

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

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GOOGLE LLC,	)	
	)	
Petitioner,	)	
	)	
vs.	)	Case No.
	)	IPR2024-00212
SECURITY FIRST INNOVATIONS,	)	
LLC,	)	
	)	
Patent Owner,	)	
	)	

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WEDNESDAY, JANUARY 22, 2025

ZOOM DEPOSITION OF SAMRAT BHATTACHARJEE, PH.D.

VOLUME II

CONFIDENTIAL TRANSCRIPT

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A P P E A R A N C E S

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INDEX OF EXAMINATION

---o0o---

SAMRAT BHATTACHARJEE, PH.D.

PAGE

BY MS. WOO

4

BY MR. ELLIOTT

60

BY MR. NIEBERG

101

INDEX OF EXHIBITS

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(None Marked.)

REMOTE VIA ZOOM, CALIFORNIA, JANUARY 22, 2025

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BE IT REMEMBERED that on Wednesday, the 22nd day of January 2025, commencing at the hour of 7:57 a.m. thereof, remotely via Zoom, California, before me, Balinda Dunlap, a Certified Shorthand Reporter in and for the County of San Francisco, State of California, remotely appeared:

SAMRAT BHATTACHARJEE, PH.D.

a Witness herein; called as a witness by the Patent Owner; who, after having been duly sworn by the Certified Shorthand Reporter to tell the truth, the whole truth, and nothing but the truth, testified as follows:

EXAMINATION BY MS. WOO

Q. Good morning, Dr. Bhattacharjee. First, thank you so much for agreeing to push the deposition. I really appreciate it.

So just so you know, I'll be conducting the first half, and then Mr. Elliot will be conducting the second half of our two-part deposition.

Is there any reason today you might not be able to provide truthful or accurate testimony?

A. No.

Q. Are you currently under the influence of

any substance that may preclude you from providing truthful or accurate testimony?

A. No.

Q. Do you understand you're testifying under oath?

A. Yes.

Q. Do you have clean copies of the filings in this IPR?

A. I have electronic copies of the replies. I'm not sure that I have -- I don't have printed copies of anything.

Q. Okay. But are the -- those replies that you mentioned, are they clean copies?

A. Yes.

Q. And do you have copies of the exhibits in this IPR?

A. I do.

Q. If you would like to access any documents during this questioning, I just ask that you let me know what document you are reviewing so I know the basis of your opinion; is that fair?

A. That's fair.

Q. Okay. Approximately how many hours did you spend preparing for your deposition today?

A. Between 10 to 15, I would think.

Q. And what did you do to prepare?

A. I looked at the reply declarations that I provided. I also looked at the references, the patents at issue, some of the references that I cited. I looked at the institution decisions. I also briefly looked at patent holder's reply and also Dr. Rubin's declarations. Those are some of the things I looked at.

Q. Okay. And approximately how many hours did you spend preparing the second declaration?

A. I mean, there were three reply declarations. I'm not sure in total how many hours it was, but I wouldn't be surprised if it was about 20 or so.

Q. Okay. Is there any change in your opinions as stated in your declarations?

A. No, there were no changes. I did find some typos when I was going through them.

Q. Okay. Why don't we pull up your reply declaration. Why don't we start with the '854. So that's Exhibit 1111.

How do you prefer we review this? Do you want to pull up your own copy electronically, or should I share my screen?

A. Either way. Or if you could put a clean

A. Yeah. There was a heading that has a weird word in it. It is above paragraph 185.

Q. I think I found the heading.

A. Yeah. The heading should be "POSAs would not have agreed" as opposed to "unagreed."

Q. I see. All right. Thank you.

So if we could return to your '854 declaration, did you note any typos in this declaration?

A. Not that I recall.

Q. Okay. So if we go to paragraph 3 of your declaration, just let me know when you're there.

A. Of the '854 declaration?

Q. Yes.

A. Okay.

Q. This is a list of the documents you reviewed in connection with preparing your second declaration, correct?

A. That's correct.

Q. Did you review a copy of the transcript from your first deposition in forming your opinions in the second declaration?

A. I don't recall whether I did that or not.

Q. And then if we can scroll to paragraph 8 of the same declaration.

copy in the chat, then maybe I could just work off of that.

Q. Of course. So I'm just uploading a clean copy of your '854 declaration. Please let me know when you have it open.

A. Yeah. I'm having some issues opening, but let me see. Yes, I have it open now.

Q. Okay. So do you want to point me to where you noted your typos?

A. I think I noted the typos primarily on the '609.

Q. Oh, I see. Why don't I drop that one in, then. Okay. It should be uploading.

A. The two typos I noticed were near paragraph 1 -- in paragraph 145.

Q. 45?

A. 145.

Q. Okay. I'm at paragraph 145.

A. In the very first sentence it states, "In its POR, SFI admits that the '609 copies Orsini's Figures 1-25 and paragraphs 1-[4]23, which SFI does not" -- and there should be the word "dispute" -- "does not disclose most of claim 1." There's the word "dispute" that's missing.

Q. Do you notice any other typos?

A. Okay.

Q. So in this paragraph you set forth your understanding of the analysis for analogous art; is that right?

A. In this paragraph I discuss what counsel told me about what analogous art should be, yes.

Q. Okay. Do you recall being informed that when considering whether a reference is reasonably pertinent to a problem, whether one should identify the problem to which that reference relates?

MR. NIEBERG: I'm just going to counsel Dr. Bhattacharjee not reveal the substance of any attorney-client conversations.

THE WITNESS: Oh, I have written down what I was told about pertinence and problems in this paragraph.

Q. BY MS. WOO: So do you recall being told anything about the analogous art analysis that does not appear in this paragraph?

MR. NIEBERG: Object to form. And again, I'll caution Dr. Bhattacharjee not to reveal the substance of any attorney-client conversations.

THE WITNESS: I think this paragraph is a good summary of the law as I was told.

Q. BY MS. WOO: Okay. To your understanding,

1 would one consider a reference's title when
2 determining that reference's field of endeavor?

3 A. I mean, I'm not a lawyer, and I'm not sure
4 if that's a legal analysis or not, but one would
5 consider the entire reference. And as part of that,
6 one would look at the title as well.

7 Q. To your understanding, would one consider a
8 reference's abstract when determining that
9 reference's field of endeavor?

10 A. Again, I'm not a lawyer. Not sure whether
11 this was a legal analysis or not, but one would
12 consider the entire reference and, as part of that,
13 would consider the abstract as well.

14 Q. And to your understanding, would one
15 consider a reference's background section when
16 determining that reference's field of endeavor?

17 A. I'm not a lawyer. I'm not sure "field of
18 endeavor" is a legal standard or legal analysis or
19 not. But certainly one would consider the entire
20 reference, including its background, in trying to
21 understand the reference.

22 Q. And to your understanding, when considering
23 whether a reference is reasonably pertinent to a
24 problem, should one identify the problem to which
25 that reference relates?

1 that are being considered and the entire teaching of
2 both of the -- both the patent at issue and also the
3 reference.

4 Q. BY MS. WOO: Have you ever heard of someone
5 named Bruce Schneider?

6 A. I have -- maybe -- don't know --

7 MR. NIEBERG: I'll say object to form.

8 THE WITNESS: I have -- I mean, there is a
9 cryptographer of a security research whose name, I
10 think, is Bruce Schneider. I have heard of him or
11 if there is somebody else. I'm not sure who you are
12 referring to.

13 Q. BY MS. WOO: I believe I'm referring to
14 that Bruce Schneider. So would you consider the
15 Bruce Schneider you mentioned in your previous
16 answer to be an expert in computer security?

17 MR. NIEBERG: Object to form. Scope.

18 THE WITNESS: Oh. I mean, I don't know the
19 full extent of Mr. -- or Dr. Schneider's expertise,
20 but I think he's written a fair amount about
21 computer security. And depending upon the context,
22 he may be an expert in computer security, yep.

23 Q. BY MS. WOO: Do you consider Bruce
24 Schneider to be an expert in cryptography?

25 MR. NIEBERG: Object to form. Scope.

1 MR. NIEBERG: Object to form.

2 THE WITNESS: Can you ask me that question
3 again?

4 Q. BY MS. WOO: Sure. Yeah.

5 To your understanding, when considering
6 whether a reference is reasonably pertinent to a
7 problem, should one identify the problem to which
8 that reference relates?

9 MR. NIEBERG: Object to form.

10 THE WITNESS: I think there is an
11 assumption in your question, which I'm not sure
12 always holds, which is there is only one problem
13 that this reference relates to.

14 But, of course, in looking at whether a
15 reference is pertinent to a problem, that you would
16 look at all of the problems that this particular
17 reference is addressing and discuss it.

18 Q. BY MS. WOO: So in considering whether a
19 reference is reasonably pertinent to a problem or
20 problems, should one consider the problems that the
21 patent at issue and the reference relate to?

22 MR. NIEBERG: Object to form.

23 THE WITNESS: Oh, I think one would look at
24 the patent at issue, the problems it is considering
25 and a related reference, and look at the problems

1 THE WITNESS: I would have to take a look
2 at the specific cryptography at issue. And also, I
3 don't recall Mr. -- or Dr. Schneider's, you know,
4 particular applications or expertise in that matter
5 off the top of my head.

6 Q. BY MS. WOO: Okay. Why don't we turn to
7 Foster, and I will drop a clean copy again into the
8 chat. So that is Exhibit 1006, I believe, in all
9 three matters, but correct me if I'm wrong.

10 THE WITNESS: I have looked at the Foster
11 reference as you sent it over.

12 Q. BY MS. WOO: When did you last review
13 Foster?

14 A. I looked at parts of Foster recently.

15 Q. How recently?

16 A. Maybe over the weekend.

17 Q. Okay. Do you see when Foster was filed?

18 A. I believe it says April 18, 2002.

19 Q. So would it be fair to say that Foster's
20 time frame is roughly 2002?

21 MR. NIEBERG: Object to form.

22 THE WITNESS: Again, I'm not a lawyer, but
23 Foster presumably was filed in that time frame, yes.

24 Q. BY MS. WOO: Okay. Why don't we look at
25 Figure 1, and let me know when you're there.

1 A. Okay. I'm there.

2 Q. What does Figure 1 depict?

3 MR. NIEBERG: Object to form.

4 THE WITNESS: Oh, I mean, there's a
5 description of Figure 1 in Foster. We can go
6 through that if you like.

7 Q. BY MS. WOO: Sure. Are you referring to
8 paragraph 49?

9 A. Oh, I mean, Figure 1 is discussed first in
10 paragraph 15, says "Figure 1 depicts a flow diagram
11 of digital rights management system (DRMS)." And
12 then it's discussed in more detail starting
13 paragraph 49, yeah.

14 Q. What is a digital rights management system?

15 A. It's a broad term. It depends upon the
16 context in which it's used. But in general, if
17 there is a piece of content in the -- let's say,
18 owner or current owner or provider of the content
19 wants to put some access restrictions on it, then
20 one way to do it would be using a digital rights
21 management system.

22 Q. Can you give me a short explanation of how
23 the DRMS in Figure 1 works?

24 MR. NIEBERG: Object to form.

25 THE WITNESS: As stated in paragraph 49, it

1 states that as part of Figure 1, "content is
2 packaged with access rights/content usage conditions
3 and loaded onto media server. The keys used to
4 access the content are downloaded to a PC as a
5 separate component from the content.

6 "Specifically, either at download or at
7 rendering time, license server must be accessed to
8 receive permission to access the content and a
9 description of any corresponding usage conditions."

10 There's also a web server that provides
11 pages that walk the customer through the steps to
12 access the content on the media server.

13 Q. BY MS. WOO: Do you know if DRMS was used
14 in roughly 2002?

15 MR. NIEBERG: Object to form.

16 THE WITNESS: As I said, it's a broad
17 concept. Certainly certain types of DRMS or access
18 control systems were available and used in the early
19 2000s.

20 Q. BY MS. WOO: What type of content was DRMS
21 used to secure roughly around 2002?

22 A. I mean, again, DRMS is a broad concept. It
23 could technically be used to secure any kind of
24 digital content. For example, music, movies,
25 documents, even binary data, if necessary.

1 Q. Could DRMS around 2002 be used for -- to
2 secure television?

3 MR. NIEBERG: Object to form.

4 THE WITNESS: Depending on the system --
5 and I don't know exactly what you mean by
6 "television" in this context. But systems that
7 were -- that, say, transmitting data that were part
8 of television content could be secured using DRMS.

9 Q. BY MS. WOO: So in the next paragraph, in
10 paragraph 50, do you see that it says, "As shown,
11 the contents can be delivered through streaming
12 delivery, e.g., if the file is" too "large." Do you
13 see that?

14 MR. NIEBERG: Object to form.

15 THE WITNESS: I see that, except I think
16 you added the word "too."

17 Q. BY MS. WOO: Oh, sorry. "e.g., if the file
18 is large."

19 What is streaming delivery?

20 A. That, again, is a relatively broad concept,
21 but the idea of streaming delivery broadly is that
22 the content is transmitted at a rate that is
23 reasonably commensurate with the rate of playback.

24 Q. So my understanding of streaming is perhaps
25 colored by Netflix and Prime Video and such.

1 Was there any difference between streaming
2 today and streaming in the rough 2002 time frame?

3 MR. NIEBERG: Object to form. Scope.

4 THE WITNESS: The -- I mean, depending upon
5 at what level we're talking, there's certainly many
6 differences. For instance, some of the protocols
7 that are used today impact DASH, HLS, commonly used
8 protocols. I am not sure they existed back then.

9 But the basic idea of transmitting the data
10 at a rate commensurate with the play-out speed would
11 likely have been similar even 25 years ago.

12 Q. BY MS. WOO: Is there a difference between
13 streaming delivery and cable television?

14 MR. NIEBERG: Object to form.

15 THE WITNESS: I think that's a very broad
16 question. Again, streaming delivery can take very
17 many different forms. And without looking at a
18 specific system and the actual transmission
19 protocols they were using, I'm not sure I can answer
20 that.

21 And again, cable television also has very
22 many different protocols and systems that they used.
23 And, in fact, some cable television was even analog
24 in the early days. So it's not clear to me that I
25 can reasonably answer this question without looking

1 at specific systems for both streaming and cable
2 television.

3 Q. BY MS. WOO: Okay. Why does Foster say
4 that if the file is large, content can be delivered
5 through streaming delivery?

6 MR. NIEBERG: Object to form.

7 THE WITNESS: A philosophical question.
8 You may just have to ask Foster and the other
9 authors.

10 But in general, Foster discusses delivery
11 using download and streaming. And it says, for
12 example, if a file is large, and then one of the
13 options would be to use streaming delivery. That's
14 just a system choice that they're discussing.

15 Q. BY MS. WOO: So if a file is small, would
16 it not be delivered through streaming delivery?

17 MR. NIEBERG: Object to form.

18 THE WITNESS: I don't think we can draw
19 that implication and/or conclusion from here. This
20 is -- in paragraph 50, all this is saying is if a
21 file is large, then one of the options is streaming
22 delivery. It's saying nothing about not being able
23 to download large files, and it is not saying
24 anything about small files.

25 Q. BY MS. WOO: You said streaming delivery is

1 used to encrypt the content"?

2 A. I see that sentence.

3 Q. So why does DRMS fail to provide
4 synchronized delivery of the content with the keys
5 used to encrypt the content?

6 MR. NIEBERG: Object to form. Scope.

7 THE WITNESS: That said -- can you ask me
8 the question again, please?

9 Q. BY MS. WOO: Sure. Why does the DRMS fail
10 to provide synchronized delivery of the content with
11 the keys used to encrypt the content?

12 MR. NIEBERG: Object to form. Scope.

13 THE WITNESS: That's a -- that's a choice
14 that the DRMS designer has made. The keys in this
15 particular case has to be accessed from the licensed
16 server separately.

17 Q. BY MS. WOO: To your understanding, does
18 the DRMS referred to in paragraph 51 refer to the
19 DRMS depicted in Figure 1?

20 MR. NIEBERG: Object to form.

21 THE WITNESS: Oh, paragraph 51 says, "As
22 indicated above." And above is discussing Figure 1.
23 So at least in some DRMS systems that can be the
24 case.

25 Q. BY MS. WOO: Just to be clear, in

1 one of the options.

2 What are the other options?

3 MR. NIEBERG: Object to form.

4 THE WITNESS: Are we talking about Foster
5 in general or, I mean, with a delivery system?

6 Q. BY MS. WOO: We're talking about Figure 1
7 in Foster.

8 A. Figure 1 in Foster is a schematic of a
9 system, and it is not -- it can emit many types of
10 data transfer.

11 So, for instance, the content could be
12 streamed, at which content may be sent at a rate, as
13 I said, commensurate with play-out. It could be
14 downloaded, at which point the rate at which the
15 content is being sent is not necessarily related to
16 the play-out speed.

17 It could be -- it could be -- so as far as
18 the rate of transmission goes, it's either related
19 to the play-out or it could be faster or slower.
20 And then the content itself can be played or stored
21 to be played later and so on. All of those are
22 admitted by Foster.

23 Q. So in the next paragraph, paragraph 51, do
24 you see it says, "The DRMS fails to provide
25 synchronized delivery of the content with the keys

1 paragraph 51 when it says the DRMS, to your
2 understanding, is it referring to Figure 1's DRMS?

3 MR. NIEBERG: Object to form. Scope.

4 THE WITNESS: I think Figure 1 is broad by
5 itself. It's a system with different components,
6 and it's really the components of the system that
7 are being shown. And in some cases, using Figure 1
8 system, the keys and the content can be decoupled.
9 But the same figure and the same system can also be
10 programmed such as that is not the case.

11 Q. BY MS. WOO: And what is the basis for your
12 opinion that it can be programmed so that the keys
13 and content are not decoupled?

14 A. Because the components in Figure 1 don't
15 have to change in order for the keys to be coupled.

16 Q. And what is the basis for that opinion?

17 A. One of the bases is just the Foster
18 reference itself. It is discussing how such a
19 system can be used such that these decoupling of
20 keys and content does not have to happen.

21 Q. Is there a specific portion of Foster that
22 you're relying on?

23 A. I'll have to look through Foster, because a
24 lot of the reference is discussing coupling of the
25 keys and the content. So would you like for me to

1 look through Foster?

2 Q. Why don't we revisit that later.

3 In your opinion, is Figure 1 a depiction of
4 Foster's invention?

5 MR. NIEBERG: Object to form.

6 THE WITNESS: Figure 1 is a schematic of
7 different components, and Foster's invention can
8 certainly be implemented in a system such as
9 Figure 1.

10 Q. BY MS. WOO: As Figure 1 is depicted, is
11 Foster's invention implemented in Figure 1?

12 MR. NIEBERG: Object to form.

13 THE WITNESS: As I said, Figure 1 is a
14 relatively broad schematic of components, and
15 Foster's system can be implemented in the systems
16 using the components of Figure 1.

17 Q. BY MS. WOO: Okay. Why don't we look at
18 Figure 2.

19 What does Figure 2 depict?

20 MR. NIEBERG: Object to form.

21 THE WITNESS: Figure 2, as discussed in
22 paragraph 16, "Depicts a flow diagram of a
23 conditional access system, CAS."

24 Q. BY MS. WOO: And what is a conditional
25 access system?

1 at some of the techniques that are used, maybe those
2 would be considered DRMS.

3 Q. BY MS. WOO: In your opinion, is there a
4 difference between the DRMS depicted in Figure 1 and
5 the CAS depicted in Figure 2?

6 MR. NIEBERG: Object to form. Scope.

7 THE WITNESS: I mean, the two systems have
8 slightly different components. So in that way, the
9 CAS in Figure 2 is using terms that are mostly used
10 in cable systems, for instance. Maybe other systems
11 as well.

12 But overall, I think they're trying to
13 implement a similar goal but using different types
14 of components and different terminologies.

15 Q. BY MS. WOO: All right. Why don't we look
16 at paragraph 52. And around the middle of the
17 paragraph it says, "Thus, similar to the DRMS, the
18 CAS also fails to provide synchronized delivery of
19 keys with encrypted content." Do you see that?

20 A. I see that sentence.

21 Q. Do you understand "the DRMS" to be
22 referring to the DRMS depicted in Figure 1?

23 MR. NIEBERG: Object to form.

24 THE WITNESS: I think that's a fair
25 assumption.

1 A. It's, again, a broad term. The examples
2 given for conditional access system are cable or
3 satellite television systems in Foster. And it's,
4 again, a system that enables access to content
5 depending upon the -- whether the recipient meets
6 certain conditions.

7 Q. And do you know if CAS was used in the 2002
8 time frame?

9 MR. NIEBERG: Object to form.

10 THE WITNESS: It's a broad term.
11 Conditional access was certainly available in the
12 early 2000s.

13 Q. BY MS. WOO: What is the difference between
14 DRMS and CAS?

15 MR. NIEBERG: Object to form.

16 THE WITNESS: Again, as I said, these are
17 very broad terms. They -- I think they sort of go
18 together. One may use DRMS to implement a
19 conditional access system, CAS.

20 Without looking at very specific examples
21 of DRMS and a CAS, I'm not sure I can give you an
22 explicit distinction, because these are terms that
23 are used to restrict access to content. And
24 depending upon the level that which one considers
25 the system, it may be considered a CAS. If you look

1 Q. BY MS. WOO: Okay. And do you understand
2 "the CAS" to refer to the CAS depicted in Figure 2?

3 A. That is how I understand it.

4 Q. And why does the CAS fail to provide
5 synchronized delivery of keys with encrypted
6 content?

7 A. That's a system choice that has been made
8 in the particular CAS that's being talked about in
9 this paragraph.

10 Q. And why would a system choose to not have
11 synchronized delivery of keys with encrypted
12 content?

13 MR. NIEBERG: Object to form. Scope.

14 THE WITNESS: I think we would have to take
15 a look at a specific system and what design
16 constraints they were built under. And in some
17 cases it may be beneficial to keep the content and
18 the keys separate. In other cases, they may be
19 beneficial to have them coupled. So that's just a
20 system choice that one would make.

21 Q. BY MS. WOO: Why don't we look at
22 paragraph 54, and let me know when you're there.

23 A. Yes, I'm here.

24 Q. Okay. Do you see where it says -- it is
25 near the bottom half of this paragraph. It says,

1 "By reencrypting title key 24, the protection on the
2 content can be varied without having to reencrypt
3 the content itself, which would be significantly
4 more time-consuming and/or consume more resources
5 than reencrypting title key 24."

6 A. I see that sentence.

7 Q. In your opinion, is this an accurate
8 statement?

9 MR. NIEBERG: Object to form. Scope.

10 THE WITNESS: Let me just take a look at
11 Figure 4 for a second that it's referring to.

12 Q. BY MS. WOO: Sure.

13 A. In general, the key is smaller than the
14 content, or usually keys are smaller than content.

15 And here we're talking about reencrypting a
16 title key and not the content itself. And
17 reencrypting a content would be more time-consuming
18 than reencrypting a key.

19 Q. Why would reencrypting the content itself
20 be significantly more time-consuming than
21 reencrypting the title key?

22 MR. NIEBERG: Object to form. Scope.

23 THE WITNESS: It depends. But as I said,
24 usually the time and/or resources required to
25 process and/or encrypt the piece of data is

1 proportional to the length of the data itself.

2 Because usually all of the bits and/or bytes of the
3 data have to be scrambled or put through a
4 particular function.

5 And if the content is longer than the key,
6 which is often the case, then encrypting the content
7 would take more time because you would have to run
8 over every bit of the content, as you would with the
9 key, but the key is smaller, and so it would consume
10 fewer resources.

11 Q. BY MS. WOO: Okay. Why don't we look now
12 at Figures 14 and 15 and let me know when you're
13 there.

14 A. Yep.

15 Q. So do you see Figure 14 depicts a transport
16 stream? Do you see that?

17 A. Yes.

18 Q. And do you see Figure 15 depicts a program
19 stream?

20 A. Yes.

21 Q. What is the difference between a transport
22 stream and a program stream?

23 MR. NIEBERG: Object to form.

24 THE WITNESS: The reference itself talks a
25 little bit about that. I can read from

1 paragraph 73, if that's okay.

2 Q. BY MS. WOO: Sorry. Paragraph 73. Sure.

3 A. So overall, transport streams and program
4 streams are part of the MPEG standard. They are
5 used in different scenarios as described here.

6 As part of paragraph 73 the reference says,
7 "A transport stream is typically used in error-prone
8 broadcast environments, such as digital television.
9 As depicted, transport stream packets are relatively
10 small, and it generally takes multiple transport
11 stream packets to contain a single video PES unit.

12 "The second option is a program stream,
13 which is shown in Figure 15. A program stream is
14 generally used in more reliable transmissions such
15 as those with error-correcting codes or in fixed
16 storage. Unlike transport stream packets, however,
17 a single program stream packet can hold multiple
18 video PES units."

19 Q. What is an error-prone broadcast
20 environment?

21 MR. NIEBERG: Object to form. Scope.

22 THE WITNESS: Again, a relatively broad
23 question. But in general when we have a
24 transmission medium, all transmission media have a,
25 let's say, base error level. So if I transmit,

1 let's say, a million bits, some number of them may
2 be corrupted. They could be flipped and so on.

3 And depending upon the context, an
4 error-prone one may induce some number of errors
5 that we considered to be error-prone.

6 Now, there is no perfect transmission
7 medium possible. So everything is error-prone.
8 Depending on the context, one may say that this is
9 more error-prone versus not.

10 So, for instance, you know, in a home or
11 even anywhere -- let's say that I have an Ethernet
12 at work which is wired. And if it's wired correctly
13 and so on, it may have a few bits that will be
14 corrupted for every million bits that will be
15 corrupted, right?

16 And in the same environment, I may have an
17 802.11 wireless network, and maybe that's next to a
18 kitchen. And somebody turns on a microwave and
19 several thousand bits may be corrupted of a million,
20 because it shares the spectrum where microwaves also
21 live.

22 So again, depending on the context, one may
23 say, "Hey, the wireless is more error-prone than the
24 Ethernet."

25 Q. BY MS. WOO: I'm recalling Zoom meetings

1 where my dad turned on the microwave sometimes,
2 which was not so productive.

3 A. As it turns out, the original spectrum for
4 802.11 was given away free because of all of the
5 interference from microwaves, not only from people's
6 appliances, but also from the universe itself.

7 Q. So thank you for that.

8 Do you see also Foster gives digital
9 television as an example of an error-prone broadcast
10 environment?

11 A. I think you're referring to the sentence "A
12 transport stream is typically used in error-prone
13 broadcast environments such as digital television?"

14 Q. Yes.

15 A. Yes.

16 Q. What is digital television?

17 A. It depends, again, on the context. I think
18 here, this is probably referring to over-the-air
19 ATSC signals, essentially over-the-air television
20 but in a digital form, not the original ATSC analog
21 form.

22 Q. Is cable television digital television?

23 A. Again, it depends on the time frame.
24 Original cable, if I remember correctly, was analog,
25 but later cable systems transferred over to a

1 days. So on the other hand, the SpaceLink is very
2 well characterized, and we expect certain number of
3 bits to be corrupted over, let's say, a thousand
4 bits.

5 And so there are mathematical functions
6 that are used to transform the data such that if the
7 number of errors is less than the threshold that we
8 expect, then the entire original transmission can be
9 recovered even though some of the bits may have been
10 corrupted in transmission.

11 So that's an example. That's a general
12 idea of an error-correcting code, which is, given a
13 set number of errors, one can still reconstruct the
14 original data.

15 Similar types of codes are used, for
16 instance, in encoding on CDs -- people remember
17 those -- or DVDs or Blu-ray, right? There's an
18 expected number of bits that can be flipped on the
19 optical media and in the read-out system. So when
20 the data is written, it's written with a certain
21 amount of redundancies so that the original
22 uncorrupted data can be recovered.

23 Q. BY MS. WOO: You said "if people recollect
24 CDs." I admit, I barely do.

25 So do you see it says, again, "A program

1 digital format.

2 Q. And is satellite television digital
3 television?

4 MR. NIEBERG: Object to form.

5 THE WITNESS: Depends on the specific
6 satellite and the encoding. Many satellite sort of
7 small dishes that we see on people's houses are
8 nowadays digital, but there is nothing fundamental
9 about satellite that has to be digital. It can be
10 analog as well.

11 Q. BY MS. WOO: Okay. And then a little later
12 on in paragraph 73 do you see, "A program stream is
13 generally used in more reliable transmissions, such
14 as those with error-correcting codes or in fixed
15 storage." Do you see that?

16 A. I see that.

17 Q. What is a transmission with
18 error-correcting codes?

19 MR. NIEBERG: Object to form.

20 THE WITNESS: Same. Many transmission
21 systems will have built-in ways of correcting
22 errors, not just detecting errors.

23 And so an example, for instance, would be
24 the communication that NASA uses to the Voyager
25 crew. Now, the round-trip for Voyager is several

1 stream is generally used in more reliable
2 transmissions such as those with error-correcting
3 codes or in fixed storage."

4 What is fixed storage?

5 MR. NIEBERG: Object to form.

6 THE WITNESS: I think fixed storage here is
7 referring to media such as CDs or hard discs where
8 the data is written and is expected to be
9 persistent. And again, as I said, those types of
10 media often have built-in error correction, because
11 they're designed to be reliable over a longer period
12 of time.

13 Q. BY MS. WOO: So as you read before, Foster
14 says, "Transport stream packets 350A-F are
15 relatively small."

16 And then later on it says, "A single
17 program stream packet can hold multiple video PES
18 units 302 and 362."

19 Would it be fair to say that program stream
20 packets are larger than transport stream packets?

21 MR. NIEBERG: Object to form. Scope.

22 THE WITNESS: I would have to take a look
23 at the specification. I just don't recall the size
24 bounds on these packets on the program elementary
25 stream units, how they are defined for transport

1 versus program.

2 Q. BY MS. WOO: So I guess I'm trying to
3 understand why are there two types of streams
4 depending on the environment? Why not just have one
5 type of stream?

6 MR. NIEBERG: Object to form. Scope.

7 THE WITNESS: I think that's a question
8 primarily for the designers of the MPEG standard
9 itself. The MPEG forum recognized that as a video
10 format, the encoded video can be used in many
11 different scenarios, for instance, transmission over
12 unreliable links, also for storage on persistent
13 media or just otherwise being stored.

14 And those use cases are different enough
15 that it made sense to optimize for these use cases.
16 And these optimizations at the very least resulted
17 in the codification of at least these two types of
18 streams that are transport and program streams.
19 That's my best answer, is that they are designed and
20 optimized for slightly different use cases.

21 Q. BY MS. WOO: Do you know how a transport
22 stream is optimized for an error-prone broadcast
23 environment?

24 MR. NIEBERG: Object to form. Scope.

25 THE WITNESS: I would have to take a look

1 MR. NIEBERG: Object to form. Scope.

2 THE WITNESS: Okay. So there are several
3 issues here. First, there is nothing stopping a
4 transport stream from being stored on fixed storage.
5 It just may not be as efficient.

6 In general, the stream formats of MPEG were
7 designed with multiple goals in mind. One of them
8 is to optimize for use cases such as transmission
9 versus storage.

10 But even when stored, the streams would
11 have to support functionality, such as random
12 access, forward, reverse, and so on.

13 And one of the reasons that they're stored
14 in integral or PES units is to facilitate random
15 access.

16 Q. BY MS. WOO: And then why don't we look
17 at -- let's see. It is paragraph 40. And let me
18 know when you're there.

19 A. 4-0?

20 Q. Yes.

21 A. I'm there.

22 Q. Do you see it defines a receiver as "a
23 consumer device such as a set-top box, a DVD player,
24 et cetera, that receives content directly from a
25 content owner, from a content service, or from

1 at the transport stream documents again. I think
2 there was more multiplexing -- just off the top of
3 my head, I remember there was more multiplexing in
4 the transport streams, but -- and the program stream
5 usually contains content from what we would consider
6 one source for video and audio, whereas transport
7 streams can multiplex multiple.

8 And then beyond that, it gets into very
9 much the details of the encoding, which I don't
10 remember off the top of my head.

11 Q. BY MS. WOO: So do you see at the end it
12 says, "A single" -- Foster, paragraph 73, "A single
13 program stream packet 360 can hold multiple video
14 PES units 302 and 362." Do you see that?

15 A. I see that sentence. It's part of a
16 sentence, but yeah.

17 Q. And do you see that a little earlier Foster
18 says, "A program stream is generally used in more
19 reliable transmission, such as those with
20 error-correcting codes or in fixed storage"? Do you
21 see that?

22 A. Yes.

23 Q. So if a program stream is stored on fixed
24 storage, why is it broken up into packets at all?

25 Why is it not just one giant block of data?

1 another receiver within a" home "consumer network."
2 Do you see that?

3 A. Yes. It says "consumer home network," but
4 I do see it.

5 Q. How does a DVD player receive content
6 directly from a content owner?

7 MR. NIEBERG: Object to form. Scope.

8 THE WITNESS: Even in the early 2000s there
9 were networked DVD players. So it had the
10 functionality of being able to play a DVD, but the
11 decoding unit could be interfaced with that network
12 interface, and it could receive content from a
13 network. That's one way.

14 I mean, I don't know if the intent here
15 encompasses saying, "Hey" -- I don't know if you
16 remember, but the way Netflix started, we had these
17 little red envelopes with DVDs in it.

18 And let's just say that in this case,
19 Netflix is a content service provider. I don't
20 believe they had their own content back then. So,
21 you know, maybe inserting the DVD counts as
22 receiving content directly from a content owner or
23 service provider.

24 But certainly consumer devices such as DVD
25 players, if I remember correctly, by the mid to

1 early 2000s also had network interfaces.

2 MS. WOO: I see. And I'll represent to you
3 I don't recollect DVD players or red envelopes very
4 much. Maybe vaguely. But unfortunately, I am of a
5 generation that is not really used to DVD players.

6 So we've been going for about an hour. Why
7 don't we take a quick break. How does ten minutes
8 sound to you?

9 (Discussion off the record.)

10 (A recess was taken.)

11 MS. WOO: All right. Let's go back on the
12 record.

13 Q. So, Dr. Bhattacharjee, if we could return
14 to Figure 1 in Foster. Can you let me know when
15 you're there?

16 A. I'm there.

17 Q. So in your opinion, does Figure 1 depict
18 synchronized delivery of the content with the keys
19 used to encrypt the content?

20 MR. NIEBERG: Object to form. Scope.

21 THE WITNESS: Figure 1 is a schematic of
22 different components, and Foster's system is
23 designed such that a system such as this could do
24 what is called synchronized delivery of content.

25 (Discussion off the record.)

1 transmitting the title key with the encrypted
2 content, the present invention maintains
3 compatibility and compliance with current front-end
4 and back-end standards."

5 And so the systems that are being shown in
6 Figure 1 and Figure 2 are compatible with Foster,
7 but Foster shows how in some ways they can be
8 changed.

9 Q. BY MS. WOO: What is a front-end standard?

10 MR. NIEBERG: Object to form. Scope.

11 THE WITNESS: It depends on the context.
12 But the front-end standard can refer to the
13 processing that is done at the recipient as defined
14 by Foster.

15 Q. BY MS. WOO: And what is a back-end
16 standard?

17 MR. NIEBERG: Object to form. Scope.

18 THE WITNESS: The back-end standard, again,
19 depends on context. But the back-end standard would
20 be, for instance, as an example, the systems and
21 techniques that are used, for instance, to store,
22 encrypt, and transmit through a front end.

23 Q. BY MS. WOO: When you say "front end," what
24 are you referring to?

25 MR. NIEBERG: Object to form.

1 Q. BY MS. WOO: So if we can turn back to
2 paragraph 51. And let me know when you're there.

3 I'm sorry. If you said something, I don't
4 think that we heard it.

5 A. I said I'm there.

6 (Discussion off the record.)

7 Q. BY MS. WOO: So in paragraph 51 do you see
8 where it says, "As indicated above, the DRMS fails
9 to provide synchronized" -- sorry -- "provide
10 synchronized delivery of the content with the keys
11 used to encrypt the content." Do you see that?

12 A. I do see that.

13 Q. In that sentence, would it be fair to say
14 "the DRMS" refers to the DRMS depicted in Figure 1?

15 MR. NIEBERG: Object to form. Scope.

16 THE WITNESS: I think if it's showing -- it
17 is talking about a way the DRMS can fail to
18 synchronize delivery of content. But the goal of
19 Foster is to take systems such as this and enable
20 the synchronization along with other things that
21 Foster teaches.

22 And if we take a look at, for instance, the
23 end of paragraph 48, Foster says that "previous
24 systems failed to provide such synchronized
25 transmission. Moreover, by synchronously

1 THE WITNESS: Yeah, one system's front end
2 could be another system's back end and so on. So we
3 have to take a look at the context in which these
4 words are being used.

5 But in general, a front end can be a
6 recipient in Foster, and the back end,
7 correspondingly, depending on perspective, would be
8 the set of systems that are used to transmit data to
9 the front end.

10 Q. BY MS. WOO: Is DRMS a standard?

11 MR. NIEBERG: Object to form. Scope.

12 THE WITNESS: "DRMS" is a broad term.
13 There are standards for DRMS. For instance, again,
14 going back to DVDs, there is a DRMS standard called
15 CAS that encrypts contents of DVDs. That's one
16 standard.

17 But by itself, "DRMS" is a broad term that
18 just refers to techniques for digital rights
19 management.

20 Q. BY MS. WOO: Does Figure 1 depict a DRMS
21 that fails to provide synchronized delivery of the
22 content with the keys used to encrypt the content?

23 MR. NIEBERG: Object to form. Scope.

24 THE WITNESS: Figure 1 is a schematic of a
25 system that implements DRMS. And that system may or

1 may not do synchronized delivery of keys with
2 content.

3 Foster describes how such a system could be
4 used to synchronize delivery, but it doesn't have to
5 always synchronize delivery of keys with content in
6 such a system at that level of abstraction.

7 Q. BY MS. WOO: Okay. Why don't we look at
8 Figure 16 of Foster, and just let me know when
9 you're there.

10 A. Okay.

11 Q. What does Figure 16 depict?

12 MR. NIEBERG: Object to form.

13 THE WITNESS: According to Foster,
14 Figure 16 depicts a computer system having an
15 attachment system according to the present invention
16 that's paragraph 30 in Foster.

17 Q. BY MS. WOO: In your opinion, does
18 Figure 16 depict Foster's invention?

19 MR. NIEBERG: Object to form.

20 THE WITNESS: Figure 16 depicts a computer
21 system having an attachment system according to the
22 present invention.

23 Q. BY MS. WOO: Okay. Why don't we look now
24 at Hayhurst. I will drop that into the chat, and I
25 will email that to the reporter during the next

1 THE WITNESS: Hayhurst has many ideas. And
2 the technical field broadly is secure handling and
3 storage of electronic media and its delivery.

4 If we -- if you have a specific part of
5 Hayhurst you would like for me to look at, I can
6 sort of give you more problems that it's working on.

7 Q. BY MS. WOO: If we go back to Hayhurst's
8 title, how does Hayhurst's title indicate Hayhurst's
9 field is, I believe you said, secure handling and
10 storage?

11 MR. NIEBERG: Object to form. Scope.

12 THE WITNESS: There were a few things here.
13 First, the title is what it is. And Hayhurst is a
14 Hayhurst specification and written description.
15 It's several pages. It would be impossible to
16 incorporate everything that Hayhurst is talking
17 about into its three-word title.

18 Having said that, the title includes
19 "decentralized." And in this case, "decentralized"
20 means that the media is broken into different
21 pieces, and then those pieces are given to
22 different -- are distributed to different places in
23 the network. And that's how it's decentralized,
24 it's breaking up the media and distributing it.

25 And that way of segmenting media provides a

1 break.

2 So here is Hayhurst, which is Exhibit 1007,
3 and just let me know when you have it open.

4 A. I have it open.

5 Q. When did you last review Hayhurst?

6 A. Again, I think over the weekend.

7 Q. Do you see the title of Hayhurst?

8 A. I see the title of Hayhurst.

9 Q. Did you consider Hayhurst's title when
10 determining Hayhurst's field of endeavor?

11 MR. NIEBERG: Object to the form.

12 THE WITNESS: I considered Hayhurst, all of
13 it, including the title.

14 Q. BY MS. WOO: So in your opinion, what is
15 Hayhurst's field of endeavor?

16 MR. NIEBERG: Object to form.

17 THE WITNESS: Hayhurst, paragraph 2, under
18 "Technical Field" states, "This application relates
19 to the field of electronic media delivery, such as
20 video-on-demand, including the secure handling and
21 storage of such media."

22 Q. BY MS. WOO: And in your opinion, is that
23 field of -- that technical field that you just read,
24 is that the Hayhurst's field of endeavor?

25 MR. NIEBERG: Object to form.

1 measure of security against compromise of the media,
2 illegal or, let's say, unauthorized access and
3 piracy and so on.

4 So the title refers to decentralization,
5 which helps with security and also deters piracy.

6 Q. BY MS. WOO: Why don't we look at
7 paragraph 8 of Hayhurst, and let me know when you're
8 there.

9 A. Okay.

10 Q. So do you see it says, "The segmented and
11 distributed storage of the media file provides a
12 high level of security and a deterrence to piracy"?
13 Do you see that?

14 A. I see that sentence.

15 Q. Do you agree with the statement?

16 MR. NIEBERG: Object to form.

17 THE WITNESS: The segmented and distributed
18 storage does provide a level of security and
19 deterrence to piracy. I do agree with that.

20 Q. BY MS. WOO: How does the segmented and
21 distributed storage of media provide a high level of
22 security?

23 MR. NIEBERG: Object to form.

24 THE WITNESS: The next sentence explains
25 what Hayhurst means. It says, "No single subscriber

1 unit has more than a segment of a media file, which
2 segment, by itself, has little value."

3 So by splitting up the original data,
4 presuming that, let's say, a particular subscriber
5 was compromised, then the segment by itself would
6 not provide much value.

7 And I should note that Hayhurst also
8 encrypts its segments, and so the attacker would get
9 a small encrypted part of a media file, for
10 instance. And even if it were able to compromise
11 the encryption, the amount of data it would get
12 would likely not be as useful as the entire file,
13 for instance.

14 Q. BY MS. WOO: You said it would not be --
15 getting one segment would not be as useful as
16 getting the entire media file, but would acquiring
17 one segment have some use?

18 MR. NIEBERG: Object to form. Scope.

19 THE WITNESS: It depends on the context,
20 right? Let's say this is a movie and it's been
21 divided in some way and the attacker really just
22 wanted to see one particular scene in the movie, and
23 by luck it got that scene, then maybe it's super
24 useful for the attacker.

25 On the other hand, if the attacker wants to

1 way of distributing, and there is a piece that I
2 want to find and read to you.

3 So let me just read a few pieces of
4 Hayhurst. Paragraph 23 of Hayhurst says, "The main
5 server (26) contains a controller (36) that controls
6 the distribution of a multitude of segments over the
7 network."

8 Later in that paragraph it says, "In one
9 embodiment, the main server (26) includes a
10 segment-tracking module (34) for tracking the
11 location of the segments. For example, in some
12 networks not all the subscriber units (22) may at
13 all times participate in the media-file delivery
14 system of the present invention.

15 "Accordingly, the segment-tracking module
16 stores the addresses of the participating units and,
17 via a look-up table or the like, keeps track of
18 which segments are distributed to which units."

19 Next, it says in paragraph 24, "Whenever a
20 subscriber requests a movie, the segment-tracking
21 module (34) provides an efficient way of instructing
22 the remaining units (that is, the one storing the
23 segments of the requested movie) to forward all of
24 the stored segments to the requesting subscriber."

25 Also in paragraph 21 of Hayhurst says that

1 pirate the movie and sell it, then having one scene
2 is of little use to that attacker.

3 But in general, again, as the patents at
4 issue have also pointed out, dividing up media or
5 content and splitting it deters the access to the
6 whole, which by itself increases security.

7 Q. BY MS. WOO: Is distributing the segments
8 of the media file, is that a cryptographic method?

9 MR. NIEBERG: Object to form. Scope.

10 THE WITNESS: It depends. One can
11 cryptographically distribute pieces, or they may be
12 not cryptographic.

13 So depending on the system that we are
14 looking at and how it's implemented, it would -- I
15 would have to take a look at how the distribution is
16 done and what is required to, let's say, recompile
17 the components.

18 And so depending upon how it's done and if
19 there is a cryptographic method used to do the
20 distribution, then it could be cryptographic, but it
21 doesn't have to be.

22 Q. BY MS. WOO: Do you know if Hayhurst
23 cryptographically distributes the segments?

24 MR. NIEBERG: Object to form. Scope.

25 THE WITNESS: Hayhurst, as I said, has a

1 "the segments are separate in the sense that they
2 represent discontinuous or nonsequential portions of
3 the movie and must be," says "soiled," but, well,
4 "must be soiled and integrated with the remaining
5 segments, distributed elsewhere in the network, to
6 provide the complete movie.

7 "This approach to segmenting the movie
8 provides increased security from piracy since each
9 subscriber A, B, C, et cetera, will store only very
10 small portions of the movie on the storage device of
11 the unit.

12 "If the segments are made very small, to
13 the scale of a few bytes or single bits, decoding of
14 any individual bundle will be virtually impossible.

15 "Further, access to the correct method for
16 recombining the segments to recreate the original
17 media file could be stored in a password-protected
18 file linked to an encryption key or locked to all
19 devices except the specific hardware device that
20 created the bundled segments."

21 So to answer your question, Hayhurst
22 envisions that encryption and decryption would be
23 required to be able to recombine the segments. And
24 depending on the scale over which the movie or,
25 let's say, the segments have been distributed, it is

1 going to be difficult and potentially untenable for
2 an attacker to try to put this thing back together
3 without having access to something, the decoding
4 instructions that are stored encrypted.

5 Q. BY MS. WOO: Forgive my layperson's
6 understanding of encryption and cryptography.

7 So I'm not sure whether you've made clear
8 whether Hayhurst -- Hayhurst's method of
9 distributing to several set-top boxes, whether that
10 is a cryptographic method. Perhaps you can help me
11 understand.

12 MR. NIEBERG: Object to form. Scope.

13 THE WITNESS: Depending upon how Hayhurst
14 is implemented, as it says, one would have to have
15 access to an encrypted key in order to recompile or
16 put together the pieces to reconstitute the whole.

17 In that way, it is a cryptographic method,
18 because encryption and decryption is required in
19 order to put the pieces back together.

20 Q. BY MS. WOO: Is the step of just storing
21 segments on different storage devices or set-top
22 boxes, is that a cryptographic step?

23 MR. NIEBERG: Object to form. Scope.

24 THE WITNESS: At the end of the day, when
25 we take an encryption algorithm, what it is doing is

1 scrambling pieces of the original into different
2 places or bits, as the case may be, right?

3 And depending upon how Hayhurst does the
4 distribution and at what granularity it does the
5 distribution, as it says, it's virtually impossible
6 to decode without having access to the key and/or
7 the distribution method. And that is then protected
8 cryptographically.

9 So overall Hayhurst envisions that the
10 distribution provides security that is commensurate
11 with cryptographic scrambling, let's say.

12 Q. BY MS. WOO: Okay. Why don't we now look
13 at Orsini, so that is Exhibit 1005, which I will
14 again put in the chat and email the reporter during
15 the break. Oh, hang on. I don't even know if this
16 was sent. This one is a massive file.

17 MR. NIEBERG: Which exhibit number is that
18 again?

19 MS. WOO: This is 1005.

20 MR. NIEBERG: I have a version that's
21 7 megabytes.

22 MS. WOO: Oh, yes. Maybe you can email
23 that to the reporter, because I don't think that
24 will attach in the email, is the problem. The ones
25 we received were 45 megabytes.

1 (Discussion off the record.)

2 Q. BY MS. WOO: Just let me know when you
3 have it.

4 A. I do have it.

5 Q. Okay. Thank you so much. So if we can
6 look at Figure 21, just let me know when you're
7 there.

8 A. Yes, I'm there.

9 Q. What do you see at the very bottom of the
10 figure? Do you see a box, or two boxes, rather,
11 that say, "Encrypted share 2 (data/session key),"
12 and next to it a box that says, "Key 1." Do you see
13 that?

14 A. Yes.

15 Q. Would an attacker with access only to this
16 encrypted share 2 box and key 1 box be able to
17 decrypt encrypted share 2?

18 MR. NIEBERG: Object to form.

19 THE WITNESS: It depends on the
20 capabilities of the attacker and the encryption of
21 share 2.

22 Q. BY MS. WOO: What capabilities would that
23 attacker need to decrypt encrypted share 2 with
24 key 1?

25 MR. NIEBERG: Object to form.

1 THE WITNESS: It's not clear to me that
2 key 1 would necessarily be useful to decrypt
3 encrypted share 2. But if the encryption were such
4 that the attacker were able to convert it, so to
5 speak, without having the key, then, obviously, they
6 may be able to do it.

7 If key 1 and key 2 were somehow
8 correlated -- for instance, a bad random number
9 generator chose the keys to be sequential numbers,
10 and if I have key 1, then I know what key 2 will
11 be -- of course, that would also help and so on.

12 But in a properly designed system with an
13 encryption that is known at least to be secure
14 against the capabilities of that attacker, the
15 attacker would presumably be reduced to doing brut
16 force attacks on the key or it -- the thing is it's
17 not -- it would have a low likelihood of being able
18 to decrypt it, the key.

19 Q. BY MS. WOO: And if encrypted share 2 and
20 key 2 were stored together, would that have a higher
21 likelihood of being decrypted?

22 MR. NIEBERG: Object to form. Scope.

23 THE WITNESS: If a piece of encrypted data
24 and its key is provided and the encryption algorithm
25 is known, then it should be a deterministic process

1 to be able to decrypt, presuming it's a proper
2 encryption algorithm.

3 Q. BY MS. WOO: So on the same level, to the
4 left, do you see the box -- boxes that say,
5 "Encrypted share 1 (data/session key)" and "key N"?

6 A. I can see that.

7 Q. What does N stand for here?

8 A. I think N is a number that's bigger than 3,
9 is the best guess.

10 Q. So assuming that N is 4, if an attacker
11 were able to acquire and decrypt one of the shares,
12 the encrypted shares in Figure 21, how much of the
13 dataset -- of the encrypted dataset would the
14 attacker have?

15 MR. NIEBERG: Object to form. Scope.

16 THE WITNESS: It depends on whether the
17 split was equal. If we assume that the splits are
18 of equal size, then presumably it would have about a
19 quarter of the original data to be parsed.

20 Q. BY MS. WOO: If an attacker managed to
21 acquire access to encrypted share 2 and key 1, would
22 that attacker know which encrypted share key 1 was
23 used to encrypt?

24 MR. NIEBERG: Object to form. Scope.

25 THE WITNESS: It would depend. It depends

1 obfuscation step.

2 Q. BY MS. WOO: Okay. Is the step of storing
3 shares in different locations a cryptographic step?

4 MR. NIEBERG: Object to form. Scope.

5 THE WITNESS: It depends upon how many
6 shares there are and how the distribution was done
7 of the -- if there are only four shares -- I mean,
8 this seems like a rotation.

9 Again, I think one of the problems is it's
10 not necessarily clear what it means for something to
11 be cryptographic. A cryptographic function is just
12 a mathematical function.

13 And, for instance, if I have encryption
14 with a key, and let's say that the key is ten bits,
15 then an attacker without knowing anything has a
16 one-in-a-thousand or one-in-1024 chance of being
17 able to decrypt just by using a random ten-bit
18 number. Okay. It is a deterministic step at that
19 point.

20 So on the other hand, assuming that all the
21 attacker has to do, can do, is pick a random key,
22 then its chances -- well, the worst chance it has is
23 one over the exponential of the number of bits. So
24 one would say, "Hey, a ten-bit key is no good.
25 Because if I could do a thousand or 1024 tries, I

1 upon what other information is there. And so to the
2 extent we're saying that the attacker has received
3 encrypted share 2 and key 1, then it knows it's
4 key 1 and encrypted share 2. So by the label, it
5 would know.

6 If it was just an encrypted share and a
7 key, then it may or may not know, depending upon
8 what other information is being kept along with it.

9 Q. BY MS. WOO: Okay. So you see this last
10 row has the label "Obfuscate" next to it.

11 A. I see it, yes.

12 Q. To your understanding, what is happening in
13 this step?

14 MR. NIEBERG: Object to form.

15 THE WITNESS: We can take a look at the
16 reference. Let me just take a look.

17 If we take a look at paragraph 299, it
18 says, "5. Encrypting each share, then store the
19 encryption keys in different locations from the
20 encrypted data portions or shares: Share 1 gets
21 key 4, share 2 gets key 1, share 3 gets key 2, share
22 4 gets key 3."

23 And the storage of encryption keys in
24 different locations from the encrypted data portions
25 or shares is, I think, being described in the

1 will get there," right?

2 So cryptographic security is -- usually it
3 takes into account the capabilities of the attacker.
4 If we say my algorithm with a key size of, let's
5 say, a hundred bits, if such that a computer that a
6 government can make that would have to run for a
7 thousand years for it to have, let's say, an even
8 chance of decrypting. Maybe one would consider that
9 to be cryptographic security.

10 So anything can be a cryptographic step if
11 the chances of decrypting become a large function of
12 the computational ability, which is the randomness
13 that's inherent in the algorithm itself.

14 So as written here with just a shift, a
15 rotation, maybe that's not a cryptographic step.
16 But there can certainly be ways of doing -- let's
17 say, storing keys in different locations. That
18 would require a large amount of computation to be
19 able to decode, and that may become a cryptographic
20 step.

21 Q. BY MS. WOO: Okay. So if I have, say, a
22 copy of a movie, I split into four just along the
23 time stamps, I put each portion on a USB, I give one
24 to my sister, she drives off, I give one to my mom,
25 she drives off, I give one to my dad, he drives off,

1 is that a cryptographic method?

2 MR. NIEBERG: Object to form. Scope.

3 THE WITNESS: I don't think I had quite
4 analyzed that, you know. Usually, a cryptographic
5 method refers to the amount of computation that
6 would be required in order to undo a certain step,
7 for instance.

8 And I don't know where they drove off, how
9 difficult it would be. Computationally, it's not
10 something that one would be able to quantify. So
11 I'm not able to answer your hypothetical.

12 Q. BY MS. WOO: If I have a dataset and I take
13 one portion of it, as long as it's less than a
14 whole, I put it on a USB, and I just remove that USB
15 from my computer, is that a cryptographic method?

16 MR. NIEBERG: Object to the form. Scope.

17 THE WITNESS: So I think we are getting
18 into the territory of security versus cryptography.

19 So cryptography usually refers to the
20 computational process and the amount of computation
21 needed to reverse, let's say, an encryption that
22 would be a cryptographics trend.

23 Now, from a network attacker's point of
24 view, if you were to put a piece of data on a USB
25 drive, remove it from the original computer that's

1 connected to the network, it's nearly perfect
2 security. Because no matter how much computation
3 they have, they're not going to be able to get to
4 it. So it's a very secure method. It is offline
5 storage, it's usually called.

6 But cryptographically it's difficult, if
7 not impossible, to quantify because it's really not
8 a -- it's not depending on the mathematics of the
9 process but on the physical steps you've taken, if
10 that makes sense.

11 So I think it's a secure method, but it is
12 not a method that's relying on cryptography to
13 provide security, but our physical actions and,
14 let's say, dissociation from the memory from what's
15 reachable over the network to provide security.

16 MS. WOO: Why don't we take another quick
17 ten-minute break, and then why don't we return at
18 10:00 a.m. Pacific Time.

19 (A recess was taken.)

20 MS. WOO: Let's go back on the record.

21 Thank you, Dr. Bhattacharjee.

22 Mr. Elliot will conduct the rest of the
23 deposition.

24 MR. ELLIOTT: Well, unless we have to
25 recross and redirect.

1 EXAMINATION BY MR. ELLIOTT

2 Q. Mr. Bhattacharjee, I think we met, I think,
3 at your last deposition for this matter. I'm
4 Stephen Elliott. I'm with Sullivan & Cromwell.

5 I wanted to ask you primarily questions
6 about your report relating to the '116 patent, which
7 is the 212 IPR.

8 First, you have a number of grounds in
9 there. Among the grounds are Foster and Hayhurst.
10 And I just wanted to ask a couple of questions about
11 Foster, if we can go back to that. And that is
12 Exhibit 1006, which I think has been provided to you
13 already.

14 A. Before we get going, would it be possible
15 for me to get the '116 reply declaration?

16 Q. Sure. Let me pull it up here.

17 MR. ELLIOTT: Can we go off the record for
18 a second.

19 (A recess was taken.)

20 THE WITNESS: I have it.

21 Q. BY MR. ELLIOTT: Dr. Bhattacharjee, I want
22 to ask you, though, to turn to figure -- I'm
23 sorry -- to the Foster reference. Again, that's
24 Exhibit 1006.

25 Do you have that?

1 A. Okay. Yes.

2 Q. I want to understand your position on this.
3 If I look at paragraph 15 of Foster, it says
4 "Figure 1 depicts a flow diagram of a digital rights
5 management system."

6 Did I have that correct?

7 A. That's correct.

8 Q. Figure 1 is a DRMS system, right?

9 A. That's what it says.

10 Q. And then in paragraph 49 it says, referring
11 to Figure 1, "a depiction of a DRMS system is
12 shown," correct?

13 A. That's correct.

14 Q. We can conclude from that, can't we, that
15 Figure 1 does depict the DRMS system?

16 MR. NIEBERG: Object to form.

17 THE WITNESS: Paragraph 49 says, "Referring
18 now to Figure 1, a depiction of a digital rights
19 management system (DRMS) is shown."

20 Q. BY MR. ELLIOTT: Is it fair to say Figure 1
21 depicts a DRMS system?

22 A. Figure 1 is showing schematics of a system
23 that can implement DRMS.

24 Q. That's not what paragraph 49 says, is it?

25 Paragraph 49 says, "A depiction of a

1 digital rights management system is shown." It
2 doesn't say anything about implementation. It says,
3 "A depiction of a digital rights management system
4 is shown," right?

5 MR. NIEBERG: Object to form.

6 THE WITNESS: I think we may, then, have to
7 understand what "depiction" means. But it's showing
8 the schematic of a system in which DRMS can be
9 implemented.

10 Q. BY MR. ELLIOTT: So you disagree with
11 paragraph 49, which says that Figure 1 depicts a
12 DRMS system?

13 MR. NIEBERG: Object to form.

14 Q. BY MR. ELLIOTT: You're saying it doesn't
15 depict a DRMS system; it only depicts a system in
16 which DRMS might be implemented?

17 MR. NIEBERG: Object to form.

18 THE WITNESS: I would disagree with that
19 characterization of it. Figure 1 has many
20 components. If we take a look, it has a PC, for
21 instance, with a browser and a DRMS client. It has
22 servers, different types of servers and so on. And
23 all together, this is depicting a schematic of a
24 system in which DRMS can be implemented.

25 Q. BY MR. ELLIOTT: Is DRMS implemented in the

1 fails to provide synchronized delivery of the
2 content with the keys used to encrypt the content,"
3 right? And is that -- did I read that correctly?
4 Did I read that correctly?

5 A. The sentence, "As indicated above, the DRMS
6 fails to provide synchronized delivery of the
7 content with the keys used to encrypt the content."
8 That's the sentence.

9 Q. Is that the DRMS that's implemented in
10 Figure 1?

11 MR. NIEBERG: Object to form. Scope.

12 THE WITNESS: It is talking about a DRMS
13 system, and schematic of that system is shown in
14 Figure 1.

15 Q. BY MR. ELLIOTT: No, Dr. Bhattacharjee. It
16 says "the DRMS." Is the reference to "the DRMS" the
17 DRMS that's referred to in Figure 1?

18 MR. NIEBERG: Object to form.

19 THE WITNESS: I think here the DRMS is the
20 digital rights management system. Figure 1 is not
21 the only way to implement DRMS. And also, Figure
22 1's DRMS can be implemented with or without
23 synchronization. So the --

24 Q. BY MR. ELLIOTT: So what is the --

25 A. May I finish?

1 system of Figure 1?

2 MR. NIEBERG: Object to form.

3 THE WITNESS: It depends upon how that
4 system is used. But as I said, it's showing the
5 schematics of the components necessary, or at least
6 as demonstrated, a system where DRMS can be
7 implemented.

8 Q. BY MR. ELLIOTT: But you don't think it
9 shows a system in which DRMS is implemented?

10 MR. NIEBERG: Object to form. Scope.

11 THE WITNESS: I don't know how to answer
12 that, frankly. It's showing a system in which DRMS
13 can be implemented.

14 Q. BY MR. ELLIOTT: Well, it's important
15 because I think -- does Figure 1 depict a system in
16 which the implementation of DRMS fails -- strike
17 that.

18 It's true, isn't it, that DRMS does not
19 provide synchronized delivery of content with the
20 keys used to encrypt the content?

21 MR. NIEBERG: Object to form. Scope.

22 THE WITNESS: I wouldn't agree with such a
23 broad characterization.

24 Q. BY MR. ELLIOTT: Well, if I look at
25 paragraph 51 it says, "As indicated above, DRMS

1 So this is a depiction of a schematic of a
2 system in which DRMS can be implemented. And as
3 Foster teaches, these types of systems can be used
4 to provide synchronization between the key and the
5 encrypted content as well, because Foster is
6 compatible with existing systems.

7 So I think to the extent you are asking
8 Figure 1 would preclude synchronization, I would
9 disagree. But Figure 1 is showing the schematic of
10 a system in which DRMS can be implemented.

11 Q. Let me ask it this way. What is the
12 reference to the DRMS in Figure 1? What is the
13 reference to "as indicated above, the DRMS"? What
14 is the DRMS there?

15 A. That DRMS is the digital rights management
16 system.

17 Q. And it's the digital rights management
18 system that's implemented in Figure 1, right?

19 MR. NIEBERG: Object to form.

20 THE WITNESS: Figure 1 is a depiction of a
21 digital rights management system. But Figure 1
22 itself is broad, and it has schematic -- it is a
23 schematic of different components which are being
24 used to implement a digital rights management
25 system.

1 Q. BY MR. ELLIOTT: I see. And what's the
2 reference to "the DRMS" in paragraph 51?

3 A. The DRMS is the digital rights management
4 system.

5 Q. What digital rights management system?

6 A. That would be a type of DRMS that can be
7 implemented using the components of Figure 1.

8 MR. ELLIOTT: I'm sorry. Balinda, could
9 you read that back, please, the answer?

10 (Reporter read back as requested.)

11 Q. BY MR. ELLIOTT: Okay. And so the DRMS
12 that can be implemented with the components of
13 Figure 1 fails to provide synchronized delivery of
14 the content with the keys used to encrypt the
15 content, right?

16 MR. NIEBERG: Object to form.

17 THE WITNESS: I wouldn't agree with that
18 characterization. Multiple types of DRMS can be
19 implemented using Figure 1. Because all of the
20 components are there that are required for Foster.

21 Now, a depiction of DRMS is shown in
22 Figure 1. And as depicted, it may or may not
23 synchronize, but the components are there such that
24 it can synchronize.

25 Q. BY MR. ELLIOTT: Do you have any basis in

1 Foster for saying that the DRMS in Foster does not
2 fail to provide synchronized delivery of content
3 with the keys used to encrypt the content?

4 Is there any basis in Foster for saying
5 that?

6 MR. NIEBERG: Object to form.

7 THE WITNESS: I cannot understand your
8 question. Could you ask it again?

9 Q. BY MR. ELLIOTT: You're saying that the
10 DRMS does not require synchronized delivery of
11 content -- I'm sorry. Strike that.

12 Is there any basis in Foster for your
13 opinion that the DRMS described in paragraph 51 that
14 fails to provide synchronized delivery of the
15 content with the keys used to encrypt the content is
16 not the DRMS depicted in Figure 1?

17 MR. NIEBERG: Object to form. Scope.

18 THE WITNESS: Okay. So if I understand
19 correctly -- well, maybe I don't really understand.
20 Can you ask that question again? Because I don't --

21 MR. ELLIOTT: Can you read the question
22 back, please?

23 (Reporter read back as requested.)

24 MR. NIEBERG: Object to form. Scope.

25 THE WITNESS: Would it be possible for you

1 to ask that question slightly differently? Because
2 I really don't understand some of the premise and/or
3 what you're asking.

4 Q. BY MR. ELLIOTT: Paragraph 51 refers to the
5 DRMS, correct?

6 A. Paragraph 51 uses the phrase "the DRMS,"
7 correct.

8 Q. And when it uses that phrase, it's
9 referring to the DRMS that "fails to provide
10 synchronized delivery of the content with the keys
11 used to encrypt the content," right?

12 A. It says that, yes.

13 Q. The DRMS refers to a DRMS that "fails to
14 provide synchronized delivery of the content with
15 the keys used to encrypt the content," right?

16 A. I mean, you're just reading from
17 paragraph 51, right?

18 Q. That's right.

19 A. Yes. It's talking about a particular
20 implementation that fails to provide synchronized
21 delivery of the content with the keys used to
22 encrypt the content.

23 Q. Okay. And figure -- is there any basis in
24 Foster for your opinion that that DRMS that's
25 referred to in Figure 1 is not the DRMS depicted --

1 I'm sorry. This is getting complicated.

2 Is there any basis in Foster for your
3 opinion that the, quote, "the DRMS" referred to in
4 figure -- in paragraph 51 is not the DRMS depicted
5 in Figure 1?

6 MR. NIEBERG: Object to form. Scope.

7 THE WITNESS: Let me try and answer, and
8 maybe we'll have to do this again.

9 Figure 1 is showing a schematic of a system
10 in which DRMS can be implemented.

11 That particular system may or may not
12 provide synchronization.

13 Now, in one implementation, the DRMS tables
14 will provide --

15 Q. BY MR. ELLIOTT: Let --

16 A. May I finish?

17 Q. Let me stop you there, because I think I
18 understand the confusion here. Let me ask the
19 question a different way.

20 When you say "the DRMS depicted in Figure 1
21 may or may not provide synchronization," what's the
22 basis in Foster for saying that?

23 MR. NIEBERG: Object to form.

24 THE WITNESS: Figure 1 is a depiction of a
25 system with multiple components. Foster, among

1 other things, teaches how to synchronously transmit
2 the title key with encrypted content.

3 In paragraph 48, as I read earlier, Foster
4 says, "The present invention maintains compatibility
5 and compliance with current front-end and back-end
6 standards."

7 So just by reading Foster and looking at
8 the components of Figure 1, that particular
9 schematic can also implement Foster's invention,
10 and, thus, it is a system that you provide the DRMS
11 and may provide synchronization or may not.

12 Q. BY MR. ELLIOTT: Is your only basis in
13 Foster for saying that the DRMS in Figure 1 may or
14 may not provide synchronization, is that statement
15 in paragraph 48 your only basis for saying that?

16 MR. NIEBERG: Object to form.

17 THE WITNESS: No. That statement in
18 paragraph 48 explicitly says that the present
19 invention, which among other things, provides
20 synchronization between keys and encrypted content,
21 maintains compatibility and compliance with existing
22 systems.

23 Now, the rest of Foster describes Foster's
24 techniques. And all of these can be implemented on
25 the system that's in Figure 1, because among other

1 synchronization by, among other things, using
2 Foster's technique, or it could be run without
3 providing synchronization.

4 And first basis, of course, is what I said,
5 Foster maintains compatibility and compliance. But
6 the rest of Foster also really enforces this by
7 describing how it maintains compatibility and
8 compliance with existing systems.

9 Q. BY MR. ELLIOTT: The only description in
10 figure -- of the DRMS in connection with Figure 1,
11 though, says that it fails to provide synchronized
12 delivery of the content with the keys used to
13 encrypt the content, right?

14 MR. NIEBERG: Object to form.

15 THE WITNESS: Foster's entire invention can
16 be implemented within the bounds of Figure 1. And
17 so I wouldn't say that's the only description of
18 Figure 1. Figure 1 shows a schematic of components
19 that can be used to implement DRMS and includes
20 synchronization as taught by Foster.

21 Q. BY MR. ELLIOTT: Can you point me to a
22 description of Figure 1 somewhere else in Foster, a
23 description of Figure 1 that shows a synchronous
24 delivery of a content with the keys used to encrypt
25 the content?

1 things, Foster maintains compatibility. But also we
2 can just go through the text of Foster, and it will
3 be clear that it is compatible. And one of ordinary
4 skill would understand how to implement Foster
5 within the context of existing systems, including
6 existing DRMS systems.

7 Q. BY MR. ELLIOTT: All right. Let me ask the
8 question again, because I don't think you answered
9 it.

10 Is the statement that you mentioned in
11 paragraph 48 the only basis in Foster that you have?

12 Can you point me to another statement in
13 Foster for it -- as a basis for your opinion that
14 the DRMS depicted in Figure 1 may or may not provide
15 synchronization?

16 MR. NIEBERG: Object to form. Scope.

17 THE WITNESS: Figure 1 refers to a
18 schematic, and it's a set of components that can be
19 used to implement DRMS. It may not provide
20 synchronization if the title keys are not
21 transmitted along with the encrypted content.

22 However, Foster teaches a method that is
23 compatible with such a system and provides such
24 synchronization.

25 So that particular schematic can provide

1 A. All of Foster is describing how to do --
2 well, not all, but a lot of Foster is describing how
3 to do the synchronization, and it maintains
4 compatibility with the existing systems. It says
5 so.

6 Q. There's no other discussion of Figure 1 in
7 Foster, though, that describes -- that describes the
8 use of a DRMS that doesn't -- that -- I'm sorry.
9 There's no description -- strike that. Let me start
10 again.

11 There's no description in Foster, is there,
12 of Figure 1 in a context where DRMS is provided that
13 can do synchronous delivery of content with the keys
14 used to encrypt the content?

15 MR. NIEBERG: Object to form. Scope.

16 THE WITNESS: Okay. So DRMS is a
17 description of methods that can provide digital
18 rights management.

19 What Foster is doing does not change that
20 fundamental fact, that the content provider or owner
21 can put restrictions on which recipient can render
22 the content when.

23 So Foster's system enhances DRMS systems
24 and -- but still remains a DRMS system, and it
25 remains compatible with existing hardware for doing

1 DRMS.

2 Q. BY MR. ELLIOTT: Foster's method is an
3 improvement on the prior art DRMS systems, right?

4 MR. NIEBERG: Object to form. Scope.

5 THE WITNESS: Foster's method is a way --
6 well, first, Foster teaches many things; but among
7 other things, it teaches a synchronization method.
8 But implementing that synchronization method does
9 not make a previous DRMS system no longer a DRMS
10 system. It's still a DRMS system, which may be more
11 efficient with respect to how keys are transmitted.

12 MR. ELLIOTT: Can you read that back,
13 please?

14 (Reporter read back as requested.)

15 Q. BY MR. ELLIOTT: The synchronization in
16 Foster makes the previous DRMS systems more
17 efficient; is that your testimony?

18 MR. NIEBERG: Object to form.

19 THE WITNESS: DRMS systems provide digital
20 rights management. Foster teaches a particular way
21 of transmitting keys, which in some cases and many
22 cases may make the system more efficient with
23 respect to various aspects of storage and rendering
24 that Foster discusses.

25 Q. BY MR. ELLIOTT: Makes it more efficient

1 Foster's invention, because it provides synchronous
2 transmission of content and the keys used to encrypt
3 that content, it's more efficient than prior art
4 systems like that depicted in Figure 1, right?

5 MR. NIEBERG: Object to form. Scope.

6 THE WITNESS: Okay. "Efficient" is a vague
7 word here. Foster's system enables random access.
8 And also, potentially, it removes an impediment to
9 finding which key had been used to encrypt which
10 piece of content, potentially allows different keys
11 to be used without having to worry about finding the
12 particular key that was used to encrypt a piece of
13 content.

14 All of these are discussed in Foster. So
15 it changes the system such that the key that was
16 used to encrypt the content is -- is easily found.
17 That's the easiest way to put it.

18 Q. BY MR. ELLIOTT: That is the improvement
19 that Foster provides over other DRMS systems, right?

20 MR. NIEBERG: Object to form. Scope.

21 THE WITNESS: I think an improvement that
22 Foster discusses, that still provides DRMS but was
23 potentially not known previously.

24 Q. BY MR. ELLIOTT: Okay. And that's an
25 improvement that Foster provides over CAS systems,

1 because the previous systems didn't have it, right?

2 MR. NIEBERG: Object to form.

3 THE WITNESS: Can you ask me that question
4 again complete?

5 Q. BY MR. ELLIOTT: It's actually more
6 efficient because the previous systems didn't have
7 that, right?

8 MR. NIEBERG: Object to form.

9 Q. BY MR. ELLIOTT: Foster's invention makes
10 it more efficient, because the previous systems did
11 not have synchronization, right?

12 MR. NIEBERG: Object to form. Scope.

13 THE WITNESS: Sorry. What is "it"?

14 MR. ELLIOTT: Foster's -- can you read back
15 the question, please?

16 (Reporter read back as requested.)

17 MR. ELLIOTT: Sorry. Can you read back his
18 previous answer?

19 (Reporter read back as requested.)

20 Q. BY MR. ELLIOTT: So Foster makes the DRMS
21 system more efficient as compared to prior art DRMS
22 by providing synchronization, right?

23 (Discussion off the record.)

24 (A recess was taken.)

25 Q. BY MR. ELLIOTT: So I think my question was

1 right, other prior art CAS systems, right?

2 MR. NIEBERG: Object to form. Scope.

3 THE WITNESS: Foster discusses CAS systems
4 that do not have synchronization.

5 Q. BY MR. ELLIOTT: That's right. And in
6 paragraph 52 Foster says, "Thus" -- I'm looking at
7 around the middle of paragraph 52. "Thus, similar
8 to DRMS, the CAS also fails to provide synchronous
9 delivery of keys with encrypted content," right?

10 A. I see that sentence.

11 Q. And that's true, isn't it?

12 MR. NIEBERG: Object to form. Scope.

13 THE WITNESS: The particular conditional
14 access system that is discussed in Foster does not
15 have synchronization.

16 Q. BY MR. ELLIOTT: And that's the system
17 discussed in Figure 2, right, or depicted in
18 Figure 2?

19 A. Again, that's a system that can have
20 synchronization. But as discussed, or as it is
21 implemented in Figure 2, it does not provide
22 synchronization.

23 MR. ELLIOTT: Can you read that back,
24 please?

25 (Reporter read back as requested.)

1 Q. BY MR. ELLIOTT: I'm going to ask you to
2 turn to your declaration on the '116 patent.

3 MR. NIEBERG: I'm sorry. The reply?

4 MR. ELLIOTT: Yes. Your reply declaration.

5 Q. BY MR. ELLIOTT: Let me ask you to turn to
6 paragraph 9 of your reply declaration. This is
7 Exhibit 111.

8 A. Okay.

9 Q. I believe it is Exhibit 111. Do you have
10 it?

11 A. Yes.

12 Q. There you're discussing SFI's '854 patent.
13 Do you see that?

14 A. Yes.

15 Q. You don't contend, do you, that the '854
16 patent is prior art for the '116 patent?

17 MR. NIEBERG: Object to form. Scope.

18 THE WITNESS: I don't know the -- I don't
19 know the prior art history of '854 which was taught
20 in '116 off the top of my head.

21 Q. BY MR. ELLIOTT: So you have no opinion as
22 to whether it's prior art or not?

23 MR. NIEBERG: Object to form.

24 THE WITNESS: The discussion in that
25 paragraph is not to do with prior art or priority.

1 MR. NIEBERG: I'll object to form. Scope.

2 THE WITNESS: I don't know that I've done a
3 prior art or priority analysis of 1113 with respect
4 to the '116 patent.

5 MR. ELLIOTT: Colette, do you have the
6 Tajima prior art? I think it's Exhibit 1005. Can
7 you drop it into the chat?

8 MS. WOO: Yeah. I'll drop it into the
9 chat.

10 THE WITNESS: I have the Tajima open.

11 Q. BY MR. ELLIOTT: You have it open. Great.
12 When's the last time you reviewed the
13 Tajima reference?

14 A. I think over the weekend.

15 Q. Okay. So you looked at it over the
16 weekend?

17 A. Yes.

18 Q. About how much time did you spend looking
19 over it?

20 A. I don't recall specifically.

21 Q. Is the purpose of the invention of the
22 Tajima to improve the security of personal
23 information stored in areas connected to the
24 Internet?

25 MR. NIEBERG: Object to form.

1 It's the fact that the total key information is used
2 routinely to mean an object that includes the
3 encryption key.

4 Q. BY MR. ELLIOTT: Right. But you're not --
5 again, it's not your opinion that the '854 patent is
6 prior art to the '116 patent, right?

7 MR. NIEBERG: Object to form.

8 THE WITNESS: I don't have an opinion with
9 respect to the priority of the '854 patent or
10 whether it's prior art to '116.

11 Q. BY MR. ELLIOTT: And with respect to in
12 paragraph -- in paragraph 11, you refer to
13 Exhibit 1113.

14 A. That's correct.

15 Q. It's not your opinion that Exhibit 1113 is
16 prior art to the '116 patent, is it?

17 MR. NIEBERG: Object to form.

18 THE WITNESS: Off the top of my head, I
19 don't remember the dates on Exhibit 1113. I believe
20 it's contemporaneous, but I'd have to take a look at
21 it. But again, here what I'm saying is that Exhibit
22 1113 likewise uses the term "key information" to
23 encompass at least the key.

24 Q. BY MR. ELLIOTT: But you're not offering
25 the opinion that Exhibit 1113 is prior art?

1 THE WITNESS: The Tajima discusses various
2 methods of improving security of data. And some of
3 the examples that it uses has to do with personal
4 information.

5 Q. BY MR. ELLIOTT: Are there any examples in
6 Tajima other than personal information?

7 MR. NIEBERG: Object to form. Scope.

8 THE WITNESS: I'd have to take a look at
9 the Tajima. But again, the Tajima I know discusses
10 shopping; and depending upon what information is
11 stored with shopping, that may or may not be
12 personal information.

13 Q. BY MR. ELLIOTT: Let's see. Is there any
14 discussion in Tajima of the storage of media
15 information?

16 MR. NIEBERG: Object to form.

17 THE WITNESS: I'd have to take a look at
18 the Tajima. But again, the method of Tajima can be
19 applied to any type of data. It's just digital data
20 that can be split and encrypted. So there would be
21 no reason for it not to be applicable to any kind of
22 data.

23 Q. BY MR. ELLIOTT: There's no example in the
24 Tajima, though, of applying it to media information,
25 is there?

MR. NIEBERG: Object to form.

THE WITNESS: I have to -- sorry. At least -- or I can look through the Tajima, but I don't know that the Tajima produced media information.

Q. BY MR. ELLIOTT: When you were reviewing it this weekend, did you find any example like that?

MR. NIEBERG: Object to form.

THE WITNESS: I don't know that I was looking for media information, per se. But off the top of my head, I don't -- I can't answer the question. I don't know whether I read that or not.

Q. BY MR. ELLIOTT: Tajima makes a distinction between data fragments and data portions, doesn't it?

MR. NIEBERG: Object to form. Scope.

THE WITNESS: Can you point me to a particular part of Tajima that you want me to consider?

Q. BY MR. ELLIOTT: You're not aware of the distinction between data fragments and data portions in Tajima?

MR. NIEBERG: Object to form. Scope.

THE WITNESS: Yeah, those are very similar phrases, and Tajima uses data fragments. I think it

also uses data portions. And again, if there's a specific distinction you would like for me to comment on, I'll be happy to look at it.

Q. BY MR. ELLIOTT: But sitting here now, you're not aware of the distinction between those two?

MR. NIEBERG: Object to form.

THE WITNESS: Tajima uses both phrases, "data fragments" and "data portions." And I'd have to take a look at Tajima to see to what extent it's being used differently.

Q. BY MR. ELLIOTT: Look, for example, at paragraph 111.

Does that refresh your recollection as to the distinction between data fragments and data portions in Tajima?

A. I'm looking.

MR. NIEBERG: Object to form.

MR. ELLIOTT: I'll withdraw the question.

Q. Let me ask you about something else.

The -- Tajima divides the personal information that is being secured into data fragments, data portions, and it stores the data fragments in different locations; is that correct?

MR. NIEBERG: Object to form.

THE WITNESS: Tajima divides information that can be personal information. And eventually the data fragments are encrypted, and each encrypted fragment is then stored in different databases.

Q. BY MR. ELLIOTT: That's one embodiment of Tajima that you mentioned, right?

A. That's correct.

MR. NIEBERG: Object to form.

MR. ELLIOTT: And the -- I'm sorry. Can you read that answer back, please?

(Discussion off the record.)

(Reporter read back as requested.)

Q. BY MR. ELLIOTT: It's important in -- in Tajima the different databases are controlled by separate or by different entities, right?

MR. NIEBERG: Object to form. Scope.

THE WITNESS: At least in some implementations of Tajima that may be the case.

Q. BY MR. ELLIOTT: Well, take a look at the abstract of Tajima. It says, "Personal information that is registered with areas that can be connected to the Internet, divided into plurality data portions, which are then each registered with areas that are under different control."

What do you understand is meant by

"registered" there?

A. Tajima uses "registered" in different contexts. But among things, registered with a database usually means stored with it, stored in the database.

Q. It says that they're registered with areas that are under different control.

What does that mean?

MR. NIEBERG: Object to form. Scope.

THE WITNESS: It is saying what it is. It's registered with areas that are under different control.

Q. BY MR. ELLIOTT: What do you understand to be meant by "control"?

MR. NIEBERG: Object to form. Scope.

THE WITNESS: I think that's a very broad word here. Different control is just that, depending -- there are different examples of types of control, for instance. But it could be administrative control. It could be different control based upon other attributes as well.

Q. BY MR. ELLIOTT: The examples in Tajima, though, are of control, different control by different entities, right, different certificate authorities?

MR. NIEBERG: Object to form. Scope.

THE WITNESS: Is there a specific part of Tajima you would like for me to look at?

Q. BY MR. ELLIOTT: Well, can you answer the question that I asked?

MR. NIEBERG: Object to form. Scope.

THE WITNESS: Not without being specific about what is it that you're asking about.

Q. BY MR. ELLIOTT: Well, in Tajima, the areas, the databases are controlled by different certificate authorities, right?

MR. NIEBERG: Object to form. Scope.

THE WITNESS: I think that's one of the examples, but I don't know that Tajima requires there to be different certificate authorities.

It is, in general, talking about distributed storage, and certificate authorities are an example of different areas with different control.

Q. BY MR. ELLIOTT: Different certificate authorities would be different entities that issue the certificates, right?

MR. NIEBERG: Object to form. Scope.

THE WITNESS: You would have to take a specific example and see what the administrative

the invention is not describing the present invention, Tajima's invention?

MR. NIEBERG: Object to form. Scope.

THE WITNESS: That's not what it said. I think one of ordinary skill reading Tajima would understand that it is a method for securing data. And the example that is being used is for personal data and specific storage areas and so on.

Q. BY MR. ELLIOTT: Well, the summary of the invention at least describes an authentication means -- in looking at paragraph 46, it says, "The authentication means or service provider divides the submitted personal information through a plurality of data portions, registers at least one of the plurality of data portions with the database that is provided in the authentication means or service provider, and register the other portions with other areas that are connectable to the Internet and under control that is separate from the authentication means or service provider." Do you see that?

A. Yes.

Q. It's fair to say, isn't it, that part of Tajima's invention is making sure that the data fragments, the data portions, are stored in areas that are not under the control of the entity that's

structure is for the certificate authorities.

Q. BY MR. ELLIOTT: Let me ask you to look at the summary of the invention.

A. I'm sorry. Can you give me a paragraph number to look at?

Q. It's around paragraph 44, 45, 46.

A. Okay.

Q. Is it your understanding that the summary of invention describes the Tajima's invention?

MR. NIEBERG: Object to form. Scope.

THE WITNESS: The summary of invention is exactly that. It summarizes a use case. But I think it is important to understand that Tajima teaches a method that can be used to secure data. And one of the use cases is what's being described in the summary.

Q. BY MR. ELLIOTT: Well, the summary is not describing the use case, right? The summary is describing, as it says in paragraph 45, the present invention. It is not describing a particular embodiment, is it?

MR. NIEBERG: Object to form. Scope.

THE WITNESS: I would disagree with that characterization. I think that's much too narrow.

Q. BY MR. ELLIOTT: You think the summary of

doing the dividing?

MR. NIEBERG: Object to form. Scope.

THE WITNESS: That's one implementation of Tajima. But in general, Tajima is describing a method for securing data and how to split data and store data.

Q. BY MR. ELLIOTT: Are you aware of any example in Tajima where the -- the data is stored in locations that are not under separate control or not under different control?

MR. NIEBERG: Object to form. Scope.

THE WITNESS: I would have to take a look at Tajima and see whether -- what it says about storage.

Q. BY MR. ELLIOTT: Sitting here today, you're not aware of any example; is that right?

MR. NIEBERG: Object to form.

THE WITNESS: No. I would just have to take a look at Tajima because certainly there are -- while there are many implementations and embodiments, and I don't have them memorized off the top of my head.

Q. BY MR. ELLIOTT: But you have looked at Tajima a number of times now, right, in connection with preparing your declaration for the petition, in

1 terms of preparing for your deposition the first
2 time around, in terms of preparing your declaration.

3 In this case you looked at Tajima again.
4 You looked at it again this weekend in preparing for
5 your deposition.

6 Having looked at it all those times, are
7 you aware of any example in Tajima where the data is
8 not stored in locations that are under separate or
9 different control?

10 MR. NIEBERG: Object to form. Scope.

11 THE WITNESS: Sorry. That's a very long
12 question. Can you ask me again?

13 MR. ELLIOTT: Can you read it back?

14 (Reporter read back as requested.)

15 MR. NIEBERG: Object to form. Scope.

16 THE WITNESS: As I said, I'd have to take a
17 look at the storage aspects of Tajima again to be
18 able to fully answer your question.

19 Q. BY MR. ELLIOTT: But sitting here, you're
20 not aware of any examples; is that right?

21 MR. NIEBERG: Object to form.

22 THE WITNESS: I don't have Tajima
23 memorized. I just have to look at it again to see
24 the extent of disclosure of storage in Tajima.

25 Q. BY MR. ELLIOTT: Why would Tajima require

1 different methods, different security protocols and
2 so on. And that could reduce the chance of one
3 compromise spilling over to another.

4 MR. ELLIOTT: Let me take a quick break.
5 We've been going more than an hour, I think. Can we
6 take five minutes?

7 MR. NIEBERG: Sure.

8 MR. ELLIOTT: Let's go off the record.

9 (A recess was taken.)

10 Q. BY MR. ELLIOTT: Let me ask you to turn
11 back to your declaration, which I think is
12 Exhibit 1111.

13 A. Just a second. I'm having some issues with
14 my computer again. Okay.

15 Q. I'm going to turn back to one of the
16 references here.

17 Let me ask you to turn to page 7 of your
18 declaration. I just had a question about the figure
19 that you have there.

20 MR. NIEBERG: I'm sorry. Page 7 or
21 paragraph 7?

22 MR. ELLIOTT: Page 7. There's a figure on
23 page 7.

24 THE WITNESS: Sorry. Page 7 of the PDF
25 or -- sorry. This is --

1 separate or different control of the areas in which
2 the data fragments are stored?

3 MR. NIEBERG: Object to form. Scope.

4 THE WITNESS: Where it says that, it's not
5 clear that Tajima's method requires that. Tajima's
6 embodiments and examples may state that. But in
7 general, this is the same sort of idea that's in
8 Hayhurst, for instance, also described to a certain
9 extent by the patents at issue.

10 When we divide and store data at different
11 locations, then all of those locations would have to
12 be, well, compromised, assuming the full data has to
13 be recovered, and that adds a measure of security.

14 Q. BY MR. ELLIOTT: So just considering the
15 examples in Tajima that require Tajima's statement
16 that separate or different control is necessary, for
17 example, in paragraph 46, why would separate control
18 be necessary?

19 A. Well, it's not clear to me that Tajima says
20 it's necessary. The idea is that if data is stored
21 in different places, then ideally, if one site is
22 compromised, that does not automatically, you know,
23 lead to a compromise at another site. One way to
24 potentially decrease that chance is to make them
25 have different control. Potentially they will use

1 Q. BY MR. ELLIOTT: Page 7 of the declaration.

2 A. Which declaration?

3 Q. Your reply declaration.

4 A. For?

5 Q. The '116?

6 A. Okay. Because they're all Exhibit 1111.

7 Q. Oh, that's right. Yes. It's Exhibit 1111
8 in the 212 IPR relating to the '116 patent.

9 A. Okay.

10 Q. You see the figure on page 7?

11 A. Yes.

12 Q. That's Figure 13 of the Tajima reference,
13 right?

14 A. Sorry. Let me make sure I'm looking at the
15 correct one. This is before paragraph 10?

16 Q. I'm sorry. I apologize. I'm looking at
17 the wrong thing.

18 I think it's on page 18 of your
19 declaration. I was looking at your counsel's brief.
20 It's before paragraph 24.

21 A. Okay.

22 Q. This is a figure that you put into your
23 declaration?

24 A. That's correct.

25 Q. It's Figure 13 of the Tajima reference,

1 Exhibit 1005?

2 A. That's right. I annotated it, but yes.

3 Q. And I get -- my first question is what the
4 two squares that you have highlighted in yellow,
5 what are those?

6 MR. NIEBERG: Object to form. Scope.

7 THE WITNESS: The two squares is what
8 Tajima usually calls key information.

9 Q. BY MR. ELLIOTT: Key information for what?

10 MR. NIEBERG: Object to form.

11 Q. BY MR. ELLIOTT: Well, actually, strike
12 that. Let me ask the question differently.

13 What's your basis for saying that those two
14 squares are key information?

15 A. My basis is reading Tajima's specification,
16 and also that part is similar to how Figure 11 also
17 describes it. And in Figure 11 those two squares
18 are specifically labeled as "key information."

19 Q. In Figure 13 in your declaration, those
20 squares aren't labeled, are they?

21 A. They do not have the phrase "key
22 information" on top of the curly bracket.

23 Q. Okay. And then you talk about dividing
24 step in the figure.

25 What do you mean by "dividing step"?

1 divided there -- first off, that's the -- what's
2 being divided there is information on the key that
3 was used in encrypting the personal information,
4 right?

5 A. What is being divided there is the
6 encrypted personal information and the information
7 on the key that was used in encrypting.

8 Q. Okay. Then what is the -- in Figure 13 in
9 your declaration, what is the relationship between
10 the squares highlighted in yellow, if there is any,
11 between the squares highlighted in yellow and the
12 squares highlighted in blue?

13 MR. NIEBERG: Object to form.

14 THE WITNESS: As paragraph 113 continues,
15 information regarding the key that was used to
16 encrypt data fragment Y is attached to encrypted
17 data fragment X. Then the information regarding the
18 key that was used to encrypt data fragment X is
19 attached to encrypted data fragment Y.

20 So the dividing step creates the blocks,
21 and the key information is then swapped in this
22 example.

23 Q. BY MR. ELLIOTT: What key information?

24 A. The key information is the information
25 regarding the key that was used to encrypt data

1 A. So if we take a look at paragraph 113 in
2 Tajima, which I have quoted, that discusses this
3 figure.

4 MR. ELLIOTT: Can you read back the
5 question and answer, please?

6 (Reporter read back as requested.)

7 Q. BY MR. ELLIOTT: Okay. But what is meant
8 by -- what did you mean when you labeled a portion
9 of Figure 13 in your declaration as "dividing step"?

10 MR. NIEBERG: Object to form.

11 THE WITNESS: As paragraph 113 says, "As
12 yet another method of dividing personal information
13 as shown in Figure 13. Personal information that
14 the user of terminal" -- "user of user terminal (10)
15 has submitted to certificate authority (40a) is
16 first encrypted, and the encrypted personal
17 information and the information on the key that was
18 used in encrypting the personal information are then
19 divided into a plurality of data portions, each of
20 fixed length as shown in Figure 8, or of arbitrary
21 length as shown in Figure 9 or 10."

22 And so this dividing step is what's being
23 described in that sentence -- or those sentences I
24 just read.

25 Q. BY MR. ELLIOTT: Okay. And what's being

1 fragment Y, which is attached to data fragment --
2 encrypted data fragment X. And the information
3 regarding the key that was used to encrypt data
4 fragment X is attached to encrypted data fragment Y.

5 Q. So is there any relationship between -- in
6 Figure 13 between the squares highlighted in yellow
7 and the squares highlighted in blue?

8 MR. NIEBERG: Object to form. Scope.

9 THE WITNESS: The information from the
10 squares in yellow are present in information in the
11 squares highlighted in blue. But the steps -- at
12 least the information, key information, of Y is
13 stored with data fragment X, and vice versa.

14 Q. BY MR. ELLIOTT: Is the key information of
15 X, does that correspond to one of the yellow boxes
16 that you have highlighted in Figure 13?

17 MR. NIEBERG: Object to form.

18 THE WITNESS: There was information that is
19 in the yellow that is also present in blue.

20 Q. BY MR. ELLIOTT: Can you explain that?

21 A. Sure. The yellow part is, again, as I
22 said, "the encrypted personal information and the
23 information on the key that was used in encrypting
24 the personal information are then divided into
25 plurality of data portions, each of fixed length as

1 shown in Figures" -- "Figure 8 or of arbitrary
2 length as shown in Figures 9 and 10."

3 And then, "This plurality of data portions
4 is then arranged into two data fragments, data
5 fragment X and data fragment Y, according to a set
6 method of arrangement, and further, data fragment X
7 and data fragment Y are each encrypted. The
8 encrypted data fragment X is then registered with
9 database (41a) of certificate authority (40a) and
10 the encrypted data fragment Y is registered with
11 database (41b) of certificate authority (40b).

12 "Information regarding the key that was
13 used to encrypt data fragment Y is attached to the
14 encrypted data fragment X, and information regarding
15 the key that was used to encrypt data fragment X is
16 attached to encrypted data fragment Y."

17 So there is information in the dividing
18 step that is attached to the data fragments X and Y.

19 Q. Okay. But there's no direct correspondence
20 between one of the yellow boxes and one of the blue
21 boxes?

22 MR. NIEBERG: Object to form. Scope.

23 THE WITNESS: It's not clear. I would
24 agree with that. I mean, Figure 13 is doing the --
25 Figure 13 is doing what was in Figure 11 and also

1 what's in the yellow boxes is information about the
2 key that was used to encrypt all of the data, all of
3 the personal data? What's in the blue boxes is key
4 information or information about the key that was
5 used to encrypt the two fragments, X and Y?

6 MR. NIEBERG: Object to form.

7 THE WITNESS: I wouldn't agree with such a
8 narrow characterization.

9 Q. BY MR. ELLIOTT: Why not?

10 A. There was more information than just the
11 information used to encrypt the data in the yellow
12 boxes. And there was more information than just the
13 keys used to encrypt the data fragments in the blue
14 boxes.

15 MR. ELLIOTT: Can you read that answer
16 back, please?

17 (Reporter read back as requested.)

18 MR. ELLIOTT: I don't have any additional
19 questions at this time.

20 MR. NIEBERG: Can we take, like, a -- call
21 it a 13-minute break just to figure out if I have
22 any redirect?

23 MR. ELLIOTT: Of course.

24 (A recess was taken.)

25 //

1 doing another encryption. And it is swapping the
2 keys and information from the yellow boxes that are
3 present in the data fragments and the key
4 information.

5 Q. BY MR. ELLIOTT: Information about the
6 yellow boxes is included in the key information
7 that's in the blue boxes?

8 MR. NIEBERG: Object to form. Scope.

9 THE WITNESS: There was metadata about the
10 dividing step, and that's in the fragments in the
11 blue boxes.

12 Q. BY MR. ELLIOTT: I see. Is that what's
13 referred to in the figure there as information
14 relating to the method of dividing and the method of
15 arranging the personal information?

16 MR. NIEBERG: Object to form.

17 THE WITNESS: That is -- that is a label
18 that is in the figure. That's correct.

19 Q. BY MR. ELLIOTT: And is that the
20 information that corresponds to what's in the yellow
21 boxes?

22 MR. NIEBERG: Object to form. Scope.

23 THE WITNESS: That is at least some of the
24 information that is in the yellow boxes.

25 Q. BY MR. ELLIOTT: Is it fair to say that

1 EXAMINATION BY MR. NIEBERG

2 Q. Hi, Dr. Bhattacharjee. Do you recall being
3 asked some questions today about the Hayhurst
4 reference?

5 A. Yes.

6 Q. Do you recall being asked questions about
7 Hayhurst's field of endeavor?

8 A. Yes.

9 Q. Okay. Can you please turn to your
10 declaration for the '854 patent -- reply declaration
11 for the '854 patent, which is Exhibit 1111?

12 A. Okay.

13 Q. Can you please turn to paragraph 11?

14 A. Yes.

15 Q. Can you please read that paragraph?

16 MR. ELLIOTT: Can you hang on one second?
17 I'm having a problem switching back and forth
18 between the different Exhibit 1111s.

19 Okay. I have it. Where are we at?

20 MR. NIEBERG: Paragraph 11 on page --
21 native page 7.

22 THE WITNESS: This is '854, correct?

23 MR. NIEBERG: Correct.

24 THE WITNESS: I'm ready.

25 MR. NIEBERG: Stephen, are you ready? I

1 didn't hear.

2 MR. ELLIOTT: Yes. Yes.

3 Q. BY MR. NIEBERG: Can you please read
4 paragraph 11?

5 A. Paragraph 11, "SFI argues the '854's field
6 is securing data, including securely storing and
7 communicating the secured data, POR 33 through 35.
8 I have not been asked to opine on whether SFI has
9 identified the correct field of endeavor for the
10 '854 patent.

11 "That is not necessary to my opinion
12 because for the reasons I discuss below, it is my
13 opinion Hayhurst is at least in the same field of
14 endeavor that SFI has identified for the '854
15 patent."

16 Q. In paragraph 11 have you identified the
17 field of endeavor for the Hayhurst reference?

18 MR. ELLIOTT: Objection.

19 THE WITNESS: Well, Hayhurst is at least in
20 the same field of endeavor that SFI has identified
21 for the '854 patent.

22 Q. BY MR. NIEBERG: And what field of endeavor
23 is that?

24 A. The field is securing data, including
25 securely storing and communicating the secured data.

1 MR. NIEBERG: Yeah. I guess I'll get a
2 copy.

3 COURT REPORTER: And, Mr. Elliot?

4 MR. ELLIOTT: No, I don't need a copy.
5 (Whereupon the proceedings were
6 concluded at 12:12 p.m.)
7 ---o0o---

1 Q. In light of your testimony that you gave
2 today, does paragraph 11 of your '854 reply
3 declaration still reflect your opinion on the field
4 of endeavor for the Hayhurst reference?

5 A. Yes.

6 Q. Did any of the testimony you gave today
7 cause you to reconsider your opinion of what is
8 Hayhurst's field of endeavor?

9 A. No.

10 Q. Did any of the testimony you gave today
11 cause you to change any of the opinions you offered
12 in your reply declarations?

13 A. No.

14 MR. NIEBERG: No further questions.

15 MR. ELLIOTT: Colette, should we talk, or
16 do you want to --

17 MS. WOO: Yeah. Can we take a quick
18 five-minute break?

19 MR. ELLIOTT: Yeah. Thanks.

20 MS. WOO: Thank you.

21 (A recess was taken.)

22 MR. ELLIOTT: I don't have any additional
23 questions.

24 COURT REPORTER: Mr. Nieberg, did you need
25 a copy of the transcript?

1 I have read the foregoing deposition transcript and
2 by signing hereafter, approve same.

3 Dated _____.

4 _____
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6 (Signature of Deponent)
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certify:
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Certificate Number CSR 10710 issued by the Court
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force and effect. (Bus. & Prof. § 8016)
I am not financially interested in this
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I am the deposition officer that
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) Ss.
COUNTY OF SAN FRANCISCO)
I, Balinda Dunlap, hereby certify:
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Written notice pursuant to Code of Civil
Procedure, Section 2025.520(a), having been sent,
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() In person, at the office of the
deposition officer, made the changes set forth on
the original of the transcript. (The parties
attending the deposition have been notified of said
changes.)
() Approved the transcript by signing it.
() Refused to approve the transcript by
not signing it.
() By means of a signed letter, made the
changes and approved or refused to approve the
transcript as set forth therein. (Said letter has
been attached to the original transcript and copies

a true record of the testimony given. (Civ. Proc. §
2025.540(a))
I have not, and shall not, offer or provide
any services or products to any party's attorney or
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() Failed to approve the transcript
within the allotted time period.
Dated _____

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ability 57:12	11:17	18:19 26:4,24,25 27:2 51:6 68:2	95:20 98:1
able 4:23 18:22 37:10 46:10 49:23 52:16 53:4,6,17 54:1,11 56:17 57:19 58:10 58:11 59:3 90:18	adds 91:13	annotated 94:2	areas 80:23 84:21,23 85:6 85:11 86:10,18 88:8 88:18,24 91:1
abstract 10:8,13 84:20	administer 106:17	answer 12:16 17:19,25 34:19 49:21 58:11 63:11 66:9 69:7 75:18 82:11 84:10 86:4 90:18 95:5 100:15	argues 102:5
abstraction 42:6	administrative 85:20 86:25	answered 71:8	arranged 98:4
access 5:18 14:19 15:2,4,8 15:12,17 22:23,25 23:2,4,11,19,23 36:12,15 45:2 47:5 49:15 50:3,15 51:6 52:15 54:21 76:7 77:14	admit 32:24	apologize 93:16	arrangement 98:6
accessed 15:7 20:15	admits 7:20	APPEAL 1:2	arranging 99:15
account 57:3	admitted 19:22	appear 9:19	art 9:3,6,18 74:3 75:21 76:3 77:1 78:16,19 78:22,25 79:6,10,16 79:25 80:3,6
accurate 4:23 5:2 26:7	affirmation 106:21	appeared 4:8	asked 86:5 101:3,6 102:8
acquire 54:11,21	affirmations 106:18	appliances 30:6	asking 65:7 68:3 86:8
acquiring 46:16	ago 17:11	applicable 81:21	aspects 74:23 90:17
action 106:14 107:6,15,19 108:11	agree 45:15,19 63:22 66:17 98:24 100:7	application 43:18	assume 54:17
actions 59:13	agreed 8:5	applications 13:4	assuming 54:10 56:20 91:12
actual 17:18	agreeing 4:17	applied 81:19	assumption 11:11 24:25
added 16:16	algorithm 50:25 53:24 54:2 57:4,13	applying 81:24	Atlantic 2:4
additional 100:18 103:22	allotted 108:12 109:4	appreciate 4:18	ATSC 30:19,20
addresses 48:16	allows 76:10	approach 49:7	attach 51:24
addressing	amount 12:20 32:21 46:11 57:18 58:5,20	approve 105:2 108:20,23 109:3	attached 96:16,19 97:1,4 98:13,16,18 108:25
	analog 17:23 30:20,24 31:10	approved 108:19,23	attachment 42:15,21
	analogous 9:3,6,18	approximately 5:23 6:9	attacker 46:8,21,24,25 47:2 50:2 52:15,20,23 53:4,14,15 54:10,14 54:20,22 55:2 56:15
	analysis 9:3,18 10:4,11,18 80:3	April 13:18	
	analyzed 58:4	arbitrary	
	and/or		

56:21 57:3	50:2,19 59:20 60:11	54:8	93:19
attacker's	66:9,10 67:22,23	binary	briefly
58:23	74:12,14 75:14,16	15:25	6:6
attacks	75:17,19 77:23,25	bit	broad
53:16	84:10,12 90:13,14	27:8,25	2:13 14:15 15:16,22
attending	92:11,15 95:4,6	bits	16:20 17:15 21:4
107:7 108:17 109:1	100:16,17 101:17	27:2 29:1,13,14,19	22:14 23:1,10,17
attorney	background	32:3,4,9,18 49:13	28:22 41:12,17
106:15 107:4,13,14	10:15,20	51:2 56:14,23 57:5	63:23 65:22 85:16
attorneys	back-end	block	broadcast
107:7,9	40:4,15,18,19 70:5	35:25	28:8,19 30:9,13
attorney-client	bad	blocks	34:22
9:13,22	53:8	96:20	broadly
attributes	Balinda	blue	16:21 44:2
85:21	1:24 4:6 66:8 106:6	96:12 97:7,11,19	broken
audio	108:5	98:20 99:7,11 100:3	35:24 44:20
35:6	barely	100:13	browser
authentication	32:24	Blu-ray	62:21
88:10,12,16,19	base	32:17	Bruce
authorities	28:25	Board	12:5,10,14,15,23
85:25 86:11,15,17,21	based	1:2 106:11	brut
87:1	85:21	Boston	53:15
authority	bases	2:5	built
95:15 98:9,11	21:17	bottom	25:16
authorized	basic	25:25 52:9	built-in
106:17	17:9	Boulevard	31:21 33:10
authors	basis	2:9	bundle
18:9	5:21 21:11,16 66:25	bounds	49:14
automatically	67:4,12 68:23 69:2	33:24 72:16	bundled
91:22	69:22 70:12,15	box	49:20
available	71:11,13 72:4 94:13	36:23 52:10,12,16,16	Bus
15:18 23:11 107:8	94:15	54:4	106:12
Avenue	believe	boxes	bytes
2:4	12:13 13:8,18 37:20	50:9,22 52:10 54:4	27:2 49:13
aware	44:9 78:9 79:19	97:15 98:20,21 99:2	
82:20 83:5 89:7,16	beneficial	99:6,7,11,21,24	C
90:7,20	25:17,19	100:1,3,12,14	
a.m	best	bracket	C
4:5 59:18	34:19 54:9	94:22	2:1 49:9
	beyond	break	cable
B	35:8	38:7 43:1 51:15	17:13,21,23 18:1
B	Bhattacharjee	59:17 92:4 100:21	23:2 24:10 30:22,24
49:9	1:16 3:2 4:9,16 9:12	103:18	30:25
back	9:21 38:13 59:21	breaking	California
17:8 37:20 38:11	60:2,21 64:15 101:2	44:24	2:10 4:1,5,8 106:3,9
39:1 41:2,6,14 44:7	bigger	brief	106:11,18 108:2
			call

100:20 called 4:10 38:24 41:14 59:5 calls 94:8 capabilities 52:20,22 53:14 57:3 CAS 22:23 23:7,14,19,21 23:25 24:5,9,18 25:2,2,4,8 41:15 76:25 77:1,3,8 case 1:8 20:15,24 21:10 27:6 37:18 44:19 51:2 84:18 87:12,18 90:3 cases 21:7 25:17,18 34:14 34:15,20 36:8 74:21 74:22 87:15 cause 103:7,11 caution 9:21 CDs 32:16,24 33:7 certain 15:17 23:6 32:2,20 58:6 91:8 certainly 10:19 15:17 17:5 22:8 23:11 37:24 57:16 89:19 certificate 85:24 86:11,15,17,20 87:1 95:15 98:9,11 106:1,10 108:1 certificates 86:22 Certified 4:6,12 106:8 certify 106:7 108:5 cetera	36:24 49:9 chance 56:16,22 57:8 91:24 92:2 chances 56:22 57:11 change 6:15 21:15 73:19 103:11 changed 40:8 changes 6:17 76:15 108:15,18 108:23 characterization 62:19 63:23 66:18 87:24 100:8 characterized 32:2 chat 7:1 13:8 42:24 51:14 80:7,9 choice 18:14 20:13 25:7,20 choose 25:10 chose 53:9 cited 6:5 Civ 106:2,16,21 107:1,9 107:19 Civil 106:18 108:9 Civ.Proc 108:1 claim 7:23 clean 5:7,13 6:25 7:3 13:7 clear 17:24 20:25 50:7 53:1 56:10 71:3 91:5,19 98:23 client	62:21 code 32:12 106:18 108:9 codes 28:15 31:14,18 32:15 33:3 35:20 codification 34:17 Colette 2:10 80:5 103:15 collect 107:16 colored 16:25 commencing 4:4 commensurate 16:23 17:10 19:13 51:10 comment 83:3 comments 107:12 commonly 17:7 communicating 102:7,25 communication 31:24 compared 75:21 compatibility 40:3 70:4,21 71:1 72:5,7 73:4 compatible 40:6 65:6 71:3,23 73:25 complete 49:6 75:4 compliance 40:3 70:5,21 72:5,8 complicated 69:1 component 15:5 components	21:5,6,14 22:7,14,16 24:8,14 38:22 47:17 62:20 63:5 65:23 66:7,12,20,23 69:25 70:8 71:18 72:18 compromise 45:1 46:10 91:23 92:3 compromised 46:5 91:12,22 computation 57:18 58:5,20 59:2 computational 57:12 58:20 Computationally 58:9 computer 12:16,21,22 42:14,20 57:5 58:15,25 92:14 concept 15:17,22 16:20 conclude 61:14 concluded 104:6 conclusion 18:19 conditional 22:23,24 23:2,11,19 77:13 conditions 15:2,9 23:6 conduct 59:22 conducting 4:19,20 CONFIDENTIAL 1:18 confusion 69:18 connectable 88:18 connected 59:1 80:23 84:21 connection 8:17 72:10 89:24
---	---	---	---

consider 10:1,5,7,12,13,15,19 11:20 12:14,23 35:5 43:9 57:8 82:19 considered 12:1 23:25 24:2 29:5 43:12 considering 9:8 10:22 11:5,18,24 91:14 considers 23:24 consisting 107:11 constraints 25:16 consume 26:4 27:9 consumer 36:23 37:1,3,24 contain 28:11 contains 35:5 48:5 contemporaneous 79:20 contend 78:15 content 14:17,18 15:1,4,5,8 15:12,20,24 16:8,22 18:4 19:11,12,15,20 19:25 20:1,4,5,10 20:11 21:8,13,20,25 23:4,23 24:19 25:6 25:12,17 26:2,3,14 26:14,16,17,19 27:5 27:6,8 35:5 36:24 36:25,25 37:5,6,12 37:19,20,22,22 38:18,19,24 39:10 39:11,18 40:2 41:22 41:22 42:2,5 47:5 63:19,20 64:2,2,7,7 65:5 66:14,15 67:2 67:3,11,15,15 68:10	68:11,14,15,21,22 70:2,20 71:21 72:12 72:13,24,25 73:13 73:14,20,22 76:2,3 76:10,13,16 77:9 contents 16:11 41:15 context 12:21 14:16 16:6 29:3,8,22 30:17 40:11,19 41:3 46:19 71:5 73:12 contexts 85:3 continues 96:14 control 15:18 84:24 85:7,12 85:14,17,19,20,21 85:23,23 86:19 88:19,25 89:9,10 90:9 91:1,16,17,25 controlled 84:14 86:10 controller 48:5 controls 48:5 conversations 9:13,22 convert 53:4 copies 5:7,9,11,13,15 7:20 108:25 copy 6:23 7:1,4 8:20 13:7 57:22 103:25 104:2 104:4 correct 8:18,19 13:9 49:15 61:6,7,12,13 68:5,7 79:14 83:24 84:7 93:15,24 99:18 101:22,23 102:9 correcting	31:21 correction 33:10 correctly 29:12 30:24 37:25 64:3,4 67:19 correlated 53:8 correspond 97:15 correspondence 98:19 corresponding 15:9 correspondingly 41:7 corresponds 99:20 corrupted 29:2,14,15,19 32:3 32:10 counsel 9:5,11 counsel's 93:19 counts 37:21 County 4:7 106:5 108:3 couple 60:10 coupled 21:15 25:19 coupling 21:24 course 7:3 11:14 53:11 72:4 100:23 Court 103:24 104:3 106:10 created 49:20 creates 96:20 crew 31:25	Cromwell 2:12 60:4 CRR 1:24 cryptographer 12:9 cryptographic 47:8,12,19,20 50:10 50:17,22 51:11 56:3 56:11,11 57:2,9,10 57:15,19 58:1,4,15 cryptographically 47:11,23 51:8 59:6 cryptographics 58:22 cryptography 12:24 13:2 50:6 58:18,19 59:12 CSR 1:24 106:6,10 curly 94:22 current 14:18 40:3 70:5 currently 4:25 customer 15:11
D			
dad 30:1 57:25 DASH 17:7 data 15:25 16:7 17:9 19:10 26:25 27:1,3 32:6,14,20,22 33:8 35:25 41:8 46:3,11 53:23 54:19 55:20 55:24 58:24 81:2,19 81:19,22 82:14,14 82:21,21,25 83:1,9 83:9,15,15,22,23,23 84:3,22 87:14 88:6 88:8,14,15,23,24			

89:5,5,6,8 90:7 91:2 91:10,12,20 95:19 96:16,17,18,19,25 97:1,2,3,4,13,25 98:3,4,4,5,6,7,8,10 98:13,14,15,16,18 99:3 100:2,3,11,13 102:6,7,24,25 database 85:4,5 88:15 98:9,11 databases 84:4,14 86:10 dataset 54:13,13 58:12 data/session 52:11 54:5 Dated 105:3 107:21 109:5 dates 79:19 day 4:4 50:24 days 17:24 32:1 decentralization 45:4 decentralized 44:19,19,23 decisions 6:5 declaration 6:10,20 7:4 8:8,9,12 8:13,18,22,25 60:15 78:2,4,6 89:25 90:2 92:11,18 93:1,2,3 93:19,23 94:19 95:9 96:9 101:10,10 103:3 declarations 6:2,7,12,16 103:12 decode 51:6 57:19 decoding 37:11 49:13 50:3 decoupled 21:8,13	decoupling 21:19 decrease 91:24 decrypt 52:17,23 53:2,18 54:1,11 56:17 decrypted 53:21 decrypting 57:8,11 decryption 49:22 50:18 defined 33:25 40:13 defines 36:22 delivered 16:11 18:4,16 delivery 16:12,19,21 17:13,16 18:5,10,13,16,22,25 19:5,25 20:4,10 24:18 25:5,11 38:18 38:24 39:10,18 41:21 42:1,4,5 43:19 44:3 48:13 63:19 64:1,6 66:13 67:2,10,14 68:10,14 68:21 72:12,24 73:13 77:9 demeanor 107:12 demonstrated 63:6 depend 54:25 depending 12:21 16:4 17:4 23:5 23:24 29:3,8,22 34:4 41:7 47:13,18 49:24 50:13 51:3 55:7 59:8 81:10 85:18 depends 14:15 26:23 30:17,23	31:5 40:11,19 46:19 47:10 52:19 54:16 54:25 56:5 63:3 depict 14:2 22:19 38:17 41:20 42:11,18 61:15 62:15 63:15 depicted 20:19 22:10 24:4,5 24:22 25:2 28:9 39:14 66:22 67:16 68:25 69:4,20 71:14 76:4 77:17 depicting 62:23 depiction 22:3 61:11,18,25 62:3,7 65:1,20 66:21 69:24 depicts 14:10 22:22 27:15,18 42:14,20 61:4,21 62:11,15 deponent 105:6 106:20 108:11 deposition 1:16 4:18,21 5:24 8:21 59:23 60:3 90:1,5 105:1 106:1 106:23,25 107:7,11 107:13 108:1,6,8,13 108:15,17 109:2 described 28:5 55:25 67:13 87:15 91:8 95:23 describes 42:3 70:23 73:7,7 87:9 88:10 94:17 describing 72:7 73:1,2 87:18,19 87:20 88:1 89:4 description 14:5 15:9 44:14 72:9 72:17,22,23 73:9,11 73:17 design	25:15 designed 33:11 34:19 36:7 38:23 53:12 designer 20:14 designers 34:8 detail 14:12 details 35:9 detecting 31:22 determining 10:2,8,16 43:10 deterministic 53:25 56:18 deterrence 45:12,19 deters 45:5 47:5 device 36:23 49:10,19 devices 37:24 49:19 50:21 diagram 14:10 22:22 61:4 difference 17:1,12 23:13 24:4 27:21 differences 17:6 different 17:17,22 21:5 22:7 24:8,13,14 28:5 34:11,14,20 38:22 44:20,22,22 50:21 51:1 55:19,24 56:3 57:17 62:22 65:23 69:19 76:10 83:24 84:4,14,15,24 85:2 85:7,11,17,18,20,23 85:24,24 86:10,15 86:18,18,20,21 89:10 90:9 91:1,10
---	---	--	--

91:16,21,25 92:1,1 101:18 differently 68:1 83:11 94:12 difficult 50:1 58:9 59:6 digital 14:11,14,20 15:24 28:8 30:8,13,16,20 30:22 31:1,2,8,9 41:18 61:4,18 62:1 62:3 64:20 65:15,17 65:21,24 66:3,5 73:17 74:19 81:19 direct 98:19 directly 36:24 37:6,22 disagree 62:10,18 65:9 87:23 discloses 7:23 disclosure 90:24 discontinuous 49:2 discs 33:7 discuss 9:5 11:17 102:12 discussed 14:9,12 22:21 76:14 77:14,17,20 discusses 18:10 74:24 76:22 77:3 81:1,9 95:2 discussing 18:14 20:22 21:18,24 78:12 discussion 38:9,25 39:6 52:1 73:6 75:23 78:24 81:14 84:11 dishes 31:7 dispute	7:22,24 dissociation 59:14 distinction 23:22 82:13,21 83:2 83:5,15 distribute 47:11 distributed 44:22 45:11,17,21 48:18 49:5,25 86:17 distributes 47:23 distributing 44:24 47:7 48:1 50:9 distribution 47:15,20 48:6 51:4,5 51:7,10 56:6 divide 91:10 divided 46:21 84:22 95:19 96:1,2,5 97:24 divides 83:21 84:1 88:12 dividing 47:4 89:1 94:23,25 95:9,12,22 96:20 98:17 99:10,14 document 5:20 documents 5:18 8:16 15:25 35:1 doing 50:25 53:15 57:16 73:19,25 89:1 98:24 98:25 99:1 download 15:6 18:11,23 downloaded 15:4 19:14 Dr 4:16 6:7 9:12,21 12:19 13:3 38:13 59:21 60:21 64:15 101:2	draw 18:18 drive 58:25 drives 57:24,25,25 DRMS 14:11,23 15:13,17,20 15:22 16:1,8 19:24 20:3,9,14,18,19,23 21:1,2 23:14,18,21 24:2,4,17,21,22 39:8,14,14,17 41:10 41:12,13,14,17,20 41:25 61:8,11,15,19 61:21,23 62:8,12,15 62:16,21,24,25 63:6 63:9,12,16,18,25 64:5,9,12,16,16,17 64:19,21,22 65:2,10 65:12,13,14,15 66:2 66:3,6,11,18,21 67:1,10,13,16 68:5 68:6,9,13,13,24,25 69:3,4,10,13,20 70:10,13 71:6,14,19 72:10,19 73:8,12,16 73:23,24 74:1,3,9,9 74:10,16,19 75:20 75:21 76:19,22 77:8 drop 7:12 13:7 42:24 80:7 80:8 drove 58:8 duly 4:11 106:8 Dunlap 1:24 4:6 106:6 108:5 DVD 36:23 37:5,9,10,21 37:24 38:3,5 DVDs 32:17 37:17 41:14,15 E	E 2:1,1 earlier 35:17 70:3 early 15:18 17:24 23:12 37:8 38:1 easiest 76:17 easily 76:16 effect 106:12 efficient 36:5 48:21 74:11,17 74:22,25 75:6,10,21 76:3,6 either 6:25 15:6 19:18 electronic 5:9 43:19 44:3 electronically 6:23 elementary 33:24 Elliot 4:20 59:22 104:3 Elliott 2:14 3:4 59:24 60:1,4 60:17,21 61:20 62:10,14,25 63:8,14 63:24 64:15,24 66:1 66:8,11,25 67:9,21 68:4 69:15 70:12 71:7 72:9,21 74:2 74:12,15,25 75:5,9 75:14,17,20,25 76:18,24 77:5,16,23 78:1,4,5,21 79:4,11 79:24 80:5,11 81:5 81:13,23 82:6,13,20 83:4,12,19 84:5,9 84:13,19 85:13,22 86:4,9,20 87:2,17 87:25 88:9 89:7,15 89:23 90:13,19,25
--	--	--	---

91:14 92:4,8,10,22 93:1 94:9,11 95:4,7 95:25 96:23 97:14 97:20 99:5,12,19,25 100:9,15,18,23 101:16 102:2,18 103:15,19,22 104:4 elliotts@sullcrom.... 2:15 email 42:25 51:14,22,24 embodiment 48:9 84:5 87:21 embodiments 89:21 91:6 emit 19:9 employee 106:14 enable 39:19 enables 23:4 76:7 encoded 34:10 encoding 31:6 32:16 35:9 encompass 79:23 encompasses 37:15 encrypt 20:1,5,11 26:25 38:19 39:11 40:22 41:22 54:23 63:20 64:2,7 66:14 67:3 67:15 68:11,15,22 72:13,24 73:14 76:2 76:9,12,16 96:16,18 96:25 97:3 98:13,15 100:2,5,11,13 encrypted 24:19 25:5,11 40:1 46:9 50:4,15 52:11 52:16,17,23 53:3,19 53:23 54:5,12,13,21	54:22 55:3,4,6,20 55:24 65:5 70:2,20 71:21 77:9 81:20 84:3,3 95:16,16 96:6,16,19 97:2,4 97:22 98:7,8,10,14 98:16 encrypting 27:6 55:18 95:18 96:3,7 97:23 encryption 46:11 49:18,22 50:6 50:18,25 52:20 53:3 53:13,24 54:2 55:19 55:23 56:13 58:21 79:3 99:1 encrypts 41:15 46:8 endeavor 10:2,9,16,18 43:10 43:15,24 101:7 102:9,14,17,20,22 103:4,8 enforces 72:6 enhances 73:23 entire 10:5,12,19 12:1 32:8 46:12,16 72:15 entities 84:15 85:24 86:21 entity 88:25 envelopes 37:17 38:3 environment 28:20 29:16 30:10 34:4,23 environments 28:8 30:13 envisions 49:22 51:9 equal 54:17,18 error	28:25 33:10 errors 29:4 31:22,22 32:7 32:13 error-correcting 28:15 31:14,18 32:12 33:2 35:20 error-prone 28:7,19 29:4,5,7,9,23 30:9,12 34:22 ESQ 2:5,10,14 essentially 30:19 et 36:24 49:9 Ethernet 29:11,24 eventually 84:2 exactly 16:5 87:12 EXAMINATION 3:1 4:15 60:1 101:1 examined 106:20 example 15:24 18:12 30:9 31:23 32:11 40:20 48:11 81:23 82:7 83:12 86:18,25 88:7 89:8,16 90:7 91:17 96:22 examples 23:1,20 81:3,5 85:18 85:22 86:14 90:20 91:6,15 exhibit 6:21 13:8 43:2 51:13 51:17 60:12,24 78:7 78:9 79:13,15,19,21 79:25 80:6 92:12 93:6,7 94:1 101:11 101:18 exhibits 3:6 5:15	existed 17:8 existing 65:6 70:21 71:5,6 72:8 73:4,25 expect 32:2,8 expected 32:18 33:8 expert 12:16,22,24 expertise 12:19 13:4 explain 97:20 explains 45:24 explanation 14:22 explicit 23:22 explicitly 70:18 exponential 56:23 extent 12:19 55:2 65:7 83:10 90:24 91:9 e.g 16:12,17 F facilitate 36:14 fact 17:23 73:20 79:1 fail 20:3,9 25:4 39:17 67:2 failed 39:24 109:3 fails 19:24 24:18 39:8 41:21 63:16 64:1,6 66:13 67:14 68:9,13 68:20 72:11 77:8
--	---	---	---

fair 5:21,22 12:20 13:19 24:24 33:19 39:13 61:20 88:22 99:25 far 19:17 faster 19:19 fewer 27:10 field 10:2,9,16,17 43:10 43:15,18,19,23,23 43:24 44:2,9 101:7 102:5,9,13,17,20,22 102:24 103:3,8 figure 13:25 14:2,5,9,10,23 15:1 19:6,8 20:19 20:22 21:2,4,7,9,14 22:3,6,9,10,11,13 22:16,18,19,21 24:4 24:5,9,22 25:2 26:11 27:15,18 28:13 38:14,17,21 39:14 40:6,6 41:20 41:24 42:8,11,14,18 42:20 52:6,10 54:12 60:22 61:4,8,11,15 61:18,20,22 62:11 62:19 63:1,15 64:10 64:14,17,20,21 65:8 65:9,12,18,20,21 66:7,13,19,22 67:16 68:23,25 69:4,5,9 69:20,24 70:8,13,25 71:14,17 72:10,10 72:16,18,18,22,23 73:6,12 76:4 77:17 77:18,21 92:18,22 93:10,12,22,25 94:16,17,19,24 95:3 95:9,13,20,21 96:8 97:6,16 98:1,24,25 98:25 99:13,18 100:21	Figures 7:21 27:12 98:1,2 file 16:12,17 18:4,12,15 18:21 45:11 46:1,9 46:12,16 47:8 49:17 49:18 51:16 filed 13:17,23 files 18:23,24 filings 5:7 financially 106:13 financing 107:5,15,18 find 6:17 48:2 82:7 finding 76:9,11 finish 64:25 69:16 first 1:9 4:16,20 7:19 8:21 14:9 36:3 44:13 60:8 72:4 74:6 90:1 94:3 95:16 96:1 106:20 107:6 five 92:6 five-minute 103:18 fixed 28:15 31:14 33:3,4,6 35:20,23 36:4 95:20 97:25 flipped 29:2 32:18 Floor 2:4 flow 14:10 22:22 61:4 following 108:11 follows	4:14 force 53:16 106:12 foregoing 105:1 106:25,25 108:8 Forgive 50:5 form 9:20 11:1,9,22 12:7 12:17,25 13:21 14:3 14:24 15:15 16:3,14 17:3,14 18:6,17 19:3 20:6,12,20 21:3 22:5,12,20 23:9,15 24:6,23 25:13 26:9,22 27:23 28:21 30:20,21 31:4 31:19 33:5,21 34:6 34:24 36:1 37:7 38:20 39:15 40:10 40:17,25 41:11,23 42:12,19 43:11,16 43:25 44:11 45:16 45:23 46:18 47:9,24 50:12,23 52:18,25 53:22 54:15,24 55:14 56:4 58:2,16 61:16 62:5,13,17 63:2,10,21 64:11,18 65:19 66:16 67:6,17 67:24 69:6,23 70:16 71:16 72:14 73:15 74:4,18 75:2,8,12 76:5,20 77:2,12 78:17,23 79:7,17 80:1,25 81:7,16 82:1,8,16,23 83:7 83:18,25 84:8,16 85:9,15 86:1,6,12 86:23 87:10,22 88:3 89:2,11,17 90:10,15 90:21 91:3 94:6,10 95:10 96:13 97:8,17 98:22 99:8,16,22 100:6	format 31:1 34:10 formats 36:6 forming 8:21 forms 17:17 forth 9:2 101:17 108:15,24 forum 34:9 forward 36:12 48:23 Foster 13:7,10,13,14,17,23 14:5 18:3,8,10 19:4 19:7,8,22 21:17,21 21:23 22:1 23:3 30:8 33:13 35:12,17 38:14 39:19,21,23 40:6,7,14 41:6 42:3 42:8,13,16 60:9,11 60:23 61:3 65:3,5 66:20 67:1,1,4,12 68:24 69:2,22,25 70:3,7,13,23 71:1,2 71:4,11,13,22 72:5 72:6,20,22 73:1,2,7 73:11,19 74:6,16,20 74:24 75:20 76:14 76:19,22,25 77:3,6 77:14 Foster's 13:19 22:4,7,11,15 38:22 42:18 70:9,23 72:2,15 73:23 74:2 74:5 75:9,14 76:1,7 found 8:3 76:16 four 56:7 57:22 fragment 84:4 96:16,17,18,19 97:1,1,2,4,4,13 98:5 98:5,6,7,8,10,13,14
--	--	--	---

98:15,16 fragments 82:14,21,25 83:9,15 83:23,24 84:3 88:24 91:2 98:4,18 99:3 99:10 100:5,13 frame 13:20,23 17:2 23:8 30:23 Francisco 4:7 106:5 108:3 frankly 63:12 free 30:4 front 40:22,23 41:1,5,9 front-end 40:3,9,12 70:5 full 12:19 91:12 106:11 fully 90:18 function 27:4 56:11,12 57:11 functionality 36:11 37:10 functions 32:5 fundamental 31:8 73:20 further 49:15 98:6 103:14	53:9 getting 46:15,16 58:17 69:1 giant 35:25 give 14:22 23:21 44:6 57:23,24,25 87:4 given 23:2 30:4 32:12 44:21 107:1 gives 30:8 gnieberg-ptab@wo... 2:6 go 8:11 14:5 23:17 38:11 44:7 59:20 60:11,17 71:2 92:8 goal 24:13 39:18 goals 36:7 goes 19:18 going 6:18 9:11 38:6 41:14 50:1 59:3 60:14 78:1 92:5,15 good 4:16 9:24 56:24 GOOGLE 1:6 government 57:6 granularity 51:4 Great 80:11 GREENFIELD 2:4 GREGORY 2:5 grounds 60:8,9 guess	34:2 54:9 104:1 H half 4:20,21 25:25 hand 32:1 46:25 56:20 handling 43:20 44:2,9 hang 51:15 101:16 happen 21:20 happening 55:12 happy 83:3 hard 33:7 hardware 49:19 73:25 Hayhurst 42:24 43:2,5,7,8,12 43:17 44:1,5,13,14 44:16 45:7,25 46:7 47:22,25 48:4,4,25 49:21 50:8,13 51:3 51:9 60:9 91:8 101:3 102:13,17,19 103:4 Hayhurst's 43:9,10,15,24 44:7,8 44:8 50:8 101:7 103:8 head 13:5 35:3,10 78:20 79:18 82:11 89:22 heading 8:1,3,4 hear 102:1 heard 12:4,10 39:4 help 50:10 53:11 helps	45:5 Hey 29:23 37:15 56:24 Hi 101:2 high 45:12,21 higher 53:20 highlighted 94:4 96:10,11,12 97:6,7,11,16 history 78:19 HLS 17:7 hold 28:17 33:17 35:13 holder 106:9 holder's 6:6 holds 11:12 home 29:10 37:1,3 hour 4:4 38:6 92:5 hours 5:23 6:9,12 houses 31:7 hundred 57:5 hypothetical 58:11
G general 14:16 18:10 19:5 26:13 28:23 32:11 36:6 41:5 47:3 86:16 89:4 91:7 generally 28:10,14 31:13 33:1 35:18 generation 38:5 generator			I idea 16:21 17:9 32:12 91:7,20 ideally 91:21 ideas 44:1 identified

102:9,14,16,20 identify 9:9 10:24 11:7 identifying 107:16 II 1:17 illegal 45:2 impact 17:7 impediment 76:8 implement 23:18 24:13 61:23 64:21 65:24 70:9 71:4,19 72:19 implementation 62:2 63:16 68:20 69:13 89:3 implementations 84:18 89:20 implemented 22:8,11,15 47:14 50:14 62:9,16,24,25 63:7,9,13 64:9,22 65:2,10,18 66:7,12 66:19 69:10 70:24 72:16 77:21 implementing 74:8 implements 41:25 implication 18:19 important 63:14 84:13 87:13 impossible 44:15 49:14 51:5 59:7 improve 80:22 improvement 74:3 76:18,21,25 improving 81:2	included 99:6 includes 44:18 48:9 72:19 79:2 including 10:20 43:13,20 71:5 102:6,24 incorporate 44:16 increased 49:8 increases 47:6 INDEX 3:1,6 indicate 44:8 indicated 20:22 39:8 63:25 64:5 65:13 individual 49:14 induce 29:4 influence 4:25 information 55:1,8 79:1,22 80:23 81:4,6,10,12,15,24 82:5,10 83:22 84:1 84:2,20 88:13 94:8 94:9,14,18,22 95:12 95:13,17,17,18 96:2 96:3,6,6,15,17,21 96:23,24,24 97:2,9 97:10,12,12,14,18 97:22,23,24 98:12 98:14,17 99:2,4,5,6 99:13,15,20,24 100:1,4,4,10,11,12 107:16 informed 9:7 inherent 57:13	INNOVATIONS 1:9 inserting 37:21 instance 17:6 19:11 24:10 29:10 31:23 32:16 34:11 39:22 40:20 40:21 41:13 46:10 46:13 53:8 56:13 58:7 62:21 85:19 91:8 institution 6:5 instructing 48:21 instructions 50:4 integral 36:14 integrated 49:4 intent 37:14 interested 106:13 interface 37:12 interfaced 37:11 interfaces 38:1 interference 30:5 Internet 80:24 84:22 88:18 invention 22:4,7,11 40:2 42:15 42:18,22 48:14 70:4 70:9,19 72:15 75:9 76:1 80:21 87:3,9,9 87:11,20 88:1,2,2 88:10,23 IPR 5:8,16 60:7 93:8 IPR2024-00212	1:9 issue 6:4 11:21,24 12:2 13:2 47:4 86:21 91:9 issued 106:10 issues 7:6 36:3 92:13 J J 2:14 January 1:15 4:1,4 K keep 25:17 keeps 48:17 kept 55:8 key 26:1,5,13,16,18,21 27:5,9,9 40:1 49:18 50:15 51:6 52:11,12 52:16,24 53:2,5,7,7 53:10,10,16,18,20 53:24 54:5,5,21,22 55:3,4,7,21,21,21 55:22 56:14,14,21 56:24 57:4 65:4 70:2 76:9,12,15 79:1,3,22,23 94:8,9 94:14,18,21 95:17 96:2,7,15,18,21,23 96:24,25 97:3,12,14 97:23 98:12,15 99:3 99:6 100:2,3,4 keys 15:3 19:25 20:4,11 20:14 21:8,12,15,20 21:25 24:19 25:5,11 25:18 26:14 38:18 39:10 41:22 42:1,5
---	---	---	---

53:9 55:19,23 57:17 63:20 64:2,7 66:14 67:3,15 68:10,15,21 70:20 71:20 72:12 72:24 73:13 74:11 74:21 76:2,10 77:9 99:2 100:13	layperson's 50:5 lead 91:23 left 54:4 legal 10:4,11,18,18 length 27:1 95:20,21 97:25 98:2 letter 108:22,24 let's 14:17 28:25 29:1,11 32:3 36:17 37:18 38:11 45:2 46:4,20 47:16 49:25 51:11 56:14 57:4,7,16 58:21 59:14,20 81:13 92:8 level 17:5 23:24 28:25 42:6 45:12,18,21 54:3 license 15:7 licensed 20:15 light 103:1 likelihood 53:17,21 likewise 79:22 linked 49:18 links 34:12 list 8:16 little 27:25 31:11 35:17 37:17 46:2 47:2 live 29:21	LLC 1:6,10 LLP 2:9 loaded 15:3 location 48:11 locations 55:19,24 56:3 57:17 83:24 89:9 90:8 91:11,11 locked 49:18 long 58:13 90:11 longer 27:5 33:11 74:9 look 10:6 11:16,23,25 13:1,24 21:23 22:1 22:17 23:25 24:15 25:15,21 26:10 27:11 33:22 34:25 36:16 39:22 41:3 42:7,23 44:5 45:6 47:15 51:12 52:6 55:15,16,17 61:3 62:20 63:24 79:20 81:8,17 82:3 83:3 83:10,12 84:19 86:3 87:2,5 89:12,19 90:17,23 95:1 looked 6:2,3,5,6,8 13:10,14 80:15 89:23 90:3,4 90:6 looking 11:14 17:17,25 23:20 47:14 70:7 77:6 80:18 82:10 83:17 88:11 93:14,16,19 look-up 48:17 lot 21:24 73:2	low 53:17 LOWENSTEIN 2:9 luck 46:23 M mailed 109:1 main 48:4,9 maintains 40:2 70:4,21 71:1 72:5,7 73:3 making 88:23 107:7 managed 54:20 management 14:11,14,21 41:19 61:5,19 62:1,3 64:20 65:15,17,21 65:24 66:3,5 73:18 74:20 Marked 3:8 Massachusetts 2:5 massive 51:16 mathematical 32:5 56:12 mathematics 59:8 matter 13:4 59:2 60:3 matters 13:9 mean 6:11 10:3 12:8,18 14:4,9 15:22 16:5 17:4 19:5 24:7 37:14 56:7 68:16 79:2 85:8 94:25 95:8 98:24
kind 15:23 81:21 kitchen 29:18 know 4:19 5:20,20 7:4 8:12 12:6,18 13:3,25 15:13 16:5 23:7 25:22 27:12 29:10 34:21 36:18 37:14 37:15,21 38:14 39:2 42:8 43:3 45:7 47:22 51:15 52:2,6 53:10 54:22 55:5,7 58:4,8 63:11 78:18 78:19 80:2 81:9 82:4,9,12 86:14 91:22 knowing 56:15 known 53:13,25 76:23 knows 55:3 L label 55:4,10 99:17 labeled 94:18,20 95:8 large 16:12,18 18:4,12,21 18:23 57:11,18 larger 33:20 law 9:24 lawyer 10:3,10,17 13:22			

means 44:20 45:25 56:10 62:7 85:4 88:11,12 88:16,20 108:22 meant 84:25 85:14 95:7 measure 45:1 91:13 media 15:3,12 28:24 32:19 33:7,10 34:13 43:19 43:21 44:3,20,24,25 45:1,11,21 46:1,9 46:16 47:4,8 49:17 81:14,24 82:4,10 media-file 48:13 medium 28:24 29:7 meetings 29:25 meets 23:5 megabytes 51:21,25 memorized 89:21 90:23 memory 59:14 mentioned 5:13 12:15 71:10 84:6 met 60:2 metadata 99:9 method 47:8,19 49:15 50:8 50:10,17 51:7 58:1 58:5,15 59:4,11,12 71:22 74:2,5,7,8 81:18 87:14 88:6 89:5 91:5 95:12 98:6 99:14,14 methods 73:17 81:2 92:1	microwave 29:18 30:1 microwaves 29:20 30:5 mid 37:25 middle 24:16 77:7 million 29:1,14,19 mind 36:7 minutes 38:7 92:6 missing 7:24 module 48:10,15,21 mom 57:24 Monica 2:10 morning 4:16 movie 46:20,22 47:1 48:20 48:23 49:3,6,7,10 49:24 57:22 movies 15:24 MPEG 28:4 34:8,9 36:6 multiple 28:10,17 33:17 35:7 35:13 36:7 66:18 69:25 multiplex 35:7 multiplexing 35:2,3 multitude 48:6 music 15:24 N	N 2:1 54:5,7,8,10 name 12:9 named 12:5 narrow 87:24 100:8 NASA 31:24 native 101:21 near 7:14 25:25 nearly 59:1 necessarily 19:15 53:2 56:10 necessary 15:25 63:5 91:16,18 91:20 102:11 need 52:23 103:24 104:4 needed 58:21 Netflix 16:25 37:16,19 network 29:17 37:1,3,11,13 38:1 44:23 48:7 49:5 58:23 59:1,15 networked 37:9 networks 48:12 New 2:13,13 Nieberg 2:5 3:4 9:11,20 11:1 11:9,22 12:7,17,25 13:21 14:3,24 15:15 16:3,14 17:3,14 18:6,17 19:3 20:6 20:12,20 21:3 22:5 22:12,20 23:9,15 24:6,23 25:13 26:9	26:22 27:23 28:21 31:4,19 33:5,21 34:6,24 36:1 37:7 38:20 39:15 40:10 40:17,25 41:11,23 42:12,19 43:11,16 43:25 44:11 45:16 45:23 46:18 47:9,24 50:12,23 51:17,20 52:18,25 53:22 54:15,24 55:14 56:4 58:2,16 61:16 62:5 62:13,17 63:2,10,21 64:11,18 65:19 66:16 67:6,17,24 69:6,23 70:16 71:16 72:14 73:15 74:4,18 75:2,8,12 76:5,20 77:2,12 78:3,17,23 79:7,17 80:1,25 81:7,16 82:1,8,16 82:23 83:7,18,25 84:8,16 85:9,15 86:1,6,12,23 87:10 87:22 88:3 89:2,11 89:17 90:10,15,21 91:3 92:7,20 94:6 94:10 95:10 96:13 97:8,17 98:22 99:8 99:16,22 100:6,20 101:1,20,23,25 102:3,22 103:14,24 104:1 nonsequential 49:2 notations 107:11 note 8:8 46:7 noted 7:9,10 notice 7:25 108:9 noticed 7:14 notified
---	---	---	---

108:17 nowadays 31:8 number 29:1,4 32:2,7,13,18 51:17 53:8 54:8 56:18,23 60:8 87:5 89:24 106:10 numbers 53:9	77:2,12 78:17,23 79:2,7,17 80:1,25 81:7,16 82:1,8,16 82:23 83:7,18,25 84:8,16 85:9,15 86:1,6,12,23 87:10 87:22 88:3 89:2,11 89:17 90:10,15,21 91:3 94:6,10 95:10 96:13 97:8,17 98:22 99:8,16,22 100:6	76:6,24 78:8 80:15 87:7 92:14 93:6,9 93:21 94:23 95:7,25 96:8 98:19 101:9,12 101:19 ones 51:24 one-in-a-thousand 56:16 one-in-1024 56:16 open 7:5,7 43:3,4 80:10,11 opening 7:6 opine 102:8 opinion 5:21 21:12,16 22:3 24:3 26:7 38:17 42:17 43:14,22 67:13 68:24 69:3 71:13 78:21 79:5,8 79:15,25 102:11,13 103:3,7 opinions 6:15 8:21 103:11 opposed 8:5 optical 32:19 optimizations 34:16 optimize 34:15 36:8 optimized 34:20,22 option 28:12 options 18:13,21 19:1,2 order 21:15 50:15,19 58:6 ordinary 71:3 88:5 original	30:3,20,24 32:8,14 32:21 46:3 49:16 51:1 54:19 58:25 108:16,25 Orsini 51:13 Orsini's 7:20 overall 24:12 28:3 51:9 over-the-air 30:18,19 owner 1:11 2:8 4:11 14:18 14:18 36:25 37:6,22 73:20 ooo 1:3,14,19 2:2 3:1,7 4:2 104:7
O	Objection 102:18 obviously 53:5 offer 107:3 offered 103:11 offering 79:24 107:6 office 1:1 108:14 officer 106:23 108:6,15 OFFICER'S 108:1 officer's 106:1 107:11 offline 59:4 Oh 7:12 9:14 11:23 12:18 14:4,9 16:17 20:21 51:15,22 93:7 okay 5:12,23 6:9,15,19 7:8 7:13,18 8:11,15 9:1 9:7,25 13:6,17,24 14:1 18:3 22:17 25:1,24 27:11 28:1 31:11 36:2 42:7,10 42:23 45:9 51:12 52:5 55:9 56:2,18 57:21 61:1 66:11 67:18 68:23 73:16		P
			P 2:1,1 Pacific 59:18 packaged 15:2 packet 28:17 33:17 35:13 packets 28:9,11,16 33:14,20 33:20,24 35:24 page 3:2 92:17,20,22,23 92:24 93:1,10,18 101:20,21 pages 15:11 44:15 paragraph 7:15,15,18 8:2,11,24 9:2,5,16,19,23 14:8 14:10,13,25 16:9,10 18:20 19:23,23 20:18,21 21:1 22:22 24:16,17 25:9,22,25 28:1,2,6 31:12

35:12 36:17 39:2,7 39:23 42:16 43:17 45:7 48:4,8,19,25 55:17 61:3,10,17,24 61:25 62:11 63:25 66:2 67:13 68:4,6 68:17 69:4 70:3,15 70:18 71:11 77:6,7 78:6,25 79:12,12 83:13 87:4,6,19 88:11 91:17 92:21 93:15,20 95:1,11 96:14 101:13,15,20 102:4,5,16 103:2	1:1,2,11 2:8 4:11 6:6 11:21,24 12:2 60:6 78:2,12,16,16 79:5 79:6,9,16 80:4 93:8 101:10,11 102:10 102:15,21	philosophical 18:7 phrase 68:6,8 94:21 phrases 82:25 83:8 physical 59:9,13 PH.D 1:16 3:2 4:9 pick 56:21 Pico 2:9 piece 14:17 26:25 48:1 53:23 58:24 76:10 76:12 pieces 44:21,21 47:11 48:3 50:16,19 51:1 piracy 45:3,5,12,19 49:8 pirate 47:1 placed 106:20 places 44:22 51:2 91:21 play 37:10 playback 16:23 played 19:20,21 player 36:23 37:5 players 37:9,25 38:3,5 play-out 17:10 19:13,16,19 please 7:4 20:8 66:9 67:22 74:13 75:15 77:24 84:10 95:5 100:16 101:9,13,15 102:3	plurality 84:22 88:13,15 95:19 97:25 98:3 point 7:8 19:14 56:19 58:23 71:12 72:21 82:17 pointed 47:4 POR 7:20 102:7 portion 21:21 57:23 58:13 95:8 portions 49:2,10 55:20,24 82:14,21 83:1,9,16 83:23 84:23 88:14 88:15,17,24 95:19 97:25 98:3 POSAs 8:4 position 61:2 possible 29:7 60:14 67:25 potentially 50:1 76:8,10,23 91:24,25 preclude 5:1 65:8 prefer 6:22 premise 68:2 prepare 6:1 preparing 5:24 6:10 8:17 89:25 90:1,2,4 present 40:2 42:15,22 48:14 70:4,18 87:19 88:1 97:10,19 99:3 107:13 presumably
paragraphs 7:21 parsed 54:19 part 10:5,12 15:1 16:7 28:4,6 35:15 44:4 46:9 82:18 86:2 88:22 94:16 97:21 107:5,15,19 participate 48:13 participating 48:16 particular 11:16 13:4 20:15 25:8 27:4 46:4,22 68:19 69:11 70:8 71:25 74:20 76:12 77:13 82:18 87:20 parties 106:15,15 107:6,8 108:16 109:1 parts 13:14 party 107:5,13,14,14,18,18 party's 107:4,14 password-protected 49:17 patent	patents 6:4 47:3 91:9 PC 15:4 62:20 PDF 92:24 people 32:16,23 people's 30:5 31:7 perfect 29:6 59:1 period 33:11 108:12 109:4 permission 15:8 persistent 33:9 34:12 person 108:14 personal 80:22 81:3,6,12 83:21 84:2,20 88:7 88:13 95:12,13,16 95:18 96:3,6 97:22 97:24 99:15 100:3 107:16 perspective 41:7 pertinence 9:15 pertinent 9:9 10:23 11:6,15,19 PES 28:11,18 33:17 35:14 36:14 petition 89:25 Petitioner 1:7 2:3		

13:23 53:15 54:18 presuming 46:4 54:1 previous 12:15 39:23 74:9,16 75:1,6,10,18 previously 76:23 primarily 7:10 34:8 60:5 Prime 16:25 printed 5:10 prior 74:3 75:21 76:3 77:1 78:16,19,22,25 79:6 79:10,16,25 80:3,6 106:19 priority 78:25 79:9 80:3 probably 30:18 problem 9:9,10 10:24,24 11:7 11:7,12,15,19 51:24 101:17 problems 9:15 11:16,20,20,24 11:25 44:6 56:9 Proc 106:2,16,21 107:1,9 107:19 Procedure 106:19 108:10 proceedings 104:5 process 26:25 53:25 58:20 59:9 processing 40:13 produced 82:4 product 107:10,17	productive 30:2 products 107:4 Prof 106:12 program 27:18,22 28:3,12,13 28:17 31:12 32:25 33:17,19,24 34:1,18 35:4,13,18,23 programmed 21:10,12 proper 54:1 properly 53:12 proportional 27:1 protected 51:7 protection 26:1 protocols 17:6,8,19,22 92:1 provide 4:23 19:24 20:3,10 24:18 25:4 39:9,9 39:24 41:21 45:18 45:21 46:6 49:6 59:13,15 63:19 64:1 64:6 65:4 66:13 67:2,14 68:9,14,20 69:12,14,21 70:10 70:11,14 71:14,19 71:25 72:11 73:17 74:19 77:8,21 107:3 107:10 provided 6:3 53:24 60:12 73:12 88:16 107:17 provider 14:18 37:19,23 73:20 88:12,17,20 provides 15:10 44:25 45:11	48:21 49:8 51:10 70:19 71:23 76:1,19 76:22,25 providing 5:1 72:3 75:22 pull 6:19,23 60:16 purpose 80:21 pursuant 106:18 108:9 push 4:17 put 6:25 14:19 27:3 50:2 50:16,19 51:14 57:23 58:14,24 73:21 76:17 93:22 p.m 104:6 Q qualified 106:8 quantify 58:10 59:7 quarter 54:19 question 11:2,11 17:16,25 18:7 20:8 28:23 34:7 49:21 67:8,20 67:21 68:1 69:19 71:8 75:3,15,25 82:12 83:19 86:5 90:12,18 92:18 94:3 94:12 95:5 questioning 5:19 questions 60:5,10 100:19 101:3 101:6 103:14,23 quick 38:7 59:16 92:4 103:17 quite	58:3 quote 69:3 quoted 95:2 R R 2:1 random 36:11,14 53:8 56:17 56:21 76:7 randomness 57:12 rate 16:22,23 17:10 19:12 19:14,18 reachable 59:15 read 27:25 33:13 43:23 48:2,3 64:3,4 66:9 66:10 67:21,23 70:3 74:12,14 75:14,16 75:17,19 77:23,25 82:12 84:10,12 90:13,14 95:4,6,24 100:15,17 101:15 102:3 105:1 reading 68:16 70:7 88:5 94:15 ready 101:24,25 read-out 32:19 really 4:18 21:6 38:5 46:21 59:7 67:19 68:2 72:6 reason 4:22 81:21 reasonably 9:8 10:23 11:6,19 16:23 17:25 reasons
---	--	--	--

36:13 102:12 recall 8:10,23 9:7,17 13:3 33:23 80:20 101:2,6 recalling 29:25 receive 15:8 37:5,12 received 51:25 55:2 receiver 36:22 37:1 receives 36:24 receiving 37:22 recess 38:10 59:19 60:19 75:24 92:9 100:24 103:21 recipient 23:5 40:13 41:6 73:21 recognized 34:9 recollect 32:23 38:3 recollection 83:14 recombine 49:23 recombining 49:16 recompile 47:16 50:15 reconsider 103:7 reconstitute 50:16 reconstruct 32:13 record 38:9,12,25 39:6 52:1 59:20 60:17 75:23 84:11 92:8 107:1 recorded	106:24 108:7 recovered 32:9,22 91:13 recreate 49:16 recross 59:25 red 37:17 38:3 redirect 59:25 100:22 reduce 92:2 reduced 53:15 redundancies 32:21 reencrypt 26:2 reencrypting 26:1,5,15,17,18,19 26:21 refer 20:18 25:2 40:12 79:12 reference 9:8,10 10:5,12,20,21 10:23,25 11:6,8,13 11:15,17,19,21,25 12:3 13:11 21:18,24 27:24 28:6 55:16 60:23 64:16 65:12 65:13 66:2 80:13 93:12,25 101:4 102:17 103:4 references 6:3,4 92:16 reference's 10:1,2,8,9,15,16 referred 20:18 64:17 68:25 69:3 99:13 referring 12:12,13 14:7 21:2 24:22 26:11 30:11 30:18 33:7 40:24	61:10,17 68:9 refers 39:14 41:18 45:4 58:5,19 68:4,13 71:17 reflect 103:3 refresh 83:14 refused 108:20,23 regarding 96:15,17,25 97:3 98:12,14 107:12 register 88:17 registered 84:21,23 85:1,2,3,6 85:11 98:8,10 registers 88:14 relate 11:21 related 11:25 19:15,18 relates 9:10 10:25 11:8,13 43:18 relating 60:6 93:8 99:14 relationship 96:9 97:5 relative 106:14 relatively 16:20 22:14 28:9,22 33:15 reliable 28:14 31:13 33:1,11 35:19 relying 21:22 59:12 remaining 48:22 49:4 remains 73:24,25	remember 30:24 32:16 35:3,10 37:16,25 79:19 REMEMBERED 4:3 REMOTE 4:1 remotely 4:5,8 remove 58:14,25 removes 76:8 render 73:21 rendering 15:7 74:23 replies 5:9,12 reply 6:2,6,11,19 60:15 78:3,4,6 93:3 101:10 103:2,12 report 60:6 reporter 1:24 4:7,12 42:25 51:14,23 66:10 67:23 74:14 75:16 75:19 77:25 84:12 90:14 95:6 100:17 103:24 104:3 106:9 Reporters 106:11 represent 38:2 49:2 requested 48:23 66:10 67:23 74:14 75:16,19 77:25 84:12 90:14 95:6 100:17 requesting 48:24 requests 48:20 require
--	--	---	--

57:18 67:10 90:25 91:15 required 26:24 47:16 49:23 50:18 58:6 66:20 requires 86:14 91:5 research 12:9 resources 26:4,24 27:10 respect 74:11,23 79:9,11 80:3 108:12 rest 59:22 70:23 72:6 restrict 23:23 restrictions 14:19 73:21 resulted 34:16 return 8:7 38:13 59:17 reveal 9:12,21 reverse 36:12 58:21 review 6:22 8:20 13:12 43:5 reviewed 8:17 80:12 reviewing 5:20 82:6 revisit 22:2 right 8:6 9:4 24:15 29:15 32:17 38:11 46:20 51:2 57:1 61:8 62:4 64:3 65:18 66:15 68:11,15,17,18 71:7 72:13 74:3 75:1,7 75:11,22 76:4,19 77:1,1,5,9,17 79:4,6 84:6,15 85:24 86:11	86:22 87:18 89:16 89:24 90:20 93:7,13 94:2 96:4 rights 14:11,14,20 41:18 61:4,18 62:1,3 64:20 65:15,17,21 65:24 66:3,5 73:18 74:20 rights/content 15:2 RMR 1:24 rotation 56:8 57:15 rough 17:2 roughly 13:20 15:14,21 round-trip 31:25 routinely 79:2 row 55:10 RPR 1:24 Rubin's 6:7 run 27:7 57:6 72:2 S S 2:1,5 SACKS 2:4 SAMRAT 1:16 3:2 4:9 San 4:7 106:5 108:3 Santa 2:10 satellite 23:3 31:2,6,6,9 saying	18:20,22,23 37:15 55:2 62:14 67:1,4,9 69:22 70:13,15 79:21 85:10 94:13 says 13:18 14:10 16:10 18:11 19:24 20:21 21:1 24:17 25:24,25 28:6 32:25 33:14,16 35:12,18 37:3 39:8 39:23 45:10,25 48:4 48:8,19,25 49:3 50:14 51:5 52:12 55:18 61:3,9,10,17 61:24,25 62:2,11 63:25 64:16 68:12 70:4,18 72:11 73:4 77:6 84:20 85:6 87:19 88:11 89:13 91:4,19 95:11 scale 49:13,24 scenarios 28:5 34:11 scene 46:22,23 47:1 schematic 19:8 22:6,14 38:21 41:24 62:8,23 64:13 65:1,9,22,23 69:9 70:9 71:18,25 72:18 schematics 61:22 63:5 Schneider 12:5,10,14,15,24 Schneider's 12:19 13:3 Scope 12:17,25 17:3 20:6 20:12 21:3 24:6 25:13 26:9,22 28:21 33:21 34:6,24 36:1 37:7 38:20 39:15 40:10,17 41:11,23 44:11 46:18 47:9,24 50:12,23 53:22	54:15,24 56:4 58:2 58:16 63:10,21 64:11 67:17,24 69:6 71:16 73:15 74:4 75:12 76:5,20 77:2 77:12 78:17 80:1 81:7 82:16,23 84:16 85:9,15 86:1,6,12 86:23 87:10,22 88:3 89:2,11 90:10,15 91:3 94:6 97:8 98:22 99:8,22 scrambled 27:3 scrambling 51:1,11 screen 6:24 scroll 8:24 se 82:10 second 4:21 6:10 8:17,22 26:11 28:12 60:18 92:13 101:16 section 10:15 106:19 108:10 secure 15:21,23 16:2 43:20 44:2,9 53:13 59:4 59:11 87:14 secured 16:8 83:22 102:7,25 securely 102:6,25 securing 88:6 89:5 102:6,24 security 1:9 12:9,16,21,22 45:1,5,12,18,22 47:6 49:8 51:10 57:2,9 58:18 59:2 59:13,15 80:22 81:2 91:13 92:1 see
---	---	---	--

7:7,12 8:6 13:17 16:10,13,15 19:24 20:2 24:19,20 25:24 26:6 27:15,16,18 30:8 31:7,12,15,16 32:25 35:11,14,15 35:17,21 36:17,22 37:2,4 38:2 39:7,11 39:12 43:7,8 45:10 45:13,14 46:22 52:9 52:10,12 54:4,6 55:9,11 66:1 77:10 78:13 81:13 83:10 86:25 88:20 89:13 90:23 93:10 99:12	separately 20:16 sequential 53:9 server 15:3,7,10,12 20:16 48:5,9 servers 62:22,22 service 36:25 37:19,23 88:12 88:16,20 107:10,17 services 107:4 set 9:2 32:13 41:8 71:18 98:5 108:15,24 set-top 36:23 50:9,21 SFI 7:20,21 102:5,8,14 102:20 SFI's 78:12 share 6:24 52:11,16,17,21 52:23 53:3,19 54:5 54:21,22 55:3,4,6 55:18,20,21,21,21 shares 29:20 54:11,12 55:20 55:25 56:3,6,7 shift 57:14 shopping 81:10,11 short 14:22 Shorthand 4:6,12 106:8 showing 39:16 61:22 62:7 63:4,12 65:9 69:9 shown 16:10 21:7 28:13 40:5 61:12,19 62:1	62:4 64:13 66:21 95:13,20,21 98:1,2 shows 40:7 63:9 72:18,23 signals 30:19 Signature 105:6 signed 108:22 significantly 26:3,20 signing 105:2 108:19,21 similar 17:11 24:13,17 32:15 77:7 82:24 94:16 single 28:11,17 33:16 35:12 35:12 45:25 49:13 sister 57:24 site 91:21,23 sitting 83:4 89:15 90:19 size 33:23 54:18 57:4 skill 71:4 88:5 slightly 24:8 34:20 68:1 slower 19:19 small 18:15,24 28:10 31:7 33:15 46:9 49:10,12 smaller 26:13,14 27:9 soiled 49:3,4 somebody 12:11 29:18 sorry 16:17 28:2 39:3,9 60:23 66:8 67:11	69:1 73:8 75:13,17 78:3 82:2 84:9 87:4 90:11 92:20,24,25 93:14,16 sort 23:17 31:6 44:6 91:7 sound 38:8 source 35:6 SpaceLink 32:1 speak 53:5 specific 13:2 17:18 18:1 21:21 23:20 25:15 31:5 44:4 49:19 83:2 86:2,7,25 88:8 specifically 15:6 80:20 94:18 specification 33:23 44:14 94:15 spectrum 29:20 30:3 speed 17:10 19:16 spend 5:24 6:10 80:18 spilling 92:3 split 54:17 57:22 81:20 89:5 splits 54:17 splitting 46:3 47:5 squares 94:4,7,14,17,20 96:10,11,12 97:6,7 97:10,11 Ss 106:4 108:3 stamps 57:23
--	--	---	--

stand 54:7	74:23 81:14 86:17 88:8 89:14 90:17,24	5:1 9:12,22 Sullivan 2:12 60:4	synchronous 72:23 73:13 76:1 77:8
standard 10:18 28:4 34:8 40:9 40:12,16,18,19 41:10,14,16	store 40:21 49:9 55:18 89:6 91:10	summarizes 87:12	synchronously 39:25 70:1
standards 40:4 41:13 70:6	stored 19:20 34:13 35:23 36:4,10,13 48:24 49:17 50:4 53:20 80:23 81:11 84:4 85:4,4 88:24 89:8 90:8 91:2,20 97:13	summary 9:24 87:3,8,11,16,17 87:18,25 88:9	system 14:11,14,21 16:4 17:18 18:14 19:5,9 21:5,6,8,9,19 22:8 22:15,23,25 23:2,4 23:19,25 25:7,10,15 25:20 32:19 38:22 38:23 41:25,25 42:3 42:6,14,15,21,21 47:13 48:14 53:12 61:5,8,11,15,19,21 61:22 62:1,3,8,12 62:15,15,24 63:1,4 63:6,9,12,15 64:13 64:13,20 65:2,10,16 65:18,21,25 66:4,5 69:9,11,25 70:10,25 71:23 73:23,24 74:9 74:10,10,22 75:21 76:7,15 77:14,16,19
start 6:20 73:9	stores 48:16 83:23	super 46:23	systems 15:18 16:6 17:22 18:1 20:23 22:15 23:3 24:7,10,10 30:25 31:21 39:19 39:24 40:5,20 41:8 65:3,6 70:22 71:5,6 72:8 73:4,23 74:3 74:16,19 75:1,6,10 76:4,19,25 77:1,3
started 37:16	storing 48:22 50:20 56:2 57:17 102:6,25	support 36:11	system's 41:1,2
starting 14:12	stream 27:16,19,22,22 28:7 28:9,11,12,13,16,17 30:12 31:12 33:1,14 33:17,19,20,25 34:5 34:22 35:1,4,13,18 35:23 36:4,6	sure 5:10 6:12 10:3,10,17 11:4,11 12:11 14:7 17:8,19 20:9 23:21 26:12 28:2 50:7 60:16 88:23 92:7 93:14 97:21	T
statement 26:8 45:15 70:14,17 71:10,12 91:15	streamed 19:12	surprised 6:13	table 48:17
states 1:1 7:19 15:1 43:18	streaming 16:11,19,21,24 17:1 17:2,13,16 18:1,5 18:11,13,16,21,25	swapped 96:21	tables 69:13
stenographically 106:24 108:7	streams 28:3,4 34:3,18,18 35:4,7 36:10	swapping 99:1	Tajima 80:6,10,13,22 81:1,6 81:9,9,14,18,18,24
step 50:20,22 55:13 56:1 56:2,3,18 57:10,15 57:20 58:6 94:24,25 95:9,22 96:20 98:18 99:10	Street 2:13	switching 101:17	
Stephen 2:14 60:4 101:25	strike 63:16 67:11 73:9 94:11	sworn 4:11	
steps 15:11 59:9 97:11	structure 87:1	synchronization 39:20 64:23 65:4,8 69:12,21 70:11,14 70:20 71:15,20,24 72:1,3,20 73:3 74:7 74:8,15 75:11,22 77:4,15,20,22	
stop 69:17	submitted 88:13 95:15	synchronize 39:18 42:4,5 66:23 66:24	
stopping 36:3	subscriber 45:25 46:4 48:12,20 48:24 49:9	synchronized 19:25 20:4,10 24:18 25:5,11 38:18,24 39:9,10,24 41:21 42:1 63:19 64:1,6 66:13 67:2,10,14 68:10,14,20 72:11	
storage 28:16 31:15 33:3,4,6 34:12 35:20,24 36:4 36:9 43:21 44:3,10 45:11,18,21 49:10 50:21 55:23 59:5	substance		

82:3,4,13,18,22,25 83:8,10,16,21 84:1 84:6,14,18,20 85:2 85:22 86:3,9,14 87:13 88:5 89:4,4,8 89:13,19,24 90:3,7 90:17,22,24,25 91:15,19 93:12,25 94:8 95:2 Tajima's 87:9 88:2,23 91:5,5 91:15 94:15 take 13:1 17:16 25:14 26:10 27:7 33:22 34:25 38:7 39:19,22 41:3 47:15 50:25 55:15,16,17 58:12 59:16 62:20 79:20 81:8,17 83:10 84:19 86:24 89:12,19 90:16 92:4,6 95:1 100:20 103:17 taken 38:10 59:9,19 60:19 75:24 92:9 100:24 103:21 takes 28:10 57:3 talk 94:23 103:15 talked 25:8 talking 17:5 19:4,6 26:15 39:17 44:16 64:12 68:19 86:16 talks 27:24 taught 72:20 78:19 teaches 39:21 65:3 70:1 71:22 74:6,7,20 87:14 teaching	12:1 technical 43:18,23 44:2 technically 15:23 technique 72:2 techniques 24:1 40:21 41:18 70:24 television 16:2,6,8 17:13,21,23 18:2 23:3 28:8 30:9 30:13,16,19,22,22 31:2,3 tell 4:12 ten 38:7 56:14 ten-bit 56:17,24 ten-minute 59:17 term 14:15 23:1,10 41:12 41:17 79:22 terminal 95:14,14 terminologies 24:14 terms 23:17,22 24:9 90:1,2 territory 58:18 testified 4:14 testifying 5:4 testimony 4:23 5:2 74:17 103:1 103:6,10 106:24 107:1 108:7 text 71:2 thank 4:17 8:6 30:7 52:5	59:21 103:20 Thanks 103:19 thereof 4:5 109:1 thing 50:2 53:16 93:17 things 6:8 39:20 44:12 70:1 70:19 71:1 72:1 74:6,7 85:3 think 5:25 7:10 8:3 9:23 11:10,23 12:10,20 16:15 17:15 18:18 21:4 23:17 24:12,24 25:14 30:11,17 33:6 34:7 35:1 39:4,16 43:6 51:23 54:8 55:25 56:9 58:3,17 59:11 60:2,2,12 62:6 63:8,15 64:19 65:7 69:17 71:8 75:25 76:21 80:6,14 82:25 85:16 86:13 87:13,24,25 88:5 92:5,11 93:18 third 107:5,14,18 thousand 29:19 32:3 56:25 57:7 three 6:11 13:9 three-word 44:17 threshold 32:7 time 13:20,23 15:7 17:2 23:8 26:24 27:7 30:23 33:12 57:23 59:18 80:12,18 90:2 100:19 107:8 109:4 times 48:13 89:24 90:6	time-consuming 26:4,17,20 title 10:1,6 26:1,5,16,21 40:1 43:7,8,9,13 44:8,8,13,17,18 45:4 70:2 71:20 today 4:22 5:24 17:2,7 89:15 101:3 103:2,6 103:10 told 9:6,15,17,24 top 13:5 35:2,10 78:20 79:18 82:11 89:22 94:22 total 6:12 79:1 track 48:17 tracking 48:10 TRADEMARK 1:1 transcript 1:18 8:20 103:25 105:1 106:25 108:12,16,19,20,24 108:25 109:3 transfer 19:10 transferred 30:25 transform 32:6 transmission 17:18 19:18 28:24,24 29:6 31:17,20 32:8 32:10 34:11 35:19 36:8 39:25 76:2 transmissions 28:14 31:13 33:2 transmit 28:25 40:22 41:8 70:1
--	---	---	---

transmitted 16:22 71:21 74:11 transmitting 16:7 17:9 40:1 74:21 transport 27:15,21 28:3,7,9,10 28:16 30:12 33:14 33:20,25 34:18,21 35:1,4,6 36:4 trend 58:22 TRIAL 1:2 tries 56:25 true 63:18 77:11 107:1 truth 4:13,13,13 truthful 4:23 5:2 try 50:2 69:7 trying 10:20 24:12 34:2 turn 13:6 39:1 60:22 78:2 78:5 92:10,15,17 101:9,13 turned 30:1 turns 29:18 30:3 two 7:14 24:7 34:3,17 52:10 83:6 94:4,7 94:13,17 98:4 100:5 two-part 4:21 type 15:20 34:5 66:6 81:19 types 15:17 19:9 24:13 32:15 33:9 34:3,17 62:22 65:3 66:18	85:18 typically 28:7 30:12 typos 6:18 7:9,10,14,25 8:8 U unagreed 8:5 unauthorized 45:2 uncorrupted 32:22 understand 5:4 10:21 24:21 25:1 25:3 34:3 50:11 61:2 62:7 67:7,18 67:19 68:2 69:18 71:4 84:25 85:13 87:13 88:6 understanding 9:3,25 10:7,14,22 11:5 16:24 20:17 21:2 50:6 55:12 87:8 undo 58:6 unfortunately 38:4 unit 28:11 37:11 46:1 49:11 UNITED 1:1 units 28:18 33:18,25 35:14 36:14 48:12,16,18 48:22 universe 30:6 unreliable 34:12 untenable 50:1 uploading 7:3,13	usage 15:2,9 USB 57:23 58:14,14,24 use 18:13 23:18 34:14,15 34:20 36:8 46:17 47:2 73:8 87:12,15 87:18 91:25 useful 46:12,15,24 53:2 user 95:14,14,14 uses 31:24 68:6,8 79:22 81:3 82:25 83:1,8 85:2 usually 26:14,24 27:2 35:5 57:2 58:4,19 59:5 85:4 94:8 V vague 76:6 vaguely 38:4 value 46:2,6 varied 26:2 various 74:23 81:1 versa 97:13 version 51:20 versus 29:9 34:1 36:9 58:18 vice 97:13 video 16:25 28:11,18 33:17 34:9,10 35:6,13 video-on-demand 43:20	view 58:24 virtually 49:14 51:5 VOLUME 1:17 Voyager 31:24,25 vs 1:8 W walk 15:11 want 6:23 7:8 48:2 60:21 61:2 82:18 103:16 wanted 46:22 60:5,10 wants 14:19 46:25 way 6:25 14:20 24:8 37:13,16 39:17 44:25 46:21 48:1,21 50:17 64:21 65:11 69:19 74:5,20 76:17 91:23 ways 31:21 40:7 57:16 WEATHERWAX 2:9 web 15:10 Wednesday 1:15 4:3 weekend 13:16 43:6 80:14,16 82:7 90:4 weird 8:1 we'll 69:8 we're 17:5 19:6 26:15 55:2 we've
--	---	---	---

38:6 92:5	100:7 101:22,24	72:17 100:7	2:5
When's	102:19 107:12,17	written	1
80:12	WOLF	9:14 12:20 32:20,20	1
wired	2:4	33:8 44:14 57:14	7:15,21,23 13:25
29:12,12	WOO	108:9	14:2,5,9,10,23 15:1
wireless	2:10 3:3 4:15 9:17,25	wrong	19:6,8 20:19,22
29:17,23	11:4,18 12:4,13,23	13:9 93:17	21:4,7,14 22:3,6,9
withdraw	13:6,12,24 14:7	X	22:10,11,13,16 24:4
83:19	15:13,20 16:9,17	X	24:22 38:14,17,21
witness	17:12 18:3,15,25	X	39:14 40:6 41:20,24
4:10,10 9:14,23 11:2	19:6 20:9,17,25	96:17,18 97:2,4,13	52:12,16,24 53:2,7
11:10,23 12:8,18	21:11 22:10,17,24	97:15 98:5,6,8,14	53:10 54:5,21,22
13:1,10,22 14:4,25	23:13 24:3,15 25:1	98:15,18 100:5	55:3,4,20,21 61:4,8
15:16 16:4,15 17:4	25:21 26:12 27:11	Y	61:11,15,18,20,22
17:15 18:7,18 19:4	28:2 29:25 31:11	Y	62:11,19 63:1,15
20:7,13,21 21:4	32:23 33:13 34:2,21	96:16,19 97:1,4,12	64:10,14,17,20 65:8
22:6,13,21 23:10,16	35:11 36:16 38:2,11	98:5,7,10,13,16,18	65:9,12,18,20,21
24:7,24 25:14 26:10	39:1,7 40:9,15,23	100:5	66:7,13,19,22 67:16
26:23 27:24 28:22	41:10,20 42:7,17,23	yeah	68:25 69:5,9,20,24
31:5,20 33:6,22	43:14,22 44:7 45:6	7:6 8:1,4 11:4 14:13	70:8,13,25 71:14,17
34:7,25 36:2 37:8	45:20 46:14 47:7,22	35:16 41:1 80:8	72:10,16,18,18,22
38:21 39:16 40:11	50:5,20 51:12,19,22	82:24 103:17,19	72:23 73:6,12 76:4
40:18 41:1,12,24	52:2,22 53:19 54:3	104:1	1's
42:13,20 43:12,17	54:20 55:9 56:2	years	21:2 64:22
44:1,12 45:17,24	57:21 58:12 59:16	17:11 57:7	1-25
46:19 47:10,25	59:20 80:8 103:17	yellow	7:21
50:13,24 52:19 53:1	103:20	94:4 96:10,11 97:6	10
53:23 54:16,25	woo@lowensteinw...	97:10,15,19,21	5:25 93:15 95:14,21
55:15 56:5 58:3,17	2:11	98:20 99:2,6,20,24	98:2
60:20 61:17 62:6,18	word	100:1,11	10:00
63:3,11,22 64:12,19	7:22,24 8:2 16:16	yep	59:18
65:20 66:17 67:7,18	76:7 85:17	12:22 27:14	10004
67:25 69:7,24 70:17	words	York	2:13
71:17 72:15 73:16	41:4	2:13,13	1005
74:5,19 75:3,13	work	Z	51:13,19 80:6 94:1
76:6,21 77:3,13	7:1 29:12	Zoom	1006
78:18,24 79:8,18	working	1:16 4:1,5 29:25	13:8 60:12,24
80:2,10 81:1,8,17	44:6	#	1007
82:2,9,17,24 83:8	works	#10710	43:2
84:1,17 85:10,16	14:23	106:6	101
86:2,7,13,24 87:11	worry	0	3:4
87:23 88:4 89:3,12	76:11	02210	1016
89:18 90:11,16,22	worst		2:9
91:4 92:24 94:7	56:22		1024
95:11 96:14 97:9,18	wouldn't		56:25
98:23 99:9,17,23	6:13 63:22 66:17		

10710 1:24 106:10	2	48:4	40a 95:15 98:9
11 79:12 94:16,17 98:25 101:13,20 102:4,5 102:16 103:2	2 22:18,19,21 24:5,9 25:2 40:6 43:17 52:11,16,17,21,23 53:3,7,10,19,20 54:21 55:3,4,21,21 77:17,18,21	23rd 2:4 24 26:1,5 48:19 93:20 25 17:11 26 48:5,9 299 55:17	40b 98:11 41a 98:9 41b 98:11 44 87:6 45 7:16 51:25 87:6,19 46 87:6 88:11 91:17 48 39:23 70:3,15,18 71:11 49 14:8,13,25 61:10,17 61:24,25 62:11
111 78:7,9 83:13	20 6:14 2000s 15:19 23:12 37:8 38:1	3	5
1111 6:21 92:12 93:6,7 101:11	2002 13:18,20 15:14,21 16:1 17:2 23:7	3 8:11 54:8 55:21,22 30 42:16 302 33:18 35:14 310)307-4508 2:11 33 102:7 34 48:10,21 35 102:7 350A-F 33:14 36 48:5 360 35:13 362 33:18 35:14	5 55:18 50 16:10 18:20 51 19:23 20:18,21 21:1 39:2,7 63:25 66:2 67:13 68:4,6,17 69:4 52 24:16 77:6,7 54 25:22
1111s 101:18	2025 1:15 4:1,4 2025.320 106:21 2025.320(a)) 106:16 2025.320(b)) 107:9 2025.320(c)) 107:19 2025.520(a) 108:10 2025.520(e)) 106:2 108:1 2025.540(a)) 106:22 107:2 2093(b) 106:19	4	6
1113 79:13,15,19,22,25 80:3	21 48:25 52:6 54:12	4 3:3 26:11 54:10 55:21,22 4-0 36:19 4)23 7:21 40 36:17	60 3:4 600 2:4 609 7:11,20 617)646-8443 2:6
113 95:1,11 96:14	212 60:7 93:8 212)558-7446 2:14 22 1:15 4:1 48:12 22nd 4:4 23		
116 60:6,15 78:2,16,20 79:6,10,16 80:4 93:5,8			
12:12 104:6			
125 2:13			
13 93:12,25 94:19 95:9 95:13 96:8 97:6,16 98:24,25			
13-minute 100:21			
14 27:12,15			
145 7:15,17,18			
15 5:25 14:10 27:12,18 28:13 61:3			
16 22:22 42:8,11,14,18 42:20			
18 13:18 93:18			
185 8:2			

7 7 51:21 92:17,20,21,22 92:23,24 93:1,10 101:21 7:57 4:5 73 28:1,2,6 31:12 35:12 8 8 8:24 45:7 95:20 98:1 8016 106:12 802.11 29:17 30:4 854 6:20 7:4 8:7,13 78:12 78:15,19 79:5,9 101:10,11,22 102:10,14,21 103:2 854's 102:5 9 9 78:6 95:21 98:2 90405 2:10			
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I, Samrat Bhattacharjee, hereby make the following corrections to my January 22, 2025 deposition transcript:

Page(s)	Line(s)	Change/Correction	Reason(s)
19	9	emit → admit	Transcription error
25	15	corrupted → transmitted	Transcription error
32	1	SpaceLink → space link	Transcription error
41	15	CAS → CSS	Transcription error
50	15	encrypted → encryption	Transcription error
53	15	brut → brute	Transcription error
79	1	total → term	Transcription error
84	4	with → in	Transcription error
98	23-24	“It’s not clear. I would agree with that.” → “It’s not clear that I would agree with that.”	Transcription error

Date: 01-31-2025



Samrat Bhattacharjee