Filed on behalf of:

Patent Owner SightSound Technologies, LLC

By: David R. Marsh, Ph.D.
Kristan L. Lansbery, Ph.D.
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,

Petitioner,

v.

SIGHTSOUND TECHNOLOGIES, LLC,

Patent Owner.

Case CBM2013-00020
Patent 5,191,573

UNOPPOSED MOTION TO EXPUNGE AND FILE CORRECTED EXHIBITS

Mail Stop PATENT BOARD
Patent Trial and Appeal Board
U.S. Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

I. Statement of the Precise Relief Requested

Pursuant to 37 C.F.R. § 42.22(a)(1) and for the reasons set forth below, Patent Owner SightSound Technologies, LLC ("Patent Owner") respectfully requests that the Board: (1) expunge Exhibits 2110, 2117, 2125, 2147, and 2153 from the record; and (2) file in their place corrected Exhibits 2110, 2117, 2125, 2147, and 2153.

II. Statement of Material Facts

1. Patent Owner filed its Response to the Petition and related Exhibits on January 3, 2014.

2. On March 4, 2014, Patent Owner noticed that Exhibits 2110, 2117, 2125, 2147, and 2153, as filed with the Response to the Petition, contained small portions of illegible and omitted text.

3. On March 5, 2014, Patent Owner alerted Counsel for Petitioner Apple Inc. ("Counsel for Petitioner") that some Exhibits may contain illegible and omitted text. Subsequently, Counsel for Petitioner agreed not to oppose the present Motion.

4. On March 14, 2014, Patent Owner emailed the Board requesting authorization to file this Unopposed Motion to Expunge and File Corrected Exhibits.

5. On March 14, 2014, the Board authorized such a filing in an email to myself, David R. Marsh, lead counsel for Patent Owner.

6. Patent Owner submits herewith, as attachments to the present Motion, corrected versions of Exhibits 2110, 2117, 2125, 2147, and 2153, which may be filed into the record should the Board grant the present Motion.

III. Statement of the Reasons for the Relief Requested

Patent Owner files the present Motion in accordance with the Board's authorization on March 14, 2014. The corrected Exhibits serve to clarify and complete the record before the Board and do not introduce new material into the proceeding. For the foregoing reasons, Patent Owner respectfully requests that the Board: (1) expunge Exhibits 2110, 2117, 2125, 2147, and 2153 from the record; and (2) file in their place corrected Exhibits 2110, 2117, 2125, 2147, and 2153.

Dated: March 19, 2014

Respectfully submitted,

By: /David R. Marsh/
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Attorneys for Patent Owner
SightSound Technologies, LLC

CERTIFICATE OF SERVICE

The undersigned certifies that a copy of the UNOPPOSED MOTION TO EXPUNGE AND FILE CORRECTED EXHIBITS, including the attached corrected Exhibits 2110, 2117, 2125, 2147, and 2153, was served on March 19, 2014 to the following Counsel for Petitioner via e-mail, pursuant to the parties' agreement concerning service:

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CORRECTED EXHIBIT 2110

Filed on behalf of:

Patent Owner Sightsound

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE, INC.,

Petitioner,

v.

Patent of SIGHTSOUND TECHNOLOGIES, LLC,

Patent Owner.

Case CBM2013-00020
Patent 5,191,573

DECLARATION OF SCOTT SANDER IN SUPPORT OF PATENT OWNER SIGHTSOUND TECHNOLOGIES, LLC'S RESPONSE PETITION

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Patent Trial and Appeal Board
U.S. Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

I, Scott Sander, hereby declare as follows:

1. I am a member of the managing board of SightSound Technologies, LLC ("SightSound"). I provide this Declaration in support of SightSound's Responses to Apple Inc.'s Petitions for Covered Business Method Patent Review of United States Patent Nos. 5,919,573 ("the '573 Patent") and 5,966,440 ("the '440 Patent") (collectively "the Patents"). I am over the age of eighteen, have personal knowledge of the facts set forth below unless otherwise stated, and if called to testify as a witness in this matter, I could and would testify competently thereto.

2. In 1995, together with Arthur Hair (the inventor of the Patents) I founded Parsec Sight/Sound, Inc. and Digital Sight/Sound, Inc., SightSound's predecessors in interest, to commercialize Mr. Hair's invention. Mr. Hair assigned all of his ownership rights in the '573 Patent, and every subsequent patent to issue from that same disclosure, to SightSound. Shortly after obtaining the '573 Patent, Mr. Hair wrote to John Sculley, the then-Chairman of the Board and CEO of Apple, informing him of the '573 Patent, which Mr. Hair stated would "revolutionize the video rental industry and prerecorded music industry, among others, and will serve as a catalyst to propel the multimedia industry into the 21st century." Attached as

exhibit 2111 is a true and correct copy of Mr. Hair's April 5, 1993 letter to Mr. Sculley. Page numbers and an exhibit label have been added to this document but no other alterations have been made.

3. In the late 1990s and early 2000s, SightSound developed an online commercial system for the sale of digital music and video files which was found at SightSound.com.

4. In 1995, SightSound became the first company to offer digital downloads of music through electronic sale over the Internet, when it offered the album (as well as individual songs) from the band The Gathering Field's debut album "The Gathering Field." Attached as exhibit 2112 is a true and correct copy of a screen shot from the SightSound.com website in 1995 offering the Gathering Field album for sale for $6.00, as well as offering individual songs from the album for sale for $1.00. Page numbers and an exhibit label have been added to this document but no other alterations have been made. SightSound.com offered free 30 second previews of the music being offered for sale. *Id.* ("Free Sample: 5.4 MB: 30 second clip"). SightSound.com also showed the cover art for music being offered for sale and provided reviews and press coverage regarding the album as shown in exhibit 2112.

5. Shortly after SightSound began offering The Gathering Field's album for sale, SightSound temporarily ceased selling music on its website due to

guidance I received from noted venture capitalist, L. John Doerr, who warned that selling the music of independent artists directly to consumers in this new way would be perceived by the major record labels as a threat to their current business model. I believe the music labels were not ready to adopt such a radical change in the mid to late 1990s, as the new model would have required them to migrate away from production of physical media (such as CDs) and transition to digital formats, as well as sell individual songs instead of entire albums which I understood they believed would be less profitable. I also understood that the music labels were reluctant to embrace the new model as they were concerned about unauthorized copying of their content. For these reasons, I understood that content holders were reluctant to license their content to SightSound for sale over the Internet.

6. SightSound.com initially offered individual songs for sale for $1.00. By 1998, however, Sightsound began offering songs for $0.99. The SightSound.com website presented a menu of music to select for purchase by showing the cover art of particular albums in a table format. Attached as exhibit 2113 hereto is a true and correct copy of a screen shot from SightSound.com from 1998-1999 reflecting music for sale at SightSound.com. Page numbers and an exhibit label have been added to this document but no other alterations have been made. In 1999, SightSound offered the first sale of a movie over the Internet (Darren Aronofsky's movie "Pi").

7. SightSound.com received press and media coverage praising the innovative new method for selling digital content. Accurate information about the history of SightSound, the website and press coverage regarding the company and website can still be found at http://www.sightsound.com/. Some specific press articles and television coverage about Mr. Hair's invention and SightSound.com are under the drop down menu "In the News." As just a few examples of the press coverage SightSound received, attached as exhibit 2114 is a true and correct copy of a November 1998 article from the Pittsburgh Business Times entitled "Internet Firm Pioneers Downloadable Music Sales." Page numbers and an exhibit label have been added to this document, and text has been organized to fit on an 8 1/2" x 11" page, but no other alterations have been made. Further, the September 6, 1999 issue of Time magazine featured SightSound.com in an article entitled "Movies Hit the Net." Attached as exhibit 2115 is a true and correct copy of the September 1999 article. Page numbers and an exhibit label have been added to this document but no other alterations have been made. Further, in January 2000, Yahoo Internet Life magazine featured SightSound.com as the lead story in its article on the 100 best sites for 2000. Attached as exhibit 2116 is a true and correct copy of the January 2000 Yahoo Internet Life magazine article. Page numbers and an exhibit label have been added to this document but no other alterations have been made.

8. On January 15, 1999, I wrote to Steve Jobs, the then-Chairman and CEO of Apple, informing him of the business of SightSound.com and the potential for Apple to participate with SightSound in the business of selling digital content over the Internet. I informed Mr. Jobs that "we believe that the download sale of movies and music will become the consumers' method of choice," and further, that the Mac OS (operating system) required specific functionality to support the download sales of music and movies. I also suggested that there could be an opportunity for Apple to participate in the "manufacture of an open platform audio player." I further attached a graphical schematic detailing how the SightSound.com servers stored content, permitted the downloaded content to be received by the consumer, and could be used on a handheld device that SightSound suggested that Apple develop. Attached as exhibit 2117 is a true and correct copy of my January 15, 1999 letter to Mr. Jobs with the attached schematic. Page numbers and an exhibit label have been added to this document but no other alterations have been made.

9. On or around February 3, 1999, SightSound was contacted by Apple with a proposal to discuss the potential business described in my January 15, 1999 letter. The letter from Apple requested that a meeting take place on a non-confidential and non-obligation basis and asked SightSound to confirm that understanding. With full confidence in the protection afforded SightSound by

virtue of our patents, I accepted Mr. Cefalo's "non-confidential and without obligation" standard for the proposed meeting. Attached as exhibit 2118 is a true and correct copy of the February 3, 1999 letter from Mr. Albert P. Cefalo on behalf of Apple to me. Page numbers and an exhibit label have been added to this document but no other alterations have been made.

10. On or around February 26, 1999, Mr. Hair and I met with Mark Gavini and Tom Weyer from Apple in Los Angeles. I understood that Mr. Weyer was an Apple engineer and that Mr. Gavini was Partnership Manager of Worldwide Developer Relations. During that meeting, Mr. Hair and I explained our patents, expressed our belief in the superiority of our download purchase model versus streaming subscription services, and made several requests of Apple, notably that they manufacture a hand held portable player, and re-architect their operating system. We discussed in more detail the written schematic previously provided to Steve Jobs. We requested enhancements to Apple's operating system to bolster digital rights management (DRM) capabilities—specifically encryption—to permit the sale of digital audio and video for download on Mac computers. After a lengthy discussion, I recall Messrs. Gavini and Weyer concluding that it would take an entire re-write of the Mac operating system to adequately support the level of encryption that would be needed to satisfy the media and entertainment industry.

Messrs. Gavini and Weyer indicated that SightSound should not expect such a re-write of the Mac operating system anytime soon.

11. In May 2001, SightSound was the first company to electronically sell a movie into a handheld pocket personal computer; the movie "Quantum Project" was sold into the iPAQ, which was sold by Compaq Computer Corporation. Attached as exhibit 2119 is a true and correct copy of a screen shot from SightSound.com from 2001 reflecting the Quantum Project for sale at SightSound.com. Page numbers and an exhibit label have been added to this document but no other alterations have been made.

12. SightSound continued to promote SightSound.com and the patented invention in the early 2000s. However, we were unable to successfully convince the major record labels that music and video distribution via a digital online download format was the future of the music industry and obtain licenses to sell their content. I believe that the record labels were resistant for the reasons mentioned above, and were slow to understand the market potential for online digital music and video sales. Without sufficient licenses for content to sell through SightSound.com, it was difficult to generate significant revenue from digital download sales.

13. In 2002, paradoxically, our Patents, the very things that enabled us to raise the capital to launch the download industry, now were draining us of cash,

given the heavy cost of defending against infringers. Further, content holders were largely unwilling to give us licenses to their content to sell through SightSound.com. I understood that content holders, particularly record labels, were unwilling for the reasons outlined above, but also because SightSound.com sold only to users of Microsoft's' operating system, which the record labels feared as a monopoly with its 96% market share, was of further concern to the record labels. In contrast, Apple's 4% share made it a far less threatening partner to the record labels, or so they thought, so they were willing to grant Apple licenses to their content. Time magazine confirmed my understanding on this point, stating that the record labels gave Apple a "sweet deal" because "Apple with its miniscule share of the computer market was never going to be a real distribution threat." Attached as exhibit 2120 is a true and correct copy of the November 17, 2003 Time magazine article "Invention of the Year." Page numbers and an exhibit label have been added to this document but no other alterations have been made.

14. In 2002, SightSound ceased its own commercial operations, as SightSound.com was unable to generate sufficient revenue to fund SightSound's expenses, including the costs associated with defending the Patents.

I declare under penalty of perjury that the foregoing is true and correct. Sworn this 27th day of December, 2013 at Pittsburgh, Pennsylvania.

Scott Sander

CORRECTED EXHIBIT 2117

SIGHTSOUND.COM

January 15, 1999

VIA FEDERAL EXPRESS

Steven Jobs
Chairman & CEO
c/o Andrea Nordemann
Apple Computer, Inc.
1 Infinite Loop
Cupertino, California 95014-2084

Dear Mr. Jobs:

SIGHTSOUND.COM is a Download Service Provider ("DSP") to owners of audio and video recordings and we believe that the download sale of movies and music will become the consumers' method of choice. Currently, SIGHTSOUND.COM is selling music over the Internet in a compressed and encrypted format. We have identified specific functionality we believe would be beneficial to have added to the Mac OS. Additionally, we believe there is an opportunity for Apple to participate in the manufacture of an open platform audio player. Attached is a graphic detailing these finding.

I look forward to meeting with you to discuss Apple's possible involvement in providing such hardware and software. We are in such discussions with Microsoft and we believe it would be in the consumers' interest to include Apple Computer as well.

Sincerely,
SIGHTSOUND.COM

Scott C. Sander
President
Chief Executive Officer

Enclosure

SCS:mg

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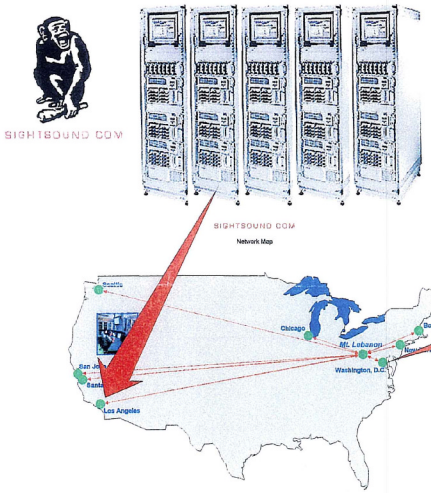
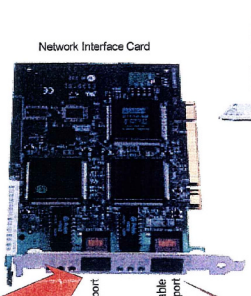
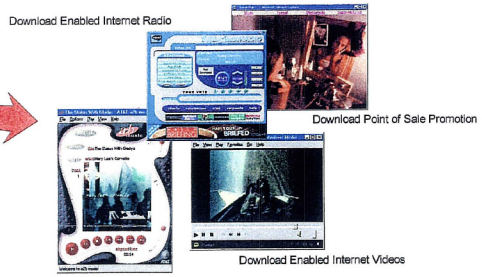
SUITE 400
MT. LEBANON, PA 15228

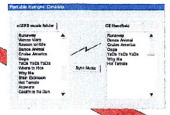
(412) 341-1001 *voice*
(412) 341-2442 *fax*
http://www.sightsound.com





SIGHTSOUND.COM



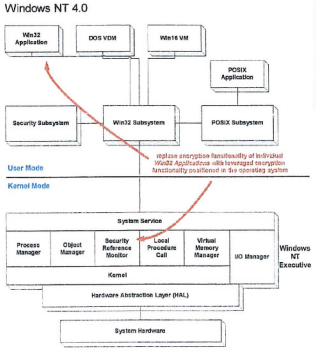


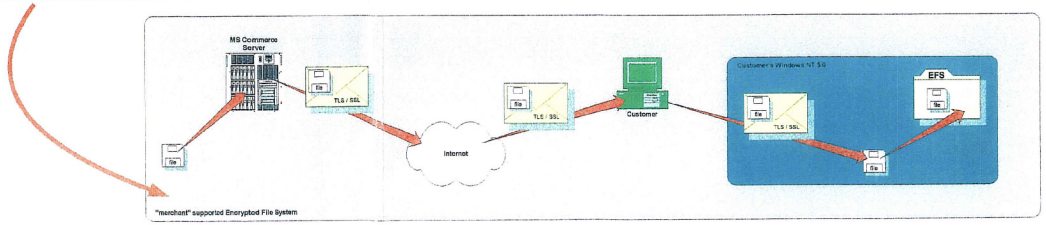
Operating System Security Enhancements

SIGHTSOUND.COM sells music (digital audio files) via the Internet in download fashion. Currently, a "one key fits all" security architecture does not exist for Internet users. Encryption/decryption currently takes place at the application level (i.e. Win32 Application), and once the music is decrypted, an unencrypted audio signal is sent by the application (i.e. the audio player) to the OS for playback through the sound card. If a consumer of encrypted audio files experiences a hard disk failure and must reinstall their audio player software, requiring a new encryption key, the new audio player will not be able to decrypt and playback their old library of purchased audio files which were encrypted with the lost key, even if they have backed up those audio files.

Microsoft has announced plans to include a Shared Public Key Infrastructure (Shared PKI) in the upcoming Windows NT 5.0 and permit application developers to take advantage of these new encryption features. SIGHTSOUND.COM believes that it would be to the benefit of both Microsoft and its customers if Microsoft provided a downloadable update for Windows CE, Win 95, Win 98, and Win NT 4.0 (if possible) to provide the same Shared PKI functionality, and that they be compatible with the Mac OS. SIGHTSOUND.COM also believes that it would be to the benefit of both Apple and its customers if Apple provided compatible Shared PKI functionality in their operating systems as well. SIGHTSOUND.COM believes that this "Shared Public Key" (Shared PK) will increase ease of use for the customer and increase on-line security for the audio/video files.

Additionally, Microsoft has announced plans to include a Encrypting File System (EFS) in the upcoming Windows NT 5.0, which supports transparent encryption and decryption of files stored on a disk. SIGHTSOUND.COM believes that it would be to the benefit of both Microsoft and its customers if Microsoft adds "merchant" functionality to the EFS and updates the Microsoft Commerce Server to provide an encrypted download link between a consumer's PC operated by Windows NT 5.0 and the merchant's Microsoft Commerce Server. Any file (i.e. WAV, AVI, MP4, EXE) could be sold and transmitted by the merchant's Microsoft Commerce Server, encrypted for Internet transmission (i.e. TLS or SSL) using the customer's Shared PK, decrypted by the customer's NT 5.0 using the Shared PK, re-encrypted by the customer's NT 5.0 using the updated EFS and using the customer's Shared PK, and saved to the customer's NTFS disk in encrypted format. Playback or opening of any file sold in this manner is only possible if the OS determines that its Shared PK matches the Shared PK used to initially encrypt the file. Additionally, SIGHTSOUND.COM believes that it would be to the benefit of both Microsoft and its customers if Microsoft adds "transport" functionality to the EFS to enable the customer to pass along the EFS encrypted file without creating unauthorized duplicates. SIGHTSOUND.COM believes that it would be to the benefit of both Microsoft and its customers if Microsoft provided a downloadable update for Windows CE, Win 95, Win 98, and Win NT 4.0 (if possible) to provide the same EFS functionality, and that they be compatible with the Mac OS. SIGHTSOUND.COM also believes that it would be to the benefit of both Apple and its customers if Apple provided compatible EFS functionality in their operating systems as well. This would permit portability of EFS encrypted audio/video files from one PC or Mac to another, including portables running Windows CE.





CORRECTED EXHIBIT 2125

IN THE UNITED STATES DISTRICT COURT

IN AND FOR THE WESTERN DISTRICT OF PENNSYLVANIA

SIGHTSOUND.COM INCORPORATED,
a Pennsylvania corporation,

Plaintiff,

vs. CIVIL ACTION NO. 98-0118

N2K, INC., a Delaware
corporation, CDNOW, INC., EXHIBITS BOUND SEPARATELY
a Pennsylvania corporation,
and CDNOW ONLINE, INC., a
Pennsylvania corporation

CERTIFIED COPY

Defendants.

_____/

DEPOSITION OF DAVID M. SCHWARTZ

Thursday, February 1, 2001

VOLUME I

Pages 1 to 210

REPORTED BY: FRANCES ANN WEINROB, RMR, CRP 8, CSR 4029

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ALSO PRESENT:

CHRISTOPHER J. REESE
ANSEL SCHWARTZ

A P P E A R A N C E S (Continued)

ALSO PRESENT (Continued):

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BY: JOSH PORTER, VIDEOGRAPHER

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(415) 731-1300 main

(415) 731-0824 fax

I N D E X

I N D E X

I N D E X

I N D E X

BE IT REMEMBERED that, pursuant to notice, and on Thursday, February 1, 2001, commencing at the hour of 9:20 a.m. thereof, at 601 California Avenue, Conference Room Baylands 2B, Palo Alto, California, before me, FRANCES A. WEINROB, a Registered Merit Reporter, Certified Realtime Reporter, Certified Realtime Professional, and a Certified Shorthand Reporter, there personally appeared DAVID M. SCHWARTZ.

09:20:13 THE VIDEOGRAPHER: Good morning.

09:20:14 This marks the beginning of Videotape 1 in the deposition of David Schwartz in the matter of SightSound.Com Incorporated versus N2K, et al., in the U.S. District Court, Western District of Pennsylvania, Civil Action No. 98-0118.

09:20:36 Today's date is February 1st, 2001, and the time is 9:20 a.m. The location of this deposition is 601 California Avenue, Palo Alto, California.

09:20:48 The deposition was noticed by attorneys for the defendant and the videotape is being produced on behalf of the same.

09:20:54 The video operator is Josh Porter, a California Notary Public for the County of San Francisco, employed by Dan Mottaz Video Productions, 402 Dewey Boulevard, San Francisco, California 94116.

09:21:12 The court reporter today is Fran Weinrob of Grossman & Cotter.

09:21:16 Would counsel present please identify themselves and state whom they represent.

09:21:23 MR. MUDGE: I'm Brian Mudge with Kenyon & Kenyon, representing plaintiff SightSound.

09:21:29 MR. ZEINEDDIN: My name's Paul Zeineddin. I am with Kenyon & Kenyon, representing SightSound.

09:21:34 MR. REESE: My name is Christopher Reese. I'm general counsel at SightSound.

09:21:38 MR. SCHWARTZ: Ansel Schwartz, self-practitioner representing SightSound.Com.

09:21:44 MR. BERL: David Berl, Wilson, Sonsini, Goodrich & Rosati, representing defendants CDNOW and CDNOW Online.

09:21:52 THE VIDEOGRAPHER: If there are no stipulations, will the court reporter please administer the oath.

DAVID M. SCHWARTZ,

called as a witness by the defendants, and who, being first duly administered the oath, was thereupon examined and testified as hereinafter set forth.

EXAMINATION BY MR. BERL

09:22:12 Q. Hello, Mr. Schwartz, my name, as you know, is David Berl. I represent CDNOW and CDNOW Online in

this case.

Could you state your full name for the record and spell your last name.

A. David Michael Schwartz, S-C-H-W-A-R-T-Z.

Q. Mr. Schwartz, have you ever lived in Pennsylvania?

A. Yes, I was born in Pittsburgh, Pennsylvania, 1948.

Q. How long did you live there?

A. I lived there until 1973.

Q. So did you go to high school there?

A. Yes. I did all my education through college in Pittsburgh.

Q. What high school did you go to?

A. Taylor Alderdice High School in Squirrel Hill.

Q. Is that outside of Pittsburgh?

A. No, it's in the city.

Q. And do you still have family in Pittsburgh?

A. No, no family in Pittsburgh.

Q. Could you state your work and home residences.

A. Presently my home address is 21 Madera Avenue, San Carlos, California. My work address is 1313 Laurel Street, San Carlos, California.

09:23:27 Q. Do you have any current addresses in Pennsylvania?

09:23:30 A. No, I do not.

09:23:31 Q. Have you ever testified in a case before?

09:23:33 A. Yes, I have.

09:23:35 Q. And what case was that?

09:23:37 A. I don't recall the name. It was the State of Kansas. It was a criminal case involving an oil drilling company in the State of Kansas.

09:23:51 Q. And what was your role in that case?

09:23:53 A. I was an engineer working for a company that owned some of the oil wells that were involved in the case.

09:24:03 Q. And you actually testified in court?

09:24:05 A. Yes, I did.

09:24:07 Q. And have you ever testified in another case?

09:24:10 A. Not to the best of my recollection.

09:24:11 Q. Have you ever been deposed before?

09:24:15 A. Yes, I have, but I can't remember the name of the case.

09:24:21 Q. Do you know about how long ago it was?

09:24:24 A. 25 years ago maybe.

09:24:26 Q. And what did the case involve? Generally speaking.

09:24:31 A. I don't know if I could even remember.

09:24:35

09:24:38 Q. Do you know what your role was, in what
09:24:40 capacity you were testifying?
09:24:41 A. I was not any kind of an expert witness, I
09:24:44 just happened to be a witness to something, and I
09:24:48 can't even remember if it was a civil or criminal
09:24:50 case. Too long ago.
09:24:53 Q. Do you remember where it was?
09:24:54 A. In Pittsburgh, Pennsylvania, I believe.
09:24:58 Q. Just since it's been a long time, I'm going
09:25:01 to go through some ground rules with you about the
09:25:03 deposition process.
09:25:04 First of all, the oath you just took has the
09:25:06 same effect that an oath you would take in court has.
09:25:09 That is, you have to tell the truth and the whole
09:25:12 truth as you would in court.
09:25:14 I noticed you have a box of Kleenexes. Are
09:25:18 you feeling okay?
09:25:19 A. I feel pretty good. I do have what's left
09:25:21 of a cold.
09:25:23 Q. Are you taking any drugs?
09:25:25 A. I took two aspirin before I came here.
09:25:28 Q. Do you feel well enough to remember
09:25:31 everything today?
09:25:33 A. I don't think my cold has affected my
09:25:35 memory.

09:25:36 Q. Is there any other reason that you don't think you can go forward and testify today?

09:25:45 A. No, I'm fine. I may have to use a Kleenex occasionally.

09:25:45 Q. Some of the things we're going to be talking about today go way back, so you may not be able to remember everything, I would guess. If that's the case, you can simply say you don't remember something. There's nothing wrong with that, and you can give your best recollection of the events as you remember them.

09:26:00 Also, the court reporter, as you see, can't pick up any physical gestures. So if the answer to a question is yes, you'll have to say yes instead of nodding your head yes or nodding your head no. Instead, just say no.

09:26:13 I'm going to ask some questions here in the morning and, we'll see, it might go through lunch and a little after that, and then SightSound will be able to ask you questions as well, and we'll go as long as it takes. Hopefully we'll be done by the end of the day.

09:26:28 What is the highest degree you've earned?

09:26:31 A. A professional degree in architecture, bachelor of architecture from Carnegie Melon

University in Pittsburgh, Pennsylvania in 1972.

Q. Where are you currently employed?

A. I'm the founder and CEO of ImaginOn, a publicly traded technology company in San Carlos, California.

Q. What does ImaginOn do?

A. Software for Internet -- for networks, Internet and intranet networks. Media software primarily. Video processing and audio processing, and also webpage processing.

Q. Is ImaginOn involved in transmitting digital audio signals over the Internet?

A. To the extent that they accompany video, yes.

Q. And are they involved in transmitting any digital audio signals over a network other than the Internet?

A. Intranets, which is the same -- using the same protocol that's used on the Internet, but in a local area network.

Q. And how long have you been employed at ImaginOn?

A. Well, I started the company, incorporated it in the spring of 1996. So I received my first paycheck probably in July or August of 1996.

09:27:52 Q. And let's go back a little farther. After university, what was the first full-time job that you had?

09:28:03 A. I was working -- I went to work for one of my former professors who had a start-up company. I can't remember the full name of the company. Something-Environmental Research, Incorporated.

09:28:16 Q. And what was your title there, if you remember?

09:28:20 A. Engineer, software engineer.

09:28:23 Q. And did that job involve the transmission of any digital audio signals?

09:28:28 A. Not at all. It was design of advanced prefabricated structures for buildings.

09:28:40 Q. Okay. And what was the next job you held? Actually, let's go back. When did you hold that job, for how long?

09:28:50 A. Oh, we started that -- started working for Tony in 1972 and worked for him through 1974. About two years.

09:29:03 Q. And where did you go after that?

09:29:06 A. I started a company with another -- a friend of mine who also worked for Tony. We split off and formed our own company in Pittsburgh and then very quickly moved into Boston in 1974.

09:29:18 Q. Do you remember the name of that company?

09:29:21 A. Sure. GNS, three initials, Inc.

09:29:27 Q. What did GNS stand for?

09:29:32 A. I think it had several meanings, but we mainly called it Great Natural Structures.

09:29:39 Q. And what did that job involve?

09:29:42 A. We designed environmentally friendly prefabricated high-tech structures.

09:29:50 Q. And when you say "structures," what do you mean by that?

09:29:52 A. Well, they were things -- I think now it's called panelized construction in the industry. Where you can put buildings together, like you would a toy, out of big pieces, and those included solar energy pieces so the building would generate a substantial part of its own heat or power.

09:30:12 Q. And how long were you at GNS?

09:30:14 A. Till about 1978.

09:30:20 Q. And where did you go after that?

09:30:22 A. I was recruited by a solar energy design company in Washington, D.C., and they set up a subsidiary called Energy Design and Analysis Company, EDAC, in Washington.

09:30:40 Q. Do you remember your title there?

09:30:45 A. Director of engineering services, I believe.

09:30:47 Q. And what were your responsibilities?

09:30:50 A. Writing software, preparing proposals to the -- mainly to the federal government for various energy conservation projects for the Department of Energy, Department of Defense. I think it was called HUD, Housing and Urban Development, at that time.

09:31:07 Q. And did the software you wrote there involve in any way the transmission of digital audio signals?

09:31:18 A. No, it did not.

09:31:18 Q. And how long were you there?

09:31:20 A. Oh, till 1980 -- or through 1980.

09:31:25 Q. Where did you go after that?

09:31:27 A. In 1980, I moved to Denver, Colorado to work for a related firm. I'm not sure, it may even have been called Energy Design and Analysis Company in Denver. Same ownership.

09:31:48 Q. What was your role there?

09:31:50 A. Again, software and a systems design, project proposals.

09:31:54 Q. So it was the same job essentially in a different place?

09:31:57 A. Essentially the same job in Denver, right.

09:32:00 Q. And how long did you stay there?

09:32:01 A. Till nineteen -- I want to say 1983.

09:32:08 Q. And where did you go in 1983?

09:32:13 A. In 1983, I started a company called CompuSound, Inc., out of my house or condominium in Denver.

09:32:29 Q. And what was the goal of CompuSound, Inc.?

09:32:35 A. To design, build and manufacture and sell digital audio equipment.

09:32:47 Q. And how long were you at CompuSound?

09:32:51 A. Well, I resigned, although there was not really anybody to resign to, I resigned in 1989.

09:32:58 Q. And was the company called CompuSound, Inc., the entire time from 1983 to 1989?

09:33:03 A. No. Early on, and I couldn't give you the exact date, I think it was 1984, middle of '84, we had to change the name because there was a firm in Southern California that owned the name CompuSound in conjunction I think with a loud speaker system, and they informed us that they objected to our registration of it as a corporate name, so we changed the name to CompuSonics.

09:33:35 Q. And was it called CompuSonics still at the time that you resigned in 1989?

09:33:41 A. Yes, it was.

09:33:42 Q. And what was the reason for your resignation?

09:33:46 A. Well, the company did not have enough

09:33:48 business to support itself, and I could not find
09:33:53 other sources of funding to keep it going, so I had
09:33:58 to get a real job.
09:33:59 Q. And what real job did you get?
09:34:02 A. Well, I worked -- I had several consulting
09:34:05 contracts, so you could say I worked as an
09:34:09 independent consultant. I did consulting work, not
09:34:14 just digital audio related, but digital signal
09:34:18 processing, which is the technology that our software
09:34:22 embodied. So I worked -- I did contracts for Tandy
09:34:31 Corporation, for Atari Corporation, for Seagate.
09:34:40 Q. And when you say "contracts," what do you
09:34:42 mean by that?
09:34:44 A. Well, they're consulting contracts, where a
09:34:47 company has a specific problem and they say, can you
09:34:50 solve this problem or write this piece of software
09:34:52 and tell us how much money you want, and then I would
09:34:55 give them a bid and we would sign a letter agreement,
09:34:57 and then within a certain period of time, I'd produce
09:35:00 either the software or a report or what it was they
09:35:05 had asked me to perform.
09:35:07 Q. And how long did you work as an independent
09:35:09 consultant?
09:35:11 A. Not very long. About six months. And then
09:35:14 one of the companies I was consulting for said,

09:35:19 basically, we think we could save some money if we
09:35:22 hired you full-time.
09:35:23 Q. And what company was that?
09:35:24 A. That was StarSignal in Campbell, California.
09:35:34 Q. How long did you work at StarSignal?
09:35:36 A. About a year.
09:35:38 Q. In about 1990 --
09:35:39 A. Yes.
09:35:40 Q. -- is that where we are? And what was your
09:35:42 title at StarSignal?
09:35:45 A. I'm pretty sure I was one of the VPs of
09:35:48 engineering, but that was a big title over what was
09:35:51 basically an engineering job.
09:35:54 Q. And what were you engineering?
09:35:58 A. The digital signal processing system for the
09:36:01 first color facsimile machine. Image processing.
09:36:09 Q. And you stayed there one year, you said?
09:36:11 A. Yes.
09:36:12 Q. And where did you go after that?
09:36:14 A. I went to work for Tandy Corporation. The
09:36:17 Tandy research and -- R&D center, research and
09:36:28 development center, in San José, California.
09:36:30 Q. And what was your role there?
09:36:32 A. I headed the software engineering group. It
09:36:35 would be too grand to call it a department.

09:36:41 Q. And in that job, were you involved with the
09:36:42 transmission of digital audio signals?
09:36:46 A. Well, to some extent. They were only
09:36:49 transmitted locally. The main purpose of the work
09:36:52 there was to develop the first erasable compact disk
09:36:58 recorder -- erasable disk for compact disk, you know,
09:37:02 players, recorders.
09:37:04 Q. And was that endeavor successful?
09:37:14 A. From a technical point of view, it was
09:37:14 successful. We produced working machines, finished
09:37:14 machines, and working devices. They were not
09:37:17 marketed at that time.
09:37:19 Q. How long did you stay at Tandy?
09:37:22 A. Till I think June 1992.
09:37:25 Q. And where did you go in June of 1992?
09:37:28 A. To Atari Corporation.
09:37:31 Q. And what were you doing at Atari?
09:37:34 A. I'm trying to remember my exact title.
09:37:36 I believe I started as a senior engineer
09:37:38 group leader for the digital audio -- two digital
09:37:43 audio projects. One, the digital audio for the Atari
09:37:46 Falcon computer, 68040-based computer, and at the
09:37:54 same time designing the digital -- the audio digital
09:37:57 signal processing circuit for the Jaguar video game
09:38:02 system.

09:38:05 Q. And did that involve the transmission of digital audio signals?

09:38:06 A. Locally. You know, from here to there around the building and from one machine to another.

09:38:08 Q. Okay, but not outside of Atari?

09:38:10 A. No.

09:38:13 Q. And how long did you stay at Atari?

09:38:15 A. Till the company basically ceased operations in the summer of 1996.

09:38:16 Q. And in the summer of 1996, where did you go?

09:38:19 A. Well, that overlaps with the start of my present company, with ImaginOn. I started the company with the permission of management of Atari.

09:38:24 Q. And you're still at ImaginOn?

09:38:28 A. Yes.

09:38:31 Q. Okay, now I'd like to circle back many jobs ago to CompuSound. What was the corporate mission originally of CompuSound?

09:38:34 A. Well, to make money for the shareholders. Okay? That was the basic mission, but we were going to do that with two types of product. One, a professional-level digital audio workstation and, two, a consumer digital audio recorder, player, editor.

09:38:37 Q. And did you make a professional-level

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09:39:22 1 digital audio system?
09:39:25 2 A. The workstation? Yes, we did. We were the
09:39:27 3 first -- to the best of my knowledge, we were the
09:39:30 4 first company to commercialize such a device.
09:39:33 5 Q. And what did you call that device?
09:39:35 6 A. The DSP 2000 series. There was the 2002,
09:39:41 7 2004 and so on, depending on how many audio channels
09:39:45 8 it could process in parallel.
09:39:47 9 Q. And did you ever make the consumer device
09:39:50 10 that you spoke of?
09:39:50 11 A. Yes, we did. We started building it in
09:39:53 12 prototype form almost immediately. The first
09:39:56 13 prototype -- I built the first prototype personally
09:40:00 14 in 1983, and it went through a series of prototypes
09:40:05 15 up until the first batch of commercial units were
09:40:08 16 produced in either late 1985 or early 1986.
09:40:18 17 Q. And who came up with the idea of making a
09:40:21 18 consumer device for digital audio signal
09:40:25 19 transmission?
09:40:27 20 MR. MUDGE: I'm going to object to the
09:40:28 21 question. I think it mischaracterizes his testimony.
09:40:33 22 BY MR. BERL:
09:40:33 23 Q. Who came up with the idea of making a
09:40:36 24 consumer device for digital signal processing?
09:40:45 25 A. Well, I'm going to take some credit for

being, if not the first, among the very first people to do that.

Digital signal processing, up until the time myself and a few other people in the industry started working with it, was purely the domain of the defense industry, really, the Navy in particular. The U.S. Navy had a very large effort in digital signal processing for audio for detecting submarines, you know, for coastal defense and processing signals to determine whether the hydrophones, the microphones underwater, were picking up, you know, whales or dolphins or submarines.

Q. What do you mean when you say "digital signal processing"?

A. Well, then I have to describe what an analog signal is. There are generally two classes of signals.

In layman's terms, an analog signal is the wiggly line you see on ER on the scope, on the screen when you're watching some patient's heart fail and it goes beep, beep, beep, beep, and the line goes across the screen, and then it goes flat and the person's dead. That's the analog representation of a signal, a wiggly line going across some screen someplace.

A digital signal is a series of numbers that

09:42:06 1 actually measures the -- represents the position of
09:42:09 2 that wiggly line in an x/y dimension. So it's a
09:42:14 3 graph. You could say you plot the points that make
09:42:17 4 up that line. So that's a digital signal.
09:42:20 5 And when we say digital signal processing,
09:42:31 6 it means to take that data, that set of numbers, and
09:42:31 7 do something with it.
09:42:31 8 Q. And I'd like to go back to that consumer
09:42:33 9 device. What did you call it?
09:42:35 10 A. The DSP 1000.
09:42:38 11 Q. And "DSP" stands for?
09:42:40 12 A. Well, we started saying digital signal
09:42:43 13 processor, then too many people said "What?" So we
09:42:46 14 said digital sound processor, and it was never -- I'm
09:42:50 15 not sure if it was clear completely to the press
09:42:52 16 which one it was.
09:42:56 17 MR. BERL: Okay. I'm now going to have this
09:43:00 18 marked Exhibit 1.
09:43:05 19 (WHEREUPON, DEPOSITION EXHIBIT 1 WAS MARKED
09:43:22 20 FOR IDENTIFICATION.)
09:43:22 21 BY MR. BERL:
09:43:22 22 Q. Are you familiar with Exhibit 1?
09:43:26 23 A. Yes, I am.
09:43:28 24 Q. Do you know who wrote Exhibit 1?
09:43:35 25 A. Well, I probably wrote the first draft of

it, and then our advertising agency, whoever they were at the time -- I do remember who they were at the time -- Leber Katz Partners in New York City, they probably turned it into English.

Q. And looking at Exhibit 1, which bears the number 26281 at the bottom, if I could direct your attention to the top, there are three bulleted lines. Could you read those to yourself for a second.

A. Yes.

Q. And could you read the first line out loud.

A. "In-home digital quality stereo recording from any source."

Q. And can you tell me what you meant by that?

A. What it says, it means it acts like a tape deck, like a cassette deck. You plug a couple of wires into it from your radio or a microphone, and you record a radio show or copy an LP record onto this machine. It's a recording deck.

The "any source" refers to whatever audio source you happen to have at hand.

Q. And can you read the second bulleted line.

A. "Digital recording from remote databases: 'telerecording.'".

Q. And what did you mean by that?

A. Well, I don't know if we invented this term.

09:45:16 We never claimed to have invented this term, but
09:45:19 maybe we did or maybe our advertising agency did.
09:45:25 Telerecording means to take digital audio
09:45:31 data from some place outside of your home and record
09:45:36 it onto your local disk drive.
09:45:41 Q. And now directing your attention to the
09:45:43 bottom of the page, are you familiar with what is
09:45:47 pictured there?
09:45:49 A. The picture?
09:45:50 Q. Yes.
09:45:51 A. That's probably the second or third
09:45:53 prototype of the DSP 1000.
09:45:58 Q. And how do you know it's the second or third
09:46:01 prototype?
09:46:01 A. The first two were pretty ugly. This is one
09:46:05 of the finished-looking ones.
09:46:09 Q. And by "finished," what do you mean?
09:46:13 A. It doesn't look like it was built in my
09:46:15 kitchen.
09:46:16 Q. Okay. Do you know when this document was
09:46:19 produced?
09:46:22 A. Well, it says "Copyright 1984" at the
09:46:25 bottom, so I'm pretty sure it was produced in 1984.
09:46:30 Q. Does that comport with your memory of when
09:46:32 the second or third prototype of the DSP 1000 --

09:46:37 A. Yes, it does. 1984 sounds about right.

09:46:41 MR. BERL: Now, if I could have this marked as Exhibit 2.

09:46:43 (WHEREUPON, DEPOSITION EXHIBIT 2 WAS MARKED FOR IDENTIFICATION.)

09:46:45 MR. BERL: You'll want to hold on to Exhibit 2. We'll be using it quite a bit throughout the morning.

09:46:57 Q. Do you recognize this document?

09:47:05 A. Yes, I do.

09:47:07 Q. And what do you recognize it as?

09:47:09 A. A document that we produced for our salespeople and for the dealers who would sell the DSP 1000.

09:47:14 Q. Do you know who produced it for the dealers, when you say "we"?

09:47:17 A. Well, again, I probably myself or one of my vice-presidents drafted this, and then our ad agency or PR agency, again, tried to make it into English.

09:47:24 Q. All right. And looking still at Exhibit 2, which is numbered 26489 through 26490, can you tell when this was produced?

09:47:29 A. It says "Copyright 1986" at the second page. I believe that's -- it seems to me it was done earlier, but maybe this particular version was

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printed in 1986.

Q. And why do you think it might have been done earlier?

A. Well, because we had -- this diagram didn't really change. It's a diagram of this machine, the Exhibit 1 machine, which is dated 1984.

Q. And if I could go through that diagram with you, the diagram on 26489 labeled "DSP 1000 System Diagram."

A. Yes.

Q. Why don't we start on the upper left. When it says "Audio In," what does "Audio In" mean?

A. Well, that represents a wiggly line, like the one I referred to on the medical monitor when you're watching a patient's heartbeat on a TV show, the wiggly line representing the sound of the patient's heart. That's audio.

It could be music. Presumably it's music or voice in this case. So that's the audio signal in.

Q. Where would that audio come from?

A. Well, most people, frankly, copied LP records or compact disks. So the audio in was the output from a compact disk player or a record player, LP record player.

Q. And how was an LP record player or compact

09:49:35 1 disk player connected to the DSP 1000?
09:49:40 2 A. Through copper wires terminated in what are
09:49:44 3 referred to as RCA jacks.
09:49:47 4 Q. And now looking at the top box labeled
09:49:50 5 "Analog Section, A-to-D/D-to-A," can you tell me what
09:49:55 6 you meant by that?
09:49:56 7 A. That's the part of the circuitry that
09:49:58 8 converts the analog signal into digital data, into
09:50:03 9 numbers. And the other part of that section does the
09:50:07 10 output, which takes the digital numbers, the D, and
09:50:11 11 turns them back into analog, an analog signal, a
09:50:15 12 wiggly line that you can listen to, that you can
09:50:18 13 amplify and call music. That's the audio out, coming
09:50:21 14 out of that box.
09:50:23 15 Q. And what do the arrows on this chart
09:50:26 16 represent?
09:50:27 17 A. The direction of data flow.
09:50:31 18 Once you're inside a digital audio machine,
09:50:33 19 or it's really a computer, everything is numbers, is
09:50:36 20 data. We'll just call it data.
09:50:41 21 Q. And so the two-sided arrows, what does that
09:50:45 22 mean exactly?
09:50:46 23 A. That means that the data flow could be to or
09:50:49 24 from that box, that part of the circuitry.
09:50:53 25 Q. Now, turning your attention to the second

box labeled "FIFO Buffer," what is the FIFO buffer?

A. It's a digital memory. FIFO stands for first in/first out. I think we just could have called it buffer. "First in" means the data that goes into the buffer first, comes out of the buffer first. So first in/first out, as opposed to first in/last out, which is, you know, a FILO or last in/last out.

There's different ways to organize digital memories by, in this case, which way the data is flowing and who's first and who's last. So this type of buffer is a FIFO buffer.

Q. And what role does a buffer play in this system?

A. Well, the flow of data after its converted from the analog world into digital data is quite rapid and it's continuous. You can't stop it. Otherwise, you'd get discontinuities in the music or in the voice signal.

So you need some way to temporarily store it in a memory before you do anything else with it to take up -- to account for the fact that the rest of the computer is not particularly continuous. It has a bursty behavior. In other words, data is processed in lumps, in groups or blocks, and so you have to

09:52:17 accumulate a block of data in a buffer and then pass it along to the processor to be processed as a group.

09:52:25 So it's like the waiting room. The FIFO buffer is like the waiting room for the data. It accumulates data.

09:52:32 Q. So what data goes into the FIFO buffer from the analog-to-digital/digital-to-analog section?

09:52:40 A. What represents the music or the audio signal. Numbers that represent that signal.

09:52:46 Q. So is it a digital or analog signal?

09:52:49 A. It's digital data.

09:52:51 Q. And what comes out of the FIFO buffer?

09:52:54 A. Digital data. It's all digital. In this case, 16 bit digital words, we call them.

09:53:03 Q. And turning your attention to the next box labeled "Dual TMS 320 Signal Processors," what does that box represent?

09:53:13 A. That's the part of the circuit that takes the data and manipulates it. That's part of the processing. Probably one of the more significant parts of the signal processing.

09:53:26 TMS 320s -- or the TMS 320 is a Texas Instruments signal processing chip. It's still in production today. Probably the most common signal processor, most popular chip for this purpose ever

made.

There are two of them in that box.

Q. And how does it process the signal?

A. Well, it can process the signal --

They're programmable devices, meaning you load software into them and they do whatever the commands of the software are.

Most of the time in this machine, the commands were -- well, two things. Check for errors, and that's a minor function. And the most important function is to analyze the data and try and compress it to make it smaller. That's the process, the two processes that were going on.

Q. And why did you need to check for errors?

A. Well, because digital errors, if they're stored and then played back, sound terrible and can actually damage your loud speakers.

Q. And do you remember how the TMS 320 checked for errors?

A. We used a simple checksum; that is, every group of every block of data got a number that represented --

If you added all the numbers together in the block, you got another number called the checksum, and that checksum is stored separately from the --

apart from the actual music or audio data.

Q. And what is the purpose of the checksum?

A. Well, if the checksum doesn't compute when you look to verify it, you know that that block of data is corrupt. You know there's been an error.

Q. And who programmed the TMS 320?

A. You mean who the employees of CompuSonics were at that time who did the work?

Q. Yes.

A. I remember some of the names, but not all of the names.

The most outstanding engineer in the group -- well, I shouldn't say that. There were a couple of outstanding engineers; John Stautner, Thomas Hegg.

Q. Could you spell "Stautner"?

A. S-T-A-U-T-N-E-R. John Paul Stautner.

And Thomas Hegg, H-E-G-G.

And I can't remember David's last name. Horowitz, David Horowitz.

Those are the three that pop to mind right away.

Q. And around what time period did this programming occur?

A. Well, we started -- I actually started

paying that group to program for this project while they were still students at MIT, so they were still graduate students in the master's program in computer science in 1983.

And what I had to do is pay the Massachusetts Institute of Technology a grant, and then they worked under the grant money to work on this.

Q. And when was this programming for the TMS 320 completed?

A. Well, software is never completed. Let me just say for the record that you have one revision after another.

You could say when did it first work well enough to do something with it, that would be 1984.

Q. And when you say "well enough to do something with it," for what purpose did it work in 1984?

A. Good enough to sell it to somebody commercially. Serviceable enough to be commercial.

Q. You identified two reasons for the TMS 320 as it was programmed in the DSP 1000, the first was to check for errors and the second was to compress the signal. Why did you need to compress the signal?

A. Well, there are a number of reasons, and I

09:57:45 1 don't know if we even want to go through all of the
09:57:47 2 reasons today, but the primary reasons were to save
09:57:51 3 space on the disk drive, storage space, and the
09:57:55 4 second reason was to minimize the amount of data that
09:57:57 5 had to flow through the wires. That's referred to as
09:58:00 6 the bandwidth.
09:58:02 7 Q. And what wires are you talking about?
09:58:05 8 A. The wires in the circuit. The wires in the
09:58:07 9 circuitry.
09:58:10 10 Q. And what would have happened --
09:58:12 11 A. And, I'm sorry, the wires inside the machine
09:58:16 12 and the circuitry, and also in the case of
09:58:17 13 telerecording, the wires external to the machine.
09:58:22 14 Q. What would have happened if you had not
09:58:23 15 compressed the signal?
09:58:28 16 A. Well, in the first versions of the DSP 1000,
09:58:31 17 we could not have recorded the signal to the disk
09:58:37 18 drive. The disk drive -- we couldn't have squeezed
09:58:40 19 the data through the wires. The bandwidth was not
09:58:42 20 there. The disk drive was not capable of recording
09:58:46 21 full bandwidth digital audio.
09:58:50 22 That was the primary initial reason.
09:58:53 23 Q. And what were a few other reasons, if you
09:58:55 24 remember?
09:58:56 25 A. Well, the other reason was we were trying to

09:58:59 1 build a system that could transmit audio over
09:59:01 2 telephone wires, and the best telephone wires in that
09:59:06 3 day, in 1983-'84, were capable of roughly 56,000 bits
09:59:15 4 per second, as opposed to digital audio that was
09:59:18 5 1,400,000 bits per second.
09:59:23 6 Q. So what would have occurred if you had not
09:59:26 7 compressed the signal?
09:59:31 8 A. Well, in practical terms, it would have
09:59:33 9 taken an awfully long time to transmit one song over
09:59:42 10 a telephone wire.
09:59:42 11 Q. And if you could estimate, how long would it
09:59:42 12 have taken?
09:59:43 13 A. Well, all day and all night to send one
09:59:47 14 song, for example.
09:59:50 15 Q. Now, these three engineers that you named,
09:59:53 16 were they the only three engineers who worked on
09:59:55 17 programming the TMS 320?
09:59:58 18 A. No, they were not.
09:59:59 19 Q. And do you remember around how many more
10:00:01 20 there were?
10:00:03 21 A. Well, they weren't all working at once. You
10:00:06 22 know, engineers came and went. Not everybody who
10:00:08 23 started with the company in 1983 or '84 continued
10:00:12 24 through 1989. So the total number of engineers who
10:00:18 25 wrote some code for those chips? Six or seven.

10:00:29 Q. And to get it what you called in working
10:00:30 order well enough to sell, how many engineering man
10:00:34 years did it take to program the TMS 320,
10:00:37 approximately?
10:00:43 MR. MUDGE: I'm going to object. The
10:00:44 question's vague.
10:00:46 MR. BERL: You can answer.
10:00:49 THE WITNESS: That's difficult to estimate.
10:00:51 Maybe two or three man years.
BY MR. BERL:
10:00:56 Q. And what role did you play, if any, in
10:00:58 writing the software for the TMS 320?
10:01:01 A. I wrote what was called or what we still
10:01:03 call in the industry pseudo-code. Pseudo-code is a
10:01:09 representation of the actual software in terms that
10:01:14 another engineer can actually take those terms and
10:01:16 write the executable code.
10:01:20 Q. And was there only one compression algorithm
10:01:23 that the TMS 320 used? In the DSP 1000.
10:01:30 A. There's a group of algorithms that all work
10:01:32 together, and they -- together, if you used them all
10:01:40 together, you would get more compression than if you
10:01:41 used one of them alone.
10:01:44 Q. And do you remember the name of any of those
10:01:46 algorithms?

10:01:47 A. I forget their nicknames. We had working
10:01:50 nicknames for them, but commercially we just called
10:01:53 them CSX2, CSX4 and CSX8.
10:01:59 Q. And what were the differences between those
10:02:01 three algorithms?
10:02:02 A. CSX2, and there are actually two versions of
10:02:07 CSX2 to complicate matters, was the highest quality,
10:02:12 least processing. It did the least damage to the
10:02:15 audio signal. In one case, it was completely
10:02:19 lossless, meaning it didn't damage the audio signal
10:02:22 whatsoever. It was called perfect reconstruction of
10:02:27 the signal.
10:02:28 The commercial version of -- first
10:02:30 commercial version of CSX2 was in fact the lossless
10:02:35 version for professional use. The second version of
10:02:38 CSX2 was somewhat slightly lossy; that is, it wasn't
10:02:43 perfect.
10:02:44 CSX4 used more software to compress the
10:02:48 signal further and damaged its quality a little more,
10:02:53 and CXS8 turned what was a pristine digital audio
10:02:59 compact disk signal into something that sounded like
10:03:01 AM radio.
10:03:05 Q. And how is, in the art of compression, how
10:03:07 is the amount of compression that one achieves
10:03:10 measured?

10:03:11 MR. MUDGE: Object. Lacks foundation.

10:03:16 THE WITNESS: We measure it by the ratio of source data rate to output data rate.

10:03:23 BY MR. BERL:

10:03:24 Q. And if you remember, what was that ratio for those three algorithms?

10:03:31 A. Well, roughly, the numbers represent the ratio. CSX2 would cut the data rate by half. CSX4 would cut it -- divide by four, and CSX8 would divide by eight.

10:03:46 In actual implementation, CSX8 divided far more than that. It actually divided -- I'd have to get out a calculator to give you the exact number, but it took a 1.4 million bit per second signal and turned it into 56,000 bits per second. So we would have to get out a calculator to figure the ratio.

10:04:09 Q. And to recap, what went in, looking at this arrow that goes from the FIFO buffer to the TMS 320, what would go into the TMS 320 from the FIFO buffer?

10:04:21 A. 16 bit long digital audio -- 16 bit long words, data words, that represented what we call samples of the analog signal. It's a digital signal which represents the analog signal.

10:04:38 Q. And was it compressed at all before it went into the TMS 320?

10:04:43 A. No, not at all.

10:04:44 Q. And what came out of the TMS 320?

10:04:50 A. Well, we're going down the diagram vertically.

10:04:53 Q. Yes, going down the diagram.

10:04:55 A. Going down the diagram, the 320s produced a smaller -- they took a large group or block of data from the FIFO buffer, squeezed it down to a much smaller block of data, and then put it in the random access memory, the main memory of the computer.

10:05:18 Q. Was the signal that came out of the TMS 320, was that stored permanently in the random access memory?

10:05:26 A. Generally not. It could be. It could be, but it wasn't permanently. It stayed there for a while until the CPU, the central processing unit, picked it up and moved it over to the disk drive.

10:05:45 Q. And by "CPU," are you referring to the box labeled "MC 68000 CPU"?

10:05:52 A. Yes, that's a Motorola microprocessor called the 68000.

10:06:01 Q. And when you say it directs the signal from the RAM, what do you mean by that?

10:06:08 A. Well, the 320s were programmed simply to crunch data. To fetch it from the buffer, you know,

10:06:13 get the waiting data, process it and dispose of it
10:06:16 into the RAM. So they were -- the 320s had a limited
10:06:21 range of movement. Grab data from one box and put it
10:06:24 in another, basically.
10:06:31 Q. And where did it go next after it was in the
10:06:33 RAM?
10:06:34 A. The 68000, the microprocessor, under
10:06:37 software control, would initiate what's called a DMA,
10:06:40 direct memory access, cycle. Pass control of the
10:06:45 data transfer to the DMA chip. It's actually a
10:06:49 separate processing chip called a DMA controller.
10:06:51 The DMA controller would then sequentially
10:06:54 read the digital audio data out of RAM, the
10:06:57 compressed data, and pass it through another chip
10:07:01 called the SCSI port to the disk drive.
10:07:04 Q. Now, you said the 68000 works under software
10:07:08 direction.
10:07:09 A. Yes.
10:07:10 Q. Who wrote that software?
10:07:13 A. Again, I wrote the first pseudo-code for
10:07:17 that, but the actual first working version -- working
10:07:20 version of software for the 68000 was written by John
10:07:25 Stautner.
10:07:28 Q. And when did that process of writing that
10:07:29 software begin?

10:07:33 A. Well, John was still a graduate student at MIT, I believe, in 1983.

10:07:39 Q. And when did you have that software in working order?

10:07:44 A. The first version of that software function was for the DSP 2000 prototypes that we built in early 1984.

10:07:55 (At this time, Monica Mucchetti entered the deposition room)

10:07:57 BY MR. BERL:

10:07:57 Q. And when did you have that software working inside a DSP 1000?

10:08:03 A. I think the second prototype of the DSP 1000 had it working, again, in late 1984 or very early 1985.

10:08:18 Q. And you said that the 68000 CPU directs the data from the RAM to the DMA controller.

10:08:25 A. Yes.

10:08:26 Q. What does that mean?

10:08:29 A. Well, the reason for a --

10:08:31 The reason for a direct memory access controller, that's what DMA stands for, is it's a specialized chip that knows how to -- given a starting address in memory and an amount of data, those two numbers, and control, you pass control to

10:08:50 it -- it knows how to then go to memory, find that
10:08:54 address and take that quantity of data from
10:08:56 sequential addresses and send it somewhere.
10:09:00 And that off loads or that relieves the
10:09:03 68000 of having to do what's a very tedious,
10:09:06 simpleminded job of just moving data from one place
10:09:09 to another.
10:09:11 Q. And the data that was on the RAM, what form
10:09:14 was that data in?
10:09:16 A. Compressed, blocks of compressed digital
10:09:20 audio.
10:09:23 Q. And after the DMA controller transferred it,
10:09:28 where did it go?
10:09:31 A. It went through another chip, which we call
10:09:34 here a SCSI port. SCSI standing for small computer
10:09:38 standard interface, pronounced "*skuzzy*." It's still
10:09:42 in computers today.
10:09:45 That chip is the interface chip between a
10:09:48 computer and a standard peripheral, a standard disk
10:09:52 drive, that understands the SCSI protocol, which
10:09:57 could be a disk drive or a scanner or a printer, you
10:10:01 know, or whatever.
10:10:02 Q. And what was it?
10:10:03 A. In this case, a disk drive.
10:10:05 Q. Do you remember what kind of disk drive it

was?

A. It depended on which prototype. Through the prototypes, it changed. And when it eventually got into production, the disk drive was a recordable optical disk in one case, and a cartridge form of floppy disk drive in another case.

Q. And as the data traveled through from the RAM to the disk, what form was it in?

A. Compressed digital data.

Q. And did that data represent something? Now moving back to the "Audio In." Was there any relationship between the data that was stored on the disk and the audio that was put into the DSP 1000?

A. What we put onto the disk drive eventually was two types of data; the compressed digital words that represented the original musical signal, the analog signal, and some header information, some text information about the file. You know, about -- well, there's two levels of that.

There's header information on each little block that says something about what's in the block, and then on the entire file, like the song, you know, the recording, there's additional data. These are non-musical forms of data.

Q. And why did you need a header for each

10:11:35 block?

10:11:39 A. Well, the header had to contain at a minimum the checksum, you know, the error correction information, and also the type of algorithm -- a notice to the signal processor as to what kind of algorithm was used to create the block, because we had various different algorithms.

10:11:54 Q. And those were the algorithms that you discussed earlier?

10:11:59 A. Yes.

10:11:59 Q. And what else did the header include?

10:12:02 A. Well, we had some extra fields, you know, extra space in the header that was -- it varied in use from time to time.

10:12:11 There were kind of scratch pad areas, and I don't know that we ever standardized those extra fields. They were just spares in case we needed them. From time to time we needed them for different things.

10:12:21 Q. And do you remember anything that you used them for?

10:12:29 A. I think for the -- I just don't remember. You'd have to ask one of the engineers who actually programmed the 320s.

10:12:37 Q. And those would be the engineers that you

10:12:39 discussed earlier?

10:12:40 A. Yes.

10:12:41 Q. Now, I see another arrow or several other

10:12:45 arrows coming from the MC 68000, and one goes to the

10:12:55 serial port.

10:12:56 A. Yes.

10:12:57 Q. What does that arrow represent?

10:12:58 A. It's a bidirectional arrow so that control

10:13:02 data, or any data in fact, could be obtained into the

10:13:05 system through a standard serial port, also called

10:13:09 RS-232, which is a standard form of serial

10:13:13 transmission of digital data.

10:13:16 We used that port generally to connect to a

10:13:18 PC, either an IBM PC or an Apple Macintosh type of

10:13:24 PC.

10:13:27 Q. And who would be -- who would use the PC?

10:13:32 A. Well, the only use we put it to commercially

10:13:36 as part of the product was for editing music, editing

10:13:41 the recordings. The editing interface --

10:13:43 We wrote additional software for editing

10:13:46 that lived on a PC or a Mac. I'm trying to remember

10:13:50 what we called it. We had a name for the editing

10:13:53 program. Oh, for Mac it was called MacSonics, I

10:13:57 think. Something like that for the Mac.

10:14:03 Q. And recapitulating once again, what form was

10:14:07 the signal in as it went from the RAM --

10:14:16 (Reporter interruption.)

10:14:16 BY MR. BERL:

10:14:17 Q. What form was the signal in as it went

10:14:21 through the line of arrows from the RAM to the

10:14:25 MC 68000 to the serial port to the PC?

10:14:30 MR. MUDGE: I'm going to object to the

10:14:32 question. The question lacks foundation and I think

10:14:34 misstates his prior testimony.

10:14:36 MR. BERL: You can answer.

10:14:38 THE WITNESS: It's digital data, and

10:14:40 everywhere in the machine it was generally 16 bit

10:14:44 wide data.

10:14:45 Although some of the peripherals, in

10:14:47 particular the DMA controller, the serial port and

10:14:52 the parallel port, were 8 bit wide data, you know,

10:14:59 byte wide data, just because the peripheral chips

10:15:02 made by Motorola for the 68000 happened to be byte

10:15:07 wide as opposed to word wide.

10:15:10 BY MR. BERL:

10:15:10 Q. And what is the difference between byte wide

10:15:13 and word wide?

10:15:13 A. Word wide is 16 bits makes one word, and

10:15:18 byte wide is 8 bits makes one word.

10:15:23 Q. And so what part of this system governed the

10:15:27 transfer from the 16 bit to the 8 bit?

10:15:32 A. The 68000. The central processing unit was generally -- I guess the best way to describe it is the overall controller of the entire system. The highest level control in this system is the 68000, so it managed all processes.

10:15:48 Q. So when the data went through the serial port, was it in 16 bit form or 8 bit form?

10:15:58 A. It was turned into bytes between the 68000 and the peripheral device chip, you know, the serial port circuit. It went from 16 bits to 8 bits as part of that circuitry, and then it came out serially, you know, as a serial stream of bits.

10:16:19 So talking about bytes or words doesn't mean anything in a serial form.

10:16:24 Q. And what governed that transfer from the 16 bit to the 8 bit?

10:16:29 A. The central processing unit, the Motorola 68000.

10:16:33 Q. Did you have to program it to do that?

10:16:35 A. Yes, nothing happens in this diagram without software. Software controls everything.

10:16:45 Q. And who programmed that software?

10:16:45 A. John wrote a lot of it, I think Peter Roos wrote some of that. I don't remember the names of

10:16:53 all the engineers who were involved in writing all of
10:16:56 the code.
10:16:58 Q. And when you say that the data came out
10:17:00 serially from the serial port to the PC, what do you
10:17:03 mean by that?
10:17:04 A. One bit after another, like a train.
10:17:09 Q. And so what ultimately landed on the PC
10:17:14 that's represented in this diagram?
10:17:15 A. Well, the PC also has a serial port. So the
10:17:18 serial data would come in on a couple of wires in the
10:17:21 serial port, and the serial port in the PC would turn
10:17:24 it back into typically bytes, 8 bit wide words.
10:17:30 Q. And what is the relationship, if any,
10:17:32 between the data that ultimately winds its way to the
10:17:36 PC and the audio signal coming in at the top left?
10:17:46 A. Generally speaking, we never trans --
10:17:48 We didn't, as a matter of course, transfer
10:17:51 audio data on the serial port. We did occasionally
10:17:55 for some purposes. But, generally speaking, the
10:17:58 audio data went to the disk drive through the channel
10:18:02 that we discussed earlier; and only controlled data,
10:18:05 or editing commands, or information about the audio
10:18:09 signal, like how big it was, would be transferred to
10:18:12 the PC so that it could be edited properly.
10:18:15 Q. Could you give some examples of control

10:18:17 data?

10:18:19 A. Oh, sure. Where your position is in music. You know, how many seconds and samples you are from the beginning of a song. That's a position pointer.

10:18:29 An amplitude information would be how loud is the music at that particular block, you know, that particular point in the music.

10:18:41 Non-audio data was sent there, like the name of the artist, you know, or the name of the edit. Edits were named as well, because if you had a song that you were editing, you had to, like you do on a PC, name your file so that you could identify one version of the edited material from another version. You know, like I Want to Hold Your Hand edit 1, I Want to Hold Your Hand edit 2. You had to name them on and on and on, and that data would have to be moved back and forth, the naming data would have to be moved back and forth to the PC.

10:19:15 Q. And one more thing to explain for me before we take a break. The bottom box here, it says "ROM," and it has an arrow pointing up to the 68000. Can you explain what that means?

10:19:27 A. ROM means read-only memory, and that's where all of the software that runs in this machine is stored when the power is off.

10:19:39 The ROM is a non-volatile memory, meaning it
10:19:44 doesn't need electricity to store the data. Some
10:19:47 people refer to it as "burning" the data into the
10:19:50 memory of the ROM because it's recorded there
10:19:52 permanently.
10:19:54 Q. And what data was stored on the ROM?
10:19:57 A. All of the programs for all of the processes
10:20:00 that took place in this computer. The programs,
10:20:06 information, copyright information about the
10:20:08 programs.
10:20:12 MR. BERL: Okay. Why don't we take our
10:20:14 first break here.
10:20:16 THE WITNESS: Sure.
10:20:16 THE VIDEOGRAPHER: Time is 10:20 a.m. We
10:20:18 are going off the record.
10:33:40 (Recess: 10:20 a.m. to 10:33 a.m.)
10:33:40 THE VIDEOGRAPHER: Back on the record. The
10:33:42 time is 10:33 a.m.
10:33:44 BY MR. BERL:
10:33:45 Q. Okay, Mr. Schwartz, when we left off we were
10:33:47 going through the diagram of Exhibit 2 on
10:33:50 Page No. 26489. There's a box there that says, on
10:33:56 the left-hand side, "20 key pad," with an arrow
10:34:00 pointing into MC 68000. Can you describe what "20
10:34:05 key pad" means?

10:34:07 A. That's the capacity of the controller chip that connects to the front panel. There's a front panel with buttons on it on the machine, kind of like the picture on Exhibit 1, and those buttons are decoded by a chip called a keypad decoder, and it can handle 20 keys.

10:34:24 Q. And what would people do with the keypad?

10:34:30 A. Well, start music playing, start a recording recording, pause. Start --

10:34:40 Change sources for recording, you know, from analog inputs to digital inputs, for example.

10:34:48 Do some simple editing. You know, designate parts of the music they didn't want to hear, for example. That sort of editing.

10:34:58 Make what are called playlists so that you could have like a party, a disk that would play back a specific sequence of songs as a list. That sort of thing.

10:35:09 Q. And how many of those 20 keys did you use, approximately?

10:35:14 A. Oh, you know, I don't remember exactly. I could turn to Exhibit 1 and count the buttons.

10:35:25 Q. That's on Page 26281?

10:35:28 A. Looks like 19.

10:35:30 Q. And so would that be 19 --

10:35:32 A. No, 18. 18, but that counts power, which
10:35:35 didn't count, so 17 on that machine.
10:35:41 Q. Would that represent 17 different functions
10:35:44 that a consumer would be able to initiate?
10:35:48 A. There are actually more, because it's a
10:35:51 soft -- they're soft keys, so they can change
10:35:54 their --
10:35:54 On Exhibit 1, you can't see it, but if you
10:35:57 look at a later model or a production model of the
10:36:01 DSP 1000 or look at its owner's manual, you'll see
10:36:05 that the keys are soft. There are actually only
10:36:07 maybe half a dozen physical keys, and they change
10:36:10 their names as you use them.
10:36:12 So they reprogram and display new functions
10:36:15 as you use them.
10:36:20 Q. And what would happen when someone pushed a
10:36:23 button inside the computer?
10:36:27 A. Well, the buttons related to different parts
10:36:29 of the software. So the button that said "Start" or
10:36:33 "Play," connected to the part of the software that
10:36:36 would queue up a sound file, start a whole process
10:36:41 that would queue data, get data from the disk drive,
10:36:43 put it in memory, send it to the signal processors to
10:36:48 be decoded, get the first blocks ready in the output
10:36:52 buffer, the FIFO buffer, and then when all of that

10:36:54 was done internally, the music would start playing.

10:36:59 Q. So let's go through that process a little

10:37:01 more slowly. Assume I want to play Kenny Loggins,

10:37:07 and I push "Play." What exactly would happen?

10:37:11 A. Well, you're assuming in that statement that

10:37:13 Kenny Loggins is the name of the song on the display.

10:37:18 Q. Yes.

10:37:18 A. If it's not, you would have had to push

10:37:20 another button to move along on the disk to find that

10:37:23 song first and then push "Play."

10:37:24 Q. And that functionality is on the keypad --

10:37:27 A. Yes.

10:37:27 Q. -- to find it? And after I found Kenny

10:37:30 Loggins and pushed "Play," what would happen?

10:37:34 A. That would tell the control program in the

10:37:37 central processing unit to go and locate that file on

10:37:42 the disk drive, find that file, start getting the

10:37:48 data from that file -- well, it would have to --

10:37:52 The CPU has to initialize the DMA controller

10:37:55 after it locates the file.

10:37:58 Q. Why don't we stop there. How does the CPU

10:38:02 locate the file on the disk?

10:38:04 A. Well, there's a directory structure on the

10:38:07 disk that when the machine is powered up, that

10:38:11 directory structure is read off of the disk and into

10:38:15 1 random access memory, so that it's easily accessible
10:38:19 2 quickly. It's scratch-pad memory, so it's stored
10:38:25 3 there.
10:38:26 4 There's a directory structure with all of
10:38:29 5 the songs, all of the edits, the information about
10:38:31 6 how they were edited, the playlists, if there are
10:38:34 7 playlists stored about particular sequences of songs
10:38:41 8 somebody might want to play. That all gets loaded
10:38:43 9 into RAM when the power button's turned on, if
10:38:48 10 there's a disk in the drive.
10:38:49 11 We're assuming that somebody has a disk
10:38:51 12 inserted.
10:38:52 13 Q. And after it finds the song that the
10:38:53 14 consumer requests to be played, what does the CPU do?
10:38:59 15 A. It starts fetching -- or gives commands to
10:39:01 16 the various parts of the circuitry to fetch the data
10:39:04 17 from the disk drive, send that data -- make the data
10:39:08 18 available to the signal processors, tell the signal
10:39:13 19 processors that the data is there and they can start
10:39:16 20 working.
10:39:16 21 Then the signal processors decompress the
10:39:19 22 compressed audio data and send it out to the FIFO
10:39:22 23 buffer, which as soon as it's full, automatically
10:39:27 24 starts the D-to-A process to actually convert the
10:39:30 25 digital data back into analog signals that you could

10:39:33 listen to as music.

10:39:37 Q. So on the way out, so to speak, as the song
10:39:40 is being played, as the data hits the TMS 320 signal
10:39:47 processor, what form is the data in?

10:39:49 A. It's in compressed digital form.

10:39:51 Q. And when it leaves the TMS 320, what form is
10:39:57 it in?

10:39:58 A. Uncompressed 16 bit samples, very much like
10:40:01 the samples on a compact disk player.

10:40:03 Q. Is the error correction capability that you
10:40:05 talked about earlier in the TMS 320, does that occur
10:40:08 as a song is being played as well?

10:40:11 A. Well, I'm going to correct your statement.
10:40:13 It's not so much error correction as error detection
10:40:18 that goes on.

10:40:18 If there's an error detected, as I recall,
10:40:22 what we did -- and you would have to ask the
10:40:24 engineers who wrote the code to see what exactly they
10:40:35 did, but as I recall, if a bad block was detected,
10:40:35 what we did is threw it away and took the block
10:40:38 before it and the block after it and stitched them
10:40:41 together so that that little piece of incorrect data
10:40:44 was never used.

10:40:46 Q. And when you say "stitched together," what
10:40:48 is it you mean?

10:40:50 A. Well, you don't want a gap in the music. So there may be a physical gap in memory, you know, where that piece of data has been marked as bad, and so the 320s would have to actually move one block in memory and copy over where the bad block was -- that's the stitching together process -- so that when the data leaves the FIFO, it's continuous, and the song actually gets shorter by a tiny fraction of a second in that case.

Q. And the FIFO buffer, what role does it play as the song is played?

A. It's a place for the data to become continuous as it comes out of the signal processors in chunks. It has to be stacked up, queued up as a continuous stream so that the music is played continuously. But, remember, it's processed in blocks, chunkwise, chunk by chunk, so it's not continuous.

Q. And then when the data leaves the FIFO buffer, what form is it in at that point?

A. 16 bit linear digital audio samples.

Q. And if I'd like to play it, what happens at the top box labeled "Analog Section A-to-D/D-to-A"?

A. Well, the digital samples, the 16 bit digital audio words, are turned back into voltages,

10:42:16 1 into what people would call real electricity at that
10:42:21 2 point. You know, continuous voltage. The wiggly
10:42:23 3 line, again, that you could amplify and listen to.
10:42:28 4 Q. And, once again, who wrote the software
10:42:31 5 needed for that functionality to exist? "That
10:42:37 6 functionality" being the D-to-A conversion in the top
10:42:41 7 box.
10:42:42 8 A. The D-to-A conversion is -- you could call
10:42:46 9 it, I guess, microcode or a state machine. It's part
10:42:49 10 of the D-to-A converter chip. In this case, it was
10:42:52 11 made by Burr Brown. So some engineer at Burr Brown
10:42:55 12 Corporation designed it and wrote whatever little
10:42:59 13 bits of code it needed to do that job.
10:43:03 14 Q. And did CompuSound or CompuSonics, depending
10:43:09 15 on the time, make any modifications to what it bought
10:43:14 16 from Burr Brown in the top box?
10:43:16 17 A. None whatsoever.
10:43:19 18 Q. And when it says "Audio Out," how would the
10:43:22 19 audio actually come out of the machine?
10:43:27 20 A. Well, if it's analog audio coming out, in
10:43:30 21 the case of the DSP 1000, there are what are called
10:43:34 22 RCA jacks, female RCA jacks, which are identical to
10:43:39 23 the female RCA jacks on a compact disk player or an
10:43:42 24 LP record player, or any piece of stereo equipment
10:43:48 25 made today.

10:43:49 Q. And what would that jack connect to?

10:43:53 A. A male RCA plug on a wire that then goes typically to an amplifier.

10:44:03 Q. Now, returning back toward the bottom of the diagram, there's a box on the left that says "LCD." What does "LCD" mean?

10:44:14 A. LCD stands for liquid crystal display, which is very much like the display on this cell phone. A little graphical display, liquid crystals under glass, and it's capable of putting alphanumeric data in a two-dimensional display, words or little pictographs, you know, little characters.

10:44:37 Q. And who would look at the LCD?

10:44:39 A. The user of the machine would need to look -- well, they don't need to look at the LCD. They could just push the Play button and play music, but if they were doing anything like trying to find a particular song or do some simple editing or create a playlist, they need to look at the words to know what they're doing.

10:44:58 Q. So other than words of a song, what did the LCD display?

10:45:05 A. Names of the soft functions that were available at that point in the process. For example, in an editing process.

10:45:13 Q. And what were some of those functions, if you remember?

10:45:16 A. Oh, we'd have to refer to the user manual, but to the best of my recollection, things like the punch-in point or the punch-out point. That is, the starting point, other than the beginning of a song.

10:45:31 If you're trimming a recording -- let's say you're making a recording and the first ten seconds are just hiss or dead air or noise, and you actually want the recording to play back from the start of the music, not from the start of the noise. You would have to listen, and as you listen and the music started, push the button labeled "Punch-In" to designate the starting point for playback.

10:45:57 Q. And that button labeled "Punch-In," was that one of the 20 buttons on the 20 keypad?

10:46:01 A. Yes.

10:46:03 Q. And what would be shown in that process you just described on the LCD?

10:46:08 A. Typically the recording time, the running time as it's happening, you know, a countdown or count-up clock, and a little marker -- a little triangle, I think -- some kind of little graphic marker above the button that you push to indicate that's the button to be pushed.

10:46:26 MR. BERL: Okay. I'd now like to mark the
10:46:29 user's manual as Exhibit 3.
10:46:32 (WHEREUPON, DEPOSITION EXHIBIT 3 WAS MARKED
10:47:01 FOR IDENTIFICATION.)
10:47:01 MR. BERL: If you could just take a look at
10:47:02 the document for a moment. You obviously don't have
10:47:06 to read the whole thing here.
10:47:11 Q. Are you familiar with this document?
10:47:12 A. Yes, I am.
10:47:16 Q. And what do you know it to be?
10:47:18 A. This is the owner's guide for the DSP 1000.
10:47:22 It says it was published in 1987.
10:47:29 Q. Did you play a role in preparing this?
10:47:31 A. Yes, I did.
10:47:32 Q. And what role did you play?
10:47:35 A. I proofed it, read it for accuracy and made
10:47:38 comments to the author, to the technical writer who
10:47:42 wrote it.
10:47:47 Q. And do you know when the text inside was
10:47:52 written? If I could, for example, direct you to the
10:47:55 page labeled 25710 of Exhibit 3, which runs from
10:48:00 Page 25708 to Page 25767.
10:48:12 A. Well, this has the copyright 1986 on the
10:48:16 bottom, is when I think it was written. I believe it
10:48:18 was written during 1986.

10:48:22 Q. And do you have any reason to think that
10:48:23 that copyright date is not accurate?
10:48:30 A. I believe it's accurate.
10:48:31 Q. Do you know whether this owner's guide was
10:48:36 sent outside of CompuSonics?
10:48:40 A. Yes, it went to every person who purchased a
10:48:44 DSP 1000.
10:48:46 Q. And who generally purchased the DSP 1000?
10:48:49 That is to say, what was the distribution channel
10:48:52 that the DSP 1000 would go through?
10:48:54 A. Well, they were only available at about a
10:48:56 dozen very high-end audio stores, what we call
10:49:00 boutique audio stores. In this area -- well, there
10:49:06 are a number of them in Palo Alto.
10:49:08 These are the stores where amplifiers start
10:49:10 at $2000, speakers, you know, start at $1000 each.
10:49:20 MR. BERL: If I can mark this as Exhibit 4.
10:49:25 (WHEREUPON, DEPOSITION EXHIBIT 4 WAS MARKED
10:49:41 FOR IDENTIFICATION.)
10:49:42 MR. BERL: Could you look at Exhibit 4
10:49:44 bearing the document number 26284.
10:49:48 THE WITNESS: Yes.
10:49:50 BY MR. BERL:
10:49:50 Q. Did you in your capacity at CompuSonics
10:49:54 often talk with the media?

10:49:56 A. Yes, I did.

10:49:58 Q. Do you remember specifically talking to Electronic Engineering Times?

10:50:05 A. I talked to them a number of times, I don't remember a specific incident.

10:50:10 Q. Do you remember about how many times you talked to them?

10:50:16 A. Over the six-year period that CompuSonics, CompuSound was in business, I probably talked to them more than a dozen times.

10:50:27 Q. And did you ever talk to them about the DSP 1000?

10:50:30 A. Certainly.

10:50:31 Q. If you could read the last paragraph of this article entitled "Optical-Disk-Based Digital Audio System Premieres," out loud, starting with "The DSP-1000."

10:50:43 A. "The DSP-1000, which will first be sold into the 'luxury, high-end' audiophile markets, is expected to begin production in October, with an initial delivery date to dealers set for November 10, Schwartz said. The suggested retail price will be $6,995."

10:51:02 Q. Now, as you sit here today, do you have any reason to believe that the author did not transmit the information you gave him or her about the CompuSonics DSP 1000 delivery date?

MR. MUDGE: I'll object to the question. Lacks foundation.

THE WITNESS: I don't understand the question. Sorry.

BY MR. BERL:

Q. Do you have any reason to believe that the information you transmitted in this quote was not reproduced correctly or accurately by the author of this article?

MR. MUDGE: Same objection.

THE WITNESS: Well, this is an accurate -- it's an accurate statement. I'm sure I made it to somebody. I don't know if I made -- if Brian Robinson is who I made it to.

BY MR. BERL:

Q. So to the best of your knowledge, this is an accurate statement?

A. Yes, it is.

MR. BERL: If we can mark this as Exhibit 5.

(WHEREUPON, DEPOSITION EXHIBIT 5 WAS MARKED FOR IDENTIFICATION.)

BY MR. BERL:

Q. Mr. Schwartz, if we could actually go back for one moment to Exhibit No. 4, the Electronic Engineering Times. What's the date of that article?

A. September 1st, 1986.

Q. So when the article at the bottom says an initial delivery date to dealers set for November 10th, what year does the November 10th refer to?

A. 1986.

Q. Now if you could look at Exhibit 5 bearing the number 26285. Do you recognize this document?

A. Well, I recognize that this is made from a -- I remember the postcard that this was made from. This is just a copy of both sides of the postcard.

Q. And who made that postcard?

A. I mean, our company did. I mean, we had a printing company make them.

Q. And what does the top of this document depict?

A. The front of the postcard.

Q. And what does the front of the postcard depict?

A. A DSP 1000.

Q. And the bottom of this document?

A. That's the back of the postcard minus the

10:53:46 address and a stamp.

10:53:51 Q. And do you see at the bottom there's a list

10:53:54 of 12 what appear to be addresses?

10:54:03 A. Well, it's 13 addresses, and those are the

10:54:06 first dealers to actually have DSP 1000s for sale.

10:54:12 Q. And so when you referred back a moment ago

10:54:15 to high-end retailers, were these the companies to

10:54:20 which you were referring?

10:54:21 A. Yes.

10:54:22 Q. And did you have any contact with these

10:54:23 retailers?

10:54:26 A. A number of them I visited personally.

10:54:30 Q. And for what purpose did you visit them?

10:54:33 A. To promote the company's product.

10:54:38 Q. Do you have knowledge of whether any of

10:54:40 these retailers sold a DSP 1000?

10:54:44 A. Well, I know some of them did, if not all of

10:54:47 them did.

10:54:49 Q. Do you have knowledge of approximately when

10:54:53 the DSP 1000s were sold?

10:54:56 A. Well, the first one was sold -- I think even

10:55:00 before the November 10th date that's mentioned in

10:55:03 that article, because we had a couple of people who

10:55:07 called the company directly and said they had to have

10:55:10 one, and I believe we just sold them direct. You

10:55:14 1 know, before they actually shipped to the store.
10:55:19 2 Q. And do you remember approximately how many
10:55:21 3 DSP 1000s were produced?
10:55:24 4 A. You know, I don't remember the exact number.
10:55:25 5 It was less than 100, but I couldn't tell you the
10:55:28 6 exact number. It's more than 50, less than 100. In
10:55:32 7 that range.
10:55:34 8 Q. And of those 50 to 100, do you remember
10:55:37 9 approximately how many were sold?
10:55:41 10 A. They were all sold.
10:55:47 11 Q. Do you have knowledge of approximately how
10:55:51 12 many were sold before June of 1987?
10:55:59 13 A. Most, if not all of them. We only made one
10:56:02 14 production run, maybe two smaller production runs,
10:56:07 15 but we didn't make -- certainly didn't make more than
10:56:10 16 two production runs of this machine.
10:56:15 17 Q. And was there any difference between the
10:56:19 18 boxes that came out of the first production run and
10:56:21 19 the second?
10:56:23 20 A. No.
10:56:28 21 MR. BERL: If I could mark this as
10:56:29 22 Exhibit 6.
10:56:31 23 (WHEREUPON, DEPOSITION EXHIBIT 6 WAS MARKED
10:56:43 24 FOR IDENTIFICATION.)
10:56:43 25 MR. BERL: This Exhibit 6 runs from page

10:56:46 1 number 25778 to page number 25786. It's entitled
10:56:55 2 "Specifications and Implementation of a Computer
10:56:57 3 Audio Console for Digital Mixing and Recording."
10:57:19 4 Q. Are you familiar with this document?
10:57:21 5 A. Yes.
10:57:22 6 Q. And how are you familiar with it?
10:57:24 7 A. I wrote it.
10:57:26 8 Q. Do you remember when you wrote it?
10:57:28 9 A. In 1984.
10:57:31 10 Q. What is the Audio Engineering Society?
10:57:35 11 A. It's the largest professional organization
10:57:37 12 of engineers who work with audio.
10:57:42 13 Q. And did you write this paper in connection
10:57:45 14 with your work at CompuSonics?
10:57:49 15 A. Yes, I did. I wrote this paper as one of a
10:57:52 16 group of papers in which CompuSonics introduced its
10:57:57 17 technology to the industry, to the professionals in
10:57:59 18 the audio engineering industry.
10:58:05 19 Q. And did employees of CompuSonics, to your
10:58:07 20 knowledge, often write papers for submission to the
10:58:11 21 Audio Engineering Society?
10:58:14 22 A. Well, they wrote a number of papers. I
10:58:17 23 don't know that I'd characterize it as "often," but.
10:58:20 24 Q. Do you remember approximately how many
10:58:21 25 times?

10:58:27 A. I don't -- I don't remember the total. There must be half a dozen papers, something like that.

10:58:32 Q. If I could turn your attention now to Page 25784 on the right-hand column.

10:58:41 A. 25784.

10:58:45 Q. The second to last page -- the third to last page.

10:58:48 A. Okay.

10:58:52 Q. If you could read the second sentence of the last paragraph aloud.

10:59:03 A. Where it starts:

10:59:03 "The 1000 incorporates a scrolling LED text display on its front panel. Pre-recorded Audio SuperFloppies contain a text file that holds the liner notes for the album."

10:59:16 Q. Okay. Now, looking back at Exhibit 2, this diagram we've been going through --

10:59:24 A. Yes.

10:59:26 Q. -- where would the LED text display be on this diagram?

10:59:31 A. Well, we changed from the early prototypes, as shown in Exhibit 1, which had an LED, light emitting diode, display to LCD, liquid crystal

10:59:47 display, for cost reasons. Somewhere between
10:59:48 whatever prototype, prototype three and four and
10:59:51 production, we changed display types.
10:59:55 Q. And did the LED perform a different task
10:59:59 than the LCD's task that you described before?
11:00:04 A. No.
11:00:07 MR. BERL: Now, if I could mark this as
11:00:09 Exhibit 7.
11:00:11 THE WITNESS: It was just a lot less
11:00:12 expensive.
11:00:14 BY MR. BERL:
11:00:14 Q. "It" being the LCD?
11:00:16 A. Yes. It was a cost saving measure.
11:00:41 (WHEREUPON, DEPOSITION EXHIBIT 7 WAS MARKED
11:00:55 FOR IDENTIFICATION.)
11:00:55 BY MR. BERL:
11:00:56 Q. Do you recognize the document marked as
11:00:57 Exhibit 7 starting on Page 25772 and going to
11:01:02 Page 25777?
11:01:05 A. Yes, I do.
11:01:06 Q. And what do you recognize it to be?
11:01:09 A. This is a paper presented to the Audio
11:01:10 Engineering Society in 1984 by one of CompuSonics'
11:01:16 engineers, Hyun Heinz Sohn, who we called Heinz, so.
11:01:22 Q. And what was Mr. Sohn's capacity at

11:01:26 CompuSonics?

A. He was one of our senior design engineers.

11:01:32 Q. Did you attend the Audio Engineering Society convention of 1984?

11:01:35 A. Yes, I did.

11:01:37 Q. Do you have knowledge as to whether this paper was presented at that convention?

11:01:39 A. Yes, I sat in the audience and listened to Heinz present this paper.

11:01:44 Q. Do you remember how many people were there in the audience?

11:01:49 A. Hundreds, at least 200, maybe more, maybe 400.

11:01:55 Q. Now, if I could direct your attention to Page 25774 and the diagram on the right side of this page. Are you familiar with this diagram?

11:01:58 A. Yes, I am.

11:02:00 Q. And what does this diagram represent?

11:02:02 A. This diagram represents the signal path or data flow path for telerecording.

11:02:07 Q. Now, if I could direct your attention just for one second back to Exhibit 2, the chart we've been going through.

11:02:15 A. Yes.

11:02:16 Q. What part of this chart is responsible for

11:02:18

11:02:23

11:02:30

11:02:32

11:02:34

11:02:36

11:02:38

11:02:42 the telerecording capability of the DSP 1000?

11:02:49 A. Well, the interface, the Accunet interface

11:02:54 that Heinz designed, attaches to the parallel port on

11:03:00 Exhibit 2.

11:03:02 Q. And what is Accunet?

11:03:05 A. Accunet's a trademark -- was a trademark of

11:03:10 AT&T. Now I don't know who it belongs to.

11:03:12 Q. And what does Accunet do, or what is it?

11:03:16 A. Accunet was the first switched circuit

11:03:21 service for sending digital data, any digital data,

11:03:27 anywhere in the telephone system in the United

11:03:29 States.

11:03:31 Q. And what do you mean by "switched circuit"?

11:03:33 A. A switched circuit is one that you can

11:03:36 connect from a local premises and go through a

11:03:39 digital switch owned by the phone company, and then

11:03:42 the data would show up at some other premise, you

11:03:45 know, some other place.

11:03:50 Q. Now, in the diagram on Page 25774 of

11:03:53 Exhibit 7, there's a first line there that says,

11:03:59 "Analog Signal Source."

11:04:00 A. Yes.

11:04:02 Q. Now, what does that correspond to in the

11:04:06 diagram in Exhibit 2?

11:04:08 A. Well, that's the "Audio In."

11:04:13 Q. And going back to Exhibit 7, there's a line
11:04:17 to the right. What does that say?
11:04:20 A. "Analog to Digital Converter."
11:04:23 Q. And does that correspond to anything that's
11:04:25 in Exhibit 2?
11:04:26 A. Yes, that's the top box that says "Analog
11:04:28 Section A-to-D/D-to-A."
11:04:32 Q. And there's an arrow from the analog to
11:04:34 digital converter, once again back in Exhibit 7, to
11:04:38 something called "Host Computer."
11:04:40 A. Yes.
11:04:40 Q. Do you know what "Host Computer" refers to?
11:04:43 A. Host computer refers to everything starting
11:04:45 with the FIFO buffer right down through the rest of
11:04:49 this diagram on Exhibit 2.
11:04:55 Q. Now, there's an arrow from the host computer
11:04:58 to something called the "Digital Audio Transceiver
11:05:02 Interface."
11:05:03 A. That's the digital audio transceiver
11:05:04 interface, we just called it DATI. It was a circuit
11:05:08 that Heinz designed that attaches to the parallel
11:05:10 port of the host computer. Or on Exhibit 2, attaches
11:05:15 to the parallel port of a DSP 1000 or DSP 2000.
11:05:22 Q. And to what else does the DATI connect, if
11:05:26 anything?

11:05:27 A. It connects to, at that time, to what was called a customer premises equipment, CPE, which is something that you leased or purchased from the telephone company. A black box.

11:05:46 Q. And did this CPE connect to anything else, other than the digital audio transceiver interface or DATI?

11:05:57 A. Well, it was the connection to the Accunet, to the digital -- the switched 56 AT&T data service.

11:06:04 Q. Now, if we could go through this diagram in a little more detail. What was the purpose of the digital audio transceiver interface, generally?

11:06:20 A. To connect to two digital systems. It bridged between a computer, the host computer of some sort, or a digital audio computer of some sort, and the telephone company's digital circuitry, digital transmission system.

11:06:39 Q. And was one such host computer the DSP 1000?

11:06:44 A. Yes.

11:06:45 Q. Absent the digital audio transceiver interface, what would have happened to data transmitted by the host computer through the parallel port?

11:07:01 A. Well, it would stop at the parallel port.

11:07:03 Q. And why is that?

11:07:04 A. Well, the parallel port is just that, a
11:07:06 port. It's a connector on the back of a computer
11:07:11 similar to the printer port on your computer.
11:07:17 Q. And to your knowledge, was the digital audio
11:07:21 transceiver interface used in the DSP 1000?
11:07:26 MR. MUDGE: Objection to the question. It's
11:07:27 vague, lacks foundation.
11:07:30 MR. BERL: You can answer.
11:07:31 THE WITNESS: I would suggest you ask Heinz
11:07:35 Sohn himself, because he was responsible for the
11:07:37 testing and everything else of the DATI. I can't
11:07:42 personally remember seeing the DATI attached to any
11:07:45 of our DSP 1000 prototypes.
11:07:49 I do remember being told that they were.
11:07:52 BY MR. BERL:
11:07:53 Q. And by whom were you told?
11:07:55 A. Either John Stautner or Heinz Sohn himself.
11:08:03 Q. And did both Mr. Stautner and Mr. Sohn
11:08:08 report to you?
11:08:09 A. Well, Heinz reported to either Gary Schwede
11:08:12 or to John, depending on the task.
11:08:20 Q. And did John and/or Gary report to you?
11:08:23 A. They both reported to me.
11:08:26 Q. Do you have any reason to believe that the
11:08:30 digital audio transceiver interface was not connected

11:08:34 to the DSP 1000, as Mr. Sohn and/or Mr. Stautner told you?

11:08:41 MR. MUDGE: Again, the question is vague, lacks foundation.

11:08:45 THE WITNESS: No. I mean, there's no reason that it shouldn't have.

11:08:50 BY MR. BERL:

11:08:55 Q. Assuming that the digital audio transceiver interface were connected to the DSP 1000, what form of data was sent through the parallel port?

11:09:09 MR. MUDGE: Question lacks foundation. Objection.

11:09:12 THE WITNESS: The form is bytes of digital audio, in this case digital audio data, 8-bit bytes.

11:09:24 And additional data, not just audio. Audio plus the headers, plus the checksum, plus whatever overhead.

11:09:34 BY MR. BERL:

11:09:35 Q. And what was the purpose of this diagram on 25774? In other words, why would one use a digital audio transceiver interface?

11:09:52 A. Well, we were trying to tell the Audio Engineering Society how we implemented telerecording, which is this concept of being able to transmit, purchase or rent digital audio copyrighted material

11:10:11 through the telephone system.

11:10:15 Q. And if we can go through how that would
11:10:16 work. Where would the signal that you would want to
11:10:23 transmit begin in the host computer? If we could be
11:10:28 on the diagram on Page 26489, Exhibit 2.

11:10:37 A. Where would it begin? Typically the data
11:10:40 stored on a disk drive.

11:10:43 Q. And if one wanted to send a digital audio
11:10:47 file on the disk drive, how would that occur?

11:10:52 A. Well, the user would have to select the file
11:10:54 using the keypad and the LCD to find -- you know, to
11:10:59 see what file it was they were dealing with, and then
11:11:02 push the send key, you know, to transmit it.

11:11:07 Q. And was there a send key on the 20 keypad?

11:11:12 A. I don't believe there was, because by the
11:11:15 time we got to 1986 or 1987, the period of the
11:11:20 DSP 1000 being commercialized, late '86, early '87,
11:11:24 frankly, we had given up on the commercialization of
11:11:29 telerecording.

11:11:31 We would still talk about it as a futures
11:11:34 kind of thing, but even having tried it out and
11:11:38 tested it and actually demonstrated it, we could not
11:11:40 find a commercial market for it. We couldn't sell
11:11:43 it.

11:11:44 Q. So let's go back and talk about the testing

11:11:47 1 of it. You had said that the digital audio file
11:11:53 2 began on the disk drive.
11:11:56 3 A. Yes.
11:11:56 4 Q. In what form was that data?
11:12:00 5 A. Compressed digital format.
11:12:03 6 Q. And where did that data go?
11:12:08 7 A. Well, it came from -- through the disk
11:12:10 8 drive's port, which is that SCSI port, through the
11:12:13 9 DMA controller, into main memory. Then from main
11:12:18 10 memory, the CPU would send it out the parallel port.
11:12:24 11 Q. And in what form was it when it went into
11:12:26 12 the parallel port?
11:12:29 13 A. Compressed digital audio data.
11:12:31 14 Q. And how many bytes?
11:12:33 15 A. Well, the data rate? For all the tests we
11:12:36 16 did, there were two data rates; one for realtime
11:12:39 17 transmissions, and one for non-realtime.
11:12:43 18 Non-realtime, I believe the data rate was
11:12:47 19 something on the order of two hundred or 300,000 bits
11:12:54 20 per second. For realtime transmissions, it was
11:12:57 21 56,000 bits per second, which was the service rate of
11:13:00 22 Accunet.
11:13:01 23 Q. Okay. So going back to the diagram on
11:13:05 24 Exhibit 7, when you say that the data was sent out to
11:13:17 25 the parallel port, where is that shown on Exhibit 7?

11:13:18 A. Well, there's an assumption -- it may be
11:13:20 discussed in this article.
11:13:23 Heinz Sohn was showing slides. You
11:13:26 understand there was a slide show accompanying this.
11:13:29 And I'm sure he can confirm this, but he showed the
11:13:32 backside of a DSP 2000, you know, the back of the
11:13:35 computer, and pointed to the parallel port, and his
11:13:39 box, his DATI box that he had designed.
11:13:42 So the host computer, being a 2002 in this
11:13:45 case, the DATI box is attached to the parallel port,
11:13:50 and then the DATI box's cable is attached to the
11:13:54 Accunet interface, the customer premises equipment,
11:13:58 which I think was called Flextie, but don't hold me
11:14:02 to the brand name.
11:14:06 Q. And what happened to the data, if anything,
11:14:09 in the digital audio transceiver interface?
11:14:15 A. It was not changed in any way, if that's
11:14:17 your question.
11:14:19 Q. Why then would one need a digital audio
11:14:22 transceiver interface?
11:14:25 A. Because the digital audio computers, as we
11:14:29 designed them, were what we designed, proprietary,
11:14:32 you know, our system was proprietary to us, and its
11:14:35 protocols and its data formats were ours, and the
11:14:39 phone company had their own protocols and data

formats for their switched 56 digital transmission system, and you needed some bridge to make the protocol-to-protocol bridge. You know, so the two different systems could send data back and forth to each other.

Q. And was the digital audio transceiver interface only able to send data, or was it able to accept as well?

A. It was fully bidirectional. It could send and receive. It did send and receive.

MR. BERL: Okay. I think this might be a good time for a five-minute break or so.

THE VIDEOGRAPHER: This marks the end of Videotape No. 1 in the deposition of David Schwartz. Time is 11:15 a.m. We are going off the record.

(Recess: 11:15 a.m. to 11:37 a.m.)

(WHEREUPON, DEPOSITION EXHIBIT 8 WAS MARKED FOR IDENTIFICATION.)

(At this point, Monica Mucchetti was absent from the deposition room.)

THE VIDEOGRAPHER: This marks the beginning of Videotape No. 2 in the deposition of David Schwartz. The time is 11:37 a.m. We are back on the record.

MR. BERL: If we could look at what's marked

Exhibit 8, a videotape bearing Production No. 26253.

Q. Mr. Schwartz, do you remember giving a lecture at Stanford University entitled "Multi-Processor Computers for Digital Audio and Video Recording and Editing"?

A. Yes, I do.

Q. And would it surprise you if the date of that lecture was February 18th, 1987?

MR. MUDGE: Objection. Leading, lacks foundation.

MR. BERL: You can answer.

THE WITNESS: I remember it being late in 1986 or early in 1987. I don't remember the exact date.

BY MR. BERL:

Q. And how did that lecture come about?

A. I had given a previous -- well, I've appeared in public --

I'd appeared in public talking about our products, the CompuSonics products, a number of times, and in one of the audiences was a professor or a lecturer or somebody, a teacher at Stanford, I'm not sure of his exact position, named Dennis Allison, who came up to me after a previous speaking engagement and asked me if myself and my associate

11:39:24 John Stautner would be willing to speak to his class, you know, lecture his class -- and he still teaches this class. I've stayed in touch with Dennis Allison -- EE380 in the Electrical Engineering Department of Stanford University, and of course I said, sure, we'd be glad to spend an hour lecturing.

Q. And do you remember what the subject of EE380 was?

A. In general, it's -- Dennis jokingly refers to it as bleeding edge technology.

Q. Do you remember how many students attended the lecture?

A. It was a big lecture hall. Over a 100, between 100 and 200 students, and it was also broadcast over Stanford's cable network to the Stanford community.

Q. Do you know whether this class was an undergraduate or a graduate class?

A. It's both, actually. It's open. It's a seminar series, so it's open to both computer science and EE.

Q. And how did you receive a videotape of this lecture?

A. I asked the audio/video guy, who was broadcasting it for the campus on cable, I asked him

11:40:41 1 if he taped what he broadcast, and he said of course
11:40:45 2 they tape it because they put them in an archive so
11:40:47 3 people can watch the tapes in the engineering
11:40:55 4 library.
11:40:55 5 So I asked him if it would be too much
11:40:55 6 trouble to make me a tape, and then of course John
11:40:55 7 chimed in and he wanted a tape. So they ended up
11:40:58 8 making I think two tapes for us.
11:41:00 9 Q. And have you watched that tape since?
11:41:02 10 A. I watched the tape probably a month ago
11:41:05 11 after you provided a copy of it to me.
11:41:09 12 Q. But in between 1987 and a month ago, you
11:41:11 13 didn't watch it?
11:41:12 14 A. Oh, no.
11:41:14 15 MR. BERL: Okay. Hit "Power" on the
11:41:24 16 television.
11:41:35 17 THE WITNESS: It's on.
11:41:46 18 MR. BERL: Can we go off the record?
11:41:48 19 THE VIDEOGRAPHER: Yes. Going off the
11:41:50 20 record. The time is 11:41 a.m.
11:43:40 21 (Discussion held off the record.)
11:43:41 22 THE VIDEOGRAPHER: Back on the record. The
11:43:41 23 time is 11:43 a.m.
11:43:46 24 MR. BERL: Let's now take a look at some of
11:43:47 25 that videotape.

(Whereupon, Exhibit 8 was played.)

BY MR. BERL:

Q. First of all, do you recognize that voice?

A. Sounds like me 15 years ago, I guess.

Q. And do you recognize the picture that's on the screen right now?

A. Yes. Yes.

Q. And what do you recognize that to be?

A. That's the circuit board of the DSP 1000.

Q. And those RCA jacks to which you refer on the tape, what was their role?

A. That's the audio input and audio output. There are four jacks.

Q. And why are there four?

A. Stereo in, stereo out.

Q. And the other two?

A. Well, you need two to get stereo in and then two for stereo out, so that's four.

Q. Okay. Those four boxes at which you were pointing, what are those boxes?

A. Those are filters.

Q. And what is a filter exactly?

A. The filter prevents what we call aliasing in the signal.

It's required when you're reconstructing

11:45:23 digital data into analog data to avoid artifacts, and
11:45:27 is required on the input to kill any or suppress any
11:45:31 frequencies that could not be converted that might
11:45:34 cause errors. And they're part of the analog, what
11:45:37 we call the analog section of the circuitry.
11:45:42 Q. And what is antialiasing?
11:45:45 A. It's the process by which you suppress
11:45:49 aliasing, which is the unpleasant sounding artifacts
11:45:55 you would hear if there were no filters.
11:46:01 Q. And in what form does the data go into the
11:46:04 filter?
11:46:05 A. Analog.
11:46:07 Q. And in what form does it come out?
11:46:09 A. Analog.
11:46:11 Q. And the difference between the signal
11:46:13 going -- or the data coming in and the data coming
11:46:16 out is what?
11:46:17 A. There's no data there. It's an analog
11:46:19 continuous waveform going in, analog continuous
11:46:23 waveform coming out. The only thing that's missing
11:46:26 is the very high frequency components that might be
11:46:29 in the signal above, say, 20 kilohertz.
11:46:32 MR. BERL: Now, back to the videotape.
(Whereupon, Exhibit 8 was played.)
BY MR. BERL:

11:46:55 Q. Now, what is a phase delay?

11:47:00 A. Well, audio signals or an analog signal can be described as having four quadrants. It looks like a sine wave, a wiggly line going above and below an axis, and the four quadrants represent the signal going up in magnitude, then coming down in magnitude, then going below zero in approaching its lowest point, and then coming off its lowest point and going up to zero again.

Those four quadrants of the signal have to be preserved, the symmetry of the shape. And if you shift the peak of that waveform to the left or to the right, that's called a phase error and phase --

A phase error, there's some people who claim they can hear it. But even if you can't hear it, what would happen is if you had phase error at 20 kilohertz -- and it could be as bad as 180 degrees out of phase, that is, you shift the waveform over on that scale enough -- you would actually get cancellation, and what would happen is your 20 kilohertz signal would be gone.

That would be total phase error at that point.

11:48:12 Q. And what would happen if your signal was gone?

11:48:16 A. Well, that's kind of a cardinal crime in
11:48:18 recording. You do not want your signal to go away.
11:48:21 That's what you're recording, and you don't want to
11:48:23 distort it.
11:48:24 So less than a 180 degree error at
11:48:26 20 kilohertz causes less than total loss of the
11:48:29 signal, but causes errors or damage to the signal.
11:48:33 As I say, some people claim they can hear
11:48:35 this. I think that's debatable.
11:48:38 Q. And how does the filter solve the phase
11:48:50 delay problem?
11:48:50 A. By very careful analog design with -- I
11:48:50 forget how many operational amplifiers are used in
11:48:52 that filter.
11:48:55 Generally, the more poles a filter has, the
11:48:59 less any individual amplifier in the chain will cause
11:49:03 an error.
11:49:06 So we can get into a very technical
11:49:08 discussion as to why RIFA designed those filters with
11:49:11 as many amplifiers as they did and how that achieves
11:49:13 low distortion. I don't know that you want to go
11:49:17 there in this.
11:49:19 Q. I think none of us do probably.
11:49:26 And did CompuSonics do anything to those
11:49:29 boxes that you just showed to modify them?

11:49:34 A. None whatsoever. The analog circuit, the whole analog section of the DSP 1000 is made up of off-the-shelf components in a circuit, a general arrangement that we designed, but the arrangement is as recommended by the manufacturers of all those components.

The filters, the digital converters, the amplifiers, all of that is -- the layout of the circuit may be original but it's not unusual.

MR. BERL: Let's go back to the videotape.

(Whereupon, Exhibit 8 was played.)

BY MR. BERL:

Q. Now, these A-to-D converters, does that correspond to the box so labeled, "A-to-D/D-to-A," on Exhibit 2?

A. Yes.

Q. And you talk about two mono-channels, what does that mean?

A. Two monophonic channels together compose one stereo pair.

Q. And how does that work exactly?

A. Well, you could save a lot of money by having one monophonic channel and then running it at double the required frequency, and then splitting it into two separate channels to create -- to get your

11:51:10 stereo information.

11:51:12 But then you'd have the two channels exactly
11:51:16 180 degrees out of phase at 20 kilohertz, which
11:51:20 introduces another problem. So you save a lot of
11:51:23 money, but you introduce a problem.

11:51:25 Q. And that problem that you introduce, is that
11:51:27 the problem you had just described?

11:51:29 A. Phase error, yes.

(Whereupon, Exhibit 8 was played.)

BY MR. BERL:

11:51:39 Q. Is that one-sample delay the same problem
11:51:40 that you're talking about?

11:51:42 A. The one-sample delay at 20 kilohertz means
11:51:45 total cancellation of the signal, yes, at
11:51:47 20 kilohertz.

11:51:49 MR. BERL: Let's now go back to the
11:51:50 videotape.

(Whereupon, Exhibit 8 was played.)

BY MR. BERL:

11:52:03 Q. Now, what does a FIFO chip -- chips that
11:52:07 you're talking about, what do they correspond to in
11:52:09 Exhibit 2 on 26489?

11:52:12 A. That's the FIFO buffer. That's a buffer
11:52:13 memory, first in/first out. It's implemented in
11:52:17 hardware. Those chips that you see on the tape.

11:52:22 Q. And did CompuSonics make those chips?

11:52:24 A. No.

11:52:25 Q. And did CompuSonics modify the chips?

11:52:27 A. No.

11:52:29 Q. Do you remember where CompuSonics bought those chips?

11:52:32 A. Well, they're made by Mostek, as I just reminded myself from the tape. Bought them from some electronic supplier.

11:52:42 MR. BERL: Let's go back to the videotape.

(Whereupon, Exhibit 8 was played.)

BY MR. BERL:

11:53:05 Q. Now, the signal processors that you showed, are those the TMS 320 signal processors in Exhibit 2?

11:53:14 A. Yes.

11:53:15 Q. And you talk about fast RAM in the boxes in the middle on the videotape. What is that exactly?

11:53:21 A. That's the scratch-pad working memory for the 320s.

11:53:25 Q. And what does that do?

11:53:27 A. Well, the 32010s need some memory to work in.

11:53:33 Now they don't. In today's -- if you buy a Texas Instruments 320 series processor today, those chips are actually gone. The memory is incorporated

11:53:42 in the signal processor itself.

11:53:45 But in those days, those were the -- this

11:53:47 was the beginning, the first signal processing chips,

11:53:51 the memory was external.

11:53:53 Q. And, sorry, just for one second, getting

11:53:55 back to the FIFO buffers, did those have any kind of

11:53:58 storage device?

11:54:02 A. FIFOs are memories by definition.

11:54:07 MR. BERL: Let's go back to the videotape.

(Whereupon, Exhibit 8 was played.)

BY MR. BERL:

11:54:25 Q. Now, can you explain that process that you

11:54:27 just talked about?

11:54:30 A. The 32010s, as I previously testified,

11:54:35 handled chunks or blocks of data, and the blocks

11:54:39 represent a discrete amount of time. In the tape,

11:54:42 I'd say 1/100th or 2/100th of a second. That's the

11:54:48 duration of the block of audio data.

11:54:51 Q. And what process is that data?

11:54:55 A. The signal processors operate on that data.

11:55:01 MR. BERL: Let's go back to the videotape.

(Whereupon, Exhibit 8 was played.)

BY MR. BERL:

11:55:28 Q. Can you describe in a little more detail,

11:55:31 and perhaps in more lay terms, how this 68000 moves

11:55:35 the data out?

11:55:39 A. I don't know if I can do that in lay terms.

11:55:41 The data is sitting in memory next to the

11:55:43 32010s, those little chips that I was pointing to in

11:55:48 the tape. The 68000 has access to those chips, and

11:55:55 it copies the data from the static RAM, those little

11:56:01 chips, to the main memory one word at a time.

11:56:05 When it's finished copying, then that memory

11:56:09 can be reused, recycled, for the next block of data.

11:56:13 Q. And where is the main memory on the diagram

11:56:15 in Exhibit 2?

11:56:17 A. It's called RAM, random access memory, that

11:56:20 block.

11:56:22 MR. BERL: Let's go back to the videotape.

(Whereupon, Exhibit 8 was played.)

BY MR. BERL:

11:56:52 Q. At what part of Exhibit 2, if any, does that

11:56:56 segment refer to?

11:56:59 A. Well, I pointed to the DMA controller chip

11:57:01 and then I pointed to the SCSI port chip, one after

11:57:05 the other, which is the data path to the disk drive.

11:57:08 The disk drive is not visible because it's

11:57:09 been removed off to the side of that thing I'm

11:57:13 pointing -- the circuit board I'm pointing to.

11:57:17 Q. Now, is the parallel port shown anywhere on

11:57:22 the picture in the screen?

11:57:24 A. It is. I don't know if I point to it, but.

11:57:28 Q. Would it be possible for you to get up and

11:57:31 point to it quickly?

11:57:32 A. Sure. The parallel port is right here where

11:57:39 I'm pointing. It's attached to the back of the

11:57:42 machine, and there are a couple of chips attached to

11:57:45 that that constitute the circuitry of the port.

11:57:51 Q. Now, in a telerecording mode, could you

11:57:56 quickly point to the place where the signal would

11:58:00 arrive into a DSP 1000?

11:58:05 MR. MUDGE: I'm going to object. The

11:58:06 question lacks foundation.

11:58:10 THE WITNESS: Okay. Well, in telerecording,

11:58:12 you'd have to attach the DATI, you know, Heinz Sohn's

11:58:17 box, to the parallel port with a little piece of

11:58:20 cable. So it would be sitting out here off the

11:58:21 screen.

11:58:22 BY MR. BERL:

11:58:23 Q. And then?

11:58:23 A. Data would come in from the phone system

11:58:26 through that box into the parallel port into main

11:58:28 memory. From main memory through the DMA controller

11:58:31 to the SCSI chip and up to the disk drive.

11:58:41 MR. BERL: All right. Thank you very much.

11:58:42 If we could go off the record for one moment.

11:58:44 THE VIDEOGRAPHER: Time is 11:58 a.m. Going

11:58:47 off the record.

12:04:57 (Recess: 11:58 a.m. to 12:05 p.m.)

12:05:05 THE VIDEOGRAPHER: Back on the record. The

12:05:06 time is 12:05 p.m.

12:05:11 BY MR. BERL:

12:05:11 Q. Do you also remember discussing the

12:05:14 telerecording capability of the DSP?

12:05:17 A. Yes, I do.

12:05:22 MR. BERL: Let's go to the videotape.

(Whereupon, Exhibit 8 was played.)

BY MR. BERL:

12:08:49 Q. Now, you said in that tape that the

12:08:51 technology is finished for that capability. What did

12:08:55 you mean by that?

12:08:57 MR. MUDGE: Well, I'll object to the extent

12:08:58 that the statements on this tape speak for

12:09:02 themselves.

12:09:03 MR. BERL: You can answer.

12:09:04 (At this time, Monica Mucchetti entered the

12:09:06 deposition room.)

12:09:07 THE WITNESS: Okay. What I meant by

12:09:08 "finished" is we had spent much time and much money,

12:09:13 up to the point of giving this lecture in '86 or '87,

12:09:17 in developing the method for what we call
12:09:21 telerecording, and this whole concept of being able
12:09:24 to database music on one of our big machines and sell
12:09:27 it through the phone company or, as I mentioned in
12:09:31 this lecture, through the cable television company to
12:09:35 the home unit and using a credit card, proposing
12:09:39 using a credit card as a mechanism to control the
12:09:43 payment scheme.
12:09:44 BY MR. BERL:
12:09:44 Q. What would have prevented a consumer from
12:09:48 using your telerecording device and buying digital
12:09:51 audio music?
12:09:53 A. It simply wasn't commercialized at that
12:09:55 time. In fact, we gave up on trying to commercialize
12:09:59 it sometime in '86 or '87.
12:10:03 Q. When you say it wasn't commercialized, what
12:10:05 do you mean by "it"?
12:10:07 A. Telerecording. The whole concept of
12:10:09 selling -- buying and selling and databasing music
12:10:19 libraries for sale on demand.
12:10:19 Q. Did you make efforts to commercialize
12:10:21 telerecording?
12:10:23 A. We did, made quite an extensive effort
12:10:28 involving AT&T. AT&T's interest, of course, was
12:10:33 selling -- well, gaining another revenue stream for

12:10:35 1 their digital phone system that they were deploying,
12:10:39 2 other than charging people for telephone calls.
12:10:42 3 They were interested in value-added content
12:10:44 4 where they could sell other kinds of data, like
12:10:46 5 music, through the phone network.
12:10:48 6 And so we were the first audio company that
12:10:52 7 I know of to propose or build equipment that was
12:10:55 8 capable of both storing the data and sending it
12:10:59 9 through their system, and receiving it.
12:11:02 10 And so we worked very closely with AT&T's
12:11:04 11 Holmdel, New Jersey and Red Cliff, New Jersey
12:11:10 12 laboratories to develop and test the hardware
12:11:13 13 involved.
12:11:15 14 Q. Was there a music database from which
12:11:16 15 consumers could have chosen music?
12:11:22 16 A. At that time, a digital database of -- no,
12:11:27 17 music? Not to my knowledge.
12:11:29 18 Q. And why is that, if you know.
12:11:34 19 A. Well, I have an opinion based on my own
12:11:36 20 contact with record company executives at that time,
12:11:40 21 because I was trying to promote this telerecording
12:11:43 22 concept, for obvious reasons, to sell equipment that
12:11:47 23 could do it.
12:11:50 24 And the response I got from the record
12:11:53 25 company executives was hostile, I guess would be the

12:11:57 polite way to put it. They were adamantly opposed to
12:12:02 the entire idea, to everything about it.
12:12:05 I pitched it as a way to make more money
12:12:08 more efficiently to improve their business model, and
12:12:16 they thought it was an attack on their business
12:12:19 model.
12:12:20 Q. If there had been such a database and a
12:12:26 consumer had an AT&T Accunet connection, could the
12:12:31 DSP 1000s that you sold have telerecorded?
12:12:38 MR. MUDGE: Well, I'll object that the
12:12:40 question lacks foundation, calls for speculation.
12:12:44 THE WITNESS: Well, what we did in 1985, I
12:12:47 think -- late '84, all through '85 -- is build
12:12:52 prototypes of the telerecording system using the
12:12:58 commercial 2002s that we were selling already into
12:13:01 the marketplace.
12:13:03 What we did is we simulated a commercial
12:13:05 database of music by putting recordings on the hard
12:13:08 drives -- you know, borrowing copyrighted material
12:13:12 onto the hard drives of the 2002. Because these were
12:13:16 demonstration-only, not commercial projects, we
12:13:19 didn't feel we needed permission from the record
12:13:21 companies to do this.
12:13:23 So we built up, you know, hundreds of
12:13:28 megabytes of recordings on the DSP 2002 hard drives

12:13:32 and used those to simulate a database, and then used
12:13:36 a second DSP 2002 to act as the receiver, and did a
12:13:42 series of tests and, in fact, some public
12:13:44 demonstrations of how this would work.
12:13:46 BY MR. BERL:
12:13:47 Q. So is it your testimony that given such a
12:13:50 database of music and an AT&T Accunet connection,
12:13:56 that the telerecording capacity existed in the
12:14:01 DSP 1000?
12:14:03 MR. MUDGE: Objection. Mischaracterizes his
12:14:05 testimony, calls for speculation and is a leading
12:14:09 question.
12:14:11 THE WITNESS: We designed the DSP 1000 to be
12:14:14 a telerecording receiver, not a sender. It was
12:14:18 conceived of as the consumer end of the system.
12:14:21 So it was designed and fully capable of
12:14:23 recording, and I'm sure you can depose some of the
12:14:25 engineers who were involved designing that circuitry
12:14:28 that you saw and verify what I'm saying.
12:14:33 The DSP 1000 was the target. It would
12:14:36 receive music from the database. We had to
12:14:38 synthesize, you know, make pretend databases on 2002s
12:14:42 to perform the actual testing and public
12:14:45 demonstrations to show the reporters and the press
12:14:49 and the community, the technical community,

12:14:51 1 engineering community, how this would work if
12:14:55 2 somebody would commercialize it. You know, if the
12:14:58 3 record companies would get on board, which of course
12:15:00 4 they refused to do.
12:15:03 5 MR. BERL: If I could have this marked as
12:15:05 6 Exhibit No. 9. It's a reprint of an article from
12:15:10 7 PC World bearing the numbers 26305 to 26312.
12:15:18 8 (WHEREUPON, DEPOSITION EXHIBIT 9 WAS MARKED
12:15:49 9 FOR IDENTIFICATION.)
12:15:49 10 BY MR. BERL:
12:15:49 11 Q. Have you seen this document before?
12:15:51 12 A. I've seen the original magazine and, yes,
12:15:54 13 I've seen copies of this before, yes.
12:15:59 14 Q. And do you remember having a discussion with
12:16:01 15 someone at PC World?
12:16:05 16 A. I remember a number of discussions with
12:16:07 17 David Renada, one of their senior writers, about our
12:16:12 18 work, and he eventually wrote at least one article
12:16:15 19 about us, including this one.
12:16:19 20 Q. Could you read from the right-hand column.
12:16:24 21 This is the first two sentences of the paragraph
12:16:26 22 beginning with "The unit."
12:16:31 23 A. "The unit is also set up to
12:16:33 24 'telerecord' from remote data bases
12:16:36 25 via modem. This capability yields a

glimpse of CompuSonics's assumptions about the musical future - no such data bases exist at present."

Q. Is this, as you sit here today, an accurate statement of what you thought in 1984?

A. Oh, yes, yes.

Q. Or, excuse me, what was the date of that article?

A. I'm not sure. '84 or '85.

Q. If you could look at 26305, it's not the greatest copy in the world. The front page.

A. April 1985.

Q. And is it your testimony that the DSP 1000s that you sold were set up to telerecord from remote databases?

A. To the best of my knowledge, yes, that's how we designed them.

Q. And did you advertise that capability?

A. I believe we did advertise that capability. We would have to find copies of the ads, if you've managed to locate them, to verify that.

Q. If we could look back for yet another time at Exhibit 2, that's number 26489. If you could look at the second bulleted item.

A. Yes.

12:18:17 Q. The "High speed Centronics-like full-duplex
12:18:21 parallel port."
12:18:21 A. Yes.
12:18:22 Q. Is that the part that was used in the
12:18:26 telerecording in the DSP 1000?
12:18:30 A. To the best of my knowledge, that is the
12:18:34 DATI, digital audio transceiver port. We just
12:18:38 referred to it in general as a parallel port on here
12:18:40 because by the time this was printed, I think in '86,
12:18:46 we had pretty much given up on the commercialization
12:18:50 of telerecording.
12:18:54 Q. And if you could look one time again at
12:18:56 Exhibit 1. That's number 26281. The second bulleted
12:19:04 item.
12:19:07 A. "Digital recording from remote data bases:
12:19:10 'telerecording'"?
12:19:15 Q. Yes. Was this exhibit sent outside of
12:19:19 CompuSonics, to your knowledge?
12:19:20 A. Oh, yes, it was widely circulated. It was
12:19:22 handed out by the thousands at trade shows.
12:19:25 Q. And were you present at those trade shows?
12:19:29 A. Many of them, yes.
12:19:30 Q. So you personally handed some of these out?
12:19:33 A. Oh, yeah, hundreds.
12:19:34 Q. When you testified a moment ago that you'd

12:19:37 given up on commercialize the telerecording, what
12:19:46 do you mean by "commercializing"?
12:19:49 A. Making money with the concept or the
12:19:53 features or equipment that would do telerecording,
12:19:56 either the head end or the receivers.
12:20:01 Q. So did you sell DSP 1000s that had the
12:20:06 capability to telerecord, despite your testimony that
12:20:13 you were unable to make money off the telerecording
12:20:15 capability?
12:20:16 A. Well, it was designed into the circuit. It
12:20:18 was an inherent part of the machine.
12:20:21 I believe in some of the later machines, not
12:20:24 the 1000s, but the 1200s, 1500s and 1800s made later
12:20:29 in '87 and '88, we may actually even have removed
12:20:31 some of the chips from the circuit board because they
12:20:34 were wasted money given that, you know, nobody was
12:20:39 going to use that function.
12:20:41 Q. And the 50 to 100 DSP 1000s that you had
12:20:46 testified about earlier that had been sold, did those
12:20:51 have the telerecording capability taken out?
12:20:54 A. No. Those were fully stuffed circuit
12:20:57 boards. They had the chips in them, all of them.
12:21:01 MR. BERL: All right. Thank you, very much,
12:21:03 Mr. Schwartz. I think this is a good time to take a
12:21:05 lunch break.

12:21:07 THE VIDEOGRAPHER: The time is 12:21 p.m.

12:21:09 We're going off the record.

(Luncheon recess: 12:21 p.m.)

AFTERNOON SESSION

(1:33 p.m.)

(WHEREUPON, DEPOSITION EXHIBIT 10 WAS MARKED FOR IDENTIFICATION.)

(At this time, Monica Mucchetti and Christopher Reese were absent from the deposition room.)

THE VIDEOGRAPHER: We're back on the record. The time is 1:33 p.m.

BY MR. BERL:

Q. Good afternoon, Mr. Schwartz. Before the break, you had talked about the CompuSonics 2000.

What is the CompuSonics 2000?

A. That was the first commercially available audio computer that CompuSonics Corporation manufactured and sold.

(At this time, Christopher Reese entered the deposition room.)

BY MR. BERL:

Q. And what is the CompuSonics 2002?

A. Well, I suppose there really wasn't a 2000.

2002 was the smallest model in the 2000 series, "2" standing for two stereo pairs.

Q. And when did you first build a prototype of the 2002?

13:34:43 A. Late 1983, I believe.

13:34:47 Q. And who was involved in designing and
13:34:49 building the system?

13:34:55 A. Myself, my chief scientist, or at that time
13:35:00 a consultant. Before I had staff, really, we had
13:35:04 consultants to the company. Gary Schwede, who was
13:35:08 getting his doctorate from Berkeley at the time.
13:35:12 John Stautner, who was in the master's program at
13:35:15 MIT. Those two primarily, and myself.

13:35:20 Q. If you could look at Exhibit 10 which bears
13:35:25 the numbers 25668 through 25707. Are you familiar
13:35:32 with this document?

13:35:33 A. Yes, I am.

13:35:42 Q. And are you familiar with its contents?

13:35:42 A. No, I'm not familiar anymore with it, but I
13:35:43 saw it in the past.

13:35:45 Q. What role did you play in its preparation?

13:35:48 A. I remember proofing it after it was written
13:35:51 by the tech writer who wrote it.

13:35:54 Q. And do you remember who that tech writer
13:35:55 was, by any chance?

13:35:57 A. I don't remember the name.

13:36:00 Q. And was it a common practice at CompuSonics
13:36:05 to write and publish a user's manual before the
13:36:08 product was ready to sell?

13:36:11 A. No. We usually started selling before we
13:36:14 had documentation.
13:36:19 Q. And so would it be your testimony then that
13:36:23 this document was prepared after the CompuSonics 2002
13:36:27 was first sold?
13:36:29 MR. MUDGE: Objection. I'm sorry.
13:36:32 Objection, leading.
13:36:33 MR. BERL: You can answer.
13:36:35 THE WITNESS: We sold the first 2002 in
13:36:38 1984. I don't believe it had much in the way of
13:36:42 documentation other than the standard UNIX documents
13:36:45 that come with any UNIX-based computer.
13:36:51 BY MR. BERL:
13:36:52 Q. Now, if I could direct you to Page 25671.
13:37:00 Near the middle of the page where it says "on-line
13:37:05 database of sound effects and music library," under
13:37:09 "Functions unique to the audio computer," what does
13:37:12 that line mean?
13:37:18 A. Sorry, I lost you. Oh, "Functions unique to
13:37:21 the audio computer"?
13:37:22 Q. Yes.
13:37:23 A. "On-line database of sound effects and music
13:37:25 library"?
13:37:26 Q. Yes, what does that mean?
13:37:28 A. That means you can fill the hard drive, hard

13:37:31 disk drive of the computer with music, sound effects,
13:37:36 voiceovers, whatever, for random access.
13:37:40 Q. And what else -- would anything else go with
13:37:44 the music in the hard drive storage?
13:37:47 A. Well, yes. The information about the edits,
13:37:51 you know, the editing on the music, the information
13:37:54 about the names of the artists, the titles, what we
13:37:58 call header information and directory and sound file
13:38:01 directory information.
13:38:02 Q. And the next line, "off-line digital storage
13:38:05 of sound effects library," how is that different?
13:38:10 A. Well, "on-line" means you can access them
13:38:12 instantly with a keystroke and play them.
13:38:16 "Off-line" means it's really a library that
13:38:19 you would have to copy to your online to get it -- to
13:38:26 use it instantly. Sort of like backup. Archival
13:38:31 storage, I guess might be a better way of putting it.
13:38:34 Q. And the line that says "digital
13:38:35 telecommunications," what does that mean?
13:38:41 A. Well, that refers to what we called in the
13:38:44 press materials telerecording.
13:38:47 Q. So were those two words or phrases used
13:38:50 interchangeably, that is, digital communications and
13:38:52 telerecording?
13:38:54 A. Yes. Well, telerecording was our

consumer -- the way we described it to consumers.

In the professional environment, this machine is meant for professionals, we used more technical terms like "digital telecommunications."

And later on on that page, in the paragraph that starts "The unique audio computer functions," et cetera, "Properly equipped, the computer can use the telephone to transmit data (music) anywhere with no loss of fidelity." That's what we're talking about here.

MR. BERL: All right. If you would look at Exhibit 11, which I'll have marked for you.

(WHEREUPON, DEPOSITION EXHIBIT 11 WAS MARKED FOR IDENTIFICATION.)

THE WITNESS: Thank you.

BY MR. BERL:

Q. Are you familiar with this document?

A. I remember it, yes.

Q. And how are you familiar with it?

A. Well, it's -- this is a letter I wrote to the shareholders of CompuSonics Corporation on 31 May 1985.

Q. If you could read the first sentence of the paragraph, about three-quarters of the way down, on Page 26261, starting with "CompuSonics's," if you

could just read the first sentence.

A. You mean "The CompuSonics telerecording system" --

Q. No, where it starts "CompuSonics's."

A. Marketing efforts?

Q. Yes?

A. "CompuSonics's marketing efforts have been rewarded with increasing sales volume. In my last letter I mentioned that we were about to deliver our first production model DSP-2000 in Hollywood. Over the past six months we have continued to make on-time deliveries of ten machines ordered to date. DSP-2000s are currently in use for digital audio recording, editing, signal analysis, radio broadcast, and video/film post-production (sound tracks)."

Q. Now, those ten machines that you've sold, do you remember to whom you sold any of those machines?

A. I remember some of the names of the owners of the companies, because I've personally talked to them in some cases, and they're apparently well-known

13:41:17 1 people in the audio industry.
13:41:19 2 Q. And would you list some of those that you
13:41:20 3 can remember?
13:41:21 4 A. Well, Howard Schwartz is easy to remember
13:41:24 5 because he's a Schwartz, who owns Sound One in New
13:41:27 6 York City, which is the studio that does all of the
13:41:36 7 audio for all of Woody Allen's movies. So I remember
13:41:36 8 Howard quite well.
13:41:36 9 And Bob Lifton, well, he's passed away, but
13:41:41 10 he was best known as the guy who first did high
13:41:44 11 quality audio on television for Saturday Night Live,
13:41:48 12 for live bands on TV.
13:41:52 13 And now I'm blanking out on the guys in
13:41:55 14 Hollywood. I can see their faces. I can't remember
13:42:02 15 their names.
13:42:03 16 Q. That's okay. It was a long time ago.
13:42:05 17 A. I'm having a senior moment, sorry.
13:42:08 18 MR. BERL: Now if you would look at
13:42:12 19 Exhibit 12, which I'll have marked for you.
13:42:18 20 (WHEREUPON, DEPOSITION EXHIBIT 12 WAS MARKED
13:42:32 21 FOR IDENTIFICATION.)
13:42:32 22 BY MR. BERL:
13:42:33 23 Q. Before we get there, what did the
13:42:35 24 CompuSonics 2002 look like to consumers?
13:42:41 25 A. A black computer, like the two black boxes,

13:42:46 each the size of an IBM PC. And a monitor, you know,
13:42:56 a keyboard and a display screen.
13:43:00 Q. So the description you gave earlier this
13:43:02 morning regarding what the DSP 1000 looked like, what
13:43:08 would the difference in appearance be between the
13:43:11 1000 and the 2002?
13:43:14 A. Well, the 1000 had a front panel like any
13:43:18 consumer electronics home audio equipment or VCR, you
13:43:21 know, buttons, a display. And then on the back, had
13:43:24 places to connect the audio and connect peripherals.
13:43:27 On the 2002, there was no front panel. The
13:43:30 black boxes had nothing on the front other than
13:43:32 lights, and on the back they had the connectors for
13:43:35 the various peripherals and a connector to the
13:43:40 display device, to the CRT, and the keyboard.
13:43:45 So all the control was through a keyboard
13:43:48 and a terminal, like any workstation of that vintage.
13:43:54 Q. Now, the DATI that we talked about earlier
13:43:57 in Exhibit 7, was that present also in the DSP 2002?
13:44:03 A. Well, the DATI always was and throughout its
13:44:06 existence always was an external box, a little black
13:44:11 box that attached to the parallel port.
13:44:16 Q. And did a consumer who bought the DSP 2002
13:44:20 automatically receive that DATI box as well?
13:44:24 A. No.

13:44:27 MR. MUDGE: I'm going to request I get a chance to raise objections. I'm going to object to that question as vague and lacks foundation.

13:44:39 THE WITNESS: We only made, I think, 10 or 12 DATI boxes. They were made primarily to promote what we thought would be a new business, or an extension of the business, this telerecording thing, for both the 2002 and the 1000.

13:44:57 The idea being that if we could get some traction commercially with it, then we'd have them manufactured or commercialized, make those boxes less expensive. Each of those 10 or 12 that we made probably cost us over a thousand dollars each at that time.

BY MR. BERL:

13:45:16 Q. And did you attempt to sell those 10 or 12 boxes that you made?

13:45:19 A. Oh, yes, I did. My salespeople and myself did, yes.

13:45:23 MR. BERL: If you could now take a look at Exhibit 13, which bears the numbers 26382 to 26383.

13:45:43 Excuse me, I misspoke. Exhibit 12, I'm sorry, which bears the Bates numbers 26382 to 26383.

13:45:51 THE WITNESS: Okay.

BY MR. BERL:

13:45:52 Q. On the second page in the first paragraph --
13:45:59 First of all, did you write this letter?
13:46:04 A. This is another letter to CompuSonics
13:46:07 shareholders written by myself.
13:46:09 Q. And when did you write this?
13:46:11 A. 10th of October 1985.
13:46:14 Q. Now, on that second page in the first
13:46:16 paragraph, you identified Bob Lifton.
13:46:19 A. Yes.
13:46:21 Q. Now, was he one of the people who bought a
13:46:25 DSP 2002?
13:46:26 A. Yes.
13:46:27 Q. And did he buy the DATI box as well?
13:46:32 MR. MUDGE: Objection. These are leading
13:46:35 questions. I really think they are improper
13:46:38 questions.
13:46:40 MR. BERL: You may answer.
13:46:42 THE WITNESS: Bob bought a 2002, and we even
13:46:48 offered to loan him a DATI box, not to even charge
13:46:51 him, for it, but he couldn't make any sense out of
13:46:56 it. He had no reason to have one. He didn't want
13:47:01 it.
13:47:02 BY MR. BERL:
13:47:02 Q. What efforts did you make, if any, to sell
13:47:05 Bob Lifton a DATI box?

13:47:10 A. I met with him and sat down and explained it to him and what it could do and how he could connect his studio in New York to his studio in Hollywood, you know, over the phone lines to send files.

13:47:23 And his conclusion was it wasn't -- that Federal Express was doing a better job sending his digital audio materials to Hollywood than the phone lines could do.

13:47:34 Q. Was Bob Lifton the only person to whom you tried to sell a DATI box?

13:47:39 A. Oh, no, I promoted it to everyone who bought a 2002. With the same argument, basically, that it was a good way to move digital audio files long distances without damage.

13:47:59 Q. Now, if you could go back to Exhibit 2, the diagram with which we've been working all morning, bearing the number 26489.

13:48:12 This diagram is labeled DSP 1000 design diagram -- or "DSP 1000 System Diagram," excuse me.

13:48:21 A. Yes.

13:48:27 Q. What differences were there, if any, between the data flow represented in this diagram and the data flow in the DSP 2002?

13:48:38 MR. MUDGE: Objection. The question is vague.

13:48:43 THE WITNESS: Well, in fact, the data diagrams -- I believe somewhere in all these documents about CompuSonics, you'll find another diagram of the 2000 system, and you'll find it's virtually identical.

13:48:54 In fact, the way we designed the 1000 was to take a 2000 and shrink it onto one circuit board. So from a multitude of circuit boards, but in the same architecture, we shrunk it down onto one circuit board and renamed it the DSP 1000, and of course it cost a lot less money to make.

BY MR. BERL:

13:49:16 Q. And when you say shrink, what do you mean by that?

13:49:19 A. Well, the DSP 2002, the smallest one, weighed 75 or 80 pounds, and was the size of two IBM PCs. Plus it needed an external console, you know, CRT and computer screen and a keyboard. It contained over a dozen circuit boards, which is big and expensive.

13:49:45 Q. Was the software that you wrote for the 2002 different than the software that was written for the DSP 1000?

13:49:56 A. Oh, somewhat different, but fundamentally the same in all of its key parts. It was written in

13:50:05 1 the same language, a lot of the same exact same code
13:50:08 2 was moved to the DSP 1000.
13:50:10 3 Q. And what were the differences, if you can
13:50:12 4 remember?
13:50:17 5 A. The DSP 1000 had a front panel that needed
13:50:20 6 quite a bit of software to control it, you know, the
13:50:23 7 buttons and the display. None of that existed in the
13:50:26 8 2000. The 2000 simply had a serial connection to a
13:50:32 9 terminal.
13:50:34 10 So there was a lot of new code written for
13:50:36 11 the 1000 pertaining to the front panel, but all the
13:50:39 12 internal data processing code, the signal processing
13:50:43 13 and the data handling parts of the system, were all
13:50:47 14 identical.
13:50:52 15 Q. If you could look at Exhibit 10 once again.
13:50:57 16 That's the DSP 2002 user's manual. On Page 25781 --
13:51:11 17 excuse me, I think I have the page number wrong.
13:51:14 18 Hold on a moment.
13:51:26 19 Excuse me, on Page 25690.
13:51:33 20 A. Okay.
13:51:48 21 Q. As you look at this, what does this page
13:51:55 22 show?
13:51:57 23 A. The edit list directory screen for
13:52:00 24 controlling edit lists.
13:52:04 25 (At this time, Michael Barclay entered the

deposition room.)

BY MR. BERL:

Q. And who controlled those edit lists?

A. The operator. The person who was sitting at the workstation at the 2002. This is how they, you know, would control the machine.

Q. And now if we can go back for one moment to Exhibit 6, which is entitled "Specifications and Implementation of a Computer Audio Console for Digital Mixing and Recording."

A. Okay.

Q. On Page 25782.

A. Yes.

Q. Do you remember what you were describing in this paper?

A. This is the architecture of the DSP 2000 workstation.

Q. And if you could read the first sentence of the paragraph beginning "The primary Data Storage module."

A. "The primary Data Storage module contains one SuperFloppy disk drive, the disk drive controller boards and three hard disk drives."

Q. And was that a difference between the 2002

and the 1000?

A. Yes. The 1000 had one disk drive. Early on it had one SuperFloppy disk drive, and then later it had one optical disk drive. And then even later on in the future, it had one hard disk drive.

Q. And in the 2002 that you describe in this paper, what was stored, if anything, in the hard drives?

A. On the 2002?

Q. Yes.

A. Well, the data, the compressed audio of the music was stored there. Directory structures about how the data was stored, files pertaining to how the music was edited, the edit sequences, the edit points.

Who recorded the music, the recording engineering information of who did it, who the artists were, how long the recordings were, who owned the copyright on the music. Notes. I mean, you could actually type, you know, liner notes into the thing and save that on there as well.

Q. And how was all this information organized in the hard drive?

A. Well, it's a UNIX computer, so it was stored in the UNIX file system, which I'd hesitate to get

13:54:36 into in this deposition.

13:54:36 Q. The sound files themselves, were those sound

13:54:38 files different from the sound files that were stored

13:54:43 in the DSP 1000?

13:54:45 A. No.

13:54:54 Q. The DATI interface, which we went through at

13:54:58 length this morning in Exhibit 7, did that play a

13:55:03 different role in the 2000 than the 1000?

13:55:07 A. No. As I described earlier, it's the black

13:55:11 box that converts one protocol to another protocol so

13:55:14 that data can be transferred between two dissimilar

13:55:17 computer systems; one being owned by the phone

13:55:20 company and the other being the audio computer.

13:55:26 Q. Okay. Now, turning your attention for the

13:55:29 last time to Exhibit 12, which was a letter written

13:55:31 on October 10th, 1985 to CompuSonics shareholders.

13:55:41 A. Okay.

13:55:47 Q. Could you read that paragraph with the

13:55:50 second star.

13:55:52 A. "We have signed the Memorandum of

13:55:55 Understanding for Co-Marketing with

13:55:57 AT&T Communications. This is the

13:55:59 direct result of a series of

13:56:00 successful telerecording tests and

13:56:04 demonstrations which culminated in

August with New York City to Chicago and back digital audio communications between two CompuSonics DSP-2002s with AT&T ACCUNET Switched 56 service providing the channel."

Q. As you sit here today, do you have any reason to believe that the paragraph you just read is not accurate?

A. It's completely accurate.

Q. Did you ever personally demonstrate the DSP 2002's capability to transmit sound files?

A. Yes, I did demonstrate it publicly in front of, you know, reporters and radio and television crews in New York City, I think it was in the summer of 1985.

Q. Now, how many demonstrations --

A. I'm sorry, it says right here, August. It was August in New York City. I was there.

Q. And how many demonstrations of the DSP 2002 did you attend?

A. Two, that I recall. One that summer in New York, the big one with the press, and then an earlier --

I don't know if I would call it a

13:57:19 demonstration or more of a testing session between -- I can't recall if it was Holmdel, New Jersey Bell Labs or Red Cliff, New Jersey Bell Labs. One of those labs and New York City. I was in the lab, the Bell Labs site.

MR. BERL: If I could have that marked Exhibit 13, which bears the Bates No. 25867 to 25873.

(WHEREUPON, DEPOSITION EXHIBIT 13 WAS MARKED FOR IDENTIFICATION.)

BY MR. BERL:

Q. Do you recognize this document?

A. Yes, I do.

Q. And how do you recognize it?

A. This was a paper presented by John Stautner at an Audio Engineering Society conference. I believe it was one of the AES conferences in Europe, but I couldn't tell you exactly which one.

Q. If I could direct your attention to Page 25872, Page 6 of the document.

A. Yes.

Q. Under number 5, "Test results."

A. Yes.

Q. If you could just read that to yourself for a moment.

A. Yes.

13:59:20 Q. Now, the document appears to describe two
13:59:23 demonstrations. Are these the demonstrations that
13:59:25 you were referring to?
13:59:30 A. Well, the August one is the demonstration I
13:59:32 was at where I was the New York -- on the New York
13:59:36 side.
13:59:38 The New Jersey and New York, I was at one of
13:59:41 those. I'm not sure if it was April or May, I
13:59:47 couldn't tell you exactly which one.
13:59:49 Q. Let's go back to that test between New York
13:59:52 and New Jersey, the first demonstration. Do you
13:59:56 remember who was there?
13:59:58 A. I don't think I was at the first series of
14:00:01 tests. The engineers, Heinz Sohn and some of our
14:00:07 other engineers at the early stage of this project,
14:00:11 were doing the testing with Bell Labs.
14:00:13 I didn't come in till kind of late in the
14:00:15 process when they told me it was working, you know,
14:00:18 when -- I didn't want to schlepp down to New Jersey
14:00:23 for a session where everything wasn't working well,
14:00:27 so I wasn't at the very first test.
14:00:29 Q. And other than Heinz Sohn, do you remember
14:00:31 any other people who were there, by name?
14:00:36 A. I remember other engineers who were
14:00:37 involved. I don't know if they were there.

14:00:41 Q. Who would those engineers be?

14:00:44 A. Harry Norris and, I'm sorry, I just -- I can see the face, but I can't remember the name of the other engineer who worked with Harry and Heinz.

14:00:58 Q. Do you know, did both of those people work for CompuSonics?

14:01:01 A. Yes.

14:01:02 Q. Do you know whether anyone who did not work for CompuSonics was there in April of 1985 for that test?

14:01:11 A. Well, a number of AT&T Bell Labs engineers, a squad of them. I don't remember any of their names.

14:01:18 Q. Did you play any role in arranging the demonstration?

14:01:22 A. The one in August, the big one with the press?

14:01:31 Q. The one in April for now.

14:01:31 A. In April, I know I was involved on the business side with AT&T, you know, setting up the whole process, the whole deal.

14:01:41 Q. Do you remember with whom you coordinated that at AT&T?

14:01:44 A. I can see the face, I just can't remember the name.

14:01:47

14:01:53 Q. And who told you, if anyone, about what occurred in the April 1985 test?

14:01:57 A. The ones I did not attend?

14:01:59 Q. Yes.

14:02:01 A. Either Harry or Heinz.

14:02:03 Q. Now, moving to the later test in 1985, the August of 1985 test, who was present for that test?

14:02:09 A. Okay, well, that wasn't a test. We were done with testing. That was strictly a dog and pony show for the press.

14:02:15 The purpose of it from AT&T's point of view and from our point of view was to show a finished system. You know, something that would work reliably where we weren't afraid to have the press there in a live demonstration.

14:02:20 Q. And who was present at that demonstration that you remember?

14:02:23 A. Myself. I believe Harry Norris was there. A couple of other CompuSonics staff people, who I can't put names -- I just don't recall the names. A number of AT&T engineers and executives, and a lot of press people from -- mainly from the New York and New Jersey area.

14:02:26 Q. To the best of your recollection, how was the demonstration or the dog and pony show set up?

14:02:28

14:02:30

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14:03:17

14:03:19

14:03:25 A. We had a 2002 in New York, which had been, you know, pre-wired before I sat down there. It was all set up, connected to the phone system.

14:03:38 And there was another 2002, which I couldn't see, of course, in Chicago, which presumably was, you know, also set up and ready to go.

14:03:48 The setups were done hours before it was open to the press. So it actually had been tested, in other words, before we opened the doors.

14:03:56 And in Chicago, I believe Heinz Sohn was on the Chicago end. He was sitting at the Chicago 2002 and I was sitting at the one in New York City. And we did a series of demonstrations. I don't know that I remember all of them.

14:04:14 One demonstration, we sent music that was in the database of the 2002, on the hard disk of the 2002 in New York. I pushed the send button on the keyboard and sent it to Heinz's machine in Chicago.

14:04:30 Then he turned around and sent it back to me in New York, and this was non-realtime, so you didn't hear it while it was happening. It was a fairly high fidelity recording.

14:04:44 And then one of the other demonstrations we did is Heinz turned on a radio in Chicago, a local radio station that was live, and transmitted it to

14:04:54 the 2002 in New York City and we could listen to it
14:04:57 while I recorded it on the 2002.
14:05:02 Q. Now let's go back through what you just said
14:05:05 in a little more detail. If you could look perhaps
14:05:08 at Exhibit 11, which is a letter that you'd written
14:05:11 to shareholders.
14:05:21 A. Okay.
14:05:23 Q. On May 31st, 1985, bearing the No. 26261, if
14:05:33 you could look at the paragraph beginning with "The
14:05:36 CompuSonics telerecording system."
14:05:39 A. Yes.
14:05:42 Q. Does that document refresh your recollection
14:05:44 about what was transmitted during the test in April
14:05:49 of 1985?
14:05:53 A. Well, this was one of -- that's one of the
14:05:55 tests I witnessed at the labs in April or May,
14:06:01 sometime in the spring of '85, the recording from CD,
14:06:08 from a CD player, the Glen Miller Orchestra, onto a
14:06:12 2002.
14:06:13 Then it was -- the recording was stopped.
14:06:14 You know, the tune was recorded. Then we opened up
the --
14:06:17 Then we went and sent the Glen Miller
14:06:24 Orchestra tune to New York where it was recorded and
14:06:28 then played back in New York.

14:06:30 Q. Were you present for that test?

14:06:33 A. At the -- well, one of these, one of the
14:06:36 Holmdel or Red Cliff tests, I was there when it was
14:06:40 done.

14:06:40 Q. And if we could go through exactly how that
14:06:43 happened. How did the first 2002, the sending 2002,
14:06:50 if we could use that phrase, how did that find the
14:06:55 Glen Miller Orchestra tune?

14:06:58 MR. MUDGE: Let me object to the question.
14:06:59 Lacks foundation, assumes facts not in evidence.

14:07:07 THE WITNESS: Okay, well, I think I just
14:07:08 said how it found it.

14:07:09 The Glen Miller recording was on a CD. I
14:07:14 can't remember whose CD it was. I think one they had
14:07:16 laying around the lab at AT&T. And there's a CD
14:07:27 player. The CD player -- the output of the CD player
14:07:27 was connected to the inputs of the DSP 2002 like a
14:07:27 tape deck, and the CD was put into play mode, so it's
14:07:29 playing the Glen Miller tune.

14:07:30 On the DSP 2002 on the keyboard, click the
14:07:35 button that corresponds, I think the R button on the
14:07:37 keyboard which corresponded to record. And that
14:07:40 started the recording onto the hard drive.

14:07:43 When the recording was over -- and, now, I
14:07:47 wasn't at the keyboard. This was probably Harry

14:07:50 Norris. He typed the name, you know, Glen Miller,
14:07:53 the name of the recording company that owned the CD,
14:07:58 his name as engineer, the date of the recording. He
14:08:00 typed a bunch of information into the database on the
14:08:03 2002, and then it was there. It was in -- you know,
14:08:06 it was a sound file properly tagged and identified on
14:08:09 the hard drive.
14:08:11 Q. In what form was that sound file stored?
14:08:15 A. Compressed digital data in CSX4 or CSX8
14:08:20 format.
14:08:21 Q. And what happened next?
14:08:28 A. As I recall, Harry picked --
14:08:30 We had a telephone line, just a regular
14:08:33 voice line set up. So he called the AT&T facility in
14:08:37 Manhattan to verify that -- the name of the engineer
14:08:44 I forget, another CompuSonics engineer had his
14:08:46 machine on and ready and said, okay, we're going to
14:08:50 send a song.
14:08:55 So Harry pushed the S key, or whatever the
14:08:58 key was, to send the file, and the engineer in New
14:09:03 York City pushed his record button, and it went
14:09:06 through the AT&T Accunet phone lines, the Switched 56
14:09:11 service, into the computer in New York City.
14:09:16 Q. And once it went into that computer, in what
14:09:19 form was the data as it went into the receiving

14:09:24 computer?

14:09:24 A. Well, it's all digital data, but most of it
14:09:27 is audio and then a tiny fraction of it was the stuff
14:09:31 that Harry typed in in New Jersey, you know, about
14:09:35 Glen Miller Orchestra, Philips Recording, Harry
14:09:39 Norris's name. Whatever else he felt like typing in
14:09:43 with it.

14:09:46 Q. And where did that go in the receiving
14:09:48 DSP 2002?

14:09:51 A. Into the -- onto the hard drive. Through
14:09:54 this whole system that we've talked about earlier,
14:09:57 you know, through the memory, through the processor
14:09:59 handing the data over to the disk drive controller,
14:10:02 ends up on the disk drive in a directory structure.

14:10:08 Q. And at that point, who was in control of the
14:10:13 receiving 2002, if you remember?

14:10:16 A. For the life of me, I can't remember the
14:10:18 name of the engineer who was sitting there, but he
14:10:21 controlled that process. He could have stopped it at
14:10:23 any point, paused it.

14:10:27 Q. Do you know whether the tune was then
14:10:29 played?

14:10:31 A. I'm sure it was.

14:10:33 I recall hearing, you know, holding up the
14:10:36 telephone -- Harry held up the telephone and said,

14:10:39 hear, listen. And you could hear it playing from New
14:10:41 York over the phone so you could verify that the
14:10:43 music had gotten there.
14:10:45 Q. Now, this Accunet connection between the two
14:10:48 computers, how was the connection actually made?
14:10:59 A. The sending computer requests -- you know,
14:11:03 sends a request to the system. There's a wire, a
14:11:09 request to send, I think, RTS. Don't hold me to the
14:11:14 name of the signal. There's one wire that's a
14:11:17 request to send. Lifts that wire or raises it to a
14:11:20 1, you know, an on state, and that engages the
14:11:24 customer premise's equipment, the Flextie interface
14:11:27 for the Accunet system, and let's it know that there
14:11:31 is going to be data. And that opens the --
14:11:36 Assuming the line isn't busy or tied up or
14:11:38 broken somewhere, it engages the sending side of the
14:11:44 system. And at the receiving side, someone has to
14:11:47 engage the ready to receive, I think it's RTR line
14:11:51 has to be raised to 1, so that the other end knows
14:11:55 that there's going to be data coming.
14:11:57 Q. And how does someone engage the ready to
14:11:59 receive line?
14:12:01 A. By either pushing a front panel button, if
14:12:04 it were a 1000 machine, but we did all these tests on
14:12:07 a 2000, so you do it on a computer keyboard,

14:12:10 basically. You know, click the receive.

14:12:13 Q. Other than the data that you've already

14:12:15 talked about, the sound file and the header, was

14:12:19 there any other exchange of data between the two

14:12:22 DSP 2002s in this April 1985 test?

14:12:28 A. The data did include checksums, you know,

14:12:32 for error detection. I know that.

14:12:35 Q. Are these similar to the checksums about

14:12:36 which you spoke this morning?

14:12:38 A. Yes, same thing.

14:12:39 Q. And why was the checksum required for the

14:12:52 transmission?

14:12:52 A. Well, because if a data block got corrupted

14:12:52 somehow, we didn't want to play it because it would,

14:12:52 you know, sound terrible.

14:12:57 Q. Now, moving forward a few months to the

14:13:00 August 1985 demonstration, you had said before that

14:13:06 you were sitting in New York City.

14:13:12 Who initiated the contact between the two

14:13:15 computers?

14:13:18 A. Well, we traded off, because we were

14:13:20 demonstrating --

14:13:23 It was almost a -- it wasn't really a canned

14:13:26 demo, because the reporters were free to ask

14:13:29 questions as we proceeded. So there was a lot of

this, well, can you do this, or how about doing that, which is why we did the mixture of prerecorded audio and live audio. And I don't know --

I can't remember who did the first thing, you know, whether I sent music from New York to Chicago, or if Heinz sent music from Chicago to New York. I honestly can't remember who went first, but we swapped back and forth. You know, we did transactions both ways.

I did not do a live recording, you know, live New York radio station recording to send to Heinz. That demonstration only came from Chicago.

Q. Do you remember whether the receiving computer ever requested a specific sound file to be sent from the sending computer?

A. It did, but that was automated. In other words, the receive key, you know, to start a reception for this demonstration, engaged what's called a script file in the UNIX computer. That file already had the name of the recording it was going to fetch already typed in.

I didn't sit there and type it into the file. It was already -- the transaction was precooked, if you know what I mean. It was set up so I couldn't make a mistake at the keyboard and look

like an idiot in front of the press.

Q. And in which computer was this script file engaged?

A. We both had them. Heinz had a script file, several of them, in his computer in Chicago, and I had some in mine in New York.

Q. So how did that work in terms of the receiving computer initiating the transmission of the sound file? In other words, if you could just take me through the process of the receiving computer requesting the sound file all the way through.

A. Well, I would have to -- I would have to find the script for you in one of these machines and read it to you, because I don't remember --

Frankly, I don't remember every line entry in those script files. I could only give you a general idea what was in those files. That was just too long ago for me to reconstruct that from memory.

Q. Okay, so in terms of a general idea, what would happen?

A. A general idea. The name of the --

The sound filename that was going to be fetched from Chicago was in that script. And when the -- when my request to receive was sent, it sent that name, which matched a name that was in the

computer in Chicago's directory.

If it didn't match, there would have been a failure. You know, we wouldn't have been able to get the music, because the file wouldn't have been found. The "file not found" kind of error.

Q. Was that request to receive sent over the same connection as the sound file?

A. Yes.

Q. Did you ever send a credit card number over that connection?

A. No.

Q. Would you have needed to change the DSP 2002 that you were using in order to send a credit card number?

MR. MUDGE: Objection. Calls for speculation.

THE WITNESS: It's just alphanumeric data. As long as you could type it on a keyboard, whatever you could type, numbers, letters, whatever, could be sent back and forth between these machines. They're computers.

BY MR. BERL:

Q. Would the computer receiving that data have been able to store the data?

MR. MUDGE: Objection. Vague, calls for

speculation.

THE WITNESS: Yes, of course.

BY MR. BERL:

Q. Did the 2002 store such alphanumeric -- did the 2002 store alphanumeric data that it received over the Accunet --

A. Yes.

Q. -- wire? And what information was that?

A. Name of the audio file, the sound file's number. They usually had a number associated with them. Some other information.

I think John Stautner would be your best reference for finding exactly what was in that header. I don't remember all of the header fields.

Q. Now, while a 2002 was sending during the demonstration, sending a sound file, was it able to perform any other tasks?

A. If you wanted to, sure.

Q. What would have limited its capacity to perform other tasks?

A. The nature of the other tasks. These were very powerful workstations. Sending or receiving one stereo file used less than half of the processing capability of the machine. It could have been, for example, recording another stereo file locally.

Most of these machines had four channel, you know, quad capability, and these telerecording tests were just stereo.

Q. So is it your testimony then that while a DSP 2002 was transmitting a sound file over Accunet in the demonstration in August 1985, it also could have recorded a different audio signal?

MR. MUDGE: Objection. Leading.

THE WITNESS: If we wanted to or saw some reason to do that, we could have done that.

BY MR. BERL:

Q. The 2002s that were used in the August 1985 demonstration, do you remember whether those machines differed in any way from the 2002s that we discussed earlier, which you sold to Bob Lifton, among others?

A. No, they were totally stock machines.

Q. What was the response to the extent that you remember from the press that attended the 2002 demonstration in August of 1985?

A. Some of the reporters were enthusiastic and in fact wrote articles about it that said this indicates the future of how audio will be distributed.

Other reporters were very cynical and raised the issue of whether or not the record companies

would ever permit, you know, digital versions of their property to be flung around on networks.

Q. Why did you choose AT&T as your partner to perform this demonstration?

A. Well, because they would. AT&T --

As I recall how it started, AT&T engineers heard one of our presentations at one of the engineering conferences in 1984 and approached us and said, you know, your whole idea of sending and receiving and selling and buying digital audio and video data over networks is not very farfetched. We have a network that we call Accunet. Why don't we show you how that works.

So they came to us, because I don't know that there was anyone else at that time with a computer that had audio or video ready to plug in.

Q. Now if I could turn your attention back one more time to Exhibit No. 12 with the numbers 26382 to 26383. The second starred paragraph, can you read the first sentence of that.

A. I believe I did earlier.

"We have signed the Memorandum of Understanding for Co-Marketing with AT&T Communications."

Q. What was that memorandum of understanding?

14:22:20 A. That's the -- the deal with AT&T, verbally
14:22:27 to start with, was that if this whole thing worked,
14:22:30 if we get through the process technically of making
14:22:33 the whole thing work, and if after demonstrating it
14:22:37 publicly there seemed to be some business interest in
14:22:40 commercializing it, we would sign a memorandum of
14:22:44 understanding to talk about it in our marketing
14:22:47 materials. Advertising in magazines, you know,
14:22:50 handouts at trade shows. You know, marketing.
14:22:55 We would both -- they would talk about
14:22:59 CompuSonics' equipment in their marketing materials
14:23:01 and we would talk about AT&T Accunet in our marketing
14:23:04 materials, and we would independently and together
14:23:07 approach businesses that could use this combination
14:23:10 of hardware and network and software to do some
14:23:14 business.
14:23:15 The idea being we would go to broadcast
14:23:17 companies and recording studios and try and -- we
14:23:23 would sell some equipment and they would sell, you
14:23:27 know, leased metered access. They make money as
14:23:31 things are transmitted, as data is transmitted.
14:23:35 Q. Did you then talk to any music companies in
14:23:37 furtherance of that memorandum of understanding?
14:23:40 A. Yes, I did.
14:23:43 MR. BERL: If we could mark this as

Exhibit 14.

(WHEREUPON, DEPOSITION EXHIBIT 14 WAS MARKED FOR IDENTIFICATION.)

BY MR. BERL:

Q. Are you familiar with this document?

A. More or less, yeah.

Q. Do you remember talking to someone from Pro Sound News?

A. I talked to a lot of people from Pro Sound News over those years.

Q. Do you remember discussing the possible telerecording capacity of the DSP with someone from Pro Sound News?

A. I'm sure I did. We were promoting that to anyone who would listen.

Q. Now, if I could direct your attention to the paragraph on the left-hand column beginning "New high-speed telephone data lines."

A. Yes.

Q. If you could read that paragraph.

A. "New high-speed telephone data lines, developed by AT&T and expected to begin being installed nationwide this summer, will enable the approximately real-time delivery

of software to home users. These users would record the software with home units onto blank high-density floppies, for an access fee to the data base, said Schwartz. At press time, he said record companies had not yet been queried about the new system, but that talks would begin shortly."

Q. As you sit here today, is that an accurate statement?

A. Yes.

Q. Now, it says that record companies had not yet been queried. Did you ultimately query them about taking part in this system?

A. Oh, yes.

Q. And what specifically did you ask them?

A. Well, I didn't query them, I lobbied them. I spent -- not just in the United States, also in Europe and Japan. And the only way to describe the response was depressing. They were not receptive to the concept in any way, shape or form.

Q. Do you remember specific people with whom you spoke in the record business?

A. I can't remember specific names.

14:26:39 Q. Do you remember specific companies?

14:26:41 A. Oh, I remember a few that stand out because they were so vile, is the only way to characterize them. There was a guy at BMI in England. There was another guy at MCA in Hollywood. I mean, these were all guys. I didn't meet with any female record company executives.

There were a couple who were polite, generally not.

14:27:18 Q. And did any of these people tell you why they refused to agree?

MR. MUDGE: Objection. Vague, lacks foundation.

THE WITNESS: Well, the fellow at BMI kind of gave me a, well, over-my-dead-body kind of lecture on why unlock digital data --

They didn't want digital data distributed over telephone lines, why they didn't want it where people could have it in a digital format that they could copy.

And we had a recording machine, you know, that -- we were peddling a recorder, a digital recorder. A digital recorder was not what they wanted to hear about

BY MR. BERL:

14:28:14 Q. You discussed earlier how you were unable to
14:28:16 make telerecording a commercial success. Could you
14:28:21 go through -- could you go through the reasons why
14:28:25 you were unable to make it work commercially?
14:28:29 A. Well, I think I just did. In order to make
14:28:32 it commercially viable, it's nice to have the
14:28:35 recording hardware and a network for distributing the
14:28:39 data, but fundamentally you need access to the
14:28:42 content. That means you need the record companies on
14:28:44 board.
14:28:47 And the only record company -- I have to go
14:28:50 on record saying there was one company, Rounder
14:28:54 Records in New England, that was amenable to trying
14:28:58 this out, and I believe we used some of their artists
14:29:01 in some of our demonstrations.
14:29:05 And they're on record in some article,
14:29:07 somewhere you've got it, you'll find some quote by
14:29:09 the president of Rounder Records saying that this is
14:29:13 feasible, someplace.
14:29:15 Q. Do you remember approximately at what time
14:29:18 your discussions with BMI and MCA and Rounder Records
14:29:23 were?
14:29:26 A. Summer of 1985 or fall 1985.
14:29:32 Q. Aside from the inability to access content
14:29:35 that you just talked about, was there any other

reason that telerecording was not a commercial success?

A. There is some question as to how much of the United States was wired, you know, that could actually receive Accunet quality, you know, digital connection from the phone company. I mean, that was an issue. We never got --

We asked and never received a definitive answer from AT&T as to how many points of entry or how many places could receive Accunet.

(At this time, Monica Mucchetti entered the deposition room.)

BY MR. BERL:

Q. And aside from the lack of access to the content and the possible lack of wiring, were there any other reasons that you can think of why you said that telerecording was not a commercial success?

A. There wasn't any inexpensive consumer equipment. Our consumer equipment was quite costly. As you saw, about a $7,000 recorder. That's very high-end. There's not that much of a market for $7,000 digital recorders.

Q. From your perspective, was, aside from the price, was the CompuSonics system responsible for the inability to make telerecording a commercial success?

14:31:09 MR. MUDGE: Objection. The question's vague.

14:31:15 THE WITNESS: I don't know exactly how to answer that, really. There were a lot of pieces of the puzzle missing.

14:31:21 MR. BERL: Let me try it again.

14:31:22 Q. Was the technology that we've discussed in both the CompuSonics 2002 and the CompuSonics 1000, was the technology in your mind up to par to make telerecording a commercial success?

14:31:37 MR. MUDGE: Objection. Question's vague, lacks foundation.

14:31:41 THE WITNESS: I believe we diligently developed and tested and demonstrated a feasible -- completely feasible system with a major industrial partner, AT&T, that made telerecording technically completely feasible in 1985.

14:31:59 MR. BERL: All right. This is a good time for a break. Why don't we take a few minutes.

14:32:03 THE VIDEOGRAPHER: This marks the end of Videotape No. 2 in the deposition of David Schwartz. The time is 2:32 p.m. We're going off the record.

14:41:13 (Recess: 2:32 p.m. to 2:42 p.m.)

14:41:13 (At this time, Michael Barclay was absent from the deposition room.)

14:41:56 THE VIDEOGRAPHER: This marks the beginning of Videotape No. 3 in the deposition of David Schwartz. The time is 2:42 p.m. We're back on the record.

BY MR. BERL:

Q. A few more questions, Mr. Schwartz. Was the DSP 1000, in your mind, a computer?

A. Yes.

Q. And what about the DSP 2000?

A. Also a computer.

Q. Did the DSP 1000 have an integrated circuit?

A. Many of them, yes.

Q. And did the DSP 2002 have an integrated circuit?

A. Many.

Q. And did the 2002 have a hard drive?

A. Yes.

Q. And did the DSP 1000 have a hard drive?

A. Only the model 1800.

Q. And did the DSP 1000 have a central processing unit?

A. Yes.

Q. And did the DSP 2002 have a central processing unit?

A. Yes.

14:43:00 Q. Did the 1000 have a device for users to control it?

14:43:03 A. Yes.

14:43:04 Q. And did the DSP 2002 have a device for users to control it?

14:43:05 A. Yes.

14:43:08 Q. And did the DSP 1000 have a monitor?

14:43:09 A. It had a built-in monitor, which was the LCD screen, and the ability to add an external monitor via an IBM PC connected to the serial port.

14:43:19 Q. And did the DSP 2002 have a monitor?

14:43:22 A. Yes, it was required for operation.

14:43:26 Q. And did the DSP 1000 have the capability to hook up to speakers?

14:43:29 A. Yes.

14:43:32 Q. And did the DSP 2002 have the capability to hook up to speakers?

14:43:36 A. Yes.

14:43:39 Q. Why did the DSP 1000 not have a hard drive?

14:43:42 A. Well, one of the DSP 1000 series models did, the 1800 specifically.

14:43:43 Q. And was it your decision not to put a hard drive into the original, the DSP 1000?

14:43:46 A. I'd say it was more of a marketing decision by our VP of marketing, who felt that a removable

14:43:47

14:43:49

14:43:53

14:43:58

14:44:00

14:44:02

14:44:07

14:44:10

14:44:15 digital media was more desirable.

14:44:18 Q. From an engineering perspective, would it have been difficult to put a hard drive into the DSP 1000?

14:44:25 A. As I just mentioned, we did.

14:44:28 Q. And how long did that take?

14:44:31 A. Three minutes.

14:44:35 Q. Did you attempt to patent any part of the DSP 1000 or 2000 technology?

14:44:42 A. Yes, we did.

14:44:43 Q. And what parts did you attempt to patent?

14:44:46 A. Well, you said "attempt." We attempted to patent everything we did.

14:44:51 Our patent attorneys, their attitude was show us everything you're doing and then we'll charge you as much money as we possibly can to patent everything we think we can get a patent on.

14:45:03 Q. Okay. And what portions of the technology did you get a patent on, if any?

14:45:11 A. We got several patents. One on the --

14:45:14 Well, on the whole device, I think an apparatus type of patent, on the recording and playback of digital audio that's been processed and compressed according to this method, and then a continuation-in-part that covered some other aspects

of the system.

Q. Did you consider applying for a patent for digital audio file transmission?

A. Yes.

Q. And why did you not apply for a patent on that?

A. Our patent attorney, Jerry Berkstresser, laughed at that one. He said, you can't patent stuff that other people have already done.

MR. BERL: Okay. That's all I have for now. I'll turn you over to SightSound to ask you some questions.

MR. MUDGE: Let's go off the record for a second.

THE VIDEOGRAPHER: Going off the record. The time is 2:46 p.m.

(Recess: 2:46 p.m. to 3:02 p.m.)

THE VIDEOGRAPHER: Back on the record. The time is 3:02 p.m.

EXAMINATION BY MR. MUDGE

Q. Good afternoon, Mr. Schwartz, we met off the record earlier today, but just for the record my name is Brian Mudge representing SightSound. I have a few questions for you this afternoon. We'll hopefully try not to keep you too long. I appreciate your

15:02:39 patience throughout this day.

15:02:41 In connection with your appearance here as a
15:02:45 witness today, have you had any communications with
15:02:50 CDNOW or its attorneys?

15:02:52 A. "Its attorneys" being Wilson, Sonsini,
15:02:54 Goodrich & Rosati?

15:02:55 Q. That's correct.

15:02:55 A. Yes.

15:02:58 Q. Any recollection as to how many such
15:03:00 communications you may have had with Wilson, Sonsini
15:03:05 attorneys?

15:03:06 A. Including telephonic communications?

15:03:08 Q. Including any kind of communications,
15:03:10 whether they be telephone, e-mail. Any kind of
15:03:18 communications. Letters.

15:03:18 A. Total over the last couple of months might
15:03:18 be ten, counting e-mail.

15:03:23 Q. Do you remember the first communication you
15:03:24 had with a Wilson, Sonsini attorney in connection
15:03:27 with this case?

15:03:28 A. Or maybe near the first, yes, I think so.
15:03:31 Evan Gourvitz I believe called me. Or called my
15:03:38 office.

15:03:40 Q. Do you remember approximately when that was?

15:03:41 A. I would have to consult my office calendar.

15:03:43 Several months ago.

15:03:46 Q. Did you speak with him at that time?

15:03:47 A. No, I just got a message from my secretary.

15:03:50 I called him back.

15:03:52 Q. Do you remember approximately when you

15:03:53 called him back? Was it in proximity to that

15:03:56 message?

15:03:57 A. Yes, it was.

15:03:58 Q. And did you speak with Mr. Gourvitz at that

15:04:02 time?

15:04:03 A. Yes.

15:04:04 Q. Approximately how long did you speak with

15:04:05 Mr. Gourvitz?

15:04:06 A. Three minutes, maybe.

15:04:09 Q. And can you tell me generally what was the

15:04:11 subject matter of that discussion?

15:04:15 MR. BERL: I'm actually going to object to

15:04:16 that because it covers work product information that

15:04:19 is not related to this testimony today.

15:04:22 I'm happy to have him answer as long as

15:04:25 you'll stipulate that it doesn't constitute a waiver

15:04:27 of work product either for this witness or any other

15:04:31 witness in the case.

15:04:32 MR. MUDGE: Well, I'm not sure how this

15:04:38 witness, who's appearing today, how his discussions

15:04:42 with anybody would constitute work product at this
15:04:45 point in time.
15:04:49 MR. BERL: To the extent that the
15:04:50 discussions include things that were said by
15:04:53 attorneys here who represent CDNOW, that clearly can
15:04:57 be work product information that doesn't relate to
15:05:00 this deposition.
15:05:01 MR. MUDGE: Well, it may be work product
15:05:03 information as between Wilson, Sonsini attorneys. If
15:05:06 it's been disclosed to a third-party witness, I'm not
15:05:09 sure how that remains --
15:05:11 MR. BERL: At that point he was not a
15:05:12 third-party witness in the case.
15:05:13 Once again, I'm happy to have him answer
15:05:15 your questions to the extent that you'll agree that
15:05:17 his answers don't constitute a waiver for work
15:05:21 product privilege, either regarding this witness or
15:05:23 any other witness in the case.
15:05:25 MR. MUDGE: I'll stipulate for purposes of
15:05:27 getting the answers from this witness, sure.
15:05:30 MR. BERL: Generally speaking as to his
15:05:31 examination?
15:05:32 MR. MUDGE: As to his examination today,
15:05:35 yes.
15:05:38 Would you like the reporter to read the

15:05:40 question back? I'm sure you've forgotten it by now.

15:05:44 THE WITNESS: I've forgotten the question

15:05:45 and I don't understand the work product business, but

15:05:47 go ahead.

(Record read as follows:

15:04:09 QUESTION: And can you tell me

15:04:10 generally what was the subject

15:04:12 matter of that discussion?)

15:06:00 THE WITNESS: Yes. He wanted to know if I

15:06:02 was the David Schwartz that used to be the founder or

15:06:06 was the founder of CompuSound and CompuSonics, and

15:06:11 the inventor of a particular couple of patents.

15:06:17 MR. MUDGE: I didn't mean to cut you off.

15:06:20 THE WITNESS: I confirmed that and he asked

15:06:21 me if I would mind possibly becoming either a witness

15:06:26 or -- either testifying or becoming an expert

15:06:30 witness, or exploring the possibility of me being

15:06:35 useful to a legal case that WSGR is involved with.

15:06:41 BY MR. MUDGE:

15:06:42 Q. Did Mr. Gourvitz identify the case at that

15:06:45 time to you?

15:06:45 A. No, not in that first phone call, no.

15:06:49 Q. Did you have subsequent communications with

15:06:51 any Wilson, Sonsini attorneys after that call that

15:06:54 you just described with Mr. Gourvitz?

15:06:58 A. Yes, that led to a meeting here at this building.

15:07:04 Q. Approximately when did that meeting take place?

15:07:11 A. Beginning of December sometime, I think.

15:07:16 Q. Did you come by yourself, or did you have anybody come with you?

15:07:19 A. I came alone, myself.

15:07:23 Q. And who was at the meeting with you?

15:07:27 A. I met with several attorneys who work here, Gourvitz. No, I can't remember everybody's names, but the fellow who was here earlier in the red tie with the white shirt and the black-rim glasses.

15:07:42 Q. Mr. Barclay?

15:07:44 A. Thank you. I think this lady right here --

15:07:47 Q. Ms. Mucchetti?

15:07:49 A. -- was in the meeting. Evan Gourvitz was in the meeting. And I'm not -- I don't remember David Berl being there.

15:08:01 I don't think you were there at the first meeting.

15:08:04 Q. Approximately how long did that meeting last?

15:08:06 A. Less than an hour.

15:08:09 Q. Did you meet in a conference room?

15:08:12

15:08:14 A. Yes, a smaller conference room than this.

15:08:17 Q. Did you bring any materials with you to the meeting?

15:08:19

15:08:23 A. No, I did not.

15:08:27 Q. Do you recall generally the nature of the discussion that took place at this meeting?

15:08:28

15:08:32 A. Yes. Well, it wasn't much of a discussion. It was more of an interrogation.

15:08:35

15:08:37 The lawyers for this firm wanted to know what I remembered and what I knew about what CompuSonics used to do. You know, to what extent I was still familiar with this stuff.

15:08:41

15:08:44

15:08:50

15:08:55 Q. And did the lawyers for Wilson, Sonsini that you met with ask you specific questions about downloading audio or video information over telecommunication lines?

15:08:58

15:09:03

15:09:07

15:09:10 MR. BERL: I'd like to restate my objection here and repeat that we consider the substance of these communications, to the extent that they fall outside of the subject matter of the deposition today, to be covered by work product and, once again, if you'll allow some kind of stipulation so that this is not waived, I'll be happy to have him answer.

15:09:11

15:09:22

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15:09:22

15:09:23

15:09:27

15:09:44 MR. MUDGE: I will stipulate, again, for purposes of allowing the testimony to come forward

15:09:45

15:09:50 today. So to the extent the witness answers today, I
15:09:53 will stipulate that that would not waive whatever
15:09:56 work product --
15:09:59 MR. BERL: The testimony he gives throughout
15:10:00 the course of this deposition.
15:10:08 MR. MUDGE: That's correct.
15:10:09 Would you repeat the question, please.
(Record read as follows:
15:08:55 QUESTION: And did the lawyers for
15:08:58 Wilson, Sonsini that you met with
15:09:00 ask you specific questions about
15:09:03 downloading audio or video
15:09:05 information over telecommunication
15:09:08 lines?)
15:10:34 THE WITNESS: I'm pretty sure they did not
15:10:36 in that meeting, in the first meeting.
15:10:41 BY MR. MUDGE:
15:10:41 Q. Were there additional meetings that you had
15:10:43 with the lawyers with Wilson, Sonsini?
15:10:47 A. Yes.
15:10:48 Q. How many such additional meetings took
15:10:50 place?
15:10:56 A. I believe only one face-to-face meeting
15:11:02 after that, and that was this week, on Monday. There
15:11:08 could have been one in between, but I don't think so.

15:11:16 Q. Going back to the first meeting you referred
15:11:18 to in December, I understand that you were asked
15:11:25 general questions about the nature of the work done
15:11:28 at CompuSonics. At the end of the meeting, did they
15:11:31 ask you to do anything?
15:11:32 A. Yes.
15:11:33 Q. What did they ask you to do?
15:11:35 A. They asked me to -- they asked me to rummage
15:11:39 through my closets and garage to find whatever
15:11:43 documents and stuff from CompuSonics I might still
15:11:49 have in the archives, such as they are.
15:11:55 Q. Did they ask you to do anything else other
15:11:57 than look for materials, as you've described?
15:11:59 A. Well, that was the first thing they asked me
15:12:01 to do. Then after I found many boxes of stuff, they
15:12:11 asked me to send -- if they could have somebody pick
15:12:15 up some of it, you know, one of the scrapbooks, which
15:12:21 had some specific articles --
15:12:27 Well, in one of the telephone conversations
15:12:29 in between, it had come up that they wanted to know
15:12:31 about the telerecording thing and did I have any
15:12:34 documentation of it, you know, of my own in those
15:12:38 boxes or anything about it.
15:12:39 And I did find a scrapbook that had some --
15:12:43 I'm not sure it's these articles, but articles that

were written about it. And I let their messenger pick up one of the scrapbooks, where I'd put little yellow sticky flags on the articles that pertained. So they had that book, they had that scrapbook.

Q. Do you remember approximately when they picked up the scrapbook from you?

A. First or second week in December, I think. Something like that.

Q. You mentioned a few minutes ago that you also located a couple of boxes, I believe, of materials.

A. Oh, ten boxes of materials. After they looked at the --

Well, ask the question.

Q. Well, at some point after they had the scrapbook, did they ask you to turn over the other boxes of materials?

A. They asked if I would mind going through them and finding more stuff, and I said yes, I would mind, because I don't have the time to go digging through ten dusty boxes of who knows what; disks, pictures, you know. I just didn't have the time to do it.

So they said, well, how about we assure you we won't lose anything, but we'll just have somebody

15:14:01 pick up all of the boxes and bring them to our office
15:14:03 and we'll rummage through them and assure you we
15:14:06 won't lose anything. And I said sure.
15:14:11 Q. Approximately when -- strike that.
15:14:13 So did they send somebody out to pick up the
15:14:15 other boxes?
15:14:16 A. Yes.
15:14:16 Q. Approximately when did that take place?
15:14:22 A. I'm not sure if that was before the
15:14:24 Christmas break or after. I can't remember exactly
15:14:27 when that was. They had the boxes for several weeks
15:14:31 somewhere, you know, for a two or three week period,
15:14:36 I think.
15:14:38 Q. After they picked up the boxes from you, did
15:14:43 they ask you to do anything further in connection
15:14:46 with locating materials?
15:14:50 A. They -- and this was fairly recently, maybe
15:14:53 two weeks ago -- they actually sent me a box which
15:14:58 had two binders in it and a videotape. And the
15:15:00 binders had photocopies -- I'm not sure, some of it
15:15:04 was this material -- photocopies of stuff they had
15:15:07 found in the ten boxes, along with a copy of the -- a
15:15:10 videotape from among the videotapes that were in some
15:15:15 of those boxes, and asked me to flip through them and
15:15:20 familiarize -- and refresh my own memory and watch

15:15:23 the tape, which I did.

15:15:29 Q. Did they return the other materials too, the other nine boxes or so worth of materials?

15:15:34 A. Ten boxes, yes. They're back in my garage, yes.

15:15:36 Q. Did you at any time go back and look at those materials in your garage to see what else was there?

15:15:40 A. No, no.

15:15:42 Q. Now, after the meeting in early December, were there --

15:15:55 You've referred to a couple of communications in connection with transmitting materials. Did you have any other telephone communications, other than -- let me strike the whole question.

15:15:55 After the meeting in December when you came here and met with the Wilson, Sonsini attorneys, did you have communications with them, other than the communications you've just described with respect to picking up materials from your house and taking them to the Wilson offices?

15:15:57 A. Yes. There was at least one telephone call where they asked me if I knew where they could find some of the parties that were mentioned in these

documents.

Q. Which parties did they ask you about?

A. John Stautner, for example, Heinz Sohn, Gary Schwede. The names, you know, that appeared on some of these documents.

Q. And what did you tell them about your knowledge of the whereabouts of these individuals?

A. Well, I knew where Gary was. I told them where Gary was and where John Stautner was. I had no idea where Heinz was.

Q. And do you know where John Stautner is today?

A. Yes.

Q. Could you tell me?

A. Well, I don't know where he is physically at the moment, but I know where he works.

Q. Yes. Where is that, please?

A. Compaq Computer in Houston, Texas.

Q. And Mr. Sohn, you said you know where he is as well?

A. No, I don't.

Q. Gary Schwede, do you know where he is?

A. Yes. Well, I don't know the exact address, but he lives in Palo Alto, California.

Q. Now, before your meeting with the Wilson

15:17:50 attorneys this past Monday, did you have any other
15:17:52 meetings that you can recall between the first
15:17:54 meeting in December and this past Monday?
15:17:58 A. Just the telephone conversations. Several
15:18:02 fairly brief telephone conversations.
15:18:05 Q. Did they send you any e-mail communications?
15:18:11 A. Only one or two pertaining to when the boxes
15:18:18 could be picked up or, you know, somebody had to go
15:18:22 to the house and meet them, you know.
15:18:25 That was kind of a pain in the neck to
15:18:27 schedule. There was some e-mail about that.
15:18:32 Q. Did they ask you to give your evaluation of
15:18:38 the binders and the tape after they asked you to look
15:18:41 at it?
15:18:44 A. They didn't ask me for a written evaluation.
15:18:46 They asked me to spend time studying the materials,
15:18:51 which I did.
15:18:55 Q. Did they ask you to provide an oral
15:18:57 evaluation in any way about those materials?
15:19:04 A. Well, there was no debriefing, a formal
15:19:07 debriefing or lengthy description. There were some
15:19:14 "what did you think about" kind of things, or "did
15:19:15 you think this was on topic," or those sorts of, you
15:19:19 know, "are we on the right track" kind of questions.
15:19:23 Which I could answer briefly.

15:19:27 Q. In your answer you just referred to on topic
15:19:29 or on track. What do you mean by that?
15:19:32 A. Well, whether they --
15:19:35 It became pretty clear to me that what they
15:19:37 were interested -- these guys were interested in
15:19:39 talking about was the telerecording aspects of what
15:19:42 CompuSonics did and the various, you know, bits and
15:19:46 pieces of that. People who might know about it or
15:19:53 have done something similar in the past before we
15:19:56 did, things like that.
15:19:58 Q. And what information were you able to
15:19:59 provide them in connection with their interests about
15:20:03 telerecording?
15:20:05 A. Well, I pointed out the names that I knew of
15:20:09 people who had been involved in the field before I
15:20:13 was. You know, prior to 1984. I provided some
15:20:19 names, some of which appear in these various papers
15:20:23 and references and footnotes.
15:20:27 Q. Can you recall who those names -- what those
15:20:29 names were?
15:20:30 A. Well, for example, Dr. Thomas Stockham of
15:20:32 the University of Utah, who was the founder of
15:20:38 Soundstream in the 1970s. The man who's responsible
15:20:43 for the Telarc recordings, the 1812 Overture, the
15:20:47 first digital recording of the 1812 Overture.

15:20:51 It's a famous -- a landmark in audio history
15:20:53 is that digital recording of the 1812 Overture, which
15:20:58 blew out more speakers than I care to think about.
15:21:02 He's the guy who did it.
15:21:04 Q. Any other names that you can recall
15:21:07 providing to them?
15:21:10 A. Yes. Barry Blesser, who's a professor at
15:21:13 MIT. There may have been another couple of names.
15:21:30 Those are the only two that pop to mind right now,
15:21:33 two key figures in the industry.
15:21:38 Toshi Doi at Sony.
15:21:42 An unpronounceable Dutch last name at
15:21:44 Philips. The guy who was head of their compact disk
15:21:48 development group. Famous person, I just couldn't
15:21:52 spell or pronounce his name.
15:21:58 Q. Now, you've told me about a number of
15:21:59 communications you had with the Wilson, Sonsini
15:22:08 attorneys. Other than what you've already mentioned,
15:22:08 can you think of any other communications that you
15:22:08 had with them prior to this past Monday?
15:22:23 A. Nothing substantive that I can -- just the
15:22:27 phone calls we just discussed.
15:22:29 Q. And you had mentioned some e-mails a few
15:22:31 minutes ago.
15:22:32 A. Yes.

15:22:32 Q. Did you send them e-mails in return at
15:22:35 times?
15:22:36 A. Yeah, just a few, and as I recall, and I'm
15:22:39 sure they're still on my computer at work, they
15:22:41 pertain to scheduling either who would come to the
15:22:47 house to pick up the boxes or when I could get them
15:22:49 back. You know, that exchange.
15:22:52 There was no exchange pertaining to
15:22:54 technology or to this -- you know, the subject under
15:22:57 discussion here.
15:22:59 Q. Do you have any objection to making copies
15:23:01 of the e-mails available if you are requested?
15:23:03 A. I'll be glad to, assuming they're still
15:23:06 there and I can find them, yeah, no problem.
15:23:09 Q. Now, you mentioned you met with Wilson
15:23:12 attorneys this past Monday.
15:23:14 A. Yes.
15:23:14 Q. Where did you meet them?
15:23:15 A. Somewhere else in this building.
15:23:17 Q. Approximately how long did you meet with
15:23:19 them?
15:23:19 A. It was an hour and a half.
15:23:22 Q. And who was -- who attended the meeting?
15:23:26 A. David Berl, and I think the other couple
15:23:31 lawyers popped in and out.

15:23:33 I think you popped in for a minute?

15:23:37 MS. MUCCHETTI: I don't think so.

15:23:39 THE WITNESS: No, then the other guy. Was it the other guy? The guy with the black-rim glasses, Michael.

15:23:44 BY MR. MUDGE:

15:23:45 Q. Mr. Barclay?

15:23:46 A. Yes, I think he stopped in for a moment.

15:23:49 MS. MUCCHETTI: I've never been mistaken for Michael Barclay.

15:23:52 THE WITNESS: Well, he didn't sit down. He just said hi and left.

15:23:57 I know why he came in. He had Gary Schwede with him. He said, I think you remember Gary, because he knew we used to work together. So he just brought Gary in and we said hello and that was it.

15:24:10 BY MR. MUDGE:

15:24:10 Q. Did you speak with Mr. Schwede during the meeting that you had here?

15:24:15 A. No. Well, I said, hi, Gary, how you've been.

15:24:19 Q. Before the meeting, did you speak with Mr. Schwede about this case in any way?

15:24:26 A. No, did not.

15:24:29 Q. Have you spoken with Mr. Schwede since your

15:24:31 meeting on Monday with Wilson?

15:24:33 A. No.

15:24:38 Q. I believe you said the meeting you had on

15:24:40 Monday was about an hour and a half?

15:24:42 A. Yes.

15:24:42 Q. And your best recollection is, though, it

15:24:45 was with Mr. Berl?

15:24:46 A. Yes.

15:24:48 Q. Primarily with Mr. Berl?

15:24:49 A. Yes, it was with Mr. Berl.

15:24:51 Q. What did you discuss at that meeting?

15:24:53 A. We discussed the -- I don't know if it was

15:24:58 exactly these documents, but some of them. You know,

15:25:03 what they were about.

15:25:06 I think he was verifying that I remembered

15:25:08 them and that I had actually read them at some point

15:25:10 in the past.

15:25:12 Q. Did Mr. Berl explain that he was intending

15:25:16 to introduce some of those documents in your

15:25:18 deposition today?

15:25:22 A. I think he may have said that.

15:25:24 Q. Did Mr. Berl ask you questions about the

15:25:28 subject matter of which you've testified earlier

15:25:30 today?

15:25:31 A. Yes, he did.

15:25:32 Q. Do you remember what questions he asked you?

15:25:34 A. They were variations on the same ones he asked me today. Not as many.

15:25:49 Q. Did he ask you to respond to those questions during the meeting?

15:25:59 A. Yeah. Not at length, but, yes, yes. I gave brief responses.

15:26:05 Q. And do you recall any of those responses that you provided on Monday different in any substantive way from the information you provided today?

15:26:14 A. Other than being shorter? No.

15:26:20 Q. Did Mr. Berl ask you to emphasize any particular matter in connection with your responses to his questions that were going to be asked today?

15:26:28 A. No, he did not.

15:26:33 Q. Did you have an understanding as a result of your meetings and communications with Wilson, Sonsini as to whether you should expound on certain elements of the information you were providing today?

15:26:43 A. It was -- I don't think David told me, but it was clear to me that what was of interest here was the processes surrounding telerecording. You know, the aspects -- all the aspects about, you know, music being digitized and sent here and there.

15:27:02 Q. And was it your understanding that to be
15:27:04 helpful, it would be better for you to provide,
15:27:09 volunteer information about telerecording?
15:27:12 A. He told me to just answer the questions as,
15:27:15 you know, directly as I could, as clearly as I could
15:27:19 and in as plain language as I could.
15:27:25 Q. Now, other than the attorneys at Wilson,
15:27:29 Sonsini that you've already mentioned that you've
15:27:32 spoken with, have you spoken with anybody else about
15:27:42 your testimony here today or your appearance here
15:27:42 today at the deposition?
15:27:42 A. No. Well, my wife. She knows where I am
15:27:45 and what I'm doing.
15:27:46 Q. Have you had any occasion to speak with any
15:27:50 attorneys from the firm called Morgan, Lewis &
15:27:52 Bockius about your testimony here today?
15:27:56 A. Doesn't ring a bell, no.
15:27:59 Q. Have you spoken with any employees of CDNOW
15:28:03 about your testimony here today?
15:28:05 A. No.
15:28:11 Q. Do you know what kind of company CDNOW is?
15:28:14 A. Only what I've seen on the Internet. I
15:28:18 believe I visited their website sometime in the past.
15:28:22 Q. Approximately how many times had you visited
15:28:25 CDNOW's website?

15:28:27 A. Once.

15:28:27 Q. And approximately when was that?

15:28:28 A. Last summer, I believe.

15:28:33 Q. After you received the call from Mr. Gourvitz, the first call, did you undertake to look at any Internet sites in connection with the subject matter that you're looking at?

15:28:47 A. None.

15:28:55 Q. Do you know anything about the plaintiff in this case, SightSound?

15:29:00 A. As a business? No, nothing.

15:29:03 Q. Had you heard of them as a company before today?

15:29:06 A. I haven't heard of them as a company. I've seen their name.

15:29:11 Q. Do you know or recall what context you saw their name?

15:29:14 A. I'm pretty sure I saw their name on one -- between one and three patents, I believe three. I'm not sure if it's on all three of the patents I looked at or just one.

15:29:28 Q. And you just referred to some patents you looked at.

15:29:30 A. Yes.

15:29:31 Q. When did you look at these patents?

15:29:34 A. They were provided -- those binders that
15:29:36 came in the box, you know, three weeks ago or
15:29:40 whenever I got the box from Wilson, Sonsini, in the
15:29:43 binders or with them or attached to them or somewhere
15:29:47 in the box were three -- xeroxes of three U.S.
15:29:50 patents that were to a guy named Hair, I believe.
15:29:55 Q. Arthur Hair, perhaps?
15:29:58 A. I don't remember the first name.
15:30:03 Q. And was there any other materials in the
15:30:04 binders that you received from Wilson, Sonsini other
15:30:06 than the patents you just described which -- strike
15:30:11 that. Let me back up.
15:30:13 The three patents you just referred to that
15:30:15 were in the set of materials that you received from
15:30:17 Wilson, Sonsini, had they come from materials that
15:30:20 you provided to them?
15:30:22 A. No. I'm pretty sure they were nowhere in
15:30:26 those ten boxes of CompuSonics stuff.
15:30:30 Q. Other than those three patents you just
15:30:31 mentioned, were there any other materials that you
15:30:35 found in the box that came back to you that you had
15:30:37 not provided to Wilson, Sonsini?
15:30:46 A. The only other thing in the box, which I
15:30:48 think I threw in the box in my office, was a copy
15:30:51 of -- whatever it's called, the summons to come here

15:30:55 1 today. There was a copy of that, but I think I put
15:30:58 2 that in the box at my office when I gathered the
15:31:01 3 stuff up to take it, you know, home.
15:31:11 4 Q. Now, you mentioned that you had seen the
15:31:14 5 three Hair patents --
15:31:16 6 A. Yes.
15:31:17 7 Q. -- in the box from Wilson, Sonsini.
15:31:19 8 A. Yes.
15:31:19 9 Q. Did you review the patents?
15:31:20 10 A. Yes, I did read them to the extent that I'm
15:31:23 11 capable of reading them. They're fairly technical,
15:31:29 12 languagewise.
15:31:32 13 Q. And did the folks at Wilson, Sonsini ask you
15:31:33 14 to take a look at those patents?
15:31:35 15 A. Yes, they did.
15:31:36 16 Q. Did they ask you to evaluate or provide any
15:31:40 17 reaction to those patents?
15:31:42 18 A. Well, they asked me for my opinion, you
15:31:44 19 know, what I thought of them in general.
15:31:48 20 Q. And what did you tell them?
15:31:50 21 A. I said, if they were trying to patent or had
15:31:52 22 gotten patents on what I think they'd gotten patents
15:31:55 23 on, somebody at the Patent Office had a screw loose.
15:32:00 24 A guy with a Vietnamese last name, Nguyen something
15:32:05 25 or other. Something Nguyen, N-G-U-Y-E-N. The

15:32:09 examiner. I said the examiner has a screw loose, I think was my conclusion.

15:32:21 Q. Were you asked to take a look at the patent claims, the claims contained in the patents?

15:32:28 A. Not specifically. I was asked to read the patents.

15:32:36 Q. Were you asked to undertake any evaluation of those patents as against any system that's out there today for downloading digital signals?

15:32:45 A. No.

15:32:50 Q. When you reviewed the patents, did you, in reviewing them, did you come to some understanding of your own as to what you thought Mr. Hair was attempting to patent?

15:33:04 A. I think so. I'd have to be vague. I think I know, I'm not sure I know. I could give you my opinion of what I think the patent is supposed to be.

15:33:19 MR. BERL: I'm going to object here to the extent this calls for a legal opinion.

15:33:24 MR. MUDGE: And I'm not asking for a legal opinion, sir. I'm just asking for whatever understanding you obtained as a result of the review of the patents you undertook at Wilson's request.

15:33:34 THE WITNESS: I believe that what Hair is trying to patent is a system for what we used to call

15:33:42 telerecording. That's what it looked like to me.

BY MR. MUDGE:

15:33:57 Q. Now, other than the things you've already told us about in answer to my questions, were you asked to undertake any other analysis or review of any materials by Wilson, Sonsini?

15:34:13 A. Other than what was in those binders and the patents themselves, no.

15:34:17 Q. Right.

15:34:18 A. No.

15:34:29 Q. I think I recalled from your testimony earlier today, and forgive me if I forget, it's a number of hours ago, you are a president of ImaginOn, is that correct?

15:34:40 A. Yes, CEO and founder, yes.

15:34:45 Q. And are you also a director of that company?

15:34:47 A. Yes.

15:34:48 Q. Do you own any stock in that company?

15:34:50 A. I own about 10% of the company.

15:34:55 Q. Are you an officer or director in any other company currently?

15:34:58 A. No.

15:35:02 Q. Do you own stock in CDNOW?

15:35:05 A. No.

15:35:07 Q. Do you own stock in Bertelsmann?

15:35:11 A. No. Let me just say for the record that I
15:35:12 do not have an investment portfolio. I own some
15:35:16 shares in a mutual fund, a Scudder Fund, Scudder
15:35:19 International Fund, and the stock in my own company,
15:35:24 and that's it.
15:35:30 Q. And would you mind describing for me,
15:35:33 briefly, what is the nature of the business that
15:35:36 ImaginOn carries out today?
15:35:39 A. We're an information technology company. We
15:35:41 develop systems for transmitting and playing back
15:35:49 digital video and audio files and text files.
15:35:53 Various different forms of data over Internet and
15:35:56 intranets.
15:36:00 Q. Does this involve transferring digital audio
15:36:06 or digital video information over the Internet from
15:36:08 one location to another?
15:36:09 A. Yes.
15:36:18 Q. Does ImaginOn operate a service in which it
15:36:22 receives compensation for such transmissions?
15:36:25 A. That's part of our business, yes.
15:36:28 Q. How long has ImaginOn been in the business
15:36:31 of transferring audio or video information over the
15:36:35 Internet?
15:36:41 A. We acquired a company called iNow in
15:36:44 San José in March 1999. They are an ISP, an Internet

15:36:53 service provider, and at the time, as soon as we took
15:36:56 them over, you could say at that point we inherited
15:37:02 that business because some of their servers contained
15:37:04 audio and video information that was hosted on behalf
15:37:08 of their client.
15:37:16 Q. And prior to the time you took over iNow,
15:37:19 had ImaginOn conducted a business involving the
15:37:22 transfer of audio or video files over the Internet?
15:37:30 A. There were some incidental transfer of audio
15:37:33 or video files in a product called WebZinger, which
15:37:40 is capable of retrieving audio or video files for a
15:37:44 user. That product failed its test marketing in
15:37:47 1999, so it was never widely deployed.
15:37:57 Q. Currently, the service that ImaginOn
15:38:00 conducts that does involve transferring audio or
15:38:03 video information, is there a name that's supplied
15:38:05 for that service?
15:38:07 A. The name of the system is called ImaginOn
15:38:10 Video, and you can visit the website ImaginOn.com and
15:38:14 there's more than you ever wanted to know about this
15:38:16 business.
15:38:18 Q. Who are the customers of ImaginOn for the
15:38:23 video service you just described? And I'm not asking
15:38:26 for you to name specific entities, just generally
15:38:29 speaking.

15:38:30 A. Businesses that are in the business of
15:38:31 communicating or selling products where they want to
15:38:33 use interactive television, basically, over the
15:38:36 Internet as opposed to television over cable. The
15:38:42 product's relatively new. We launched it in April of
15:38:45 last year, and we've delivered maybe a dozen such
15:38:48 systems.
15:38:53 Q. When you say you've delivered a dozen such
15:38:55 systems, are these systems that allow your customers
15:38:57 to undertake delivery of audio or video information?
15:39:01 A. Yes, sir.
15:39:04 Q. And, again, if I understand your answer a
15:39:06 couple minutes ago, the customers are generally
15:39:08 business customers as opposed to consumers?
15:39:11 A. Yes, they are businesses. They're all
15:39:13 businesses. We do not sell to consumers.
15:39:21 Q. Do you have an understanding as to the
15:39:22 nature of the video or audio information that your
15:39:25 customers are using your systems to transfer?
15:39:28 MR. BERL: I'll object as vague.
15:39:33 THE WITNESS: I don't -- I only know from
15:39:34 samples, you know, from looking at those customers'
15:39:37 servers, their sites, to see what they're doing.
15:39:39 For example, one is Golf Magazine, and the
15:39:44 video is entirely golfing clips, golf training, golf

15:39:47 resorts, golfing discounts, golf balls, golf bags. I mean, it's all golf all the time.

These are specific businesses and each one, you know, has its own stuff. There's a bicycle company and all their stuff is bicycles and trails that you would bicycle on. Things like that.

Q. I'd actually like to now go back and ask you a few follow-up questions in connection with some of your information that you provided earlier today.

You talked about some demonstrations or tests that have been conducted and you described them, I think, for the record. But I just want to make clear, did any of those tests involve a transaction which involved a payment of money or a fee of any kind?

A. No.

Q. And I think you mentioned that in the Chicago to New York demonstration that you took part in, there had been scripts prepared to facilitate the transfer of files?

A. Yes.

Q. If those scripts had not been prepared, was there software functionality that was available for commercial sale which would have undertaken the step of picking out a particular audio file and sending it

over the telephone lines, as you've described, to another site?

MR. BERL: Vague.

THE WITNESS: The operator of the system could type a command -- these are computers -- to do anything they wished with any named file. If the file was music, it would pick it out and send or fetch that music. If it were a Word document, it would go get that.

These are computers, fundamentally. So they're at the operator's command. Could you automate those processes, like you can automate any computer? Sure.

That's what we did with the scripts. We automated the process to make the demo flow to avoid keystroke error so we wouldn't flub it in front of the press.

BY MR. MUDGE:

Q. Now, I want to focus now on the commercial units that were sold to -- the commercial, I guess the 2002 units that you sold.

Was there functionality provided in the commercial units that the operator could type in a command to fetch a file and essentially transmit it electronically to a remote location?