



Transcript of Patrick Traynor, Ph.D.

Date: September 21, 2026

Case: Google LLC -v- Headwater Research LLC (PTAB)

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

GOOGLE, LLC	)	
	)	
PETITIONER,	)	
	)	IPR2026-00203
VS.	)	Patent No.
	)	9,232,403
HEADWATER RESEARCH, LLC,	)	
	)	
PATENT OWNER.	)	
_____	)	

REMOTE VIDEOCONFERENCE DEPOSITION
DR. PATRICK TRAYNOR
MONDAY, SEPTEMBER 21, 2026 (7:00 A.M. PST)
LOS ANGELES, CALIFORNIA

PAGES 1 - 63
REPORTED BY MICHAEL CAGLIATA
CSR #14491, RPR

1 Videoconference Deposition of
2 DR. PATRICK TRAYNOR, held remotely:
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4 Witness Location:
5 (NOT STATED ON THE RECORD.)
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11 Pursuant to Notice, before Michael
12 Cagliata, Registered Professional Reporter, and
13 Certified Shorthand Reporter No. 14491 in and for the
14 State of California.
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INDEX

WITNESS NAME

PAGE

DR. PATRICK TRAYNOR, SWORN

EXAMINATION BY MR. MILKEY

6

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

EXHIBIT INDEX

EXHIBIT NUMBER		PAGE
1001	'403 PATENT	6
1003	DECLARATION	6
1004	TS-23.140 REFERENCE	7
1005	OGAWA REFERENCE	7

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

P R O C E E D I N G S

* * * *

(Oath given.)

EXAMINATION BY MR. MILKEY

Q. Dr. Traynor, you understand that you're
testifying today regarding IPR 2026-00203; is that
correct?

A. Yes.

Q. And that's regarding U.S. patent number
9,232,403; right?

A. Yes.

Q. Okay. And do you have a copy of your
declaration that you submitted in that proceeding?

A. I have a copy of all of the exhibits, all
of which are unmarked.

Q. Okay. Perfect. For the benefit of the
reporter I am going to upload some of the exhibits I
suspect we will get to today. There may be
additional. We may not get to all of these exhibits,
but I am uploading into the chat Exhibit 1001, which
is the '403 patent.

(Exhibit 1001 marked for identification.)

Q. Exhibit 1003, which is your declaration.

(Exhibit 1003 marked for identification.)

Q. Exhibit 1004, which is the TS-23.140

1 reference.

2 (Exhibit 1004 marked for identification.)

3 Q. And Exhibit 105, which is the Ogawa
4 reference.

5 (Exhibit 1005 marked for identification.)

6 Q. Dr. Traynor, feel free to refer to any
7 clean copies that you have of any of these materials
8 throughout the deposition today.

9 A. Thank you. Again, my copies are all clean.

10 Q. Perfect. Dr. Traynor, did you do anything
11 to prepare for today's deposition?

12 A. Yes, I did.

13 Q. What did you do to prepare for today's
14 deposition?

15 A. I reread my report, looked at the exhibits,
16 spoke with counsel.

17 Q. Other than your report and the exhibits,
18 did you review any other materials in preparation for
19 today's deposition?

20 A. No, I don't believe so.

21 Q. Okay. And approximately how long did you
22 spend preparing for today's deposition?

23 A. I couldn't say exactly. I don't have my
24 hours in front of me, but maybe 15 or 20 hours. Just
25 rereading everything.

1 Q. Okay. And over the course of how many days
2 did you prepare for today's deposition?

3 A. Again, I couldn't say specifically. Over
4 the last two weeks or so.

5 Q. Okay. Could you please turn to
6 paragraph 134 of your declaration?

7 A. One moment, please. Just give me a moment
8 so that I can read this.

9 Okay. I've read it.

10 Q. Okay. And do you see that this is the
11 beginning of your analysis regarding the claim
12 limitation wherein at least a subset of the secure
13 Internet data messages contain an identifier for a
14 corresponding one of the software applications?

15 A. Yes, I see that.

16 Q. And what is it that you allege to be the
17 subset of the secure Internet data messages that
18 contain an identifier in the context of this
19 limitation?

20 A. One moment so I can just read my written
21 testimony. So I would point you to paragraph 135.
22 There, I discuss that the subset would include at
23 least those abstract messages that contain a
24 destination application identifier.

25 Q. Okay. And in paragraph 136 you discuss MM1

1 retrieve requests. Sorry. In paragraph 136 you
2 discuss MM1 retrieve response. Do you see that?

3 A. Yes, I do.

4 Q. And is MM1 retrieve response an example of
5 one of these secure Internet data messages that would
6 contain an identifier?

7 A. I believe that's what I say in 136.

8 Q. Are you familiar with OSI model of network
9 communication?

10 A. Yes.

11 Q. What layer of the OSI model would the MM1
12 retrieve response be?

13 A. That's a bit of a complicated question. At
14 the time of this document, cellular data networks
15 didn't exactly follow a pure OSI model, and so it's
16 sort of a hybrid and specialized model. So hard to
17 say exactly what the mapping is.

18 Q. Would the MM1 retrieve response be a data
19 element at the MAC layer?

20 A. Again, at the time of this document, the
21 OSI model was not the exact way in which these
22 networks would be described. These networks would
23 often have multiple different stacks associated with
24 them, and so there would actually be potentially
25 network traffic over an entirely different model

1 below it as well. So hard to say without looking at
2 a very specific implementation.

3 Q. Okay. Do you have any opinions in your
4 declaration regarding what layer of the network the
5 MM1 retrieve response would be located at?

6 A. I don't recall, but I could certainly go
7 and look for it if you would like.

8 Q. I don't recall that either, but I was just
9 checking to see if you knew offhand. I don't think
10 there's a need to review the entirety of your
11 declaration. Could you please turn to page 69 of
12 Exhibit 1004, TS23.140 reference?

13 MR. SCOTT: Counsel, what page was that
14 again?

15 MR. MILKEY: Page 69.

16 MR. SCOTT: Thank you.

17 THE WITNESS: Just to make sure I'm in the
18 same place, I see a subheading 8.1.5, retrieval of
19 multimedia message; is that correct?

20 Q. Yes.

21 A. I'm there.

22 Q. And do you see that just under that
23 heading, the second sentence states, "for retrieval
24 purposes NMM shall always be retrieved by the
25 recipient MMS user agent from their recipient MMS

1 relay server."

2 A. I see that literal text, yes.

3 Q. And then, under 8.1.5.1, normal operation,
4 do you see that the reference goes on to state that,
5 "the recipient MMS user agent shall issue an MM1
6 retrieve request to the recipient MMS relay server to
7 initiate the retrieval process"?

8 A. I see that literal text, yes.

9 Q. And then, in response it says, "the MMS
10 relay server shall respond with an MM1 retrieve
11 response, which contains MM's control information and
12 the MM content."

13 Do you see that?

14 A. Yes, I also see that literal text.

15 Q. And do you see on the same page under
16 Section 8.1.5.3 it refers to a message reference, and
17 says, "the recipient MMS user agent shall provide a
18 reference, EG, URL for the MM1 in the MM1 retrieval
19 request?"

20 A. Correction, counsel. The text in front of
21 me says URI, not URL.

22 Q. Oh, thank you. So do you see that under
23 8.1.5.3 it states, "the recipient MMS user agent
24 shall provide a reference, EG, URI for the NMM in the
25 MM1 retrieve request"?

1 A. Yes, I see that.

2 Q. And that reference would have been
3 previously delivered to the MMS user agent from an
4 MM1 notification request, MM1 submit response, MM1
5 forward response, MM1 amend box, view response, MM1
6 MM box, upload response, or MM1 MM box store
7 response; correct?

8 A. That's the literal text in front of me,
9 yes.

10 Q. And going on to page 70. Do you see about
11 halfway down the page there is a bolded entry for
12 identification?

13 A. I do. If you would just give me one moment
14 to read it.

15 Q. Absolutely.

16 A. Yes, I see that.

17 Q. And do you see that within that entry it
18 states, the MMS relay server shall provide a message
19 identifier -- strike that. Do you see within that
20 identification entry it says that the MMS relay
21 server shall provide a message identification for a
22 message?

23 A. I see that literal text, yes.

24 Q. Are you aware of any provision of 8.1 of
25 TS23.140 describing an MM1 retrieve response that

1 would carry more than a single MM?

2 A. I don't have a direct reference. My
3 understanding is that this is often done in practice
4 as a means of saving bandwidth.

5 Q. It is commonly done in TS23.140 to include
6 more than one MM in an MM1 retrieval request? Sorry.
7 Retrieval response?

8 A. That's not what I said. I said I don't
9 know of a direct pointer here, but in practice, as a
10 means of reducing bandwidth and communications
11 overhead, oftentimes multiple messages are batched
12 and delivered.

13 Q. Okay. To be clear, I'm not asking about
14 multiple messages being batched and delivered. I'm
15 asking about an MM1 retrieval response itself
16 carrying more than one MM. Are you aware of that
17 being disclosed in TS23.140?

18 A. Counsel, it's a 218 page document. I don't
19 have it memorized. I could try looking for a while
20 if you would like, but not off the top of my head.

21 Q. Okay. Do you recall addressing in your
22 declaration whether a single retrieval response in
23 TS23.140 would include more than one MM?

24 A. Counsel, I'll change the page numbering
25 here. My document is 220 pages and I don't have it

1 memorized. If you would like to point me to a
2 specific paragraph, I can look at that.

3 Q. Okay. In preparing for your declaration
4 you don't -- strike that. Sitting here today,
5 without going through page by page of the
6 declaration, do you recall addressing in your
7 declaration whether a single MM1 retrieve response
8 would include more than one MM?

9 MR. SCOTT: Objection to form.

10 THE WITNESS: Again, I haven't memorized my
11 report. If you would like to point me to something,
12 I'm more than happy to answer questions about that.

13 Q. Okay. I'd like to turn to the Ogawa
14 reference, Exhibit 1005. If you could let me know
15 when you have that open.

16 A. One moment, please. Okay. I have it open.
17 Where would you like me to turn?

18 Q. Let's start with Figure 1.

19 A. I'm looking at Figure 1 now.

20 Q. Okay. Do you see that Figure 1 depicts a
21 data input site, a database server, and a client site
22 all connected via an external network 4?

23 A. Apologies. Yes, I do. It was just taking
24 me a moment to find 4. I see that.

25 Q. Okay. Do you see that client site includes

1 loaded program 51?

2 A. Yes, I do see that.

3 Q. Okay. And loaded program 51 includes each
4 of the elements 31 through 39; correct?

5 A. I believe that's one embodiment, yes.

6 Q. Okay. Okay. You saw that that was one
7 embodiment of Ogawa. Are you aware of any
8 embodiments of Ogawa where elements 31 through 39 are
9 not part of loaded program 51?

10 MR. SCOTT: Objection to form.

11 THE WITNESS: Can you be a little more
12 specific, please?

13 Q. Well, you had a clarification to my last
14 question where I was asking about Figure 1 and
15 whether elements 31 through 39 were part of loaded
16 program 51. You said, that was one embodiment. So
17 I'm asking if you had something in mind where
18 elements 31 through 39 would not be part of loaded
19 program 51.

20 A. Well, as a person of ordinary skill in the
21 art at the time, I'm relying upon the teachings of
22 Ogawa. So I can imagine versions where certain
23 portions are or aren't needed. So maybe optionally
24 included.

25 Q. Okay. But in the Figure 1 embodiment of

1 Ogawa, it's 31 through 39, are disclosed as being
2 part of loaded program 51; correct?

3 A. I see the elements that you're talking
4 about in the loaded program but, again, this is one
5 embodiment. So my earlier answer still stands.

6 Q. Okay.

7 Okay. So let's turn to column 5 of Ogawa.
8 Towards the bottom of column 5. The last paragraph
9 of it. If you could let me know when you're there.

10 A. I'm there, if you would just give me one
11 moment to read it.

12 I've read it.

13 Q. At column 5, lines 59 through 62, do you
14 see that it states that "the shared key encrypted
15 data will be received by the receive unit 32 from the
16 database server 2"?

17 A. I see that literal text, yes.

18 Q. Okay. Then, it goes on to say that the
19 shared key encrypted data will be decrypted using the
20 shared encryption key 52; correct?

21 A. Yes, I see that in the paragraph beginning
22 in the exemplary embodiment. Yes.

23 Q. Okay. And then, decryption unit 32 --
24 sorry. Decryption unit 33 decrypts -- sorry about
25 that. Strike that.

1 After the data is decrypted, Ogawa states
2 the decrypted data is reverted back to its original
3 format; correct?

4 A. Apologies. The last few questions were
5 about literal text. Are you asking me about
6 something literal?

7 Q. I'm asking if Ogawa -- I'm not quoting from
8 Ogawa necessarily, but do you agree that in Ogawa's
9 Figure 1 embodiment that the decrypted data is
10 converted back to its original format?

11 A. I certainly see text suggesting that,
12 beginning in the sentence column 5, line 65. Again,
13 in this exemplary embodiment.

14 Q. Okay. And then, you see at the top of
15 column 6 Ogawa discusses re-encrypting data that was
16 previously expanded by the decompression unit using
17 an inherent encryption key 53?

18 A. Yes. There were -- some of the text in the
19 middle was elided, but I see roughly that.

20 Q. Okay. And then, again, in that same
21 paragraph Ogawa also discloses storing that
22 re-encrypted data on a storage device 30; correct?

23 A. Based on Figure 1, that exemplary
24 embodiment 30 appears to be local storage.

25 Q. Okay. Does Ogawa disclose sending that

1 re-encrypted data anywhere other than local storage?

2 MR. SCOTT: Objection to form.

3 THE WITNESS: As I said before, I'm relying
4 upon the teachings of Ogawa. And so storage here
5 could be just memory, and so I would expect that if
6 another device had the inherent key, it could --
7 sorry. The program. It could potentially be the
8 receiving program of it.

9 Q. Okay. So you said if another program had
10 the inherent key it could potentially be the
11 receiving program of it. Is there any disclosure of
12 that in Ogawa?

13 A. Again, I'm relying upon the teachings of
14 Ogawa. Passing messages or content to an operating
15 system service to then potentially pass onto another
16 application is sort of the basis of IPC, or
17 interprocess communication. And so this is how
18 operating systems have worked since the 80s. So as a
19 person of ordinary skill in the art looking at this,
20 again, this storage or memory is an intermediary, and
21 where it goes next depends upon the implementation.

22 Q. Okay. So you say that you're relying on
23 the teachings of Ogawa so I'm asking you, where in
24 the teachings of Ogawa does Ogawa disclose any other
25 program having access to the inherent key?

1 A. Again, whether or not that program has
2 access to the inherent key is actually kind of a
3 different question. I'll repeat my previous answer.
4 Sending something essentially to memory or a proxy,
5 this is, you know, the way D-Bus functions, for
6 example. Again, that other application ultimately
7 receiving the message, this is how systems have
8 worked for a very, very long time. D-Bus is probably
9 2000-2002.

10 In terms of the inherent key, and this is
11 just a symmetric key, so whether the application --
12 the receiving application has access to it or, again,
13 whether D-Bus as an entrusted proxy has access to it,
14 that's an implementation specific detail.

15 Q. Where does Ogawa describe its inherent key
16 as being a symmetric key?

17 A. Right in Figure 1.

18 Q. Where in Figure 1 is the inherent key
19 described as a symmetric key?

20 A. So just to be clear, there are two classes
21 of keys: Symmetric and, of course, asymmetric. The
22 definition of a symmetric key is one that can be used
23 for encryption and decryption. So I look at 53 in
24 Figure 1. I see it pointing both to encryption and
25 decryption, which tells me the same key is being

1 used, which means that it's a symmetric key.

2 Counsel, there's also text in column 6 that further
3 describes exactly what I just have.

4 Q. Okay. And can you point me to any
5 disclosure in Ogawa where more than one program has
6 access to the inherent encryption key?

7 A. Apologies. I feel as if I've answered this
8 question. Let me just say it one more time just to
9 make sure. Again, that's an implementation-specific
10 detail. One way to do -- to have an embodiment here
11 is for that destination application to have access to
12 the key. Another is that in a trusted process model,
13 that proxy in the operating system a la D-Bus, which
14 is explicitly named in the '403, it could have access
15 to the key. Using storage or memory or a proxy, any
16 of these things are very standard procedure in
17 operating systems and have been for 40 years.

18 Q. Okay. So I'm specifically asking about the
19 disclosures of Ogawa. And if you want to talk about
20 other things, that's fine. We can get into that
21 later. Your counsel can ask on redirect. I'm
22 asking, is there any disclosure you can point me to
23 in Ogawa where more than one program would have
24 access to the inherent key?

25 MR. SCOTT: Objection to form.

1 THE WITNESS: Again, apologies. I believe
2 I'm answering your question. It's certainly
3 possible. Storage is, as depicted in 30 in Figure 1,
4 this is -- this can be long-term storage. This can
5 just be memory. I would imagine that because of
6 that, any application that was communicating with the
7 first application, if it was receiving encrypted
8 content either it or the operating system or, again,
9 some trusted proxy, any of those things might decrypt
10 it. Ultimately, that content would be decrypted such
11 that the receiving application could understand it.

12 Q. Okay. What paragraph of Ogawa discloses a
13 different application having access to the inherent
14 key and decrypting that data?

15 MR. SCOTT: Objection to form.

16 THE WITNESS: Again, counsel, I'm relying
17 on the teachings of Ogawa. It demonstrates that a
18 single application is doing this. It's very clear
19 based on the history of systems, if one application
20 can do something then it can be used by multiple
21 applications -- and in fact, the fact that 30 is
22 storage hints very, very strongly that this mechanism
23 can be used through many applications.

24 Q. Okay. So you haven't pointed me to a
25 paragraph in Ogawa. I'm going to give you one last

1 opportunity to point me to a paragraph in Ogawa that
2 discloses another program having access to the
3 inherent encryption key and decrypting the data?

4 MR. SCOTT: Objection to form.

5 THE WITNESS: Just one last time. Again,
6 I'm talking about multiple ways in which the
7 application data can ultimately be decrypted. One
8 way is another application having access to that key.
9 Another way is the operating system mediating it.
10 The third way is trusted proxy. These are all very
11 standard mechanisms that have existed in real systems
12 since at least the 80s.

13 Q. Okay. Having failed to point to any
14 paragraph in Ogawa that discloses another program
15 having access to the inherent encryption key or
16 decrypting the data, can you point me to any
17 discussion in your declaration of another program
18 having access to the inherent encryption key or
19 decrypting the data?

20 MR. SCOTT: Objection. Form.

21 THE WITNESS: Just one moment, please.
22 Counsel, as I've said a few times, I haven't talked
23 about how precisely the decryption is performed, but
24 I look to the '403 patent and its spec for guidance.
25 In column 42, there's a lot of ways this could be

1 implemented. Whether it's that the end application
2 has access to the key or that it's mediated by the
3 operating system, just as I've talked to you about
4 over the last few minutes. So there are many, many
5 ways in which this could be done, whether it's the
6 end application having access to the key, a proxy, et
7 cetera.

8 Q. So while your declaration and Ogawa don't
9 disclose how another program would have access to the
10 inherent encryption key or decrypt that data, it's
11 your opinion that the '403 patent discloses that this
12 would have been -- technically could be used?

13 MR. SCOTT: Objection. Form.

14 THE WITNESS: So counsel, I think we're
15 talking about a secure interprocess communication
16 service, as is discussed in claim 1. To interpret
17 that, I look at column 41 and 42, which gives lots of
18 examples of how that could be implemented. I'll also
19 note that there's lots of things I don't talk about
20 in my report. I don't talk about how this user
21 device is powered. I don't talk about the shape of
22 the case or that it's in a case at all. These are
23 all implementation details. And so whether it's the
24 end application doing the decryption or the operating
25 system or a trusted proxy, these are all means for

1 secure communication between two processes.

2 Q. So your declaration doesn't go into the
3 implementation details regarding how the secure
4 communication between two processes would actually
5 allow for the receiving application to decrypt the
6 data it receives; correct?

7 MR. SCOTT: Objection. Scope.

8 THE WITNESS: Can you maybe refine that
9 question? Is there a specific paragraph you want me
10 to look at?

11 Q. No. I think your attorney's objection
12 speaks for itself.

13 A. I apologize. I was waiting on you. Are
14 you --

15 Q. No.

16 A. Going to be asking me another question?

17 Q. No. I agree that that's beyond what's in
18 your declaration.

19 Ogawa discloses a shared encryption key in
20 Figure 1; correct?

21 A. Let me be precise about the language here.
22 52 in Ogawa has the literal label, shared encryption
23 key. That's speaking about the key that's shared
24 between the MMS relay server and the user agent on
25 the device. It also has an inherent encryption key

1 which is, again, as we discussed earlier -- both of
2 these are symmetric keys. They just have named them
3 differently. You can think of them as key A and key
4 B. They picked shared and inherent, but they're both
5 of the same form.

6 Q. Okay. Does Ogawa disclose -- strike that.
7 What does it mean for a key to be shared?

8 A. I spoke about this a little earlier. So
9 let me just reiterate. Shared is another word for
10 symmetric key in the standard parlance of my field.
11 So in this case it is shared with the MMS relay
12 server, or it could be shared with the VASP, or
13 whatever the implementation is specifically designed
14 to do. It's a symmetric key, which means that it
15 will be used for both encryption and decryption. You
16 see the exact same thing for the inherent encryption
17 key. It's used for both encryption and decryption.

18 Q. Okay. So if a key is used for both
19 encryption and decryption but is only provided to a
20 single entity, in your opinion would that key be a
21 shared key?

22 A. Well, again, it's important to understand
23 that shared here generally means symmetric. It has a
24 very specific mathematical definition. Whether or
25 not I would perform the next process of key

1 distribution, that's sort of inconsequential. As a
2 complimentary example, an asymmetric key has a public
3 or private -- two separate keys. Whether or not I
4 pass them out doesn't change the math behind them and
5 what they are. So a shared key is a shared key.
6 Whether or not I've distributed it has no implication
7 on its properties.

8 Q. Okay. So a shared key need not be a
9 distributed key; is that fair?

10 A. I can generate a shared key and give it to
11 anybody because it's a symmetric key. Key generation
12 and key distribution are two very distinct
13 operations.

14 Q. Okay. Ogawa's shared encryption key is, in
15 fact, a distributed encryption key; correct?

16 A. Just so I'm clear, what do you mean by
17 "distributed"?

18 Q. Distributed between more than one entity.

19 A. Sorry. You're on the edge of a very
20 complex area. What Ogawa's shared key is, to be
21 clear, is it's a symmetric key that some network
22 element has, and the MMS user agent has.

23 Q. Okay. So both the network element and the
24 MMS user agent in your proposed combination would
25 have access to Ogawa's shared encryption key 52;

1 correct?

2 A. Yes.

3 Q. Okay. And in your proposed combination
4 would the network element have access to the inherent
5 encryption key 53?

6 A. No.

7 Q. In your declaration do you describe any
8 program or entity other than MMS user agent having
9 access to Ogawa's inherent encryption key 53?

10 MR. SCOTT: Objection to form.

11 THE WITNESS: Counsel, I believe I've
12 answered this question a few times. There are many
13 ways to implement this. One way could be that
14 another -- that the destination application has
15 access. A second way could be that the operating
16 system has access and mediates the decryption. A
17 third way is that a proxy could do it. So there are
18 lots of ways to implement this.

19 Q. Move to strike as non-responsive. Dr.
20 Traynor, I'm asking about an opinion that's actually
21 presented in your declaration. Do you present any
22 opinion in your declaration of any entity other than
23 the MMS user agent having access to Ogawa's inherent
24 encryption key 53?

25 MR. SCOTT: Objection. Form.

1 THE WITNESS: Counsel, I believe I'm being
2 consistent here and trying to be helpful. There are
3 many ways to implement this. I similarly haven't --
4 I'm not offering you any opinions on how this is
5 powered, the color of the case. There are many ways
6 to do this that are functionally equivalent.

7 Q. I'll move to strike as non-responsive. Dr.
8 Traynor, you're free to review your declaration. Can
9 you point me to a paragraph in your declaration that
10 discusses any entity other than the MMS user agent 53
11 having access to Ogawa's inherent encryption key?

12 MR. SCOTT: Objection. Form. Objection.
13 Scope.

14 THE WITNESS: Counsel, I'm not sure what to
15 tell you other than the testimony I've given you
16 repeatedly. This is fairly straightforward secure
17 interprocess communications. There's lots of ways to
18 it.

19 Q. Okay. But your declaration doesn't address
20 that; right?

21 MR. SCOTT: Objection. Form.

22 THE WITNESS: My declaration talks about
23 there being a secure interprocess communication
24 mechanism, but there are lots of things that I
25 haven't also included, the details of the battery,

1 the details of the case, how big the screen is, none
2 of which are consequential.

3 Q. You don't think it's consequential how the
4 inherent encryption key is distributed between
5 various elements of your proposed combination?

6 A. I think that it is fairly straightforward
7 to implement multiple different techniques, depending
8 on the assumptions of the system and its security.
9 I've offered you three sort of very standard ways
10 that it could and is done in real systems. So I'm
11 not really sure what to tell you beyond that.

12 Counsel, we are approaching an hour. When
13 it's convenient, when you find a break in the line of
14 questioning, I would love to take five. I'll leave
15 it to you.

16 Q. Okay. Let's go off the record.

17 (Recess taken.)

18 Q. Okay. Dr. Traynor, in the context of
19 Ogawa's Figure 1, the inherent encryption key is
20 located on storage 5; correct?

21 A. Again, that's one possible embodiment.
22 Yes.

23 Q. Okay. Are you aware of Ogawa disclosing
24 its inherent encryption key being located anywhere
25 other than storage 5?

1 A. To be clear, I'm not claiming that in Ogawa
2 but, in my experience in this space, certainly at the
3 time of this invention sometimes these keys would
4 come off of the removal storage and be kept in main
5 memory, and the reason for that being performance.
6 So based on my experience, it's an implementation
7 specific detail.

8 Q. Okay. So whether or not the inherent
9 encryption key is kept solely on removable storage is
10 an implementation detail in the context of Ogawa?

11 A. Again, as a person of ordinary skill in the
12 art at the time, I would assume in this
13 implementation that it's at least stored on the
14 removable storage, but whether or not a copy is made,
15 kept temporarily in memory, that certainly happened
16 on cell phones I would say through the mid 20 teens.

17 Q. Okay. Are you aware of Ogawa disclosing
18 that storage 5 would be anything other than removable
19 storage?

20 A. I don't have it memorized. Again, would
21 you like me to look through?

22 Q. Yeah. I actually would like you to look
23 through. For context, as I understand it, Ogawa is
24 pretty heavily focused on removable storage. For
25 example, the title is "removable storage device and

1 associated methodology of data encryption."

2 So if you could point me to any disclosure
3 where the storage in which the inherent encryption
4 key is stored would not be removable, I would
5 appreciate it.

6 MR. SCOTT: Objection to form.

7 THE WITNESS: Again, I'll take a look.
8 Again, to clarify my position, I imagine that the
9 keys were at least stored on this removable storage,
10 but for reasons of performance it was very, very
11 common on devices like cell phones through the mid 20
12 teens, for copies of the keys to end up on the device
13 itself. I'll spend a few minutes, if you'd like.

14 Q. Okay. Thank you.

15 A. Counsel, I'd point you to Figure 4. In
16 Figure 4 on step S45 you'll see that the final box
17 says, "transmit an inherent identification value from
18 the removable storage." Then, in S46, which is in
19 the client site, "encrypt and decrypt using the
20 inherent encryption key." So Figure 4 seems to
21 support the implementation example that I've
22 discussed.

23 Q. Okay. In the context of Figure 4, the
24 inherent identification value is transmitted from the
25 removable storage; correct?

1 A. Again, that's what it appears to be. At
2 the time, as I've mentioned, it was not uncommon for
3 cryptographic keys stored on a removable storage to
4 temporarily be in the memory of the main device?

5 Q. Okay. So again, are you aware of any
6 disclosure in Ogawa where the storage on which the
7 inherent key is kept is not a removable storage?

8 A. I'm not sure that I understand. I just
9 pointed you to Figure 4. My understanding of at
10 least one of the proposed embodiments is that the
11 inherent key is derived from the inherent
12 identification value. So it would appear here that
13 the value is sent to the client site and then, before
14 we can encrypt with it in S46, I would imagine that
15 key is generated and then used. So it looks like
16 this is an example here.

17 Q. Okay. So are you aware of any example in
18 which the inherent key is not either stored on or
19 derived from a removable storage?

20 A. So are you asking me specifically about the
21 patent or are you asking me just in general.

22 Q. About Ogawa's disclosure?

23 A. Ogawa seems to generally rely upon the --
24 excuse me. About this inherent identification value
25 as a seed for key generation, but there are many,

1 many key generation algorithms. So as a person of
2 ordinary skill in the art, I would use any one of
3 those and get equivalent outputs.

4 Q. I'm confused. Is your invalidity
5 combination of TS23.140 relying on the key generation
6 algorithm in Ogawa or the key generation algorithm
7 disclosed in other references that would give you
8 equivalent outputs?

9 MR. SCOTT: Objection to form.

10 THE WITNESS: Can you point me to where I
11 talk about key generation in my declaration?

12 Q. Well, your reliance on encryption and
13 decryption for the secure interprocess communication
14 in your combination relies on Ogawa; correct?

15 A. It relies on the teachings of Ogawa. Yes.

16 Q. Okay. Is it your testimony sitting here
17 today that you -- in implementing your proposed
18 combination, rather than relying on the key
19 generation algorithms that are disclosed in Ogawa,
20 that it would be obvious to use different key
21 generation algorithms?

22 MR. SCOTT: Objection. Form.

23 THE WITNESS: Counsel, I think there's a
24 misunderstanding. Ogawa provides some high level
25 mechanisms for key generation, but there are lots of

1 details that aren't included here. So for example,
2 how long should the key be? Does it have to conform
3 to any standard like FIPS-140.2? It's a federal
4 encryption standard from NIST. So I would -- I don't
5 see any names of the specific algorithms that I might
6 need, and so as a person of ordinary skill in the art
7 I would look to those sources for making sure I'm
8 using -- with these inputs, potentially that I'm
9 using a secure key generation mechanism.

10 Q. Okay. But Ogawa does give the
11 implementation detail that the inherent encryption
12 key is derived from removable storage; correct?

13 MR. SCOTT: Objection. Scope.

14 THE WITNESS: Apologies. I'm looking for
15 that word derived just to make sure I'm answering
16 your question. Can you point me to it in Ogawa?

17 Q. So I'm not quoting the term derived from
18 Ogawa. I'm discussing that -- as we've discussed,
19 the inherent encryption value is either stored on
20 Ogawa's removable storage or transmitted from the
21 removable storage to Ogawa's client device. I didn't
22 see any other disclosure in Ogawa regarding how that
23 inherent identification key or value would be stored
24 or transmitted. Am I missing something?

25 A. Again, I pointed you to Figure 4 where it

1 shows that the inherent identifier, I believe, was
2 transmitted. Similarly, Figure 6 has some
3 information about generating a random number
4 sequence. Again, for what it's worth, generating a
5 random number sequence is historically fraught space,
6 and so I would be looking to things like the FIPS
7 140-2 standard on how exactly to do this in a secure
8 fashion.

9 Q. Okay. And the Figure 6 disclosure relates
10 to Ogawa's removable storage; correct?

11 MR. SCOTT: Objection to form.

12 THE WITNESS: Figure 6 seems to be related
13 to that embodiment. Yeah.

14 Q. Are you aware of any embodiments of Ogawa
15 in which the inherent identification code or inherent
16 key is somehow not related to Ogawa's removable
17 storage?

18 MR. SCOTT: Objection. Form.

19 THE WITNESS: I don't recall reading that
20 but, again, the inherent identification code is
21 ultimately a random number. So how it's formed,
22 whether it's the form of some random number
23 generation process, whether it is a PUF, a physically
24 uncloneable function, there are lots of ways in which
25 it could be derived. As a person of ordinary skill

1 in the art at the time, where it's derived, I could
2 imagine it being implemented in multiple ways.

3 Q. Okay. Could you please turn to page 54 of
4 TS23.140?

5 A. I'm there. Could you point me to a
6 subsection, please?

7 Q. Okay. It's 7.1.18. Specifically, the note
8 under that section?

9 A. One moment while I read that. I've read
10 that?

11 Q. Okay. The first sentence of that note
12 states, "applications that want to transport data
13 specific to applications other than MMS will
14 initially need to register with the appropriate MMS
15 user agent or MMS VAS application."

16 Do you see that?

17 A. I do.

18 Q. Then, the next sentence states, "during
19 this registration process, the application
20 prohibitions and MMS user agent or an MMS VAS
21 application with its application identification
22 value, and may negotiate with MMS user agent or MMS
23 VAS application the details (amount and format) of
24 information to be exchanged between the two
25 entities."

1 Do you see that?

2 A. Yes, I do.

3 Q. Okay. So this note describes two different
4 things happening during the registration process,
5 provision of an application identification value and
6 a negotiation of the amount and format of information
7 to be exchanged. Do you see anything else as being
8 described as being part of the registration process?

9 A. I would point you to the last sentence in
10 that note. Whatever the details of the application
11 registration process are, an MMS user agent or MMS
12 VAS application acts according to the negotiated
13 results from the application registration process.

14 To me, that says that, again, there are
15 many different things that may need to be negotiated
16 between the user application and the network element.

17 Q. How does the user application negotiate
18 with the network element?

19 A. Well, again, the -- there's a sentence that
20 says, "the application registration process is
21 outside the scope of the specification."

22 So it could happen many different ways.

23 Q. Okay. So you understand this note to be
24 regarding the destination application's registration
25 with the network element?

1 MR. SCOTT: Objection. Form.

2 THE WITNESS: Sorry. Could you repeat the
3 question?

4 Q. Yeah. So is it your opinion that this note
5 under 7.1.18 relates to a destination application's
6 registration with a network element?

7 A. So to be clear, this is about the MMS user
8 agent delivering application data to an application,
9 and so that information, that application-specific
10 information, is transiting that user agent.

11 Q. So is the destination application
12 registering with the MMS user agent in this note or
13 is it registering with a network element in this
14 note?

15 A. I'm sorry. Could you repeat that first
16 part? I just didn't hear it.

17 Q. Yeah. In this note under 7.1.18 on page 54
18 of TS23.140, is this describing a destination
19 application registering with either A, an MMS user
20 agent or, B, a network element?

21 MR. SCOTT: Objection to form.

22 THE WITNESS: So here it's talking about
23 the possibility of both. And so, again, back to the
24 first sentence. Applications that want to transport
25 data-specific to applications other than MMS will

1 initially need to register with the appropriate MMS
2 user agent or MMS facts application. So it might do
3 so locally with its MMS user agent, which may then
4 need to, as a proxy or on behalf of application,
5 further register with the MMS VAS application.

6 Q. Okay. So a destination application on a
7 mobile device at least needs to register with an MMS
8 user agent; correct?

9 A. Again, it's possible. The language here is
10 or. And so I imagine if it's using MMS it probably
11 needs to register with the MMS user agent. This
12 would also be potentially -- there's some ambiguity
13 here because whether or not at the time the
14 application had direct access to MMS, versus through
15 a specific MMS user agent, wouldn't necessarily be
16 assumed.

17 Q. Okay. So if an application is intending to
18 receive and send messages via an MMS user agent, that
19 application would need to register with the MMS user
20 agent; correct?

21 A. Again, this is a bit implementation
22 specific. It depends on what the operating system of
23 that UE, or user equipment, requires. So depending
24 on how mediation is done, certainly it could have to
25 do that. Earlier operating systems may not have

1 limited what could read that MMS messages. So in
2 those cases it may not need to. It really depends on
3 what the operating system would require.

4 Q. Okay. In the event that an application
5 does register with an MMS user agent, does TS23.140
6 disclose that registration process as entailing
7 anything other than providing an application
8 identification value and the details, (amount and
9 format), of information to be exchanged between the
10 two entities?

11 A. So to be clear, you're actually running up
12 against a philosophical question. In my community,
13 ultimately the belief is that the network can't know
14 every possible thing that an application is going to
15 need. This is referred to as the semantic gap. So
16 what you're seeing here, particularly in the text,
17 the application registration process is outside the
18 scope of the specification, is an acknowledgement to
19 there being things that the network can't anticipate,
20 or certainly couldn't anticipate at the time. As an
21 example, let's say the application was doing video.
22 The network may not understand that. And so
23 additional details are going to be as required by the
24 application.

25 Q. Okay. And that would relate to the amount

1 or format of information to be exchanged; correct?

2 A. Possibly, yeah.

3 Q. Okay. I'd like to direct you to
4 paragraph 271 of your declaration, which is the
5 beginning of your analysis of ground 4A regarding
6 claim 10.

7 A. One moment, please. I'm there.

8 Q. Okay. In paragraph 275 of your
9 declaration, that same section, you state that "it
10 was well-known for computing systems to include the
11 messaging services and clients/agents responsible for
12 providing those services within a trusted/secure
13 computing environment, and for applications, EG,
14 downloaded third party destination applications to
15 which messages are directed, end parentheses, to be
16 tiered/organized outside of this environment."

17 Do you see that?

18 A. Yes, I do.

19 Q. Okay. Are the destination applications in
20 TS23.140 examples of what could be downloaded third
21 party destination applications?

22 A. Yes.

23 Q. When a destination application in your
24 proposed combination receives an inherent key
25 encrypted message over a BUS, can it use that

1 inherent key encrypted message without first
2 decrypting it?

3 A. Could you restate that? There were many
4 parts in that. I want to make sure I'm answering
5 precisely.

6 Q. Yeah. So in your proposed combination of
7 TS23.140 with Ogawa, Ogawa's MMS user agent would
8 encrypt data using Ogawa's inherent encryption key
9 before transmitting it to a destination application
10 over a BUS; correct?

11 A. That's correct. To be clear, it would use
12 the -- it would decrypt it first to determine the
13 application ID and then re-encrypt it with the
14 inherent key.

15 Q. Okay. And when the destination application
16 receives that encrypted message can that destination
17 application use the data contained in that message
18 without first decrypting that message?

19 MR. SCOTT: Objection. Scope.

20 THE WITNESS: To be clear, I feel I've
21 answered this a few times. At the end of the day,
22 the application has to have access to decrypted data,
23 whether that's by it decrypting it itself, the
24 operation system doing it, a trusted proxy doing it.
25 That data does get decrypted.

1 Q. Okay. And more specifically, that data
2 needs to be decrypted before the application can use
3 it; right?

4 A. Generally, yes. I could imagine some sort
5 of heartbeat conditions in which just receiving a
6 message would be sufficient. Again, whether it's by
7 the application doing it itself, the operating system
8 mediating it, or a trusted proxy application doing
9 it, I'm assuming for applications like chess, the
10 destination application would need to see the
11 contents of the message.

12 Q. Do Ogawa's inherent key encryption
13 teachings disclose an operating system on decrypting
14 inherent key encrypted data?

15 MR. SCOTT: Objection to form.

16 THE WITNESS: Again, counsel, I apologize
17 for repeating myself, but I believe I've answered
18 this a few times. I'm relying on the teachings of
19 Ogawa. There are many different ways in which the
20 data could be decrypted, including potentially the
21 end application, but also something in the operating
22 system could do it. A trusted proxy could do it.

23 Q. Okay. Do Ogawa's inherent key encryption
24 teachings discuss an operating system or trusted
25 proxy decrypting data via an inherent encryption key?

1 MR. SCOTT: Objection to form.

2 THE WITNESS: Again, to be clear, because I
3 showed you Figure 4 in Ogawa in which the key is held
4 in the client site in the operating system, that
5 tells me that it's certainly capable of doing that.

6 Q. Okay. So it's your opinion that in
7 Figure 4 of Ogawa it's the operating system that's
8 decrypting the data using the inherent encryption
9 key?

10 MR. SCOTT: Objection to form.

11 THE WITNESS: That's not quite what I said.
12 What I said was that I see that the key has left
13 removable storage. The key exists on the device
14 itself. And so whether it's the application, whether
15 it's the operating system, whether it's a trusted
16 proxy, that key is somewhere. Depending on the
17 configuration and implementation decisions, could
18 potentially be decrypted to any one of those.

19 Q. Okay. So I'm not asking about what could
20 potentially be done. I'm asking about what Ogawa
21 actually discloses. I'm asking if you're aware of
22 any actual disclosure in Ogawa where the operating
23 system or a trusted proxy would be the entity that
24 decrypts data using the inherent encryption key?

25 MR. SCOTT: Objection. Form.

1 THE WITNESS: Again, to repeat myself, I'm
2 interpreting Ogawa as a person of ordinary skill in
3 the art. I see things like Figure 4. I understand
4 that there is an inherent encryption key for
5 encryption and decryption, and note that I can
6 implement that in multiple different ways, including
7 the ways I've discussed multiple times.

8 Q. Okay. Do any of TS23.140, Ogawa, or your
9 declaration disclose how if either an operating
10 system or a trusted proxy were to decrypt data, that
11 that decrypted data would be communicated to a
12 destination application?

13 MR. SCOTT: Objection. Form.

14 THE WITNESS: Would you just repeat that
15 one more time for me, please?

16 Q. Yeah. Do any of the TS23.140 reference,
17 the Ogawa reference, or in your declaration, disclose
18 how if either an operating system or a trusted proxy
19 were to decrypt data, that the resulting decrypted
20 data would be communicated to a destination
21 application?

22 MR. SCOTT: Objection. Form.

23 THE WITNESS: Oh. I would point you in
24 TS23.140 to page 56, where it discusses the normal
25 behavior of the MMS user agent, and that its job is

1 to forward on application-specific information to the
2 application identified by the destination application
3 identifier. So additional steps like encryption or
4 decryption are potentially specific to the
5 application, to the operating system. So this very
6 clearly tells me that application data will be
7 forwarded to the destination application, and Ogawa
8 talks about a way in which it can be protected while
9 doing that.

10 Q. Okay. So if a trusted proxy -- strike
11 that. I'm trying to understand the theory that you
12 set forth in your declaration. So assuming that your
13 declaration theory encompasses a scenario where
14 either an operating system or a trusted proxy were to
15 decrypt data intended for a destination application,
16 where in your declaration do you provide any evidence
17 regarding how that decrypted data would actually
18 arrive at the destination application?

19 MR. SCOTT: Objection. Form.

20 THE WITNESS: So again, to be clear, my
21 declaration talks about secure interprocess
22 communication. I talk about, you know, the use of
23 Ogawa offers one possible embodiment wherein the
24 application does the decryption, but it's certainly
25 not limited to that. Again, it's very common for the

1 operating system to mediate such delivery and to deal
2 with encryption, or for some trusted proxy, as in
3 D-Bus.

4 Q. Okay. So if D-Bus is doing the encryption,
5 where in your declaration do you specify how the --
6 strike that. If D-Bus is doing the decryption, where
7 in your declaration do you specify how that decrypted
8 data arrives at the destination application?

9 A. Again, apologies for repeating myself, but
10 these are implementation details. Whether it's the
11 application itself or some other trusted process or
12 operating system mediated access, the decryption
13 happens. It would depend on the system. It would
14 depend on the application. So there are many ways to
15 do this.

16 Q. Okay. And does your declaration explain
17 how that process would occur in your proposed
18 combination?

19 MR. SCOTT: Objection. Form.

20 THE WITNESS: One last time. Apologies.
21 My declaration doesn't talk about the battery size or
22 the screen size. None of those things are necessary
23 to talk about the secure interprocess communication
24 system. I've given you multiple different ways in
25 which it could be implemented. Ways that are

1 consistent with the spec of the '403. To any one of
2 those ways would be sufficient.

3 Q. Okay. So is it your opinion that any
4 transmission of decrypted data from an operating
5 system to a destination application would satisfy the
6 requirement of a secure interprocess communication?

7 MR. SCOTT: Objection. Form. Objection.
8 Scope.

9 THE WITNESS: That's not my testimony.

10 Q. Okay. So you agree that some
11 implementation details of how decrypted data is
12 transmitted from an operating system to a destination
13 application are required before one can determine
14 whether the claim requirements are satisfied;
15 correct?

16 MR. SCOTT: Objection. Scope. Objection.
17 Form.

18 THE WITNESS: I've given you one potential
19 embodiment in which the destination application does
20 the decryption itself, but that's not the only way.
21 We can have a long conversation about fret modelling,
22 assumptions about kernel structure, memory
23 protection. There are lots of assumptions that go
24 into building security. So I've given you one
25 particular embodiment, which decryption can happen in

1 the destination application, but there are others
2 that are arguably equivalent. I've given you
3 examples multiple times.

4 Q. Okay. So in one of those examples, right,
5 is the operating system doing the decryption;
6 correct?

7 A. That is an example I've given, yes.

8 Q. Okay. And if an operating system were to
9 do the decryption, where in your declaration do you
10 specify how the data would be transmitted from the
11 operating system to the destination application?

12 MR. SCOTT: Objection. Scope.

13 THE WITNESS: Again, counsel, I point to
14 secure interprocess communication system service that
15 show it can be implemented in a multitude of ways, as
16 the '403 spec also considers. One of those ways is
17 by the application. Another could be the operating
18 system. Another could be a proxy.

19 Q. Okay. I understand that you're saying that
20 different entities could decrypt the data. I'm
21 specifically asking if the operating system decrypts
22 the data, where in your declaration do you say how
23 the data goes from the operating system to the
24 destination application? How does it get from point
25 A to point B?

1 MR. SCOTT: Objection. Scope.

2 THE WITNESS: I get we're talking about a
3 hypothetical at this point, and so there are lots of
4 ways to possibly implement that. Do you have a
5 specific operating system you want to talk about?

6 Q. I'm asking for the opinions you put in your
7 declaration. Do you address this in your
8 declaration?

9 MR. SCOTT: Objection. Scope.

10 THE WITNESS: I address whether or not
11 there's a secure interprocess communication service,
12 and I give an example of one way in which that could
13 be achieved. I've discussed with you other examples
14 here today, just like the '403 spec also considers.

15 Q. Okay. What's the example you give in your
16 declaration of how the secure interprocess
17 communication can be achieved?

18 A. Again, I've talked to you about multiple
19 different ways. One way could be that the
20 destination application does the decryption. Another
21 way could be that the operating system does it. A
22 third way could be that a trusted proxy does it. I
23 don't go into all of the details because the claim
24 language was satisfied and, again, I also don't
25 discuss the details of the battery, how many buttons

1 are on the phone, et cetera.

2 Q. Dr. Traynor, the claim requires a secure
3 interprocess communication. It doesn't require
4 secure phone battery. What I'm trying to understand
5 is how you are saying that the claim limitation as
6 set forth in the claim is satisfied. And so you
7 stated that -- you gave an example in your
8 declaration as to how this secure communication
9 process occurs. Is it your -- in the theory that you
10 set forth in your declaration, what's the entity
11 that's doing the decryption?

12 MR. SCOTT: Objection. Scope.

13 THE WITNESS: I'd point you generally to
14 paragraph 146 of my report in which I talk about
15 this. But again, I don't necessarily talk about all
16 of the details. So it could be that the destination
17 application is doing it. It could be any of the
18 other things I've mentioned multiple times to you.
19 Really, based on the language, as I point out at the
20 end of 146, can be secured, signed, encrypted, or
21 otherwise protected. And I've given you plenty of
22 examples of that.

23 Q. Okay. So in your declaration you don't
24 specify what entity is doing the decryption of the
25 data; correct?

1 A. Apologies. I think we're going in circles
2 here. I have said consistently that it could be one
3 of many things. I haven't discussed, you know, how
4 this process is powered, what the case looks like,
5 and so what I have said is that it can be secured,
6 encrypted, or otherwise protected, and I've done
7 that.

8 Q. Okay. And when you say "it can be secured,
9 encrypted, or otherwise protected," that's a quote
10 from the patent itself; correct?

11 A. I'm pointing, as you can see, to references
12 Exhibits 1002 and 1001.

13 Q. And what are those references?

14 A. 1001 is the patent itself. 1002 -- I'm
15 trying to remember exactly the name of that document.
16 Certification request for prioritized examination
17 under 37CFR1.102E.

18 Q. And that's the prosecution history of the
19 patent itself; correct?

20 A. Yes, part 1.

21 Q. Okay. And so other than quoting from the
22 patent and its prosecution history, do you explain
23 how the data would be decrypted in your proposed
24 combination?

25 MR. SCOTT: Objection. Scope.

1 THE WITNESS: As I've said many times
2 before in multiple different ways, depending on
3 implementation decisions by application developers,
4 platform developers, et cetera, I'm demonstrating
5 that it's encrypted and therefore protected. And as
6 I've said before, it's my assumption that the
7 application at the end will get access to the data so
8 that applications like chess or weather are useful,
9 and whether that's by the application doing it or by
10 the operating system or a trusted proxy, any of those
11 could work.

12 Q. Okay. So sitting here today, you're
13 telling me that it could be the application, an
14 operating system, or a trusted proxy that decrypts
15 the data. In your declaration do you discuss those
16 entities doing the decryption?

17 MR. SCOTT: Objection. Scope.

18 THE WITNESS: Again, I feel like we're just
19 going in circles here. So I'm showing that the
20 content is encrypted. I've given -- I've pointed you
21 to language in 146 that encryption is a way to
22 protect those communications. The destination
23 application has to be able to get access to that data
24 somehow, which implies decryption. How I implement
25 it, I've given you lots of equivalent ways.

1 Q. Okay. So I know that you've discussed
2 certain things during your deposition. What I am
3 asking you for specifically is where in your
4 declaration do you address which entity is doing the
5 decryption in your proposed combination?

6 MR. SCOTT: Objection. Form.

7 THE WITNESS: Counsel, I've demonstrated
8 that the data is encrypted and explained that it
9 needs to be decrypted, and that there are many
10 different entities that could do it.

11 Q. In your view, that's enough to satisfy the
12 claim language?

13 A. I believe that my written testimony
14 satisfies the claim language. Yes.

15 Q. Okay. Let me give you a hypothetical.
16 Let's say that the MMS user agent sends inherent key
17 encrypted data to an operating system. The operating
18 system decrypts that data and then the operating
19 system sends that decrypted data to every single
20 component on the device, it broadcasts it. Would
21 that system -- would that implementation satisfy the
22 claim requirement of a secure interprocess
23 communication service between the MMS user agent and
24 the destination application?

25 MR. SCOTT: Objection. Scope.

1 THE WITNESS: So this is a hypothetical,
2 and so my response would be, it depends. Is every
3 application supposed to get that information? I'd
4 need more information to answer this completely.

5 Q. Okay. So whether the claim requirement is
6 met depends on implementation details that are not
7 addressed in your declaration; correct?

8 MR. SCOTT: Objection. Form.

9 THE WITNESS: Again, I've said that the
10 content is encrypted. I've demonstrated that in
11 combination with 23.40 that it's ultimately delivered
12 to the destination application, the assumption being
13 that that application can use it. Whether it's the
14 application itself, the operating system, a trusted
15 proxy, multiple other mechanisms, any of those would
16 potentially satisfy this.

17 To be clear, the hypothetical is -- it
18 sounds like you're suggesting something that is maybe
19 a vulnerability was exploited. So it's just hard to
20 know exactly what scenario you're talking about
21 there. Just as one other note, we're approaching the
22 end of the second hour. When it's convenient, let me
23 know.

24 MR. SCOTT: I was about to jump in and ask
25 the same question. If we could break when

1 convenient.

2 MR. MILKEY: Yeah. Just give me a couple
3 of minutes.

4 MR. SCOTT: Sure.

5 Q. Is it your opinion that if the MMS user
6 agent encrypts data, sends that encrypted data to an
7 operating system, the operating system decrypts the
8 data, and the operating system sends that data to a
9 destination application, that the secure interprocess
10 communication service limitation is necessarily met?

11 A. It depends.

12 Q. Okay. And is it your opinion that if the
13 MMS user agent encrypts data, sends that encrypted
14 data to a trusted proxy, the trusted proxy decrypts
15 the data and the trusted proxy sends that data to a
16 destination application, that the secure interprocess
17 communication service limitation is necessarily met?

18 MR. SCOTT: Objection. Scope.

19 THE WITNESS: Again, it depends on the
20 details of how that's implemented. Potentially.

21 Q. Okay. And you didn't provide any details
22 regarding how the operating system or trusted proxy
23 would transmit decrypted data to a destination
24 application in your declaration; correct?

25 MR. SCOTT: Objection. Scope.

1 THE WITNESS: Again, these are
2 well-understood concepts. They have existed in
3 systems since the 80s. So I can imagine other ways
4 as well. So depending on your security model,
5 operating system features, implementation,
6 application details. There are many different ways
7 to deliver data securely, and there are ways you
8 could get it wrong too.

9 Q. Okay. In your declaration do you describe
10 whether every destination application would have
11 access to the same inherent key or they would have
12 access to -- each having access to a different
13 inherent key?

14 MR. SCOTT: Objection. Scope.

15 THE WITNESS: Are you pointing me to a
16 specific paragraph?

17 Q. I don't think you addressed this in your
18 declaration. If you're aware of anything, let me
19 know.

20 MR. SCOTT: Objection. Form.

21 THE WITNESS: Again, I haven't memorized my
22 report. If I need communication to be secure -- if I
23 can generate one key, I can generate other keys. So
24 I would imagine that different keys are used for
25 different applications. It's sort of standard

1 practice.

2 Q. Okay. So is your proposed combination as
3 set forth in your declaration relying on using
4 multiple different inherent keys for transmission
5 within the device?

6 MR. SCOTT: Objection. Scope.

7 THE WITNESS: Again, it all depends on what
8 your security model is for the operating system.
9 That's one hypothetical embodiment. If you have more
10 trust in the operating system but not total, maybe
11 it's a subset. All these details really depend on
12 the system you're building it in and your assumptions
13 about security.

14 Q. Dr. Traynor, you're the expert and it's
15 your declaration. Can you give me one example as set
16 forth in your declaration as to how the inherent keys
17 in Ogawa are distributed to the destination
18 application?

19 MR. SCOTT: Objection. Scope.

20 THE WITNESS: Are distributed to the
21 destination application? Again, there are lots of
22 ways. This could be an independent key generation
23 process as part of the registration process you
24 pointed me to in TS23.140. It could be a service
25 within the operating system. Again, it's a

1 hypothetical. I would need to know more about the
2 system. There are lots of different ways to do this.

3 Q. Okay. So there are lots of different ways
4 to do this and you're unable to point me to any
5 paragraph in your declaration that discloses even one
6 way of how this would be done in your proposed
7 combination; right?

8 MR. SCOTT: Objection. Scope.

9 THE WITNESS: Counsel, I haven't provided
10 you with how the battery powers the system, at what
11 voltage. I didn't say anything about the screen size
12 or the casing or its coloring. These are all
13 implementation details. Certainly, different experts
14 might make different choices and come up with
15 equivalent systems.

16 Q. You agree that how an encryption key is
17 distributed could impact whether or not a system is
18 secure; right?

19 MR. SCOTT: Objection. Scope.

20 THE WITNESS: This is really a multitiered
21 discussion. Certainly if it's done poorly but,
22 again, as a person of ordinary skill in the art, I
23 would look to any of the mechanisms that I described
24 to you before as ways to try and do it securely.

25 Q. Okay. And where in your declaration do you

1 discuss how those mechanisms would be implemented in
2 your TS23.140 and Ogawa combination?

3 MR. SCOTT: Objection. Scope.

4 THE WITNESS: Counsel, again, I'm trying to
5 provide you multiple ways in which security could be
6 attempted to be implemented. I can't speak to
7 whether or not the operating system has no
8 vulnerabilities, that the hardware or the hardware
9 supply chain haven't been compromised. These are all
10 discussions for threat modelling and security
11 modelling. So someone actually implementing these
12 systems would take additional considerations. I
13 haven't talked about the key length but, again, these
14 are all things that as an expert, you understand that
15 have to occur.

16 Q. Can you point me to a paragraph in your
17 declaration that discusses how those mechanisms would
18 be implemented in your proposed combination?

19 MR. SCOTT: Objection. Form. Objection.
20 Scope.

21 THE WITNESS: Again, I feel like I've
22 answered this many times. There are implementation
23 details that could be taken different ways, and I've
24 given you multiple different ways to do it and
25 multiple considerations, and how one might achieve

1 them.

2 Q. Okay. Dr. Traynor, my client needs to
3 provide a response to the petition in your
4 declaration. Can you give me a paragraph number that
5 describes how those mechanisms would be implemented
6 in your proposed combination so that I can respond to
7 that paragraph?

8 MR. SCOTT: Objection. Form. Objection.
9 Scope.

10 THE WITNESS: Again, I'm not sure how to
11 answer this further than I have.

12 Q. Okay. Let's go off the record.

13 (Recess taken.)

14 MR. MILKEY: Okay. I pass the witness.

15 MR. SCOTT: Okay. Let's go back to break
16 and I'll let you know whether we have a redirect when
17 we get back.

18 MR. MILKEY: How long?

19 MR. SCOTT: I don't know. Let's go for ten
20 minutes.

21 (Recess taken.)

22 MR. SCOTT: No further questions from
23 petitioner.

24 MR. MILKEY: All right. Thank you. Let's
25 go off the record.

1 MR. SCOTT: We'll take a rough. Thank you.

2 MR. MILKEY: We need it by Friday.

3 (Proceedings concluded at 9:31 A.M.)

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1 CERTIFICATE OF SHORTHAND REPORTER - NOTARY PUBLIC

2 I, MICHAEL CAGLIATA, CERTIFIED REPORTER AND
3 NOTARY PUBLIC WITHIN AND FOR THE STATE OF CALIFORNIA
DO HEREBY CERTIFY:

4 THAT DR. PATRICK TRAYNOR, THE WITNESS WHOSE
5 DEPOSITION IS HEREINBEFORE SET FORTH, WAS DULY SWORN
6 BY ME BEFORE THE COMMENCEMENT OF SUCH DEPOSITION AND
7 THAT SUCH DEPOSITION WAS TAKEN BEFORE ME AND IS A
8 TRUE RECORD OF THE TESTIMONY GIVEN BY SUCH WITNESS.

9 I FURTHER CERTIFY THAT THE ADVERSE PARTY,
10 GOOGLE, LLC, WAS REPRESENTED BY COUNSEL
11 AT THE DEPOSITION.

12 I FURTHER CERTIFY THAT THE DEPOSITION OF DR. PATRICK
13 TRAYNOR OCCURRED REMOTELY, 09/21/26, COMMENCING
14 AT 7:00 A.M. TO 9:31 A.M.

15 I FURTHER CERTIFY THAT I AM NOT RELATED TO ANY OF THE
16 PARTIES TO THIS ACTION BY BLOOD OR MARRIAGE, I AM NOT
17 EMPLOYED BY OR AN ATTORNEY TO ANY OF THE PARTIES TO
18 THIS ACTION, AND THAT I AM IN NO WAY INTERESTED,
19 FINANCIALLY OR OTHERWISE, IN THE OUTCOME
20 OF THIS MATTER.

21 IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY
22 HAND THIS 21ST DAY OF SEPTEMBER, 2026.

23 

24 _____
25 MICHAEL CAGLIATA
NOTARY PUBLIC IN AND FOR THE STATE OF CALIFORNIA

A			
able	53:7, 53:23,	31:7, 31:8,	all
53:23	57:11, 57:12	32:1, 32:5,	6:14, 6:19,
about	according	34:25, 35:4,	7:9, 14:22,
12:10, 13:13,	37:12	35:20, 37:14,	22:10, 23:22,
13:15, 14:12,	achieve	37:19, 38:23,	23:23, 23:25,
15:14, 16:4,	60:25	39:9, 39:21,	50:23, 51:15,
16:24, 17:5,	achieved	43:6, 43:16,	58:7, 58:11,
20:18, 20:19,	50:13, 50:17	44:2, 45:1,	59:12, 60:9,
22:6, 22:23,	acknowledgement	46:20, 46:25,	60:14, 61:24
23:3, 23:15,	40:18	47:9, 49:13,	allege
23:19, 23:20,	action	50:18, 50:24,	8:16
23:21, 24:21,	63:17, 63:19	51:15, 53:18,	allow
24:23, 25:8,	acts	55:9, 56:19,	24:5
27:20, 28:22,	37:12	57:1, 57:21,	also
32:20, 32:22,	actual	58:7, 58:21,	11:14, 17:21,
32:24, 33:11,	44:22	58:25, 59:22,	20:2, 23:18,
35:3, 38:7,	actually	60:4, 60:13,	24:25, 28:25,
38:22, 44:19,	9:24, 19:2,	60:21, 61:10	39:12, 43:21,
44:20, 46:8,	24:4, 27:20,	against	49:16, 50:14,
46:21, 46:22,	30:22, 40:11,	40:12	50:24
47:21, 47:23,	44:21, 46:17,	agent	always
48:21, 48:22,	60:11	10:25, 11:5,	10:24
50:2, 50:5,	additional	11:17, 11:23,	ambiguity
50:18, 51:14,	6:19, 40:23,	12:3, 24:24,	39:12
51:15, 55:20,	46:3, 60:12	26:22, 26:24,	amend
55:24, 58:13,	address	27:8, 27:23,	12:5
59:1, 59:11,	28:19, 50:7,	28:10, 36:15,	amount
60:13	50:10, 54:4	36:20, 36:22,	36:23, 37:6,
absolutely	addressed	37:11, 38:8,	40:8, 40:25
12:15	55:7, 57:17	38:10, 38:12,	analysis
abstract	addressing	38:20, 39:2,	8:11, 41:5
8:23	13:21, 14:6	39:3, 39:8,	angeles
access	adverse	39:11, 39:15,	1:21, 3:15
18:25, 19:2,	63:10	39:18, 39:20,	another
19:12, 19:13,	after	40:5, 42:7,	18:6, 18:9,
20:6, 20:11,	17:1	45:25, 54:16,	18:15, 20:12,
20:14, 20:24,	again	54:23, 56:6,	22:2, 22:8,
21:13, 22:2,	7:9, 8:3, 9:20,	56:13	22:9, 22:14,
22:8, 22:15,	10:14, 14:10,	agents	22:17, 23:9,
22:18, 23:2,	16:4, 17:12,	41:11	24:16, 25:9,
23:6, 23:9,	17:20, 18:13,	agree	27:14, 49:17,
26:25, 27:4,	18:20, 19:1,	17:8, 24:17,	49:18, 50:20
27:9, 27:15,	19:6, 19:12,	48:10, 59:16	answer
27:16, 27:23,	20:9, 21:1,	algorithm	14:12, 16:5,
28:11, 39:14,	21:8, 21:16,	33:6	19:3, 55:4,
42:22, 47:12,	22:5, 25:1,	algorithms	61:11
	25:22, 29:21,	33:1, 33:19,	answered
	30:11, 30:20,	33:21, 34:5	20:7, 27:12,

<p>42:21, 43:17, 60:22 answering 21:2, 34:15, 42:4 anticipate 40:19, 40:20 any 7:6, 7:7, 7:18, 10:3, 12:24, 15:7, 18:11, 18:24, 20:4, 20:15, 20:22, 21:6, 21:9, 22:13, 22:16, 27:7, 27:21, 27:22, 28:4, 28:10, 31:2, 32:5, 32:17, 33:2, 34:3, 34:5, 34:22, 35:14, 44:18, 44:22, 45:8, 45:16, 46:16, 48:1, 48:3, 51:17, 53:10, 55:15, 56:21, 59:4, 59:23, 63:16, 63:18 anybody 26:11 anything 7:10, 30:18, 37:7, 40:7, 57:18, 59:11 anywhere 18:1, 29:24 apologies 14:23, 17:4, 20:7, 21:1, 34:14, 47:9, 47:20, 52:1 apologize 24:13, 43:16 appeal 1:2 appear 32:12</p>	<p>appears 17:24, 32:1 application 8:24, 18:16, 19:6, 19:11, 19:12, 20:11, 21:6, 21:7, 21:11, 21:13, 21:18, 21:19, 22:7, 22:8, 23:1, 23:6, 23:24, 24:5, 27:14, 36:15, 36:19, 36:21, 36:23, 37:5, 37:10, 37:12, 37:13, 37:16, 37:17, 37:20, 38:8, 38:11, 38:19, 39:2, 39:4, 39:5, 39:6, 39:14, 39:17, 39:19, 40:4, 40:7, 40:14, 40:17, 40:21, 40:24, 41:23, 42:9, 42:13, 42:15, 42:17, 42:22, 43:2, 43:7, 43:8, 43:10, 43:21, 44:14, 45:12, 45:21, 46:2, 46:5, 46:6, 46:7, 46:15, 46:18, 46:24, 47:8, 47:11, 47:14, 48:5, 48:13, 48:19, 49:1, 49:11, 49:17, 49:24, 50:20, 51:17, 53:3, 53:7, 53:9, 53:13, 53:23, 54:24, 55:3, 55:12, 55:13, 55:14, 56:9,</p>	<p>56:16, 56:24, 57:6, 57:10, 58:18, 58:21 application's 37:24, 38:5 application-spec- ific 38:9, 46:1 applications 8:14, 21:21, 21:23, 36:12, 36:13, 38:24, 38:25, 41:13, 41:14, 41:19, 41:21, 43:9, 53:8, 57:25 appreciate 31:5 approaching 29:12, 55:21 appropriate 36:14, 39:1 approximately 7:21 area 26:20 aren't 15:23, 34:1 arguably 49:2 arrive 46:18 arrives 47:8 art 15:21, 18:19, 30:12, 33:2, 34:6, 36:1, 45:3, 59:22 asking 13:13, 13:15, 15:14, 15:17, 17:5, 17:7, 18:23, 20:18, 20:22, 24:16, 27:20, 32:20, 32:21, 44:19, 44:20, 44:21,</p>	<p>49:21, 50:6, 54:3 associated 9:23, 31:1 assume 30:12 assumed 39:16 assuming 43:9, 46:12 assumption 53:6, 55:12 assumptions 29:8, 48:22, 48:23, 58:12 asymmetric 19:21, 26:2 atlantic 3:7 attempted 60:6 attorney 63:18 attorney's 24:11 august 3:12 avenue 3:7 aware 12:24, 13:16, 15:7, 29:23, 30:17, 32:5, 32:17, 35:14, 44:21, 57:18</p> <hr/> <p style="text-align: center;">B</p> <hr/> <p>back 17:2, 17:10, 38:23, 61:15, 61:17 bandwidth 13:4, 13:10 based 17:23, 21:19, 30:6, 51:19 basis 18:16</p>
--	---	---	---

batched 13:11, 13:14 battery 28:25, 47:21, 50:25, 51:4, 59:10 because 21:5, 26:11, 39:13, 44:2, 50:23 been 12:2, 20:17, 23:12, 60:9 before 1:2, 2:15, 18:3, 32:13, 42:9, 43:2, 48:13, 53:2, 53:6, 59:24, 63:7, 63:8 beginning 8:11, 16:21, 17:12, 41:5 behalf 39:4 behavior 45:25 behind 26:4 being 13:14, 13:17, 16:1, 19:16, 19:25, 28:1, 28:23, 29:24, 30:5, 36:2, 37:7, 37:8, 40:19, 55:12 belief 40:13 believe 7:20, 9:7, 15:5, 21:1, 27:11, 28:1, 35:1, 43:17, 54:13 below 10:1 benefit 6:16	between 24:1, 24:4, 24:24, 26:18, 29:4, 36:24, 37:16, 40:9, 54:23 beyond 24:17, 29:11 big 29:1 bit 9:13, 39:21 blood 63:17 board 1:2 bolded 12:11 boston 3:8 both 19:24, 25:1, 25:4, 25:15, 25:17, 25:18, 26:23, 38:23 bottom 16:8 boulevard 3:14 box 12:5, 12:6, 31:16 break 29:13, 55:25, 61:15 broadcasts 54:20 building 48:24, 58:12 bus 41:25, 42:10 buttons 50:25 <hr/> C <hr/> cagliata 1:30, 2:16, 63:2, 63:26	california 1:21, 2:18, 3:15, 63:3, 63:27 can't 40:13, 40:19, 60:6 capable 44:5 carry 13:1 carrying 13:16 case 23:22, 25:11, 28:5, 29:1, 52:4 cases 40:2 casing 59:12 cell 30:16, 31:11 cellular 9:14 certain 15:22, 54:2 certainly 10:6, 17:11, 21:2, 30:2, 30:15, 39:24, 40:20, 44:5, 46:24, 59:13, 59:21 certificate 63:1 certification 52:16 certified 2:17, 63:2 certify 63:4, 63:10, 63:13, 63:16 cetera 23:7, 51:1, 53:4 cfre 52:17 chain 60:9	change 13:24, 26:4 chat 6:20 checking 10:9 chess 43:9, 53:8 choices 59:14 circles 52:1, 53:19 claim 8:11, 23:16, 41:6, 48:14, 50:23, 51:2, 51:5, 51:6, 54:12, 54:14, 54:22, 55:5 claiming 30:1 clarification 15:13 clarify 31:8 classes 19:20 clean 7:7, 7:9 clear 13:13, 19:20, 21:18, 26:16, 26:21, 30:1, 38:7, 40:11, 42:11, 42:20, 44:2, 46:20, 55:17 clearly 46:6 client 14:21, 14:25, 31:19, 32:13, 34:21, 44:4, 61:2 clients 41:11 code 35:15, 35:20
--	---	---	---

color 28:5 coloring 59:12 column 16:7, 16:8, 16:13, 17:12, 17:15, 20:2, 22:25, 23:17 combination 26:24, 27:3, 29:5, 33:5, 33:14, 33:18, 41:24, 42:6, 47:18, 52:24, 54:5, 55:11, 58:2, 59:7, 60:2, 60:18, 61:6 come 30:4, 59:14 commencement 63:7 commencing 63:14 common 31:11, 46:25 commonly 13:5 communicated 45:11, 45:20 communicating 21:6 communication 9:9, 18:17, 23:15, 24:1, 24:4, 28:23, 33:13, 46:22, 47:23, 48:6, 49:14, 50:11, 50:17, 51:3, 51:8, 54:23, 56:10, 56:17, 57:22 communications 13:10, 28:17, 53:22 community 40:12	completely 55:4 complex 26:20 complicated 9:13 complimentary 26:2 component 54:20 compromised 60:9 computing 41:10, 41:13 concepts 57:2 concluded 62:3 conditions 43:5 configuration 44:17 conform 34:2 confused 33:4 connected 14:22 consequential 29:2, 29:3 considerations 60:12, 60:25 considers 49:16, 50:14 consistent 28:2, 48:1 consistently 52:2 contain 8:13, 8:18, 8:23, 9:6 contained 42:17 contains 11:11 content 11:12, 18:14, 21:8, 21:10,	53:20, 55:10 contents 43:11 context 8:18, 29:18, 30:10, 30:23, 31:23 control 11:11 convenient 29:13, 55:22, 56:1 conversation 48:21 converted 17:10 copies 7:7, 7:9, 31:12 copy 6:12, 6:14, 30:14 correct 6:7, 10:19, 12:7, 15:4, 16:2, 16:20, 17:3, 17:22, 24:6, 24:20, 26:15, 27:1, 29:20, 31:25, 33:14, 34:12, 35:10, 39:8, 39:20, 41:1, 42:10, 42:11, 48:15, 49:6, 51:25, 52:10, 52:19, 55:7, 56:24 correction 11:20 corresponding 8:14 could 8:5, 10:6, 10:11, 13:19, 14:14, 16:9, 18:5, 18:6, 18:7, 18:10, 20:14, 21:11,	22:25, 23:5, 23:12, 23:18, 25:12, 27:13, 27:15, 27:17, 29:10, 31:2, 35:25, 36:1, 36:3, 36:5, 37:22, 38:2, 38:15, 39:24, 40:1, 41:20, 42:3, 43:4, 43:20, 43:22, 44:17, 44:19, 47:25, 49:17, 49:18, 49:20, 50:12, 50:19, 50:21, 50:22, 51:16, 51:17, 52:2, 53:11, 53:13, 54:10, 55:25, 57:8, 58:22, 58:24, 59:17, 60:5, 60:23 couldn't 7:23, 8:3, 40:20 counsel 7:16, 10:13, 11:20, 13:18, 13:24, 20:2, 20:21, 21:16, 22:22, 23:14, 27:11, 28:1, 28:14, 29:12, 31:15, 33:23, 43:16, 49:13, 54:7, 59:9, 60:4, 63:11 couple 56:2 course 8:1, 19:21 cryptographic 32:3 csr 1:31 <hr/> D <hr/> d-bus 19:5, 19:8,
--	---	---	--

19:13, 20:13, 47:3, 47:4, 47:6 data 8:13, 8:17, 9:5, 9:14, 9:18, 14:21, 16:15, 16:19, 17:1, 17:2, 17:9, 17:15, 17:22, 18:1, 21:14, 22:3, 22:7, 22:16, 22:19, 23:10, 24:6, 31:1, 36:12, 38:8, 42:8, 42:17, 42:22, 42:25, 43:1, 43:14, 43:20, 43:25, 44:8, 44:24, 45:10, 45:11, 45:19, 45:20, 46:6, 46:15, 46:17, 47:8, 48:4, 48:11, 49:10, 49:20, 49:22, 49:23, 51:25, 52:23, 53:7, 53:15, 53:23, 54:8, 54:17, 54:18, 54:19, 56:6, 56:8, 56:13, 56:14, 56:15, 56:23, 57:7 data-specific 38:25 database 14:21, 16:16 day 42:21, 63:23 days 8:1 deal 47:1 decisions 44:17, 53:3 declaration 5:4, 6:13,	6:23, 8:6, 10:4, 10:11, 13:22, 14:3, 14:6, 14:7, 22:17, 23:8, 24:2, 24:18, 27:7, 27:21, 27:22, 28:8, 28:9, 28:19, 28:22, 33:11, 41:4, 41:9, 45:9, 45:17, 46:12, 46:13, 46:16, 46:21, 47:5, 47:7, 47:16, 47:21, 49:9, 49:22, 50:7, 50:8, 50:16, 51:8, 51:10, 51:23, 53:15, 54:4, 55:7, 56:24, 57:9, 57:18, 58:3, 58:15, 58:16, 59:5, 59:25, 60:17, 61:4 decompression 17:16 decrypt 21:9, 23:10, 24:5, 31:19, 42:12, 45:10, 45:19, 46:15, 49:20 decrypted 16:19, 17:1, 17:2, 17:9, 21:10, 22:7, 42:22, 42:25, 43:2, 43:20, 44:18, 45:11, 45:19, 46:17, 47:7, 48:4, 48:11, 52:23, 54:9, 54:19, 56:23 decrypting 21:14, 22:3,	22:16, 22:19, 42:2, 42:18, 42:23, 43:13, 43:25, 44:8 decryption 16:23, 16:24, 19:23, 19:25, 22:23, 23:24, 25:15, 25:17, 25:19, 27:16, 33:13, 45:5, 46:4, 46:24, 47:6, 47:12, 48:20, 48:25, 49:5, 49:9, 50:20, 51:11, 51:24, 53:16, 53:24, 54:5 decrypts 16:24, 44:24, 49:21, 53:14, 54:18, 56:7, 56:14 definition 19:22, 25:24 deliver 57:7 delivered 12:3, 13:12, 13:14, 55:11 delivering 38:8 delivery 47:1 demonstrated 54:7, 55:10 demonstrates 21:17 demonstrating 53:4 depend 47:13, 47:14, 58:11 depending 29:7, 39:23, 44:16, 53:2, 57:4 depends 18:21, 39:22,	40:2, 55:2, 55:6, 56:11, 56:19, 58:7 depicted 21:3 depicts 14:20 deposition 1:18, 2:2, 7:8, 7:11, 7:14, 7:19, 7:22, 8:2, 54:2, 63:6, 63:7, 63:8, 63:12, 63:13 derived 32:11, 32:19, 34:12, 34:15, 34:17, 35:25, 36:1 describe 19:15, 27:7, 57:9 described 9:22, 19:19, 37:8, 59:23 describes 20:3, 37:3, 61:5 describing 12:25, 38:18 designed 25:13 destination 8:24, 20:11, 27:14, 37:24, 38:5, 38:11, 38:18, 39:6, 41:14, 41:19, 41:21, 41:23, 42:9, 42:15, 42:16, 43:10, 45:12, 45:20, 46:2, 46:7, 46:15, 46:18, 47:8, 48:5, 48:12, 48:19, 49:1, 49:11, 49:24, 50:20,
---	---	---	--

<p>51:16, 53:22, 54:24, 55:12, 56:9, 56:16, 56:23, 57:10, 58:17, 58:21 detail 19:14, 20:10, 30:7, 30:10, 34:11 details 23:23, 24:3, 28:25, 29:1, 34:1, 36:23, 37:10, 40:8, 40:23, 47:10, 48:11, 50:23, 50:25, 51:16, 55:6, 56:20, 56:21, 57:6, 58:11, 59:13, 60:23 determine 42:12, 48:13 developers 53:3, 53:4 device 17:22, 18:6, 23:21, 24:25, 30:25, 31:12, 32:4, 34:21, 39:7, 44:13, 54:20, 58:5 devices 31:11 different 9:23, 9:25, 19:3, 21:13, 29:7, 33:20, 37:3, 37:15, 37:22, 43:19, 45:6, 47:24, 49:20, 50:19, 53:2, 54:10, 57:6, 57:12, 57:24, 57:25, 58:4, 59:2, 59:3, 59:13, 59:14, 60:23,</p>	<p>60:24 differently 25:3 direct 13:2, 13:9, 39:14, 41:3 directed 41:15 disclose 17:25, 18:24, 23:9, 25:6, 40:6, 43:13, 45:9, 45:17 disclosed 13:17, 16:1, 33:7, 33:19 discloses 17:21, 21:12, 22:2, 22:14, 23:11, 24:19, 44:21, 59:5 disclosing 29:23, 30:17 disclosure 18:11, 20:5, 20:22, 31:2, 32:6, 32:22, 34:22, 35:9, 44:22 disclosures 20:19 discuss 8:22, 8:25, 9:2, 43:24, 50:25, 53:15, 60:1 discussed 23:16, 25:1, 31:22, 34:18, 45:7, 50:13, 52:3, 54:1 discusses 17:15, 28:10, 45:24, 60:17 discussing 34:18 discussion 22:17, 59:21</p>	<p>discussions 60:10 distinct 26:12 distributed 26:6, 26:9, 26:15, 26:17, 26:18, 29:4, 58:17, 58:20, 59:17 distribution 26:1, 26:12 document 9:14, 9:20, 13:18, 13:25, 52:15 doing 21:18, 23:24, 40:21, 42:24, 43:7, 43:8, 44:5, 46:9, 47:4, 47:6, 49:5, 51:11, 51:17, 51:24, 53:9, 53:16, 54:4 done 13:3, 13:5, 23:5, 29:10, 39:24, 44:20, 52:6, 59:6, 59:21 down 12:11 downloaded 41:14, 41:20 dr 1:19, 2:4, 4:3, 6:5, 7:6, 7:10, 27:19, 28:7, 29:18, 51:2, 58:14, 61:2, 63:5, 63:13 duly 63:6 during 36:18, 37:4, 54:2</p>	<p>E each 15:3, 57:12 earlier 16:5, 25:1, 25:8, 39:25 edge 26:19 eg 11:18, 11:24, 41:13 either 10:8, 21:8, 32:18, 34:19, 38:19, 45:9, 45:18, 46:14 element 9:19, 26:22, 26:23, 27:4, 37:16, 37:18, 37:25, 38:6, 38:13, 38:20 elements 15:4, 15:8, 15:15, 15:18, 16:3, 29:5 elided 17:19 else 37:7 embodiment 15:5, 15:7, 15:16, 15:25, 16:5, 16:22, 17:9, 17:13, 17:24, 20:10, 29:21, 35:13, 46:23, 48:19, 48:25, 58:9 embodiments 15:8, 32:10, 35:14 employed 63:18 encompasses 46:13 encrypt 31:19, 32:14,</p>
---	--	---	---

<p>42:8 encrypted 16:14, 16:19, 21:7, 41:25, 42:1, 42:16, 43:14, 51:20, 52:6, 52:9, 53:5, 53:20, 54:8, 54:17, 55:10, 56:6, 56:13 encryption 16:20, 17:17, 19:23, 19:24, 20:6, 22:3, 22:15, 22:18, 23:10, 24:19, 24:22, 24:25, 25:15, 25:16, 25:17, 25:19, 26:14, 26:15, 26:25, 27:5, 27:9, 27:24, 28:11, 29:4, 29:19, 29:24, 30:9, 31:1, 31:3, 31:20, 33:12, 34:4, 34:11, 34:19, 42:8, 43:12, 43:23, 43:25, 44:8, 44:24, 45:4, 45:5, 46:3, 47:2, 47:4, 53:21, 59:16 encrypts 56:6, 56:13 end 23:1, 23:6, 23:24, 31:12, 41:15, 42:21, 43:21, 51:20, 53:7, 55:22 enough 54:11 entailing 40:6</p>	<p>entirely 9:25 entirety 10:10 entities 36:25, 40:10, 49:20, 53:16, 54:10 entity 25:20, 26:18, 27:8, 27:22, 28:10, 44:23, 51:10, 51:24, 54:4 entrusted 19:13 entry 12:11, 12:17, 12:20 environment 41:13, 41:16 equipment 39:23 equivalent 28:6, 33:3, 33:8, 49:2, 53:25, 59:15 esq 3:5, 3:6, 3:13 essentially 19:4 et 23:6, 51:1, 53:4 even 59:5 event 40:4 every 40:14, 54:19, 55:2, 57:10 everything 7:25 evidence 46:16 exact 9:21, 25:16 exactly 7:23, 9:15,</p>	<p>9:17, 20:3, 35:7, 52:15, 55:20 examination 4:4, 6:4, 52:16 example 9:4, 19:6, 26:2, 30:25, 31:21, 32:16, 32:17, 34:1, 40:21, 49:7, 50:12, 50:15, 51:7, 58:15 examples 23:18, 41:20, 49:3, 49:4, 50:13, 51:22 exchanged 36:24, 37:7, 40:9, 41:1 excuse 32:24 exemplary 16:22, 17:13, 17:23 exhibit 5:1, 5:2, 6:20, 6:22, 6:23, 6:24, 6:25, 7:2, 7:3, 7:5, 10:12, 14:14 exhibits 6:14, 6:17, 6:19, 7:15, 7:17, 52:12 existed 22:11, 57:2 exists 44:13 expanded 17:16 expect 18:5 experience 30:2, 30:6 expert 58:14, 60:14 experts 59:13</p>	<p>explain 47:16, 52:22 explained 54:8 explicitly 20:14 exploited 55:19 external 14:22</p> <hr/> <p style="text-align: center;">F</p> <hr/> <p>fact 21:21, 26:15 facts 39:2 failed 22:13 fair 26:9 fairly 28:16, 29:6 familiar 9:8 fashion 35:8 features 57:5 federal 34:3 feel 7:6, 20:7, 42:20, 53:18, 60:21 few 17:4, 22:22, 23:4, 27:12, 31:13, 42:21, 43:18 field 25:10 figure 14:18, 14:19, 14:20, 15:14, 15:25, 17:9, 17:23, 19:17, 19:18, 19:24, 21:3, 24:20,</p>
--	---	--	--

<p>29:19, 31:15, 31:16, 31:20, 31:23, 32:9, 34:25, 35:2, 35:9, 35:12, 44:3, 44:7, 45:3 final 31:16 financially 63:20 find 14:24, 29:13 fine 20:20 fips 34:3, 35:6 first 21:7, 36:11, 38:15, 38:24, 42:1, 42:12, 42:18 five 29:14 floor 3:14 focused 30:24 follow 9:15 form 14:9, 15:10, 18:2, 20:25, 21:15, 22:4, 22:20, 23:13, 25:5, 27:10, 27:25, 28:12, 28:21, 31:6, 33:9, 33:22, 35:11, 35:18, 35:22, 38:1, 38:21, 43:15, 44:1, 44:10, 44:25, 45:13, 45:22, 46:19, 47:19, 48:7, 48:17, 54:6, 55:8, 57:20, 60:19, 61:8</p>	<p>format 17:3, 17:10, 36:23, 37:6, 40:9, 41:1 formed 35:21 forth 46:12, 51:6, 51:10, 58:3, 58:16, 63:6 forward 12:5, 46:1 forwarded 46:7 fraught 35:5 free 7:6, 28:8 fret 48:21 friday 62:2 front 7:24, 11:20, 12:8 function 35:24 functionally 28:6 functions 19:5 further 20:2, 39:5, 61:11, 61:22, 63:10, 63:13, 63:16</p> <hr/> <p style="text-align: center;">G</p> <hr/> <p>gap 40:15 gave 51:7 general 32:21 generally 25:23, 32:23, 43:4, 51:13 generate 26:10, 57:23</p>	<p>generated 32:15 generating 35:3, 35:4 generation 26:11, 32:25, 33:1, 33:5, 33:6, 33:11, 33:19, 33:21, 33:25, 34:9, 35:23, 58:22 george 3:5 give 8:7, 12:13, 16:10, 21:25, 26:10, 33:7, 34:10, 50:12, 50:15, 54:15, 56:2, 58:15, 61:4 given 6:3, 28:15, 47:24, 48:18, 48:24, 49:2, 49:7, 51:21, 53:20, 53:25, 60:24, 63:9 gives 23:17 go 10:6, 24:2, 29:16, 48:23, 50:23, 61:12, 61:15, 61:19, 61:25 goes 11:4, 16:18, 18:21, 49:23 going 6:17, 12:10, 14:5, 21:25, 24:16, 40:14, 40:23, 52:1, 53:19 google 1:4, 63:11 greenfield 3:4</p>	<p>ground 41:5 guidance 22:24</p> <hr/> <p style="text-align: center;">H</p> <hr/> <p>halfway 12:11 hand 63:23 happen 37:22, 48:25 happened 30:15 happening 37:4 happens 47:13 happy 14:12 hard 9:16, 10:1, 55:19 hardware 60:8 head 13:20 heading 10:23 headwater 1:10 hear 38:16 heartbeat 43:5 heavily 30:24 held 2:4, 44:3 helpful 28:2 here 13:9, 13:25, 14:4, 18:4, 20:10, 24:21, 25:23, 28:2, 32:12, 32:16, 33:16, 34:1,</p>
--	--	---	--

<p>38:22, 39:9, 39:13, 40:16, 50:14, 52:2, 53:12, 53:19 hereby 63:4 hereinbefore 63:6 hereunto 63:22 high 33:24 hints 21:22 historically 35:5 history 21:19, 52:18, 52:22 hour 29:12, 55:22 hours 7:24 hybrid 9:16 hypothetical 50:3, 54:15, 55:1, 55:17, 58:9, 59:1</p> <hr/> <p style="text-align: center;">I</p> <hr/> <p>id 42:13 identification 6:22, 6:24, 7:2, 7:5, 12:12, 12:20, 12:21, 31:17, 31:24, 32:12, 32:24, 34:23, 35:15, 35:20, 36:21, 37:5, 40:8 identified 46:2 identifier 8:13, 8:18, 8:24, 9:6, 12:19, 35:1,</p>	<p>46:3 imagine 15:22, 21:5, 31:8, 32:14, 36:2, 39:10, 43:4, 57:3, 57:24 impact 59:17 implement 27:13, 27:18, 28:3, 29:7, 45:6, 50:4, 53:24 implementation 10:2, 18:21, 19:14, 23:23, 24:3, 25:13, 30:6, 30:10, 30:13, 31:21, 34:11, 39:21, 44:17, 47:10, 48:11, 53:3, 54:21, 55:6, 57:5, 59:13, 60:22 implementation-s- pecific 20:9 implemented 23:1, 23:18, 36:2, 47:25, 49:15, 56:20, 60:1, 60:6, 60:18, 61:5 implementing 33:17, 60:11 implication 26:6 implies 53:24 important 25:22 include 8:22, 13:5, 13:23, 14:8, 41:10 included 15:24, 28:25,</p>	<p>34:1 includes 14:25, 15:3 including 43:20, 45:6 inconsequential 26:1 independent 58:22 index 4:1, 5:1 information 11:11, 35:3, 36:24, 37:6, 38:9, 38:10, 40:9, 41:1, 46:1, 55:3, 55:4 inherent 17:17, 18:6, 18:10, 18:25, 19:2, 19:10, 19:15, 19:18, 20:6, 20:24, 21:13, 22:3, 22:15, 22:18, 23:10, 24:25, 25:4, 25:16, 27:4, 27:9, 27:23, 28:11, 29:4, 29:19, 29:24, 30:8, 31:3, 31:17, 31:20, 31:24, 32:7, 32:11, 32:18, 32:24, 34:11, 34:19, 34:23, 35:1, 35:15, 35:20, 41:24, 42:1, 42:8, 42:14, 43:12, 43:14, 43:23, 43:25, 44:8, 44:24, 45:4, 54:16, 57:11, 57:13, 58:4, 58:16 initially 36:14, 39:1</p>	<p>initiate 11:7 input 14:21 inputs 34:8 intended 46:15 intending 39:17 interested 63:19 intermediary 18:20 internet 8:13, 8:17, 9:5 interpret 23:16 interpreting 45:2 interprocess 18:17, 23:15, 28:17, 28:23, 33:13, 46:21, 47:23, 48:6, 49:14, 50:11, 50:16, 51:3, 54:22, 56:9, 56:16 invalidity 33:4 invention 30:3 ipc 18:16 ipr 1:7, 6:6 issue 11:5 itself 13:15, 24:12, 31:13, 42:23, 43:7, 44:14, 47:11, 48:20, 52:10, 52:14, 52:19, 55:14</p> <hr/> <p style="text-align: center;">J</p> <hr/> <p>james 3:13</p>
---	---	---	--

job 45:25 jump 55:24	47:20 later 20:21 layer 9:11, 9:19, 10:4 least 8:12, 8:23, 22:12, 30:13, 31:9, 32:10, 39:7 leave 29:14 left 44:12 length 60:13 let's 14:18, 16:7, 29:16, 40:21, 54:16, 61:12, 61:15, 61:19, 61:24 level 33:24 limitation 8:12, 8:19, 51:5, 56:10, 56:17 limited 40:1, 46:25 line 17:12, 29:13 lines 16:13 literal 11:2, 11:8, 11:14, 12:8, 12:23, 16:17, 17:5, 17:6, 24:22 little 15:11, 25:8 llc 1:4, 1:10, 63:11 loaded 15:1, 15:3,	15:9, 15:15, 15:18, 16:2, 16:4 local 17:24, 18:1 locally 39:3 located 10:5, 29:20, 29:24 location 2:7 long 7:21, 19:8, 34:2, 48:21, 61:18 long-term 21:4 look 10:7, 14:2, 19:23, 22:24, 23:17, 24:10, 30:21, 30:22, 31:7, 34:7, 59:23 looked 7:15 looking 10:1, 13:19, 14:19, 18:19, 34:14, 35:6 looks 32:15, 52:4 los 1:21, 3:15 lot 22:25 lots 23:17, 23:19, 27:18, 28:17, 28:24, 33:25, 35:24, 48:23, 50:3, 53:25, 58:21, 59:2, 59:3 love 29:14	made 30:14 main 30:4, 32:4 make 10:17, 20:9, 34:15, 42:4, 59:14 making 34:7 many 8:1, 21:23, 23:4, 27:12, 28:3, 28:5, 32:25, 33:1, 37:15, 37:22, 42:3, 43:19, 47:14, 50:25, 52:3, 53:1, 54:9, 57:6, 60:22 mapping 9:17 marked 6:22, 6:24, 7:2, 7:5 marriage 63:17 massachusetts 3:8 materials 7:7, 7:18 math 26:4 mathematical 25:24 matter 63:21 maybe 7:24, 15:23, 24:8, 55:18, 58:10 mean 25:7, 26:16 means 13:4, 13:10, 20:1, 23:25, 25:14, 25:23
K			
kabat 3:12 kept 30:4, 30:9, 30:15, 32:7 kernel 48:22 keys 19:21, 25:2, 26:3, 30:3, 31:9, 31:12, 32:3, 57:23, 57:24, 58:4, 58:16 kind 19:2 knew 10:9 know 13:9, 14:14, 16:9, 19:5, 40:13, 46:22, 52:3, 54:1, 55:20, 55:23, 57:19, 59:1, 61:16, 61:19			
L			
la 20:13 label 24:22 language 24:21, 39:9, 50:24, 51:19, 53:21, 54:12, 54:14 last 8:4, 15:13, 16:8, 17:4, 21:25, 22:5, 23:4, 37:9,			
		M	
	mac 9:19		

mechanism 21:22, 28:24, 34:9 mechanisms 22:11, 33:25, 55:15, 59:23, 60:1, 60:17, 61:5 mediate 47:1 mediated 23:2, 47:12 mediates 27:16 mediating 22:9, 43:8 mediation 39:24 memorized 13:19, 14:1, 14:10, 30:20, 57:21 memory 18:5, 18:20, 19:4, 20:15, 21:5, 30:5, 30:15, 32:4, 48:22 mentioned 32:2, 51:18 message 10:19, 11:16, 12:18, 12:21, 12:22, 19:7, 41:25, 42:1, 42:16, 42:17, 42:18, 43:6, 43:11 messages 8:13, 8:17, 8:23, 9:5, 13:11, 13:14, 18:14, 39:18, 40:1, 41:15 messaging 41:11 met 55:6, 56:10,	56:17 methodology 31:1 michael 1:30, 2:15, 63:2, 63:26 mid 30:16, 31:11 middle 17:19 might 21:9, 34:5, 39:2, 59:14, 60:25 milkey 3:13, 4:4, 6:4, 10:15, 56:2, 61:14, 61:18, 61:24, 62:2 mind 15:17 minutes 23:4, 31:13, 56:3, 61:20 missing 34:24 misunderstanding 33:24 mm 11:12, 12:6, 13:1, 13:6, 13:16, 13:23, 14:8 mm's 11:11 mm1 8:25, 9:2, 9:4, 9:11, 9:18, 10:5, 11:5, 11:10, 11:18, 11:25, 12:4, 12:5, 12:6, 12:25, 13:6, 13:15, 14:7 mms 10:25, 11:5, 11:6, 11:9, 11:17, 11:23,	12:3, 12:18, 12:20, 24:24, 25:11, 26:22, 26:24, 27:8, 27:23, 28:10, 36:13, 36:14, 36:15, 36:20, 36:22, 37:11, 38:7, 38:12, 38:19, 38:25, 39:1, 39:2, 39:3, 39:5, 39:7, 39:10, 39:11, 39:14, 39:15, 39:18, 39:19, 40:1, 40:5, 42:7, 45:25, 54:16, 54:23, 56:5, 56:13 mobile 39:7 model 9:8, 9:11, 9:15, 9:16, 9:21, 9:25, 20:12, 57:4, 58:8 modelling 48:21, 60:10, 60:11 moment 8:7, 8:20, 12:13, 14:16, 14:24, 16:11, 22:21, 36:9, 41:7 monday 1:20 more 13:1, 13:6, 13:16, 13:23, 14:8, 14:12, 15:11, 20:5, 20:8, 20:23, 26:18, 43:1, 45:15, 55:4, 58:9, 59:1	move 27:19, 28:7 multimedia 10:19 multiple 9:23, 13:11, 13:14, 21:20, 22:6, 29:7, 36:2, 45:6, 45:7, 47:24, 49:3, 50:18, 51:18, 53:2, 55:15, 58:4, 60:5, 60:24, 60:25 multitiered 59:20 multitude 49:15 myself 43:17, 45:1, 47:9 <hr/> N <hr/> name 4:2, 52:15 named 20:14, 25:2 names 34:5 necessarily 17:8, 39:15, 51:15, 56:10, 56:17 necessary 47:22 need 10:10, 26:8, 34:6, 36:14, 37:15, 39:1, 39:4, 39:19, 40:2, 40:15, 43:10, 55:4, 57:22, 59:1, 62:2 needed 15:23 needs 39:7, 39:11,
---	--	--	---

Transcript of Patrick Traynor, Ph.D.
Conducted on September 21, 2026

75

43:2, 54:9, 61:2 negotiate 36:22, 37:17 negotiated 37:12, 37:15 negotiation 37:6 network 9:8, 9:25, 10:4, 14:22, 26:21, 26:23, 27:4, 37:16, 37:18, 37:25, 38:6, 38:13, 38:20, 40:13, 40:19, 40:22 networks 9:14, 9:22 next 18:21, 25:25, 36:18 nist 34:4 mmm 10:24, 11:24 non-responsive 27:19, 28:7 none 29:1, 47:22 normal 11:3, 45:24 notary 63:1, 63:3, 63:27 note 23:19, 36:7, 36:11, 37:3, 37:10, 37:23, 38:4, 38:12, 38:14, 38:17, 45:5, 55:21 notice 2:15 notification 12:4 number 5:2, 6:9, 35:3, 35:5, 35:21,	35:22, 61:4 numbering 13:24 <hr/> O <hr/> oath 6:3 objection 14:9, 15:10, 18:2, 20:25, 21:15, 22:4, 22:20, 23:13, 24:7, 24:11, 27:10, 27:25, 28:12, 28:21, 31:6, 33:9, 33:22, 34:13, 35:11, 35:18, 38:1, 38:21, 42:19, 43:15, 44:1, 44:10, 44:25, 45:13, 45:22, 46:19, 47:19, 48:7, 48:16, 49:12, 50:1, 50:9, 51:12, 52:25, 53:17, 54:6, 54:25, 55:8, 56:18, 56:25, 57:14, 57:20, 58:6, 58:19, 59:8, 59:19, 60:3, 60:19, 61:8 obvious 33:20 occur 47:17, 60:15 occurred 63:14 occurs 51:9 offered 29:9 offering 28:4 offers 46:23	offhand 10:9 office 1:1 often 9:23, 13:3 oftentimes 13:11 ogawa 5:6, 7:3, 14:13, 15:7, 15:8, 15:22, 16:1, 16:7, 17:1, 17:7, 17:8, 17:15, 17:21, 17:25, 18:4, 18:12, 18:14, 18:23, 18:24, 19:15, 20:5, 20:19, 20:23, 21:12, 21:17, 21:25, 22:1, 22:14, 23:8, 24:19, 24:22, 25:6, 29:23, 30:1, 30:10, 30:17, 30:23, 32:6, 32:23, 33:6, 33:14, 33:15, 33:19, 33:24, 34:10, 34:16, 34:18, 34:22, 35:14, 42:7, 43:19, 44:3, 44:7, 44:20, 44:22, 45:2, 45:8, 45:17, 46:7, 46:23, 58:17, 60:2 ogawa's 17:8, 26:14, 26:20, 26:25, 27:9, 27:23, 28:11, 29:19, 32:22, 34:20, 34:21, 35:10, 35:16, 42:7,	42:8, 43:12, 43:23 oh 11:22, 45:23 okay 6:12, 6:16, 7:21, 8:1, 8:5, 8:9, 8:10, 8:25, 10:3, 13:13, 13:21, 14:3, 14:13, 14:16, 14:20, 14:25, 15:3, 15:6, 15:25, 16:6, 16:7, 16:18, 16:23, 17:14, 17:20, 17:25, 18:9, 18:22, 20:4, 20:18, 21:12, 21:24, 22:13, 25:6, 25:18, 26:8, 26:14, 26:23, 27:3, 28:19, 29:16, 29:18, 29:23, 30:8, 30:17, 31:14, 31:23, 32:5, 32:17, 33:16, 34:10, 35:9, 36:3, 36:7, 36:11, 37:3, 37:23, 39:6, 39:17, 40:4, 40:25, 41:3, 41:8, 41:19, 42:15, 43:1, 43:23, 44:6, 44:19, 45:8, 46:10, 47:4, 47:16, 48:3, 48:10, 49:4, 49:8, 49:19, 50:15, 51:23, 52:8, 52:21, 53:12, 54:1, 54:15, 55:5, 56:12, 56:21,
--	--	--	--

<p>57:9, 58:2, 59:3, 59:25, 61:2, 61:12, 61:14, 61:15 one 8:7, 8:14, 8:20, 9:5, 12:13, 13:6, 13:16, 13:23, 14:8, 14:16, 15:5, 15:6, 15:16, 16:4, 16:10, 19:22, 20:5, 20:8, 20:10, 20:23, 21:19, 21:25, 22:5, 22:7, 22:21, 26:18, 27:13, 29:21, 32:10, 33:2, 36:9, 41:7, 44:18, 45:15, 46:23, 47:20, 48:1, 48:13, 48:18, 48:24, 49:4, 49:16, 50:12, 50:19, 52:2, 55:21, 57:23, 58:9, 58:15, 59:5, 60:25 only 25:19, 48:20 open 14:15, 14:16 operating 18:14, 18:18, 20:13, 20:17, 21:8, 22:9, 23:3, 23:24, 27:15, 39:22, 39:25, 40:3, 43:7, 43:13, 43:21, 43:24, 44:4, 44:7, 44:15, 44:22, 45:9, 45:18, 46:5, 46:14,</p>	<p>47:1, 47:12, 48:4, 48:12, 49:5, 49:8, 49:11, 49:17, 49:21, 49:23, 50:5, 50:21, 53:10, 53:14, 54:17, 54:18, 55:14, 56:7, 56:8, 56:22, 57:5, 58:8, 58:10, 58:25, 60:7 operation 11:3, 42:24 operations 26:13 opinion 23:11, 25:20, 27:20, 27:22, 38:4, 44:6, 48:3, 56:5, 56:12 opinions 10:3, 28:4, 50:6 opportunity 22:1 optionally 15:23 ordinary 15:20, 18:19, 30:11, 33:2, 34:6, 35:25, 45:2, 59:22 organized 41:16 original 17:2, 17:10 osi 9:8, 9:11, 9:15, 9:21 other 7:17, 7:18, 18:1, 18:24, 19:6, 20:20, 27:8, 27:22, 28:10, 28:15,</p>	<p>29:25, 30:18, 33:7, 34:22, 36:13, 38:25, 40:7, 47:11, 50:13, 51:18, 52:21, 55:15, 55:21, 57:3, 57:23 others 49:1 otherwise 51:21, 52:6, 52:9, 63:20 out 26:4, 51:19 outcome 63:20 outputs 33:3, 33:8 outside 37:21, 40:17, 41:16 over 8:1, 8:3, 9:25, 23:4, 41:25, 42:10 overhead 13:11 owner 1:12, 3:11</p> <hr/> <p style="text-align: center;">P</p> <hr/> <p>page 4:2, 5:2, 10:11, 10:13, 10:15, 11:15, 12:10, 12:11, 13:18, 13:24, 14:5, 36:3, 38:17, 45:24 pages 1:29, 13:25 paragraph 8:6, 8:21, 8:25, 9:1, 14:2, 16:8, 16:21, 17:21, 21:12, 21:25, 22:1,</p>	<p>22:14, 24:9, 28:9, 41:4, 41:8, 51:14, 57:16, 59:5, 60:16, 61:4, 61:7 parentheses 41:15 parlance 25:10 part 15:9, 15:15, 15:18, 16:2, 37:8, 38:16, 52:20, 58:23 particular 48:25 particularly 40:16 parties 63:17, 63:18 parts 42:4 party 41:14, 41:21, 63:10 pass 18:15, 26:4, 61:14 passing 18:14 patent 1:1, 1:2, 1:8, 1:12, 3:11, 5:3, 6:9, 6:21, 22:24, 23:11, 32:21, 52:10, 52:14, 52:19, 52:22 patrick 1:19, 2:4, 4:3, 63:5, 63:13 perfect 6:16, 7:10 perform 25:25 performance 30:5, 31:10</p>
---	---	--	---

<p>performed 22:23</p> <p>person 15:20, 18:19, 30:11, 33:1, 34:6, 35:25, 45:2, 59:22</p> <p>petition 61:3</p> <p>petitioner 1:6, 3:3, 61:23</p> <p>philosophical 40:12</p> <p>phone 51:1, 51:4</p> <p>phones 30:16, 31:11</p> <p>physically 35:23</p> <p>picked 25:4</p> <p>place 10:18</p> <p>platform 53:4</p> <p>please 8:5, 8:7, 10:11, 14:16, 15:12, 22:21, 36:3, 36:6, 41:7, 45:15</p> <p>plenty 51:21</p> <p>point 8:21, 14:1, 14:11, 20:4, 20:22, 22:1, 22:13, 22:16, 28:9, 31:2, 31:15, 33:10, 34:16, 36:5, 37:9, 45:23, 49:13, 49:24, 49:25, 50:3, 51:13, 51:19, 59:4, 60:16</p> <p>pointed 21:24, 32:9,</p>	<p>34:25, 53:20, 58:24</p> <p>pointer 13:9</p> <p>pointing 19:24, 52:11, 57:15</p> <p>poorly 59:21</p> <p>portions 15:23</p> <p>position 31:8</p> <p>possibility 38:23</p> <p>possible 21:3, 29:21, 39:9, 40:14, 46:23</p> <p>possibly 41:2, 50:4</p> <p>potential 48:18</p> <p>potentially 9:24, 18:7, 18:10, 18:15, 34:8, 39:12, 43:20, 44:18, 44:20, 46:4, 55:16, 56:20</p> <p>powered 23:21, 28:5, 52:4</p> <p>powers 59:10</p> <p>practice 13:3, 13:9, 58:1</p> <p>precise 24:21</p> <p>precisely 22:23, 42:5</p> <p>preparation 7:18</p> <p>prepare 7:11, 7:13, 8:2</p> <p>preparing 7:22, 14:3</p>	<p>present 27:21</p> <p>presented 27:21</p> <p>pretty 30:24</p> <p>previous 19:3</p> <p>previously 12:3, 17:16</p> <p>prioritized 52:16</p> <p>private 26:3</p> <p>probably 19:8, 39:10</p> <p>procedure 20:16</p> <p>proceeding 6:13</p> <p>proceedings 62:3</p> <p>process 11:7, 20:12, 25:25, 35:23, 36:19, 37:4, 37:8, 37:11, 37:13, 37:20, 40:6, 40:17, 47:11, 47:17, 51:9, 52:4, 58:23</p> <p>processes 24:1, 24:4</p> <p>professional 2:16</p> <p>program 15:1, 15:3, 15:9, 15:16, 15:19, 16:2, 16:4, 18:7, 18:8, 18:9, 18:11, 18:25, 19:1, 20:5, 20:23, 22:2, 22:14, 22:17, 23:9, 27:8</p> <p>prohibitions 36:20</p>	<p>properties 26:7</p> <p>proposed 26:24, 27:3, 29:5, 32:10, 33:17, 41:24, 42:6, 47:17, 52:23, 54:5, 58:2, 59:6, 60:18, 61:6</p> <p>prosecution 52:18, 52:22</p> <p>protect 53:22</p> <p>protected 46:8, 51:21, 52:6, 52:9, 53:5</p> <p>protection 48:23</p> <p>provide 11:17, 11:24, 12:18, 12:21, 46:16, 56:21, 60:5, 61:3</p> <p>provided 25:19, 59:9</p> <p>provides 33:24</p> <p>providing 40:7, 41:12</p> <p>provision 12:24, 37:5</p> <p>proxy 19:4, 19:13, 20:13, 20:15, 21:9, 22:10, 23:6, 23:25, 27:17, 39:4, 42:24, 43:8, 43:22, 43:25, 44:16, 44:23, 45:10, 45:18, 46:10, 46:14, 47:2, 49:18, 50:22, 53:10, 53:14, 55:15, 56:14, 56:15, 56:22</p>
---	---	--	---

<p>pst 1:20 public 26:2, 63:1, 63:3, 63:27 puf 35:23 pure 9:15 purposes 10:24 pursuant 2:15 put 50:6</p> <hr/> <p>Q</p> <p>question 9:13, 15:14, 19:3, 20:8, 21:2, 24:9, 24:16, 27:12, 34:16, 38:3, 40:12, 55:25 questioning 29:14 questions 14:12, 17:4, 61:22 quite 44:11 quote 52:9 quoting 17:7, 34:17, 52:21</p> <hr/> <p>R</p> <p>random 35:3, 35:5, 35:21, 35:22 rather 33:18 re-encrypt 42:13 re-encrypted 17:22, 18:1 re-encrypting 17:15</p>	<p>read 8:8, 8:9, 8:20, 12:14, 16:11, 16:12, 36:9, 40:1 reading 35:19 real 22:11, 29:10 really 29:11, 40:2, 51:19, 58:11, 59:20 reason 30:5 reasons 31:10 recall 10:6, 10:8, 13:21, 14:6, 35:19 receive 16:15, 39:18 received 16:15 receives 24:6, 41:24, 42:16 receiving 18:8, 18:11, 19:7, 19:12, 21:7, 21:11, 24:5, 43:5 recess 29:17, 61:13, 61:21 recipient 10:25, 11:5, 11:6, 11:17, 11:23 record 2:9, 29:16, 61:12, 61:25, 63:9 redirect 20:21, 61:16 reducing 13:10</p>	<p>refer 7:6 reference 5:5, 5:6, 7:1, 7:4, 10:12, 11:4, 11:16, 11:18, 11:24, 12:2, 13:2, 14:14, 45:16, 45:17 references 33:7, 52:11, 52:13 referred 40:15 refers 11:16 refine 24:8 regarding 6:6, 6:9, 8:11, 10:4, 24:3, 34:22, 37:24, 41:5, 46:17, 56:22 register 36:14, 39:1, 39:5, 39:7, 39:11, 39:19, 40:5 registered 2:16 registering 38:12, 38:13, 38:19 registration 36:19, 37:4, 37:8, 37:11, 37:13, 37:20, 37:24, 38:6, 40:6, 40:17, 58:23 reiterate 25:9 relate 40:25 related 35:12, 35:16,</p>	<p>63:16 relates 35:9, 38:5 relay 11:1, 11:6, 11:10, 12:18, 12:20, 24:24, 25:11 reliance 33:12 relies 33:14, 33:15 rely 32:23 relying 15:21, 18:3, 18:13, 18:22, 21:16, 33:5, 33:18, 43:18, 58:3 remember 52:15 remote 1:18 remotely 2:4, 63:14 removable 30:9, 30:14, 30:18, 30:24, 30:25, 31:4, 31:9, 31:18, 31:25, 32:3, 32:7, 32:19, 34:12, 34:20, 34:21, 35:10, 35:16, 44:13 removal 30:4 repeat 19:3, 38:2, 38:15, 45:1, 45:14 repeatedly 28:16 repeating 43:17, 47:9 report 7:15, 7:17,</p>
--	---	---	---

Transcript of Patrick Traynor, Ph.D.
Conducted on September 21, 2026

79

14:11, 23:20, 51:14, 57:22 reported 1:30 reporter 2:16, 2:17, 6:17, 63:1, 63:2 represented 63:11 request 11:6, 11:19, 11:25, 12:4, 13:6, 52:16 requests 9:1 require 40:3, 51:3 required 40:23, 48:13 requirement 48:6, 54:22, 55:5 requirements 48:14 requires 39:23, 51:2 reread 7:15 rereading 7:25 research 1:10 respond 11:10, 61:6 response 9:2, 9:4, 9:12, 9:18, 10:5, 11:9, 11:11, 12:4, 12:5, 12:6, 12:7, 12:25, 13:7, 13:15, 13:22, 14:7, 55:2, 61:3 responsible 41:11 restate 42:3 resulting 45:19	results 37:13 retrieval 10:18, 10:23, 11:7, 11:18, 13:6, 13:7, 13:15, 13:22 retrieve 9:1, 9:2, 9:4, 9:12, 9:18, 10:5, 11:6, 11:10, 11:25, 12:25, 14:7 retrieved 10:24 reverted 17:2 review 7:18, 10:10, 28:8 right 6:10, 19:17, 28:20, 43:3, 49:4, 59:7, 59:18, 61:24 rough 62:1 roughly 17:19 rpr 1:31 running 40:11 russ 3:12	17:20, 19:25, 25:5, 25:16, 41:9, 55:25, 57:11 sarwar 3:6 satisfied 48:14, 50:24, 51:6 satisfies 54:14 satisfy 48:5, 54:11, 54:21, 55:16 saving 13:4 saw 15:6 say 7:23, 8:3, 9:7, 9:17, 10:1, 16:18, 18:22, 20:8, 30:16, 40:21, 49:22, 52:8, 54:16, 59:11 saying 49:19, 51:5 says 11:9, 11:17, 11:21, 12:20, 31:17, 37:14, 37:20 scenario 46:13, 55:20 scope 24:7, 28:13, 34:13, 37:21, 40:18, 42:19, 48:8, 48:16, 49:12, 50:1, 50:9, 51:12, 52:25, 53:17, 54:25, 56:18, 56:25, 57:14, 58:6, 58:19, 59:8, 59:19, 60:3, 60:20,	61:9 scott 3:5, 10:13, 10:16, 14:9, 15:10, 18:2, 20:25, 21:15, 22:4, 22:20, 23:13, 24:7, 27:10, 27:25, 28:12, 28:21, 31:6, 33:9, 33:22, 34:13, 35:11, 35:18, 38:1, 38:21, 42:19, 43:15, 44:1, 44:10, 44:25, 45:13, 45:22, 46:19, 47:19, 48:7, 48:16, 49:12, 50:1, 50:9, 51:12, 52:25, 53:17, 54:6, 54:25, 55:8, 55:24, 56:4, 56:18, 56:25, 57:14, 57:20, 58:6, 58:19, 59:8, 59:19, 60:3, 60:19, 61:8, 61:15, 61:19, 61:22, 62:1 screen 29:1, 47:22, 59:11 second 10:23, 27:15, 55:22 section 11:16, 36:8, 41:9 secure 8:12, 8:17, 9:5, 23:15, 24:1, 24:3, 28:16, 28:23, 33:13, 34:9,
	S		
	sacks 3:4 said 13:8, 15:16, 18:3, 18:9, 22:22, 44:11, 44:12, 52:2, 52:5, 53:1, 53:6, 55:9 same 10:18, 11:15,		

<p>35:7, 41:12, 46:21, 47:23, 48:6, 49:14, 50:11, 50:16, 51:2, 51:4, 51:8, 54:22, 56:9, 56:16, 57:22, 59:18 secured 51:20, 52:5, 52:8 securely 57:7, 59:24 security 29:8, 48:24, 57:4, 58:8, 58:13, 60:5, 60:10 see 8:10, 8:15, 9:2, 10:9, 10:18, 10:22, 11:2, 11:4, 11:8, 11:13, 11:14, 11:15, 11:22, 12:1, 12:10, 12:16, 12:17, 12:19, 12:23, 14:20, 14:24, 14:25, 15:2, 16:3, 16:14, 16:17, 16:21, 17:11, 17:14, 17:19, 19:24, 25:16, 31:16, 34:5, 34:22, 36:16, 37:1, 37:7, 41:17, 43:10, 44:12, 45:3, 52:11 seed 32:25 seeing 40:16 seems 31:20, 32:23, 35:12</p>	<p>semantic 40:15 send 39:18 sending 17:25, 19:4 sends 54:16, 54:19, 56:6, 56:8, 56:13, 56:15 sent 32:13 sentence 10:23, 17:12, 36:11, 36:18, 37:9, 37:19, 38:24 separate 26:3 september 1:20, 63:23 sequence 35:4, 35:5 server 11:1, 11:6, 11:10, 12:18, 12:21, 14:21, 16:16, 24:24, 25:12 service 18:15, 23:16, 49:14, 50:11, 54:23, 56:10, 56:17, 58:24 services 41:11, 41:12 set 46:12, 51:6, 51:10, 58:3, 58:15, 63:6, 63:22 shall 10:24, 11:5, 11:10, 11:17, 11:24, 12:18, 12:21 shape 23:21</p>	<p>shared 16:14, 16:19, 16:20, 24:19, 24:22, 24:23, 25:4, 25:7, 25:9, 25:11, 25:12, 25:21, 25:23, 26:5, 26:8, 26:10, 26:14, 26:20, 26:25 shorthand 2:17, 63:1 should 34:2 show 49:15 showed 44:3 showing 53:19 shows 35:1 signature-plkal 63:24 signed 51:20 similarly 28:3, 35:2 since 18:18, 22:12, 57:3 single 13:1, 13:22, 14:7, 21:18, 25:20, 54:19 site 14:21, 14:25, 31:19, 32:13, 44:4 sitting 14:4, 33:16, 53:12 size 47:21, 47:22, 59:11 skill 15:20, 18:19,</p>	<p>30:11, 33:2, 34:6, 35:25, 45:2, 59:22 software 8:14 solely 30:9 some 6:17, 17:18, 21:9, 26:21, 33:24, 35:2, 35:22, 39:12, 43:4, 47:2, 47:11, 48:10 somehow 35:16, 53:24 someone 60:11 something 14:11, 15:17, 17:6, 19:4, 21:20, 34:24, 43:21, 55:18 sometimes 30:3 somewhere 44:16 sorry 9:1, 13:6, 16:24, 18:7, 26:19, 38:2, 38:15 sort 9:16, 18:16, 26:1, 29:9, 43:4, 57:25 sounds 55:18 sources 34:7 space 30:2, 35:5 speak 60:6 speaking 24:23 speaks 24:12</p>
---	---	--	---

spec 22:24, 48:1, 49:16, 50:14 specialized 9:16 specific 10:2, 14:2, 15:12, 19:14, 24:9, 25:24, 30:7, 34:5, 36:13, 39:15, 39:22, 46:4, 50:5, 57:16 specifically 8:3, 20:18, 25:13, 32:20, 36:7, 43:1, 49:21, 54:3 specification 37:21, 40:18 specify 47:5, 47:7, 49:10, 51:24 spend 7:22, 31:13 spoke 7:16, 25:8 st 63:23 stacks 9:23 standard 20:16, 22:11, 25:10, 29:9, 34:3, 34:4, 35:7, 57:25 stands 16:5 start 14:18 state 2:18, 11:4, 41:9, 63:3, 63:27 stated 2:9, 51:7 states 1:1, 10:23,	11:23, 12:18, 16:14, 17:1, 36:12, 36:18 step 31:16 steps 46:3 still 16:5 storage 17:22, 17:24, 18:1, 18:4, 18:20, 20:15, 21:3, 21:4, 21:22, 29:20, 29:25, 30:4, 30:9, 30:14, 30:18, 30:19, 30:24, 30:25, 31:3, 31:9, 31:18, 31:25, 32:3, 32:6, 32:7, 32:19, 34:12, 34:20, 34:21, 35:10, 35:17, 44:13 store 12:6 stored 30:13, 31:4, 31:9, 32:3, 32:18, 34:19, 34:23 storing 17:21 straightforward 28:16, 29:6 strike 12:19, 14:4, 16:25, 25:6, 27:19, 28:7, 46:10, 47:6 strongly 21:22 structure 48:22 subheading 10:18	submit 12:4 submitted 6:13 subsection 36:6 subset 8:12, 8:17, 8:22, 58:11 sufficient 43:6, 48:2 suggesting 17:11, 55:18 supply 60:9 support 31:21 supposed 55:3 sure 10:17, 20:9, 28:14, 29:11, 32:8, 34:7, 34:15, 42:4, 56:4, 61:10 suspect 6:18 sworn 4:3, 63:6 symmetric 19:11, 19:16, 19:19, 19:21, 19:22, 20:1, 25:2, 25:10, 25:14, 25:23, 26:11, 26:21 system 18:15, 20:13, 21:8, 22:9, 23:3, 23:25, 27:16, 29:8, 39:22, 40:3, 42:24, 43:7, 43:13, 43:22, 43:24, 44:4, 44:7, 44:15, 44:23, 45:10, 45:18, 46:5,	46:14, 47:1, 47:12, 47:13, 47:24, 48:5, 48:12, 49:5, 49:8, 49:11, 49:14, 49:18, 49:21, 49:23, 50:5, 50:21, 53:10, 53:14, 54:17, 54:18, 54:19, 54:21, 55:14, 56:7, 56:8, 56:22, 57:5, 58:8, 58:10, 58:12, 58:25, 59:2, 59:10, 59:17, 60:7 systems 18:18, 19:7, 20:17, 21:19, 22:11, 29:10, 39:25, 41:10, 57:3, 59:15, 60:12 <hr/> T <hr/> take 29:14, 31:7, 60:12, 62:1 taken 29:17, 60:23, 61:13, 61:21, 63:8 taking 14:23 talk 20:19, 23:19, 23:20, 23:21, 33:11, 46:22, 47:21, 47:23, 50:5, 51:14, 51:15 talked 22:22, 23:3, 50:18, 60:13 talking 16:3, 22:6,
--	--	---	---

<p>23:15, 38:22, 50:2, 55:20 talks 28:22, 46:8, 46:21 teachings 15:21, 18:4, 18:13, 18:23, 18:24, 21:17, 33:15, 43:13, 43:18, 43:24 technically 23:12 techniques 29:7 teens 30:16, 31:12 tell 28:15, 29:11 telling 53:13 tells 19:25, 44:5, 46:6 temporarily 30:15, 32:4 ten 61:19 term 34:17 terms 19:10 testifying 6:6 testimony 8:21, 28:15, 33:16, 48:9, 54:13, 63:9 text 11:2, 11:8, 11:14, 11:20, 12:8, 12:23, 16:17, 17:5, 17:11, 17:18, 20:2, 40:16 th 3:14 thank 7:9, 10:16,</p>	<p>11:22, 31:14, 61:24, 62:1 theory 46:11, 46:13, 51:9 therefore 53:5 thing 25:16, 40:14 things 20:16, 20:20, 21:9, 23:19, 28:24, 35:6, 37:4, 37:15, 40:19, 45:3, 47:22, 51:18, 52:3, 54:2, 60:14 think 10:9, 23:14, 24:11, 25:3, 29:3, 29:6, 33:23, 52:1, 57:17 third 22:10, 27:17, 41:14, 41:20, 50:22 threat 60:10 three 29:9 through 14:5, 15:4, 15:8, 15:15, 15:18, 16:1, 16:13, 21:23, 30:16, 30:21, 30:23, 31:11, 39:14 throughout 7:8 tiered 41:16 time 9:14, 9:20, 15:21, 19:8, 20:8, 22:5,</p>	<p>30:3, 30:12, 32:2, 36:1, 39:13, 40:20, 45:15, 47:20 times 22:22, 27:12, 42:21, 43:18, 45:7, 49:3, 51:18, 53:1, 60:22 title 30:25 today 6:6, 6:18, 7:8, 14:4, 33:17, 50:14, 53:12 today's 7:11, 7:13, 7:19, 7:22, 8:2 top 13:20, 17:14 total 58:10 towards 16:8 trademark 1:1 traffic 9:25 transiting 38:10 transmission 48:4, 58:4 transmit 31:17, 56:23 transmitted 31:24, 34:20, 34:24, 35:2, 48:12, 49:10 transmitting 42:9 transport 36:12, 38:24 traynor 1:19, 2:4, 4:3, 6:5, 7:6, 7:10, 27:20, 28:8, 29:18, 51:2,</p>	<p>58:14, 61:2, 63:5, 63:14 trial 1:2 true 63:9 trust 58:10 trusted 20:12, 21:9, 22:10, 23:25, 41:12, 42:24, 43:8, 43:22, 43:24, 44:15, 44:23, 45:10, 45:18, 46:10, 46:14, 47:2, 47:11, 50:22, 53:10, 53:14, 55:14, 56:14, 56:15, 56:22 try 13:19, 59:24 trying 28:2, 46:11, 51:4, 52:15, 60:4 ts 5:5, 6:25, 10:12, 12:25, 13:5, 13:17, 13:23, 33:5, 36:4, 38:18, 40:5, 41:20, 42:7, 45:8, 45:16, 45:24, 58:24, 60:2 turhan 3:6 turn 8:5, 10:11, 14:13, 14:17, 16:7, 36:3 two 8:4, 19:20, 24:1, 24:4, 26:3, 26:12, 36:24, 37:3,</p>
--	--	--	---

40:10	46:22, 55:13	versus	49:16, 50:4,
U	useful	39:14	50:19, 53:2,
ue	53:8	via	53:25, 57:3,
39:23	user	14:22, 39:18,	57:6, 57:7,
ultimately	10:25, 11:5,	43:25	58:22, 59:2,
19:6, 21:10,	11:17, 11:23,	video	59:3, 59:24,
22:7, 35:21,	12:3, 23:20,	40:21	60:5, 60:23,
40:13, 55:11	24:24, 26:22,	videoconference	60:24
unable	26:24, 27:8,	1:18, 2:2	we'll
59:4	27:23, 28:10,	view	62:1
uncloneable	36:15, 36:20,	12:5, 54:11	we're
35:24	36:22, 37:11,	voltage	23:14, 50:2,
uncommon	37:16, 37:17,	59:11	52:1, 53:18,
32:2	38:7, 38:10,	vs	55:21
under	38:12, 38:19,	1:8	we've
10:22, 11:3,	39:2, 39:3,	vulnerabilities	34:18
11:15, 11:22,	39:8, 39:11,	60:8	weather
36:8, 38:5,	39:15, 39:18,	vulnerability	53:8
38:17, 52:17	39:19, 39:23,	55:19	weeks
understand	40:5, 42:7,	W	8:4
6:5, 21:11,	45:25, 54:16,	waiting	well-known
25:22, 30:23,	54:23, 56:5,	24:13	41:10
32:8, 37:23,	56:13	want	well-understood
40:22, 45:3,	using	20:19, 24:9,	57:2
46:11, 49:19,	16:19, 17:16,	36:12, 38:24,	whatever
51:4, 60:14	20:15, 31:19,	42:4, 50:5	25:13, 37:10
understanding	34:8, 34:9,	way	wherein
13:3, 32:9	39:10, 42:8,	9:21, 19:5,	8:12, 46:23
unit	44:8, 44:24,	20:10, 22:8,	whereof
16:15, 16:23,	58:3	22:9, 22:10,	63:22
16:24, 17:16	V	27:13, 27:15,	whether
united	value	27:17, 46:8,	13:22, 14:7,
1:1	31:17, 31:24,	48:20, 50:12,	15:15, 19:1,
unmarked	32:12, 32:13,	50:19, 50:21,	19:11, 19:13,
6:15	32:24, 34:19,	50:22, 53:21,	23:1, 23:5,
upload	34:23, 36:22,	59:6, 63:19	23:23, 25:24,
6:17, 12:6	37:5, 40:8	ways	26:3, 26:6,
uploading	various	22:6, 22:25,	30:8, 30:14,
6:20	29:5	23:5, 27:13,	35:22, 35:23,
uri	vas	27:18, 28:3,	39:13, 42:23,
11:21, 11:24	36:15, 36:20,	28:5, 28:17,	43:6, 44:14,
url	36:23, 37:12,	29:9, 35:24,	44:15, 47:10,
11:18, 11:21	39:5	36:2, 37:22,	48:14, 50:10,
use	vasp	43:19, 45:6,	53:9, 55:5,
33:2, 33:20,	25:12	45:7, 47:14,	55:13, 57:10,
41:25, 42:11,	versions	47:24, 47:25,	59:17, 60:7,
42:17, 43:2,	15:22	48:2, 49:15,	61:16
			wilshire
			3:14

Transcript of Patrick Traynor, Ph.D.
Conducted on September 21, 2026

84

<p>within 12:17, 12:19, 41:12, 58:5, 58:25, 63:3 without 10:1, 14:5, 42:1, 42:18 witness 2:7, 4:2, 10:17, 14:10, 15:11, 18:3, 21:1, 21:16, 22:5, 22:21, 23:14, 24:8, 27:11, 28:1, 28:14, 28:22, 31:7, 33:10, 33:23, 34:14, 35:12, 35:19, 38:2, 38:22, 42:20, 43:16, 44:2, 44:11, 45:1, 45:14, 45:23, 46:20, 47:20, 48:9, 48:18, 49:13, 50:2, 50:10, 51:13, 53:1, 53:18, 54:7, 55:1, 55:9, 56:19, 57:1, 57:15, 57:21, 58:7, 58:20, 59:9, 59:20, 60:4, 60:21, 61:10, 61:14, 63:5, 63:9, 63:22 wolf 3:4 word 25:9, 34:15 work 53:11 worked 18:18, 19:8 worth 35:4</p>	<p>wouldn't 39:15 written 8:20, 54:13 wrong 57:8 <hr/>Y<hr/>yeah 30:22, 35:13, 38:4, 38:17, 41:2, 42:6, 45:16, 56:2 years 20:17 <hr/>.<hr/>.1 11:3 .18 36:7, 38:5, 38:17 .3 11:16, 11:23 .5 10:18, 11:3, 11:16, 11:23 <hr/>0<hr/>00 1:20, 63:15 00203 1:7, 6:6 02210 3:8 09 63:14 <hr/>1<hr/>1 24:20 1.102 52:17 10 41:6 1001 5:3, 6:20, 6:22, 52:12,</p>	<p>52:14 1002 52:12, 52:14 1003 5:4, 6:23, 6:24 1004 5:5, 6:25, 7:2, 10:12 1005 5:6, 7:5, 14:14 105 7:3 12 3:14 12424 3:14 134 8:6 135 8:21 136 8:25, 9:1, 9:7 140 35:7 140.2 34:3 14491 1:31, 2:17 146 51:14, 51:20, 53:21 15 7:24 <hr/>2<hr/>2 16:16, 35:7 20 7:24, 30:16, 31:11 2000 19:9 2002 19:9 2026 1:7, 1:20, 6:6, 63:23 21 1:20, 63:14,</p>	<p>63:23 218 13:18 220 13:25 2206 3:8 23.140 5:5, 6:25, 10:12, 12:25, 13:5, 13:17, 13:23, 33:5, 36:4, 38:18, 40:5, 41:20, 42:7, 45:8, 45:16, 45:24, 58:24, 60:2 23.40 55:11 26 63:14 271 41:4 275 41:8 <hr/>3<hr/>30 17:22, 17:24, 21:3, 21:21 31 15:4, 15:8, 15:15, 15:18, 16:1, 62:3, 63:15 310 3:16 32 16:15, 16:23 33 16:24 37 52:17 39 15:4, 15:8, 15:15, 15:18, 16:1 <hr/>4<hr/>40 20:17</p>
--	--	---	--

<p>403 5:3, 6:21, 20:14, 22:24, 23:11, 48:1, 49:16, 50:14</p> <p>41 23:17</p> <p>42 22:25, 23:17</p> <p>45 31:16</p> <p>46 31:18, 32:14</p> <p>4a 41:5</p> <hr/> <p>5</p> <hr/> <p>5 29:20</p> <p>51 15:1, 15:3, 15:9, 15:16, 15:19, 16:2</p> <p>52 16:20, 24:22, 26:25</p> <p>53 17:17, 19:23, 27:5, 27:9, 27:24, 28:10</p> <p>54 36:3, 38:17</p> <p>56 45:24</p> <p>59 16:13</p> <hr/> <p>6</p> <hr/> <p>600 3:7</p> <p>617 3:9</p> <p>62 16:13</p> <p>63 1:29</p> <p>646 3:9</p>	<p>65 17:12</p> <p>69 10:11, 10:15</p> <hr/> <p>7</p> <hr/> <p>7 1:20, 63:15</p> <p>7.1 36:7, 38:5, 38:17</p> <p>70 12:10</p> <p>7474 3:16</p> <hr/> <p>8</p> <hr/> <p>8.1 10:18, 11:3, 11:16, 11:23, 12:24</p> <p>80 18:18, 22:12, 57:3</p> <p>8000 3:9</p> <p>826 3:16</p> <hr/> <p>9</p> <hr/> <p>9 62:3, 63:15</p> <p>9,232,403 1:9, 6:10</p> <p>90025 3:15</p>	
---	---	--