

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NETFLIX, INC. AND HULU, LLC,
Petitioner,
vs.
DIVX, LLC
Patent Owner.

IPR2020-00558
Patent 10,225,588 B2

REMOTE DEPOSITION OF PATRICK MCDANIEL, Ph.D.
NOVEMBER 16, 2020
8:57 a.m.

Diana Janniere, CSR-10034

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1 INDEX OF EXAMINATION
 2 WITNESS: PATRICK MCDANIEL, Ph.D. (Remote)

3	EXAMINATION	PAGE
4	By Mr. Hendifar	4, 119
5	By Mr. Liang	115

6

7

8 INDEX OF EXHIBITS
 9 (None offered.)

10

11

12 INSTRUCTED NOT TO ANSWER

13	PAGE	LINE
14	119	13

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1 REMOTE DEPOSITION OF PATRICK MCDANIEL, Ph.D.

2 NOVEMBER 16, 2020

3

4 PATRICK MCDANIEL, Ph.D.,

5 having been first duly sworn, testifies as follows:

6

7 EXAMINATION

8 BY MR. HENDIFAR:

9 Q Good morning, if we are still in the
10 morning, considering your time, but good morning,
11 Dr. McDaniel. Thank you for your time today.

12 Can you kindly spell your full name for the
13 record, please?

14 A Patrick McDaniel. P-A-T-R-I-C-K,
15 M-C-D-A-N-I-E-L.

16 Q Thank you.

17 Is there a reason why you may not be able to
18 provide your full, truthful and complete testimony
19 today?

20 A No, but I just warn you, I have been sick
21 the last couple of days. I have been sort of in bed
22 over the weekend. So I may need to take a moment as
23 it is a little hard for me to talk. I get kind of
24 choked up.

25 I am not trying to dog your question. I am

1 just -- sometimes it is a little hard for me to talk.

2 I will let you know.

3 Q Whenever you need a break, just please let
4 me know. I only request that we don't take a break
5 while a question is pending, but we can take a break
6 with the frequency and as long as you may need to of
7 course.

8 Now, have you ever been deposed in an IPR?

9 A I have.

10 Q And how many times if I may ask?

11 A I want to say, it's three or four.

12 Q I'm sorry. I could not hear.

13 A I want to say it is three or four times I
14 believe.

15 Q Okay. So I will be quick with the preamble,
16 I suppose.

17 IPR depositions are a little bit different
18 than District Court depositions. During the course of
19 the cross-examination, where I ask you questions, you
20 are not permitted to speak to your counsel regarding
21 the subject matter of the deposition except on issues
22 relating to privilege.

23 You understand that?

24 A I do.

25 Q Okay. And so we will be taking breaks

1 during the course of the day, but it is my expectation
2 that you will not be discussing the substance of the
3 testimony with your attorney.

4 Also, your counsel will make objections that
5 are short, two-word objections, but unless counsel
6 expressly instructs you not to answer, you still have
7 to answer my question once the objection is stated.

8 Do you understand that?

9 A Yes.

10 Q Also, your counsel is not permitted to make
11 speaking objections. So, for example, counsel will
12 not be allow to make objections on the basis of vague
13 and ambiguousness.

14 So if you are not sure about what my
15 question means or you need additional information,
16 please do feel free to ask me, but if you do not ask
17 for clarification and answer my question, I will
18 assume that you have understood my question; is that
19 fair?

20 A That's fair.

21 Q Okay. Other than being retained on this IPR
22 and I also understand that another IPR ending in 511,
23 do you have any other affiliation with Hulu?

24 A No. An unsubscrber.

25 Q Understood. Same question for Netflix?

1 A Same answer.

2 Q Okay. And have you ever or do you have any
3 current task associated with Unified Patent, LLC, also
4 known as Unified Patents, Inc.?

5 A I don't think so.

6 Q Do you know what Unified Patents is?

7 A I don't believe so.

8 Q Okay. Approximately how many times have you
9 been retained as a technical expert in a patent
10 matter?

11 A You know, it is possibly close to 30, maybe
12 a little bit more. I would have to go look at my C.V.

13 Q Okay. And have you ever been retained on
14 behalf of the patent owner?

15 A I don't think so.

16 Q And what did you do to prepare for today's
17 deposition?

18 A Well, obviously, I read my report. I
19 reviewed the materials considered. I went through --
20 met with counsel, I think, four or five times over the
21 last week.

22 (Discussion held off the record.)

23 BY MR. HENDIFAR:

24 Q Okay. And how many hours would you estimate
25 you devoted to your preparation for today's

1 depositions?

2 A Maybe 15, 20, something like that.

3 Q Okay. And other than the documents attached
4 to your deposition -- I'm sorry. Strike that.

5 Other than documents attached as exhibits to
6 the petition referenced in your declaration, did you
7 review any other documents in preparation for the
8 deposition?

9 A Perhaps there was a small handful of
10 documents. I would have to think about that a little
11 bit, but the ones that I focused on was the ones that
12 are listed in my report.

13 Q Okay. So would you mind taking a moment to
14 think about what other documents that you may have
15 reviewed, please.

16 MR. LIANG: I am going to caution the
17 witness not to reveal the contents of our discussions.

18 And Counsel, I would also add that the
19 selection of documents -- review of documents is a
20 privileged matter.

21 MR. HENDIFAR: Any document that the witness
22 has reviewed is open to questioning. He cannot hide
23 any documents that he has reviewed under the
24 privilege.

25 So unless your instructing him not to

1 answer, which we would have to take further, he is
2 obligated to answer what documents he has reviewed.

3 MR. LIANG: Well, I just want to be careful
4 not to -- that this does not create some kind of a
5 waiver issue. So I would --

6 MR. HENDIFAR: I am not asking what he told
7 you or what you told him. I am asking him, what
8 documents he reviewed which is a very -- it is an
9 established permissible question.

10 MR. LIANG: Okay. Well, so -- Dr. McDaniel,
11 well, I caution you not to reveal any privileged
12 communications that we've had, but to the extent you
13 can remember any specific document, I think it is fine
14 to identify those specific documents.

15 THE WITNESS: Okay. So I looked at the
16 Institution decision. I believe I looked at the
17 Patent Owner's response. I think, we looked at some
18 external material. I think there was something called
19 Amini and there may have been others. I just can't
20 remember off the top.

21 BY MR. HENDIFAR:

22 Q I am sorry. You were not audible in the
23 external documents you were identifying. Would you
24 please be more clear on the documents?

25 A Let's see, if I can turn up the mic a little

1 bit more.

2 All right. So the Institution decision.
3 The Patent Owner, I believe, had a preliminary
4 response. I believe there was a patent called Amini
5 and there may have been others. That is all I can
6 remember off the top of my head.

7 Is that better? Can you hear me now?

8 Q Yes. So I heard the Amini patent and then,
9 I believe the first time you answered the question,
10 you identified the second external document other than
11 the Institution's decision, and the Patent Owner's
12 response. Did I miss hear you?

13 A That's all. It's those three, the things
14 that I remember.

15 Q Okay. Do you happen to have the patent
16 number for the Amini patent?

17 A All I have is the documents for my exhibit.
18 I don't have that in front of me.

19 Q Okay. Is that something that you can look
20 up on your computer to see what the patent number for
21 the Amini patent was?

22 A I could try.

23 Q Thank you.

24 THE WITNESS: So I have a question for,
25 Jeff.

1 MR. LIANG: Yeah.

2 THE WITNESS: So we are starting to look at
3 materials that aren't -- that I have not prepared and
4 we are starting to dig around on lots of materials
5 that I have.

6 MR. LIANG: So maybe I could just -- so far,
7 you know, I think I could shortcut this a little bit.
8 Let's go off the record for a brief moment.

9 MR. HENDIFAR: Fine.

10 (Discussion held off the record.)

11 BY MR. HENDIFAR:

12 Q So off the record, the parties looked at the
13 document that Dr. McDaniel identified as having
14 reviewed and it is U.S. Patent Application
15 No. 2009-0290706 issued to Amini, A-M-I-N-I.

16 A And to be clear, I just saw one part of it.
17 It is not like I studied it.

18 Q Sure. Which part of it did you see?

19 A I would have to go through it again.

20 Q Sure.

21 Now, does your declaration contain all of
22 the opinions that you had at the time of the drafting
23 it?

24 A I believe so.

25 Q Okay. Does your declaration state to all

1 the evidence that you were aware of at the time
2 regarding the subject matter stated in your
3 declaration?

4 A I believe it does.

5 Q Have any of your opinions changed with
6 respect to any issues addressed in your declaration?

7 A I can't think of any.

8 Q Okay. Who drafted your declaration in this
9 matter?

10 A Well, these are my opinions. I worked -- I
11 drafted parts of it. I received editorial assistance
12 working with counsel.

13 Q Did you draft -- strike that.

14 Did you prepare the first draft of your
15 declaration?

16 A I prepared the first draft of many sections
17 of the client report.

18 Q Okay. Who -- did you find the prior art
19 references -- strike that.

20 Did you find the prior art reference Chen,
21 Exhibit 1006 referenced in your declaration?

22 A What do you mean "find"?

23 Q Okay. How did you come to know of
24 Exhibit 1006, Chen, that you cited in your
25 declaration?

1 THE WITNESS: Jeff, is this a privilege
2 issue?

3 MR. LIANG: Well, I definitely caution you
4 not to reveal any of our communications.

5 THE WITNESS: Okay.

6 MR. LIANG: To the extent that your answer
7 would require that, then I would instruct you not to
8 answer it.

9 THE WITNESS: I was provided a set of prior
10 art with my counsel.

11 BY MR. HENDIFAR:

12 Q Okay. Same question for Exhibit 1007,
13 Lindahl, L-I-N-D-A-H-L?

14 A That was also one of the pieces of prior art
15 that was supplied.

16 Q Same question for Exhibit 1008, Hurst,
17 H-U-R-S-T?

18 A It was part of the materials that were
19 presented -- provided to me by counsel.

20 Q Did you yourself search to locate any prior
21 art to rely upon in your declaration?

22 A Yes.

23 Q Okay. And did you find any?

24 A There is certainly lots of prior art that is
25 relevant to these, you know, very standard DRM, you

1 know, delivery. You know, streaming systems.

2 I looked at prior art dating back decades.
3 Some to my prior experience, you know, papers and
4 materials from the '90's and 2000's that are all in
5 the same basic area.

6 Q What prompted you to search for prior art
7 other than the three references Chen, Lindahl and
8 Hurst that was provided to you by counsel?

9 MR. LIANG: Object to form.

10 THE WITNESS: I would have to -- it would
11 depend on what I was looking for.

12 BY MR. HENDIFAR:

13 Q Okay. Can you give me a couple of examples?

14 A Probably looking -- it's been well --
15 probably, well over a year, so I guess I would have to
16 think pretty hard, but I looked at some key management
17 issues and looked at different -- the way different
18 systems handle keys. Certainly, was sort of reviewing
19 the evolution of adaptive bitrate streaming and
20 systems.

21 Q And is it fair to assume that if you did not
22 site those other prior art references in your
23 declaration, you did not find them?

24 A You dropped off at the end there.

25 Q Okay. Sure. Is it fair to assume that if

1 you did not cite the prior art references that you
2 located in your declaration, you had not found them to
3 be sufficiently relevant?

4 A Well, my opinions are in -- that are in this
5 declaration relates to these -- this combination of
6 prior art.

7 There may be many other relevant pieces of
8 prior art, but my declaration is focused on these
9 three. So I couldn't disregard any particular piece
10 of prior art.

11 Q Okay. Is it fair to assume that if you had
12 found better evidence of obviousness -- strike that.

13 Is it fair to assume that if you had found
14 better evidence of your opinions regarding
15 obviousness, you would have cited them in your
16 declaration?

17 A Had I performed that particular analysis for
18 some other prior art, that is just not what I have
19 been asked to do.

20 Q Referring to your C.V., how would you
21 characterize the field of your research currently?

22 A Broadly speaking, I work in pretty broad
23 range of security, cyber security systems, distributed
24 networks.

25 Q And what -- your C.V. is the same as of the

1 year 2011?

2 A I mean, my focus changes. You know, I
3 follow the research, but in general, that's the same
4 area I have been working on for 20, 30 years.

5 Q Okay. How would you describe the field of
6 the '588 patent?

7 And when I say "'588 patent," I will be
8 referring to U.S. Patent No. 10-225-588, that is the
9 subject of this IPR.

10 A Okay. So I have just -- I have my report
11 and I think all of the exhibits here. I don't know
12 how you want to mark those or if I can refer now to my
13 report before answering your question.

14 Q You could refer to your report whenever
15 you'd like to.

16 A Okay. I just want to make sure I wasn't
17 doing anything, you know --

18 Q Are there any extra notes in any of the
19 documents you are reviewing today?

20 A No, they are all clean. They are all clean.
21 I can confirm that. Meaning, there are no notes or
22 annotations or highlighting or anything throughout any
23 of those documents. Of course.

24 Q Okay. So while you review your declaration,
25 the pending question is how would you describe the

1 field of the '588 patent?

2 A So I refer to this actually in -- when we
3 are describing the level of somebody's skill in the
4 art in Paragraph 66 of my report, and we will refer
5 broadly to the field of the '588, as the field of
6 video streaming media security. You might add into
7 that digital rights management, for example.

8 Q So is it in your view that any novelty
9 that -- strike that.

10 Is it your view that any novelty to discuss
11 in the specification of the '588 patent whether or not
12 they are actually claimed, would relate to security
13 and not any other aspects of streaming video?

14 A It will relate to -- the innovations would
15 relate to security, digital rights management,
16 distributed streaming.

17 Q Now, prior to your retention in this IPR,
18 did you have any familiarity with patent owner DivX,
19 D-I-V-X?

20 A Yes, I heard of the company and I was aware
21 of -- they -- they have a codec for streaming.

22 Q Okay. And when did you first, if you
23 recall, approximately hear of -- strike that.

24 When did you first hear of DivX, if you can
25 recall, approximately?

1 A That's hard to say. You know, I couldn't
2 pin that down.

3 Q Okay. Was it more than 10 years ago?

4 A Probably, yeah.

5 Q Okay. And what was the content that you
6 first learned about DivX?

7 A Yeah, I am going to hazard a guess. I
8 probably heard about it in the context of, you know,
9 streaming, research streaming, development.

10 Q Okay. What was your understanding of what
11 DivX was when you learned -- strike that.

12 What was your understanding of what DivX was
13 in the time frame of the year 2011 approximately?

14 A DivX was a company that I developed some
15 systems for, for streaming and the codec, but beyond
16 that, I don't remember the contents and the details
17 of, you know, my understanding of that.

18 Q Have you personally used as of the year 2011
19 any of the products developed or invented by DivX?

20 A I wouldn't know.

21 Q Have you codeced as of the year 2011?

22 As of the year 2011, had you used any codec?
23 Codec, C-O-D-E-C.

24 A Yeah, sure. For streaming, yes.

25 Q Okay. And as of the year 2011, had you used

1 any codec manufacturer or programmed by DivX?

2 A Yeah, I don't know.

3 Q Okay. What is your understanding of the
4 reputation of DivX as of the year 2011?

5 A I didn't really have an understanding. You
6 know, beyond it was a company that was doing work in
7 that space.

8 Q Okay. So you testified about your research
9 as of the year 2011 included distributed networks and
10 Cyber security, correct?

11 A Correct.

12 Q And is it your understanding that DivX at
13 the time also was engaged in inventions and
14 manufacturing in that same space?

15 A Yes.

16 Q Okay. Is there a reason you have no
17 familiarity with DivX's work during the same time
18 frame?

19 A I am sorry. I don't understand the
20 question. Can you try it again?

21 Q Sure. Is there a reason why you are not
22 familiar or have no familiarity with DivX's activities
23 in the same space that was also your research space?

24 A I knew that they were doing video codec. It
25 wasn't that I wasn't aware.

1 Q Okay. But you have no knowledge of the
2 quality of their work or their reputation of their
3 work?

4 A You know, I didn't have any reason to doubt
5 the quality. You know, it was something that was --
6 that, that people had heard about. It is a system or
7 they had technologies out there. So I didn't really
8 have any need to investigate or understand what the
9 reputation was.

10 Q Okay. To your knowledge, have you cited any
11 inventions by DivX in any other publications?

12 A Yeah, I am not certain. I have to go look.

13 Q Okay. Do you -- prior to today's -- strike
14 that, again.

15 Prior to your retention in this IPR, have
16 you heard of any of the inventions of the '588 patent?

17 A So I have a clean copy of '588, just for the
18 record.

19 Q Sure.

20 A No, I don't believe.

21 Q If I may refer you to the '588 patent,
22 Column 9, Lines 18 through 23, please.

23 A I am there.

24 Q Okay. So what is a Matroska container file?

25 A If you go to Background of my report,

1 Paragraph 72, I sort of introduced the notion. "Video
2 streams were typically stored in media container files
3 on a server." This is me sort of talking in
4 Background.

5 "Several media container formats existed,
6 including the ISO base media file format, sometimes
7 referred to as the MP4 file format and Matroska."

8 Q Okay. Now, was Matroska a standard and
9 typical file format for streaming media in the year
10 2011?

11 A Yes. It's well-known.

12 Q Now, going back to the same portion of the
13 patent Column 9, Lines 18 through 23, patent explains
14 that, "In several embodiments, the Matroska container
15 file is further specialized in that additional DRM
16 elements (i.e., elements that are not specified as
17 part of the Matroska container format.) can be
18 included within the file."

19 What does the patent mean by specializing
20 the Matroska container file format?

21 A So if you go to my report -- really, what
22 the '588 is -- is specializing -- they're modifying
23 the Matroska, but they -- they -- the '588 explicitly
24 says, you know, that this is the -- you know, the MP4
25 Matroska was well-known in the art and they're

1 modifying slightly the format.

2 As I lay out in my report in a number of
3 places, it is not a substantial addition.

4 Q What does it mean to modify a file format?

5 A It's to either add, remove or change
6 different parts of the format file.

7 Q Okay. And when the file format is modified,
8 does it then require specialized equipment in order to
9 be recognize that file format?

10 A What do you mean "specialized equipment"?

11 Q Sure. So a standard file format can be
12 recognized by any software or hardware that is
13 programmed to recognize that standard file format,
14 correct?

15 A Correct.

16 Q If that file format is modified, then does
17 that -- can that modified file format still be
18 recognized in programs or software or hardware, that
19 were originally designed for the standard unmodified
20 file format?

21 A It would depend on the modification in the
22 particular piece of software that was interpreting it.

23 Q Okay. So focusing on Column 9, Line 19
24 through 23, of the patent that we just read, is the
25 modification of the Matroska file format discussed in

1 this portion of the patent resolved in -- I mean,
2 ability of the hardware or software designed for the
3 original file format to read and understand the
4 modified file format?

5 A Would you need additional -- for these
6 extensions or for these modifications, the file -- the
7 file format is changed. If there was an
8 implementation that, that -- for example, ignored
9 potentially new parts that are in some of the
10 embodiments of the '588, it may work if there are
11 other parts that are required for them to interpret
12 the actual contents and perform playback and graphs
13 (phonetic).

14 Q Can you give me an example of a software in
15 the 2011 time frame that was used to play media
16 streamed via the Matroska container file?

17 A I think this was a Windows player. I think
18 there was an Apple player. I think there was some
19 open source tools like VLC. There were different
20 customized players for different media services. So
21 there is a pretty large universe of implementations
22 that is shrinking (phonetic) that use the --
23 (Inaudible.)

24 Q Thank you. Let's take the Windows player as
25 an example to use for this subsequent question.

1 Would the Windows player be able to play the
2 Matroska file format as modified in Column 9, Lines 18
3 through 23 of the patent?

4 A Well, which embodiments?

5 Q Sure. As modified in Column 9, Line 18
6 through 23, of the patent?

7 A That is referring to several embodiments
8 there.

9 Q Yes, but it's particular modification that
10 is used in several embodiments, and that question is
11 about -- let me rephrase the question.

12 Column 9, Lines 19 through 23, of the patent
13 explains that, "the Matroska container file is further
14 specialized in that additional DRM elements can be
15 included within the file to facilitate the
16 distribution of protected media."

17 Would a Windows Media Player in the 2011
18 time frame be able to play the Matroska file format as
19 modified as explained in Column 9, Lines 18 through 23
20 of the patent?

21 A So the Window Media Player would if it
22 didn't understand the extensions or the modifications
23 that are referred to here, couldn't play.

24 Q Sure. My question is did you understand or
25 you don't understand or you don't know?

1 A Well, I would have to go look. I can't -- I
2 would have to think about that a little, but I think
3 if there were -- as I said before, I am sure there are
4 extensions where they are doing things that make the
5 content unreadable, then it would not be able to do
6 playback.

7 Q Did the standard unmodified Matroska
8 container file format allow for the inclusion of the
9 additional DRM element referenced in Column 9, Lines
10 18 through 23 of the patent?

11 A I don't believe so.

12 Q Did the standard unmodified MP4 file format
13 allow for the inclusion of the additional DRM element
14 as referenced in Column 9, Lines 18 through 23 of the
15 patent?

16 A Just the MP4 systems -- so MP4 is the
17 standard Matroska -- I don't believe it had those DRM
18 elements at that time.

19 THE REPORTER: You're breaking up or I can't
20 hear you.

21 THE WITNESS: I don't believe it had those
22 DRM elements at that time.

23 BY MR. HENDIFAR:

24 Q Are you aware of any standard file format in
25 the 2011 time frame that allowed for the inclusion of

1 additional DRM elements as referenced in Column 9,
2 Lines 18 through 23, of the patent?

3 A I would have to go look at all the DRM
4 extensions to -- to -- and compare them to the '588.
5 There is certainly DRM streaming systems that have DRM
6 data that modified the stream. So I would have to go
7 look at those. My opinions aren't really related to
8 those. My opinions are related to combinations in my
9 report.

10 Q Sure. So I don't believe you answered my
11 question, though. So I will rephrase it.

12 Sitting here now, are you aware of any
13 standard file format in the 2011 time frame that
14 allowed for the inclusion of additional DRM elements
15 as referred in Column 9, Lines 18 through 23, of the
16 patent?

17 A I would have to go look at the standard,
18 that are certain DRM standards. I would have to
19 compare the kind of DRM information, the DRM elements
20 that this column is referring to and compare them to
21 the DRM standards that were available at that time.

22 Q Thank you.

23 Now, if I recall correctly from your C.V.,
24 you have taught both graduate and undergrad courses in
25 computer science, correct?

1 A Yes, I have.

2 Q What graduate or undergraduate level course
3 in computer science or related field, would enable a
4 student to modify a Matroska container file format, if
5 any?

6 A Certainly, distributed systems, multimedia
7 course, probably a security force with DRM in a host
8 of subjects, any of those courses.

9 Q So is it your opinion that a person of
10 ordinary skill in the arts, as you have defined in
11 your declaration, would be able to relatively with
12 ease modify the Matroska container file format?

13 A Well, it would depend on what it was
14 trying -- what they were trying to do. You know,
15 certainly, Matroska file format is highly-structured
16 data. And if they wanted to modify it for some
17 purpose, they can certainly do it.

18 Understanding, you know, the standard, and
19 understanding how one writes source code and designs
20 data structures.

21 Q Would a person of ordinary skill in the
22 arts, as you have defined it in your declaration, in
23 the 2011 time frame, had been able to modify the
24 Matroska container file format to include the
25 additional DRM elements referenced in Column 9, Lines

1 18 through 23 of the patent?

2 A I believe they could, yes.

3 Q If they made that modification, then the
4 system that played the Matroska file format as
5 modified would also have to be modified, correct?

6 A Depending on the implementation, it --
7 again, if it is an optional field, it would be
8 normally ignored. This is a data structure the way
9 Matroska works is that it is a highly-structured
10 content and it kind of reads field by field and there
11 are indices that tell you what everything means.

12 And so some of these fields, I believe the
13 SMIL, the standard -- the field the SMIL, the
14 standard -- I have to go look. I seem to remember the
15 SMIL standard was based on XML which is an extensible
16 markup language, which allows things to be readily
17 extended.

18 So, you have an implementation that only
19 looks at parts of the data structure, and most of
20 those things, it doesn't understand, depending on what
21 you are modifying, it might work; it might not.

22 MR. HENDIFAR: Okay. Can I maybe suggest
23 that Dr. McDaniel maybe use the phone because I am
24 having similar difficulties that the court reporter
25 has.

1 MR. LIANG: I can actually hear everybody.
2 I know you guys are having trouble, but I can hear
3 everybody just fine.

4 MR. HENDIFAR: Dr. McDaniel, do you have any
5 option of maybe using a phone connection?

6 THE WITNESS: Let me put this a little bit
7 closer. So if you don't mind seeing my giant head in
8 the middle of your screen.

9 THE REPORTER: Can we take a break? Go off
10 the record?

11 MR. HENDIFAR: Sure.

12 (Discussion held off the record.)

13 BY MR. HENDIFAR:

14 Q So welcome back. I think we fixed some
15 audio issues that we had prior to the break.

16 So I will be repeating a couple of the last
17 questions prior to the break, just to make sure we get
18 a clear answer for the record.

19 Dr. McDaniel, is it your opinion that as of
20 the year 2011, a person of ordinary skill in the art,
21 as you have defined it in your declaration, would have
22 been able to modify the Matroska standard file format
23 as explained in Column 9, Lines 18 through 23, of the
24 patent?

25 A I believe somebody who has efficient

1 background, skill in the art, as defined in my report,
2 would be able to modify the Matroska in a way that is
3 consistent with what it is talking about in Column 9.

4 Q And would the said modification require a
5 modified software to play the modified Matroska file
6 format?

7 A So it would depend on -- it would depend on
8 how the modifications were done. If they were
9 modifications to -- that were not required to perform
10 playback, and an implementation was, you know,
11 designed to ignore parts of the actual structure
12 itself, the Matroska file format is highly structured,
13 then -- then, it probably could play.

14 If it had things that were going to modify
15 the content in a way that made the playback
16 unplayable, then, obviously, there would need to be
17 additional modifications.

18 Q Okay. Reviewing the file -- the '588
19 patent, is the modified Matroska file format, as
20 described in the '588 patent, play in a standard media
21 player that could play an unmodified Matroska file
22 format?

23 A Again, it feels like that is the same
24 question again. I mean, it would depend on what
25 particular modifications to the Matroska file were

1 done with the embodiments you were talking about and
2 whether they would impede the playback.

3 Q Sure. So, for example, if I were to refer
4 you to Figure 3 of the patent.

5 A Okay. Okay. I am there.

6 Q Thank you. Would the embodiment of the
7 patent described in Figure 3, play in a media player
8 that is designed for a standard unmodified Matroska
9 file format?

10 A So this is described at the bottom of
11 Column 14 and the top of 15, at the '588, and in this
12 case, it is a specific modification of Matroska file,
13 this particular embodiment, that includes nonstandard
14 EBML element containing cryptographic information
15 utilized to access, to protect the system streams. In
16 that case, it would require some additional processing
17 pour to handle that, that nonstandard EBML element in
18 order to decode the content.

19 Q Okay. So my question -- and thank you for
20 that response.

21 My question was not directed at processing
22 pour. It was directed as whether a software designed
23 for playing a standard nonmodified Matroska would be
24 able to play the modified Matroska. So I will redo
25 the question for your convenience, if that is okay.

1 Okay. Would a media player designed for an
2 unmodified Matroska file format be able to play the
3 modified Matroska file format as described in the
4 patent Figure 3 at Column 14, Line 63 through Column
5 15, line 50 of the patent?

6 A So the hypothetical player you are
7 discussing in this case, it wasn't -- it was not
8 designed to handle the decryption you based on the
9 EBML element containing cryptographic information,
10 then it would not be able to play that.

11 Q So is that an issue with the software being
12 generally decrypt or is there an issue of the software
13 being to process the modified Matroska file format?

14 THE REPORTER: Can you repeat the beginning
15 of your question?

16 THE WITNESS: Yeah, I didn't get the
17 question either.

18 BY MR. HENDIFAR:

19 Q Sure. Is the issue -- you identified an
20 issue with general capability of the software to
21 decrypt or is it an issue with the software being able
22 to process the modified Matroska file format.

23 A So this hypothetical player would need to be
24 able to process both the nonstandard element and it
25 would need to perform the decryption. So the software

1 would have to do both.

2 Q Okay. Did the Windows Media Player in 2011
3 be able to decrypt encrypted media?

4 A I would have to -- I would have to go look.

5 Q Now, what file format is used in the
6 invention of the Chen reference, Exhibit 1006?

7 A So Chen isn't focused on any one particular
8 format, but it actually refers to a number of formats.
9 If you go to Paragraph 119 or perhaps better, let's
10 start with my report where I am describing the Chen
11 reference in Paragraph 106.

12 "Chen teaches HTTP streaming involving
13 'streaming segmentation and the use of multiple
14 streams.'" The multiple streams involve video content
15 'encoded at multiple bitrates to form different
16 versions, or representations.' These representations
17 are 'broken into smaller pieces, perhaps on the order
18 of a few seconds each, to perform segments.' These
19 representations and segments are stored on a server or
20 content delivery network" -- otherwise known as --
21 (Inaudible) -- "and streamed to a client device."

22 And that is sort of described throughout
23 Chen, but principally, around Paragraphs 61 and 63.

24 Chen goes on in 119, to say, "Chen teaches
25 that the '3GPP file format or any other file based on

1 the ISO base media format, such as the MP4 file format
2 or the 3GPP2 file format, may be used as the container
3 format' for these purposes."

4 So they are really saying any
5 standardized -- Chen is really referring to any kind
6 of standardized format.

7 Q Thank you.

8 Was the 3GPP file format in 2011, a standard
9 file format just like the Matroska file format was?

10 A Yes.

11 Q Okay. Did 3GPP file format in 2011 include
12 DRM elements within the file?

13 A I don't remember. I don't remember seeing
14 any extensions in 3GPP directly for DRM in that era.

15 However, the combination, really, what Chen
16 is talking about, amongst other things is providing
17 some capabilities for adapting streaming that may
18 include some encryption, for example.

19 Q Okay. Now, would the standard file format
20 necessarily have to be modified if Chen were to
21 implement encryption?

22 A Would it have to be modified? I am not sure
23 how you do encryption without -- certainly --
24 (Inaudible.) talking about in my report.

25 THE REPORTER: I can't hear you. I'm sorry.

1 You need to repeat your answer.

2 THE WITNESS: Can you ask the question again
3 then?

4 BY MR. HENDIFAR:

5 Q Sure. Was -- would implementation of Chen
6 with encryption necessarily require a modification of
7 a standard file format?

8 MR. LIANG: Object to form.

9 THE WITNESS: It's pretty abstract. I am
10 not -- which embodiments are you referring to?

11 BY MR. HENDIFAR:

12 Q Okay. Would you mind telling me which part
13 of your declaration you referenced in discussing Chen?

14 A 119.

15 Q The Paragraph 119, you do not discuss any
16 particular embodiment of Chen; do you?

17 A No. I am referring to -- that's really sort
18 of describing the 3GPP and how it could be used in any
19 of the embodiments.

20 Q Now, in your proposed combination of the
21 references, are you relying on any particular
22 embodiment of Chen?

23 A There are different embodiments that I point
24 to.

25 Q Okay. Do any of the embodiments that you

1 rely on from Chen in your declaration require a
2 modification of a standard file format in order to
3 enable encryption?

4 MR. LIANG: Object to form.

5 THE WITNESS: Yeah, I think the
6 combination -- we are talking about Chen with, you
7 know, using things like partial encryption would
8 require some additional encryption information.

9 For example, to process the contents, so you
10 would probably have to make some modifications to 3GPP
11 to enable or to -- not enable -- to implement the
12 combination of Chen, Hurst and Lindahl.

13 I think I turned my phone around and put it
14 back in my pocket. That is the microphone right
15 there.

16 Q Now, does Lindahl use a standard file format
17 for its invention?

18 MR. LIANG: Object to form.

19 THE WITNESS: So the combination that I am
20 referring to here isn't restricted to any particular
21 file format, I think.

22 BY MR. HENDIFAR:

23 Q But, Doctor, that does not answer my
24 question.

25 The question was does Lindahl use a standard

1 file format in its invention?

2 MR. LIANG: Object to form.

3 THE WITNESS: So talking about Lindahl,
4 referred to Paragraph 109 in my report, and Lindahl
5 isn't tied to any specific standard, but it does in
6 Paragraph 0006 of the Lindahl reference referred to
7 MPEG standards as being some that could be appropriate
8 for application of the Lindahl inventions.

9 BY MR. HENDIFAR:

10 Q Okay. Does Lindahl invention by virtual of
11 having encryption information require a modification
12 of the standard file format available in 2011?

13 A The invention of the partial encryption
14 requires some additional information, so you know what
15 parts or are partially encrypted.

16 Q I don't believe that answered my question.
17 So the question is does Lindahl by virtual
18 of having encrypted files require a modification of
19 the standard files available in 2011?

20 A What we are referring to -- the part of
21 Lindahl that we are referring to in -- in this case --
22 well, here -- so to add the encryption to a standard
23 as defined by the invention in Lindahl, you have to
24 have additional encryption information in order to
25 know what -- what you are actually implementing or how

1 to actually perform the decryption.

2 I haven't really given a great deal of
3 thought. There may be a pathological case where you
4 can do it without actually modifying, but I would have
5 to dig into the actual standard to see how one can
6 apply Lindahl without modifying the standard.

7 Q Got it.

8 Now, why didn't the standard file format
9 that we had discussed so far in 2011 and as referenced
10 in the reference in the patent, include already within
11 them DRM information location?

12 MR. LIANG: Object to form.

13 THE WITNESS: Yeah. You have to talk to the
14 standard developers. Certainly, people have been
15 adding DRM information to all sorts of content format,
16 content streaming for decades before 2011, and why the
17 standards chose to provide something a little bit
18 external, I would have to -- you'd have to actually
19 talk to them.

20 BY MR. HENDIFAR:

21 Q Have you ever been involved in any aspect of
22 a standard development or adaptation?

23 A Standards, yes.

24 Q Okay. What was your involvement and if you
25 could elaborate?

1 A Back in the early 2000's, I was involved in
2 the development of security standards for broadcast
3 and multicast communication security, of which
4 interestingly enough, video streaming was a prime
5 application. And I was involved in the development of
6 standards for defining the policies structures which
7 would be something like the encryption information
8 that would be passed between different endpoints.

9 Q Now, broadcast is different from streaming
10 video, correct?

11 MR. LIANG: Object to form.

12 THE WITNESS: You can -- you can
13 certainly -- you can certainly stream and broadcast.
14 You can stream over broadcast media under the right
15 circumstances.

16 BY MR. HENDIFAR:

17 Q If you look at '588 patent -- just one
18 second. Let me strike the question and ask a
19 different question.

20 Broadcast does not include an adaptive
21 bitrate streaming; correct?

22 A Certainly, you can have adaptive bitrate
23 streaming. You can have -- using things like
24 multicast and group communication, you can have
25 streaming with adaptive bitrate delivery for sure.

1 MR. LIANG: Um-hmm.

2 MR. HENDIFAR: Jeff, did you say something?

3 THE WITNESS: Can you hear me?

4 MR. HENDIFAR: I heard you. I thought Jeff
5 said something. Maybe I misheard.

6 MR. LIANG: Yeah, I was just wondering.
7 Yeah, no, I was just wondering if you had lost your
8 connection or something.

9 MR. HENDIFAR: No. No. No. I'm sorry
10 about that.

11 MR. LIANG: Yeah. Parham, you occasionally
12 -- your video does freeze occasionally.

13 MR. HENDIFAR: I am using the phone for the
14 audio.

15 MR. LIANG: Okay.

16 MR. HENDIFAR: Hopefully, it is not going
17 to --

18 BY MR. HENDIFAR:

19 Q Going to the '588 patent Claim 1, if you
20 would, please.

21 A I am there.

22 Q Okay. The limitation locating encryption
23 information in Claim one.

24 A I have to review my report. It appears I am
25 looking off to the side. I got documents here and so

1 I am not, like, staring off.

2 Q Okay. Let me know when you have it.

3 Please let me know when you have the claim
4 and I will ask my question.

5 A Yeah. I am just reviewing a part of my
6 report that is related to the limitation 1L that you
7 just referred me to.

8 Q Okay.

9 A Okay. I am ready.

10 Q So in the content of Claim 1, locating is
11 not synonymous with retrieving; is it?

12 A Well, certainly, if you're retrieving
13 something, you have to locate it.

14 Q Okay. But is it synonymous?

15 A Well, it's a logical requirement when you
16 retrieve something to also locate it.

17 Q Okay. In the context of Claim 1, is
18 locating synonymous with receiving?

19 A So somebody skilled in the art reading Claim
20 1 and the entirety of the specification of the '588,
21 would look at that and -- and note that locating would
22 be a necessary step in retrieving.

23 Q Yes. And my second question was in the
24 context of Claim 1, is locating synonymous with
25 receiving?

1 A From receiving?

2 Q Correct.

3 A Is it synonymous -- you changed the word.
4 You said -- you were talking about "retrieving" before
5 and now, you are saying, "receiving." Is that
6 intentional?

7 Q Yes. It is a new question.

8 A Okay. I just want to make sure.

9 Q You answered the question for retrieving and
10 now, I am asking a similar question for receiving.

11 So that the record is clear, in the context
12 of Claim 1, is the word locating synonymous with
13 receiving?

14 MR. LIANG: Object to form.

15 THE WITNESS: So what -- in what content do
16 you mean retrieving? It seems like you're heading
17 somewhere. Is there a --

18 BY MR. HENDIFAR:

19 Q No, I am trying -- sure. I am trying to
20 understand what locating means in Column 1.

21 So I first asked whether it means
22 retrieving, you provided an answer, which was slightly
23 not responsive, but that's okay. So, now, I am asking
24 to see if it is synonymous with receiving.

25 So I will repeat the question. In the

1 context of Claim 1 is locating synonymous with
2 receiving?

3 A So I think you just said, Column 1. I think
4 you meant Claim 1.

5 Okay. So in that case, receiving, there is
6 a receiving steps which happens before locating. So
7 it's a different step. It's not the same thing.

8 Q Sure. I am not asking whether the receiving
9 step of Claim 1 is the same step as the locating step
10 of Claim 1.

11 My question is does locating as an English
12 word in Claim 1 mean receiving or is it synonymous
13 with receiving?

14 A Does it mean -- when you say, "synonymous,"
15 does it mean exactly the same thing?

16 Q Correct.

17 A If that is the question you're asking, then
18 locating is -- is, you know, a step that's distinct
19 from receiving. So it is not the same thing.

20 Q Now, going to Claim 2 of the patent, the
21 limitation where the container file also includes
22 encryption information that identifies portions of
23 frames of video that are encrypted?

24 A Just reviewing my report.

25 Q Sure. Okay.

1 A Okay. I am there.

2 Q Now, Claim 2 depends on Claim 1, correct?

3 A Yes.

4 Q And Claim 2 requires that the step of
5 requesting portion of the selected stream further
6 comprises the step of obtaining a container file,
7 correct?

8 A Wherein, the step of requesting portions of
9 the selected stream further comprises the step of
10 obtaining a container file.

11 Q And the container file must include
12 encryption information that identifies portions of
13 frames of video that are encrypted, correct?

14 A As written in the claim.

15 Q Yes.

16 Okay. How is the limitation that I just
17 read, read, in the container file also includes
18 encryption information that identifies portions of
19 frames of video that are encrypted in Claim 2,
20 different from the limitation in Claim 1 that locating
21 encryption information that identifies encrypted
22 portions of frames of video?

23 A Sorry. Could you ask the question again?

24 Q Sure. Yes.

25 How is the limitation in Claim 2 that the

1 container file also includes encryption information
2 that identifies portions of frames of video that are
3 encrypted different from the limitation of Claim 1
4 that states, locating encryption information that
5 identifies encrypted portion of frames of video?

6 A I think what it's specifying what is
7 different is Claim 2 is saying where the encryption
8 information is located in the file.

9 Q Sorry. I don't understand your response.

10 A What is that?

11 Q I am not sure if I understood your response,
12 if you could elaborate.

13 A Can you ask a different question then or the
14 same question?

15 Q Sure. I can restate the question.

16 How is the limitation in Claim 2 that the
17 container file that is received includes encryption
18 information that identifies portions of frames of
19 video that are encrypted different from the limitation
20 of Claim 1, that states locating encryption
21 information that identifies the encrypted portions of
22 frames of video?

23 A So I think with Claim 1 is locating, it
24 talks about locating the information. In the
25 encrypted select stream and I think Claim 2 is really

1 talking about where -- you know, being specific about
2 where the container file includes encryption
3 information.

4 Q Could you elaborate your response? I am
5 not sure if I am following the distinction that you're
6 making.

7 A So the location information identifies
8 encrypted portions of frames within the requested
9 portion of the selected stream of protected video.

10 And what that is saying is just locating the
11 encryption information in the selected stream and
12 Claim 2 is talking about the container file explicitly
13 includes encryption information that identifies
14 portions of frames of video that are encrypted.

15 Q Okay. Thank you.

16 Now, if I may refer you to the '588 patent
17 Column 9, Line 23 through 29.

18 A Column 9?

19 Q Yes.

20 A Okay. I am there.

21 Q Okay. In the embodiment of the patent in
22 Column 9, Line 23 through 29, the encryption
23 information is located within the requested portion of
24 the selected stream of the encrypted video, correct?

25 A In that embodiment -- I'm sorry. Can you

1 ask the question again?

2 Q Yes, of course. In the embodiment of the
3 patent in Column 9, Line 23 through 29, the encryption
4 information is located within the requested portion of
5 the selected stream of the protected video, correct?

6 A It would appear so.

7 Q Okay. If I may refer you to Column 13,
8 Line 57 through 63.

9 A I am there.

10 Q In the embodiment of the patent in Column
11 13, Line 57 through 63, the encryption information is
12 located within the requested portion of the selected
13 stream of protected video, correct?

14 A In this -- in this embodiment.

15 Q Did you say, yes?

16 A In this embodiment, yes.

17 Q Now, if I may refer you to Column 16,
18 Line 33 through 49.

19 A Column 16?

20 Q Correct. Column 16, Lines 33 through 49.

21 A Okay. I am there.

22 Q Okay. In the embodiment of the patent in
23 Column 16, Line 33 through 49, the encryption
24 information is located within the requested portion of
25 the selected stream of protected video, correct?

1 THE REPORTER: "Selected stream of protected
2 video"?

3 MR. HENDIFAR: Correct.

4 THE WITNESS: In this embodiment, it would
5 appear that the encryption information is included.

6 BY MR. HENDIFAR:

7 Q Okay. If I may direct your attention now to
8 Column 22, Lines 14 through 17, please.

9 A Okay. I lost -- I was just reading my
10 report. Which Column? 22?

11 Q Sure. Column 22, Lines 14 through 17.

12 A 14 through 17, okay.

13 Q In the embodiment of the patent in Column
14 22, Lines 14 through 17, the encryption information is
15 located within the requested portion of the selected
16 stream of protected video, correct?

17 A Let me read this for context.

18 Q Sure.

19 A It would appear it was included. The DRM
20 element was included in the stream.

21 Q Okay. Now, if I may refer you to the last
22 one, Column 25, Line 15 through 21.

23 MR. LIANG: Counsel, did you say, "Column
24 15"?

25 MR. HENDIFAR: Yeah -- no. Column 25,

1 Line 15 through 21.

2 BY MR. HENDIFAR:

3 Q Please let me know when you are ready for a
4 question, Dr. McDaniel?

5 A Yes, I am just reviewing the section of the
6 patent.

7 Q Sure. Just let me know when you are ready.

8 A I'm ready.

9 Q Okay. In the embodiment of the patent in
10 Column 25, Line 15 through 21, the encryption
11 information is located within the requested portion of
12 the selected stream of protected video; correct?

13 THE REPORTER: Can you repeat that again?

14 BY MR. HENDIFAR:

15 Q Sure. In the embodiment of the patent in
16 Column 25, Line 15 through 21, the encryption
17 information is located within the requested portion of
18 the selected stream of protected video, correct?

19 A It would appear so in this particular
20 embodiment.

21 Q Okay. Sitting here now, are you aware of
22 any embodiments where -- strike that.

23 The embodiment of the patent described a
24 Block Group that is sent as the smallest unit of
25 information to the user; is that correct?

1 MR. LIANG: Object to form.

2 THE WITNESS: The Block Group?

3 BY MR. HENDIFAR:

4 Q Sure. The embodiment of the patent
5 describes a Block Group as the smallest unit of
6 information sent to the user, correct?

7 MR. LIANG: Object to form.

8 THE WITNESS: I would have to -- I don't
9 know. I am not certain. I would have to go look.

10 BY MR. HENDIFAR:

11 Q Okay. Are you aware of any embodiment of
12 the patent where the encryption information for each
13 cluster of video is not included within that cluster?

14 A Can you say that again? I lost you there.

15 Q Sure. Are you aware of any embodiment of
16 the patent where the encryption information for a
17 cluster of video is not included within that cluster?

18 A So somebody skilled in the art reviewing the
19 bitrate (phonetic) wouldn't restrict the scope of the
20 claims to the specific embodiments in which it is
21 included in that stream.

22 Q I must strike as nonresponsive. If you
23 would just please answer my question, which is not
24 talking about claims.

25 The question was, an embodiment of the '588

1 patent where the encryption information for a cluster
2 of video is not located within that cluster?

3 A I think in the background when
4 identifying -- you know, digital rights management in
5 particular, the last paragraph, or second to last
6 paragraph, Column 2, is talking about the DRM system,
7 typically, involved the use of cryptographic
8 information to control access to this content. And so
9 they are sort of specifying in the DRM systems will
10 provide that information, you know, that's -- whatever
11 is appropriate for the particular.

12 So in the case of the '588, it is saying --

13 THE REPORTER: You broke up there. Can you
14 repeat your answer again?

15 THE WITNESS: Yes. So if you go to Column
16 2, introduction of the digital rights management
17 system, it is talking broadly about the use of
18 cryptographic information to control access. So some
19 of the limitations or some of the embodiments that you
20 refer to are including those in certain places, but
21 there's by no means a requirement of the '588, that it
22 goes in any particular place.

23 BY MR. HENDIFAR:

24 Q And I appreciate that response, but it is
25 not responsive to my question. So let me ask a

1 different question.

2 Do you consider the background of the '588
3 in parts of Column 1 and Column 2 to be an embodiment
4 of the '588 patent?

5 A The background would provide somebody
6 skilled in the arts, the background of the known --
7 the known uses of the DRM systems, to the background
8 in order to look at different embodiments in order to
9 implement them.

10 Q I'll repeat the question. If you please,
11 answer the question.

12 Do you consider the background of the '588
13 in Column 1 and 2 of the patent to be one or more of
14 the embodiment of the '588 patent?

15 A It's providing context in order for somebody
16 skilled in the art to understand how to implement or
17 for -- understand how those embodiments actually work.

18 Q Okay. In the actual embodiment --

19 MR. LIANG: Um-hmm.

20 THE REPORTER: What was that, Jeff?

21 MR. LIANG: Oh, I didn't mean to interrupt.
22 I just wanted to point out, we have been going about
23 an hour. So when you get to a good stopping point --

24 MR. HENDIFAR: I will finish this portion
25 and then, we can take a break.

1 Q Now, my question is in the actual embodiment
2 of the '588 patent; that are described in the '588
3 patent.

4 Is there any embodiment where the encryption
5 information of a given cluster is not located within
6 that cluster?

7 A I would have to -- I would have to take a
8 careful look at that. Somebody skilled in the art
9 reading the background, reading the '588, would know
10 that it would be possible to put it somewhere else.
11 Outside the cluster, for example.

12 Q Dr. McDaniel, this is the fourth time I am
13 asking this question, and you are deflecting the
14 answer. I know you have a memorized answer to give,
15 but my question is very specific. It is not about
16 what's possible about the claim. It is not whether it
17 is theoretically possible to put encryption
18 information somewhere.

19 My question is very specific about the
20 actual embodiment described in the '588 patent. I
21 would appreciate it if you would actually answer my
22 question.

23 If you need time to review this stuff, that
24 is fine. I have been very patient for you to review
25 your declaration for the patent, and that is perfectly

1 fair. And I do not mean to deprive you of that
2 opportunity.

3 So if you need to review the patent, please
4 feel free to do so, but my question is very simple.

5 In the actual embodiment of the '588 patent,
6 that are described in the patent, is there any
7 embodiment where the encryption information of a given
8 cluster is not located within that cluster?

9 MR. LIANG: Object to form.

10 THE WITNESS: So the only answer I can give
11 is the one I have given you, which is someone skilled
12 in the arts reading these embodiments would know that
13 based on the background and the skill they had, that
14 these embodiments could include things where they
15 weren't.

16 BY MR. HENDIFAR:

17 Q The question is actually important, and it
18 requires an actual direct answer because whether it is
19 or it is not there. And if I have to, I will have to
20 call the Board because it is an important question.

21 I'm not asking what is possible. I am not
22 asking what could be interpreted. I am not asking
23 whether it could come up with other embodiments of the
24 '588.

25 I'm asking about what is actually the

1 embodiment, actually described in the '588 patent.

2 And if you have an embodiment, you can show
3 me. So if you would please try to actually answer my
4 question. I will repeat it again for the sixth time.

5 Is there any embodiment of the '588 patent
6 that is actually required in the '588 patent where the
7 encryption information of a given cluster is not
8 located within that cluster?

9 MR. LIANG: Same objection.

10 THE WITNESS: So -- so putting aside
11 somebody skilled -- how somebody skilled in the art
12 would interpret the '588, and putting aside the
13 embodiments that don't have an explicit description of
14 where the information lies, there is not an explicit
15 embodiment.

16 MR. HENDIFAR: Thank you.

17 Okay. You want to take a break?

18 MR. LIANG: Sure.

19 MR. HENDIFAR: How long would you like the
20 break to be?

21 MR. LIANG: Ten minutes is fine.

22 MR. HENDIFAR: We will come back 10 after
23 the hour.

24 THE WITNESS: Sounds good.

25 (Recess.)

1 BY MR. HENDIFAR:

2 Q Okay. Dr. McDaniel, if I may please direct
3 your attention to Claim 1 of the '588 patent.

4 A All right.

5 Q And specific to -- specifically if I may
6 direct your attention to the limitation, decrypting
7 each encrypted portion of the frame of video.

8 A I am there.

9 Q Okay. Is it possible to decrypt the
10 encrypted portion of the frames of video without first
11 identifying which portions of the frame are encrypted?

12 MR. LIANG: Object to form.

13 THE WITNESS: Can you ask the question
14 again?

15 BY MR. HENDIFAR:

16 Q No worries.

17 Is it possible to decrypt the encrypted
18 portions of the frames of video without first
19 identifying the encrypted portion of the frame?

20 A Yes, I am not sure how you could perform
21 decryption. There may be a case where you could have
22 a fixed location within a frame that is always
23 encrypted.

24 Q Okay. Is it, therefore, the case that the
25 limitation locating encryption information that

1 identifies encrypted portions of frames of video
2 appears to be superfluous in the context of Claim 1
3 given the subsequent limitation that required
4 decrypting each encrypted portion of the frame of
5 video?

6 MR. LIANG: Object to form.

7 THE WITNESS: Yeah, I am not sure what you
8 mean by superfluous.

9 BY MR. HENDIFAR:

10 Q Sure. That limitation would happen whether
11 or not -- let me step back.

12 What I mean by superfluous is that in
13 locating encryption information step, would have to
14 happen whether or not it was expressly cited in
15 Claim 1?

16 THE REPORTER: Expressly, what?

17 BY MR. HENDIFAR:

18 Q Whether or not it was expressly cited in
19 Claim 1?

20 So let me ask the question again.

21 Is it, therefore, the case that the step of
22 locating encryption information appears to be
23 superfluous given the subsequent step that requires
24 decrypting each encrypted portion of the frame?

25 MR. LIANG: Object to form.

1 THE WITNESS: I don't think so. I think you
2 could have a decryption in which there was an
3 encryption information and it was just sort of
4 implicit. It was known. And, therefore, you wouldn't
5 have to locate it, if there was like a fixed location.

6 BY MR. HENDIFAR:

7 Q If the information is known, you don't have
8 to locate it; is that the idea?

9 MR. LIANG: Object to form.

10 THE WITNESS: I mean that is a pathological
11 case, I think.

12 BY MR. HENDIFAR:

13 Q Could you elaborate? Because I am not sure
14 I understand your response. I'm sorry.

15 A So the -- the located -- (Inaudible.)

16 Q You're getting disconnected.

17 THE REPORTER: I can't hear anything. You
18 are breaking up.

19 THE WITNESS: Yes, it's Verizon in Central
20 Pennsylvania. So I will try again.

21 So the limitations says, the located
22 encryption information is used to decrypt. So the
23 previous limitation says, the location. It is the
24 process of the location -- so you're asking me is
25 there a case where if locating -- actually, I don't

1 know what you are asking me. Maybe I am getting
2 myself confused.

3 Let me try this line of questioning again
4 because I feel like I've lost the --

5 Q No worries.

6 In Claim 1, is it true that by virtue of
7 decrypting each encrypted portion of the frames of
8 video, the process has to necessarily locate and
9 identify which portions of video are encrypted whether
10 or not that limitation is expressly recited?

11 THE REPORTER: Can you state your question
12 again?

13 BY MR. HENDIFAR:

14 Q Sure. Is it true that in Claim 1 by virtue
15 of having to decrypt each encrypted portion of the
16 frames of video, the process also has to identify
17 encrypted portions of the frames of video whether or
18 not that identification step is expressly recited?

19 A Yeah, the limitation says decrypting each
20 encrypted portion of the frames of video identified
21 within the located encryption information.

22 So in that sense, what that is saying is
23 that the person has to use this encryption information
24 in order to do the decryption. So you're -- I am not
25 sure what you're asking me.

1 Q Okay. Let me rephrase the question.

2 In order to decrypt all encrypted portions
3 of a video, a process necessarily has to first
4 identify which portion of the video are encrypted,
5 correct?

6 A Well, in order to understand what you're
7 decrypting, you have to know what to decrypt.

8 Q Okay. So in order to decrypt each encrypted
9 portion of the frame of video in Claim 1, the process
10 has to necessarily first locate encryption information
11 that identifies encrypted portions of frames of video
12 whether or not that locating the -- (inaudible)
13 expressly recited, correct?

14 THE REPORTER: I lost you at the end.

15 MR. HENDIFAR: I will repeat the question.

16 BY MR. HENDIFAR:

17 Q In order to decrypt each encrypted portion
18 of the frame of video in Claim 1, the process has to
19 necessarily locate encryption information that
20 identifies encrypted portions of frame of video
21 whether or not that locating step is expressly
22 recited, correct?

23 A I am having trouble editing out one of the
24 limitations of the claim here. I haven't really given
25 that a whole lot of thought, but I would say that the

1 locating step in the previous limitation, that step is
2 identifying that you look to someplace to find the
3 encrypted portion or the encryption information that
4 identifies the encrypted portions of frames, and those
5 frames are part of the video within the requested
6 portions of the selected stream.

7 And then, in the next step, it says, okay,
8 you have done the location of that information, and
9 then, you perform encryption based on what you've
10 found.

11 So it seems like it is two distinct steps.
12 Whether or not one would be able to practice the
13 limits of the claim by editing out the location, I
14 haven't really given that a tremendous amount of
15 thought.

16 Q All right. Thank you.

17 Now, what is the difference in the art as of
18 the year 2011 between downloading and streaming
19 multimedia?

20 A In what context?

21 Q In the context of streaming and -- in the
22 context of the art. This is not a trick question. I
23 am just changing topics.

24 A Okay. So, I mean, so those are very broad
25 concepts. So, you know, to download is to take

1 content -- you know, data from one place and download
2 it into another. Whereas, streaming would be
3 something where you're taking the content and you're
4 sending it as a stream to a -- and, again, speaking
5 completely broadly within the context of the field.

6 Q Right. Okay. If I may direct your
7 attention to Lindahl, Paragraph 40.

8 A I am there.

9 Q Okay. So the sentence toward the middle of
10 Paragraph 40 of Lindahl states, "Through such
11 interaction, users of the client machines 112 and 114
12 are able to browse the media files stored in the media
13 storage 110, select media files for purchase, download
14 the purchased media files; and subsequently play the
15 purchased media files at their respective client
16 machines 112 and 114," end quote.

17 Do you see that?

18 A Yes.

19 Q Okay. In Paragraph 40, Lindahl is not
20 describing a streaming media; is it?

21 A I am just reviewing my report here.

22 Q Sure.

23 A So in Paragraph 40, it is talking about
24 downloading, but if you pivot to another part of
25 Lindahl, particularly, if you go to Paragraph 118 of

1 my report, Lindahl provides, you know, motivation
2 combined a solution of training techniques.

3 For example, as identified in Paragraph 65,
4 it says, "Next, the media file is downloaded 708 to
5 the user. In one embodiment, the download of the
6 media file can be performed by streaming the media
7 file through the data network to the user; namely, to
8 the user client's machine.

9 "Here, the downloading" 78 of the -- "708 of
10 the media file can be efficient because of the manner
11 in which the media file can be stored, facilitates its
12 immediate download without the need for
13 processing-intensive conversion."

14 So what Lindahl is doing is inviting you to
15 acquire teachings to a streaming media as well.

16 Q Okay. So let's go to Paragraph 65 that you
17 mentioned.

18 A I am there.

19 Q Let's go to Paragraph 66. I apologize.

20 The first sentence, it says, quote, "Once
21 the media file is downloaded, the media file can then
22 be decrypted at the user's local machine using the
23 cryptographic key."

24 Do you see that?

25 A I see that.

1 Q All right. And then, subsequent in
2 Paragraph 66, Lindahl explains that the file is really
3 encrypted at the user's machine, so that it can be
4 played at the user's choosing whenever the user
5 decides to view the file, correct?

6 A In this embodiment.

7 Q Okay. Going back to Paragraph 65, is it
8 your contention that Paragraph 65 of Lindahl describes
9 an embodiment where a file is provided to the user as
10 a streaming media where the user consumes the file as
11 it is received before the entire file is downloaded?

12 THE REPORTER: Did you say, consumed? Where
13 the user consumes the file?

14 MR. HENDIFAR: Yes. As it is received and
15 before the entire file is downloaded.

16 THE WITNESS: So in this case, the use of
17 the term streaming in 65 is inviting the user to, I
18 think, of alternative embodiments.

19 It is really providing motivation to combine
20 with things like Chen and Hurst, or suggesting that --
21 it's talking in this case, its embodiment about
22 downloads in processing; but in reality, it is saying
23 yes, streaming is also available; and so somebody who
24 is reviewing Lindahl would look to other sources.

25

1 BY MR. HENDIFAR:

2 Q I don't think I got an actual answer to my
3 question. So I will repeat my question.

4 Is it your contention that reference to
5 streaming in Paragraph 65 of Lindahl, is referencing
6 streaming media and the fact that the user consumes
7 the media as it is received and before the entire file
8 is downloaded?

9 A No. But it is inviting the user as a means
10 of motivation to combine; suggesting that streaming is
11 something that would be desirable perhaps in other
12 context.

13 Q Okay. Does the streaming have only --
14 strike that.

15 What does the word stream mean in
16 Paragraph 39 of Lindahl?

17 And specifically, the sentence in the middle
18 of Paragraph 39 of Lindahl, it states: "The remote
19 media source 106 can transmit or stream media files to
20 the media server 102 through the data network 108,"
21 end quote.

22 A So it would stream them at some sort of
23 fixed bitrate.

24 Q I am sorry. I did not understand. I
25 couldn't understand.

1 A So it would transfer the data, stream the
2 date in some sort of fixed bitrate, perhaps adaptive
3 bitrate transmission.

4 Q Okay. In Paragraph 39, Lindahl is talking
5 about transmitting or streaming the file from the
6 content provider to the server, not to the end user,
7 correct?

8 A In Paragraph 39, it's referring to
9 transferring from the content to the media server.

10 Q Okay. And in Paragraph 39, therefore, when
11 Lindahl uses the word stream, it is meaning using that
12 as synonymous for the word transmit and not as
13 streaming media to the end user, correct?

14 MR. LIANG: Object to form.

15 THE WITNESS: Can you say that again? You
16 are breaking up some on the network.

17 BY MR. HENDIFAR:

18 Q Sure. Sure.

19 So in Paragraph 39, therefore, Lindahl is
20 using the word stream as synonymous with transmit, and
21 not in the sense of the streaming media to the end
22 user?

23 A So in Paragraph 39, what -- it is not really
24 using -- it's juxtaposing transmission versus
25 streaming. So streaming is a particular kind of

1 movement of data between devices.

2 Q Okay. And what is that type, if you can
3 define it?

4 A What is -- what kind?

5 Q Sure. You said streaming is a particular
6 type of transmitting data, and I am asking, can you
7 define what type of transmitting data that is?

8 A Yes. That is moving data from one source to
9 another at a fixed or adaptive bitrate.

10 Q Okay. And how is that narrower than
11 generally transmitting data?

12 A Well, transmission of data, you know, can be
13 something like just sort of, you know, FTP, HTTP put,
14 something like that, where you are pushing data at
15 whatever rate the network can actually sustain.

16 THE REPORTER: Hold on. You said, "FTP,"
17 and what was the other initials?

18 THE WITNESS: HTTP put.

19 THE REPORTER: Thank you.

20 BY MR. HENDIFAR:

21 Q Now, does streaming data, as you just
22 defined it, as fixed rate or variable rate
23 transmission of data, require conduction of the data
24 as it arrives, as opposed to waiting for the entire
25 file to be downloaded before consumption?

1 A I am sorry. You broke up again. I'm having
2 some network problems here. Can you try that again?

3 Q Of course. Does --

4 A Let me see -- try again.

5 Q Does streaming of data, as you just defined
6 it, in the context of Paragraph 39 of Lindahl, meaning
7 fixed rate or variable rate transmission of data from
8 one point to another require that the data is consumed
9 as it arrives, as opposed to consuming the data after
10 the download is completed?

11 A What do you mean by "consume"?

12 Q Okay. So, for example, in the context of an
13 end user consumed in viewing? Consuming means
14 viewing.

15 A So the -- if you look at the next sentence,
16 the one you pointed me to, it is talking about the
17 media files are received at the media server from the
18 media sources can be processed and stored in media
19 storage.

20 So that processing can happen either as all
21 the data is arrived, or it could be processed, you
22 know, as it is actually streamed.

23 Q Okay. Is there any embodiment in Lindahl
24 where media is consumed by the end user as it arrives
25 and before the entire media file is downloaded?

1 A So the Lindahl, what we are -- the
2 combination of Lindahl, some people look to Lindahl --
3 let me stop. Let me answer your question.

4 Q Thank you.

5 A So the area of Lindahl talks about the
6 delivery of video and processing, using standard --
7 the standard media files, like, an MP3 and MPEG files.

8 And then, in the totality of Lindahl is
9 talking generally about digital rights management.
10 Somebody skilled in the art would look broadly at the
11 application of digital rights management.

12 And so somebody skilled in the art would
13 understand that all of this would apply to the
14 streaming media as well.

15 However, Lindahl does not have a direct
16 embodiment that has streaming data in it.

17 Q Thank you.

18 Is there any embodiment of Lindahl where the
19 user can request only parts of a media file?

20 A So I don't see one as I am looking here, but
21 I would show you Paragraph 95 and 96 where Lindahl is
22 articulating that somebody skilled in the art, who is
23 reviewing this patent, should look to the advantage,
24 and how this would be applied in other domains.

25

1 Q Is there any embodiment in Lindahl that
2 discloses multiple alternative bitrates encoding of a
3 given media file?

4 THE REPORTER: I need that repeated.

5 BY MR. HENDIFAR:

6 Q Sure. Is there any embodiment in Lindahl
7 that discloses multiple alternative bitrates encoding
8 of media file?

9 A Again, that's not the purpose of Lindahl,
10 you know. Again, I point you back to the invitation
11 body. Lindahl endeavors to seek or define where this
12 would apply to other areas of digital rights
13 management that were current as of the date of this
14 patent application.

15 Q Thank you. And I think you answered about
16 what is the intent. That's a good -- maybe I asked my
17 question, and I will ask it again.

18 Is there any embodiment in Lindahl that
19 discloses multiple alternative encoding -- strike
20 that.

21 Is there any embodiment in Lindahl that
22 discloses multiple alternative bitrate encoding of
23 media files?

24 A Well, certainly, some of the standards that
25 are referenced like MPEG 4, I believe. Yeah, I'd have

1 to -- I would have to go look at these standards.

2 Again, the intention of Lindahl is to
3 provide -- well, I point you to Paragraph 96, where it
4 is inviting you to look where such kind of streaming
5 would be appropriate use of Lindahl, that they are
6 inviting you to look.

7 Q So my question is not how Lindahl can be
8 applied to embodiment that does not disclose. My
9 question is really towards the embodiment that Lindahl
10 does itself disclose.

11 And if you would please direct the answer to
12 the question which is, does Lindahl disclose multiple
13 alternative encoding of the same video in an
14 embodiment?

15 A In the embodiments that are in this patent,
16 there is not an example. It may be referenced by one
17 of the standards. I would have to go look, but that's
18 not really the way this would be used within the
19 combination that I am identifying in my declaration.

20 Q Understood. Okay. Give me one second to
21 check something.

22 Now, what does the global key mean in the
23 context of Lindahl?

24 THE REPORTER: What does the global key
25 mean?

1 BY MR. HENDIFAR:

2 Q Yes. What does a global key mean in the
3 context of Lindahl?

4 A So I described this in starting at
5 Paragraph 40 -- 144 of my report. Lindahl teaches
6 that the client may receive a global key from the
7 server, and the media files may be encrypted, and,
8 therefore, decrypted with the global key; Paragraph
9 66.

10 Q Yes. And the question is, what does the
11 global key mean in the context of Lindahl?

12 A So if you go halfway down that, continuing
13 on that paragraph, here Lindahl teaches one embodiment
14 where the common global key is used to encrypt and
15 decrypt all media files on this server.

16 Q Does Lindahl use the word global key in the
17 sense that is different from how that term is
18 understood in the art in 2011?

19 THE REPORTER: Can you repeat that again?

20 BY MR. HENDIFAR:

21 Q Sure. Does Lindahl use the word global key
22 in the sense that is different from how POSITA would
23 understand that term in 2011?

24 THE REPORTER: "Different from?"

25

1 BY MR. HENDIFAR:

2 Q How POSITA, P-O-S-I-T-A, would understand
3 that term in 2011?

4 A Well, the term global key is dependent on
5 the context of a particular system.

6 Q How so? If you could provide a couple of
7 examples of different context where global key would
8 mean different things in different context.

9 A Global to what?

10 Q Okay. So in the context of Lindahl, is the
11 word global key used to mean global for everything in
12 the Lindahl system?

13 A In any, you know, one embodiment, the common
14 global key is used to encrypt and decrypt all the
15 medias on the server.

16 Q Does Lindahl have different uses of what
17 global key means in its different embodiments?

18 A There is a -- if you go to Paragraph 64 of
19 Lindahl. So in 64, one interpretation, one embodiment
20 would be that the global is global to that particular
21 content and its alternates.

22 Q Now, Lindahl is assigned to Apple, correct?

23 THE REPORTER: A what to Apple?

24 THE WITNESS: It is.

25 THE REPORTER: I didn't hear the whole

1 question.

2 MR. HENDIFAR: Apple, as in the fruit.

3 THE REPORTER: Yeah, I know.

4 THE WITNESS: Or in the phone.

5 THE REPORTER: I appreciate that. I heard
6 Apple, but I didn't hear the question. Now, Lindahl
7 is something -- Apple.

8 MR. HENDIFAR: Oh, assigned.

9 THE WITNESS: Yeah, I think I may have
10 misspoke when I was referring to 64.

11 BY MR. HENDIFAR:

12 Q Okay. Would you like to correct that?

13 A Yeah. So if you look at 48, there is a
14 couple of uses of global key.

15 One global key, if you go to Paragraph 48:
16 "In one embodiment, the global key is used to encrypt
17 the metadata for all the media files at the media
18 server. In another embodiment, if desired, different
19 global keys can be used with different media servers."

20 Q Where does that second embodiment come from?

21 A That is also Paragraph 48. There is one
22 sentence after the other.

23 Q Okay. Now, in Paragraph 123 of your
24 declaration, you mention that: "I note that Lindahl
25 is an Apple Corporation patent and Apple was active in

1 developing and using prior art file formats and
2 adaptive bitrate streaming."

3 Do you see that?

4 A What paragraph?

5 Q 123.

6 A Oh, I thought you said 133.

7 Q No, I'm sorry. Let me know when you have
8 it.

9 A I have it. I reviewed it.

10 Q Okay. Now, is there any Apple product that
11 you are aware where the Lindahl patent has been
12 implemented?

13 A I wouldn't know. I would have to talk to
14 people at Apple.

15 Q Okay. Is there any Apple product that
16 allows for streaming service as of the year 2011 that
17 allowed for the use of the global key for videos?

18 A I would have to -- I would have to talk to
19 Apple about how they were doing their key management
20 at that time and for what particular products.

21 Q Okay. Now, is there any expressed
22 disclosure in Lindahl of encrypting as opposed to just
23 decrypting frames of video with a global key?

24 A So if you look at Paragraph 14 bottom: "As
25 a method of encrypting media data, one embodiment of

1 the invention includes at least the acts of
2 identifying a media file, having a media data to be
3 encrypted; the media data being arranged in frames;
4 examining the media data in the media file to locate
5 frame boundaries for the frames within the media data;
6 dividing each of the frames into a plurality of
7 blocks; retrieving encryption parameters to be
8 utilized; and encrypting each of the blocks in
9 accordance with the encryption parameters."

10 So if you start with 14 and you go to,
11 again, 48, that talks about encrypting the file, using
12 the encryption parameters, and 48 says what key you
13 are actually going to use. Someone skilled in the art
14 reading the specification will be very clear.

15 Q Is it your contention, is that Paragraph 48
16 accepted its closure encrypting video frames using a
17 global key?

18 MR. LIANG: Object to form.

19 THE REPORTER: Can I have the question
20 again, please?

21 BY MR. HENDIFAR:

22 Q Sure. Is it your contention that Paragraph
23 48 of Lindahl expressly discloses encrypting video
24 frame using a global key?

25 A Well, a person that's skilled in the art

1 would have been motivated to apply the teaching here
2 to encrypt all media files including alternative
3 representations using a global key. So it would
4 simplify key management as Lindahl discusses.

5 Q Okay. I appreciate your giving me your
6 declaration about what a POSITA was modified. That is
7 not my question.

8 My question is, is it your contention that
9 Paragraph 48 of Lindahl expressly discloses encrypting
10 video frames using a global key?

11 A So I think that 48 is probably the wrong
12 reference. We can look at 66, Paragraph 66, where it
13 is talking about the media file can be decrypted
14 using the user's local machine, using a cryptographic
15 key; the global key; or other cryptographic key may
16 also be used to performing the encryption.

17 Q Okay. So I am not -- again, my question is
18 not about decryption. My question is about
19 encryption.

20 And my question is, is there any part of
21 Lindahl that expressly discloses encrypting video
22 frames using a global key?

23 A Okay. So 66 describes decrypting, and it is
24 a -- somebody skilled in the art would understand that
25 it was to be decrypted using the symmetric keys that

1 Lindahl is discussing. They would have to perform
2 that encryption.

3 So you would look at something like
4 Paragraph 14 to understand where that encryption is
5 actually occurring.

6 Q Okay. Other than Paragraph 66 that talks
7 about decryption and not encryption, is there any part
8 of Lindahl that expressly discloses encrypting video
9 frames using a global key?

10 A Well, somebody that's skilled in the art
11 reading this patent, the Lindahl patent, would look at
12 Paragraph 14 and say that if the frames were to be
13 encrypted using the encryption parameters that are
14 actually provided, and in Paragraph 66, it says that
15 you could use the global key for decryption and,
16 therefore, it is a logical conclusion that somebody
17 skilled in the art that there -- has to encrypt it
18 using a -- because it's a symmetric key, it has to be
19 encrypted using that same global key that you used to
20 decrypt it.

21 Q Okay. So you're making a deduction from
22 Lindahl, correct?

23 A No, it's not a deduction. It is just
24 obvious. It is just clear to somebody skilled in the
25 art that if you have something that's decrypted with a

1 key, it must -- and it's a symmetric key, then it must
2 have been encrypted with the other key, and so you'd
3 look to paragraph, like, 14 to determine how that
4 encryption actually performed.

5 Q Okay. Can you show me a sentence in Lindahl
6 that you contend expressly says, you can encrypt video
7 frames with a global key?

8 A Well, so the words "encrypting using the
9 global key" don't appear in Lindahl, but the words
10 "decrypt using a global key," I am paraphrasing at the
11 beginning of 66, do appear, combining that with 14;
12 and the only logical conclusion that it is encrypted
13 using the global key.

14 Q Okay. And other than Paragraph 66, there
15 are no other disclosures in Lindahl that contend
16 discloses encrypting a video frame with a global key?

17 A I don't see any, as I am sitting here right
18 now.

19 MR. HENDIFAR: Okay. This may be a time for
20 a quick lunch break. A half hour maybe?

21 MR. LIANG: I mean, I guess, Dr. McDaniel
22 has already had lunch. It is 3:00 over there. Maybe
23 we can do a shorter break. Like, 20 minutes?

24 MR. HENDIFAR: I'll try to be short. I
25 don't know if I can make it shorter than a half an

1 hour, but I want to go through -- I won't go beyond
2 6:00 p.m. So don't worry about that.

3 THE WITNESS: Yeah, it's -- it'd be
4 considerably painful for my family if we did, but you
5 do what you got to do.

6 MR. HENDIFAR: We don't have a lot left. So
7 I wouldn't -- you don't need to worry about that. All
8 right.

9 MR. LIANG: We can do a half an hour.

10 MR. HENDIFAR: Yeah, we are off the record.

11 MR. LIANG: Yes.

12 (Lunch recess.)

13 MR. HENDIFAR: Let's go back on the record.
14 Are we back on the record?

15 THE REPORTER: Yes.

16 BY MR. HENDIFAR:

17 Q Okay. So welcome back.

18 Quick question: Your combination of Chen
19 and Lindahl at first alternative relies on the
20 disclosure of Lindahl of the use of global key and
21 then utilizing that disclosure in Chen, correct?

22 A So, I mean, just to take a step back, you
23 said the combination that is identified in this is
24 consisting of three parts.

25 You start with Chen's sort of adaptive

1 streaming system, which has some digital rights
2 management, and it invites you to combine things like
3 Lindahl, which is doing some digital rights
4 management, partial encryption, and providing
5 encryption parameters; and then, finally, Hurst, and
6 Hurst is really kind of plugs in pretty easily because
7 it is a system that is providing for an alternate
8 stream using about the same key. It's a pretty simple
9 concept.

10 Q In your declaration, you do argue as an
11 alternative to Hurst, that the global key in Lindahl
12 also discloses the claim invention, correct?

13 A So we are talking about the case in 1E,
14 Paragraph 144 of my report?

15 Q Yes.

16 A Sorry. Go ahead.

17 Q And you also testified that global key can
18 mean different things, depending on the context,
19 correct?

20 A According to Lindahl, yes.

21 Q Okay. Can you tell me what does global key
22 mean in the context of the embodiment of Lindahl that
23 you seek to combine with Chen?

24 Let me rephrase my question to make it
25 easier for you.

1 In Paragraph 144 of your declaration, --

2 A Sure.

3 Q -- you opine that your proposed combination
4 would, quote, "encrypt all media files, including all
5 alternative representations using the global key
6 input," correct?

7 A That's what the paragraph says.

8 Q Okay. Is that -- and that is the
9 combination that you are proposing as an alternative
10 to Hurst, correct?

11 A Hurst reinforces the obviousness of this
12 claim. And it's laid out starting in Paragraph 147 of
13 my report.

14 So it's not a replacement for Hurst. I am
15 just suggesting that Hurst is reinforcing the
16 obviousness of the combination that I'm referring to
17 in para -- in both paragraphs.

18 Q Sure. So I will rephrase my question.

19 In your combination of Chen with Hurst and
20 Lindahl, is the proposed combination as stated in
21 Paragraph 144, that, quote, "All media file, including
22 all alternative representations, would be encrypted
23 using a global key."

24 Is that the combination you're proposing?

25 A I think that's the global -- the one key,

1 the global key is being used to encrypt all media
2 files, including alternative representations, meaning
3 the limitation 1E.

4 Q I am sorry. I am not sure -- maybe you
5 answered it, but I didn't quite get it; but I am not
6 sure if I understood your response.

7 Is the combination you're proposing to meet
8 in limitation 1E, that the system, quote, "would
9 encrypt all media files, including all alternative
10 representations using the global key," as stated in
11 Paragraph 144 of your declaration?

12 A Yes, as laid out in Paragraph 144.

13 Q Okay. And in the combination of Chen and
14 Lindahl and Hurst that you're proposing, if all media
15 files are encrypted using a global key, what happens
16 to the media files that are sensitive enough that
17 would not -- that would require the use of unique
18 encryption key for its file?

19 A You're asking me about a specific system
20 now?

21 Q Well, I am asking you about the combined
22 system that you're proposing. If it -- in your
23 combined system, you would, quote, "encrypt all media
24 files, including all alternative representations using
25 a global key," end quote, and I am asking you in your

1 combined system, what happens to files for which a
2 global key is not suitable?

3 A Well, there are -- the common key in this
4 case, the global key, or in the alternative where, for
5 example, it's laid out in Paragraph 146, the common
6 set of keys would be used to encrypt those files; and
7 this system would make sense where, you know, a person
8 would recognize that the content is less sensitive
9 (phonetic) for marketing.

10 So, you know, where the content is less
11 sensitive (phonetic), you can use a single key. And
12 in this case, you know, that's the claims, one set of
13 keys are a global set of keys. Then, the data that's
14 not -- the data that's not a subset (phonetic) would
15 be appropriate for encryption.

16 I'm not sure what you are asking.

17 Q Sure. I am asking that -- you explained in
18 Paragraph 144 of your declaration, that your combined
19 system of Chen, Hurst and Lindahl would, quote,
20 "encrypt all media files, including all alternative
21 representations using a global key," end quote.

22 And my question is, what happens to files
23 for which a global key is not suitable for security in
24 your combined system?

25 A I see what you are saying.

1 So if you go to Paragraph 146, it lays out
2 for things where a single key would not make sense.
3 You could use the same key for all representations of
4 a video or in a different one, in a different
5 approach, use a different set of keys for each
6 representation.

7 For example, if you want to separate those,
8 you know, they will provide you --

9 Q I'm sorry. Go ahead.

10 A So you would use a solution like this to
11 differentiate between, you know, if something was more
12 sensitive like it was approved, or content, then you
13 would use a different set of keys, laid out in 146.

14 Q Okay. So the sentence in Paragraph 144, the
15 typographical error where it says, "The combined
16 system would encrypt all media files with a global
17 key"?

18 A It's -- that's -- a person skilled in the
19 art would have been motivated to apply the teachings
20 to come up with that solution, you know. And part of
21 that solution, you know, a second to deal with that is
22 laid out in 146, would also -- the person that's
23 skilled in the art would find it obvious to use a
24 common set of keys to encrypt alternate streams. As I
25 described between different keys for different

1 representations.

2 Q Yes. I guess, I just find what you just
3 explained for Paragraph 146 to be inconsistent with
4 what Paragraph 144 says, because Paragraph 144, says,
5 "The combined system would, quote, 'encrypt all media
6 files using a global key,'" end quote; whereas, you
7 just stated that Paragraph 146 states that you would
8 use a global key for some files and not a global key
9 for other files. And that's where my confusion lies.

10 A So there is -- the system in 144 is
11 providing an instance where the global key is used in
12 one particular way.

13 And then, 146 is providing a standard --
14 what I also found about this, not only use a global
15 key in the way it is described in 144; but in a
16 different way in 146.

17 Q Okay. Can you explain to me the way that
18 Paragraph 146 in your declaration uses a global key?

19 A For the -- well, in this case, there is a
20 person of skills in the art would find it obvious to
21 use a common set of keys, rather than just a single
22 global key in this way that's laid out in 146.

23 Q Yes. But if each file has its own key, that
24 key will no longer be global; isn't that true?

25 A Each file had its own key would no longer be

1 global. And in the context of the -- I am getting
2 confused.

3 Where is this global -- so the global key
4 that is described in Lindahl for the combination of
5 Chen, so if you're suggesting some other key, I am
6 lost.

7 Q Sure. So Paragraph 144 of your declaration
8 states that a combined system that you are proposing,
9 all files would be encrypted with a global key.

10 I subsequently asked you what happens to
11 files for which a global key is not suitable, and you
12 said in Paragraph 146, each file would have its own
13 key.

14 And I find it to be incompatible because if
15 each file had its own key, then that key is no longer
16 a global key. So what am I missing here?

17 A There is a common set of keys. There isn't
18 a key per file. I think you just kind of switched
19 gears on me, and you assumed some sort of design I
20 wasn't suggesting here.

21 So what I am saying in 144, an
22 interpretation, you know, somebody skilled in the art
23 would look at the disclosure of Lindahl to state that
24 you could use a global key used to encrypt all the
25 media files on the server in that combined system.

1 And that combined system, you could also, as
2 laid out in 146, to use a common set of keys, someone
3 skilled in the art would have been motivated, looking
4 at Lindahl or Chen, to come up with a second solution,
5 which is to use a common set of keys where perhaps it
6 was less appropriate to use a simple global key
7 because perhaps it's more sensitive.

8 Q Okay. So can you explain in more detail how
9 many keys in that common set of keys and how is that
10 used to encrypt some files in the combined system that
11 you explained in Paragraph 146?

12 A So can you say that one more time?

13 Q Sure. Can you elaborate on your proposed
14 combined system that you explained in Paragraph 146,
15 including how does a set of common set of keys is used
16 to encrypt different files?

17 A Right. So somebody applying -- a person
18 that's skilled in the art would find it obvious to
19 use a common set of keys.

20 And Chen needs only two finite
21 possibilities, and that is either use the same set of
22 keys for all representations, but video would use a
23 different set.

24 Would it have been found it obvious to use
25 the same set of keys for those two possibilities. So

1 as, again, I've laid out here. So the keys --
2 somebody that was working in this area, somebody
3 skilled in the art, would say, okay, well, there is
4 only really two ways you can do this.

5 You can either use the same set of keys for
6 each representation, or you can use that same body of
7 keys, or you can use a different set of keys.

8 Somebody skilled in the art, who has been
9 working in these systems, would know that using one
10 set of common set of keys for all representations
11 would be appropriate.

12 Q Okay. Now, where in Chen or Lindahl or
13 Hurst, in any of the references, disclose the concept
14 of a set of keys as opposed to a single key?

15 A So the use of multiple keys was well-known.
16 If you go to Paragraph 81 of my report, it
17 describes -- it is common in MPEG. That was popular
18 at the time using a single key or a single set of keys
19 for alternative streams.

20 Also, if you go to Lindahl 54, the last
21 paragraph, 54, it says, "The encryption process also
22 makes use of one or more encryption keys, one
23 encrypting each block." So it is referring to a set
24 of keys that you might be able to use.

25 "The encryption of each block in accordance

1 with the encryption parameters is discussed in greater
2 detail below." And again, I am referring to Paragraph
3 54, Figures 5A through C and Figures 6A through 6B.

4 "The encryption process also makes use of
5 one or more encryption keys when encrypting each
6 block."

7 Later, the decryption, which is identified
8 in Paragraph 72, goes on to say, "The encryption of
9 each block also makes use of more and more
10 cryptographic keys."

11 THE REPORTER: More and more -- I didn't
12 hear the last part of what you were reading.

13 THE WITNESS: One or more cryptographic
14 keys, also pointed out in Paragraph 217 of my report.
15 BY MR. HENDIFAR:

16 Q I appreciate that.

17 I'm going to, if I may, draw your attention
18 to the Hurst reference, Exhibit 1008.

19 A I am there.

20 Q Okay. Column 18, Lines 66 and 67. The
21 sentence that says, "The streamlet 304 of different
22 bitrates may be encrypted with the same key," end
23 quote.

24 Please let me know when you have that.

25 A Yes, I am there.

1 Q Okay. Does Hurst anywhere disclose any
2 reason, benefit or motivation to use the same key as
3 opposed to different keys to encrypt different bitrate
4 of the same video?

5 A Well, to somebody skilled in the art,
6 reading Hurst, it would have been obvious what those
7 advantages are. They simplify key management. They
8 simplify the process of decryption. Every case
9 (phonetic) there is overhead, computation, so you
10 don't have to do all of the preprocessing.

11 And when the key comes in, you don't have to
12 reset the initialization -- (Inaudible). Somebody who
13 is experienced with cryptography to understand the
14 simplicity and computation advantages of using a
15 single key.

16 BY MR. HENDIFAR:

17 Q Okay. Now, my question is not what a person
18 may know independent from Hurst. My question is what
19 is actually disclosed in Hurst.

20 So I will ask the question again. If you
21 would please just answer the question, which is: Does
22 Hurst disclose any benefit or advantage for using the
23 same key to encrypt different bitrate of the same
24 video?

25 A While I don't see an explicit disclosure of

1 an advantage by Hurst, the whole point of Hurst is,
2 you know, particular, the processing of the adaptive
3 bitrates to improve performance.

4 So, again, someone skilled in the art
5 reading this patent and will understand that it has an
6 actual advantage.

7 Q Now, as of the year 2011 -- strike that.

8 Are you aware of any system that as of 2011,
9 actually used the same set of keys to encrypt
10 different bitrate of the same video?

11 A Sure. So a conferencing system, such as
12 like, end party video conferencing systems would
13 negotiate a key, and that key would be to get all
14 content between the various streaming parties.

15 And the whole purpose of the key is called
16 key negotiation process was to arrive at a single key
17 that everybody could use.

18 Q And there are different alternate bitrate?

19 A Sure. When you are streaming different --
20 when you are streaming a -- basically, everything that
21 would go across, you know, some of these, you know,
22 these conferencing systems would be using the same
23 group key, the whole purpose of having a group key.

24 Q Are you aware of a system that as of the
25 year 2011, using a global key to encrypt different

1 bitrates of the same video?

2 A Sure. In some of those conferencing
3 systems, they would have what's called statically
4 assigned keys. And, again, these were typically used
5 for less sensitive conferencing.

6 So, basically, you'd have -- you would have
7 your basic playback device and you would, essentially,
8 type in a number, which was the key called fixed
9 keying in end party communication.

10 Q So for conferencing applications that you
11 mentioned, those wouldn't have a top level index file
12 and then other aspects of the Claim 1 system, correct?

13 A Perhaps not. Depends on if there was any
14 video being transmitted or any recorded video being
15 transmitted to the end points.

16 Q Okay. So let me then make my question more
17 precise.

18 Are you aware of a system as of the year
19 2011, that met the limitations of Claim 1, including
20 use of the same key to encrypt bitrate streams of the
21 same video?

22 A Yeah, I haven't done that analysis. I would
23 have to go back and map the claim elements to the
24 systems that were available.

25 Q If I can direct your attention to Paragraph

1 198 of your declaration, please.

2 A I am there. Let me have a moment to review.

3 Q Um-hmm.

4 A Okay. I am there.

5 Q Okay. So at the end, the last sentence of
6 Paragraph 198, you mentioned that, quote, "It is a
7 common practice to include key IDs with encrypted
8 files for video streaming DRM applications," end
9 quote.

10 Do you see that?

11 A Yes.

12 Q Okay. In your opinion, was it also a common
13 practice to include key IDs with encrypted files for
14 video streaming DRM applications in 2011?

15 A Video -- I'm sorry. I had trouble parsing
16 that.

17 Q Sure. I'll ask the question again.

18 In your opinion, was it also common practice
19 to include key IDs with encrypted files for video
20 streaming DRM applications in 2011?

21 A Well, there had to be some keying -- key
22 identifier somewhere associated with files. I'd have
23 to go look.

24 I mean, the important thing about key IDs is
25 that they were absolutely ubiquitous in that

1 community. If you had some sort of data that was
2 being delivered where the key was not known, you have
3 to have some way to identify it.

4 And so the protocols that we used from
5 everything from streaming to IP sack, BPMs to web
6 traffic, all had key IDs because you have to have a
7 way to identify. So somebody skilled in the art,
8 looking at this art, would know that you would need
9 key IDs.

10 Q Okay. And that's also in your opinion in
11 the case in 2011?

12 A Certainly.

13 Q Okay. Now, do you cite any evidence in your
14 declaration for this proposition that it is common
15 practice to include key IDs in encrypted files for
16 video streaming?

17 A Well, for video streaming, in which there
18 are multiple keys, there has to be some sort of key
19 identifier. Typically, it is in some header
20 information.

21 Q And my question is do you cite any evidence
22 for your proposition that it is a common practice at
23 the time?

24 A It's clear to people in the field that I
25 didn't think it was necessary, but I can certainly

1 cite to half a dozen standards for all sorts of
2 transport in the streaming protocols that will include
3 some kind of key identifiers.

4 Q Okay. But you have not cited any in your
5 declaration, correct?

6 A I have -- for the reasons I stated before, I
7 have not cited any. That is just beyond --

8 Q Thank you. You are familiar with Content
9 Scramble System?

10 A Content Scramble Systems?

11 Q Correct.

12 A As in things like, scrambling old cable
13 scrambling systems?

14 Q Let me show you something to make my
15 question more precise.

16 Content Scramble System as in DVD encryption
17 methods?

18 A Oh, I am vaguely familiar.

19 Q Okay. Are you also familiar with Advantage
20 Access Content, which is a more recent DVD encryption
21 methodology?

22 A I would have to go look at the details. I
23 am not prepped up for that today.

24 Q Are you aware whether the Content Scramble
25 System, CSS, utilizes a global key for encryption?

1 A Yeah, I don't remember.

2 Q Okay. Do you have any knowledge as to why
3 CSS was subsequently replaced with AAC3 for DVD and
4 Blu Ray?

5 A No, I don't remember the exact reasons
6 sitting here today.

7 Q Please draw your attention to Paragraph 145
8 to your declaration.

9 Can you draw your attention to Paragraph 145
10 to your declaration, Dr. McDaniel?

11 A I am there.

12 Q Towards the beginning, you state that it was
13 well -- it was "a well-known security principle:
14 Reusing a global (e.g. single) key for many videos can
15 provide sufficient protection for content that is less
16 sensitive."

17 Do you see that?

18 A Yes.

19 Q Okay. Now, you do not cite any evidence for
20 this proposition that you said was well-known,
21 correct?

22 A Again, it's a principle of key management
23 and content management. Someone skilled in the art,
24 who spends time in this space, would understand.

25 Q Right, but you do not cite any evidence for

1 this proposition that you state is well-known,
2 correct?

3 A Yeah, for the reasons that, you know, people
4 are taught about key management in the very, very
5 first stage of their security lives, in their
6 undergraduate security class and there is a trade-off
7 between having what we call fix T's or in this case,
8 we refer to this as a global key for all of your
9 content, that has a particular threat model in which,
10 you know, the -- that somebody gets access to the key,
11 they have access to everything.

12 So for things that are not very sensitive,
13 such as things that I identify in Paragraph 144, using
14 you know, a single key is a totally appropriate key
15 management strategy for whatever you want to -- you
16 know, for example, you're recording lectures at in my
17 department at the university.

18 There are other threat models in which data
19 is more sensitive where you might not. You might
20 decide that, that is a less desirable solution, but
21 people in the space, knew that. That is one of very
22 the central concepts in key management.

23 Q Thank you.

24 Are you aware of any system in 2011 that
25 used a global key to encrypt everything in that

1 streaming system, which has multiple bitrates for
2 videos?

3 A I would have to look.

4 Q Sitting here now, you're not aware of any,
5 correct?

6 A I can't think of any off the top of my head.

7 Q Okay. May I please direct your attention to
8 Paragraph 9 of Lindahl.

9 A I am there.

10 Q Okay. So towards the beginning, Lindahl
11 explained, "algorithmic schemes for encryption and
12 decryption are computationally expensive."

13 Do you see that?

14 A Yes.

15 Q Okay. If you were to provide a layman's
16 explanation of how computationally expensive
17 encryption and decryption is as compared to merely
18 decoding and encoding, how would those two compare?

19 A I heard two questions. So maybe you can try
20 again, because I thought you started one question and
21 it seemed to switch. So I want to make sure I
22 understand it clearly.

23 Q Of course. So my question is in terms of
24 computationally expensive, how do encryption and
25 decryption compare to encoding and decoding?

1 A In terms of relative overhead?

2 Q Correct.

3 A Well, it would depend on the kind of
4 encoding, decoding and encrypting and decrypting you
5 were going. I'm sorry. I will slow down.

6 THE WITNESS: Did you get the answer?

7 THE REPORTER: Yes. You said, "It would
8 depend on the kind of encoding, decoding and
9 encrypting and decrypting you were going."

10 THE WITNESS: Yes.

11 BY MR. HENDIFAR:

12 Q Is there a rule of thumb on the general
13 order of magnitude in terms of comparison?

14 A Well, there -- and, again, it would depend.
15 There are lots of different encryption and decryption
16 schemes.

17 You know, in general encryption/decryption
18 is considered to be more computational intensive as a
19 broad category of characterization. I think that is
20 fair to say.

21 Q Thank you.

22 Now, does the computational complexity of
23 encryption and decryption change depending on whether
24 a global key is used or whether a cryptographic key is
25 used?

1 A A global key is a cryptographic key.

2 Q I meant, a unique key -- I will ask that
3 question again.

4 Does the computational complexity of
5 encryption and decryption change depending on whether
6 a global or unique cryptographic key is used for the
7 particular file?

8 A Well, it would depend on how it is used.

9 Q How so?

10 A Well, certainly, if you have a global key,
11 there is always a start-up cost. You do -- you can do
12 some for some encryptic cryptographic algorithms, you
13 can do some computation. You do things called key
14 scheduling.

15 So if you have a global key, you can
16 amortize in sort of the setup costs of the cipher
17 before you decrypt anything, and potentially -- to
18 potentially over multiple files, as compared to a
19 unique key for each file.

20 Q Okay. And are you able to give a rough
21 estimate in terms of the percentage savings if you
22 were to use a global key as opposed to a unique key?

23 A It would depend on how big the files were.
24 It would depend on what kind of cipher you were using.
25 It depends on how much free computation you can do for

1 a particular cipher.

2 Q If there is a system that uses a global key
3 for some files and uses a unique key for other files,
4 depending on the nature of the file, this amortization
5 for global key does not really materialize, correct?

6 A Well, it would be amortized over those files
7 that were encrypted using the global key.

8 Q But don't the files have to be used
9 consecutively in order to be able to use that savings?

10 A The key schedules can be stored in memory
11 and reused.

12 THE REPORTER: Hold on. For that last
13 question, can you repeat that? "But don't the files
14 have to be used" --

15 MR. HENDIFAR: Consecutively for the savings
16 to happen?

17 THE WITNESS: I mean, I think it's important
18 to note -- to finish my answer, it is important to
19 note that using a key for a single file and using a
20 key -- a global key, as you call it, versus a unique
21 key for each file represents different threat models.

22 And so there are additional overhead
23 associated with finite or we will call it unique keys,
24 in terms of where you generate some, where you
25 management; how you transfer them; and so there are

1 other externalities or external costs associated with
2 those files that are not entirely encompassed by the
3 computational overhead.

4 BY MR. HENDIFAR:

5 Q I understand that.

6 May I please direct your attention to Chen,
7 Exhibit 1006, please.

8 A I am there.

9 Q Page 39, and I am going off of Chen's native
10 page number off the top of the page. Page 69 of the
11 exhibit overall.

12 A I am there.

13 Q Okay. So Page 39 of Chen, Column 1
14 Paragraph 522, towards the end, Chen says, quote,
15 "Because encryption is being employed to encrypt each
16 fragment or block separately, and thus, the entire
17 fragment or block needs to be received before it can
18 be decrypted," end quote.

19 Do you see that sentence or column?

20 A Okay.

21 Q The question is why is it that in Chen if
22 encryption is being used the entire fragment or block
23 has to be downloaded before it can be decrypted?

24 A So this is one embodiment of Chen and if
25 you --

1 Q That is the only embodiment that talks about
2 decryption, as far as I can tell.

3 A "Suppose further that the media data
4 structure is such that it playout of a block can be
5 done when the entire block is available at the client,
6 i.e., playout of a block can only start after the
7 entire block is received, e.g., due to the structure
8 of the underlying video encoding or because encryption
9 is being employed to encrypt each fragment or block
10 separately."

11 So it's -- sorry.

12 Q If you need to take a break, we can do that.
13 That's fine.

14 A There is a question pending. I will -- so
15 that is a restriction, but saying, you know, that's --
16 that's one potential way -- (Inaudible.)

17 THE REPORTER: I sorry. I couldn't hear
18 you.

19 THE WITNESS: Okay. So if you start about
20 halfway through that paragraph, that I just read to
21 you, it is saying that this requirement is a potential
22 kind of way that one might be able to implement Chen.

23 So I don't think it is trying to say, the
24 only way to implement Chen is to meet this
25 requirement.

1 BY MR. HENDIFAR:

2 Q I read it a little bit differently. I read
3 the sentence you read starting with "suppose," as Chen
4 trying to provide examples of situations where entire
5 blocks have to be downloaded before it can start
6 playing.

7 And one example is where encryption is being
8 employed, but the entire fragment or block needs to be
9 received before it can be decrypted. So that is how I
10 read it.

11 Do you agree with that understanding of
12 Chen?

13 A Yeah, I think my interpretation is a little
14 different. He is suggesting that this is one possible
15 way that one can accomplish this or one possible
16 design.

17 Q Okay. So in that possible design or in that
18 embodiment that is referenced in Paragraph 522, why
19 does the entire block or fragment need to be received
20 before it can be decrypted?

21 A So Chen is providing two examples of why
22 that might be so. First, is due to the structure of
23 the underlying video and coding, which I presumed to
24 mean is that there is information that the latter
25 parts of the block that would be necessary in order to

1 understand the earlier parts of the block.

2 MR. LIANG: Do you want to -- do you need a
3 break? We can take a break right now.

4 THE WITNESS: I will finish.

5 MR. LIANG: Okay.

6 THE WITNESS: And then, the second is
7 described in that second clause.

8 BY MR. HENDIFAR:

9 Q Because encryption is being employed?

10 MR. LIANG: Object to form.

11 THE WITNESS: "Or because encryption is
12 being employed to encrypt each fragment or block
13 separately and thus, the entire fragment or block
14 needs to be received before it can be decrypted."

15 BY MR. HENDIFAR:

16 Q So my question is why does encrypting or
17 decrypting each fragment separately would require that
18 the entire fragment be received before it can be
19 decrypted?

20 MR. LIANG: Object to form.

21 THE WITNESS: So in this particular
22 embodiment of Chen, and this particular supposition of
23 the requirement, it would mean that you have to
24 receive -- you would have to encrypt -- you would have
25 to have the entirety encryption, encrypted block or

1 the encrypted portion in order to perform the
2 decryption phase because of the way that the -- the --
3 for example, the cipher structure.

4 BY MR. HENDIFAR:

5 Q Right. So my question is how is the cipher
6 structure that would require this, wait until you
7 receive the entire file before you can decrypt?

8 THE REPORTER: Hold on. Can I have that
9 question again?

10 BY MR. HENDIFAR: Cipher?

11 Q So the question is how is the cipher
12 structure that would require this wait until you
13 receive the entire file before you can decrypt?

14 A Well, you have to receive the entire
15 fragment of block.

16 Q Right.

17 A The part, the portion, those are different
18 than necessarily files and so you have to have the
19 entirety of the piece that is actually encrypted as a
20 unit before you can decrypt it, in this particular
21 supposition of this embodiment.

22 Q Okay. So if each frame of video is
23 encrypted differently -- I'm sorry. Strike that.

24 If each frame of video is encrypted
25 separately, why would you need to download the entire

1 fragment or block before you can start decrypting?

2 A Because there is some information that is
3 required to perform the decryption and playback.
4 That's in the other parts of the fragment or block.

5 Q Is there a difference between encrypting
6 each frame separately and encrypting each fragment
7 separately?

8 A So encrypting a fragment could be performed
9 at a larger granularity than a frame.

10 Q Okay. What are the benefits of encrypting
11 in a larger granularity than a frame in the context of
12 Chen's system?

13 MR. LIANG: Object to form.

14 THE WITNESS: Yeah, I have to think about
15 that. No. Certainly, you would want -- there are
16 benefits to performing frame encryption, as well as,
17 you know, larger granularity such as a fragment.

18 So, you know, perhaps you would have larger
19 encrypted ranges, which might require less invitations
20 of a cipher, I suppose. I would have to think about
21 that question a little bit more.

22 Can you still hear me? The phone is a
23 little bit far away from me.

24 THE REPORTER: No, it's not as clear as it
25 was before.

1 BY MR. HENDIFAR:

2 Q You have to think about the general pros and
3 cons of frame versus larger granularity encryption in
4 the context of Chen, or you just have to think about
5 it generally -- strike that.

6 And this is not a question. I will ask the
7 question. I am trying to understand whether
8 generally, you can explain the pros and cons of the
9 two or you also need to think about that, or is the
10 issue that you need to think about it in the context
11 of Chen, and that is what the hold up is.

12 So I will ask the question.

13 Generally speaking, what are the pros and
14 cons of encrypting a video frame at the video frame
15 level as opposed to a larger granularity, like a
16 block?

17 MR. LIANG: Object to form.

18 THE WITNESS: Yes. So encrypting at a frame
19 level such as, you know, identified -- well,
20 encrypting a frame level provides a lower level of
21 granularity in which you're actually encrypting the
22 individual frames, and so you are able to potentially
23 replay your -- you'll have smaller units of
24 decryption. And so there will be less time sort of
25 having what is called a stall, waiting for the actual

1 cipher as you're going much smaller.

2 The -- conversely, you know, somebody
3 skilled in the art would look at this and say, well,
4 perhaps doing a frame makes a ton of sense for my
5 particular application.

6 Whereas, at a higher level, then, there are
7 advantages of, again, that you're using the cipher
8 less frequently. They both have pros and cons.

9 Q Okay. What are the pros of using it at a
10 less granular level? I don't think you mentioned
11 those.

12 MR. LIANG: Object to form.

13 THE WITNESS: The lower level granularity
14 potentially would be using smaller units of decryption
15 and that may be advantageous of certain kinds devices
16 or applications. It really just depends on the
17 context and the application.

18 BY MR. HENDIFAR:

19 Q Is it possible to do partial encryption with
20 a block level granularity of encryption?

21 A Block as in -- in what context block?

22 Q In the context that Chen uses fragment -- I
23 will use the word fragment if that is easier. So I
24 will rephrase the question.

25 Is possible to do partial encryption if

1 encryption is performed at a fragment level
2 granularity?

3 A It's possible.

4 Q Okay. Is it feasible?

5 A I don't see why it wouldn't be infeasible.

6 Q Is there anything in Chen's disclosure of
7 its system that would suggest encryption at the frame
8 or fragment level, either one maybe more beneficial
9 than the other?

10 A Well, Chen is certainly inviting you in a
11 number of embodiments to discover what approach would
12 make the most sense for your application.

13 So if you were using -- you're applying
14 something, like, Lindahl's partial encryption, then it
15 would make sense to perhaps do it at the frame level
16 because that would be appropriate for the application
17 of Chen.

18 Q If encryption is performed at the fragment
19 level granularity, does the standard file format still
20 need to be modified?

21 A Perhaps. I would have to think about how
22 that was actually going to be implemented.

23 MR. HENDIFAR: Let's take a ten-minute
24 break. I may be done. I just want to make sure that
25 I don't have any questions that I haven't asked.

1 Let's take a ten-minute break. Come back 45
2 minutes, half an hour, if that's okay, and then, we
3 may be done.

4 (Recess.)

5 BY MR. HENDIFAR:

6 Q I just have a couple of more questions, not
7 a lot.

8 What property of Lindahl system led it to
9 perform frame level encryption as opposed to a less
10 granular approach, such as file level or something
11 else?

12 THE REPORTER: State the first part again.

13 BY MR. HENDIFAR:

14 Q What property of Lindahl system led it to
15 perform frame level encryption as opposed to a less
16 granular approach, such as file level encryption?

17 A So the summary of encryption started on
18 Paragraph 10 of Lindahl, really talks about "improved
19 techniques to partially encrypt media files." It
20 chooses to do that at the frame level because, you
21 know, that's where the inventor saw some opportunity.

22 It further goes on, you know, in Paragraph
23 16 -- I'm sorry. It goes on and describes a number of
24 embodiments that includes frames, but the notion
25 that -- the idea of partial encryption uses a general

1 concept that somebody skilled in the art would look
2 to, could learn from Lindahl.

3 BY MR. HENDIFAR:

4 Q Okay. Was the concept of partial encryption
5 of either frames or fragments or files also known
6 prior to Lindahl?

7 A Yes.

8 Q In your view, what is Lindahl's contribution
9 to the state of the art?

10 A Lindahl provides, you know, as I described
11 in my report, you know, a general approach and
12 specifics of how to implement things like partial
13 encryption.

14 Q But what is its contribution to the state of
15 the art? What is Lindahl disclosing that was not
16 already known?

17 A Yeah, I would have to -- sorry. Yeah, I
18 would have to -- I would have to go through it and
19 compare it to the art at that time; and dig through
20 it; and look at the limitations; and all the
21 specifications.

22 Q Okay. Moving quickly to the Hurst, Exhibit
23 1008, and we already looked at this Column 18, Line
24 66, where Hurst states, "The streamlets 304 of
25 different bitrates may be encrypted with the same

1 key."

2 Is Hurst discussing frame level encryption
3 or a streamlet level encryption?

4 MR. LIANG: Object to form.

5 THE WITNESS: Streamlets at least in this
6 embodiment appears to be something, large in
7 granularity than frames.

8 BY MR. HENDIFAR:

9 Q And is it accurate to state that first
10 encryption in Column 18, Line 66 through 67, is
11 discussing encryption at a granularity of larger than
12 a frame?

13 MR. LIANG: Object to form.

14 THE WITNESS: Streamlets -- I would have to
15 go look. They could be kind of a frame. I would have
16 to go look, but I think they are specific time frames
17 which are of in-determinant length. I would have
18 to -- I would have to look a little bit lower, but I
19 think the streamlets at least encompass things that
20 are longer periods of time than frames.

21 BY MR. HENDIFAR:

22 Q Okay. And on any of the breaks today, did
23 you speak to your counsel about anything related to
24 the contents of your deposition?

25 A I didn't talk to anybody, but my wife and

1 kids.

2 Q About the deposition? Just joking. No.

3 MR. HENDIFAR: I have no further questions.

4 MR. LIANG: Okay. Can you give me -- let me
5 check my notes. Let me check my notes and then, give
6 me maybe 15 or 20 minutes.

7 MR. HENDIFAR: Okay.

8 MR. LIANG: So let's reconvene at, let's
9 say, 2:10 Pacific. I may have a couple of questions.

10 (Recess.)

11

12

EXAMINATION

13 BY MR. LIANG:

14 Q Okay. Dr. McDaniel, good afternoon.

15 A Good afternoon.

16 Q I just wanted to ask you: Earlier you
17 had -- in your testimony, you mentioned you had
18 reviewed the Institution decision; is that right?

19 A I have.

20 Q Okay. Can you turn to the Institution
21 decision? Do you have it in front of you? Can you
22 turn to Page 30, please?

23 MR. HENDIFAR: Objection. Scope.

24 THE WITNESS: I am on page 30.

25

1 BY MR. LIANG:

2 Q And you see there is a paragraph that says,
3 "More natural to the language of Claim 1, the frames
4 of video are denoted as coming from with -- let me
5 backup for a second.

6 You remember earlier counsel had asked you
7 questions about limitations 1L?

8 A Yes.

9 Q Okay. And here the decision -- let me refer
10 you to this line that says, "More natural to the
11 language of Claim 1, the frames of video are denoted
12 as coming from those within the requested portions
13 where those requested portions are parts of the
14 selected stream of protected video."

15 Do you see that?

16 A Yes.

17 Q Okay. And then, subsequently, a few lines
18 down, it says, "The within, therefore, most clearly
19 connotes where the particular encrypted portions of
20 frames of video must be located, not necessarily where
21 the encryption information must be located."

22 Do you see that?

23 A Yes.

24 Q How does --

25 MR. HENDIFAR: Objection. Form.

1 I'm sorry. Counsel, let me put my
2 objection.

3 Scope and form.

4 BY MR. LIANG:

5 Q Okay. How does the Board's decision relate
6 to the opinions in your declaration?

7 MR. HENDIFAR: Objection. Scope. Form and
8 relevance.

9 THE WITNESS: The Institution decision
10 reflects the thinking of the Board from reviewing my
11 report, and in this case, actually, supports my view
12 that the encryption information can either be located
13 within stream or someplace else.

14 BY MR. LIANG:

15 Q And is the Board's decision as explained on
16 Page 30 of the Institution decision, consistent with
17 the opinions you've provided today in your deposition
18 regarding this limitation 1L?

19 A Yes.

20 MR. HENDIFAR: Objection. Scope.
21 Objection. Scope and form.

22 BY MR. LIANG:

23 Q I would like to turn to Hurst briefly, if
24 you could, if you would, and let me know when you get
25 there.

1 MR. HENDIFAR: Where are we turning?

2 MR. LIANG: Column 18 of Hurst.

3 BY MR. LIANG:

4 Q Please let me know when you get there.

5 A Yes.

6 Q Okay. If you could turn to Column 18, Line
7 66, there is a sentence that says, "The streamlet 304
8 of different bitrates may be encrypted with the same
9 key."

10 Do you see that?

11 A Yes.

12 Q Does that teaching in Hurst, is it limited
13 to either frame level encryption or a larger
14 granularity of encryption?

15 A No. All it is saying is that you are going
16 to encrypt some or all of the streamlet using the same
17 key.

18 Q Okay. So it's not limited to a particular
19 form of encryption?

20 A No, it's not.

21 MR. HENDIFAR: Objection. As to form.

22 MR. LIANG: Okay. Thank you. No further
23 questions.

24 MR. HENDIFAR: I have one redirect.

25

1 FURTHER EXAMINATION

2 BY MR. HENDIFAR:

3 Q Dr. McDaniel, during the course of the most
4 recent break, did you speak with your counsel about
5 the contents of your deposition?

6 MR. LIANG: I caution the witness not to
7 reveal the contents of any discussions we had, but you
8 can answer yes or no.

9 THE WITNESS: Yes.

10 BY MR. HENDIFAR:

11 Q And I will ask the question. And if counsel
12 wants to instruct you not to answer, that's fine.

13 The question is did you discuss the
14 questions that counsel asked you during the redirect
15 examination?

16 MR. LIANG: Objection, to privilege.

17 Instruct the witness not to answer.

18 BY MR. HENDIFAR:

19 Q Okay.

20 THE WITNESS: I am not going to answer.

21 MR. HENDIFAR: Okay. I have no further
22 questions.

23 (The remote deposition concluded at
24 2:12 p.m.)

25 * * *

REPORTER'S CERTIFICATION

I, Diana Janniere, a Certified Shorthand Reporter,
in and for the State of California, do hereby certify:

That the foregoing witness was by me remotely duly
sworn; that the remote deposition was then taken
before me at the time and place herein set forth; that
the remote testimony and remote proceedings were
reported stenographically by me and later transcribed
into typewriting under my direction; and that the
foregoing is a true record of the remote testimony and
remote proceedings taken at that time.

IN WITNESS WHEREOF, I subscribed my name
this 20th day of July, 2020.

Diana Janniere, CSR No. 10034

1 DECLARATION ERRATA SHEET

2

3

4 Our Assignment No. 666691

5 Case Caption: Netflix, Inc., et al.

6 vs. DivX, Inc.

7

8 DECLARATION UNDER PENALTY OF PERJURY

9 I declare under penalty of perjury that I
 10 have read the foregoing transcript of my remote
 11 deposition taken in the above-captioned matter or the
 12 same has been read to me, and the same is true and
 13 accurate, save and except for the changes and/or
 14 corrections, if any, as indicated by me on the
 15 DEPOSITION ERRATA SHEET hereof, with the understanding
 16 that I offer these changes as if still under oath.

17 Signed on the _____ day of
 18 _____, 2020.

19

20

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PATRICK MCDANIEL, Ph.D.

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21 _____

22 Page No. _____ Line No. _____ Change to: _____

23 _____

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25 PATRICK MCDANIEL, Ph.D.

A				
AACS 97:3	24:14 25:9,13	amortization	93:10 94:8,14	85:19,23 86:20
ability 23:2	26:1,14 27:25	102:4	94:20 110:16	87:22 88:3,18
able 4:17 24:1,18	30:17 31:16	amortize 101:16	applied 69:24	89:3,8 91:5
25:5 27:11,23	36:8 37:14,24	amortized 102:6	71:8	92:4 95:7,8
29:22 30:2	102:22	amount 61:14	apply 38:6 69:13	97:23 110:3
31:24 32:2,10	addressed 12:6	analysis 15:17	70:12 77:1	113:1,9,15,19
32:21,24 33:3	advantage 69:23	93:22	85:19	articulating
61:12 62:12	91:22 92:1,6	and/or 121:13	applying 88:17	69:22
89:24 101:20	96:19	ANGELES 2:10	111:13	arts 27:10,22
102:9 104:22	advantageous	annotations	appreciate 51:24	52:6 54:12
109:22	110:15	16:22	53:21 74:5 77:5	aside 55:10,12
above-captioned	advantages 91:7	answer 3:12 6:6	90:16	asked 15:19
121:11	91:14 110:7	6:7,17 7:1 9:1,2	approach 85:5	42:21 70:16
absolutely 94:25	affiliation 6:23	13:6,8 29:18	111:11 112:10	87:10 111:25
abstract 35:9	afternoon 115:14	35:1 36:23	112:16 113:11	116:6 119:14
accepted 76:16	115:15	42:22 50:23	appropriate 37:7	asking 9:6,7
access 31:15 51:8	ago 18:3	51:14 52:11	51:11 71:5	42:10,23 43:8
51:18 96:20	agree 105:11	53:14,14,21	84:15 88:6	43:17 53:13
98:10,11	ahead 81:16 85:9	54:10,18 55:3	89:11 98:14	54:21,22,22,25
accomplish	al 121:5	65:2 69:3 71:11	111:16	58:24 59:1,25
105:15	algorithmic	91:21 100:6	approved 85:12	67:6 83:19,21
accurate 114:9	99:11	102:18 119:8	approximately	83:25 84:16,17
121:13	algorithms	119:12,17,20	7:8 17:23,25	aspect 38:21
acquire 63:15	101:12	answered 10:9	18:13	aspects 17:13
active 74:25	allow 6:12 25:8	26:10 37:16	area 14:5 16:4	93:12
activities 19:22	25:13	42:9 70:15 83:5	69:5 89:2	assigned 73:22
acts 76:1	allowed 25:25	answering 16:13	areas 70:12	74:8 93:4
actual 23:12	26:14 75:17	anybody 114:25	argue 81:10	Assignment
30:11 38:5	allows 28:16	apologize 63:19	arranged 76:3	121:4
52:18 53:1,20	75:16	APPEAL 1:3	arrive 92:16	assistance 12:11
54:5,18 65:2	alternates 73:21	appear 47:6 48:5	arrived 68:21	associated 7:3
92:6 109:25	alternates 73:21	48:19 49:19	arrives 67:24	94:22 102:23
adaptation 38:22	alternative 64:18	79:9,11	68:9,24	103:1
adapting 34:17	70:2,7,19,22	APPEARANC...	art 12:18,20	assume 6:18
adaptive 14:19	71:13 77:2	2:1	13:10,14,21,24	14:21,25 15:11
39:20,22,25	80:19 81:11	appears 40:24	14:2,6,22 15:1	15:13
66:2 67:9 75:2	82:5,9,22 83:2	57:2,22 114:6	15:6,8,10,18	assumed 87:19
80:25 92:2	83:9,24 84:4,20	Apple 23:18	17:4 21:25	attached 8:3,5
add 8:18 17:6	89:19	73:22,23 74:2,6	29:20 30:1	attention 48:7
22:5 37:22	ALTO 2:5	74:7,25,25	41:19 50:18	56:3,6 62:7
adding 38:15	ambiguousness	75:10,14,15,19	52:16 53:8	90:17 93:25
addition 22:3	6:13	application 11:14	55:11 61:17,22	97:7,9 99:7
additional 6:15	Amini 9:19 10:4	37:8 39:5 69:11	69:10,12,22	103:6
21:15 23:5	10:8,16,21	70:14 110:5,17	72:18 75:1	attorney 6:3
	11:15	111:12,16	76:13,25 77:24	audible 9:22
		applications	78:10,17,25	audio 29:15

40:14 available 26:21 37:12,19 64:23 93:24 104:5 AVENUE 2:5 aware 12:1 17:20 19:25 25:24 26:12 49:21 50:11,15 75:11 92:8,24 93:18 96:24 98:24 99:4 A-M-I-N-I 11:15 a.m 1:17	25:21 26:10 28:2,12 29:25 37:16 70:25 beneficial 111:8 benefit 91:2,22 benefits 108:10 108:16 better 10:7 15:12 15:14 33:9 beyond 18:15 19:6 80:1 96:7 big 101:23 bit 5:17 7:12 8:11 10:1 11:7 29:6 38:17 105:2 108:21,23 114:18 bitrate 14:19 39:21,22,25 50:19 65:23 66:2,3 67:9 70:22 75:2 91:3 91:23 92:10,18 93:20 bitrates 33:15 70:2,7 90:22 92:3 93:1 99:1 113:25 118:8 block 49:24 50:2 50:5 89:23,25 90:6,9 103:16 103:17,22 104:4,5,6,7,9 105:8,19,25 106:1,12,13,25 107:15 108:1,4 109:16 110:20 110:21,21 blocks 76:7,8 105:5 Blu 97:4 Board 1:3 54:20 117:10 Board's 117:5,15 body 70:11 89:6 bottom 31:10	75:24 boundaries 76:5 BPMs 95:5 break 5:3,4,5 29:9,15,17 52:25 55:17,20 79:20,23 104:12 106:3,3 111:24 112:1 119:4 breaking 25:19 58:18 66:16 breaks 5:25 114:22 brief 11:8 briefly 117:23 broad 15:22 61:24 100:19 broadcast 39:2,9 39:13,14,20 broadly 15:22 17:5 51:17 62:5 69:10 broke 51:13 68:1 broken 33:17 browse 62:12 B2 1:11	56:21,24 57:21 58:11,25 64:16 64:21 81:13 84:4,12 86:19 91:8 95:11 98:7 117:11 121:5 category 100:19 caution 8:16 9:11 13:3 119:6 central 58:19 98:22 CENTURY 2:10 certain 20:12 26:18 50:9 51:20 110:15 certainly 13:24 14:18 26:5 27:6 27:15,17 34:23 38:14 39:13,13 39:22 41:12 70:24 95:12,25 101:10 108:15 111:10 CERTIFICAT... 120:1 Certified 120:3 certify 120:4 change 22:5 100:23 101:5 122:2,4,6,8,10 122:12,14,16 122:18,20,22 123:2,4,6,8,10 123:12,14,16 123:18,20,22 124:2,4,6,8,10 124:12,14,16 124:18,20,22 changed 12:5 23:7 42:3 changes 16:2 121:13,16 changing 61:23 characterization 100:19 characterize	15:21 check 71:21 115:5,5 Chen 12:20,24 14:7 33:6,7,10 33:12,23,24,24 34:5,15,20 35:5 35:13,16,22 36:1,6,12 64:20 80:18,21 81:23 82:19 83:13 84:19 87:5 88:4 88:20 89:12 103:6,13,14,21 103:24 104:22 104:24 105:3 105:12,21 106:22 109:4 109:11 110:22 111:10,17 Chen's 80:25 103:9 108:12 111:6 choked 4:24 chooses 112:20 choosing 64:4 chose 38:17 cipher 101:16,24 102:1 107:3,5 107:10,11 108:20 110:1,7 circumstances 39:15 cite 15:1 95:13,21 96:1 97:19,25 cited 12:24 15:15 20:10 57:14,18 96:4,7 claim 40:19,23 41:3,10,17,19 41:24 42:12 43:1,4,9,10,12 43:20 44:2,2,4 44:14,19,20,25 45:3,7,16,20,23 45:25 46:12
B				
back 14:2 21:12 29:14 36:14 39:1 55:22 57:11 64:7 70:10 80:13,14 80:17,22 93:23 112:1 background 20:25 21:4 30:1 51:3 52:2,5,6,7 52:12 53:9 54:13 backup 116:5 base 21:6 34:1 based 28:15 32:8 33:25 54:13 61:9 basic 14:5 93:7 basically 92:20 93:6 basis 6:12 bed 4:21 beginning 32:14 79:11 97:12 99:10 behalf 7:14 believe 5:14 7:7 9:16 10:3,4,9 11:24 12:4 20:20 25:11,17				
		C		
		C 90:3 cable 96:12 California 2:5,10 120:4 call 54:20 98:7 102:20,23 called 9:18 10:4 92:15 93:3,8 101:13 109:25 capabilities 34:17 capability 32:20 Caption 121:5 careful 9:3 53:8 case 31:12,16 32:7 37:21 38:3 43:5 51:12		

53:16 56:3 57:2 57:15,19 59:6 59:14 60:9,18 60:24 61:13 81:12 82:12 93:12,19,23 116:3,11 claimed 17:12 claims 50:20,24 84:12 clarification 6:17 class 98:6 clause 106:7 clean 16:20,20 20:17 clear 9:24 11:16 29:18 42:11 76:14 78:24 95:24 108:24 clearly 99:22 116:18 client 12:17 33:21 62:11,15 72:6 104:5 client's 63:8 close 7:11 closer 29:7 closure 76:16 cluster 50:13,13 50:17,17 51:1,2 53:5,6,11 54:8 54:8 55:7,8 code 27:19 codec 17:21 18:15,22,23 19:1,24 coded 18:21 coding 105:23 column 20:22 21:13 22:23 24:2,5,12,19 25:9,14 26:1,15 26:20 27:25 29:23 30:3 31:11 32:4,4 42:20 43:3	46:17,18,22 47:3,7,10,17,19 47:20,23 48:8 48:10,11,13,22 48:23,25 49:10 49:16 51:6,15 52:3,3,13 90:20 103:13,19 113:23 114:10 118:2,6 combination 15:5 34:15 35:20 36:6,12 36:19 69:2 71:19 80:18,23 82:3,9,16,19,20 82:24 83:7,13 87:4 combinations 26:8 combine 64:19 65:10 81:2,23 combined 63:2 83:21,23 84:1 84:18,24 85:15 86:5 87:8,25 88:1,10,14 combining 79:11 come 12:23 54:23 55:22 74:20 85:20 88:4 112:1 comes 91:11 coming 116:4,12 common 72:14 73:13 84:3,5 85:24 86:21 87:17 88:2,5,9 88:15,19 89:10 89:17 94:7,12 94:18 95:14,22 communication 39:3,24 93:9 communications 9:12 13:4 community 95:1	company 17:20 18:14 19:6 compare 26:4,19 26:20 99:18,25 113:19 compared 99:17 101:18 comparison 100:13 complete 4:18 completed 68:10 completely 62:5 complexity 100:22 101:4 comprises 44:6,9 computation 91:9,14 101:13 101:25 computational 100:18,22 101:4 103:3 computationally 99:12,16,24 computer 10:20 26:25 27:3 concept 81:9 89:13 113:1,4 concepts 61:25 98:22 concluded 119:23 conclusion 78:16 79:12 conduction 67:23 conferencing 92:11,12,22 93:2,5,10 confirm 16:21 confused 59:2 87:2 confusion 86:9 connection 29:5 40:8 connotes 116:19 cons 109:3,8,14 110:8	consecutively 102:9,15 consider 52:2,12 considerably 80:4 considered 7:19 100:18 considering 4:10 consistent 30:3 117:16 consisting 80:24 consume 68:11 consumed 64:12 68:8,13,24 consumes 64:10 64:13 65:6 consuming 68:9 68:13 consumption 67:25 contain 11:21 container 20:24 21:2,5,14,17,20 23:16 24:13 25:8 27:4,12,24 34:2 43:21 44:6 44:10,11,17 45:1,17 46:2,12 containing 31:14 32:9 contend 79:6,15 content 18:5 25:5 28:10 30:15 31:18 33:14,20 38:15,16 41:10 42:15 51:8 62:1 62:3 66:6,9 73:21 84:8,10 85:12 92:14 96:8,10,16,20 96:24 97:15,23 98:9 contention 64:8 65:4 76:15,22 77:8 contents 8:17	18:16 23:12 36:9 114:24 119:5,7 context 18:8 41:17,24 42:11 43:1 48:17 52:15 57:2 61:20,21,22 62:5 65:12 68:6 68:12 71:23 72:3,11 73:5,7 73:8,10 81:18 81:22 87:1 108:11 109:4 109:10 110:17 110:21,22 continuing 72:12 contribution 113:8,14 control 51:8,18 convenience 31:25 conversely 110:2 conversion 63:13 copy 20:17 Corporation 74:25 correct 19:10,11 22:14,15 26:25 28:5 39:10,21 42:2 43:16 44:2 44:7,13 46:24 47:5,13,20,25 48:3,16 49:12 49:18,25 50:6 60:5,13,22 64:5 66:7,13 73:22 74:12 78:22 80:21 81:12,19 82:6,10 93:12 96:5,11 97:21 98:2 99:5 100:2 102:5 corrections 121:14 correctly 26:23
---	---	--	---	---

cost 101:11	data 26:6 27:16	decrypt 32:12,21	department	31:22 32:1,8
costs 101:16	27:20 28:8,19	33:3 56:9,17	98:17	designs 27:19
103:1	62:1 63:7 65:20	58:22 59:15	depend 14:11	desirable 65:11
counsel 2:1 5:20	66:1 67:1,6,7,8	60:2,7,8,17	22:21 27:13	98:20
6:4,5,10,11	67:11,12,14,21	72:15 73:14	30:7,7,24 100:3	desired 74:18
7:20 8:18 12:12	67:23,23 68:5,7	78:20 79:10	100:8,14 101:8	detail 88:8 90:2
13:10,19 14:8	68:8,9,21 69:16	101:17 107:7	101:23,24	details 18:16
48:23 114:23	75:25 76:2,3,4	107:13,20	dependent 73:4	96:22
116:6 117:1	76:5 84:13,14	decrypted 63:22	depending 28:6	determine 79:3
119:4,11,14	95:1 98:18	72:8 77:13,25	28:20 81:18	developed 18:14
couple 4:21	104:3	78:25 103:18	100:23 101:5	18:19
14:13 29:16	date 66:2 70:13	103:23 105:9	102:4	developers 38:14
73:6 74:14	122:24 123:24	105:20 106:14	depends 44:2	developing 75:1
112:6 115:9	124:24	106:19	93:13 101:25	development
course 5:7,18 6:1	dating 14:2	decrypting 56:6	110:16	18:9 38:22 39:2
16:23 27:2,7	day 6:1 120:16	57:4,24 59:7,19	deposed 5:8	39:5
47:2 68:3 99:23	121:17	60:7 75:23	deposition 1:15	device 33:21 93:7
119:3	days 4:21	77:23 100:4,9	4:1 5:21 7:17	devices 67:1
courses 26:24	deal 38:2 85:21	106:17 108:1	8:4,8 114:24	110:15
27:8	decades 14:2	decryption 32:8	115:2 117:17	devoted 7:25
court 5:18 28:24	38:16	32:25 38:1	119:5,23 120:7	Diana 1:21 120:3
create 9:4	decide 98:20	56:21 58:2	121:11,15	120:22
cross-examinat...	decides 64:5	59:24 77:18	122:1 123:1	difference 61:17
5:19	decision 9:16	78:7,15 90:7	124:1	108:5
cryptographic	10:2,11 115:18	91:8 99:12,17	depositions 5:17	different 5:17
31:14 32:9 51:7	115:21 116:9	99:25 100:15	5:18 8:1	14:17,17 22:6
51:18 63:23	117:5,9,15,16	100:23 101:5	deprive 54:1	23:19,20 33:15
77:14,15 90:10	declaration 8:6	104:2 107:2	describe 16:5,25	35:23 39:8,9,19
90:13 100:24	11:21,25 12:3,6	108:3 109:24	described 30:20	43:7 44:20 45:3
101:1,6,12	12:8,15,21,25	110:14	31:7,10 32:3	45:7,13,19 52:1
cryptography	13:21 14:23	deduction 78:21	33:22 49:23	52:8 72:17,22
91:13	15:2,5,8,16	78:23	53:2,20 54:6	72:24 73:7,8,8
CSR 120:22	16:24 27:11,22	define 67:3,7	55:1 72:4 85:25	73:16,17 74:18
CSR-10034 1:21	29:21 35:13	70:11	86:15 87:4	74:19 81:18
CSS 96:25 97:3	36:1 53:25	defined 27:10,22	106:7 113:10	85:4,4,5,13,25
current 7:3 70:13	71:19 74:24	29:21 30:1	describes 50:5	85:25 86:16
currently 15:21	77:6 81:10 82:1	37:23 67:22	64:8 77:23	88:16,23 89:7
customized 23:20	83:11 84:18	68:5	89:17 112:23	90:21 91:3,3,23
cyber 15:23	86:18 87:7 94:1	defining 39:6	describing 17:3	92:10,18,19,25
19:10	95:14 96:5 97:8	definitely 13:3	33:10 35:18	100:15 102:21
C-O-D-E-C	97:10 117:6	deflecting 53:13	62:20	105:14 107:17
18:23	121:1,8	delivered 95:2	description 55:13	113:25 118:8
C.V 7:12 15:20	declare 121:9	delivery 14:1	design 87:19	differentiate
15:25 26:23	decode 31:18	33:20 39:25	105:16,17	85:11
D	decoding 99:18	69:6	designed 22:19	differently 105:2
	99:25 100:4,8	denoted 116:4,11	23:2 30:11 31:8	107:23

difficulties 28:24	distributed 15:23	115:14 119:3	element 25:9,13	99:18,25 100:4
dig 11:4 38:5	17:16 19:9 27:6	draft 12:13,14,16	31:14,17 32:9	100:8 104:8
113:19	distribution	drafted 12:8,11	32:24 48:20	encompass
digital 17:7,15	24:16	drafting 11:22	elements 21:16	114:19
51:4,16 69:9,11	District 5:18	draw 90:17 97:7	21:16 24:14	encompassed
70:12 81:1,3	dividing 76:6	97:9	25:18,22 26:1	103:2
direct 48:7 54:18	DivX 1:8 17:18	DRM 13:25	26:14,19 27:25	encrypt 72:14
56:2,6 62:6	17:24 18:6,11	21:15 24:14	34:12 93:23	73:14 74:16
69:15 71:11	18:12,14,19	25:9,13,17,22	embodiment	77:2 78:17 79:6
93:25 99:7	19:1,4,12 20:11	26:1,3,5,5,14	31:6,13 35:16	82:4 83:1,9,23
103:6	121:6	26:18,19,19,21	35:22 46:21,25	84:6,20 85:16
directed 31:21,22	DivX's 19:17,22	27:7,25 34:12	47:2,10,14,16	85:24 86:5
direction 120:11	Doctor 36:23	34:14 38:11,15	47:22 48:4,13	87:24 88:10,16
directly 34:14	document 8:21	48:19 51:6,9	49:9,15,20,23	91:3,23 92:9,25
disclose 71:8,10	9:13 10:10	52:7 94:8,14,20	50:4,11,15,25	93:20 98:25
71:12 89:13	11:13	dropped 14:24	52:3,14,18 53:1	103:15 104:9
91:1,22	documents 8:3,5	due 104:7 105:22	53:4,20 54:5,7	106:12,24
disclosed 91:19	8:7,10,14,19,19	duly 4:5 120:6	55:1,2,5,15	112:19 118:16
discloses 70:2,7	8:23 9:2,8,14	DVD 96:16,20	63:5 64:6,9,21	encrypted 33:3
70:19,22 76:23	9:23,24 10:17	97:3	68:23 69:16,18	37:15,18 43:23
77:9,21 78:8	16:19,23 40:25	D-I-V-X 17:19	70:1,6,18,21	44:13,19,21
79:16 81:12	dog 4:25		71:8,9,14 72:13	45:3,5,19,21,25
disclosing 113:15	doing 16:17 19:6	E	73:13,19 74:16	46:8,14,24 56:7
disclosure 75:22	19:24 25:4	earlier 106:1	74:18,20 75:25	56:10,11,17,19
80:20,21 87:23	63:14 75:19	115:16 116:6	81:22 103:24	56:23 57:1,4,24
91:25 111:6	81:3 110:4	early 39:1	104:1 105:18	59:7,9,15,17,20
disclosures 79:15	domains 69:24	ease 27:12	106:22 107:21	60:2,4,8,11,17
disconnected	doubt 20:4	easier 81:25	114:6	60:20 61:3,4
58:16	download 61:25	110:23	embodiments	64:3 72:7 76:3
discover 111:11	62:1,13 63:5,12	easily 81:6	21:14 23:10	78:13,19 79:2
discuss 17:10	68:10 107:25	EAST 2:10	24:4,7,10 31:1	79:12 82:22
35:15 119:13	downloaded 63:4	EBML 31:14,17	35:10,19,23,25	83:15 87:9
discussed 22:25	63:21 64:11,15	32:9	49:22 50:20	90:22 94:7,13
38:9 90:1	65:8 67:25	editing 60:23	51:19 52:8,17	94:19 95:15
discusses 77:4	68:25 103:23	61:13	54:12,14,23	102:7 106:25
discussing 6:2	105:5	editorial 12:11	55:13 64:18	107:1,19,23,24
32:7 35:13 78:1	downloading	efficient 29:25	71:15 73:17	108:19 113:25
114:2,11	61:18 62:24	63:10	111:11 112:24	116:19 118:8
Discussion 7:22	63:9	either 22:5 32:17	employed 103:15	encryptic 101:12
11:10 29:12	downloads 64:22	68:20 88:21	104:9 105:8	encrypting 75:22
discussions 8:17	dozen 96:1	89:5 111:8	106:9,12	75:25 76:8,11
119:7	Dr 4:11 9:10	113:5 117:12	enable 27:3 36:3	76:16,23 77:9
disregard 15:9	11:13 28:23	118:13	36:11,11	77:21 78:8 79:8
distinct 43:18	29:4,19 49:4	elaborate 38:25	encoded 33:15	79:16 89:23
61:11	53:12 56:2	45:12 46:4	encoding 70:2,7	90:5 100:4,9
distinction 46:5	79:21 97:10	58:13 88:13	70:19,22 71:13	106:16 108:5,6

108:8,10 109:14,18,20 109:21 encryption 34:18 34:21,23 35:6 36:3,7,8 37:11 37:13,22,24 39:7 40:22 43:22 44:12,18 44:21 45:1,4,7 45:17,20 46:2 46:11,13,22 47:3,11,23 48:5 48:14 49:10,16 50:12,16 51:1 53:4,17 54:7 55:7 56:25 57:13,22 58:3 58:22 59:21,23 60:10,19 61:3,9 76:7,9,12 77:16 77:19 78:2,4,7 78:13 79:4 81:4 81:5 83:18 84:15 89:21,22 89:25 90:1,4,5 90:8 96:16,20 96:25 99:11,17 99:24 100:15 100:23 101:5 103:15,22 104:8 105:7 106:9,11,25 108:16 109:3 110:19,20,25 111:1,7,14,18 112:9,15,16,17 112:25 113:4 113:13 114:2,3 114:10,11 116:21 117:12 118:13,14,19 encryption/dec... 100:17 endeavors 70:11 endpoints 39:8	engaged 19:13 English 43:11 entire 64:11,15 65:7 67:24 68:25 103:16 103:22 104:5,7 105:4,8,19 106:13,18 107:7,13,14,25 entirely 103:2 entirety 41:20 106:25 107:19 equipment 22:8 22:10 era 34:14 ERRATA 121:1 121:15 122:1 123:1 124:1 error 85:15 ESQ 2:4,9 essentially 93:7 established 9:9 estimate 7:24 101:21 et 121:5 everybody 29:1,3 92:17 evidence 12:1 15:12,14 95:13 95:21 97:19,25 evolution 14:19 exact 97:5 exactly 43:15 examination 3:1 3:3 4:7 115:12 119:1,15 examining 76:4 example 6:11 17:7 23:8,14,25 31:3 34:18 36:9 53:11 63:3 68:12 71:16 84:5 85:7 98:16 105:7 107:3 examples 14:13 73:7 105:4,21	exhibit 10:17 12:21,24 13:12 13:16 33:6 90:18 103:7,11 113:22 exhibits 3:8 8:5 16:11 existed 21:5 expectation 6:1 expensive 99:12 99:16,24 experience 14:3 experienced 91:13 expert 7:9 explain 86:17 88:8 109:8 explained 24:19 29:23 84:17 86:3 88:11,14 99:11 117:15 explains 21:13 24:13 64:2 explanation 99:16 explicit 55:13,14 91:25 explicitly 21:23 46:12 expressed 75:21 expressly 6:6 57:14,16,18 59:10,18 60:13 60:21 76:23 77:9,21 78:8 79:6 extended 28:17 extensible 28:15 extensions 23:6 24:22 25:4 26:4 34:14 extent 9:12 13:6 external 9:18,23 10:10 38:18 103:1 externalities	103:1 extra 16:18 e.g 97:14 104:7 F facilitate 24:15 facilitates 63:11 fact 65:6 fair 6:19,20 14:21,25 15:11 15:13 54:1 100:20 familiar 19:22 96:8,18,19 familiarity 17:18 19:17,22 family 80:4 far 11:6 38:9 104:2 108:23 feasible 111:4 feel 6:16 54:4 59:4 feels 30:23 field 15:21 16:5 17:1,5,5 27:3 28:7,10,10,13 62:5 95:24 fields 28:12 Figure 31:4,7 32:4 Figures 90:3,3 file 20:24 21:6,7 21:9,15,18,20 22:4,6,7,9,11 22:13,16,17,20 22:25 23:3,4,6 23:7,16 24:2,13 24:15,18 25:8 25:12,24 26:13 27:4,12,15,24 28:4 29:22 30:5 30:12,18,19,21 30:25 31:9,12 32:2,3,13,22 33:5,25,25 34:1 34:2,8,9,9,11	34:12,19 35:7 36:2,16,21 37:1 37:12 38:8 43:21 44:6,10 44:11,17 45:1,8 45:17 46:2,12 63:4,6,7,10,11 63:21,21 64:2,5 64:9,10,11,13 64:15 65:7 66:5 67:25 68:25 69:19 70:3,8 75:1 76:2,4,11 77:13 82:21 83:18 86:23,25 87:12,15,18 93:11 101:7,19 102:4,19,21 107:7,13 111:19 112:10 112:16 files 21:2 37:18 37:19 62:12,13 62:14,15 65:19 68:17 69:7,7 70:23 72:7,15 74:17 77:2 82:4 83:2,9,15,16,24 84:1,6,20,22 85:16 86:6,8,9 87:9,11,25 88:10,16 94:8 94:13,19,22 95:15 101:18 101:23 102:3,3 102:6,8,13 103:2 107:18 112:19 113:5 finally 81:5 find 12:18,20,22 13:23 14:23 61:2 85:23 86:2 86:20 87:14 88:18 fine 9:13 11:9 29:3 53:24
---	--	--	---	--

55:21 104:13 119:12 finish 52:24 102:18 106:4 finite 88:20 102:23 first 4:5 10:9 12:14,16 17:22 17:24 18:6 42:21 56:10,18 60:3,10 63:20 80:19 98:5 105:22 112:12 114:9 five 7:20 fix 98:7 fixed 29:14 56:22 58:5 65:23 66:2 67:9,22 68:7 93:8 focus 16:2 focused 8:11 15:8 33:7 focusing 22:23 follow 16:3 following 46:5 follows 4:5 force 27:7 foregoing 120:6 120:12 121:10 form 14:9 33:15 35:8 36:4,18 37:2 38:12 39:11 42:14 50:1,7 54:9 56:12 57:6,25 58:9 66:14 76:18 106:10 106:20 108:13 109:17 110:12 114:4,13 116:25 117:3,7 117:21 118:19 118:21 format 21:6,7,9 21:17,20 22:1,4	22:6,7,9,11,13 22:16,17,20,25 23:3,4,7 24:2 24:18 25:8,12 25:24 26:13 27:4,12,15,24 28:4 29:22 30:6 30:12,19,22 31:9 32:2,3,13 32:22 33:5,8,25 34:1,1,2,3,6,8,9 34:9,11,19 35:7 36:2,16,21 37:1 37:12 38:8,15 111:19 formats 21:5 33:8 75:1 forth 120:8 found 15:2,12,13 61:10 86:14 88:24 four 5:11,13 7:20 fourth 53:12 fragment 103:16 103:17,22 104:9 105:8,19 106:12,13,17 106:18 107:15 108:1,4,6,8,17 110:22,23 111:1,8,18 fragments 113:5 frame 18:13 19:18 23:15 24:18 25:25 26:13 27:23 56:7,11,19,22 57:4,24 60:9,18 60:20 76:5,24 79:16 107:22 107:24 108:6,9 108:11,16 109:3,14,14,18 109:20 110:4 111:7,15 112:9 112:15,20	114:2,12,15 118:13 frames 43:23 44:13,19,22 45:2,5,18,22 46:8,14 56:10 56:18 57:1 59:7 59:16,17,20 60:11 61:4,5 75:23 76:3,5,6 76:16 77:10,22 78:9,12 79:7 109:22 112:24 113:5 114:7,16 114:20 116:3 116:11,20 free 6:16 54:4 101:25 freeze 40:12 frequency 5:6 frequently 110:8 front 10:18 115:21 fruit 74:2 FTP 67:13,16 full 4:12,18 further 9:1 21:15 24:13 44:5,9 104:3 112:22 115:3 118:22 119:1,21	53:14 54:10 71:20 101:20 115:4,5 given 38:2 53:5 54:7,11 55:7 57:3,23 60:24 61:14 70:3 giving 77:5 global 71:22,24 72:2,6,8,11,14 72:16,21 73:4,7 73:9,11,11,14 73:17,20,20 74:14,15,16,19 75:17,23 76:17 76:24 77:3,10 77:15,22 78:9 78:15,19 79:7,9 79:10,13,16 80:20 81:11,17 81:21 82:5,23 82:25 83:1,10 83:15,25 84:2,4 84:13,21,23 85:16 86:6,8,8 86:11,14,18,22 86:24 87:1,3,3 87:9,11,16,24 88:6 92:25 96:25 97:14 98:8,25 100:24 101:1,6,10,15 101:22 102:2,5 102:7,20 go 7:12 11:8,19 20:12,25 21:21 25:1 26:3,6,17 28:14 29:9 33:4 33:9 50:9 51:15 62:25 63:16,19 71:1,17 72:12 73:18 74:15 76:10 80:1,1,13 81:16 85:1,9 89:16,20 92:21 93:23 94:23	96:22 113:18 114:15,16 goes 33:24 51:22 90:8 112:22,23 going 8:16 18:7 21:12 30:14 40:16,19 43:20 52:22 64:7 76:13 90:17 100:5,9 103:9 110:1 111:22 118:15 119:20 good 4:9,10 52:23 55:24 70:16 115:14 115:15 graduate 26:24 27:2 granular 110:10 112:10,16 granularity 108:9,11,17 109:3,15,21 110:13,20 111:2,19 114:7 114:11 118:14 graphs 23:12 great 38:2 greater 90:1 group 39:24 49:24 50:2,5 92:23,23 guess 14:15 18:7 79:21 86:2 guys 29:2 G3PP 34:14
--	---	--	---	--

G

gears 87:19
general 16:3
32:20 100:12
100:17 109:2
112:25 113:11
generally 32:12
67:11 69:9
109:5,8,13
generate 102:24
getting 58:16
59:1 87:1
giant 29:7
give 14:13 23:14

H

half 79:20,25
80:9 96:1 112:2
halfway 72:12
104:20
handful 8:9
handle 14:18
31:17 32:8
happen 10:15

57:10,14 68:20 102:16 happens 43:6 83:15 84:1,22 87:10 hard 4:23 5:1 14:16 18:1 hardware 22:12 22:18 23:2 hazard 18:7 head 10:6 29:7 99:6 header 95:19 heading 42:16 hear 5:12 10:7,12 17:23,24 25:20 29:1,2 34:25 40:3 58:17 73:25 74:6 90:12 104:17 108:22 heard 10:8 17:20 18:8 20:6,16 40:4 74:5 99:19 held 7:22 11:10 29:12 Hendifar 2:9 3:4 4:8 7:23 8:21 9:6,21 11:9,11 13:11 14:12 25:23 28:22 29:4,11,13 32:18 35:4,11 36:22 37:9 38:20 39:16 40:2,4,9,13,16 40:18 42:18 48:3,6,25 49:2 49:14 50:3,10 51:23 52:24 54:16 55:16,19 55:22 56:1,15 57:9,17 58:6,12 59:13 60:15,16 64:14 65:1 66:17 67:20	70:5 72:1,20 73:1 74:2,8,11 76:21 79:19,24 80:6,10,13,16 90:15 91:16 100:11 102:15 103:4 105:1 106:8,15 107:4 107:10 109:1 110:18 111:23 112:5,13 113:3 114:8,21 115:3 115:7,23 116:25 117:7 117:20 118:1 118:21,24 119:2,10,18,21 hendifar@low... 2:11 hereof 121:15 hide 8:22 higher 110:6 highlighting 16:22 highly 30:12 highly-structu... 27:15 28:9 hold 67:16 102:12 107:8 109:11 Hopefully 40:16 host 27:7 hour 52:23 55:23 79:20 80:1,9 112:2 hours 7:24 HTTP 33:12 67:13,18 Hulu 1:5 6:23 Hurst 13:16 14:8 36:12 64:20 81:5,6,11 82:10 82:11,14,15,19 83:14 84:19 89:13 90:18 91:1,6,18,19,22	92:1,1 113:22 113:24 114:2 117:23 118:2 118:12 hypothetical 32:6 32:23 H-U-R-S-T 13:17 I idea 58:8 112:25 identification 59:18 identified 10:10 11:13 32:19 59:20 63:3 80:23 90:7 109:19 identifier 94:22 95:19 identifiers 96:3 identifies 43:22 44:12,18,21 45:2,5,18,21 46:7,13 57:1 60:11,20 61:4 identify 9:14 59:9,16 60:4 95:3,7 98:13 identifying 9:23 51:4 56:11,19 61:2 71:19 76:2 IDs 94:7,13,19,24 95:6,9,15 ignore 30:11 ignored 23:8 28:8 immediate 63:12 impede 31:2 implement 34:21 36:11 52:9,16 104:22,24 113:12 implementation 23:8 28:6,18 30:10 35:5 implementations	23:21 implemented 75:12 111:22 implementing 37:25 implicit 58:4 important 54:17 54:20 94:24 102:17,18 improve 92:3 improved 112:18 inaudible 23:23 33:21 34:24 58:15 60:12 91:12 104:16 include 27:24 34:11,18 38:10 39:20 44:11 54:14 94:7,13 94:19 95:15 96:2 included 19:9 21:18 24:15 48:5,19,20 50:13,17,21 includes 31:13 43:21 44:17 45:1,17 46:2,13 76:1 112:24 including 21:6 51:20 77:2 82:4 82:21 83:2,9,24 84:20 88:15 93:19 inclusion 25:8,13 25:25 26:14 incompatible 87:14 inconsistent 86:3 independent 91:18 index 3:1,8 93:11 indicated 121:14 indices 28:11 individual 109:22	infeasible 111:5 information 6:15 26:19 31:14 32:9 36:8 37:11 37:14,24 38:11 38:15 39:7 40:23 43:22 44:12,18,21 45:1,4,8,18,21 45:24 46:3,7,11 46:13,23 47:4 47:11,24 48:5 48:14 49:11,17 49:25 50:6,12 50:16 51:1,8,10 51:18 53:5,18 54:7 55:7,14 56:25 57:13,22 58:3,7,22 59:21 59:23 60:10,19 61:3,8 95:20 105:24 108:2 116:21 117:12 initialization 91:12 initials 67:17 innovations 17:14 input 82:6 instance 86:11 Institution 9:16 10:2 115:18,20 117:9,16 Institution's 10:11 instruct 13:7 119:12,17 INSTRUCTED 3:12 instructing 8:25 instructs 6:6 intensive 100:18 intent 70:16 intention 71:2 intentional 42:6 interaction 62:11
---	---	---	--	---

interestingly 39:4 interpret 23:11 55:12 interpretation 73:19 87:22 105:13 interpreted 54:22 interpreting 22:22 interrupt 52:21 introduced 21:1 introduction 51:16 invented 18:19 invention 33:6 36:17 37:1,10 37:13,23 76:1 81:12 inventions 19:13 20:11,16 37:8 inventor 112:21 investigate 20:8 invitation 70:10 invitations 108:19 invites 81:2 inviting 63:14 64:17 65:9 71:4 71:6 111:10 involve 33:14 involved 38:21 39:1,5 51:7 involvement 38:24 involving 33:12 in-determinant 114:17 IP 95:5 IPR 5:8,17 6:21 6:22 16:9 17:17 20:15 IPR2020-00558 1:11 ISO 21:6 34:1	issue 9:5 13:2 32:11,12,19,20 32:21 109:10 issued 11:15 issues 5:21 12:6 14:17 29:15 it'd 80:3 i.e 21:16 104:6 J Janniere 1:21 120:3,22 Jeff 10:25 13:1 40:2,4 52:20 JEFFREY 2:4 jliang@sheppa... 2:6 joking 115:2 July 120:16 juxtaposing 66:24 K key 14:16 63:23 71:22,24 72:2,6 72:8,11,14,16 72:21 73:4,7,11 73:14,17 74:14 74:15,16 75:17 75:19,23 76:12 76:17,24 77:3,4 77:10,15,15,15 77:22 78:9,15 78:18,19 79:1,1 79:2,7,9,10,13 79:16 80:20 81:8,11,17,21 82:5,23,25 83:1 83:10,15,18,25 84:2,3,4,11,21 84:23 85:2,3,17 86:6,8,8,11,15 86:18,22,23,24 86:25 87:3,5,9 87:11,13,15,15 87:16,18,24	88:6 89:14,18 90:22 91:2,7,11 91:15,23 92:13 92:13,15,16,16 92:23,23,25 93:8,20 94:7,13 94:19,21,24 95:2,6,9,15,18 96:3,25 97:14 97:22 98:4,8,10 98:14,14,22,25 100:24,24 101:1,1,2,6,10 101:13,15,19 101:22,22 102:2,3,5,7,10 102:19,20,20 102:21 114:1 118:9,17 keying 93:9 94:21 keys 14:18 74:19 77:25 84:6,13 84:13 85:5,13 85:24,25 86:21 87:17 88:2,5,9 88:9,15,19,22 88:25 89:1,5,7 89:7,10,14,15 89:18,22,24 90:5,10,14 91:3 92:9 93:4 95:18 102:23 kids 115:1 kind 4:23 9:4 26:19 28:10 34:5 66:25 67:4 71:4 81:6 87:18 96:3 100:3,8 101:24 104:22 114:15 kindly 4:12 kinds 110:15 knew 19:24 98:21 know 5:2,4 7:6	7:11 11:7 12:23 13:25 14:1,1,3 16:2,11,17 18:1 18:8,17,20 19:2 19:6 20:4,5 21:24,24 24:25 27:14,18 29:2 30:10 36:7 37:14,25 41:2,3 43:18 46:1 49:3 49:7 50:9 51:4 51:10 53:9,14 54:12 59:1 60:7 61:25 62:1 63:1 67:12,13 68:22 70:10 73:13 74:3 75:7,13 79:25 84:7,10 84:12 85:8,11 85:20,21 87:22 89:9 90:24 91:18 92:2,21 92:21 95:8 98:3 98:10,14,16 100:17 104:15 108:17,18 109:19 110:2 112:21,22 113:10,11 117:24 118:4 knowledge 20:1 20:10 97:2 known 7:4 33:20 52:6,7 58:4,7 95:2 113:5,16 L laid 82:12 83:12 84:5 85:13,22 86:22 88:2 89:1 language 28:16 116:3,11 large 23:21 114:6 larger 108:9,11 108:17,18 109:3,15	114:11 118:13 lay 22:2 layman's 99:15 lays 85:1 learn 113:2 learned 18:6,11 lectures 98:16 led 112:8,14 left 80:6 Legal 1:24 length 114:17 let's 9:25 11:8 23:24 33:9 63:16,19 80:13 111:23 112:1 115:8,8 level 17:3 27:2 93:11 109:15 109:19,20,20 110:6,10,13,20 111:1,8,15,19 112:9,10,15,16 112:20 114:2,3 118:13 Liang 2:4 3:5 8:16 9:3,10 11:1,6 13:3,6 14:9 29:1 35:8 36:4,18 37:2 38:12 39:11 40:1,6,11,15 42:14 48:23 50:1,7 52:19,21 54:9 55:9,18,21 56:12 57:6,25 58:9 66:14 76:18 79:21 80:9,11 106:2,5 106:10,20 108:13 109:17 110:12 114:4 114:13 115:4,8 115:13 116:1 117:4,14,22 118:2,3,22 119:6,16
--	---	---	--	---

lies 55:14 86:9	Lindahl's 111:14	117:12	lot 60:25 80:6	Matroska 20:24
lives 98:5	113:8	locating 40:22	112:7	21:7,8,14,17,20
limitation 40:22	line 3:13 22:23	41:10,18,21,24	lots 11:4 13:24	21:23,25 22:25
41:6 43:21	24:5 32:4,5	42:12,20 43:1,6	100:15	23:16 24:2,13
44:16,20,25	46:17,22 47:3,8	43:9,11,18	LOWENSTEIN	24:18 25:7,17
45:3,16,19 56:6	47:11,18,23	44:20 45:4,20	2:9	27:4,12,15,24
56:25 57:3,10	48:22 49:1,10	45:23,24 46:10	lower 109:20	28:4,9 29:22
58:23 59:10,19	49:16 59:3	56:25 57:13,22	110:13 114:18	30:2,5,12,19,21
61:1 83:3,8	113:23 114:10	58:25 60:12,21	lunch 79:20,22	30:25 31:8,12
117:18	116:10 118:6	61:1	80:12	31:23,24 32:2,3
limitations 51:19	122:2,4,6,8,10	location 38:11	LYTTON 2:5	32:13,22 34:9
58:21 60:24	122:12,14,16	46:7 56:22 58:5	L-I-N-D-A-H-L	matter 5:21 7:10
93:19 113:20	122:18,20,22	58:23,24 61:8	13:13	8:20 12:2,9
116:7	123:2,4,6,8,10	61:13		121:11
limited 118:12,18	123:12,14,16	logical 41:15	M	McDaniel 1:15
limits 61:13	123:18,20,22	78:16 79:12	machine 63:8,22	3:2 4:1,4,11,14
Lindahl 13:13	124:2,4,6,8,10	long 5:6 55:19	64:3 77:14	9:10 11:13
14:7 36:12,16	124:12,14,16	longer 86:24,25	machines 62:11	28:23 29:4,19
36:25 37:3,4,6	124:18,20,22	87:15 114:20	62:16	49:4 53:12 56:2
37:8,10,17,21	lines 20:22 21:13	look 7:12 10:19	Magna 1:24	79:21 97:10
37:23 38:6 62:7	24:2,12,19 25:9	11:2 20:12 25:1	magnitude	115:14 119:3
62:10,19,25	25:14 26:2,15	26:3,7,17 28:14	100:13	121:22 122:25
63:1,14 64:2,8	27:25 29:23	33:4 39:17	making 46:6	123:25 124:25
64:24 65:5,16	47:20 48:8,11	41:21 50:9 52:8	78:21	mean 12:22 16:2
65:18 66:4,11	48:14 90:20	53:8 61:2 64:24	management	21:19 22:4,10
66:19 68:6,23	116:17	68:15 69:2,10	14:16 17:7,15	23:1 30:24
69:1,2,2,5,8,15	listed 8:12	69:23 71:1,4,6	51:4,16 69:9,11	42:16 43:12,14
69:18,21 70:1,6	little 4:23 5:1,17	71:17 74:13	70:13 75:19	43:15 52:21
70:9,11,18,21	7:12 8:10 9:25	75:24 77:12	77:4 81:2,4	54:1 57:8,12
71:2,5,7,9,12	11:7 25:2 29:6	78:3,11 79:3	91:7 97:22,23	58:10 61:24
71:23 72:3,5,11	38:17 105:2,13	87:23 94:23	98:4,15,22	65:15 68:11
72:13,16,21	108:21,23	96:22 99:3	102:25	71:22,25 72:2
73:10,12,16,19	114:18	110:3 113:1,20	manner 63:10	72:11 73:8,11
73:22 74:6,24	LLC 1:5,8 7:3	114:15,16,18	manufacturer	79:21 80:22
75:11,22 76:23	local 63:22 77:14	looked 9:15,16	19:1	81:18,22 94:24
77:4,9,21 78:1	locate 13:20	9:17 11:12 14:2	manufacturing	102:17 105:24
78:8,11,22 79:5	41:13,16 58:5,8	14:16,17	19:14	106:23
79:9,15 80:19	59:8 60:10,19	113:23	map 93:23	meaning 16:21
80:20 81:3,11	76:4	looking 14:11,14	mark 16:12	66:11 68:6 83:2
81:20,22 82:20	located 15:2 45:8	40:25 69:20	marketing 84:9	means 6:15 28:11
83:14 84:19	46:23 47:4,12	88:3 95:8	markup 28:16	42:20,21 51:21
87:4,23 88:4	47:24 48:15	looks 28:19	material 9:18	65:9 68:13
89:12,20 99:8	49:11,17 51:2	LOS 2:10	materialize 102:5	73:17
99:10 112:8,14	53:5 54:8 55:8	lost 40:7 48:9	materials 7:19	meant 43:4 101:2
112:18 113:2,6	58:15,21 59:21	50:14 59:4	11:3,4 13:18	media 17:6 21:2
113:10,15	116:20,21	60:14 87:6	14:4	21:5,6,9 23:15

23:20 24:16,17 24:21 30:20 31:7 32:1 33:2 33:3 34:1 39:14 62:12,12,13,14 62:15,20 63:4,6 63:6,10,11,15 63:21,21 64:10 65:6,7,19,19,20 66:9,13,21 68:17,17,18,18 68:24,25 69:7 69:14,19 70:3,8 70:23 72:7,15 74:17,17,19 75:25 76:2,2,3 76:4,4,5 77:2 77:13 82:4,21 83:1,9,14,16,23 84:20 85:16 86:5 87:25 104:3 112:19 medias 73:15 meet 83:7 104:24 memorized 53:14 memory 102:10 mention 74:24 mentioned 63:17 93:11 94:6 110:10 115:17 merely 99:17 met 7:20 93:19 metadata 74:17 method 75:25 methodology 96:21 methods 96:17 mic 9:25 microphone 36:14 middle 29:8 62:9 65:17 mind 8:13 29:7 35:12 minutes 55:21 79:23 112:2	115:6 misheard 40:5 missing 87:16 misspoke 74:10 model 98:9 models 98:18 102:21 modification 22:21,25 24:9 28:3 30:4 31:12 35:6 36:2 37:11 37:18 modifications 23:6 24:22 30:8 30:9,17,25 36:10 modified 22:7,16 22:17 23:4 24:2 24:5,19 26:6 28:5,5 30:5,5 30:19 31:24 32:3,13,22 34:20,22 77:6 111:20 modify 22:4 27:4 27:12,16,23 29:22 30:2,14 modifying 21:22 22:1 28:21 38:4 38:6 moment 4:22 8:13 11:8 94:2 morning 4:9,10 4:10 motivated 77:1 85:19 88:3 motivation 63:1 64:19 65:10 91:2 movement 67:1 moving 67:8 113:22 MPEG 37:7 69:7 70:25 89:17 MP3 69:7 MP4 21:7,24	25:12,16,16 34:1 MULLIN 2:4 multicast 39:3,24 multimedia 27:6 61:19 multiple 33:13 33:14,15 70:2,7 70:19,22 71:12 89:15 95:18 99:1 101:18 M-C-D-A-N-I-... 4:15 N name 4:12 120:15 narrower 67:10 native 103:9 natural 116:3,10 nature 102:4 necessarily 34:20 35:6 59:8 60:3 60:10,19 107:18 116:20 necessary 41:22 95:25 105:25 need 4:22 5:3,6 6:15 20:8 23:5 30:16 32:23,25 35:1 53:23 54:3 63:12 70:4 80:7 95:8 104:12 105:19 106:2 107:25 109:9 109:10 111:20 needs 88:20 103:17 105:8 106:14 negotiate 92:13 negotiation 92:16 Netflix 1:5 6:25 121:5 network 33:20 63:7 65:20 66:16 67:15	68:2 networks 15:24 19:9 new 23:9 42:7 nonmodified 31:23 nonresponsive 50:22 nonstandard 31:13,17 32:24 normally 28:8 note 41:21 74:24 102:18,19 notes 16:18,21 115:5,5 notion 21:1 112:24 novelty 17:8,10 NOVEMBER 1:16 4:2 number 10:16,20 22:2 33:8 93:8 103:10 111:11 112:23 O oath 121:16 Object 14:9 35:8 36:4,18 37:2 38:12 39:11 42:14 50:1,7 54:9 56:12 57:6 57:25 58:9 66:14 76:18 106:10,20 108:13 109:17 110:12 114:4 114:13 objection 6:7 55:9 115:23 116:25 117:2,7 117:20,21 118:21 119:16 objections 6:4,5 6:11,12 obligated 9:2	obtaining 44:6 44:10 obvious 78:24 85:23 86:20 88:18,24 91:6 obviously 7:18 30:16 obviousness 15:12,15 82:11 82:16 occasionally 40:11,12 occurring 78:5 offer 121:16 offered 3:9 OFFICE 1:1 Oh 52:21 74:8 75:6 96:18 okay 5:15,25 6:21 7:2,8,13 7:24 8:3,13 9:10,15 10:15 10:19 11:25 12:8,18,23 13:5 13:12,23 14:13 14:25 15:11 16:5,10,16,24 17:22 18:3,5,10 18:25 19:3,8,16 20:1,10,13,24 21:8 22:7,23 28:22 30:18 31:5,5,19,25 32:1 33:2 34:11 34:19 35:12,25 37:10 38:24 40:15,22 41:2,8 41:9,14,17 42:8 42:23 43:5,25 44:1,16 46:15 46:20,21 47:7 47:21,22 48:7,9 48:12,21 49:9 49:21 50:11 52:18 55:17 56:2,9,24 60:1
---	--	---	--	--

60:8 61:7,24 62:6,9,19 63:16 64:7 65:13 66:4 66:10 67:2,10 68:12,23 71:20 73:10 74:12,23 75:10,15,21 77:5,17,23 78:6 78:21 79:5,14 79:19 80:17 81:21 82:8 83:13 85:14 86:17 88:8 89:3 89:12 90:20 91:1,17 93:16 94:4,5,12 95:10 95:13 96:4,19 97:2,19 99:7,10 99:15 101:20 103:13,20 104:19 105:17 106:5 107:22 108:10 110:9 111:4 112:2 113:4,22 114:22 115:4,7 115:14,20 116:9,17 117:5 118:6,18,22 119:19,21 old 96:12 once 6:7 63:20 ones 8:11,11 open 8:22 23:19 opine 82:3 opinion 27:9 29:19 94:12,18 95:10 opinions 11:22 12:5,10 15:4,14 26:7,8 117:6,17 opportunity 54:2 112:21 opposed 67:24 68:9 75:22 89:14 91:3	101:22 109:15 112:9,15 option 29:5 optional 28:7 order 22:8 31:18 33:17 36:2 37:24 52:8,8,15 59:24 60:2,6,8 60:17 100:13 102:9 105:25 107:1 ordinary 27:10 27:21 29:20 original 23:3 originally 22:19 Outside 53:11 overall 103:11 overhead 91:9 100:1 102:22 103:3 owner 1:8 2:8 7:14 10:3 17:18 Owner's 9:17 10:11 P Pacific 115:9 page 3:3,13 103:9 103:10,10,10 103:13 115:22 115:24 117:16 122:2,4,6,8,10 122:12,14,16 122:18,20,22 123:2,4,6,8,10 123:12,14,16 123:18,20,22 124:2,4,6,8,10 124:12,14,16 124:18,20,22 painful 80:4 PALO 2:5 papers 14:3 para 82:17 paragraph 17:4 21:1 33:9,11	35:15 37:4,6 51:5,6 62:7,10 62:19,23,25 63:3,16,19 64:2 64:7,8 65:5,16 65:18 66:4,8,10 66:19,23 68:6 69:21 71:3 72:5 72:8,13 73:18 74:15,21,23 75:4,24 76:15 76:22 77:9,12 78:4,6,12,14 79:3,14 81:14 82:1,7,12,21 83:11,12 84:5 84:18 85:1,14 86:3,4,4,7,18 87:7,12 88:11 88:14 89:16,21 90:2,8,14 93:25 94:6 97:7,9 98:13 99:8 103:14 104:20 105:18 112:18 112:22 116:2 paragraphs 33:23 82:17 parameters 76:7 76:9,12 78:13 81:5 90:1 paraphrasing 79:10 Parham 2:9 40:11 PARK 2:10 parsing 94:15 part 11:16,18 13:18 21:17 35:12 37:20 41:5 61:5 62:24 77:20 78:7 85:20 90:12 107:17 112:12 partial 36:7 37:13 81:4	110:19,25 111:14 112:25 113:4,12 partially 37:15 112:19 particular 15:9 15:17 22:22 24:9 30:25 31:13 33:7 35:16,21 36:20 49:19 51:5,11 51:22 66:25 67:5 73:5,20 75:20 86:12 92:2 98:9 101:7 102:1 106:21 106:22 107:20 110:5 116:19 118:18 particularly 62:25 parties 11:12 92:14 parts 12:11 22:6 23:9,11 28:19 30:11 37:15 52:3 69:19 80:24 105:25 106:1 108:4 116:13 party 92:12 93:9 passed 39:8 patent 1:1,3,8,11 2:8 7:3,9,14 9:17 10:3,4,8 10:11,15,16,20 10:21 11:14 16:6,7,8 17:1 17:11,18 20:16 20:21 21:13,13 21:19 22:24 23:1 24:3,6,12 24:20 25:10,15 26:2,16 28:1 29:24 30:19,20 31:4,7 32:4,5	38:10 39:17 40:19 43:20 46:16,21 47:3 47:10,22 48:13 49:6,9,15,23 50:4,12,16 51:1 52:4,13,14 53:2 53:3,20,25 54:3 54:5,6 55:1,5,6 56:3 69:23 70:14 71:15 74:25 75:11 78:11,11 92:5 Patents 7:4,6 pathological 38:3 58:10 patient 53:24 Patrick 1:15 3:2 4:1,4,14 121:22 122:25 123:25 124:25 penalty 121:8,9 pending 5:5 16:25 104:14 Pennsylvania 58:20 people 20:6 38:14 69:2 75:14 95:24 98:3,21 percentage 101:21 perfectly 53:25 perform 23:12 30:9 32:25 33:18 38:1 56:20 61:9 78:1 107:1 108:3 112:9,15 performance 92:3 performed 15:17 63:6 79:4 108:8 111:1,18 performing 77:16 108:16
---	---	--	---	---

periods 114:20 perjury 121:8,9 permissible 9:9 permitted 5:20 6:10 person 27:9,21 29:20 59:23 76:25 84:7 85:18,22 86:20 88:17 91:17 personally 18:18 petition 8:6 Petitioner 1:6 2:3 phase 107:2 phone 28:23 29:5 36:13 40:13 74:4 108:22 phonetic 23:13 23:22 50:19 84:9,11,14 91:9 Ph.D 1:15 3:2 4:1 4:4 121:22 122:25 123:25 124:25 piece 15:9 22:22 107:19 pieces 13:14 15:7 33:17 pin 18:2 pivot 62:24 place 51:22 62:1 120:8 places 22:3 51:20 play 23:15 24:1 24:18,23 30:5 30:13,20,21 31:7,24 32:2,10 62:14 playback 23:12 25:6 30:10,15 31:2 93:7 108:3 played 28:4 64:4 player 23:17,18 23:24 24:1,17 24:21 30:21 31:7 32:1,6,23	33:2 players 23:20 playing 31:23 105:6 playout 104:4,6 please 4:13 5:3 6:16 8:15 9:24 20:22 40:20 41:3 48:8 49:3 50:23 52:10 54:3 55:3 56:2 71:11 76:20 90:24 91:21 94:1 97:7 99:7 103:6,7 115:22 118:4 plugs 81:6 plurality 76:6 pocket 36:14 point 35:23 52:22 52:23 68:8 70:10 71:3 92:1 pointed 68:16 90:14 points 93:15 policies 39:6 popular 89:17 portion 21:12 23:1 44:5 45:5 46:9,23 47:4,12 47:24 48:15 49:11,17 52:24 56:7,10,19 57:4 57:24 59:7,15 59:20 60:4,9,17 61:3 107:1,17 portions 43:22 44:8,12,18,22 45:2,18,21 46:8 46:14 56:11,18 57:1 59:9,17 60:2,11,20 61:4 61:6 116:12,13 116:19 POSITA 72:22 73:2 77:6	possibilities 88:21,25 possible 53:10,16 53:17 54:21 56:9,17 105:14 105:15,17 110:19,25 111:3 possibly 7:11 potential 104:16 104:21 potentially 23:9 101:17,18 109:22 110:14 pour 31:17,22 practice 61:12 94:7,13,18 95:15,22 preamble 5:15 precise 93:17 96:15 preliminary 10:3 preparation 7:25 8:7 prepare 7:16 12:14 prepared 11:3 12:16 prepped 96:23 preprocessing 91:10 presented 13:19 presumed 105:23 pretty 14:16 15:22 23:21 35:9 81:6,8 previous 58:23 61:1 prime 39:4 principally 33:23 principle 97:13 97:22 prior 12:18,20 13:9,14,20,24 14:2,3,6,22 15:1,6,8,10,18	17:17 20:13,15 29:15,17 75:1 113:6 privilege 5:22 8:24 13:1 119:16 privileged 8:20 9:11 probably 14:14 14:15 18:4,8 27:7 30:13 36:10 77:11 problems 68:2 proceedings 120:9,13 process 32:13,22 32:24 36:9 58:24 59:8,16 60:3,9,18 89:21 90:4 91:8 92:16 processed 68:18 68:21 processing 31:16 31:21 64:22 68:20 69:6 92:2 processing-inte... 63:13 product 75:10,15 products 18:19 75:20 programmed 19:1 22:13 programs 22:18 prompted 14:6 property 112:8 112:14 proposed 35:20 82:3,20 88:13 proposing 82:9 82:24 83:7,14 83:22 87:8 proposition 95:14,22 97:20 98:1 pros 109:2,8,13 110:8,9	protect 31:15 protected 24:16 46:9 47:5,13,25 48:1,16 49:12 49:18 116:14 protection 97:15 protocols 95:4 96:2 provide 4:18 38:17 51:10 52:5 71:3 73:6 85:8 97:15 99:15 105:4 provided 13:9,19 14:8 42:22 64:9 78:14 117:17 provider 66:6 provides 63:1 109:20 113:10 providing 34:16 52:15 64:19 81:4,7 86:11,13 105:21 publications 20:11 purchase 62:13 purchased 62:14 62:15 purpose 27:17 70:9 92:15,23 purposes 34:3 pushing 67:14 put 29:6 36:13 53:10,17 67:13 67:18 117:1 putting 55:10,12 P-A-T-R-I-C-K 4:14 P-O-S-I-T-A 73:2 p.m 80:2 119:24
Q quality 20:2,5 question 4:25 5:5 6:7,15,17,18,25				

9:9 10:9,24 13:12,16 16:13 16:25 19:20 23:25 24:10,11 24:24 26:11 30:24 31:19,21 31:25 32:15,17 35:2 36:24,25 37:16,17 39:18 39:19 41:4,23 42:7,9,10,25 43:11,17 44:23 45:13,14,15 47:1 49:4 50:23 50:25 51:25 52:1,10,11 53:1 53:13,15,19,22 54:4,17,20 55:4 56:13 57:20 59:11 60:1,15 61:22 65:3,3 69:3 70:17 71:7 71:9,12 72:10 74:1,6 76:19 77:7,8,17,18,20 80:18 81:24 82:18 84:22 91:17,18,20,21 93:16 94:17 95:21 96:15 99:20,23 101:3 102:13 103:21 104:14 106:16 107:5,9,11 108:21 109:6,7 109:12 110:24 119:11,13 questioning 8:22 59:3 questions 5:19 29:17 99:19 111:25 112:6 115:3,9 116:7 118:23 119:14 119:22 quick 5:15 79:20	80:18 quickly 113:22 quite 83:5 quote 62:16 63:20 65:21 82:4,21 83:8,23 83:25 84:19,21 86:5,6 90:23 94:6,9 103:14 103:18 R range 15:23 ranges 108:19 rate 67:15,22,22 68:7,7 Ray 97:4 read 7:18 22:24 23:3 44:17,17 48:17 104:20 105:2,2,3,10 121:10,12 readily 28:16 reading 41:19 48:9 53:9,9 54:12 76:14 78:11 90:12 91:6 92:5 reads 28:10 ready 41:9 49:3,7 49:8 reality 64:22 really 19:5 20:7 21:21 26:7 34:4 34:5,15 35:17 38:2 45:25 60:24 61:14 64:2,19 66:23 71:9,18 81:6 89:4 102:5 110:16 112:18 reason 4:17 19:16,21 20:4 91:2 reasons 96:6 97:5 98:3	recall 17:23,25 26:23 receive 72:6 106:24 107:7 107:13,14 received 12:11 45:17 64:11,14 65:7 68:17 103:17 104:7 105:9,19 106:14,18 receiving 41:18 41:25 42:1,5,10 42:13,24 43:2,5 43:6,8,12,13,19 recess 55:25 80:12 112:4 115:10 recited 59:10,18 60:13,22 recognize 22:9 22:13 84:8 recognized 22:12 22:18 reconvene 115:8 record 4:13 7:22 11:8,10,12 20:18 29:10,12 29:18 42:11 80:10,13,14 120:12 recorded 93:14 recording 98:16 redirect 118:24 119:14 redo 31:24 refer 16:12,14 17:2,4 20:21 31:3 46:16 47:7 47:17 48:21 51:20 98:8 116:9 reference 12:20 33:6,11 37:6 38:10 65:4 77:12 90:18	referenced 8:6 12:21 25:9,14 26:1 27:25 35:13 38:9 70:25 71:16 105:18 references 12:19 14:7,22 15:1 35:21 89:13 referencing 65:5 referred 21:7 24:23 26:15 37:4,6 41:7 referring 15:20 16:8 24:7 26:20 34:5 35:10,17 36:20 37:20,21 66:8 74:10 82:16 89:23 90:2 refers 33:8 reflects 117:10 regarding 5:20 12:2 15:14 117:18 reinforces 82:11 reinforcing 82:15 relate 17:12,14 17:15 117:5 related 26:7,8 27:3 41:6 114:23 relates 15:5 relating 5:22 relative 100:1 relatively 27:11 relevance 117:8 relevant 13:25 15:3,7 relies 80:19 rely 13:21 36:1 relying 35:21 remember 9:13 9:20 10:6,14 18:16 28:14 34:13,13 97:1,5	116:6 remote 1:15 2:1 3:2 4:1 65:18 119:23 120:7,9 120:9,12,13 121:10 remotely 120:6 remove 22:5 repeat 32:14 35:1 42:25 49:13 51:14 52:10 55:4 60:15 65:3 72:19 102:13 repeated 70:4 repeating 29:16 rephrase 24:11 26:11 60:1 81:24 82:18 110:24 replaced 97:3 replacement 82:14 replay 109:23 report 7:18 8:12 12:17 16:10,13 16:14 17:4 20:25 21:21 22:2 26:9 30:1 33:10 34:24 37:4 40:24 41:6 43:24 48:10 62:21 63:1 72:5 81:14 82:13 89:16 90:14 113:11 117:11 reported 120:10 reporter 25:19 28:24 29:9 32:14 34:25 48:1 49:13 51:13 52:20 57:16 58:17 59:11 60:14 64:12 67:16,19 70:4 71:24 72:19,24 73:23
---	--	--	---	--

73:25 74:3,5 76:19 80:15 90:11 100:7 102:12 104:17 107:8 108:24 112:12 120:3 REPORTER'S 120:1 representation 85:6 89:6 representations 33:16,16,19 77:3 82:5,22 83:2,10,24 84:21 85:3 86:1 88:22 89:10 represents 102:21 reputation 19:4 20:2,9 request 5:4 69:19 requested 46:8 46:23 47:4,12 47:24 48:15 49:11,17 61:5 116:12,13 requesting 44:5,8 require 13:7 22:8 30:4 31:16 35:6 36:1,8 37:11,18 67:23 68:8 83:17 106:17 107:6,12 108:19 required 23:11 30:9 55:6 57:3 108:3 requirement 41:15 51:21 104:21,25 106:23 requires 37:14 44:4 54:18 57:23 research 15:21 16:3 18:9 19:8	19:23 reset 91:12 resolved 23:1 respect 12:6 respective 62:15 response 9:17 10:4,12 31:20 45:9,11 46:4 51:24 58:14 83:6 responsive 42:23 51:25 restate 45:15 restrict 50:19 restricted 36:20 restriction 104:15 retained 6:21 7:9 7:13 retention 17:17 20:15 retrieve 41:16 retrieving 41:11 41:12,22 42:4,9 42:16,22 76:7 reused 102:11 Reusing 97:14 reveal 8:17 9:11 13:4 119:7 review 8:7,19 16:24 40:24 53:23,24 54:3 94:2 reviewed 7:19 8:15,22,23 9:2 9:8 11:14 75:9 115:18 reviewing 14:18 16:19 30:18 41:5 43:24 49:5 50:18 62:21 64:24 69:23 117:10 right 10:2 36:14 39:14 56:4 61:16 62:6 64:1	79:17 80:8 88:17 97:25 106:3 107:5,16 115:18 rights 17:7,15 51:4,16 69:9,11 70:12 81:1,3 rough 101:20 rule 100:12 S sack 95:5 save 121:13 savings 101:21 102:9,15 saw 11:16 112:21 saying 34:4 42:5 45:7 46:10 51:12 59:22 64:22 84:25 87:21 104:15 104:21 118:15 says 21:24 58:21 58:23 59:19 61:7 63:4,20 76:12 78:14 79:6 82:7 85:15 86:4,4 89:21 90:21 103:14 116:2,10,18 118:7 schedules 102:10 scheduling 101:14 schemes 99:11 100:16 science 26:25 27:3 scope 50:19 115:23 117:3,7 117:20,21 Scramble 96:9 96:10,16,24 scrambling 96:12 96:13 screen 29:8	search 13:20 14:6 second 10:10 39:18 41:23 51:5 71:20 74:20 85:21 88:4 106:6,7 116:5 seconds 33:18 section 49:5 sections 12:16 security 15:23,23 17:6,12,15 19:10 27:7 39:2 39:3 84:23 97:13 98:5,6 see 9:25 10:20 11:18 38:5 42:24 62:17 63:24,25 68:4 69:20 75:3 79:17 84:25 91:25 94:10 97:17 99:13 103:19 111:5 116:2,15,22 118:10 seeing 29:7 34:13 seek 70:11 81:23 segmentation 33:13 segments 33:18 33:19 select 45:25 62:13 selected 44:5,9 46:9,11,24 47:5 47:12,25 48:1 48:15 49:12,18 61:6 116:14 selection 8:19 sending 62:4 sense 59:22 66:21 72:17,22 84:7 85:2 110:4 111:12,15	sensitive 83:16 84:8,11 85:12 88:7 93:5 97:16 98:12,19 sent 49:24 50:6 sentence 62:9 63:20 65:17 68:15 74:22 79:5 85:14 90:21 94:5 103:19 105:3 118:7 separate 85:7 separately 103:16 104:10 106:13,17 107:25 108:6,7 server 21:3 33:19 65:20 66:6,9 68:17 72:7,15 73:15 74:18 87:25 servers 74:19 service 75:16 services 1:24 23:20 set 13:9 84:6,12 84:13 85:5,13 85:24 86:21 87:17 88:2,5,9 88:15,15,19,21 88:23,25 89:5,7 89:10,10,14,18 89:23 92:9 120:8 setup 101:16 SHEET 121:1,15 122:1 123:1 124:1 SHEPPARD 2:4 short 6:5 79:24 shortcut 11:7 shorter 79:23,25 Shorthand 120:3 show 55:2 69:21 79:5 96:14
---	---	---	---	---

shrinking 23:22	109:23 110:1	sorts 38:15 96:1	31:8,23 34:8,19	stopping 52:23
sick 4:20	110:14	Sounds 55:24	35:7 36:2,16,25	storage 62:13
side 40:25	smallest 49:24	source 23:19	37:5,12,19,22	68:19
SIGNATURE	50:5	27:19 65:19	38:5,6,8,14,22	stored 21:2 33:19
122:24 123:24	SMIL 28:13,13	67:8	69:6,7 86:13	62:12 63:11
124:24	28:15	sources 64:24	111:19	68:18 102:10
Signed 121:17	software 22:12	68:18	standardized	strategy 98:15
similar 28:24	22:18,22 23:2	space 19:7,14,23	34:5,6	stream 26:6
42:10	23:14 30:5	19:23 97:24	standards 26:18	39:13,14 44:5,9
simple 54:4 81:8	31:22 32:11,12	98:21	26:21 37:7	45:25 46:9,11
88:6	32:20,21,25	speak 5:20	38:17,23 39:2,6	46:24 47:5,13
simplicity 91:14	solution 63:2	114:23 119:4	70:24 71:1,17	47:25 48:1,16
simplify 77:4	85:10,20,21	speaking 6:11	96:1	48:20 49:12,18
91:7,8	88:4 98:20	15:22 62:4	staring 41:1	50:21 61:6 62:4
single 84:11 85:2	somebody 29:25	109:13	start 33:10 76:10	65:15,19,22
86:21 89:14,18	41:19 50:18	specialized 21:15	80:25 104:6,19	66:1,11,20 81:8
89:18 91:15	52:5,15 53:8	22:8,10 24:14	105:5 108:1	116:14 117:13
92:16 97:14	55:11,11 64:23	specializing	started 99:20	streamed 23:16
98:14 102:19	69:10,12,22	21:19,22	112:17	33:21 68:22
site 14:22	77:24 78:10,16	specific 9:13,14	starting 11:2,4	streaming 14:1
sitting 26:12	78:24 87:22	31:12 37:5 46:1	72:4 82:12	14:19 17:6,13
49:21 79:17	88:17 89:2,2,8	50:20 53:15,19	105:3	17:16,21 18:9,9
97:6 99:4	91:5,12 95:7	56:5 83:19	start-up 101:11	18:15,24 21:9
situations 105:4	98:10 110:2	114:16	state 11:25 59:11	26:5 33:12,13
sixth 55:4	113:1	specifically 56:5	87:23 97:12	34:17 38:16
skill 17:3 27:10	somebody's 17:3	65:17	98:1 112:12	39:4,9,21,23,25
27:21 29:20	someplace 61:2	specification	113:9,14 114:9	61:18,21 62:2
30:1 54:13	117:13	17:11 41:20	120:4	62:20 63:6,15
skilled 41:19	sorry 5:12 8:4	76:14	stated 6:7 12:2	64:10,17,23
50:18 52:6,16	9:22 19:19	specifications	82:20 83:10	65:5,6,10,13
53:8 54:11	34:25 40:9	113:21	86:7 96:6	66:5,13,21,25
55:11,11 69:10	44:23 45:9	specifics 113:12	states 1:1 45:4,20	66:25 67:5,21
69:12,22 76:13	46:25 58:14	specified 21:16	62:10 65:18	68:5 69:14,16
76:25 77:24	65:24 68:1 75:7	specifying 45:6	86:7 87:8	71:4 75:2,16
78:10,17,24	81:16 83:4 85:9	51:9	113:24	81:1 92:14,19
85:18,23 87:22	94:15 100:5	spell 4:12	statically 93:3	92:20 94:8,14
88:3,18 89:3,8	104:11,17	spends 97:24	stenographically	94:20 95:5,16
91:5 92:4 95:7	107:23 112:23	stage 98:5	120:10	95:17 96:2 99:1
97:23 110:3	113:17 117:1	stall 109:25	step 41:22 43:7,9	streamlet 90:21
113:1	sort 4:21 14:18	standard 13:25	43:9,9,18 44:4	114:3 118:7,16
skills 86:20	21:1,3 33:22	21:8 22:11,13	44:6,8,9 57:11	streamlets
slightly 22:1	35:17 51:9 58:3	22:19 25:7,12	57:13,21,23	113:24 114:5
42:22	65:22 66:2	25:17,24 26:13	59:18 60:21	114:14,19
slow 100:5	67:13 80:25	26:17 27:18	61:1,1,7 80:22	streams 21:2
small 8:9	87:19 95:1,18	28:13,14,15	steps 43:6 61:11	31:15 33:14,14
smaller 33:17	101:16 109:24	29:22 30:20	stop 69:3	85:24 89:19

93:20	supports 117:11	85:16 86:5,10	118:12	think 7:5,15,20
strike 8:4 12:13	suppose 5:16	87:8,25 88:1,10	teachings 63:15	8:10,14 9:13,17
12:19 15:12	104:3 105:3	88:14 92:8,11	85:19	9:18 11:7 12:7
17:9,23 18:11	108:20	92:24 93:12,18	technical 7:9	14:16 16:11
20:13 39:18	supposition	96:9,16,25	techniques 63:2	23:17,17,18
49:22 50:22	106:22 107:21	98:24 99:1	112:19	25:2,2 29:14
65:14 70:19	sure 6:14 11:18	102:2 108:12	technologies 20:7	36:5,13,21 43:3
92:7 107:23	11:20 14:25	111:7 112:8,14	tell 28:11 81:21	43:3 45:6,23,25
109:5	16:16 18:24	systems 14:1,18	104:2	51:3 58:1,1,11
structure 28:8,19	19:21 20:19	14:20 15:23	telling 35:12	64:18 65:2
30:11 104:4,7	22:11 24:5,24	18:15 25:16	Ten 55:21	70:15 74:9
105:22 107:3,6	25:3 26:10	26:5 27:6 51:9	ten-minute	77:11 82:25
107:12	29:11,17 31:3	52:7 89:9 92:12	111:23 112:1	87:18 95:25
structured 30:12	32:19 34:22	92:22 93:3,24	term 64:17 72:17	99:6 100:19
structures 27:20	35:5 39:25 42:8	96:10,13	72:23 73:3,4	102:17 104:23
39:6	42:19 43:8,25		terms 99:23	105:13 108:14
student 27:4	44:24 45:11,15		100:1,13	108:20 109:2,4
studied 11:17	46:5 48:11,18	T	101:21 102:24	109:9,10
stuff 53:23	49:7,15 50:4,15	take 4:22 5:4,5	testified 19:8	110:10 111:21
subject 5:21 12:2	55:18 56:20	9:1 23:24 29:9	81:17	114:16,19
16:9	57:7,10 58:13	52:25 53:7	testifies 4:5	thinking 117:10
subjects 27:8	59:14,25 62:22	55:17 61:25	testimony 4:18	thought 38:3
subscribed	66:18,18 67:5	80:22 104:12	6:3 115:17	40:4 60:25
120:15	70:6 72:21	106:3 111:23	120:9,12	61:15 75:6
subsequent 23:25	76:22 82:2,18	112:1	thank 4:11,16	99:20
57:3,23 64:1	83:4,6 84:16,17	taken 120:7,13	10:23 23:24	threat 98:9,18
subsequently	87:7 88:13	121:11	26:22 31:6,19	102:21
62:14 87:10	92:11,19 93:2	talk 4:23 5:1	34:7 46:15	three 5:11,13
97:3 116:17	94:17 99:21	38:13,19 75:13	55:16 61:16	10:13 14:7 15:9
subset 84:14	111:24	75:18 114:25	67:19 69:4,17	80:24
substance 6:2	sustain 67:15	talking 21:3 30:3	70:15 96:8	thumb 100:12
substantial 22:3	76:22 82:2,18	31:1 34:16,24	98:23 100:21	tied 37:5
sufficient 97:15	83:4,6 84:16,17	36:6 37:3 42:4	118:22	time 4:10,11 10:9
sufficiently 15:3	87:7 88:13	46:1,12 50:24	theoretically	11:22 12:1
suggest 28:22	92:11,19 93:2	51:6,17 62:23	53:17	18:13 19:13,17
111:7	94:17 99:21	64:21 66:4	thing 43:7,15,19	23:15 24:18
suggesting 64:20	111:24	68:16 69:9	94:24	25:18,22,25
65:10 82:15	synonymous	77:13 81:13	things 10:13 25:4	26:13,21 27:23
87:5,20 105:14	41:11,14,18,24	talks 45:24 69:5	28:16,20 30:14	53:12,23 55:4
suitable 84:2,23	42:3,12,24 43:1	76:11 78:6	34:16 36:7	75:20 79:19
87:11	43:12,14 66:12	104:1 112:18	39:23 54:14	88:12 89:18
SUITE 2:10	66:20	task 7:3	64:20 73:8 81:2	95:23 97:24
summary 112:17	system 20:6 28:4	taught 26:24	81:18 85:2	109:24 113:19
superfluous 57:2	31:15 51:6,17	98:4	96:12 98:12,13	114:16,20
57:8,12,23	73:5,12 81:1,7	teaches 33:12,24	101:13 113:12	120:8,13
supplied 13:15	83:8,19,22,23	72:5,13	114:19	times 5:10,13 7:8
	84:1,7,19,24	teaching 77:1		

7:20	truthful 4:18	69:13 72:23	89:7,15,22,24	59:17,20 60:3,4
today 4:11,19	try 10:22 19:20	73:2 77:24 78:4	90:4,9 91:2	60:9,11,18,20
16:19 96:23	55:3 58:20 59:3	91:13 92:5	92:17 93:20	61:5 69:6 71:13
97:6 114:22	68:2,4 79:24	97:24 99:22	101:22 102:9	75:23 76:16,23
117:17	99:19	103:5 106:1	110:23	77:10,21 78:8
today's 7:16,25	trying 4:25 27:14	109:7	user 49:25 50:6	79:6,16 85:4
20:13	27:14 42:19,19	understanding	63:5,7,8 64:4,9	88:22 91:4,24
told 9:6,7	104:23 105:4	18:10,12,17	64:10,13,17	92:10,12 93:1
ton 110:4	109:7	19:3,5,12 27:18	65:6,9 66:6,13	93:14,14,21
tools 23:19	turn 9:25 115:20	27:19 105:11	66:22 68:13,24	94:8,14,15,19
top 9:20 10:6	115:22 117:23	121:15	69:19	95:16,17 104:8
31:11 93:11	118:6	understood 6:18	users 62:11	105:23 107:22
99:6 103:10	turned 36:13	6:25 45:11	user's 63:22 64:3	107:24 109:14
topics 61:23	turning 118:1	71:20 72:18	64:4 77:14	109:14 116:4
totality 69:8	two 61:11 88:20	83:6	uses 52:7 66:11	116:11,14,20
totally 98:14	88:25 89:4	Unified 7:3,4,6	73:16 74:14	videos 75:17
TRADEMARK	99:18,19	unique 83:17	86:18 102:2,3	97:14 99:2
1:1	105:21 109:9	101:2,6,19,22	110:22 112:25	view 17:8,10 64:5
trade-off 98:6	two-word 6:5	102:3,20,23	utilized 31:15	113:8 117:11
traffic 95:6	type 67:2,6,7	unit 49:24 50:5	76:8	viewing 68:13,14
training 63:2	93:8	107:20	utilizes 96:25	virtual 37:10,17
transcribed	typewriting	UNITED 1:1	utilizing 80:21	virtue 59:6,14
120:10	120:11	units 109:23	U.S 11:14 16:8	VLC 23:19
transcript 121:10	typical 21:9	110:14		vs 1:7 121:6
transfer 66:1	typically 21:2	universe 23:21	V	
102:25	51:7 93:4 95:19	university 98:17	vague 6:12	W
transferring 66:9	typographical	unmodified	vaguely 96:18	wait 107:6,12
transmission	85:15	22:19 25:7,12	variable 67:22	waiting 67:24
66:3,24 67:12	T's 98:7	30:21 31:8 32:2	68:7	109:25
67:23 68:7		unplayable 30:16	various 92:14	waiver 9:5
transmit 65:19	U	unreadable 25:5	Verizon 58:19	want 5:11,13 9:3
66:12,20	ubiquitous 94:25	unsubscriber	versions 33:16	16:12,16 42:8
transmitted	Um-hmm 40:1	6:24	versus 66:24	55:17 80:1 85:7
93:14,15	52:19 94:3	use 23:22,25	102:20 109:3	98:15 99:21
transmitting	undergrad 26:24	28:23 33:13	video 17:6,13	106:2 108:15
66:5 67:6,7,11	undergraduate	36:16,25 51:7	19:24 21:1	111:24
transport 96:2	27:2 98:6	51:17 59:23	33:14 39:4,10	wanted 27:16
tremendous	underlying 104:8	64:16 71:5	40:12 43:23	52:22 115:16
61:14	105:23	72:16,21 75:17	44:13,19,22	wants 119:12
TRIAL 1:3	understand 5:23	76:13 78:15	45:2,5,19,22	warn 4:20
trick 61:22	6:8,22 19:19	80:20 83:17	46:9,14,24 47:5	wasn't 16:16
trouble 29:2	20:8 23:3 24:22	84:11 85:3,5,10	47:13,25 48:2	19:25,25 32:7
60:23 94:15	24:24,25 28:20	85:13,23 86:8	48:16 49:12,18	87:20
true 59:6,14	42:20 45:9	86:14,21 87:24	50:13,17 51:2	way 14:17 28:8
86:24 120:12	52:16,17 58:14	88:2,5,6,19,21	56:7,10,18 57:1	30:2,15 71:18
121:12	60:6 65:24,25	88:22,24 89:5,6	57:5 59:8,9,16	86:12,15,16,17

86:22 95:3,7 104:16,22,24 105:15 107:2 ways 89:4 WEATHERW... 2:9 web 95:5 week 7:21 weekend 4:22 welcome 29:14 80:17 well-known 21:11,25 89:15 97:13,20 98:1 went 7:19 weren't 54:15 we've 9:12 WHEREOF 120:15 wife 114:25 Window 24:21 Windows 23:17 23:24 24:1,17 33:2 witness 3:2 8:17 8:21 9:15 10:24 11:2 13:1,5,9 14:10 25:21 29:6 32:16 35:2 35:9 36:5,19 37:3 38:13 39:12 40:3 42:15 48:4 50:2 50:8 51:15 54:10 55:10,24 56:13 57:7 58:1 58:10,19 64:16 66:15 67:18 73:24 74:4,9 80:3 90:13 100:6,10 102:17 104:19 106:4,6,11,21 108:14 109:18 110:13 114:5 114:14 115:24	117:9 119:6,9 119:17,20 120:6,15 wondering 40:6 40:7 word 42:3,12 43:12 65:15 66:11,12,20 72:16,21 73:11 110:23 words 79:8,9 work 15:22 19:6 19:17 20:2,3 23:10 28:21 52:17 worked 12:10 working 12:12 16:4 89:2,9 works 28:9 worries 56:16 59:5 worry 80:2,7 wouldn't 18:20 50:19 58:4 75:13 80:7 93:11 111:5 writes 27:19 written 44:14 wrong 77:11 www.MagnaL... 1:25 X XML 28:15 Y yeah 11:1 18:4,7 18:24 19:2 20:12 32:16 36:5 38:13 40:6 40:7,11 41:5 48:25 57:7 59:19 70:25 74:3,9,13 80:3 80:10 93:22 97:1 98:3	105:13 108:14 113:17,17 year 14:15 16:1 18:13,18,21,22 18:25 19:4,9 21:9 29:20 61:18 75:16 92:7,25 93:18 years 16:4 18:3 0 0006 37:6 1 1 40:19 41:10,17 41:20,24 42:12 42:20 43:1,3,4 43:9,10,12 44:2 44:20 45:3,20 45:23 52:3,13 56:3 57:2,15,19 59:6,14 60:9,18 93:12,19 103:13 116:3 116:11 1E 81:13 83:3,8 1L 41:6 116:7 117:18 10 18:3 55:22 112:18 10,225,588 1:11 10-225-588 16:8 10034 120:22 1006 12:21,24 33:6 103:7 1007 13:12 1008 13:16 90:18 113:23 102 65:20 106 33:11 65:19 108 65:20 109 37:4 110 62:13 112 62:11,16 114 62:11,16 115 3:5	118 62:25 119 3:4,14 33:9 33:24 35:14,15 123 74:23 75:5 13 3:14 47:7,11 133 75:6 14 31:11 32:4 48:8,11,12,14 75:24 76:10 78:4,12 79:3,11 144 72:5 81:14 82:1,21 83:11 83:12 84:18 85:14 86:4,4,10 86:15 87:7,21 98:13 145 97:7,9 146 84:5 85:1,13 85:22 86:3,7,13 86:16,18,22 87:12 88:2,11 88:14 147 82:12 15 8:2 31:11 32:5 48:22,24 49:1 49:10,16 115:6 16 1:16 4:2 47:17 47:19,20,23 112:23 17 48:8,11,12,14 18 20:22 21:13 24:2,5,19 25:10 25:14 26:2,15 28:1 29:23 90:20 113:23 114:10 118:2,6 1880 2:10 19 22:23 24:12 198 94:1,6 2 2 43:20 44:2,4,19 44:25 45:7,16 45:25 46:12 51:6,16 52:3,13 2:10 115:9	2:12 119:24 20 8:2 16:4 79:23 115:6 20th 120:16 2000's 14:4 39:1 2009-0290706 11:15 2011 16:1 18:13 18:18,21,22,25 19:4,9 21:10 23:15 24:17 25:25 26:13 27:23 29:20 33:2 34:8,11 37:12,19 38:9 38:16 61:18 72:18,23 73:3 75:16 92:7,8,25 93:19 94:14,20 95:11 98:24 2020 1:16 4:2 120:16 121:18 21 48:22 49:1,10 49:16 217 90:14 22 48:8,10,11,14 23 20:22 21:13 22:24 24:3,6,12 24:19 25:10,14 26:2,15 28:1 29:23 46:17,22 47:3 25 48:22,25 49:10 49:16 29 46:17,22 47:3 3 3 31:4,7 32:4 3GPP 33:25 34:8 34:11 35:18 36:10 3GPP2 34:2 3:00 79:22 30 7:11 16:4 115:22,24 117:16
---	--	--	---	--

304 90:21 113:24 118:7 33 47:18,20,23 379 2:5 39 65:16,18 66:4 66:8,10,19,23 68:6 103:9,13 4 4 3:4 70:25 40 62:7,10,19,23 72:5 45 112:1 48 74:13,15,21 76:11,12,15,23 77:9,11 49 47:18,20,23 5 5A 90:3 50 32:5 511 6:22 522 103:14 105:18 54 89:20,21 90:3 57 47:8,11 588 16:6,7 17:1,5 17:11 20:16,17 20:21 21:22,23 23:10 26:4 30:18,20 31:11 39:17 40:19 41:20 46:16 50:25 51:12,21 52:2,4,12,14 53:2,2,9,20 54:5,24 55:1,5 55:6,12 56:3 6 6A 90:3 6B 90:3 6:00 80:2 61 33:23 63 32:4 33:23 47:8,11	64 73:18,19 74:10 65 63:3,16 64:7,8 64:17 65:5 650.815.2685 2:6 66 17:4 63:19 64:2 72:9 77:12 77:12,23 78:6 78:14 79:11,14 90:20 113:24 114:10 118:7 666691 121:4 67 90:20 114:10 69 103:10 7 708 63:4,9 72 21:1 90:8 78 63:9 8 8:57 1:17 81 89:16 815 2:10 866-624-6221 1:24 9 9 20:22 21:13 22:23 24:2,5,12 24:19 25:9,14 26:1,15 27:25 29:23 30:3 46:17,18,22 47:3 99:8 90's 14:4 90067 2:10 94301-1379 2:5 95 69:21 96 69:21 71:3			
--	---	--	--	--