1 UNITED STATES PATENT AND TRADEMARK OFFICE

2 _____

3 BEFORE THE PATENT TRIAL AND APPEAL BOARD

4 _____

5 SAMSUNG ELECTRONICS CO., LTD,

6 Petitioner ,

7 v.

8 BROADPHONE LLC,

9 Patent Owner.

10 _____

11 Case IPR2024-00153, IPR2024-00154, IPR2024-00155

12 U.S. Patent No. 8,170,583; 8,594,698; 10,341,811

13 _____

14

15 Deposition of TODOR V. COOKLEV, PH.D.

16 Conducted Virtually

17 Tuesday, October 22, 2024

18 11:03 a.m. EDT

19 Job No.: 556957

20 Pages: 1 - 155

21 Stenographically reported by: Judith E. Bellinger,

22 RPR, CRR, CSR-TX CCR-WA, CCR-NM

SAMSUNG EXHIBIT 1079
Samsung Electronics Co., Ltd. v. Broadphone LLC
IPR2024-00154

1 Deposition of TODOR V. COOKLEV, PH.D., conducted
2 virtually.
3
4
5
6
7
8
9
10
11 Pursuant to notice, before Judith E.
12 Bellinger, Registered Professional Reporter,
13 Certified Realtime Reporter, and Notary Public in
14 and for the State of Maryland.
15
16
17
18
19
20
21
22

1 A P P E A R A N C E S
2
3 ON BEHALF OF THE PETITIONER:
4 DANIEL ZEILBERGER, ESQUIRE
5 JASON MIKUS, ESQUIRE
6 PAUL HASTINGS LLP
7 2050 M Street NW
8 Washington, DC 20036
9 202.551.1700
10
11 ON BEHALF OF THE RESPONDENT:
12 CHRISTIAN W. CONKLE, ESQUIRE
13 RUSS AUGUST & KABAT
14 12424 Wilshire Boulevard
15 12th Floor
16 Los Angeles, CA 90025
17 310.826.7474
18
19
20
21
22

C O N T E N T S

EXAMINATION OF TODOR V. COOKLEV, PH.D. PAGE
By Mr. Zeilberger 5
By Mr. Conkle 127
By Mr. Zeilberger 130

E X H I B I T S

Previously Marked:
Exhibit:
Exhibit 1001 United States Patent Number 8,170,583 B2 32
Exhibit 1006 United States Patent Number 8,477,731 B2 75
Exhibit 1011 United States Patent Number 6,944,465 B2 72
Exhibit 2003 Declaration of Todor V. Cooklev, Ph.D. 14

1 P R O C E E D I N G S
2
3 TODOR V. COOKLEV, PH.D.,
4 Being first duly sworn, was examined
5 and testified as follows:
6 EXAMINATION BY COUNSEL FOR THE PETITIONER
7 BY MR. ZEILBERGER:
8 Q Good morning, Dr. Cooklev.
9 A Good morning.
10 Q Could you, please, state your full name
11 for the record.
12 A My name is Todor Cooklev.
13 Q Have you been deposed before?
14 A Yes, I have.
15 Q How many times?
16 A I've been deposed more than 40 times.
17 Q Okay. So, you are probably familiar
18 with the ground rules and, so, I'll just remind
19 you of them.
20 You understand today that there is a
21 court reporter who is transcribing the words that
22 we say?

1 A Yes, I understand that.
2 Q And given that the court reporter can
3 only transcribe one person at a time, I would
4 appreciate it if you wait for me to finish my
5 questions before speaking, and I will do the same
6 for you.
7 Is that okay?
8 A Yes.
9 Q And if at any point today you don't
10 understand a question that I ask, please, let me
11 know; otherwise, I'll assume you understood the
12 question.
13 Is that fair?
14 A Yes.
15 Q Do you understand that you're under
16 oath today?
17 A I do.
18 Q Is there any reason you cannot testify
19 completely, truthfully, and accurately today?
20 A I'm not aware of a reason.
21 Q Who first contacted you about this
22 case?

1 MR. CONKLE: You can answer.
2 A To the extent that I recall, it was
3 probably counsel for Broadphone.
4 Q And when you say "counsel for
5 Broadphone," are you referring to an attorney from
6 Russ, August & Kabat?
7 A Yes.
8 Q When were you retained for these
9 proceedings?
10 A I do not remember, Counsel. It was at
11 least sometime before I submitted the
12 declarations.
13 Q Was it after the IPR petitions were
14 filed?
15 A I do not recall that detail.
16 Q What is your hourly rate for these
17 proceedings?
18 A And just for the record, I'm looking at
19 my declaration.
20 My declaration, paragraph 2, states
21 that I'm compensated, my standard hourly rate. I
22 think it is 700.

1 Q And just to orient me, what materials
2 do you have in front of you today?
3 A Yes, Counsel, thank you for the
4 question.
5 I received instructions from counsel
6 for Broadphone and the counsel defending me today,
7 I received instructions to have some documents
8 printed, which I did.
9 So, at the moment, around me, I have, I
10 believe, everything that I was asked to print,
11 that it might facilitate the deposition today.
12 Just generally, here in the office and
13 on my desk, there are some -- there are a few
14 things that you would find in an office, but they
15 have no relation to the case. That's what I have.
16 So, the only thing that is relevant to
17 the IPR, or the three IPRs, the only thing is the
18 three patents that have been challenged, the prior
19 art, and my three declarations.
20 Q Understood.
21 So you have six documents with you
22 today; is that right?

1 A Six -- I think there are a little bit
2 more than six. I can count.
3 Q I apologize, that's my mistake. I
4 hadn't heard that you also had referenced the
5 prior art, which would be the additional
6 documents. Okay.
7 A Yes.
8 Q Do you have -- well, I guess, let me
9 take a step back.
10 Could you, please, list out what
11 documents you are referring to when you are
12 referring to the prior art, which documents do you
13 have with you today?
14 A Yes, certainly.
15 So, I have, and let me put this on the
16 side, this is one of the patents.
17 So I do have the Blomqvist, Houri,
18 Damarla patents.
19 I have Spain, the Spain reference,
20 Nanda, Hunzinger.
21 And I think this is it.
22 I mean, if I've missed something, maybe

1 I can get it electronically, but I don't think I
2 have.
3 Q Do you have any means of communication
4 open today, besides this Zoom connection?
5 A No. And I'm actually closing my email
6 window, which I had open just for the link, for
7 the deposition link. But that's closed.
8 So no means for communication in the
9 office where I am.
10 Q Do you understand you're here today
11 regarding three proceedings that you submitted
12 declarations in, IPR 2024-00153, 00154, and 00155?
13 A Yes. Yes.
14 Q Would it be fair to say that your
15 opinions regarding any particular reference that
16 is common among the proceedings would be the same
17 for each proceeding?
18 A Well, I think we have to be careful
19 about this. And so, I'm not sure that one answer
20 would apply. That some things could be common,
21 but some things could be different. And since
22 today is -- we're talking about three IPRs, I will

1 try to be clarifying in the context of which IPR
2 is my answer. And if I don't understand in the
3 context of which IPR is the question, I hope that
4 I can ask for you, Counsel, to clarify.
5 Q Are you saying that there are some
6 references that you have interpreted one way for
7 one proceeding and a different way for a different
8 one of these proceedings?
9 A I don't think that's quite what I am
10 saying.
11 I don't think I can just agree that I
12 am interpreting a reference one way or a different
13 way.
14 First, my declarations are in response
15 to the declaration submitted by Dr. Kevin
16 Almeroth. And so, that is what I am responding
17 to, and these are -- and those were the arguments
18 that I considered. And so, I will leave it at
19 that.
20 Q Did you spend any time preparing for
21 today's deposition?
22 A Yes, I have.

1 Q How much time?
2 A I think on the order of a couple of
3 days.
4 Q When you say "on the order of a couple
5 of days" was that a couple of full days or a
6 couple of hours for a couple of days?
7 A No, I meant, generally, what would be
8 considered around two full days.
9 Q What did you do to prepare for today's
10 deposition?
11 MR. CONKLE: Caution the witness not to
12 reveal the substance of attorney-client
13 communications or work product.
14 But you can answer -- if you can answer
15 generally, without getting into that, you may.
16 A Oh, I reviewed the patents; I certainly
17 reviewed my three declarations; I had some
18 discussions with counsel.
19 Generally, that's about what I did.
20 Q When you say "generally," that's about
21 what you did, is there anything else you did to
22 prepare for the deposition today?

1 A Well, I also reviewed the -- I reviewed
2 the prior art references.
3 Now, the difference -- at the different
4 level of detail, I reviewed them. But I took a
5 look, also, at the prior art references.
6 Q Anything else?
7 A I don't recall anything else.
8 Q You mentioned having spoken to people
9 to prepare for today's deposition. I do not want
10 to know the substance of any communications you
11 had, but can you, please, identify who you spoke
12 to, to prepare for today's deposition?
13 A I spoke to counsel for Broadphone
14 that's defending me today. And I also spoke with
15 another lawyer from the same law firm. I spoke
16 briefly.
17 Q Did you speak to anybody that is not
18 from Russ, August & Kabat, in preparation for
19 today's deposition?
20 A No, I did not.
21 Q Did you review any materials that are
22 not presently of record in these IPR proceedings

1 to prepare for today's deposition?
2 MR. CONKLE: Just an objection.
3 Privileged and work product.
4 But, Dr. Cooklev, if you can answer
5 without getting into materials prepared by or for
6 attorneys, or other privileged material, feel free
7 to do so.
8 A I don't think I did. I don't recall at
9 the moment.
10 Q Can you, please, pull out Exhibit 2003
11 from the 00153 proceeding, which is your
12 declaration directed to the '583 patent.
13 (Exhibit 2003 previously marked for
14 identification and attached to the transcript.)
15 A I'm looking at it.
16 Q If I refer to this today as your '583
17 patent declaration or 153 proceeding declaration,
18 will you understand what I'm referring to?
19 A Yes.
20 Q And if you turn to page 15, the last
21 page of this declaration, is that your signature
22 provided?

1 A Yes. That's correct.
2 Q Did you prepare this declaration?
3 A Well, if you mean whether I wrote it
4 from start to finish without any help from
5 counsel, no.
6 Counsel did help properly format my
7 opinions. And together, with that, maybe some
8 general tutorial editing.
9 The opinions, though, were my opinions.
10 Q And is it fair to say that you reviewed
11 and signed off on the final version of this
12 declaration that was submitted to the patent
13 office?
14 A Yes.
15 Q If you can, please, pull out your
16 declaration Exhibit 2003 in the '154 proceeding,
17 which is directed to the '698 patent.
18 A I'm looking at it.
19 Q And, similarly, if I refer to this
20 declaration as your '698 patent declaration or the
21 '154 proceeding declaration, will you understand
22 what I'm referring to?

1 A Yes.
2 Q And if you turn to the last page, is
3 that, similarly, your signature?
4 A Yes. That's correct.
5 Q And would the answers you provided as
6 to the 153 proceeding declaration, in terms of
7 your process for preparing the declaration, also
8 apply to this '154 proceeding declaration?
9 A Yes.
10 Q If you can, please, open up your third
11 declaration, Exhibit 2003, in the 155 proceeding.
12 A Yes. I'm looking at it.
13 Q And if I refer to this declaration as
14 the 155 proceeding declaration, or the '811 patent
15 declaration, will you understand what I'm
16 referring to?
17 A Yes.
18 Q And if you turn to the last page of
19 this declaration, is that your signature?
20 A Yes.
21 Q And, similarly, to the previous
22 declaration, would the answers you provided

1 regarding the process of preparing the declaration
2 for the 153 proceeding declaration also apply to
3 your process for the 155 proceeding declaration?
4 A Yes.
5 Q Just to orient us on one particular
6 declaration, if you pull back up the
7 153 proceeding declaration --
8 A Yes.
9 Q -- Exhibit 2003.
10 And let us know when you have it.
11 A I have it here.
12 Q And can you, please, turn to paragraph
13 18.
14 A I'm looking at it.
15 Q You indicate, in paragraph 18, that you
16 have reviewed materials, and then you provide a
17 list of several materials -- several specific
18 documents, correct?
19 A Yes, this is the section "Materials
20 Considered."
21 Q And you have a similar section in your
22 other two declarations, correct?

1 A Yes.
2 Q Did you review any documents, besides
3 those listed in your materials considered section,
4 to prepare your declaration for these IPRs?
5 A Well, I know that there is a list here
6 in paragraph 18, the last item says "other
7 documents cited herein."
8 So, even if I've missed something on
9 this list, I think the declaration is correct.
10 But I do not recall -- I do not recall the
11 reviewing any other document in preparation for
12 these declarations.
13 Q How much time did you spend preparing
14 your declarations for these IPRs?
15 A I don't remember, but I didn't spend
16 that much time, which, when you look at the
17 declarations, they are not that long, which is
18 basically what I was asked to do for these
19 declarations.
20 So, I don't remember exactly how much
21 time, but I don't think it was a lot.
22 Q Was it more than a day?

1 A Perhaps it was.
2 Q What do you mean when you say "perhaps
3 it was"?
4 A I mean that I don't exactly remember,
5 but maybe it was more than a day. If you mean for
6 all three declarations.
7 Q Let's say for each particular
8 declaration.
9 A Well, there's quite a bit of overlap,
10 and I don't think the priorities, to begins with,
11 there are any differences. So it's a little
12 difficult to separate the time spent for one IPR
13 from the time spent in connection with another
14 one.
15 Q Would it be fair -- oh, I'm sorry. Go
16 on.
17 A No, that was my answer, basically.
18 Q So would it be fair to say that for all
19 three proceedings, you collectively spent,
20 approximately, one day of time for the
21 declarations?
22 A Well, I think I said perhaps more than

1 a day. I didn't say approximately a day.
2 Again, I don't exactly remember. I
3 would say it was more than a day.
4 Q Was it more than two days?
5 A And now we are getting close to a point
6 where I just have to guess. Even if it were more
7 than two days, not much more, I think, again, to
8 the best of my recollection right now.
9 Q In the qualification section of each of
10 your declarations, you indicate that you were a
11 professor at Purdue University, Fort Wayne,
12 correct?
13 A Yes.
14 Q Is that a position that you still hold
15 today?
16 A Yes.
17 Q In paragraph 5 of each of your
18 declarations, you said you obtained a Ph.D. in
19 electrical engineering, correct?
20 A Yes.
21 Q Did your undergraduate or graduate
22 coursework relate to mobile device location

1 systems?
2 A I think the answer to that -- you said
3 "relate to."
4 And I think the answer is yes because I
5 studied advanced signal processing techniques for
6 communication systems.
7 And including mobile communication
8 systems that were emerging at the time.
9 So, the mobile communication systems
10 that were emerging, they do relate to, generally,
11 positioning techniques.
12 Q Are you saying that you studied how
13 mobile communication systems relate to positioning
14 techniques for your Ph.D. coursework?
15 A I'm not sure that -- I mean, the
16 phrasing of the question, how do mobile systems
17 relate to positioning or how does positioning
18 relate to mobile systems?
19 So I'm -- most positioning techniques
20 in mobile communication systems, most of them
21 came -- I think most of them would develop later.
22 So, after, I took a course related to TDMA and

1 then the GSM second-generation system, which was
2 state of the art in the -- basically, in the early
3 1990s, and it was state of the art throughout the
4 1990s.
5 So, yes, I think most positioning
6 techniques would develop -- were developed after
7 that. But even after my coursework, I have
8 attended -- for example, I've attempted --
9 attended a number of tutorials, and other
10 presentations at international conferences,
11 tutorials at standards committee meetings, which
12 I've attended a significant number.
13 So, in these tutorials, there have been
14 discussions of positioning techniques in mobile
15 communication systems.
16 So I think that one -- from attending a
17 tutorial like that, I think one would get,
18 especially after having the background, I think
19 one would learn quite a bit.
20 Q But you would agree that to prepare --
21 or to obtain your Ph.D., you did not study
22 positioning techniques in mobile communication

1 systems, correct?
2 A With that statement, with that question
3 as phrased, I wouldn't quite agree. I mean, I
4 studied what -- generally what existed at the
5 time. And since mobile communications were
6 rapidly being developed at the time, a number of
7 things, indeed, would develop later; however, the
8 foundation for these things, including
9 positioning, I think I was familiar with.
10 Q What sort of positioning techniques in
11 mobile communication systems did you study while
12 you were working on your Ph.D.?
13 A For example, one technique is the angle
14 of arrival estimation, that I think I knew how
15 it -- I studied that algorithm.
16 Q What is the angle of arrival
17 estimation?
18 A Well, it's an algorithm to determine if
19 there is a wireless transmission towards you, to
20 determine the angle that it's coming from.
21 Q And that is an algorithm that's used to
22 determine mobile device location?

1 A When you say it's "used," what do you
2 mean?
3 Q You identified this algorithm as
4 something you studied during your Ph.D. education
5 as a positioning technique of mobile communication
6 systems. That is the context I'm using it in.
7 A Well, still, when you say "used," I
8 mean, this algorithm can be used in mobile
9 communication systems.
10 Q Did you understand this algorithm to be
11 one that was used to determine mobile device
12 location in a mobile communication system when you
13 were obtaining your Ph.D.?
14 A Well, you said that "was used," which I
15 want to understand better. You know, by this, you
16 mean whether base stations were using -- all of
17 the base stations were using this method at the
18 time?
19 Q I want to understand why you identified
20 this algorithm, when I asked you about whether you
21 studied coursework relating to mobile device
22 location systems.

1 A Well, all I did was I gave you an
2 example of one algorithm that is related -- it is
3 one of the -- just in general, one of the location
4 estimation techniques.
5 Q And so, you understood, when you were
6 obtaining your Ph.D., that that algorithm could be
7 used to estimate a mobile device's location; is
8 that correct?
9 A Yes. I also note, if I may, Counsel,
10 that you asked me about the -- to some extent, the
11 state of the art in the mid-1990s. But the
12 priority date of these patents is September of
13 2006, as I also describe in paragraph 19 of my
14 declaration for the '583 patent. And my
15 perspective in this declaration is a person of
16 ordinary skill in the art as of that time, which
17 is September 2006.
18 Q Are you saying that the knowledge in
19 the field further developed between when you
20 obtained your Ph.D. and September of 2006?
21 A Absolutely. Mobile communication has
22 been, it was during the periods, mid-1990s to

1 December 2006, and has remained, since, a field
2 that has seen very significant development.
3 Q And you would agree that it's seen very
4 significant development because there has been
5 tremendous interest in this field, in the
6 industry?
7 A I mean, I would agree with that. I'm
8 not sure which one is first. Is it the
9 development or the interest in the industry? But
10 both have been very significant. I mean, the
11 market opportunity has been very significant,
12 which probably comes first.
13 Q In paragraph 6 of your declarations,
14 you state that you teach several courses related
15 to the hardware and software architectures of
16 wireless systems and wireless devices, correct?
17 A Yes.
18 Q Do any of your courses cover systems or
19 methods from locating mobile devices?
20 A Yes.
21 Q Which ones?
22 A So, first, I teach a course on -- I

1 teach a course on communication systems, in which
2 I go over, starting with first-generation
3 satellite systems to -- all the way to the
4 fifth-generation satellite systems.
5 And so, as part of that, there's
6 some -- I do mention my location estimation. But
7 I also do research, I've -- and I also teach about
8 some of the things that I do research on and, so,
9 for example, I think I have contributed
10 significantly to one standard for -- it's just,
11 primarily, in signal intelligence, but it is,
12 generally, a softer or defined radio standard.
13 And as part of that standard, there is position
14 estimation used and positioned data is part of
15 that interface standard.
16 I mean, these are some examples.
17 Q For the standard that you're
18 referencing, did you work on the portion of the
19 standard relating to position estimation?
20 A Well, I've worked on the entire
21 standard, including that portion.
22 Q Were you the sole contributor to the

1 standards discussion of position estimation?
2 A No. I don't -- and standards are
3 normally a -- they normally are not developed by
4 one person. Although, for that standard, I
5 believe I have done significant work, but others
6 also contributed.
7 Q And which standard are you referring
8 to?
9 A I was referring to the Vita 49
10 standard.
11 Q And so, you contributed to the Vita 49
12 standard's discussion of position estimation?
13 A Excuse me?
14 Q You contributed to that standard's
15 discussion of position estimation?
16 A Well, I said that I worked on the
17 entire standard. The discussion of how position
18 data is represented and encoded in that standard.
19 The infused part of that standard.
20 Q Could you, please, spell the standard
21 that you're referring to? Because I don't believe
22 you refer to it, expressly, in your declaration.

1 A Of course I can. This may be in my CV,
2 there is, somewhere, something like that is
3 mentioned. It's spelled V-I-T-A 49.
4 Q And do you -- strike that.
5 Can you, please, explain how position
6 estimation is used in the Vita 49 standard?
7 A Well, I have to -- we have to look at
8 the standard.
9 Q Okay. So sitting here today, you don't
10 recall what contributions you made to the Vita 49
11 standard's use of position estimation?
12 A Well, I recall working on that entire
13 standard. And just what I said, working on the
14 entire standard is what I recall.
15 Q In paragraph 8 of your declaration, you
16 say that a list of your publications and patents
17 appears in your curriculum vitae, attached as
18 Appendix 1, correct?
19 A Yes.
20 Q Do you understand that your
21 declarations do not actually have any appendices?
22 A Oh. I mean, I -- I think I will take

1 your word, Counsel, for this.
2 Up to this moment, I was not
3 understanding that.
4 Q Are the versions of your declaration
5 that you signed off on, did they have appendices?
6 A No, probably what I signed off was this
7 version. And maybe when I signed off, I was
8 thinking that the CV would be attached as
9 Appendix 1. But I just have to acknowledge that
10 due to oversight, that maybe it wasn't.
11 MR. CONKLE: Counsel, obviously, if you
12 want a copy of the CV, we can make that happen.
13 My apologies.
14 MR. ZEILBERGER: Thank you for that,
15 Counsel.
16 Q Dr. Cooklev, are you receiving
17 compensation from Broadphone for any work, other
18 than the work you're performing for these IPRs?
19 A No, I'm not.
20 Q If you could turn to paragraph 26 of
21 your 153 proceeding declaration.
22 A Paragraph 26?

1 Q Yes.
2 A Yes. I'm looking at it.
3 Q In paragraph 26, you describe what you
4 believe is taken into account for an obviousness
5 analysis, correct?
6 A In paragraph 26, which is part of the
7 section, with my understanding of the legal
8 standards that govern here, I describe my
9 understanding of obviousness analysis.
10 Q If you go to the next page, paragraph
11 27, you state that specific teachings,
12 suggestions, or motivations to combine any first
13 prior art reference with the second prior art
14 reference must have existed before the date of
15 purported invention.
16 Do you see that?
17 A Yes, I see it.
18 Q What does that mean?
19 A There is a general idea. What this
20 means is that the motivation to combine any two
21 references should not be based on -- entirely on
22 hindsight.

1 And so, the -- so that's why I state
2 the teaching, suggestions, or motivations
3 should -- must have existed before the date of the
4 invention.
5 Q Can you, please, pull out Exhibit 1001,
6 in the 153 proceeding, which is the '583 patent?
7 (Exhibit 1001 previously marked for
8 identification and attached to the transcript.)
9 A Yes, I have the '583 patent here,
10 convenient hard copy.
11 Q And, can you, please, turn to the
12 claims.
13 A Yes. I'm looking at the claims.
14 Q Claim 1 of the '583 patent is directed
15 to a method of location determination, correct?
16 A Claim 1 is a little bit long, and
17 claim 1 recites the location-determining method --
18 actually, it recites a signal comparison based
19 location-determining method, and continues.
20 So, if this is what you mean by
21 "location-determination method," yeah, that's
22 what, generally, claim 1 is about.

1 Q Claim 1 of the '583 patent includes
2 first portable RF communications device, correct?
3 A Yes. There is a first portable RF
4 communications device?
5 Q Is claim 1 limited to methods that make
6 use of a single RF communication device?
7 MR. CONKLE: Objection. Form.
8 A So, excuse me, if I -- could you please
9 repeat?
10 Q Sure. Is claim 1 limited to methods
11 that make use of a single RF communications
12 device?
13 MR. CONKLE: Same objection.
14 A And for the record, I reviewed my
15 declaration for the '583 patent. I don't think I
16 have opined on this. And if I have, please,
17 Counsel, point me to my -- to that paragraph.
18 Q Do you not have an opinion about
19 whether claim 1 is limited to methods that make
20 use of a single RF communications device, claim 1
21 of the '583 patent?
22 MR. CONKLE: Objection. Form.

1 A I mean, I -- again, I don't think I've
2 opined here. I did review claim 1. I do see a
3 first portable line of communications device
4 there, but I don't want to just be providing these
5 opinions on the fly.
6 If this is -- if Dr. Almeroth
7 somewhere, he has provided an opinion, well, then,
8 still, I don't think I've provided an opinion.
9 But if he has, I mean, if you could point me to
10 his declaration, I will take a look and will think
11 again.
12 Q Dr. Cooklev, I would like to understand
13 what your opinions are, including based on what
14 you've said in your declarations. And so, I would
15 like to know, sitting here today, do you have an
16 opinion as to whether claim 1 is limited to
17 methods that make use of a single RF
18 communications device?
19 MR. CONKLE: Objection. Form.
20 A Well, to the extent that my paragraph
21 32 answers your question, in paragraph 32, I state
22 that the '583 patent is directed to a method by

1 which a portable radio communication device can
2 determine whether it's located near the location
3 previously chosen by its user. And, in
4 particular, the '583 patent claims a two-step
5 process.
6 So I think my paragraph 32 is correct.
7 Q I'm not sure I understood your answer,
8 Dr. Cooklev. So I'll ask.
9 Are you saying that paragraph 32
10 answers the question about whether claim 1 is
11 limited to methods that make use of a single RF
12 communications device?
13 MR. CONKLE: Objection. Form.
14 A Well, what I think is that, what I can
15 say in response to your question is, in my
16 paragraph 32, where I describe, at the high level,
17 what is the '583 patent, they directed to what
18 kind of a method. And as I describe, it's a
19 method by which a portable radio communication
20 device can determine whether it's located near a
21 location previously chosen by a user.
22 And I see that -- I also see claim 1

1 recites a first portable RF communication --
2 communications device in conjunction with a
3 plurality of fixed-location service area antenna
4 stations.
5 So, this is what I think I can say in
6 response to your question.
7 Q Do you agree that claim 1 does not
8 preclude the use of more than one portable RF
9 communications device?
10 A I did not provide an opinion about
11 that. So that would be my testimony.
12 I -- again, I reviewed claim 1. I know
13 that claim 3 recites a second portable RF
14 communication device.
15 Q In step A, claim 1 of the '583 patent
16 states that the portable RF communication device
17 monitors its location, correct?
18 A Yes. That's what step A says.
19 Q Does claim 1 preclude the portable RF
20 communications device from monitoring its location
21 with assistance from another device?
22 A I mean, Counsel, I can't, on the fly,

1 be coming up with opinions like this. I mean, but
2 if you are -- it's not clear to me if you are
3 trying to modify the claim language here.
4 Or to -- are you suggesting that if all
5 the recited steps of the method are done, and then
6 something else is being done, is this within the
7 scope of claim 1?
8 Is this the type of question? I'm not
9 sure.
10 Q What does the term "monitoring" mean in
11 claim 1?
12 A Well, I think the term "monitoring" is,
13 and was, at the time, fairly clear to a person of
14 skill, that the device is monitoring its location.
15 And not only that, but the claim specifically,
16 claim 1, is saying what does the device need to do
17 to monitor its location?
18 So, there are three steps as part of
19 item A. There are three steps, and when these
20 three steps are done, then the device is
21 monitoring its location.
22 So that's what monitoring here is.

1 MR. CONKLE: And, Counsel, whenever you
2 reach a stopping point, we've been going, like, an
3 hour 20.
4 MR. ZEILBERGER: I just realized I'm on
5 mute. I think we've been going an hour 15, but
6 I'd be happy to take a break if Dr. Cooklev would
7 like a break.
8 THE WITNESS: I will take a ten-minute
9 break.
10 MR. ZEILBERGER: Okay. Let's go off
11 the record.
12 (Recess taken from 12:19 p.m. to
13 12:32 p.m.)
14 BY MR. ZEILBERGER:
15 Q Dr. Cooklev, during the break we just
16 had, did you communicate or receive any
17 communications from anyone regarding today's
18 deposition?
19 A No, I did not.
20 Q Picking up back from where we left off,
21 claim 1 of the '583 patent does not recite that
22 any particular portion of step B must take place

1 at the RF communication device, correct, the
2 portable RF communication device?
3 MR. CONKLE: Objection to the form.
4 A So you're talking about claim 1, step
5 B?
6 Q Correct.
7 A And what about step B?
8 Q Step B does not require -- well, strike
9 that.
10 The claim does not require that any
11 particular portion of step B must take place at
12 the first portable RF communication device,
13 correct?
14 MR. CONKLE: Objection. Form.
15 A So the question is that claim 1 does
16 not require that any particular step recited in
17 part B takes place on the mobile device?
18 Q Correct. On the first portable RF
19 communication device --
20 A Well, I think the answer is --
21 Q -- do you agree with that?
22 A No, I don't agree. I think that's

1 wrong.
2 And the reason is that if we look at
3 part B, part B says "the first portable RF
4 communication device determining." So right here,
5 right here is the device is doing the determining.
6 The device determining if a monitored location is
7 within proximity of a location chosen by a user of
8 the first portable RF communication device as a
9 result of. And then, electronically comparing,
10 that's the first step, and then determining if the
11 difference between the signal strengths, and
12 that's another thing.
13 And so, it seems to me that the first
14 portable RF communication device is doing the
15 determining here. It is determining, and it's
16 determining because the result of first
17 electronically comparing, and then determining if
18 the difference is less than a predetermined
19 threshold.
20 So I think that they are done on the
21 first portable RF communication device.
22 Q If we move on to claim 3 of the '583

1 patent, claim 3 depends on claim 1, correct?
2 A Claim 3 is a dependent claim and
3 depends on claim 1.
4 Q Claim 3 recites a second portable RF
5 communication device, correct?
6 A That's correct.
7 Q Is it your opinion that, for claim 3,
8 the determination of whether a monitored location
9 is within proximity of the location chosen by a
10 user of the first portable RF communication device
11 still must occur on the first portable RF
12 communication device?
13 A And now, if I may, I would like the
14 question to be repeated, please.
15 Q Is it your opinion that, for claim 3,
16 the determination of whether a monitored location
17 is within proximity of the location chosen by a
18 user of the first portable RF communication device
19 still must occur on the first portable RF
20 communication device?
21 A It's a little bit long question, but --
22 well, claim 3 depends on claim 1. And my

1 understanding of dependent claims is that they
2 will require everything that the parent claim --
3 well, the claim that they depend from, requires.
4 And then, dependent claims add another limitation.
5 And I'm not -- clearly not a lawyer, but I have
6 this understanding of dependent claims.
7 And so, claim 3 will require what claim
8 1 requires. Excuse me. And, in addition, it will
9 rely on another limitation.
10 Q And a few moments ago, you told me
11 that, in your opinion, the sub-steps of step B of
12 claim 1, which are designated i and ii, those are
13 performed by the first portable RF communication
14 device, correct?
15 MR. CONKLE: Objection. Form.
16 A Yes. That part B of claim 1 says the
17 first portable RF communication device,
18 determine -- it is, this device is doing the
19 determining if a monitored location is within
20 proximity of a location chosen by a user, as a
21 result of, and then doing these things in i and
22 ii.

1 Q But, so, when we're talking about i and
2 ii, would you agree that those sub-steps can be
3 performed by a different device that is not the
4 first portable RF communication device?
5 A I think it is the first portable RF
6 communication device. It's not a different
7 device.
8 Q Let's turn to claim -- or, rather, the
9 '698 patent, which is Exhibit 1001 in the
10 '154 proceeding.
11 If you could, please, turn to that
12 exhibit.
13 A I am looking at the '698 patent.
14 Q In step A of claim 1 of the '698
15 patent, the claim recites measuring of varying
16 signal characteristic other than ID.
17 Do you see that?
18 A Oh, yes. I got there.
19 Q What is a "varying signal
20 characteristic"?
21 MR. CONKLE: Objection. Form.
22 A I think one example, signal strength is

1 a varying signal characteristic.
2 Q Are there any other examples?
3 MR. CONKLE: Objection. Form.
4 A That's possible, yes. It's possible
5 that there are other examples, although, I don't
6 recall doing this analysis, now, to give you more
7 examples.
8 Q But sitting here today, you are not
9 able to identify any examples of a varying signal
10 characteristic besides signal strength?
11 A I don't agree with what you said. No,
12 I am -- generally, I am aware of other varying
13 signal characteristics. Now, whether -- so since
14 our discussion is in the context of claim 1 of the
15 '698 patent, and I said, just to give you more
16 examples, that's not something that I did in my
17 declaration or in preparation for today, at least
18 that's what I think.
19 So I just want to be more careful. And
20 before I start giving examples of varying
21 significant characteristics, since I haven't done
22 this analysis, I'll just stick with one example.

1 Q So are you saying you are able to
2 identify additional examples but you're not
3 willing to?
4 A I think it's not quite. I am able to
5 perform this analysis, but since I haven't done
6 this analysis, I think it's -- I'm under oath
7 here, and while I'm under oath, generally, I think
8 I should not be doing the analysis and just giving
9 you opinions on the fly.
10 Q And so, my question was whether sitting
11 here today, you are you aware of any examples of
12 varying signal -- of a varying signal
13 characteristic besides signal strength?
14 Are you?
15 MR. CONKLE: Objection. Form.
16 A No, I am aware of varying signal
17 characteristics other than signal strength.
18 Now, whether these are in -- whether
19 these are, in the context of claim 1 of the '698
20 patent, is, to the best of my recollection, is
21 something I have not provided an opinion.
22 Q If we look at step A of claim 1 of the

1 '698 patent. The claim refers to the first
2 portable RF communications device monitoring its
3 location, correct?
4 A Yes. I mean, that's how step A begins.
5 The first portable RF communication device
6 monitoring its location.
7 Q Would you agree that a device, other
8 than the first portable RF communications device,
9 can perform the three sub-steps of step A, which
10 are i, ii, and iii.
11 A Excuse me, what about these steps, in
12 i, ii, and iii?
13 Q Would you agree that a device, other
14 than the first portable RF communications device,
15 can perform those three sub-steps?
16 A Well, not in the context of claim 1. I
17 mean, if the question is about some hypothetical
18 device, I mean, something like that, whether they
19 could do it, then I guess that's possible.
20 But, as I said, not in the context of
21 claim 1. Because claim 1, step A says "is the
22 first portable RF communications device that is

1 monitoring its location by." And then we have i,
2 ii, and iii.
3 Q If we look to step B of claim 1 of the
4 '698 patent, the claim refers to the first
5 portable RF communications device, determining if
6 a first monitored location, monitored in
7 accordance with part A, is within proximity of a
8 location chosen by a user of the first portable RF
9 communications device, correct?
10 A I mean, if we just read this part of
11 the claim, step B, yes, I was trying to follow.
12 So I'd agree that step B is step B here. I mean,
13 sometimes, I apologize, the questions get a little
14 bit long for me, and when I get to the end, I may
15 have forgotten some of the beginning.
16 Q No problem. And I'm certainly trying
17 to read the claim accurately, and I'm just trying
18 to orient you to the part of the claim that I
19 wanted to ask you some follow-up questions on.
20 A Yeah, I'm looking at the part B of
21 claim 1.
22 Q Would you agree that the determination

1 that it discussed in step B could be performed by
2 a device other than the first portable RF
3 communications device, in the context of claim 1
4 of the '698 patent?
5 A So, I will -- I mean, first, I will try
6 to give an answer. So I'm also, here, opening my
7 declaration for the '698 patent.
8 But, first, just if you look at the
9 claim, part B says "the first portable RF
10 communications device determining." And so your
11 question is, well, if something else could be
12 doing this determining.
13 I think the claim says it's the device
14 that's doing the determining, it's not something
15 else.
16 Q If we look at the two sub-steps, i and
17 ii of step B of claim 1 of the '698 patent, would
18 you agree that those sub-steps could be performed
19 by a device other than the first portable RF
20 communications device?
21 A And I'm just quickly looking at my
22 declaration. I don't think I've -- anywhere in my

1 declaration I've said something like this.
2 Neither in the opinion section nor in paragraph
3 32, where I give an overview of the '698 patent.
4 So what I can tell is that, in
5 paragraph 32, I say the portable device monitors
6 its location and determines if it's within
7 proximity.
8 And I think all three, do we call them
9 steps, as i, ii, and it seems like there's no iii.
10 I and ii in part B. So all two.
11 I think they're the same. That's why
12 they're i and ii.
13 And so, the determining, the recited
14 determining in part B says "As a result of
15 electronically comparing what is recited in part i
16 and what's decided in part ii." And this is done
17 by the first portable RF communications device.
18 Q When you say "This is done by the first
19 portable RF communications device," are you
20 referring to sub-steps 1 and 2 of step B?
21 A Yes. And you can help me, if you'd
22 point me to where Dr. Almeroth analyzed this,

1 that'll be helpful for our discussion here.
2 Q Dr. Cooklev, can you, please, turn to
3 the '811 patent, which is Exhibit 1001 to the
4 155 proceeding.
5 A One second. Yes. I have here, with
6 me, the '811 patent. Like all of the materials
7 that I printed, all of these -- this copy of the
8 patent, there are no markings, Counsel, just to
9 clarify for the record.
10 Q Thank you. I appreciate you
11 communicating that.
12 If we turn to claim 1 of the '811
13 patent. Please, tell me when you're there.
14 A I'm looking at it.
15 Q Claim 1 of the '811 patent refers to a
16 method of determining whether a portable RF
17 communications device is present at a
18 device-specific target location, correct?
19 A Yes, we're beginning, like, now,
20 beginning to read claim 1.
21 Q What is a device-specific target
22 location?

1 MR. CONKLE: Objection. Form.
2 A It's a target location specific to a
3 device.
4 Q And when you say that it is "specific
5 to a device," what do you mean?
6 MR. CONKLE: Objection. Form.
7 A I'm not sure how I can rephrase that.
8 A target location specific to a device.
9 Q Would you agree that a user-selected
10 location is a device-specific target location?
11 MR. CONKLE: Objection. Form.
12 A In paragraph 34 of my declaration, I'm
13 saying something that's consistent with what I
14 testified a moment ago, that the term
15 "device-specific target location" has a plain and
16 ordinary meaning. I think these words are
17 individually, the words of this term are -- or
18 were, at the time, clear to a person of skill, and
19 in combination, they were clear.
20 And as I said, it's a target location
21 that is specific to -- I said a device, or a
22 particular device, as I write in paragraph 34.

1 And so, it seems to be your question
2 whether this could be this or that, is -- at least
3 it's difficult to answer in the abstract.
4 So, if you have a specific system or a
5 specific prior art, maybe I'll -- I will consider
6 that and try to give you an answer.
7 Q So, it is your opinion that a
8 user-selected location may or may not be a
9 device-specific target location, depending on the
10 system in which it's implemented?
11 A I think this seems, to me, correct;
12 that whether a location is device-specific target
13 location, in the context of the '811 patent, yeah,
14 it would depend on -- it'll depend on the system.
15 Q What aspect of the system would you
16 look to, to determine whether a user-selected
17 location is a device-specific target location?
18 MR. CONKLE: Objection. Form.
19 A For example, I state in paragraph 34,
20 that a location that is generally applicable to
21 numerous devices is not a device-specific target
22 location. Very likely, it's not a

1 device-specific --
2 Q What do you mean by "very likely"?
3 A Excuse me?
4 Q What do you mean by "very likely"?
5 A Well, see, a little bit, the question
6 here is not about the specific system, but it's
7 more, as I understand the question, it's more
8 about a hypothetical system. And you were asking,
9 well, how would I analyze a hypothetical system to
10 see if a location is the claimed device-specific
11 target location? And the answer to this is, at
12 least one aspect that I would take into account,
13 is I would analyze, is this location generally
14 applicable to numerous devices?
15 And if the answer is yes to this, then
16 since we're talking about a hypothetical system, I
17 said very likely. But then, it's not likely that
18 that location is not. I agree it is not a
19 device-specific target location.
20 So that's how I would approach this
21 problem in general.
22 Q So if a user of a mobile device selects

1 a movie theater, for example, under your
2 understanding, that would not be a device-specific
3 target location?
4 A Well, now I think you are giving me,
5 now it becomes -- it becomes a hypothetical that
6 it requires more careful consideration.
7 Yeah, I -- I think it'll be difficult
8 for me to make this analysis on the fly. It's
9 difficult to render and form the opinion this way.
10 Q If you look to the specification of the
11 '811 patent, at column 6.
12 A Oh, column 6?
13 Q Lines 19 to 23.
14 A And I will answer this question, and
15 after that, if we may take a break, maybe for
16 lunch, if you, Counsel, are on Eastern Time.
17 Q Yeah, that's fine.
18 A I'm looking at column 6 of the '811
19 patent.
20 Q And if you can look, specifically, to
21 lines 19 to 23. And read it to yourself.
22 A Yes.

1 Yes, I read this.
2 Q Would you agree that column 6, lines 19
3 to 23, the '811 patent, provides an example of
4 determining whether the portable RF communications
5 device is present at a specific target location?
6 MR. CONKLE: Objection. Form.
7 A And so, what about the passage between
8 lines 19 to 23?
9 Q My question is whether you would agree
10 that column 6, lines 19 to 23, of the '811 patent,
11 provides an example of determining whether a
12 portable RF communications device is present at a
13 specific target location -- at a device-specific
14 target location?
15 A All right. I don't think I performed
16 this analysis. My task was limited to responding
17 to certain paragraphs from Dr. Almeroth's
18 declaration.
19 Q But you would agree that you've applied
20 some understanding of what "device-specific target
21 location" means in providing your opinions,
22 correct?

1 A Yes.
2 Q And so, applying that understanding,
3 would the determination that is referred to in
4 column 6, lines 19 to 23, of the '811 patent,
5 constitute determining whether a portable RF
6 communications device is present at a
7 device-specific target location?
8 MR. CONKLE: Objection. Form.
9 A I stated my understanding of a
10 device-specific target location. It's really
11 plain and ordinary meaning of this term.
12 Whether this passage from column 6 and
13 whether a device-specific target location is
14 present here, I haven't -- I haven't opined on
15 this.
16 Q I would like your opinion on that
17 issue, Dr. Cooklev.
18 MR. CONKLE: Objection. Form.
19 A Well, Counsel, I'm doing my best here,
20 and I'm answering all of your questions in
21 considering the oath that I gave.
22 For -- but if the -- if it is not

1 stated in my declaration, maybe we can look at --
2 again, I said a few times, maybe we can look at
3 Dr. Almeroth's declaration. And if he addresses
4 column 6, I mean, that's something that I'll
5 consider. Maybe then I can give you a better
6 answer.
7 Q Would it be fair to say that your
8 opinions regarding the meaning of a
9 device-specific target location do not take into
10 account column 6, lines 19 to 23, of the '811
11 patent?
12 MR. CONKLE: Objection. Form.
13 A No. I don't think so.
14 The device-specific target location is
15 a claim term.
16 Q When you say -- no, you don't think so,
17 you're saying, no, it's not fair to say what I
18 say, or, no, you didn't take that portion of the
19 specification into account in understanding the
20 term "device-specific target location"?
21 A No, I think it's not fair what you
22 said.

1 Q So you did take that portion of the
2 specification into account?
3 A No, I took into account the entire
4 patent.
5 Q So if you took that portion of the
6 specification into account, I would like your
7 opinion, Dr. Cooklev, on whether what is provided
8 in column 6, lines 19 to 23, of the '811 patent,
9 provides an example of a determination about
10 whether a portable RF communications device is
11 present at a device-specific target location?
12 MR. CONKLE: Objection. Form.
13 A Even though, as I said, I took the
14 patent into account, opining that the term
15 "device-specific target location," has its plain
16 and ordinary meaning that, also, as I said, the
17 words of this term, individually and in
18 combination, were clear and is a general idea,
19 that meaning is target location specific to a
20 particular device. And so, I -- even though I've
21 taken the entire patent into consideration.
22 Now you're asking me a specific

1 question about a passage from column 6. And,
2 generally, the claims of a patent, I think, should
3 be understood in the context of the specification.
4 And I'm not sure why -- why are we taking a claim
5 term and then looking at one portion, from column
6 6, to see if it's talking about that claim term?
7 Q Dr. Cooklev, the reason behind my
8 questions, unless your counsel's instructing you
9 not to answer a question, you're required to
10 answer. And so, regardless of your beliefs about
11 the motivations behind my questions, I still would
12 like an answer, if you're able to provide one.
13 MR. CONKLE: Objection. Form.
14 A No, my counsel isn't instructing me not
15 to answer. I was just trying, perhaps, for my own
16 benefit, I acknowledged, to understand.
17 I will take another moment to review my
18 declaration here.
19 Q And I don't think you do discuss column
20 6 in your declaration. I want to understand
21 whether your -- whether the meaning of
22 device-specific target location, that you have

1 applied, whether applying that meaning, what is in
2 column 6, lines 19 to 23, whether you would see a
3 device-specific target location in that passage?
4 MR. CONKLE: Objection. Form.
5 A If I haven't provided an opinion in my
6 declaration. I understand, Counsel, you want an
7 answer, but it's -- I don't understand my task to
8 be, you know, coming up with new opinions right
9 now.
10 Q Dr. Cooklev, you told me that you did
11 take this passage into account when you prepared
12 your declaration; did you not?
13 A I took the entire patent into account.
14 Q Including this passage from the
15 specification, yes?
16 A Well, this is passage from the patent.
17 Q But did you take this passage into
18 account in developing your understanding what a
19 device-specific target location means?
20 A If I may, Counsel, I think the question
21 is, at least, misleading. Because lines 19
22 through 23, in column 6, as far as location, they

1 say the selected location of the registering step.
2 That's what these lines say.
3 Q Why does that make my question
4 misleading, Dr. Cooklev?
5 A It's -- and I said "at least
6 misleading."
7 Because based on my understanding of
8 patent law, that claims can have other meanings
9 than embodiments.
10 Q I just want to understand, Dr. Cooklev,
11 whether these five lines from the specification,
12 in column 6, provide an example of a
13 device-specific target location?
14 MR. CONKLE: Objection.
15 Q Are you not able to provide an answer
16 to that question, Dr. Cooklev?
17 MR. CONKLE: Objection. Counsel,
18 objection. This is starting to veer outside the
19 realm of an appropriate examination.
20 I'd be loath to argue about this on the
21 record, except for the fact that the witness did
22 ask, 20 minutes ago, for a lunch break.

1 Q Dr. Cooklev, I would like an answer to
2 that question. I'm happy to take a break for
3 lunch, but I would like to have an answer to that
4 question first, and then I'm happy to break.
5 A I understand what you're saying,
6 Counsel.
7 So I think -- there are several parts
8 to the answer. The answer is that, first, my
9 declaration, my work, was clearly limited to
10 responding to certain paragraphs from
11 Dr. Almeroth. So, it would be helpful if
12 Dr. Almeroth has opined on this paragraph, it will
13 be somewhat helpful if I can, and if we can, I
14 don't have it here, printed, but I assume we can,
15 we can look at Dr. Almeroth's declaration and see
16 what he's saying about this paragraph.
17 And that might help me give you a
18 better answer.
19 The second part is, I've said I've
20 taken the specification into account, even though
21 I've taken the specification into account, and I'm
22 generally familiar with the specification, I have

1 not -- I just don't think I can give another
2 opinion about this in my declaration.
3 And, here, I -- I think we can agree
4 that it's very difficult, on the fly, to render an
5 informed opinion about something that I just -- I
6 haven't.
7 Q Are you finished, Dr. Cooklev, or --
8 A I am. Thank you.
9 MR. ZEILBERGER: Okay. Let's take a
10 break and go off the record.
11 (Recess taken from 1:51 p.m. to
12 2:43 p.m.)
13 BY MR. ZEILBERGER:
14 Q Dr. Cooklev, are you aware that the
15 '583, '698, and '811 patents all share a common
16 specification?
17 A Yes.
18 Q If you could, please, refer to the '583
19 patent.
20 A Oh, the '583?
21 Q Yes, please.
22 A I'm looking at it.

1 Q If you could, please, turn to column 6
2 of the '583 patent.
3 A Yes, looking at it.
4 Q And, specifically, the paragraph that
5 begins at line 56, which starts with "simply
6 stated."
7 Do you see that?
8 A I do.
9 Q And that paragraph goes on into column
10 7, where the first full sentence in column 7 says
11 "Since the device is capable of receiving and
12 measuring such signals, the device simply performs
13 such reception measurements and compares these
14 measurements with the remembered signal strength
15 combinations."
16 Correct?
17 A And I see the sentence in column 7.
18 Q This passage from the specification is
19 referring to a location determination analysis
20 that is performed by the mobile device, correct?
21 MR. CONKLE: Objection. Form.
22 A Well, in this passage, as it is stated

1 here, it's a conceptually instant enabling
2 embodiment is described.
3 And, again, an embodiment is, my
4 understanding, it is just an embodiment, and we
5 should not bring an embodiment into the claims.
6 So is -- I think your question says everything
7 here from this passage, is it done on the mobile
8 device? And I'm not sure how to make sense of
9 that question. This passage, like in column 6,
10 line 61, it says "The device needs a means for
11 remembering this signal strength."
12 And this means, maybe on the device,
13 per se, kept the remote storage, or even transfer
14 from the current mobile device to the next -- the
15 user's next cell phone.
16 So that's what I can say about this
17 passage.
18 Q And before we go further, Dr. Cooklev,
19 during the lunch break, did you communicate with
20 anybody?
21 A I did not communicate with anybody,
22 certainly not with anyone that's something that's

1 related to the deposition.
2 Q Looking at column 8, line 62 of the
3 specification, the paragraph beginning at that
4 line.
5 A Excuse me, column 8?
6 Q Column 8, line 62.
7 Do you see the paragraph beginning
8 there?
9 A I'm there.
10 Q In this paragraph, the specification is
11 describing a scenario where if the mobile phone
12 observes substantially identical signal strength,
13 it will conclude that it is within a predetermined
14 proximity of a user-selected location, correct?
15 A Just for the record, I'm reviewing
16 here, this paragraph, including a little bit, to
17 some extent, the prior paragraph and the paragraph
18 that follows.
19 I mean, of course, I think the
20 specification speaks for itself. But, yes, if an
21 identical list of, they're called here, service
22 antennas, where it's substantially identical

1 respective signal strength -- signal strengths.
2 If this is what is being observed, then the
3 reasonable conclusion is that the mobile devices
4 are within a predetermined proximity of the
5 original user-selected location.
6 As it says here in this passage.
7 Q This passage, from the specification,
8 does not state that the observed substantially
9 identical signal strength necessarily came from
10 the mobile phone itself, correct?
11 MR. CONKLE: Objection. Form.
12 A I'm sorry. I do not understand the
13 question, or even --
14 Q The signal strengths that are being
15 compared to, they were not necessarily captured by
16 the mobile phone that is performing the
17 comparison, correct?
18 MR. CONKLE: Same objection.
19 A Well, I don't think I agree with that.
20 This passage says "if a mobile telephone (at the
21 user-selected location) measures."
22 So, measures a plurality of service

1 antenna signals.
2 So, in other words, there is a signal
3 strength, determined measurement or estimation.
4 And so that happens, right, at least
5 this passage, right, the one we're talking about,
6 if a mobile telephone measures the signal
7 strengths, and there's also IDs, identifications,
8 and then that mobile telephone, upon observing an
9 identical list of service antennas, so these are
10 the IDs with substantially identical signal
11 strength, can reasonably conclude that it is
12 within a predetermined proximity of the original
13 user-selected location.
14 This is what I think it says here.
15 Q What is your understanding of what the
16 specification means when it has, in parentheses,
17 at line 65 of column 8, "or an equivalent unit"?
18 MR. CONKLE: Objection. Form.
19 You can answer.
20 A I'm looking at the '583 patent. I
21 think I can answer you.
22 An equivalent unit to a mobile

1 telephone would be a portable RF communications
2 device.
3 Q So is it your testimony that the
4 equivalent unit is not a device, other than the
5 mobile telephone that measured the antenna signals
6 and stored them?
7 Is that right?
8 MR. CONKLE: Objection. Form.
9 A It's even a little difficult to
10 understand the question.
11 So if the question is whether --
12 Q Dr. Cooklev, I believe you put yourself
13 on mute by accident.
14 A I accidentally did that with my hands.
15 I apologize.
16 I said that it's a little difficult to
17 understand the question. If you're asking whether
18 the equivalent unit could be a different mobile
19 device, and I don't think it's a different device,
20 and I don't see how, technically, what you're
21 asking about makes sense.
22 Q Why doesn't it make sense?

1 A Well, I'm saying, my understanding of
2 the question is that there may be a problem in the
3 question, even though if -- and if I may say,
4 that, Counsel, even though I may be -- it may be
5 difficult for me to articulate all the problems in
6 the question, it seems to me there's a problem.
7 Because it says "if a mobile telephone at the
8 user-selected location measures signal strength
9 and stores these together with the IDs."
10 And even if we look at the sentence --
11 just the sentence "can reasonably conclude that it
12 is within a predetermined proximity of the
13 user-selected location."
14 So, if it were another device somehow
15 involved, like, how can that be that it is, not
16 that the other device is, that it is within a
17 predetermined proximity.
18 Q So, are you saying, Dr. Cooklev, that
19 it wouldn't make technical sense for the first
20 mobile telephone to measure a plurality of service
21 antenna signals and store them, and then a second
22 mobile telephone to, then, observe an identical

1 list of service antennas with substantially
2 identical respective signal strengths; is that
3 right?
4 MR. CONKLE: Objection. Form.
5 A Well, I think you're trying to
6 construct from a hypothetical system in which it
7 might make sense, something like that to be
8 performed.
9 Q No, Dr. Cooklev, did --
10 A And --
11 Q I'm sorry, I thought you were done.
12 Please continue.
13 A I was almost done. I think you're
14 constructing a different system, not what is
15 described in this example of the specification.
16 Q So you would disagree that when the
17 specification refers to "an equivalent unit," that
18 it's referring to a second mobile telephone, or
19 that it could refer to a second mobile telephone?
20 MR. CONKLE: Objection. Form.
21 A I think, here, the -- this equivalent
22 unit is something equivalent to a mobile

1 telephone, such as portable RF communications
2 device. I think that's what is meant.
3 But, more generally, I guess one can
4 construct a system where a different device
5 that -- or somehow has access or has had access to
6 the service antenna identifications and signal
7 strengths could conclude.
8 So that's more, I think -- that's not
9 the case that is considered in this passage, but,
10 more generally, something like that is possible.
11 Q Are you saying that such a scenario is
12 described in the specification here?
13 A Excuse me?
14 Q Are you saying that such a scenario,
15 that you just described, is described in the
16 specification of the patents here?
17 A No, I'm not saying that.
18 Q Can you, please, pull out Exhibit 1011,
19 if you have it.
20 (Exhibit 1011 previously marked for
21 identification and attached to the transcript.)
22 A 10 -- yeah, I -- I probably do.

1 What's that number?
2 Q Exhibit 1011 is what you referred to
3 earlier as the Spain reference --
4 A Oh, Spain.
5 Q U.S. Patent Number 6,944,465?
6 A Yes, I have it right here.
7 Q And this is a document that you have
8 previously reviewed?
9 A Oh, at some level of detail. To the
10 extent that I thought it's appropriate for the
11 declarations that I submitted, yes.
12 Q Can you, please, turn to column 5 of
13 the Spain reference, Exhibit 1011.
14 A Yes, I'm looking at column 5.
15 Q And lines 65 to 66 refer to a database
16 stored in the mobile unit, correct?
17 A In one embodiment, the database is
18 stored in the mobile unit, is what's in Spain.
19 Q And if you look in column 6, lines 9
20 through 10, Spain describes a fingerprint database
21 stored at a location server, correct?
22 A Yes.

1 Q So would you agree that Spain
2 contemplates a fingerprint database being stored
3 at either a mobile unit or a location server?
4 MR. CONKLE: Objection. Form.
5 A I think I agree with this. Spain, and
6 you pointed to column 5, line 65-6, says in one
7 embodiment, the database is stored in the mobile
8 unit. And this database is the fingerprint
9 database that is mentioned, I think, in line 63.
10 And then, in column 6, line 9, in
11 another embodiment, the fingerprint database is
12 stored at the location server.
13 So, yes, Spain has these two
14 embodiments.
15 Q And looking to column 6, line 17 to 20
16 of Spain, Spain explains that a request for
17 position of the mobile unit can be generated by
18 the user carrying the mobile unit or remotely by
19 the location server, correct?
20 A Oh, there is a sentence that the
21 request may be generated by the user carrying the
22 mobile unit or by the location server.

1 Q So, in the process that's being
2 described at column 6, line 17 to 20, both of
3 those options are available, correct?
4 A Well, this discussion is in the context
5 of Figure 3 of Spain. In particular, box 301 of
6 Figure 3, which is request position. And for box
7 301, Spain says the request may be generated by
8 the user or remotely, by the location server.
9 Q Can you, please, turn to Exhibit 1006,
10 which is what has been referred to as the Nanda
11 reference, U.S. Patent Number 8,477,731?
12 (Exhibit 1006 previously marked for
13 identification and attached to the transcript.)
14 A Yes, I'm looking at Nanda.
15 Q You reviewed the Nanda reference in
16 preparing your declarations, correct?
17 A At a certain level of detail, yes.
18 Q What do you mean by "a certain level of
19 detail"?
20 A Just what I'm saying. I reviewed Nanda
21 to the extent that I felt I needed, for my
22 declaration.

1 Q At column 12, lines 14 through 18,
2 Nanda explains that fingerprints generated by a
3 mobile device can be stored in a fingerprint
4 database or --
5 A Excuse me, column 12? Which line?
6 Q Beginning at line 14.
7 A I'm there.
8 Q In the first two sentences of that
9 paragraph, beginning at line 14 of column 12,
10 Nanda explains that fingerprints that are
11 generated by the mobile device can be stored at
12 either a fingerprint database of the mobile device
13 or in a different database that is remote from the
14 mobile device, correct?
15 A I mean, generally, there is something
16 similar. Here, Nanda is describing that the
17 mobile device generates the fingerprints and
18 stores a fingerprint database; however, some or
19 all of the fingerprints may be stored somewhere
20 further up, the wide area wireless communication.
21 That's the cellular network, such as the database
22 here, 111, accessible by the MSC110.

1 Q If you can turn to column 8, lines 30
2 to 32.
3 Please let me know when you're there.
4 A I'm looking at column 8. Again, Nanda.
5 Q In this portion of Nanda, it explains
6 that the mobile device can include an algorithm
7 for creating and comparing fingerprints, correct?
8 A Generally, there is something like
9 that, yes. Creating multiple fingerprints and
10 comparing different fingerprints to one another.
11 Q When you say "generally, there's
12 something like that," what portion of my question
13 do you disagree with?
14 A It's not that I was necessarily
15 disagreeing with a portion. I said "generally"
16 because the specification says what it says, and
17 we're just focused on that excerpt from the
18 specification.
19 Q And to be clear, I'm not asking you to
20 simply read the words of Nanda, I'm asking for
21 your understanding about what Nanda teaches.
22 And with that in mind, would you agree

1 that, in column 8, lines 30 to 32 of Nanda, Nanda
2 is teaching that the mobile device can include an
3 algorithm creating and comparing fingerprints?
4 MR. CONKLE: Objection. Form.
5 A I think I agree that Nanda, in this
6 column 8, line 30, teaches that the mobile device
7 also includes, so it can include, if that's the
8 question, but, also, includes an algorithm and
9 it's even an executable, but for creating
10 fingerprints and comparing different fingerprints.
11 Q And if we look to column 12 of Nanda,
12 lines 23 to 24, there, Nanda is teaching that an
13 MSC, which is a mobile switching center, can
14 perform the fingerprint comparison, correct?
15 A Well, I think before I agree with you,
16 I think it's important to say that this passage in
17 column 12, line 20-something, that this pertains
18 when some -- or all of the fingerprints may
19 alternatively be stored somewhere further up the
20 wide area wireless communication network, this is
21 starting from line 15.
22 So, basically, this, yes, Nanda has

1 this when the database is a remote database.
2 Q Do you see the sentence in column 12 of
3 Nanda, lines 29 to 31, where Nanda says that "A
4 personalized fingerprint databases may be created
5 for each user of the wide area wireless
6 communication network and stored at their home
7 system"?
8 A Yes, I see this.
9 Q In that scenario, the database would be
10 device-specific, correct?
11 MR. CONKLE: Objection. Form.
12 A Oh, the sentence that you brought up on
13 lines 29 through 31, I don't think it changes
14 my -- it does not change my analysis. And you
15 said, well, then, the database should be
16 device-specific, which is -- I mean, it's -- I
17 think there are some considerations here, as far
18 as personalized fingerprint database. I mean, for
19 example, privacy is -- it was important, even in
20 2006, let's -- I think we will agree. And now
21 it's even more.
22 And so, yes, Nanda, in this passage,

1 teaches that the database can be stored remotely.
2 It also says the MSC could have a much larger
3 database.
4 But, now, every device might, due to
5 privacy considerations, possibly other
6 considerations, every device can access
7 different -- doesn't have to access the whole
8 database, can access only a part of that database.
9 So, I think that that's what we can
10 have here. That is -- I mean, that's what it
11 says, I think, basically.
12 Q And so, you disagree with Nanda that a
13 personalized fingerprint database may be created
14 for each user?
15 MR. CONKLE: Objection. Form.
16 A No, I don't. Nanda says this. I don't
17 disagree with these words. So I'm saying what a
18 person of skill would have understood from these
19 words.
20 So, often, a personalized database is
21 just -- the way it is created is different user,
22 different users have different permissions. And

1 for that different permissions, they access
2 different parts of the large -- of the much larger
3 database that Nanda is talking about a couple
4 lines above that.
5 Q So even though Nanda goes on to say
6 that the personalized fingerprint database is
7 stored at their home system, you are interpreting
8 Nanda to be speaking about a single database that
9 all of the users are sharing?
10 A I think the explanation that I gave
11 seems to be correct, that, yes, there's a -- here,
12 there could be a much larger database because the
13 MSC's involved and -- well, but, as they said
14 there are privacy -- there are considerations as
15 well, privacy's just one example.
16 But in this way, from that much larger
17 database, really, a user can be allowed access to
18 only a part, typically, a smaller part of that
19 larger database.
20 And so, I don't see anything here
21 that's -- that, essentially, is a problem with
22 this understanding.

1 Q What is the basis for your opinion that
2 when Nanda says "Alternatively, a personalized
3 fingerprint database may be created for each
4 user," that it, in fact, is talking about users
5 only having access to a subportion of a single
6 database that is common to all of the users?
7 A Probably, I think it to satisfy, it
8 will satisfy some privacy considerations, and
9 it'll also make the fingerprint comparison more
10 efficient if the MSC, right? Nanda here is
11 talking about the database is remote, and the MSC
12 is doing the comparison, the fingerprint
13 comparison.
14 And the comparison will be more
15 efficient if the MSC doesn't have to compare or
16 receive a current fingerprint with all of the
17 fingerprints in that large database.
18 And so, one way, it could make both the
19 algorithm more efficient and it could satisfy
20 privacy considerations, plus, possibly, other
21 considerations.
22 So one way this can happen is -- and

1 that's where it says "alternatively."
2 Well, "Alternatively, a personalized
3 fingerprint database may be created."
4 And the way to do that, the way to do
5 that is just its -- you just impose, impose some
6 privacy considerations.
7 Q And so, you're saying that a copy of
8 the MSC would be stored at each user's home
9 system; is that right?
10 A A copy of the MSC?
11 Q I'm asking you, Dr. Cooklev.
12 A Yes, yes, I understand. I understand.
13 But a copy of the MSC is part of your question?
14 Q I'm asking if that is what you are
15 saying would happen?
16 A No. I'm not saying a copy of the M --
17 MSC is a big infrastructure component of a
18 cellular network. So, we don't want to even work
19 with copies of that MSC.
20 Q So are you saying that every user would
21 have their own MSC?
22 A Every user? No. No, the MSC has a

1 certain place in a cellular network. We can't
2 have one MSC per user. That will be, if we
3 engineer a cellular network like that, that
4 doesn't seem, to me, a very efficient way. But in
5 any case, cellular networks, at the time, you have
6 many users for one MSC.
7 MR. CONKLE: So I want to state form
8 objections to the last two questions.
9 Counsel, it's my preference not to
10 interrupt the witness. If you think that I'm
11 obliged to interrupt the witness in order to
12 preserve the objection, I can do that. Just tell
13 me.
14 MR. ZEILBERGER: That's fine, Counsel.
15 Q Dr. Cooklev, when Nanda says the words
16 "stored at their home system," at line 31 of
17 column 12, what is it referring to, in your
18 opinion?
19 MR. CONKLE: Objection. Form.
20 A I think it means that this database is
21 stored at an appropriate place. It's consistent
22 with what Nanda is saying in line 15, that some or

1 all of the fingerprints may be stored somewhere
2 further up the wide area wireless communication
3 network, such as a database accessible by the MSC.
4 And something like that, that's been stored
5 somewhere. And so, that's what I think it means.
6 Q Dr. Cooklev, wouldn't you agree that,
7 at a minimum, one way to implement what is in
8 lines 29 to 31 of column 12 of Nanda, would be for
9 each user to have their own database of
10 fingerprints that are stored in their home system?
11 MR. CONKLE: Objection. Form.
12 A I'm looking at my declarations. Right
13 now, looking at the declaration for the '698
14 patent.
15 Well, I focused, in my declaration --
16 you are asking me about a passage here in column
17 12, which I cite to in my declaration. So that's
18 in paragraph 35 of the declaration, and I
19 considered this paragraph and, in particular, I
20 considered the declaration of Dr. Almeroth. And
21 my opinion is that the -- what is relevant here is
22 that when the fingerprint database is stored on

1 the remote server, it is the remote server that
2 determines the location, or in this case, in
3 Nanda, performs the comparison of fingerprints.
4 So, definitely, I think it's wrong to
5 store the database remotely, but perform the
6 fingerprint comparison on the mobile unit.
7 Q In paragraph 35 of the declaration you
8 just referred to, of the 155 proceeding, you
9 indicate that fingerprint data for multiple mobile
10 devices is stored in a single database.
11 Is that the first sentence?
12 MR. CONKLE: Objection. Form.
13 A Paragraph 35?
14 Q Yes.
15 A Well, I don't know in this -- paragraph
16 35 is fine, that Nanda, likewise, teaches an
17 alternative embodiment where both the data storage
18 and the location determination are situated on a
19 remote server. This is correct.
20 Q What are you reading from, Dr. Cooklev?
21 A Oh, I am -- I said I'm reading from my
22 declaration for the '698 patent, paragraph 35.

1 Might be a different paragraph number
2 from the one you are reading at.
3 Q I see. I was referring to paragraph 35
4 from the '811 patent declaration.
5 A Oh, okay. Yes. And that's why it's
6 very important, as I said in the beginning, to
7 identify the context of which IPR.
8 Okay. Paragraph 35. I will answer
9 your question, if I may, after lunch, it would be
10 helpful if there's a cup of coffee or something,
11 before we keep going.
12 But I would be happy to take one
13 question and try to answer.
14 Q So in that sentence of paragraph 35,
15 your '811 patent declaration, you refer to
16 fingerprint data for multiple mobile devices being
17 stored in a single database, correct?
18 A Yes.
19 Q And looking back at Nanda, and the
20 sentence we were talking about a moment ago,
21 column 12, lines 29 to 31, that is an example
22 where fingerprint data from a single mobile device

1 would be stored in a single remote database,
2 correct?
3 MR. CONKLE: Objection. Form.
4 A Which line in column 12?
5 Q Lines 29 to 31.
6 A Oh. Well, in paragraph 35, states that
7 the way Dr. Almeroth approaches or makes his
8 analysis regarding claim 14, he advances
9 modification of the Spain, Nanda, and Hunzinger.
10 And this -- I mean, at least the way --
11 yeah, that's what basically, I state, actually, in
12 paragraph 35. But I also think a couple of things
13 are -- I think, overall, his analysis is
14 deficient.
15 His analysis is deficient, first --
16 well, that single -- multiple mobile devices in a
17 single database. And I mean, he doesn't -- I
18 don't think he addresses, sufficiently, the -- any
19 privacy considerations in this, or any other
20 technical considerations in just producing and
21 maintaining this much larger database, right? So,
22 but, that's one aspect here.

1 And second, as I state in paragraph 36
2 of -- well, if these are fingerprints associated
3 with locations that are usable by all mobile
4 devices, this is not going to meet the
5 device-specific location of claim 1.
6 MR. ZEILBERGER: I'm going to object to
7 that answer as being nonresponsive.
8 Q Dr. Cooklev, I'm not asking you about
9 paragraph 35 or 36 of your declaration, or your
10 thoughts on why -- or regarding Dr. Almeroth's
11 opinions that you just identified.
12 I asked you, specifically, about column
13 12, lines 29 to 31, of Nanda, whether that
14 sentence from Nanda provides an example where
15 fingerprint data from a single mobile device would
16 be stored in a single remote database?
17 Can you, please, answer that question?
18 MR. CONKLE: Objection. Form.
19 A Well, maybe I tried to give a more
20 complete answer to your question a moment ago.
21 But in response to your question, is fingerprint
22 data from a single mobile device, is it going to

1 be stored in this personalized fingerprint
2 database?
3 But then this -- lines 29 through 31,
4 and stored at their, at their system.
5 So -- so, this is why I state, in
6 paragraph 36, that -- first, I state fingerprints
7 associated with locations usable by all mobile
8 devices. And by "all," I mean, here, the mobile
9 devices for which the specification says stored at
10 their own system.
11 And I also state that while -- that,
12 indeed, the database, this database of locations
13 and fingerprints, would be applicable to multiple
14 devices.
15 Again, it would be applicable to
16 multiple, which multiple, exactly, but the devices
17 that are referred to, in the specification, as
18 their own system.
19 So this is applicable to multiple, I
20 think.
21 Q Just to be clear, it's your testimony,
22 to the board, that when Nanda refers to a

1 "personalized fingerprint data," that personalized
2 fingerprint database, at column 12, lines 29 to
3 31, is referring to a database that applies to
4 multiple mobile devices?
5 MR. CONKLE: Objection. Form.
6 A I'm looking at my declaration for the
7 record.
8 I think, yes. And, since my
9 declaration is in response to Dr. Almeroth, I
10 think this is how Dr. Almeroth describes it.
11 Q Okay.
12 MR. ZEILBERGER: I think you had asked
13 for a break, so why don't we take a break.
14 MR. CONKLE: Thank you.
15 (Recess taken from 4:02 p.m. to
16 4:15 p.m.)
17 MR. ZEILBERGER: Let's go back on the
18 record.
19 BY MR. ZEILBERGER:
20 Q And if you can, please, pull out your
21 '583 patent declaration for the 153 proceeding?
22 A Yes, right here. I have it.

1 Q And if you could, please, go to
2 paragraph 37.
3 A Yes.
4 Q In paragraph 37 of your declaration for
5 the '583 patent, you say that Nanda recites that
6 the benefit of storing the fingerprint database on
7 the server is to reduce the processing
8 requirements and storage requirements for the MU,
9 correct?
10 A Yes.
11 Q Reducing processing requirements and
12 reducing storage requirements are two separate
13 benefits to storing the fingerprint database on
14 the server, correct?
15 A And just I want to make sure that I'm
16 not confused.
17 So in paragraph 37 of this declaration,
18 that's for the '583 patent, reducing the
19 processing requirements and storage requirements
20 for the MU, now, these are two benefits to storing
21 the database on the server.
22 Yes, I think it's -- and I'm citing

1 here to Nanda. I think what also is -- I think it
2 is significant that, at the time of the invention,
3 mobile devices had limited capabilities that,
4 right, these days, we take these capabilities for
5 granted. But, at the time, the capabilities of
6 mobile devices were far from what they are today.
7 And, so, generally, this is what I talk about in
8 paragraph 37, that if the database is stored on
9 the server, sure, this simplifies things at the
10 mobile device. Well, of course, provided that the
11 computation, also, is on the server, is also done
12 remote.
13 I think, generally, I'm done.
14 Q So you agree that reducing processing
15 requirements and reducing storage requirements are
16 two separate benefits for storing the fingerprint
17 database on the server, correct?
18 A I think I agree with that.
19 Q Moving on to paragraph 38 of your
20 declaration in the 153 proceeding.
21 You say that a person of ordinary skill
22 in the art would furthermore recognize that

1 storing the database on a server but requiring the
2 MU to perform the determination computation, would
3 likely increase the power consumption of the MU,
4 correct?
5 A Yes, I state this. And in my opinion,
6 this is correct.
7 Q What do you mean, when you say, in that
8 sentence, "likely"?
9 A I mean, that's how I worded this
10 sentence.
11 You know, I can get rid of the word
12 "likely." To decrease the power consumption of
13 the mobile unit, if the database is remote, but
14 the mobile unit does the determination.
15 Q When you say you can get rid of the
16 world "likely," are you saying that we should read
17 your declaration as not using the word "likely";
18 that that was a mistake?
19 A No, the word "likely" was not a
20 mistake. I'm saying that we can take it out
21 without -- it will not mischaracterize my opinion
22 if we take the word likely out.

1 Q Well, if it wasn't a mistake, I would
2 like to know what you meant by it.
3 MR. CONKLE: Objection. Form.
4 A Well, that's how the sentence is
5 worded. It certainly was not a mistake, right, to
6 turn things around and say that the mobile unit
7 during the determination, but the database to the
8 moment, this will not increase the power, right?
9 It doesn't make technical sense.
10 And I use the word "likely," again,
11 that's how I said it. And, furthermore, I'm
12 providing a reason why. And the reason is, there
13 must be some facility which is not explained in
14 the petition. There must be something to
15 communicate location information between the
16 mobile unit and the server. Because how is the
17 mobile unit going to do computations based on the
18 remote database, right? There must be something
19 to resolve this.
20 This is not a small problem, right?
21 And the mobile devices is a wireless device,
22 right? So this is the reason why. And the word

1 "likely" is, as I said, it is not wrong.
2 Q When you say that power consumption of
3 the MU would likely increase, is that as compared
4 to a scenario where the server performs the
5 determination?
6 A I can answer the question.
7 So the analysis here applies to the
8 case where the database is at the server, or, in
9 other words, it's remote. And so, now, with this
10 background, there are two options. Where is the
11 determination, where is that computation done? Is
12 it done remotely or at the mobile unit? And now,
13 obviously, if it's done remotely, from the
14 perspective of power consumption of the mobile
15 unit, which is -- again, it's an important
16 consideration, if the database is remote, the
17 computation is remote, I think we can see that
18 that's going to work and it won't be, because
19 they're both remote, won't be particularly
20 demanding for the mobile unit.
21 But if the data is remote, but the
22 mobile unit is doing the determination, then I

1 think that doesn't -- there are problems. There
2 are problems that power consumption, and there
3 must be something else, right, even if it's not
4 explained.
5 And this will be -- this will be a
6 significant issue that says, well, how is the
7 database maintained, and then how is this mobile
8 unit now performing the determination based on
9 this database?
10 So that's what I'm saying in paragraph
11 38.
12 Q And so, I'm asking you, specifically,
13 Dr. Cooklev, what the increase is compared to.
14 The increase -- take it in parts. You would agree
15 that your words "increase the power consumption,"
16 that is relative to something, yes?
17 A Yes.
18 Q And I believe it's the case that that
19 thing that you are comparing to is the scenario
20 where the fingerprint database is both stored on
21 and processed at the server; is that correct?
22 A Yes.

1 Q And when you go on to say, in paragraph
2 38, that there must be some facility not explained
3 in the petition to communicate location
4 information between the MU and the server in order
5 to enable the MU to perform computations based on
6 a remote database, are you saying that a person of
7 ordinary skill in the art would not know how to
8 communicate location information between an MU and
9 a server?
10 A Not quite. I'm not saying that a
11 person of ordinary skill in the art wouldn't know
12 how. But I'm saying that a scheme is necessary
13 and -- well, and even maybe I will -- I'm saying,
14 first, the scheme is necessary. But this scheme
15 is not explained in the petition, and maybe I will
16 qualify my answer that I just said about the
17 person of ordinary skill in the art.
18 It's not clear how this will happen.
19 So this -- it's not something that is based on
20 their background, a person of ordinary skill in
21 the art, to know how to do. It's not like that.
22 This is a -- this facility that I'm

1 talking about here is -- this is a very
2 significant problem because this database will be
3 updated all the time and the mobile -- this
4 determination, this determination is being done
5 regularly. And so, that's not -- this is not
6 something that is straightforward based on the
7 knowledge of a person of ordinary skill in the
8 art.
9 But even more than that, even more than
10 that, I'm saying, well, necessarily, this will
11 communicate bandwidth and power, necessarily.
12 Maybe there is a way to do it.
13 But in any case, it will consume
14 bandwidth and power.
15 Q Let's take that in part because you
16 said a lot there, Dr. Cooklev.
17 Is it your testimony to the board that
18 in 2006, a person of ordinary skill in the art
19 would not have known how to communicate location
20 information between the mobile device and the
21 remote database?
22 A Well, Counsel, your question, which I

1 understand is regarding this paragraph 38, is
2 misleading. And I find the description here, a
3 person of ordinary skill in the art knowing how to
4 communicate location information. This is not the
5 problem that we have here. It's not about
6 communicating location information between a
7 mobile unit and a database. It is, the problem
8 is, and it's not even articulated in the petition,
9 and I'm even -- I'm here just to try and in broad
10 strokes, if you will, articulate the problem.
11 When I say, well, there must be some
12 facility to communicate location information
13 between the end user and the server, in order to.
14 So there's more to that.
15 So, in order to enable the mobile unit
16 to perform computations based on, right, based on
17 a database which is being updated and remote.
18 So, it's not just about the one-time
19 communication of location information, or even a
20 periodic communication. So there must be more
21 than that. And maybe this will -- maybe if this
22 were -- if this -- there will be some restrictions

1 on performance. All right, that's possible. But
2 in any case, even if we say, okay, there may be no
3 restrictions in performance, but, right, the
4 bandwidth and power, well, we have dispensed of,
5 right? And I think that this is correct.
6 So I think that this is a -- if I may,
7 I think this is a more complete answer to the
8 question, that although we ask, wireless
9 communication was known. And if you say, well,
10 wireless communication was known, that does not
11 capture, does not capture, adequately, the
12 problem, for which I think the problem wasn't
13 known and that's why, at the minimum -- so I'm
14 being conservative here to say just bandwidth and
15 power. And if something is -- I mean, I will take
16 a look at it. But conservatively, almost
17 certainly bandwidth and power will be a problem.
18 MR. ZEILBERGER: I'm going to object to
19 that answer as nonresponsive.
20 Q Dr. Cooklev, do you agree that in 2006,
21 a person of ordinary skill in the art would have
22 known how to communicate location information

1 between a mobile device and a server?
2 MR. CONKLE: Objection. Form.
3 A Well, I'm trying to answer this as
4 completely and thoroughly and as truthfully as I
5 can. I said that the -- this description of the
6 problem does not capture the --
7 Q Dr. Cooklev, I'm not describing a
8 problem. I'm asking you a question. And I would
9 like an answer to my question, regardless of
10 whether you think the question is accurately
11 characterizing what you think is the problem.
12 MR. CONKLE: So, Counsel,
13 cross-examination, under the rules, need to be
14 constrained to the scope of the direct. You're
15 saying he's had -- there's one sentence in his
16 declaration and now you're, you know, trying to --
17 MR. ZEILBERGER: Christian, speaking
18 objections -- Christian, speaking objections are
19 not proper. You're coaching the witness, please
20 stop.
21 MR. CONKLE: So, I disagree that I
22 can't assert that you're improperly questioning

1 the witness.
2 MR. ZEILBERGER: You can make your
3 objection.
4 MR. CONKLE: Okay. You have to let the
5 witness finish his answer at least, okay?
6 So you choose where you want to pick
7 back up, but do not interrupt the witness and then
8 tell me that I can't object.
9 MR. ZEILBERGER: Christian, I did not
10 interrupt the witness. The witness has now,
11 several times, gone on five- to ten-minute-long
12 descriptions that don't answer the question.
13 Now, this isn't a proper discussion on
14 the record in front of the witness. I think we
15 should get back to questions and answers.
16 Q Dr. Cooklev, do you agree that in 2006,
17 a person of ordinary skill in the art would have
18 known how to communicate location information
19 between a mobile device and a server?
20 MR. CONKLE: Same objections.
21 A In the abstract, yes, a person of skill
22 would have known how to communicate. Just that,

1 as I said, this would not necessarily solve the
2 problem of performing computations on mobile
3 device while the database is remote.
4 Q When you say, in paragraph 38 of your
5 declaration in the 153 proceeding, that such
6 communications would necessarily consume both
7 bandwidth and power, which are precious resources
8 in a wireless communication system, would you
9 agree that notwithstanding an increase in
10 bandwidth and power consumption, such an
11 arrangement would still provide a benefit to
12 storage requirements?
13 A That is only for storage requirements?
14 Q Could you repeat that? I didn't hear
15 you.
16 A I said the question referred to benefit
17 only for storage requirements?
18 Q So, in the last sentence of paragraph
19 38, you say that the arrangement that you're
20 discussing in paragraph 38 would increase
21 bandwidth and power requirements.
22 Is that a fair characterization of what

1 you're saying in the last sentence there?
2 A Yes.
3 Q Such an arrangement would still provide
4 a benefit to storage requirements of the mobile
5 device, correct?
6 MR. CONKLE: Objection. Form.
7 A Well, first, yes, in the -- that --
8 well, such an arrangement, by such an arrangement,
9 you mean the database being remote and the
10 calculation done on the mobile device. Because
11 the database is remote, the question is, is this
12 beneficial regarding storage requirements?
13 I mean, just because the database is
14 not in the mobile device, a person of skill would
15 look at this and say, well, yes, this saves some
16 storage. But, you know, Counsel, the -- this
17 would not be the type of analysis, not a complete
18 analysis, that a person of skill would get done in
19 time.
20 Because even though, even though this
21 saves -- this, just in the abstract, it saves some
22 storage. But the subsequent -- and I refer to it

1 as a facility that will communicate this
2 information, and in a timely manner, so, also,
3 this, there -- that quite a bit is necessary that
4 has not been explained; that this will add so
5 much, it will add so much to both bandwidth and
6 power that, overall, I think it could be -- and,
7 again, I'm very conservative, it would have been
8 very difficult to say that, overall, there was
9 some benefit. I think, conservatively, that would
10 have been very difficult to say, meaning that,
11 overall, I don't think a person of skill could
12 realize there was a benefit.
13 Q When you say "it would have added so
14 much to both bandwidth and power," how much?
15 A Well, first, the facility that I would
16 refer to, which will communicate this information
17 to enable the mobile unit to do the determination.
18 This was not even -- this was not even identified,
19 not proposed. How could I have evaluated this and
20 have a detailed answer to tell you how much
21 bandwidth and power. But, actually, in 2006 --
22 well, bandwidth and power, they will always be at

1 the premium in cellular communications. Even more
2 so in 2006. Because bandwidth was more expensive.
3 And, I mean, in 2006, we had -- we didn't have
4 power-efficient phones we have today. So they
5 were, even more important, these things, than they
6 are today.
7 So I don't have an exact number because
8 nothing has been presented to me to evaluate and
9 respond.
10 Q So what did you mean when you said "it
11 would have added so much to both bandwidth and
12 power"?
13 A Well, I'm saying this facility, right,
14 again, it communicates location information. I
15 mean, that's about -- that's about what I think we
16 know about it, or we can infer, would be more
17 accurate. But how does it do it? How does it do
18 it so that this is -- the location determination
19 is being done all the time, the database updated
20 all the time? So how does it do it? And nothing
21 has been presented to me.
22 But the answer about bandwidth and

1 power depends on, how does this happen?
2 Q Let's turn to your declaration in the
3 155 proceeding.
4 A Yes, I'm there. This is for the '811
5 patent?
6 Q That's right.
7 And can you, please, turn to paragraph
8 34.
9 A I'm right there.
10 Q In paragraph 34, similar to what we
11 talked about earlier today, you say that the term
12 "device-specific target location" requires a
13 target location that is specific to a particular
14 device, correct?
15 A Yes.
16 Q Is it your opinion that there are
17 locations that only exist as to particular
18 devices?
19 MR. CONKLE: Objection. Form.
20 A I'm trying to understand the question.
21 That the locations existed.
22 I mean, in a certain sense, locations

1 existed before the world got cellular telephone.
2 So in this sense, locations, yeah, they could
3 exist without any cell phones.
4 But, a device-specific target location
5 is a location that is specific to a particular
6 device.
7 Q But you're not saying that two
8 different devices can't share the same
9 device-specific target location, are you?
10 A I think the answer is, it depends.
11 Q So there are situations where two
12 different devices can share the same
13 device-specific target location, correct?
14 A I think I haven't said it here, but I
15 think it depends.
16 Q So I asked you whether there are
17 situations where that could be true.
18 What do you mean by "it depends"?
19 A I mean, the context of the '811 patent,
20 I think that there could be situations in which
21 that could be true.
22 Q When you say, in paragraph 34, that a

1 device-specific location does not refer to a
2 location that is generally applicable to numerous
3 devices, what do you mean?
4 A I think this sentence has a clear
5 meaning, but I'm not sure how to explain further.
6 That, what I mean is that
7 device-specific target location is a location that
8 is specific to a particular device.
9 Q What do you mean by "generally
10 applicable," in paragraph 34?
11 A I'm not sure I can rephrase for these
12 terms that -- I see no lexicography or disclaimer
13 that device-specific target location, what it
14 generally refers to, is a location for numerous
15 devices.
16 Q When you say "numerous devices," what
17 do you mean?
18 A A large number of devices.
19 Q Would two devices be "numerous
20 devices"?
21 A Generally not.
22 Q So how do you know whether you've

1 reached numerous devices?
2 A Well, one would look at the, maybe,
3 some additional context to see what this
4 "numerous" really means.
5 Q The phrase "numerous devices" is a
6 phrasing that you came up with, Dr. Cooklev; is it
7 not?
8 A Well, and I'm not sure I can completely
9 agree with this. I think -- certainly I'm using
10 it here, but I think the phrase "numerous
11 devices," has been used many times before and has
12 a general clear meaning.
13 Q It's a phrasing, though, that you chose
14 to use in your declaration, correct?
15 A Yes.
16 Q And so, as you used the phrase
17 "numerous devices," how would one know whether or
18 not there are numerous devices?
19 MR. CONKLE: Objection. Form.
20 A Well, I think the way I used "numerous
21 devices" is clear to a person of skill. And if,
22 in a given instance, someone wants to investigate,

1 some additional context would be necessary.
2 Q What context would be necessary to know
3 whether a location is generally applicable to
4 numerous devices?
5 A I need to think about it. In my
6 declaration, my goal was to respond to
7 Dr. Almeroth.
8 Q So you didn't have an understanding
9 about what a location that is generally applicable
10 to numerous devices meant when you wrote your
11 declaration?
12 A No, I did. I did. I think there is a
13 distinction here between device-specific target
14 location and the location generally applicable to
15 numerous devices. I think there is a clear
16 distinction there.
17 Q If a family of five individuals, that
18 each have a phone, live at a home, and each of
19 them creates a fingerprint at their home, would
20 that home location be a device-specific target
21 location?
22 MR. CONKLE: Objection. Form.

1 A I think it's not necessarily is going
2 to be a device-specific target location.
3 Q What would it depend on?
4 A I think I did not make that analysis.
5 I mean, it seems, to me, it was beyond the -- what
6 I was asked to do in connection with the IPR.
7 Q So why did you say it's not necessarily
8 going to be a device-specific target location?
9 A I mean, I was trying to give you the
10 best answer -- I mean, trying to give an honest
11 answer right now.
12 Q I'm trying to understand the
13 distinction you are making between a location that
14 is specific to a particular device and a location
15 that is generally applicable to numerous devices.
16 What distinction are you trying to
17 make?
18 A Well, I think there's a clear
19 distinction between location that's specific to a
20 device and a location that is applicable to
21 numerous devices. I think there is a clear
22 distinction between these.

1 Q Earlier today, you said how locations
2 existed even before mobile networks existed.
3 Do you remember that?
4 A I do.
5 Q How can there be a location that is
6 specific to a particular device?
7 MR. CONKLE: Objection. Form.
8 A Well, I think the -- maybe the short
9 answer is that, according to the claims of the
10 '811 patent, yes, this is how.
11 Q So you understand the claims of the
12 '811 patent to recite a target location that is
13 specific to a particular device?
14 MR. CONKLE: Objection. Form.
15 A Excuse me. I want the claims to
16 recite?
17 Q You understand the claims of the '811
18 patent to recite a target location that is
19 specific to a particular device; is that right?
20 A I mean, that is not incorrect. I think
21 that the term in the claim, in claim 115, is
22 device-specific target location, which to say is,

1 like, target location that is specific to a
2 device.
3 So, yes, that's how I understand the
4 claims. I think you were -- you are correct.
5 Q So you are saying that a location can
6 be specific to a particular device because the
7 claims recite that a location can be specific to a
8 particular device and that the claims recite that
9 because they recite a device-specific target
10 location?
11 Do I have that right?
12 MR. CONKLE: Objection. Form.
13 A I'm sorry, it became a long question.
14 Q Let's take it apart.
15 A Or I grow tired or both. I'm sorry.
16 But I will try to answer this and maybe we can
17 take another break.
18 Q Let's take it apart.
19 Earlier, when I asked you how can a
20 location be specific to a particular device, you
21 said, "The short answer is, according to the
22 claims of the '811 patent, this is how."

1 Do you recall that?
2 A I do.
3 Q And now, when I asked you where did the
4 claims of the '811 patent say that a location can
5 be specific to a particular device, you told me
6 that they say that by reciting the term
7 "device-specific target location."
8 Do you recall that?
9 A I think, yes.
10 Q So you're saying that a location can be
11 specific to a particular device simply because the
12 claims say "device-specific target location"; is
13 that right?
14 MR. CONKLE: Objection. Form.
15 A Well, to the extent your question is
16 related to infringement, I would -- at least
17 that's how I understand it, how can this happen?
18 How can this happen? Or how can a given location
19 be a device-specific target location?
20 To the extent this is related to
21 infringement, I have not reached an opinion about
22 this.

1 Q Dr. Cooklev, I have not said a single
2 word about infringement. I'm trying to understand
3 your testimony in paragraph 34 of your declaration
4 in the 155 proceeding.
5 Can you give me a single example of a
6 target location that is specific to a particular
7 device?
8 MR. CONKLE: Objection. Form.
9 A You know, because my declaration was in
10 response to Dr. Almeroth, I didn't think of an
11 example. So your question, I think, is an
12 interesting question. But, again, I didn't think
13 of examples to, essentially, have an example.
14 Now --
15 Q So sitting here today, you can't think
16 of a single example that would explain what you
17 mean when you say, from paragraph 34 of your
18 declaration in the 155 proceeding, "a target
19 location that is specific to a particular device"?
20 MR. CONKLE: Objection. Form.
21 A I did not think that an example is
22 necessary since each word from this claim,

1 individually, and all the words in combination,
2 had, at the time of the invention, clear meaning
3 and were astute, and I didn't think I need to give
4 an example to explain what this means beyond what
5 I've said.
6 Q If these words are so clear,
7 Dr. Cooklev, why is it that today, not at the time
8 of your declaration, today, in today's deposition,
9 you cannot articulate a single example of a target
10 location that is specific to a particular device?
11 MR. CONKLE: Objection. Form.
12 A And I think the answer is because I
13 understood my declaration to be in response to
14 Dr. Almeroth and not advance or develop my own
15 examples and analysis, but just focus on and
16 respond to his analysis.
17 Q Your declaration criticizes the prior
18 art for not teaching a device-specific target
19 location, correct?
20 A Yes.
21 Q How can you know that the prior art
22 does not have a device-specific target location if

1 you cannot articulate a single example of
2 something that is a device-specific target
3 location?
4 MR. CONKLE: Objection. Form.
5 A Well, I think I show an answer for
6 this. For example, in paragraph 36, I say, well,
7 "fingerprints associated with location is usable
8 by all mobile devices," they -- essentially, what
9 I'm saying is that, in this case, that is not a
10 device-specific location.
11 And, or as another example, so even if
12 it's not all devices, but if it's multiple
13 devices, and I cite to paragraph 215 from
14 Dr. Almeroth's declaration, so I -- this also
15 undermines his contention that these locations are
16 device-specific.
17 So, this is how I can -- and I reach
18 the opinions, in my declaration.
19 Q How can you say that the functionality
20 you identify in paragraph 36 is not a
21 device-specific target location if you cannot tell
22 me what is a device-specific target location?

1 MR. CONKLE: Objection. Form.
2 A Well, I think I can. And I don't think
3 it's a problem even if -- even if the boundaries
4 of this claim element, even if regarding the
5 boundaries, they are not that crisply defined, we
6 were talking earlier about the words "numerous
7 devices," right? Even if that's so -- even if
8 that's not the crisply defined boundary, clearly
9 locations that I state here, if locations are
10 usable by all mobile devices, or by multiple,
11 meaning a large number of them, a large number of
12 mobile devices. So that is not, in these
13 examples, not a device-specific target location.
14 I think I can. Even as I said, even if the
15 boundaries are not crisply defined, yes, I think
16 one can make this analysis and conclude that,
17 well, if we have all or multiple, that's not
18 device-specific target location.
19 Q Can you provide me a single example of
20 something that is clearly a device-specific target
21 location?
22 MR. CONKLE: Objection. Form.

1 A I don't want to, essentially, be coming
2 up with examples on the fly, Counsel. I did not
3 think of that.
4 Q Well, you told me, a moment ago, that
5 even if the boundaries of this claim element
6 aren't crisply defined, you know things that are
7 and are not device-specific target locations; did
8 you not?
9 A Yeah, I think I said if the boundaries
10 are not crisply defined, we still can make a
11 determination, as I have.
12 Q So I'm not asking you about the
13 boundary examples, where you might not know, one
14 way or the other. I'm asking you about, give me
15 the most extreme example of something that is
16 clearly a device-specific target location. I just
17 want one example to understand what you mean when
18 you say that "a device-specific target location
19 requires a target location that is specific to a
20 particular device."
21 MR. CONKLE: Objection. Form.
22 A Counsel, I don't want to, essentially,

1 be rendering opinions on the fly or giving
2 examples on the fly.
3 But I can say, again, that it's easier
4 to reach the conclusion that locations usable by
5 all are large numbers of mobile devices.
6 So I think, unquestionably, these are
7 not device-specific.
8 Q Is there a location on earth that is
9 not usable by multiple mobile devices?
10 MR. CONKLE: Objection. Form.
11 A I think, in the context of the '811
12 patent, yes. Although, I have not performed that
13 type of analysis.
14 MR. CONKLE: And, again, the witness
15 asked for a break over 15 minutes ago -- well,
16 approximately, 15 minutes ago.
17 MR. ZEILBERGER: Dr. Cooklev, did you
18 want to take a break?
19 THE WITNESS: Yes, Counsel. Thank you.
20 MR. ZEILBERGER: Sure. We can take a
21 break.
22 (Recess taken from 5:28 p.m. to

1 5:42 p.m.)
2 MR. ZEILBERGER: Back on the record.
3 BY MR. ZEILBERGER:
4 Q Dr. Cooklev, how can a location exist
5 that is not usable by multiple mobile devices?
6 MR. CONKLE: Objection. Form.
7 A I think you are asking me outside the
8 context of the '811 patent.
9 Q No, Dr. Cooklev. I'm asking you in the
10 context of the '811 patent.
11 A Well, the way, then, I understand the
12 question is, how can the '811 patent be infringed?
13 Now, I can't answer this because I
14 haven't done this analysis.
15 Q I did not ask you about infringement,
16 Dr. Cooklev. I asked you, how can a location
17 exist that is not usable by multiple mobile
18 devices in the context of the '811 patent?
19 MR. CONKLE: Objection. Form.
20 A Well, the claims of the '811 patent,
21 they recite the claim term "device-specific target
22 location." I mean, I said already how I

1 understand your question. Seems to me you are
2 saying there's no such thing as device-specific.
3 Q No, Dr. Cooklev. I'm talking about the
4 understanding of device-specific target location
5 that you recite in paragraph 34 of your
6 declaration, where you say "A device-specific
7 target location requires a target location that is
8 specific to a particular device."
9 How can a location exist that is
10 specific to a particular device and not applicable
11 to other devices?
12 MR. CONKLE: Objection. Form.
13 A I don't think I considered that to be
14 able to answer your question.
15 Q And that's not an issue that you
16 considered when you said, in your declaration,
17 that, in your opinion, "A device-specific target
18 location refers to and requires a target location
19 that is specific to a particular device"?
20 MR. CONKLE: Objection. Form.
21 A You know, I -- as we were talking
22 about, yes, device location that's specific to a

1 particular device is what I think the plain and
2 ordinary meaning of this claim term is.
3 But how is the claim element met is a
4 question that I did not study?
5 Q And you also didn't study what the
6 phrase "a target location that is specific to a
7 particular device" means, correct?
8 MR. CONKLE: Objection. Form.
9 A Well, I think, Counsel, you've taken
10 what I'm explaining the plain and ordinary meaning
11 to be and you are suggesting this should be
12 construed any further, or explained, in term,
13 explain what it means.
14 To begin with, device-specific target
15 location, I don't think it should be construed in
16 any way. And I was just -- and I was giving what
17 my understanding of the plain and ordinary meaning
18 is. So it's not clear to me that the plain and
19 ordinary meaning needs to be explained or
20 construed in term.
21 Q Are you saying, Dr. Cooklev, that you
22 did not apply a meaning to the phrase

1 "device-specific target location" such that it
2 requires a target location that is specific to a
3 particular device in performing your analysis?
4 A No, I did apply, and I applied the
5 meaning that I state in paragraph 34.
6 MR. CONKLE: I'm so sorry. Could we
7 pause for about a minute? I need to deal with
8 something in the hallway.
9 Is that all right?
10 MR. ZEILBERGER: That's fine.
11 MR. CONKLE: We can stay on the record.
12 MR. ZEILBERGER: We can take a break.
13 MR. CONKLE: Okay.
14 (Recess taken from 5:51 p.m. to
15 5:53 p.m.)
16 MR. ZEILBERGER: Back on the record.
17 BY MR. ZEILBERGER:
18 Q If a first user of a mobile device,
19 standing at a geographical location A, selects
20 that location for a fingerprint, which is, then,
21 sent to a database, would that be a
22 device-specific target location?

1 MR. CONKLE: Objection. Form.
2 A I think it depends. It's a
3 possibility.
4 Q What would it depend on?
5 A I have not done this analysis.
6 MR. ZEILBERGER: Why don't we take a
7 five-minute break.
8 MR. CONKLE: That's fine.
9 (Recess taken from 5:56 p.m. to
10 6:03 p.m.)
11 MR. ZEILBERGER: Thank you for your
12 time today, Dr. Cooklev. We have no further
13 questions.
14 MR. CONKLE: Let's go off the record
15 again for about five minutes.
16 (Recess taken from 6:03 p.m. to
17 6:08 p.m.)
18 EXAMINATION BY COUNSEL FOR THE RESPONDENT
19 BY MR. CONKLE:
20 Q Dr. Cooklev, thank you. I just have a
21 few questions on redirect.
22 Do you recall Counsel asking you some

1 questions about device-specific locations,
2 correct?
3 A Yes, I do.
4 Q Does the '811 patent -- pardon me.
5 Does any claim of the '811 patent recite the
6 phrase "device-specific location"?
7 MR. ZEILBERGER: Objection. Leading.
8 Form.
9 MR. CONKLE: Counsel, if you have a
10 suggestion how I can ask that in non-leading form,
11 I'd be happy to. I don't think it's leading.
12 A So, the claim term is device-specific
13 target location.
14 Q Okay. Is it fair that in your
15 declaration, when you talk about a -- well, let me
16 try to ask it in a non-leading format.
17 In your declaration, when you refer to
18 a "device-specific location," are you referring to
19 a device-specific target location, as claimed?
20 MR. ZEILBERGER: Objection. Leading.
21 A Yes, I was. I just was shortening -- I
22 understand I was shortening this phrase. But what

1 I meant is the claim term, device-specific target
2 location.
3 Q Thank you.
4 Do you recall Counsel asking for an
5 example of specific target location?
6 Do you recall that.
7 A I do.
8 Q Would you turn to column 18, line 46,
9 of the '811 patent, and read the paragraph that
10 begins on that line.
11 A So I'm there. Column 18. "The user
12 will stand in the location where he would like
13 something to take place. Every time he reaches
14 that place (a desired location) using his cell
15 phone, he will choose the action that he wants to
16 take place. The action he would like to take
17 place will, then, be associated with the location
18 where the user is standing, where the location
19 will be defined by software running on the cell
20 phone as the combination of signal strengths
21 measured by the cell phone from surrounding
22 cells."

1 Q Thank you. Within the context of the
2 '811 patent's specification and disclosed
3 embodiments, does this paragraph provide an
4 example of device-specific target location?
5 MR. ZEILBERGER: Objection. Leading.
6 A Yes.
7 MR. CONKLE: Thank you. Pass the
8 witness, if you want to redirect -- or recross.
9 EXAMINATION BY COUNSEL FOR THE PETITIONER
10 BY MR. ZEILBERGER:
11 Q Dr. Cooklev, when you say that column
12 18, lines 46 to 54, provide an example of a
13 device-specific target location, if a user
14 performs that action at a location that is
15 generally applicable to numerous devices, would it
16 still be a device-specific target location?
17 MR. CONKLE: Objection. Form.
18 A So I still have this column 18 of the
19 '811 patent. I will look at my declaration.
20 If the only thing we can say about a
21 location is that it's applicable to numerous
22 devices, if that's what we can say, then it's not

1 device-specific target location.
2 Q So, how do we know, in the example at
3 column 18, lines 46 to 54, if the user performs
4 the action at a location that it is a
5 device-specific target location, under your
6 understanding of that term?
7 MR. CONKLE: Objection. Form.
8 A Well, as a result of this example, this
9 location is device-specific target location.
10 That's how we know that it is.
11 Q So even if this location in column 18,
12 lines 46 to 54, is generally applicable to
13 numerous devices, it is a device-specific target
14 location, correct?
15 MR. CONKLE: Objection. Form.
16 A Well, in my paragraph 34, where I say
17 "generally applicable to numerous devices," I use
18 this in the context that a location that is
19 generally applicable to numerous devices is not
20 device-specific target location, if that's all.
21 If you mean that while the location can
22 be here the user will stand in the location where

1 he would like something to take place, and if you
2 mean -- I mean, this -- this is, now, does become
3 a device-specific target location. I mean,
4 someone else might. I haven't really considered
5 these. Someone else might get to that location.
6 So it's not that this location is unreachable.
7 Q So, are you saying, Dr. Cooklev, that
8 if a second user stands in this location, that's
9 referred to column 18, lines 46 to 54, the
10 location will convert from a device-specific
11 target location to something other than a
12 device-specific target location?
13 A No. I was not saying that.
14 MR. CONKLE: My apologies. Objection.
15 Form.
16 Q Do you agree that so long as a user
17 stands at a location and chooses that location, as
18 a location for which to measure signal strength,
19 that is a device-specific target location,
20 correct?
21 MR. CONKLE: Objection. Form.
22 A Well, I think this is just -- this

1 example, from column 18, recites a little bit more
2 than just measuring signal strength in the
3 location.
4 Q What is it about column 18, lines 46 to
5 54, that makes it a target location that is
6 specific to a particular device?
7 MR. CONKLE: Objection. Form.
8 A Well, it's the -- I mean, I can repeat,
9 again, the example.
10 So it's in a location where the user
11 would like something to take place. Every time
12 the user reaches that place and then chooses the
13 action that the user wants to take place. And
14 then the action will be associated with the
15 location where the user is standing.
16 Q Do you agree that so long as you have
17 those characteristics, you have a device-specific
18 target location?
19 MR. CONKLE: Objection. Form.
20 A I think I already said that this is one
21 example of a device-specific target location, so I
22 would agree that this is one example.

1 Q Does this example, in column 18 of the
2 specification, say anything about what
3 fingerprints to use to confirm whether a user is
4 at that location?
5 MR. CONKLE: Objection. Form.
6 A Well, this example says that the
7 location will be defined as the combination of
8 signal strengths measured by the cell phone from
9 surrounding cells.
10 So it provides an example about that
11 too.
12 Q I'm asking you whether this says that a
13 device-specific target location is limited to
14 fingerprints that are determined by the device
15 that requested an action to occur at this
16 location?
17 MR. CONKLE: Objection. Form.
18 A So, first, this passage, column 18,
19 lines 46 to 54, this is one example of a
20 device-specific target location.
21 Now, your question about the boundaries
22 of this term, I think this is a claim term, it's

1 not just I think, it is a claim term, and --
2 Q Was that your full answer, Dr. Cooklev?
3 A I'm still looking at claim 1 and being
4 mindful of the question.
5 I think the -- it seems to me the term
6 "device-specific target location" is separate from
7 the determination aspect. So that's my answer.
8 Q So, in your opinion, something can be a
9 device-specific target location even if the
10 determination about whether the device at that
11 location is based on fingerprints captured by
12 different mobile devices; is that right?
13 MR. CONKLE: Objection. Form.
14 A So, I think "device-specific target
15 location" is a term that appears in claim 1 of the
16 '811 patent.
17 What you are citing, the determination
18 to be done based on fingerprints captured by other
19 devices, I don't think it will -- I think it will
20 fall out of the scope of claim 1.
21 Q Why?
22 A Because that's not what claim 1

1 teaches. Because claim 1 requires the portable RF
2 communications device to -- says automatically
3 receiving a first plurality of communication
4 signals.
5 And so I -- you said, well, if other
6 devices are doing the steps, doing this step, I
7 mean, at least the way I understand the question,
8 it'll be, in this case, it'll be out of the scope
9 of claim 1.
10 Q I believe you were misstating my
11 question, which was directed to a device-specific
12 target location.
13 Is it your opinion that a location
14 cannot be a device-specific target location if the
15 determination about whether the device is at that
16 location is based on fingerprints captured by
17 different mobile devices?
18 MR. CONKLE: Objection. Form.
19 A Well, the term "device-specific target
20 location" is separate from which device captures
21 the -- or measures the signal strengths. That's a
22 separate aspect.

1 So, if -- I mean, in column 18, we saw
2 one example. So we can have a device-specific
3 target location, we follow that example, just as
4 far as the location part. But if the other -- if
5 the other steps recited in claim 1, if they are
6 not performed, they're not performed.
7 So, it seems like, in your question,
8 you're merging the device-specific target
9 location, which is separate from, and now you
10 merge it with which device receives the signal
11 strength.
12 Q Dr. Cooklev, could you --
13 A So, different aspect.
14 Q Can you, please, turn to paragraph 36
15 of your declaration for the 155 proceeding, the
16 '811 patent.
17 A I'm there.
18 Q In paragraph 36 you state,
19 "Dr. Almeroth failed to explain how this proposed
20 combination, involving fingerprints associated
21 with location usable by all mobile devices using
22 the system, would have involved a device-specific

1 location, meeting the requirements of claim 1."
2 Do you see that?
3 A Yes.
4 Q When you made that assertion, were you
5 saying that Dr. Almeroth did not sufficiently
6 address the device-specific target location or
7 were you referring to some other requirements of
8 claim 1?
9 A I was referring to the device-specific
10 target location.
11 Q Why does the involvement of
12 fingerprints associated with locations usable by
13 all mobile devices using the system bear on the
14 question of whether there is a device-specific
15 target location?
16 MR. CONKLE: Objection. Form.
17 A Because it's a location that's
18 generally applicable to all the devices, is not
19 device-specific.
20 Q Why is it not device-specific?
21 MR. CONKLE: Objection. Form.
22 A Well, it's because Dr. Almeroth

1 doesn't -- first of all, Dr. Almeroth doesn't
2 explain, doesn't pay any attention to this
3 claim -- to the claim element device-specific
4 target location.
5 And identifies location that's
6 generally applicable to all, or at least a large
7 number of devices. So, and as we discussed
8 earlier, a location generally applicable to all or
9 a large number of devices is not, unquestionably,
10 is not a device-specific target location in the
11 context of the '811 patent.
12 Q Turning back to column 18 of the '811
13 patent, at lines 46-54, you are saying, then, that
14 if the signal strength measurements that are
15 referred to here were stored in a database that
16 had measurements from other devices, that that
17 would suddenly convert, what you say is a
18 device-specific target location, into something
19 that is not a device-specific target location; is
20 that right?
21 MR. CONKLE: Objection. Form.
22 A I don't agree with that.

1 Q Why not?
2 A I mean, in short, I think that this
3 just departs from this example.
4 Q I don't understand how that answers my
5 question, Dr. Cooklev.
6 A If I may, could you, please, Counsel,
7 repeat the question. I'll try once again to
8 answer.
9 Q Looking at column 18 of the '811
10 patent, at lines 46 to 54, are you saying that if
11 the signal strength measurements, that are
12 referred to here, were stored in a database that
13 had measurements from other devices, that would
14 convert what you previously said is a
15 device-specific target location into something
16 that is not a device-specific target location?
17 MR. CONKLE: Objection. Form.
18 A Well, first, in your question, the
19 signal strengths that are mentioned in the example
20 from line 46 to 54, the only place signal
21 strengths are mentioned is the location will be
22 defined by software running on the cell phone as

1 the combination of signal strengths measured by
2 the cell phone from surrounding cells.
3 So the combination of signal strength,
4 that's what defines the location.
5 And then you constructed almost, I
6 think, a hypothetical here. Now, if these -- if
7 this -- these signal strengths are stored, right?
8 So the question is a hypothetical system where the
9 signal strengths are stored.
10 And as far as device-specific target
11 location, I mean, this example here doesn't say
12 where these signal strengths are stored.
13 Q So you agree, then, that what is in
14 column 18, lines 46 to 54, would remain a
15 device-specific target location, even if the
16 measurements were stored with other fingerprints
17 captured by other mobile devices, correct?
18 MR. CONKLE: Objection. Form.
19 A I don't think I have provided an
20 opinion about that.
21 Q I'm asking you, sitting here today,
22 Dr. Cooklev. You suddenly are saying that what is

1 in column 18, lines 46 to 54, is an example of a
2 device-specific target location. And I would like
3 to understand that testimony.
4 Would that example remain a
5 device-specific target location even if the
6 measurements were stored with other fingerprints
7 captured by other mobile devices?
8 MR. CONKLE: Objection. Form.
9 A Well, I don't think I considered that
10 question, Counsel, to be able to answer it right
11 now.
12 Q So sitting here today, you can't say
13 whether what is referred to in column 18, lines 46
14 to 54, would always refer to a device-specific
15 target location, correct?
16 MR. CONKLE: Objection. Form.
17 A Well, I'm not sure that's an accurate
18 statement of my testimony.
19 I think this is one example of a
20 device-specific target location.
21 Q Okay. So if you're saying that this is
22 only an example of a device-specific target

1 location, then you are saying that even if the
2 measurements that are referred to in this example
3 were stored in a database with fingerprints
4 captured by other mobile devices, it would still
5 refer to a device-specific target location,
6 correct?
7 MR. CONKLE: Objection. Form.
8 A Well, it seems to me you're
9 constructing a different system and I did not -- I
10 don't think I've analyzed that system.
11 Q What have I changed about this example,
12 Dr. Cooklev?
13 MR. CONKLE: Objection. Form.
14 A Well, isn't the question, is this going
15 to remain an example even if -- and then it's
16 really something normal that is not in this
17 passage, which, I think, is that the fingerprint
18 or the signal strength measurements are stored on
19 a database together with other devices, something
20 like that.
21 Q Can you, please, show me where, in
22 column 18, lines 46 to 54, it says that the signal

1 strength measurements are not stored on the
2 database, together with fingerprints captured by
3 different mobile devices?
4 MR. CONKLE: Objection. Form.
5 A I said that this is separate. It
6 doesn't say that.
7 This passage does not describe storing
8 the fingerprints?
9 Q And sitting here today, you're not able
10 to say what impact storing signal strength
11 measurements on a database, together with
12 measurements from different mobile devices, has on
13 whether something is a device-specific target
14 location, correct?
15 MR. CONKLE: Objection. Form.
16 A Oh, I think the way I try to analyze
17 the validity of a claim is I look at all of the
18 claim elements, not just one claim element. So I
19 did not understand Dr. Almeroth's examples to be
20 constructing the hypothetical system that you are
21 now constructing.
22 And in case I'm wrong, please correct

1 me and point me to a paragraph of Dr. Almeroth
2 where he's constructing that system.
3 But if you are constructing, right now,
4 a system, I said I would look at all the elements
5 of the claim, which is my understanding of the way
6 validity should be analyzed, and then I will come
7 up with an opinion.
8 Q You would agree that the passage in
9 column 18, lines 46 to 54, of the '811 patent, is
10 a device-specific target location because it
11 involves a location that a user has selected on
12 that device, correct?
13 MR. CONKLE: Objection. Form.
14 A I don't think this quite accurately
15 summarizes the example.
16 Q I wasn't summarizing the example,
17 Dr. Cooklev, I was asking you whether that is the
18 reason why you testified today that this example
19 is a device-specific target location.
20 MR. CONKLE: Objection. Form.
21 A Well, but if that does not accurately
22 summarize the example.

1 Then it can be the reason, right? At
2 least that's how I understand it.
3 So, this is an example because -- so we
4 see what is present here. So this is a location
5 where some -- the user would like something to
6 happen every time it reaches that location, and
7 then chooses the action that he wants to take
8 place. And then the action is associated with the
9 location and the location is defined by the
10 fingerprint.
11 So we have these things, and this is
12 why I said this is a device -- this is an example
13 of a device-specific target location.
14 Q But you're not testifying that you need
15 all of these things, that you just summarized, for
16 something to be a device-specific target location,
17 correct?
18 A So you're asking, now, about other
19 examples, whether you don't need all of these
20 things.
21 And -- well, and I said that the
22 boundaries of the claim, they may not be that

1 crisply defined. I mean, this is one example of a
2 device-specific target location. Now, if we start
3 to depart from this example and if we remove some
4 of these things, it's possible that we no longer
5 have that. And if I -- I can't analyze a
6 hypothetical.
7 Q If everything in column 18, lines 46 to
8 54, were the same except that signal strengths
9 were measured by a different device, would it
10 still be a device-specific target location?
11 MR. CONKLE: Objection. Form.
12 A I'm -- I was listening very carefully,
13 and mindful of the question. I'm not sure how
14 that's possible.
15 How is it everything here is going to
16 be the same except that now the difference --
17 different devices will be measuring the signal
18 strengths?
19 So, first, it's -- I would say, at the
20 minimum, that's difficult to -- difficult to
21 understand, and I'm doing my best.
22 And second, it's a -- it is a -- it's

1 the material change to this example. And at least
2 for this reason, I would need time to consider
3 something like that. It becomes a hypothetical
4 that I would need time to consider, is it, now,
5 within the scope or it's not within the scope. To
6 the extent, even, of course, to the extent that it
7 is understandable and it makes sense.
8 So there's quite a bit of analysis that
9 needs to happen before I answer the question.
10 Q And you performed that extensive
11 analysis when you opined in response to the
12 question from Broadphone's counsel, that this
13 example, in column 18, lines 46 to 54, in fact
14 refers to a device-specific target location?
15 MR. CONKLE: Objection. Form.
16 A Yes, I think. Yes, I did. I mean,
17 this is an example in the specification, one
18 example, what is a device-specific target
19 location.
20 Q Well, the specification doesn't refer
21 to a device-specific target location expressly in
22 this passage, correct?

1 A That's correct.
2 Q And so, what was it about this example
3 that made you say that it is a device-specific
4 target location?
5 MR. CONKLE: Objection. Form.
6 A Because this is a location that is
7 specific to that device?
8 Q Why is it a location that is specific
9 to that device?
10 MR. CONKLE: Objection. Form.
11 A Well, because the user chooses an
12 action here, and the action will take place. The
13 action will -- that he would like to take place,
14 will be associated with the location.
15 And so, it is a location that is
16 specific to this device. So this device will
17 perform some sort of an action.
18 Q So, if you have a location that is
19 selected by a user such that an action will occur
20 on the user's device at that location, that is a
21 device-specific location, correct --
22 device-specific target location?

1 MR. CONKLE: Objection. Form.
2 A Well, if you intended to accurately
3 summarize this example, it's a little bit long
4 example. But if you intended, accurately, to
5 summarize it, yes, this is an example of a
6 device-specific target location.
7 Q Dr. Cooklev, I asked you the question
8 that I asked you, and I'd like an answer to it.
9 If you have a location that is selected
10 by a user such that an action will occur on the
11 user's device at that location, is that a
12 device-specific target location?
13 MR. CONKLE: Objection. Form.
14 A If I may, I'd like to give a complete
15 answer here. That I think, for the most part,
16 yes, the answer to what you said. There is -- in
17 this example, also, it says "The action will,
18 then, be associated with the location," so there's
19 the location, an action is chosen, the action will
20 be associated with the location. And, in this
21 case, the location is defined by signal strengths.
22 So, for the most part, yes.

1 Q I'm not asking you to summarize column
2 18, Dr. Cooklev. I'm asking you -- you can set
3 aside column 18, put it out of your mind.
4 If you have a location that is selected
5 by a user such that an action will occur on the
6 user's device at that location, is that a
7 device-specific target location?
8 MR. CONKLE: Objection. Form. Outside
9 the scope of recross.
10 You can answer, if you can. Sorry, I
11 apologize.
12 A Whether something is a device-specific
13 target location is -- I think it would be correct
14 on my part, in the abstract, to provide opinions
15 that, in a hypothetical case, is or isn't -- well,
16 my task, as it was explained to me, was to respond
17 to Dr. Almeroth. And I don't think there is a
18 hypothetical like that in Dr. Almeroth's
19 declaration, in a sense for me to have seen it and
20 to have thought about it.
21 Q And you said that you don't think it
22 would be correct for you to provide an opinion on

1 the question I gave you.
2 Are you saying that you are not able to
3 provide an answer to my question?
4 MR. CONKLE: Objection. Form.
5 A And I was saying that providing new
6 opinions while I'm under oath is -- in some cases,
7 when I'm clearly able to do that, and I can be
8 doing my best to do it. And so, in some cases,
9 yes. But in some cases, where I think it requires
10 a more substantial analysis, I'm just not able to
11 do it, yes.
12 Q And so, sitting here today, you are not
13 able to say whether if you have a location that is
14 selected by a user, such that an action will occur
15 on the user's device at that location, whether
16 that is a device-specific target location,
17 correct?
18 MR. CONKLE: Objection. Form.
19 Improper recross.
20 A I think basically, my answer would be
21 the same. If I haven't seen it in Dr. Almeroth's
22 declaration, for me to give it some consideration,

1 I don't think it's in my declaration, and I can't,
2 right now, on the record, analyze. It's pretty
3 close to a hypothetical question.
4 MR. ZEILBERGER: No further questions.
5 MR. CONKLE: One moment.
6 Ms. Bellinger, can we get the lapsed time on the
7 record?
8 MR. ZEILBERGER: Can we go off the
9 record.
10 (Off the record at 7:14 p.m.)
11
12
13
14
15 Time on the record:
16 SAMSUNG ELECTRONICS - 6 hours, 22 minutes
17 BROADPHONE - 3 minutes
18
19
20
21
22

1 CERTIFICATE OF SHORTHAND REPORTER - NOTARY PUBLIC
2
3 I, Judith E. Bellinger, Certified Reporter
4 and Notary Public within and for the State of
5 Maryland do hereby certify:
6 That TODOR COOKLEV, PH.D., the
7 witness whose deposition is hereinbefore set
8 forth, was duly sworn by me before the
9 commencement of such deposition and that such
10 deposition was taken before me and is a true
11 record of the testimony given by such witness.
12 I further certify that the adverse party,
13 Broadphone LLC, was represented by counsel at the
14 deposition.
15 I further certify that the deposition of
16 TODOR COOKLEV, PH.D., occurred virtually
17 on Tuesday, October 22, 2024, commencing at
18 11:03 a.m. EDT.
19 I further certify that I am not related to
20 any of the parties to this action by blood or
21 marriage, I am not employed by or an attorney to
22 any of the parties to this action, and that I am

in no way interested, financially or otherwise, in the outcome of this matter.

IN WITNESS WHEREOF, I have hereunto set my hand this 25th day of October, 2024.

My commission expires:
November 3, 2028

Judith E. Bellinger

E-NOTARY PUBLIC IN AND FOR THE
State of Maryland

A

able
44:9, 45:1, 45:4, 59:12, 61:15, 124:14, 142:10, 144:9, 152:2, 152:7, 152:10, 152:13
about
6:21, 10:19, 10:22, 12:19, 12:20, 24:20, 25:10, 27:7, 32:22, 33:18, 35:10, 36:10, 39:4, 39:7, 43:1, 46:11, 46:17, 53:6, 53:8, 53:16, 55:7, 58:9, 59:1, 59:6, 59:10, 61:20, 62:16, 63:2, 63:5, 65:16, 68:5, 69:21, 77:21, 81:3, 81:8, 82:4, 82:11, 85:16, 87:20, 89:8, 89:12, 93:7, 98:16, 99:1, 100:5, 100:18, 107:15, 107:16, 107:22, 108:11, 112:5, 112:9, 116:21, 117:2, 120:6, 121:12, 121:14, 123:15, 124:3, 124:22, 126:7, 127:15, 128:1, 128:15, 130:20, 133:4, 134:2, 134:10, 134:21, 135:10, 136:15, 141:20, 143:11, 146:18, 149:2, 151:20
above
81:4
absolutely
25:21
abstract
52:3, 103:21, 105:21, 151:14
access
72:5, 80:6, 80:7, 80:8, 81:1, 81:17, 82:5
accessible
76:22, 85:3
accident
69:13
accidentally
69:14
accordance
47:7
according
114:9, 115:21
account
31:4, 53:12, 57:10, 57:19, 58:2, 58:3, 58:6, 58:14, 60:11, 60:13, 60:18, 62:20, 62:21
accurate
107:17, 142:17
accurately
6:19, 47:17, 102:10, 145:14, 145:21, 150:2, 150:4
acknowledge
30:9
acknowledged
59:16
action
129:15, 129:16, 130:14, 131:4, 133:13, 133:14, 134:15, 146:7, 146:8, 149:12, 149:13, 149:17, 149:19, 150:10, 150:17, 150:19, 151:5, 152:14, 154:20, 154:22
actually
10:5, 29:21, 32:18, 88:11, 106:21
add
42:4, 106:4, 106:5
added
106:13, 107:11
addition
42:8
additional
9:5, 45:2, 111:3, 112:1
address
138:6
addresses
57:3, 88:18
adequately
101:11
advance
118:14
advanced
21:5
advances
88:8
adverse
154:12
after
7:13, 21:22, 22:6, 22:7, 22:18, 54:15, 87:9
again
20:2, 20:7, 34:1, 34:11, 36:12, 57:2, 65:3, 77:4, 90:15, 95:10, 96:15, 106:7, 107:14, 117:12, 122:3, 122:14, 127:15, 133:9, 140:7
ago
42:10, 51:14, 61:22, 87:20, 89:20, 121:4, 122:15, 122:16
agree
11:11, 22:20, 23:3, 26:3, 26:7, 36:7, 39:21, 39:22, 43:2, 44:11, 46:7, 46:13, 47:12, 47:22, 48:18, 51:9, 53:18, 55:2, 55:9, 55:19, 63:3, 67:19, 74:1, 74:5, 77:22, 78:5, 78:15, 79:20, 85:6, 93:14, 93:18, 97:14, 101:20, 103:16, 104:9, 111:9, 132:16, 133:16, 133:22, 139:22, 141:13, 145:8
algorithm
23:15, 23:18, 23:21, 24:3, 24:8, 24:10, 24:20, 25:2, 25:6, 77:6, 78:3, 78:8, 82:19
all
19:6, 19:18, 24:16, 25:1, 27:3, 37:4, 49:8, 49:10, 50:6, 50:7, 55:15, 56:20, 63:15, 70:5, 76:19, 78:18, 81:9, 82:6, 82:16, 85:1, 89:3, 90:7, 90:8, 99:3,

101:1, 107:19, 107:20, 118:1, 119:8, 119:12, 120:10, 120:17, 122:5, 126:9, 131:20, 137:21, 138:13, 138:18, 139:1, 139:6, 139:8, 144:17, 145:4, 146:15, 146:19
allowed
81:17
almeroth
11:16, 34:6, 49:22, 62:11, 62:12, 85:20, 88:7, 91:9, 91:10, 112:7, 117:10, 118:14, 137:19, 138:5, 138:22, 139:1, 145:1, 151:17
almeroth's
55:17, 57:3, 62:15, 89:10, 119:14, 144:19, 151:18, 152:21
almost
71:13, 101:16, 141:5
already
123:22, 133:20
also
9:4, 13:1, 13:5, 13:14, 16:7, 17:2, 25:9, 25:13, 27:7, 28:6, 35:22, 48:6, 58:16, 68:7, 78:7, 78:8, 80:2, 82:9, 88:12, 90:11, 93:1, 93:11, 106:2, 119:14, 125:5, 150:17
alternative
86:17
alternatively
78:19, 82:2, 83:1, 83:2
although
28:4, 44:5, 101:8, 122:12
always
106:22, 142:14
among
10:16
analysis
31:5, 31:9, 44:6, 44:22, 45:5, 45:6, 45:8, 54:8, 55:16, 64:19, 79:14, 88:8, 88:13, 88:15, 96:7, 105:17, 105:18, 113:4, 118:15, 118:16, 120:16, 122:13, 123:14, 126:3, 127:5, 148:8, 148:11, 152:10
analyze
53:9, 53:13, 144:16, 147:5, 153:2
analyzed
49:22, 143:10, 145:6
angeles
3:16
angle
23:13, 23:16, 23:20
another
13:15, 19:13, 36:21, 40:12, 42:4, 42:9, 59:17, 63:1, 70:14, 74:11, 77:10, 115:17, 119:11
answer
7:1, 10:19, 11:2, 12:14, 14:4, 19:17, 21:2, 21:4, 35:7, 39:20, 48:6, 52:3, 52:6, 53:11, 53:15, 54:14, 57:6, 59:9, 59:10, 59:12, 59:15, 60:7, 61:15, 62:1, 62:3, 62:8, 62:18, 68:19, 68:21, 87:8, 87:13, 89:7, 89:17, 89:20, 96:6, 98:16, 101:7, 101:19, 102:3, 102:9, 103:5, 103:12, 106:20, 107:22, 109:10, 113:10, 113:11, 114:9, 115:16, 115:21, 118:12, 119:5, 123:13, 124:14, 135:2, 135:7, 140:8, 142:10, 148:9, 150:8, 150:15, 150:16, 151:10, 152:3, 152:20
answering
56:20
answers
16:5, 16:22, 34:21, 35:10, 103:15, 140:4
antenna
36:3, 68:1, 69:5, 70:21, 72:6
antennas
66:22, 68:9, 71:1
any
6:9, 6:18, 10:3, 10:15, 11:20, 13:10, 13:21, 15:4, 18:2, 18:11, 19:11, 26:18, 29:21, 30:17, 31:12, 31:20, 38:16, 38:22, 39:10, 39:16, 44:2, 44:9, 45:11, 84:5, 88:18, 88:19, 99:13, 101:2, 109:3, 125:12, 125:16, 128:5, 139:2, 154:20, 154:22
anybody
13:17, 65:20, 65:21
anyone
38:17, 65:22
anything
12:21, 13:6, 13:7, 81:20, 134:2
anywhere
48:22
apart
115:14, 115:18
apologies
30:13, 132:14
apologize
9:3, 47:13, 69:15, 151:11
appeal
1:3
appears
29:17, 135:15
appendices
29:21, 30:5
appendix
29:18, 30:9
applicable
52:20, 53:14, 90:13, 90:15, 90:19, 110:2, 110:10, 112:3, 112:9, 112:14, 113:15, 113:20,

124:10, 130:15, 130:21, 131:12, 131:17, 131:19, 138:18, 139:6, 139:8
applied 55:19, 60:1, 126:4
applies 91:3, 96:7
apply 10:20, 16:8, 17:2, 125:22, 126:4
applying 56:2, 60:1
appreciate 6:4, 50:10
approach 53:20
approaches 88:7
appropriate 61:19, 73:10, 84:21
approximately 19:20, 20:1, 122:16
architectures 26:15
area 36:3, 76:20, 78:20, 79:5, 85:2
aren't 121:6
argue 61:20
arguments 11:17
around 8:9, 12:8, 95:6
arrangement 104:11, 104:19, 105:3, 105:8
arrival 23:14, 23:16
art 8:19, 9:5, 9:12, 13:2, 13:5, 22:2, 22:3, 25:11, 25:16, 31:13, 52:5, 93:22, 98:7, 98:11, 98:17, 98:21, 99:8, 99:18, 100:3, 101:21, 103:17, 118:18, 118:21
articulate 70:5, 100:10, 118:9, 119:1
articulated 100:8
aside 151:3
asked 8:10, 18:18, 24:20, 25:10, 89:12, 91:12, 109:16, 113:6, 115:19, 116:3, 122:15, 123:16, 150:7, 150:8
asking 53:8, 58:22, 69:17, 69:21, 77:19, 77:20, 83:11, 83:14, 85:16, 89:8, 97:12, 102:8, 121:12, 121:14, 123:7, 123:9, 127:22, 129:4, 134:12, 141:21, 145:17, 146:18, 151:1, 151:2
aspect 52:15, 53:12, 88:22, 135:7, 136:22, 137:13
assert 102:22
assertion 138:4
assistance 36:21
associated 89:2, 90:7, 119:7, 129:17, 133:14, 137:20, 138:12, 146:8, 149:14, 150:18, 150:20
assume 6:11, 62:14
astute 118:3
attached 14:14, 29:17, 30:8, 32:8, 72:21, 75:13
attempted 22:8
attended 22:8, 22:9, 22:12
attending 22:16
attention 139:2
attorney 7:5, 154:21
attorney-client 12:12
attorneys 14:6
august 3:13, 7:6, 13:18
automatically 136:2
available 75:3
aware 6:20, 44:12, 45:11, 45:16, 63:14

B

b2 4:12, 4:14, 4:16
back 9:9, 17:6, 38:20, 87:19, 91:17, 103:7, 103:15, 123:2, 126:16, 139:12
background 22:18, 96:10, 98:20
bandwidth 99:11, 99:14, 101:4, 101:14, 101:17, 104:7, 104:10, 104:21, 106:5, 106:14, 106:21, 106:22, 107:2, 107:11, 107:22
base 24:16, 24:17
based 31:21, 32:18, 34:13, 61:7, 95:17, 97:8, 98:5, 98:19, 99:6, 100:16, 135:11, 135:18, 136:16
basically 18:18, 19:17, 22:2, 78:22, 80:11, 88:11, 152:20
basis 82:1
bear 138:13
became 115:13
because 21:4, 26:4, 28:21, 40:16, 46:21, 60:21, 61:7, 70:7, 77:16, 81:12, 95:16, 96:18, 99:2, 99:15, 105:10, 105:13, 105:20, 107:2, 107:7, 115:6,

115:9, 116:11, 117:9, 118:12, 123:13, 135:22, 136:1, 138:17, 138:22, 145:10, 146:3, 149:6, 149:11
become
132:2
becomes
54:5, 148:3
been
5:13, 5:16, 8:18, 22:13, 25:22, 26:4, 26:10, 26:11, 38:2, 38:5, 75:10, 85:4, 106:4, 106:7, 106:10, 107:8, 107:21, 111:11
before
1:3, 2:11, 5:13, 6:5, 7:11, 31:14, 32:3, 44:20, 65:18, 78:15, 87:11, 109:1, 111:11, 114:2, 148:9, 154:8, 154:10
begin
125:14
beginning
47:15, 50:19, 50:20, 66:3, 66:7, 76:6, 76:9, 87:6
begins
19:10, 46:4, 64:5, 129:10
behalf
3:3, 3:11
behind
59:7, 59:11
being
5:4, 23:6, 37:6, 67:2, 67:14, 74:2, 75:1, 87:16, 89:7, 99:4, 100:17, 101:14, 105:9, 107:19, 135:3
beliefs
59:10
believe
8:10, 28:5, 28:21, 31:4, 69:12, 97:18, 136:10
bellinger
1:21, 2:12, 153:6, 154:3
beneficial
105:12
benefit
59:16, 92:6, 104:11, 104:16, 105:4, 106:9, 106:12
benefits
92:13, 92:20, 93:16
besides
10:4, 18:2, 44:10, 45:13
best
20:8, 45:20, 56:19, 113:10, 147:21, 152:8
better
24:15, 57:5, 62:18
between
25:19, 40:11, 55:7, 95:15, 98:4, 98:8, 99:20, 100:6, 100:13, 102:1, 103:19, 112:13, 113:13, 113:19, 113:22
beyond
113:5, 118:4
big
83:17
bit
9:1, 19:9, 22:19, 32:16, 41:21, 47:14, 53:5, 66:16, 106:3, 133:1, 148:8, 150:3
blomqvist
9:17
blood
154:20
board
1:3, 90:22, 99:17
both
26:10, 75:2, 82:18, 86:17, 96:19, 97:20, 104:6, 106:5, 106:14, 107:11, 115:15
boulevard
3:14
boundaries
120:3, 120:5, 120:15, 121:5, 121:9, 134:21, 146:22
boundary
120:8, 121:13
box
75:5, 75:6
break
38:6, 38:7, 38:9, 38:15, 54:15, 61:22, 62:2, 62:4, 63:10, 65:19, 91:13, 115:17, 122:15, 122:18, 122:21, 126:12, 127:7
briefly
13:16
bring
65:5
broad
100:9
broadphone
1:8, 7:3, 7:5, 8:6, 13:13, 30:17, 153:17, 154:13
broadphone's
148:12
brought
79:12

C

ca
3:16
calculation
105:10
call
49:8
called
66:21
came
21:21, 67:9, 111:6
can't
36:22, 84:1, 102:22, 103:8, 109:8, 117:15, 123:13, 142:12, 147:5, 153:1
cannot
6:18, 118:9, 119:1, 119:21, 136:14
capabilities
93:3, 93:4, 93:5
capable
64:11
capture
101:11, 102:6
captured
67:15, 135:11, 135:18, 136:16, 141:17, 142:7, 143:4, 144:2
captures
136:20
careful
10:18, 44:19,

54:6
carefully
147:12
carrying
74:18, 74:21
case
1:11, 6:22, 8:15, 72:9, 84:5, 86:2, 96:8, 97:18, 99:13, 101:2, 119:9, 136:8, 144:22, 150:21, 151:15
cases
152:6, 152:8, 152:9
caution
12:11
ccr-nm
1:22
ccr-wa
1:22
cell
65:15, 109:3, 129:14, 129:19, 129:21, 134:8, 140:22, 141:2
cells
129:22, 134:9, 141:2
cellular
76:21, 83:18, 84:1, 84:3, 84:5, 107:1, 109:1
center
78:13
certain
55:17, 62:10, 75:17, 75:18, 84:1, 108:22
certainly
9:14, 12:16, 47:16, 65:22, 95:5, 101:17, 111:9
certificate
154:1
certified
2:13, 154:3
certify
154:5, 154:12, 154:15, 154:19
challenged
8:18
change
79:14, 148:1
changed
143:11
changes
79:13
characteristic
43:16, 43:20, 44:1, 44:10, 45:13
characteristics
44:13, 44:21, 45:17, 133:17
characterization
104:22
characterizing
102:11
choose
103:6, 129:15
chooses
132:17, 133:12, 146:7, 149:11
chose
111:13
chosen
35:3, 35:21, 40:7, 41:9, 41:17, 42:20, 47:8, 150:19
christian
3:12, 102:17, 102:18, 103:9
cite
85:17, 119:13
cited
18:7
citing
92:22, 135:17
claim
32:14, 32:16, 32:17, 32:22, 33:1, 33:5, 33:10, 33:19, 33:20, 34:2, 34:16, 35:10, 35:22, 36:7, 36:12, 36:13, 36:15, 36:19, 37:3, 37:7, 37:11, 37:15, 37:16, 38:21, 39:4, 39:10, 39:15, 40:22, 41:1, 41:2, 41:3, 41:4, 41:7, 41:15, 41:22, 42:2, 42:3, 42:7, 42:12, 42:16, 43:8, 43:14, 43:15, 44:14, 45:19, 45:22, 46:1, 46:16, 46:21, 47:3, 47:4, 47:11, 47:17, 47:18, 47:21, 48:3, 48:9, 48:13, 48:17, 50:12, 50:15, 50:20, 57:15, 59:4, 59:6, 88:8, 89:5, 114:21, 117:22, 120:4, 121:5, 123:21, 125:2, 125:3, 128:5, 128:12, 129:1, 134:22, 135:1, 135:3, 135:15, 135:20, 135:22, 136:1, 136:9, 137:5, 138:1, 138:8, 139:3, 144:17, 144:18, 145:5, 146:22
claimed
53:10, 128:19
claims
32:12, 32:13, 35:4, 42:1, 42:4, 42:6, 59:2, 61:8, 65:5, 114:9, 114:11, 114:15, 114:17, 115:4, 115:7, 115:8, 115:22, 116:4, 116:12, 123:20
clarify
11:4, 50:9
clarifying
11:1
clear
37:2, 37:13, 51:18, 51:19, 58:18, 77:19, 90:21, 98:18, 110:4, 111:12, 111:21, 112:15, 113:18, 113:21, 118:2, 118:6, 125:18
clearly
42:5, 62:9, 120:8, 120:20, 121:16, 152:7
close
20:5, 153:3
closed
10:7
closing
10:5
coaching
102:19
coffee
87:10
collectively
19:19
column
54:11, 54:12, 54:18, 55:2, 55:10, 56:4, 56:12, 57:4, 57:10, 58:8, 59:1, 59:5, 59:19, 60:2, 60:22, 61:12,

64:1, 64:9, 64:10, 64:17, 65:9, 66:2, 66:5, 66:6, 68:17, 73:12, 73:14, 73:19, 74:6, 74:10, 74:15, 75:2, 76:1, 76:5, 76:9, 77:1, 77:4, 78:1, 78:6, 78:11, 78:17, 79:2, 84:17, 85:8, 85:16, 87:21, 88:4, 89:12, 91:2, 129:8, 129:11, 130:11, 130:18, 131:3, 131:11, 132:9, 133:1, 133:4, 134:1, 134:18, 137:1, 139:12, 140:9, 141:14, 142:1, 142:13, 143:22, 145:9, 147:7, 148:13, 151:1, 151:3
combination
51:19, 58:18, 118:1, 129:20, 134:7, 137:20, 141:1, 141:3
combinations
64:15
combine
31:12, 31:20
come
145:6
comes
26:12
coming
23:20, 37:1, 60:8, 121:1
commencement
154:9
commencing
154:17
commission
155:6
committee
22:11
common
10:16, 10:20, 63:15, 82:6
communicate
38:16, 65:19, 65:21, 95:15, 98:3, 98:8, 99:11, 99:19, 100:4, 100:12, 101:22, 103:18, 103:22, 106:1, 106:16
communicates
107:14
communicating
50:11, 100:6
communication
10:3, 10:8, 21:6, 21:7, 21:9, 21:13, 21:20, 22:15, 22:22, 23:11, 24:5, 24:9, 24:12, 25:21, 27:1, 33:6, 35:1, 35:19, 36:1, 36:14, 36:16, 39:1, 39:2, 39:12, 39:19, 40:4, 40:8, 40:14, 40:21, 41:5, 41:10, 41:12, 41:18, 41:20, 42:13, 42:17, 43:4, 43:6, 46:5, 76:20, 78:20, 79:6, 85:2, 100:19, 100:20, 101:9, 101:10, 104:8, 136:3
communications
12:13, 13:10, 23:5, 33:2, 33:4, 33:11, 33:20, 34:3, 34:18, 35:12, 36:2, 36:9, 36:20, 38:17, 46:2, 46:8, 46:14, 46:22, 47:5, 47:9, 48:3, 48:10, 48:20, 49:17, 49:19, 50:17, 55:4, 55:12, 56:6, 58:10, 69:1, 72:1, 104:6, 107:1, 136:2
compare
82:15
compared
67:15, 96:3, 97:13
compares
64:13
comparing
40:9, 40:17, 49:15, 77:7, 77:10, 78:3, 78:10, 97:19
comparison
32:18, 67:17, 78:14, 82:9, 82:12, 82:13, 82:14, 86:3, 86:6
compensated
7:21
compensation
30:17
complete
89:20, 101:7, 105:17, 150:14
completely
6:19, 102:4, 111:8
component
83:17
computation
93:11, 94:2, 96:11, 96:17
computations
95:17, 98:5, 100:16, 104:2
conceptually
65:1
conclude
66:13, 68:11, 70:11, 72:7, 120:16
conclusion
67:3, 122:4
conducted
1:16, 2:1
conferences
22:10
confirm
134:3
confused
92:16
conjunction
36:2
connection
10:4, 19:13, 113:6
conservative
101:14, 106:7
conservatively
101:16, 106:9
consider
52:5, 57:5, 148:2, 148:4
consideration
54:6, 58:21, 96:16, 152:22
considerations
79:17, 80:5, 80:6, 81:14, 82:8, 82:20, 82:21, 83:6, 88:19, 88:20
considered
11:18, 12:8, 17:20, 18:3, 72:9, 85:19, 85:20, 124:13, 124:16, 132:4, 142:9

considering
56:21
consistent
51:13, 84:21
constitute
56:5
constrained
102:14
construct
71:6, 72:4
constructed
141:5
constructing
71:14, 143:9, 144:20, 144:21, 145:2, 145:3
construed
125:12, 125:15, 125:20
consume
99:13, 104:6
consumption
94:3, 94:12, 96:2, 96:14, 97:2, 97:15, 104:10
contacted
6:21
contemplates
74:2
contention
119:15
context
11:1, 11:3, 24:6, 44:14, 45:19, 46:16, 46:20, 48:3, 52:13, 59:3, 75:4, 87:7, 109:19, 111:3, 112:1, 112:2, 122:11, 123:8, 123:10, 123:18, 130:1, 131:18, 139:11
continue
71:12
continues
32:19
contributed
27:9, 28:6, 28:11, 28:14
contributions
29:10
contributor
27:22
convenient
32:10
convert
132:10, 139:17, 140:14
cooklev
1:15, 2:1, 4:2, 4:17, 5:3, 5:8, 5:12, 14:4, 30:16, 34:12, 35:8, 38:6, 38:15, 50:2, 56:17, 58:7, 59:7, 60:10, 61:4, 61:10, 61:16, 62:1, 63:7, 63:14, 65:18, 69:12, 70:18, 71:9, 83:11, 84:15, 85:6, 86:20, 89:8, 97:13, 99:16, 101:20, 102:7, 103:16, 111:6, 117:1, 118:7, 122:17, 123:4, 123:9, 123:16, 124:3, 125:21, 127:12, 127:20, 130:11, 132:7, 135:2, 137:12, 140:5, 141:22, 143:12, 145:17, 150:7, 151:2, 154:6, 154:16
copies
83:19
copy
30:12, 32:10, 50:7, 83:7, 83:10, 83:13, 83:16
correct
15:1, 16:4, 17:18, 17:22, 18:9, 20:12, 20:19, 23:1, 25:8, 26:16, 29:18, 31:5, 32:15, 33:2, 35:6, 36:17, 39:1, 39:6, 39:13, 39:18, 41:1, 41:5, 41:6, 42:14, 46:3, 47:9, 50:18, 52:11, 55:22, 64:16, 64:20, 66:14, 67:10, 67:17, 73:16, 73:21, 74:19, 75:3, 75:16, 76:14, 77:7, 78:14, 79:10, 81:11, 86:19, 87:17, 88:2, 92:9, 92:14, 93:17, 94:4, 94:6, 97:21, 101:5, 105:5, 108:14, 109:13, 111:14, 115:4, 118:19, 125:7, 128:2, 131:14, 132:20, 141:17, 142:15, 143:6, 144:14, 144:22, 145:12, 146:17, 148:22, 149:1, 149:21, 151:13, 151:22, 152:17
could
5:10, 9:10, 10:20, 10:21, 25:6, 28:20, 30:20, 33:8, 34:9, 43:11, 46:19, 48:1, 48:11, 48:18, 52:2, 63:18, 64:1, 69:18, 71:19, 72:7, 80:2, 81:12, 82:18, 82:19, 92:1, 104:14, 106:6, 106:11, 106:19, 109:2, 109:17, 109:20, 109:21, 126:6, 137:12, 140:6
counsel
5:6, 7:3, 7:4, 7:10, 8:3, 8:5, 8:6, 11:4, 12:18, 13:13, 15:5, 15:6, 25:9, 30:1, 30:11, 30:15, 33:17, 36:22, 38:1, 50:8, 54:16, 56:19, 59:14, 60:6, 60:20, 61:17, 62:6, 70:4, 84:9, 84:14, 99:22, 102:12, 105:16, 121:2, 121:22, 122:19, 125:9, 127:18, 127:22, 128:9, 129:4, 130:9, 140:6, 142:10, 148:12, 154:13
counsel's
59:8
count
9:2
couple
12:2, 12:4, 12:5, 12:6, 81:3, 88:12
course
21:22, 26:22, 27:1, 29:1, 66:19, 93:10,

148:6
courses
26:14, 26:18
coursework
20:22, 21:14, 22:7, 24:21
court
5:21, 6:2
cover
26:18
created
79:4, 80:13, 80:21, 82:3, 83:3
creates
112:19
creating
77:7, 77:9, 78:3, 78:9
crisply
120:5, 120:8, 120:15, 121:6, 121:10, 147:1
criticizes
118:17
cross-examination
102:13
crr
1:22
csr-tx
1:22
cup
87:10
current
65:14, 82:16
curriculum
29:17
cv
29:1, 30:8, 30:12

D

damarla
9:18
daniel
3:4
data
27:14, 28:18, 86:9, 86:17, 87:16, 87:22, 89:15, 89:22, 91:1, 96:21
database
73:15, 73:17, 73:20, 74:2, 74:7, 74:8, 74:9, 74:11, 76:4, 76:12, 76:13, 76:18, 76:21, 79:1, 79:9, 79:15, 79:18, 80:1, 80:3, 80:8, 80:13, 80:20, 81:3, 81:6, 81:8, 81:12, 81:17, 81:19, 82:3, 82:6, 82:11, 82:17, 83:3, 84:20, 85:3, 85:9, 85:22, 86:5, 86:10, 87:17, 88:1, 88:17, 88:21, 89:16, 90:2, 90:12, 91:2, 91:3, 92:6, 92:13, 92:21, 93:8, 93:17, 94:1, 94:13, 95:7, 95:18, 96:8, 96:16, 97:7, 97:9, 97:20, 98:6, 99:2, 99:21, 100:7, 100:17, 104:3, 105:9, 105:11, 105:13, 107:19, 126:21, 139:15, 140:12, 143:3, 143:19, 144:2, 144:11
databases
79:4
date
25:12, 31:14, 32:3
day
18:22, 19:5, 19:20, 20:1, 20:3, 155:4
days
12:3, 12:5, 12:6, 12:8, 20:4, 20:7, 93:4
dc
3:8
deal
126:7
december
26:1
decided
49:16
declaration
4:17, 7:19, 7:20, 11:15, 14:12, 14:17, 14:21, 15:2, 15:12, 15:16, 15:20, 15:21, 16:6, 16:7, 16:8, 16:11, 16:13, 16:14, 16:15, 16:19, 16:22, 17:1, 17:2, 17:3, 17:6, 17:7, 18:4, 18:9, 19:8, 25:14, 25:15, 28:22, 29:15, 30:4, 30:21, 33:15, 34:10, 44:17, 48:7, 48:22, 49:1, 51:12, 55:18, 57:1, 57:3, 59:18, 59:20, 60:6, 60:12, 62:9, 62:15, 63:2, 75:22, 85:13, 85:15, 85:17, 85:18, 85:20, 86:7, 86:22, 87:4, 87:15, 89:9, 91:6, 91:9, 91:21, 92:4, 92:17, 93:20, 94:17, 102:16, 104:5, 108:2, 111:14, 112:6, 112:11, 117:3, 117:9, 117:18, 118:8, 118:13, 118:17, 119:14, 119:18, 124:6, 124:16, 128:15, 128:17, 130:19, 137:15, 151:19, 152:22, 153:1
declarations
7:12, 8:19, 10:12, 11:14, 12:17, 17:22, 18:12, 18:14, 18:17, 18:19, 19:6, 19:21, 20:10, 20:18, 26:13, 29:21, 34:14, 73:11, 75:16, 85:12
decrease
94:12
defending
8:6, 13:14
deficient
88:14, 88:15
defined
27:12, 120:5, 120:8, 120:15, 121:6, 121:10, 129:19, 134:7, 140:22, 146:9, 147:1, 150:21
defines
141:4
definitely
86:4
demanding
96:20
depart
147:3

departs
140:3
depend
42:3, 52:14, 113:3, 127:4
dependent
41:2, 42:1, 42:4, 42:6
depending
52:9
depends
41:1, 41:3, 41:22, 108:1, 109:10, 109:15, 109:18, 127:2
deposed
5:13, 5:16
deposition
1:15, 2:1, 8:11, 10:7, 11:21, 12:10, 12:22, 13:9, 13:12, 13:19, 14:1, 38:18, 66:1, 118:8, 154:7, 154:9, 154:10, 154:14, 154:15
describe
25:13, 31:3, 31:8, 35:16, 35:18, 144:7
described
65:2, 71:15, 72:12, 72:15, 75:2
describes
73:20, 91:10
describing
66:11, 76:16, 102:7
description
100:2, 102:5
descriptions
103:12
designated
42:12
desired
129:14
desk
8:13
detail
7:15, 13:4, 73:9, 75:17, 75:19
detailed
106:20
determination
32:15, 41:8, 41:16, 47:22, 56:3, 58:9, 64:19, 86:18, 94:2, 94:14, 95:7, 96:5, 96:11, 96:22, 97:8, 99:4, 106:17, 107:18, 121:11, 135:7, 135:10, 135:17, 136:15
determine
23:18, 23:20, 23:22, 24:11, 35:2, 35:20, 42:18, 52:16
determined
68:3, 134:14
determines
49:6, 86:2
determining
40:4, 40:5, 40:6, 40:10, 40:15, 40:16, 40:17, 42:19, 47:5, 48:10, 48:12, 48:14, 49:13, 49:14, 50:16, 55:4, 55:11, 56:5
develop
21:21, 22:6, 23:7, 118:14
developed
22:6, 23:6, 25:19, 28:3
developing
60:18
development
26:2, 26:4, 26:9
device's
25:7
devices
26:16, 26:19, 52:21, 53:14, 67:3, 86:10, 87:16, 88:16, 89:4, 90:8, 90:9, 90:14, 90:16, 91:4, 93:3, 93:6, 95:21, 108:18, 109:8, 109:12, 110:3, 110:15, 110:16, 110:18, 110:19, 110:20, 111:1, 111:5, 111:11, 111:17, 111:18, 111:21, 112:4, 112:10, 112:15, 113:15, 113:21, 119:8, 119:12, 119:13, 120:7, 120:10, 120:12, 122:5, 122:9, 123:5, 123:18, 124:11, 130:15, 130:22, 131:13, 131:17, 131:19, 135:12, 135:19, 136:6, 136:17, 137:21, 138:13, 138:18, 139:7, 139:9, 139:16, 140:13, 141:17, 142:7, 143:4, 143:19, 144:3, 144:12, 147:17
difference
13:3, 40:11, 40:18, 147:16
differences
19:11
different
10:21, 11:7, 11:12, 13:3, 43:3, 43:6, 69:18, 69:19, 71:14, 72:4, 76:13, 77:10, 78:10, 80:7, 80:21, 80:22, 81:1, 81:2, 87:1, 109:8, 109:12, 135:12, 136:17, 137:13, 143:9, 144:3, 144:12, 147:9, 147:17
difficult
19:12, 52:3, 54:7, 54:9, 63:4, 69:9, 69:16, 70:5, 106:8, 106:10, 147:20
direct
102:14
directed
14:12, 15:17, 32:14, 34:22, 35:17, 136:11
disagree
71:16, 77:13, 80:12, 80:17, 102:21
disagreeing
77:15
disclaimer
110:12
disclosed
130:2
discuss
59:19
discussed
48:1, 139:7
discussing
104:20
discussion
28:1, 28:12, 28:15, 28:17, 44:14, 50:1, 75:4, 103:13

discussions
12:18, 22:14
dispensed
101:4
distinction
112:13, 112:16, 113:13, 113:16, 113:19, 113:22
document
18:11, 73:7
documents
8:7, 8:21, 9:6, 9:11, 9:12, 17:18, 18:2, 18:7
doing
40:5, 40:14, 42:18, 42:21, 44:6, 45:8, 48:12, 48:14, 56:19, 82:12, 96:22, 136:6, 147:21, 152:8
done
28:5, 37:5, 37:6, 37:20, 40:20, 44:21, 45:5, 49:16, 49:18, 65:7, 71:11, 71:13, 93:11, 93:13, 96:11, 96:12, 96:13, 99:4, 105:10, 105:18, 107:19, 123:14, 127:5, 135:18
dr
5:8, 11:15, 14:4, 30:16, 34:6, 34:12, 35:8, 38:6, 38:15, 49:22, 50:2, 55:17, 56:17, 57:3, 58:7, 59:7, 60:10, 61:4, 61:10, 61:16, 62:1, 62:11, 62:12, 62:15, 63:7, 63:14, 65:18, 69:12, 70:18, 71:9, 83:11, 84:15, 85:6, 85:20, 86:20, 88:7, 89:8, 89:10, 91:9, 91:10, 97:13, 99:16, 101:20, 102:7, 103:16, 111:6, 112:7, 117:1, 117:10, 118:7, 118:14, 119:14, 122:17, 123:4, 123:9, 123:16, 124:3, 125:21, 127:12, 127:20, 130:11, 132:7, 135:2, 137:12, 137:19, 138:5, 138:22, 139:1, 140:5, 141:22, 143:12, 144:19, 145:1, 145:17, 150:7, 151:2, 151:17, 151:18, 152:21
due
30:10, 80:4
duly
5:4, 154:8
during
24:4, 25:22, 38:15, 65:19, 95:7

E

e-notary
155:11
each
10:17, 19:7, 20:9, 20:17, 79:5, 80:14, 82:3, 83:8, 85:9, 112:18, 117:22
earlier
73:3, 108:11, 114:1, 115:19, 120:6, 139:8
early
22:2
earth
122:8
easier
122:3
eastern
54:16
editing
15:8
edt
1:18, 154:18
education
24:4
efficient
82:10, 82:15, 82:19, 84:4
either
74:3, 76:12
electrical
20:19
electronically
10:1, 40:9, 40:17, 49:15
electronics
1:5, 153:16
element
120:4, 121:5, 125:3, 139:3, 144:18
elements
144:18, 145:4
else
12:21, 13:6, 13:7, 37:6, 48:11, 48:15, 97:3, 132:4, 132:5
email
10:5
embodiment
65:2, 65:3, 65:4, 65:5, 73:17, 74:7, 74:11, 86:17
embodiments
61:9, 74:14, 130:3
emerging
21:8, 21:10
employed
154:21
enable
98:5, 100:15, 106:17
enabling
65:1
encoded
28:18
end
47:14, 100:13
engineer
84:3
engineering
20:19
entire
27:20, 28:17, 29:12, 29:14, 58:3, 58:21, 60:13
entirely
31:21
equivalent
68:17, 68:22, 69:4, 69:18, 71:17, 71:21, 71:22
especially
22:18
esquire
3:4, 3:5, 3:12
essentially
81:21, 117:13, 119:8, 121:1, 121:22
estimate
25:7
estimation
23:14, 23:17, 25:4, 27:6, 27:14, 27:19, 28:1, 28:12,

28:15, 29:6, 29:11, 68:3
evaluate 107:8
evaluated 106:19
even 18:8, 20:6, 22:7, 58:13, 58:20, 62:20, 65:13, 67:13, 69:9, 70:3, 70:4, 70:10, 78:9, 79:19, 79:21, 81:5, 83:18, 97:3, 98:13, 99:9, 100:8, 100:9, 100:19, 101:2, 105:20, 106:18, 107:1, 107:5, 114:2, 119:11, 120:3, 120:4, 120:7, 120:14, 121:5, 131:11, 135:9, 141:15, 142:5, 143:1, 143:15, 148:6
every 80:4, 80:6, 83:20, 83:22, 129:13, 133:11, 146:6
everything 8:10, 42:2, 65:6, 147:7, 147:15
exact 107:7
exactly 18:20, 19:4, 20:2, 90:16
examination 4:2, 5:6, 61:19, 127:18, 130:9
examined 5:4
example 22:8, 23:13, 25:2, 27:9, 43:22, 44:22, 52:19, 54:1, 55:3, 55:11, 58:9, 61:12, 71:15, 79:19, 81:15, 87:21, 89:14, 117:5, 117:11, 117:13, 117:16, 117:21, 118:4, 118:9, 119:1, 119:6, 119:11, 120:19, 121:15, 121:17, 129:5, 130:4, 130:12, 131:2, 131:8, 133:1, 133:9, 133:21, 133:22, 134:1, 134:6, 134:10, 134:19, 137:2, 137:3, 140:3, 140:19, 141:11, 142:1, 142:4, 142:19, 142:22, 143:2, 143:11, 143:15, 145:15, 145:16, 145:18, 145:22, 146:3, 146:12, 147:1, 147:3, 148:1, 148:13, 148:17, 148:18, 149:2, 150:3, 150:4, 150:5, 150:17
examples 27:16, 44:2, 44:5, 44:7, 44:9, 44:16, 44:20, 45:2, 45:11, 117:13, 118:15, 120:13, 121:2, 121:13, 122:2, 144:19, 146:19
except 61:21, 147:8, 147:16
excerpt 77:17
excuse 28:13, 33:8, 42:8, 46:11, 53:3, 66:5, 72:13, 76:5, 114:15
executable 78:9
exhibit 4:10, 4:11, 4:13, 4:15, 4:17, 14:10, 14:13, 15:16, 16:11, 17:9, 32:5, 32:7, 43:9, 43:12, 50:3, 72:18, 72:20, 73:2, 73:13, 75:9, 75:12
exist 108:17, 109:3, 123:4, 123:17, 124:9
existed 23:4, 31:14, 32:3, 108:21, 109:1, 114:2
expensive 107:2
expires 155:6
explain 29:5, 110:5, 117:16, 118:4, 125:13, 137:19, 139:2
explained 95:13, 97:4, 98:2, 98:15, 106:4, 125:12, 125:19, 151:16
explaining 125:10
explains 74:16, 76:2, 76:10, 77:5
explanation 81:10
expressly 28:22, 148:21
extensive 148:10
extent 7:2, 25:10, 34:20, 66:17, 73:10, 75:21, 116:15, 116:20, 148:6
extreme 121:15

F

facilitate 8:11
facility 95:13, 98:2, 98:22, 100:12, 106:1, 106:15, 107:13
fact 61:21, 82:4, 148:13
failed 137:19
fair 6:13, 10:14, 15:10, 19:15, 19:18, 57:7, 57:17, 57:21, 104:22, 128:14
fairly 37:13
fall 135:20
familiar 5:17, 23:9, 62:22
family 112:17
far 60:22, 79:17, 93:6, 137:4, 141:10

feel
14:6
felt
75:21
few
8:13, 42:10, 57:2, 127:21
field
25:19, 26:1, 26:5
fifth-generation
27:4
figure
75:5, 75:6
filed
7:14
final
15:11
financially
155:1
find
8:14, 100:2
fine
54:17, 84:14, 86:16, 126:10, 127:8
fingerprint
73:20, 74:2, 74:8, 74:11, 76:3, 76:12, 76:18, 78:14, 79:4, 79:18, 80:13, 81:6, 82:3, 82:9, 82:12, 82:16, 83:3, 85:22, 86:6, 86:9, 87:16, 87:22, 89:15, 89:21, 90:1, 91:1, 91:2, 92:6, 92:13, 93:16, 97:20, 112:19, 126:20, 143:17, 146:10
fingerprints
76:2, 76:10, 76:17, 76:19, 77:7, 77:9, 77:10, 78:3, 78:10, 78:18, 82:17, 85:1, 85:10, 86:3, 89:2, 90:6, 90:13, 119:7, 134:3, 134:14, 135:11, 135:18, 136:16, 137:20, 138:12, 141:16, 142:6, 143:3, 144:2, 144:8
finish
6:4, 15:4, 103:5
finished
63:7
firm
13:15
first
5:4, 6:21, 11:14, 26:8, 26:12, 26:22, 31:12, 33:2, 33:3, 34:3, 36:1, 39:12, 39:18, 40:3, 40:8, 40:10, 40:13, 40:16, 40:21, 41:10, 41:11, 41:18, 41:19, 42:13, 42:17, 43:4, 43:5, 46:1, 46:5, 46:8, 46:14, 46:22, 47:4, 47:6, 47:8, 48:2, 48:5, 48:8, 48:9, 48:19, 49:17, 49:18, 62:4, 62:8, 64:10, 70:19, 76:8, 86:11, 88:15, 90:6, 98:14, 105:7, 106:15, 126:18, 134:18, 136:3, 139:1, 140:18, 147:19
first-generation
27:2
five
61:11, 103:11, 112:17, 127:15
five-minute
127:7
fixed-location
36:3
floor
3:15
fly
34:5, 36:22, 45:9, 54:8, 63:4, 121:2, 122:1, 122:2
focus
118:15
focused
77:17, 85:15
follow
47:11, 137:3
follow-up
47:19
follows
5:5, 66:18
forgotten
47:15
form
33:7, 33:22, 34:19, 35:13, 39:3, 39:14, 42:15, 43:21, 44:3, 45:15, 51:1, 51:6, 51:11, 52:18, 54:9, 55:6, 56:8, 56:18, 57:12, 58:12, 59:13, 60:4, 64:21, 67:11, 68:18, 69:8, 71:4, 71:20, 74:4, 78:4, 79:11, 80:15, 84:7, 84:19, 85:11, 86:12, 88:3, 89:18, 91:5, 95:3, 102:2, 105:6, 108:19, 111:19, 112:22, 114:7, 114:14, 115:12, 116:14, 117:8, 117:20, 118:11, 119:4, 120:1, 120:22, 121:21, 122:10, 123:6, 123:19, 124:12, 124:20, 125:8, 127:1, 128:8, 128:10, 130:17, 131:7, 131:15, 132:15, 132:21, 133:7, 133:19, 134:5, 134:17, 135:13, 136:18, 138:16, 138:21, 139:21, 140:17, 141:18, 142:8, 142:16, 143:7, 143:13, 144:4, 144:15, 145:13, 145:20, 147:11, 148:15, 149:5, 149:10, 150:1, 150:13, 151:8, 152:4, 152:18
format
15:6, 128:16
fort
20:11
forth
154:8
foundation
23:8
free
14:6
front
8:2, 103:14
full
5:10, 12:5, 12:8, 64:10,

135:2
functionality
119:19
further
25:19, 65:18, 76:20, 78:19, 85:2, 110:5, 125:12, 127:12, 153:4, 154:12, 154:15, 154:19
furthermore
93:22, 95:11

G

gave
25:1, 56:21, 81:10, 152:1
general
15:8, 25:3, 31:19, 53:21, 58:18, 111:12
generally
8:12, 12:7, 12:15, 12:19, 12:20, 21:10, 23:4, 27:12, 32:22, 44:12, 45:7, 52:20, 53:13, 59:2, 62:22, 72:3, 72:10, 76:15, 77:8, 77:11, 77:15, 93:7, 93:13, 110:2, 110:9, 110:14, 110:21, 112:3, 112:9, 112:14, 113:15, 130:15, 131:12, 131:17, 131:19, 138:18, 139:6, 139:8
generated
74:17, 74:21, 75:7, 76:2, 76:11
generates
76:17
geographical
126:19
getting
12:15, 14:5, 20:5
give
44:6, 44:15, 48:6, 49:3, 52:6, 57:5, 62:17, 63:1, 89:19, 113:9, 113:10, 117:5, 118:3, 121:14, 150:14, 152:22
given
6:2, 111:22, 116:18, 154:11
giving
44:20, 45:8, 54:4, 122:1, 125:16
go
19:15, 27:2, 31:10, 38:10, 63:10, 65:18, 91:17, 92:1, 98:1, 127:14, 153:8
goal
112:6
goes
64:9, 81:5
going
38:2, 38:5, 87:11, 89:4, 89:6, 89:22, 95:17, 96:18, 101:18, 113:1, 113:8, 143:14, 147:15
gone
103:11
good
5:8, 5:9
govern
31:8
graduate
20:21
granted
93:5
ground
5:18
grow
115:15
gsm
22:1
guess
9:8, 20:6, 46:19, 72:3

H

hallway
126:8
hand
155:4
hands
69:14
happen
30:12, 82:22, 83:15, 98:18, 108:1, 116:17, 116:18, 146:6, 148:9
happens
68:4
happy
38:6, 62:2, 62:4, 87:12, 128:11
hard
32:10
hardware
26:15
hastings
3:6
hear
104:14
heard
9:4
help
15:4, 15:6, 49:21, 62:17
helpful
50:1, 62:11, 62:13, 87:10
here
8:12, 10:10, 17:11, 18:5, 29:9, 31:8, 32:9, 34:2, 34:15, 37:3, 37:22, 40:4, 40:5, 40:15, 44:8, 45:7, 45:11, 47:12, 48:6, 50:1, 50:5, 53:6, 56:14, 56:19, 59:18, 62:14, 63:3, 65:1, 65:7, 66:16, 66:21, 67:6, 68:14, 71:21, 72:12, 72:16, 73:6, 76:16, 76:22, 79:17, 80:10, 81:11, 81:20, 82:10, 85:16, 85:21, 88:22, 90:8, 91:22, 93:1, 96:7, 99:1, 100:2, 100:5, 100:9, 101:14, 109:14, 111:10, 112:13, 117:15, 120:9, 131:22, 139:15, 140:12, 141:6, 141:11, 141:21, 142:12, 144:9, 146:4, 147:15, 149:12, 150:15, 152:12
hereby
154:5
herein
18:7
hereinbefore
154:7
hereunto
155:3
high
35:16
hindsight
31:22
hold
20:14

home
79:6, 81:7, 83:8, 84:16, 85:10, 112:18, 112:19, 112:20
honest
113:10
hope
11:3
hour
38:3, 38:5
houri
9:17
hourly
7:16, 7:21
hours
12:6, 153:16
however
23:7, 76:18
hunzinger
9:20, 88:9
hypothetical
46:17, 53:8, 53:9, 53:16, 54:5, 71:6, 141:6, 141:8, 144:20, 147:6, 148:3, 151:15, 151:18, 153:3

I

id
43:16
idea
31:19, 58:18
identical
66:12, 66:21, 66:22, 67:9, 68:9, 68:10, 70:22, 71:2
identification
14:14, 32:8, 72:21, 75:13
identifications
68:7, 72:6
identified
24:3, 24:19, 89:11, 106:18
identifies
139:5
identify
13:11, 44:9, 45:2, 87:7, 119:20
ids
68:7, 68:10, 70:9
ii
42:12, 42:22, 43:2, 46:10, 46:12, 47:2, 48:17, 49:9, 49:10, 49:12, 49:16
iii
46:10, 46:12, 47:2, 49:9
impact
144:10
implement
85:7
implemented
52:10
important
78:16, 79:19, 87:6, 96:15, 107:5
impose
83:5
improper
152:19
improperly
102:22
include
77:6, 78:2, 78:7
includes
33:1, 78:7, 78:8
including
21:7, 23:8, 27:21, 34:13, 60:14, 66:16
incorrect
114:20
increase
94:3, 95:8, 96:3, 97:13, 97:14, 97:15, 104:9, 104:20
indeed
23:7, 90:12
indicate
17:15, 20:10, 86:9
individually
51:17, 58:17, 118:1
individuals
112:17
industry
26:6, 26:9
infer
107:16
information
95:15, 98:4, 98:8, 99:20, 100:4, 100:6, 100:12, 100:19, 101:22, 103:18, 106:2, 106:16, 107:14
informed
63:5
infrastructure
83:17
infringed
123:12
infringement
116:16, 116:21, 117:2, 123:15
infused
28:19
instance
111:22
instant
65:1
instructing
59:8, 59:14
instructions
8:5, 8:7
intelligence
27:11
intended
150:2, 150:4
interest
26:5, 26:9
interested
155:1
interesting
117:12
interface
27:15
international
22:10
interpreted
11:6
interpreting
11:12, 81:7
interrupt
84:10, 84:11, 103:7, 103:10
invention
31:15, 32:4, 93:2, 118:2
investigate
111:22
involved
70:15, 81:13, 137:22
involvement
138:11
involves
145:11
involving
137:20
ipr
1:11, 7:13, 8:17, 10:12, 11:1, 11:3, 13:22, 19:12, 87:7, 113:6
iprs
8:17, 10:22, 18:4, 18:14, 30:18
issue
56:17, 97:6, 124:15
it'll
52:14, 54:7, 82:9, 136:8
item
18:6, 37:19

itself
66:20, 67:10

J

jason
3:5
job
1:19
judith
1:21, 2:11, 154:3

K

kabat
3:13, 7:6, 13:18
keep
87:11
kept
65:13
kevin
11:15
kind
35:18
knew
23:14
know
6:11, 13:10, 17:10, 18:5, 24:15, 34:15, 36:12, 60:8, 77:3, 86:15, 94:11, 95:2, 98:7, 98:11, 98:21, 102:16, 105:16, 107:16, 110:22, 111:17, 112:2, 117:9, 118:21, 121:6, 121:13, 124:21, 131:2, 131:10
knowing
100:3
knowledge
25:18, 99:7
known
99:19, 101:9, 101:10, 101:13, 101:22, 103:18, 103:22

L

language
37:3
lapsed
153:6
large
81:2, 82:17, 110:18, 120:11, 122:5, 139:6, 139:9
larger
80:2, 81:2, 81:12, 81:16, 81:19, 88:21
last
14:20, 16:2, 16:18, 18:6, 84:8, 104:18, 105:1
later
21:21, 23:7
law
13:15, 61:8
lawyer
13:15, 42:5
leading
128:7, 128:11, 128:20, 130:5
learn
22:19
least
7:11, 44:17, 52:2, 53:12, 60:21, 61:5, 68:4, 88:10, 103:5, 116:16, 136:7, 139:6, 146:2, 148:1
leave
11:18
left
38:20
legal
31:7
less
40:18
let's
19:7, 38:10, 43:8, 63:9, 79:20, 91:17, 99:15, 108:2, 115:14, 115:18, 127:14
level
13:4, 35:16, 73:9, 75:17, 75:18
lexicography
110:12
likely
52:22, 53:2, 53:4, 53:17, 94:3, 94:8, 94:12, 94:16, 94:19, 94:22, 95:10, 96:1, 96:3
likely"
94:17
likewise
86:16
limitation
42:4, 42:9
limited
33:5, 33:10, 33:19, 34:16, 35:11, 55:16, 62:9, 93:3, 134:13
line
34:3, 64:5, 65:10, 66:2, 66:4, 66:6, 68:17, 74:6, 74:9, 74:10, 74:15, 75:2, 76:5, 76:6, 76:9, 78:6, 78:17, 78:21, 84:16, 84:22, 88:4, 129:8, 129:10, 140:20
lines
54:13, 54:21, 55:2, 55:8, 55:10, 56:4, 57:10, 58:8, 60:2, 60:21, 61:2, 61:11, 73:15, 73:19, 76:1, 77:1, 78:1, 78:12, 79:3, 79:13, 81:4, 85:8, 87:21, 88:5, 89:13, 90:3, 91:2, 130:12, 131:3, 131:12, 132:9, 133:4, 134:19, 139:13, 140:10, 141:14, 142:1, 142:13, 143:22, 145:9, 147:7, 148:13
link
10:6, 10:7
list
9:10, 17:17, 18:5, 18:9, 29:16, 66:21, 68:9, 71:1
listed
18:3
listening
147:12
little
9:1, 19:11, 32:16, 41:21, 47:13, 53:5, 66:16, 69:9, 69:16, 133:1, 150:3
live
112:18
llc
1:8, 154:13
llp
3:6
loath
61:20
located
35:2, 35:20

locating
26:19
location"
116:12
location-determination
32:21
location-determining
32:17, 32:19
locations
89:3, 90:7, 90:12, 108:17, 108:21, 108:22, 109:2, 114:1, 119:15, 120:9, 121:7, 122:4, 128:1, 138:12
long
18:17, 32:16, 41:21, 47:14, 115:13, 132:16, 133:16, 150:3
longer
147:4
look
13:5, 18:16, 29:7, 34:10, 40:2, 45:22, 47:3, 48:8, 48:16, 52:16, 54:10, 54:20, 57:1, 57:2, 62:15, 70:10, 73:19, 78:11, 101:16, 105:15, 111:2, 130:19, 144:17, 145:4
looking
7:18, 14:15, 15:18, 16:12, 17:14, 31:2, 32:13, 43:13, 47:20, 48:21, 50:14, 54:18, 59:5, 63:22, 64:3, 66:2, 68:20, 73:14, 74:15, 75:14, 77:4, 85:12, 85:13, 87:19, 91:6, 135:3, 140:9
los
3:16
lot
18:21, 99:16
lunch
54:16, 61:22, 62:3, 65:19, 87:9

M

made
29:10, 138:4, 149:3
maintained
97:7
maintaining
88:21
make
30:12, 33:5, 33:11, 33:19, 34:17, 35:11, 54:8, 61:3, 65:8, 69:22, 70:19, 71:7, 82:9, 82:18, 92:15, 95:9, 103:2, 113:4, 113:17, 120:16, 121:10
makes
69:21, 88:7, 133:5, 148:7
making
113:13
manner
106:2
many
5:15, 84:6, 111:11
marked
4:9, 14:13, 32:7, 72:20, 75:12
market
26:11
markings
50:8
marriage
154:21
maryland
2:14, 154:5, 155:12
material
14:6, 148:1
materials
8:1, 13:21, 14:5, 17:16, 17:17, 17:19, 18:3, 50:6
matter
155:2
maybe
9:22, 15:7, 19:5, 30:7, 30:10, 52:5, 54:15, 57:1, 57:2, 57:5, 65:12, 89:19, 98:13, 98:15, 99:12, 100:21, 111:2, 114:8, 115:16
mean
9:22, 15:3, 19:2, 19:4, 19:5, 21:15, 23:3, 24:2, 24:8, 24:16, 26:7, 26:10, 27:16, 29:22, 31:18, 32:20, 34:1, 34:9, 36:22, 37:1, 37:10, 46:4, 46:17, 46:18, 47:10, 47:12, 48:5, 51:5, 53:2, 53:4, 57:4, 66:19, 75:18, 76:15, 79:16, 79:18, 80:10, 88:10, 88:17, 90:8, 94:7, 94:9, 101:15, 105:9, 105:13, 107:3, 107:10, 107:15, 108:22, 109:18, 109:19, 110:3, 110:6, 110:9, 110:17, 113:5, 113:9, 113:10, 114:20, 117:17, 121:17, 123:22, 131:21, 132:2, 132:3, 133:8, 136:7, 137:1, 140:2, 141:11, 147:1, 148:16
meaning
51:16, 56:11, 57:8, 58:16, 58:19, 59:21, 60:1, 106:10, 110:5, 111:12, 118:2, 120:11, 125:2, 125:10, 125:17, 125:19, 125:22, 126:5
meanings
61:8
means
10:3, 10:8, 31:20, 55:21, 60:19, 65:10, 65:12, 68:16, 84:20, 85:5, 111:4, 118:4, 125:7, 125:13
meant
12:7, 72:2, 95:2, 112:10, 129:1
measure
70:20, 132:18
measured
69:5, 129:21, 134:8, 141:1, 147:9

measurement
68:3
measurements
64:13, 64:14, 139:14, 139:16, 140:11, 140:13, 141:16, 142:6, 143:2, 143:18, 144:1, 144:11, 144:12
measures
67:21, 67:22, 68:6, 70:8, 136:21
measuring
43:15, 64:12, 133:2, 147:17
meet
89:4
meeting
138:1
meetings
22:11
mention
27:6
mentioned
13:8, 29:3, 74:9, 140:19, 140:21
merge
137:10
merging
137:8
met
125:3
method
24:17, 32:15, 32:17, 32:19, 32:21, 34:22, 35:18, 35:19, 37:5, 50:16
methods
26:19, 33:5, 33:10, 33:19, 34:17, 35:11
mid-s
25:11, 25:22
might
8:11, 62:17, 71:7, 80:4, 87:1, 121:13, 132:4, 132:5
mikus
3:5
mind
77:22, 151:3
mindful
135:4, 147:13
minimum
85:7, 101:13, 147:20
minute
126:7
minutes
61:22, 122:15, 122:16, 127:15, 153:16, 153:17
mischaracterize
94:21
misleading
60:21, 61:4, 61:6, 100:2
missed
9:22, 18:8
misstating
136:10
mistake
9:3, 94:18, 94:20, 95:1, 95:5
modification
88:9
modify
37:3
moment
8:9, 14:9, 30:2, 51:14, 59:17, 87:20, 89:20, 95:8, 121:4, 153:5
moments
42:10
monitor
37:17
monitored
40:6, 41:8, 41:16, 42:19, 47:6
monitoring
36:20, 37:10, 37:12, 37:14, 37:21, 37:22, 46:2, 46:6, 47:1
monitors
36:17, 49:5
more
5:16, 9:2, 18:22, 19:5, 19:22, 20:3, 20:4, 20:6, 20:7, 36:8, 44:6, 44:15, 44:19, 53:7, 54:6, 72:3, 72:8, 72:10, 79:21, 82:9, 82:14, 82:19, 89:19, 99:9, 100:14, 100:20, 101:7, 107:1, 107:2, 107:5, 107:16, 133:1, 152:10
morning
5:8, 5:9
most
21:19, 21:20, 21:21, 22:5, 121:15, 150:15, 150:22
motivation
31:20
motivations
31:12, 32:2, 59:11
move
40:22
movie
54:1
moving
93:19
msc
76:22, 78:13, 80:2, 82:10, 82:11, 82:15, 83:8, 83:10, 83:13, 83:17, 83:19, 83:21, 83:22, 84:2, 84:6, 85:3
msc's
81:13
mu
92:8, 92:20, 94:2, 94:3, 96:3, 98:4, 98:5, 98:8
much
12:1, 18:13, 18:16, 18:20, 20:7, 80:2, 81:2, 81:12, 81:16, 88:21, 106:5, 106:14, 106:20, 107:11
multiple
77:9, 86:9, 87:16, 88:16, 90:13, 90:16, 90:19, 91:4, 119:12, 120:10, 120:17, 122:9, 123:5, 123:17
must
31:14, 32:3, 38:22, 39:11, 41:11, 41:19, 95:13, 95:14, 95:18, 97:3, 98:2, 100:11, 100:20
mute
38:5, 69:13

N

name
5:10, 5:12
nanda
9:20, 75:10, 75:14, 75:15, 75:20, 76:2, 76:10, 76:16, 77:4, 77:5,

77:20, 77:21, 78:1, 78:5, 78:11, 78:12, 78:22, 79:3, 79:22, 80:12, 80:16, 81:3, 81:5, 81:8, 82:2, 82:10, 84:15, 84:22, 85:8, 86:3, 86:16, 87:19, 88:9, 89:13, 89:14, 90:22, 92:5, 93:1
near
35:2, 35:20
necessarily
67:9, 67:15, 77:14, 99:10, 99:11, 104:1, 104:6, 113:1, 113:7
necessary
98:12, 98:14, 106:3, 112:1, 112:2, 117:22
need
37:16, 102:13, 112:5, 118:3, 126:7, 146:14, 146:19, 148:2, 148:4
needed
75:21
needs
65:10, 125:19, 148:9
neither
49:2
network
76:21, 78:20, 79:6, 83:18, 84:1, 84:3, 85:3
networks
84:5, 114:2
new
60:8, 152:5
next
31:10, 65:14, 65:15
non-leading
128:10, 128:16
nonresponsive
89:7, 101:19
normal
143:16
normally
28:3
notary
2:13, 154:1, 154:4
note
25:9
nothing
107:8, 107:20
notice
2:11
notwithstanding
104:9
november
155:7
number
4:11, 4:13, 4:15, 22:9, 22:12, 23:6, 73:1, 73:5, 75:11, 87:1, 107:7, 110:18, 120:11, 139:7, 139:9
numbers
122:5
numerous
52:21, 53:14, 110:2, 110:14, 110:16, 110:19, 111:1, 111:4, 111:5, 111:10, 111:17, 111:18, 111:20, 112:4, 112:10, 112:15, 113:15, 113:21, 120:6, 130:15, 130:21, 131:13, 131:17, 131:19
nw
3:7

O

oath
6:16, 45:6, 45:7, 56:21, 152:6
object
89:6, 101:18, 103:8
objection
14:2, 33:7, 33:13, 33:22, 34:19, 35:13, 39:3, 39:14, 42:15, 43:21, 44:3, 45:15, 51:1, 51:6, 51:11, 52:18, 55:6, 56:8, 56:18, 57:12, 58:12, 59:13, 60:4, 61:14, 61:17, 61:18, 64:21, 67:11, 67:18, 68:18, 69:8, 71:4, 71:20, 74:4, 78:4, 79:11, 80:15, 84:12, 84:19, 85:11, 86:12, 88:3, 89:18, 91:5, 95:3, 102:2, 103:3, 105:6, 108:19, 111:19, 112:22, 114:7, 114:14, 115:12, 116:14, 117:8, 117:20, 118:11, 119:4, 120:1, 120:22, 121:21, 122:10, 123:6, 123:19, 124:12, 124:20, 125:8, 127:1, 128:7, 128:20, 130:5, 130:17, 131:7, 131:15, 132:14, 132:21, 133:7, 133:19, 134:5, 134:17, 135:13, 136:18, 138:16, 138:21, 139:21, 140:17, 141:18, 142:8, 142:16, 143:7, 143:13, 144:4, 144:15, 145:13, 145:20, 147:11, 148:15, 149:5, 149:10, 150:1, 150:13, 151:8, 152:4, 152:18
objections
84:8, 102:18, 103:20
obliged
84:11
observe
70:22
observed
67:2, 67:8
observes
66:12
observing
68:8
obtain
22:21
obtained
20:18, 25:20
obtaining
24:13, 25:6
obviously
30:11, 96:13
obviousness
31:4, 31:9
occur
41:11, 41:19, 134:15, 149:19, 150:10, 151:5, 152:14
occurred
154:16
october
1:17, 154:17, 155:4

office
1:1, 8:12, 8:14, 10:9, 15:13
often
80:20
oh
12:16, 19:15, 29:22, 43:18, 54:12, 63:20, 73:4, 73:9, 74:20, 79:12, 86:21, 87:5, 88:6, 144:16
okay
5:17, 6:7, 9:6, 29:9, 38:10, 63:9, 87:5, 87:8, 91:11, 101:2, 103:4, 103:5, 126:13, 128:14, 142:21
once
140:7
one
6:3, 9:16, 10:19, 11:6, 11:7, 11:8, 11:12, 17:5, 19:12, 19:14, 19:20, 22:16, 22:17, 22:19, 23:13, 24:11, 25:2, 25:3, 26:8, 27:10, 28:4, 36:8, 43:22, 44:22, 50:5, 53:12, 59:5, 59:12, 68:5, 72:3, 73:17, 74:6, 77:10, 81:15, 82:18, 82:22, 84:2, 84:6, 85:7, 87:2, 87:12, 88:22, 102:15, 111:2, 111:17, 120:16, 121:13, 121:17, 133:20, 133:22, 134:19, 137:2, 142:19, 144:18, 147:1, 148:17, 153:5
one-time
100:18
ones
26:21
only
6:3, 8:16, 8:17, 37:15, 80:8, 81:18, 82:5, 104:13, 104:17, 108:17, 130:20, 140:20, 142:22
open
10:4, 10:6, 16:10
opening
48:6
opined
33:16, 34:2, 56:14, 62:12, 148:11
opining
58:14
opinion
33:18, 34:7, 34:8, 34:16, 36:10, 41:7, 41:15, 42:11, 45:21, 49:2, 52:7, 54:9, 56:16, 58:7, 60:5, 63:2, 63:5, 82:1, 84:18, 85:21, 94:5, 94:21, 108:16, 116:21, 124:17, 135:8, 136:13, 141:20, 145:7, 151:22
opinions
10:15, 15:7, 15:9, 34:5, 34:13, 37:1, 45:9, 55:21, 57:8, 60:8, 89:11, 119:18, 122:1, 151:14, 152:6
opportunity
26:11
options
75:3, 96:10
order
12:2, 12:4, 84:11, 98:4, 100:13, 100:15
ordinary
25:16, 51:16, 56:11, 58:16, 93:21, 98:7, 98:11, 98:17, 98:20, 99:7, 99:18, 100:3, 101:21, 103:17, 125:2, 125:10, 125:17, 125:19
orient
8:1, 17:5, 47:18
original
67:5, 68:12
other
14:6, 17:22, 18:6, 18:11, 22:9, 30:17, 43:16, 44:2, 44:5, 44:12, 45:17, 46:7, 46:13, 48:2, 48:19, 61:8, 68:2, 69:4, 70:16, 80:5, 82:20, 88:19, 96:9, 121:14, 124:11, 132:11, 135:18, 136:5, 137:4, 137:5, 138:7, 139:16, 140:13, 141:16, 141:17, 142:6, 142:7, 143:4, 143:19, 146:18
others
28:5
otherwise
6:11, 155:1
out
9:10, 14:10, 15:15, 32:5, 72:18, 91:20, 94:20, 94:22, 135:20, 136:8, 151:3
outcome
155:2
outside
61:18, 123:7, 151:8
over
27:2, 122:15
overall
88:13, 106:6, 106:8, 106:11
overlap
19:9
oversight
30:10
overview
49:3
own
59:15, 83:21, 85:9, 90:10, 90:18, 118:14
owner
1:9

P

page
4:2, 14:20, 14:21, 16:2, 16:18, 31:10
pages
1:20
paragraph
7:20, 17:12, 17:15, 18:6, 20:17, 25:13, 26:13, 29:15,

30:20, 30:22, 31:3, 31:6, 31:10, 33:17, 34:20, 34:21, 35:6, 35:9, 35:16, 49:2, 49:5, 51:12, 51:22, 52:19, 62:12, 62:16, 64:4, 64:9, 66:3, 66:7, 66:10, 66:16, 66:17, 76:9, 85:18, 85:19, 86:7, 86:13, 86:15, 86:22, 87:1, 87:3, 87:8, 87:14, 88:6, 88:12, 89:1, 89:9, 90:6, 92:2, 92:4, 92:17, 93:8, 93:19, 97:10, 98:1, 100:1, 104:4, 104:18, 104:20, 108:7, 108:10, 109:22, 110:10, 117:3, 117:17, 119:6, 119:13, 119:20, 124:5, 126:5, 129:9, 130:3, 131:16, 137:14, 137:18, 145:1
paragraphs
55:17, 62:10
pardon
128:4
parent
42:2
parentheses
68:16
part
27:5, 27:13, 27:14, 28:19, 31:6, 37:18, 39:17, 40:3, 42:16, 47:7, 47:10, 47:18, 47:20, 48:9, 49:10, 49:14, 49:15, 49:16, 62:19, 80:8, 81:18, 83:13, 99:15, 137:4, 150:15, 150:22, 151:14
particular
10:15, 17:5, 19:7, 35:4, 38:22, 39:11, 39:16, 51:22, 58:20, 75:5, 85:19, 108:13, 108:17, 109:5, 110:8, 113:14, 114:6, 114:13, 114:19, 115:6, 115:8, 115:20, 116:5, 116:11, 117:6, 117:19, 118:10, 121:20, 124:8, 124:10, 124:19, 125:1, 125:7, 126:3, 133:6
particularly
96:19
parties
154:20, 154:22
parts
62:7, 81:2, 97:14
party
154:12
pass
130:7
passage
55:7, 56:12, 59:1, 60:3, 60:11, 60:14, 60:16, 60:17, 64:18, 64:22, 65:7, 65:9, 65:17, 67:6, 67:7, 67:20, 68:5, 72:9, 78:16, 79:22, 85:16, 134:18, 143:17, 144:7, 145:8, 148:22
patent
1:1, 1:3, 1:9, 1:12, 4:11, 4:13, 4:15, 14:12, 14:17, 15:12, 15:17, 15:20, 16:14, 25:14, 32:6, 32:9, 32:14, 33:1, 33:15, 33:21, 34:22, 35:4, 35:17, 36:15, 38:21, 41:1, 43:9, 43:13, 43:15, 44:15, 45:20, 46:1, 47:4, 48:4, 48:7, 48:17, 49:3, 50:3, 50:6, 50:8, 50:13, 50:15, 52:13, 54:11, 54:19, 55:3, 55:10, 56:4, 57:11, 58:4, 58:8, 58:14, 58:21, 59:2, 60:13, 60:16, 61:8, 63:19, 64:2, 68:20, 73:5, 75:11, 85:14, 86:22, 87:4, 87:15, 91:21, 92:5, 92:18, 108:5, 109:19, 114:10, 114:12, 114:18, 115:22, 116:4, 122:12, 123:8, 123:10, 123:12, 123:18, 123:20, 128:4, 128:5, 129:9, 130:19, 135:16, 137:16, 139:11, 139:13, 140:10, 145:9
patent's
130:2
patents
8:18, 9:16, 9:18, 12:16, 25:12, 29:16, 63:15, 72:16
paul
3:6
pause
126:7
pay
139:2
people
13:8
perform
45:5, 46:9, 46:15, 78:14, 86:5, 94:2, 98:5, 100:16, 149:17
performance
101:1, 101:3
performed
42:13, 43:3, 48:1, 48:18, 55:15, 64:20, 71:8, 122:12, 137:6, 148:10
performing
30:18, 67:16, 97:8, 104:2, 126:3
performs
64:12, 86:3, 96:4, 130:14, 131:3
perhaps
19:1, 19:2, 19:22, 59:15
periodic
100:20
periods
25:22

permissions
80:22, 81:1
person
6:3, 25:15, 28:4, 37:13, 51:18, 80:18, 93:21, 98:6, 98:11, 98:17, 98:20, 99:7, 99:18, 100:3, 101:21, 103:17, 103:21, 105:14, 105:18, 106:11, 111:21
personalized
79:4, 79:18, 80:13, 80:20, 81:6, 82:2, 83:2, 90:1, 91:1
perspective
25:15, 96:14
pertains
78:17
petition
95:14, 98:3, 98:15, 100:8
petitioner
1:6, 3:3, 5:6, 130:9
petitions
7:13
ph
1:15, 2:1, 4:2, 4:18, 5:3, 20:18, 21:14, 22:21, 23:12, 24:4, 24:13, 25:6, 25:20, 154:6, 154:16
phone
65:15, 66:11, 67:10, 67:16, 112:18, 129:15, 129:20, 129:21, 134:8, 140:22, 141:2
phones
107:4, 109:3
phrase
111:5, 111:10, 111:16, 125:6, 125:22, 128:6, 128:22
phrased
23:3
phrasing
21:16, 111:6, 111:13
pick
103:6
picking
38:20
place
38:22, 39:11, 39:17, 84:1, 84:21, 129:13, 129:14, 129:16, 129:17, 132:1, 133:11, 133:12, 133:13, 140:20, 146:8, 149:12, 149:13
plain
51:15, 56:11, 58:15, 125:1, 125:10, 125:17, 125:18
please
5:10, 6:10, 9:10, 13:11, 14:10, 15:15, 16:10, 17:12, 28:20, 29:5, 32:5, 32:11, 33:8, 33:16, 41:14, 43:11, 50:2, 50:13, 63:18, 63:21, 64:1, 71:12, 72:18, 73:12, 75:9, 77:3, 89:17, 91:20, 92:1, 102:19, 108:7, 137:14, 140:6, 143:21, 144:22
plurality
36:3, 67:22, 70:20, 136:3
plus
82:20
point
6:9, 20:5, 33:17, 34:9, 38:2, 49:22, 145:1
pointed
74:6
portable
33:2, 33:3, 34:3, 35:1, 35:19, 36:1, 36:8, 36:13, 36:16, 36:19, 39:2, 39:12, 39:18, 40:3, 40:8, 40:14, 40:21, 41:4, 41:10, 41:11, 41:18, 41:19, 42:13, 42:17, 43:4, 43:5, 46:2, 46:5, 46:8, 46:14, 46:22, 47:5, 47:8, 48:2, 48:9, 48:19, 49:5, 49:17, 49:19, 50:16, 55:4, 55:12, 56:5, 58:10, 69:1, 72:1, 136:1
portion
27:18, 27:21, 38:22, 39:11, 57:18, 58:1, 58:5, 59:5, 77:5, 77:12, 77:15
position
20:14, 27:13, 27:19, 28:1, 28:12, 28:15, 28:17, 29:5, 29:11, 74:17, 75:6
positioned
27:14
positioning
21:11, 21:13, 21:17, 21:19, 22:5, 22:14, 22:22, 23:9, 23:10, 24:5
possibility
127:3
possible
44:4, 46:19, 72:10, 101:1, 147:4, 147:14
possibly
80:5, 82:20
power
94:3, 94:12, 95:8, 96:2, 96:14, 97:2, 97:15, 99:11, 99:14, 101:4, 101:15, 101:17, 104:7, 104:10, 104:21, 106:6, 106:14, 106:21, 106:22, 107:12, 108:1
power-efficient
107:4
precious
104:7
preclude
36:8, 36:19
predetermined
40:18, 66:13, 67:4, 68:12, 70:12, 70:17
preference
84:9
premium
107:1
preparation
13:18, 18:11, 44:17

prepare
12:9, 12:22, 13:9, 13:12, 14:1, 15:2, 18:4, 22:20
prepared
14:5, 60:11
preparing
11:20, 16:7, 17:1, 18:13, 75:16
present
50:17, 55:5, 55:12, 56:6, 56:14, 58:11, 146:4
presentations
22:10
presented
107:8, 107:21
presently
13:22
preserve
84:12
pretty
153:2
previous
16:21
previously
4:9, 14:13, 32:7, 35:3, 35:21, 72:20, 73:8, 75:12, 140:14
primarily
27:11
print
8:10
printed
8:8, 50:7, 62:14
prior
8:18, 9:5, 9:12, 13:2, 13:5, 31:13, 52:5, 66:17, 118:17, 118:21
priorities
19:10
priority
25:12
privacy
79:19, 80:5, 81:14, 82:8, 82:20, 83:6, 88:19
privacy's
81:15
privileged
14:3, 14:6
probably
5:17, 7:3, 26:12, 30:6, 72:22, 82:7
problem
47:16, 53:21, 70:2, 70:6, 81:21, 95:20, 99:2, 100:5, 100:7, 100:10, 101:12, 101:17, 102:6, 102:8, 102:11, 104:2, 120:3
problems
70:5, 97:1, 97:2
proceeding
10:17, 11:7, 14:11, 14:17, 15:16, 15:21, 16:6, 16:8, 16:11, 16:14, 17:2, 17:3, 17:7, 30:21, 32:6, 43:10, 50:4, 86:8, 91:21, 93:20, 104:5, 108:3, 117:4, 117:18, 137:15
proceedings
7:9, 7:17, 10:11, 10:16, 11:8, 13:22, 19:19
process
16:7, 17:1, 17:3, 35:5, 75:1
processed
97:21
processing
21:5, 92:7, 92:11, 92:19, 93:14
producing
88:20
product
12:13, 14:3
professional
2:12
professor
20:11
proper
102:19, 103:13
properly
15:6
proposed
106:19, 137:19
provide
17:16, 36:10, 59:12, 61:12, 61:15, 104:11, 105:3, 120:19, 130:3, 130:12, 151:14, 151:22, 152:3
provided
14:22, 16:5, 16:22, 34:7, 34:8, 45:21, 58:7, 60:5, 93:10, 141:19
provides
55:3, 55:11, 58:9, 89:14, 134:10
providing
34:4, 55:21, 95:12, 152:5
proximity
40:7, 41:9, 41:17, 42:20, 47:7, 49:7, 66:14, 67:4, 68:12, 70:12, 70:17
public
2:13, 154:1, 154:4, 155:11
publications
29:16
pull
14:10, 15:15, 17:6, 32:5, 72:18, 91:20
purdue
20:11
purported
31:15
pursuant
2:11
put
9:15, 69:12, 151:3

Q

qualification
20:9
qualify
98:16
question
6:10, 6:12, 8:4, 11:3, 21:16, 23:2, 34:21, 35:10, 35:15, 36:6, 37:8, 39:15, 41:14, 41:21, 45:10, 46:17, 48:11, 52:1, 53:5, 53:7, 54:14, 55:9, 59:1, 59:9, 60:20, 61:3, 61:16, 62:2, 62:4, 65:6, 65:9, 67:13, 69:10, 69:11, 69:17, 70:2, 70:3, 70:6, 77:12, 78:8, 83:13, 87:9, 87:13, 89:17,

89:20, 89:21, 96:6, 99:22, 101:8, 102:8, 102:9, 102:10, 103:12, 104:16, 105:11, 108:20, 115:13, 116:15, 117:11, 117:12, 123:12, 124:1, 124:14, 125:4, 134:21, 135:4, 136:7, 136:11, 137:7, 138:14, 140:5, 140:7, 140:18, 141:8, 142:10, 143:14, 147:13, 148:9, 148:12, 150:7, 152:1, 152:3, 153:3
questioning 102:22
questions 6:5, 47:13, 47:19, 56:20, 59:8, 59:11, 84:8, 103:15, 127:13, 127:21, 128:1, 153:4
quickly 48:21
quite 11:9, 19:9, 22:19, 23:3, 45:4, 98:10, 106:3, 145:14, 148:8

R

radio 27:12, 35:1, 35:19
rapidly 23:6
rate 7:16, 7:21
rather 43:8
reach 38:2, 119:17, 122:4
reached 111:1, 116:21
reaches 129:13, 133:12, 146:6
read 47:10, 47:17, 50:20, 54:21, 55:1, 77:20, 94:16, 129:9
reading 86:20, 86:21, 87:2
realize 106:12
realized 38:4
really 56:10, 81:17, 111:4, 132:4, 143:16
realm 61:19
realtime 2:13
reason 6:18, 6:20, 40:2, 59:7, 95:12, 95:22, 145:18, 146:1, 148:2
reasonable 67:3
reasonably 68:11, 70:11
recall 7:2, 7:15, 13:7, 14:8, 18:10, 29:10, 29:12, 29:14, 44:6, 116:1, 116:8, 127:22, 129:4, 129:6
receive 38:16, 82:16
received 8:5, 8:7
receives 137:10
receiving 30:16, 64:11, 136:3
reception 64:13
recess 38:12, 63:11, 91:15, 122:22, 126:14, 127:9, 127:16
recite 38:21, 114:12, 114:16, 114:18, 115:7, 115:8, 115:9, 123:21, 124:5, 128:5
recited 37:5, 39:16, 49:13, 49:15, 137:5
recites 32:17, 32:18, 36:1, 36:13, 41:4, 43:15, 92:5, 133:1
reciting 116:6
recognize 93:22
recollection 20:8, 45:20
record 5:11, 7:18, 13:22, 33:14, 38:11, 50:9, 61:21, 63:10, 66:15, 91:7, 91:18, 103:14, 123:2, 126:11, 126:16, 127:14, 153:2, 153:7, 153:9, 153:10, 153:15, 154:11
recross 130:8, 151:9, 152:19
redirect 127:21, 130:8
reduce 92:7
reducing 92:11, 92:12, 92:18, 93:14, 93:15
refer 14:16, 15:19, 16:13, 28:22, 63:18, 71:19, 73:15, 87:15, 105:22, 106:16, 110:1, 128:17, 142:14, 143:5, 148:20
reference 9:19, 10:15, 11:12, 31:13, 31:14, 73:3, 73:13, 75:11, 75:15
referenced 9:4
references 11:6, 13:2, 13:5, 31:21
referencing 27:18
referred 56:3, 73:2, 75:10, 86:8, 90:17, 104:16, 132:9, 139:15, 140:12, 142:13, 143:2
referring 7:5, 9:11, 9:12, 14:18, 15:22, 16:16, 28:7, 28:9, 28:21, 49:20, 64:19, 71:18, 84:17, 87:3, 91:3, 128:18, 138:7, 138:9

refers
46:1, 47:4, 50:15, 71:17, 90:22, 110:14, 124:18, 148:14
regarding
10:11, 10:15, 17:1, 38:17, 57:8, 88:8, 89:10, 100:1, 105:12, 120:4
regardless
59:10, 102:9
registered
2:12
registering
61:1
regularly
99:5
relate
20:22, 21:3, 21:10, 21:13, 21:17, 21:18
related
21:22, 25:2, 26:14, 66:1, 116:16, 116:20, 154:19
relating
24:21, 27:19
relation
8:15
relative
97:16
relevant
8:16, 85:21
rely
42:9
remain
141:14, 142:4, 143:15
remained
26:1
remember
7:10, 18:15, 18:20, 19:4, 20:2, 114:3
remembered
64:14
remembering
65:11
remind
5:18
remote
65:13, 76:13, 79:1, 82:11, 86:1, 86:19, 88:1, 89:16, 93:12, 94:13, 95:18, 96:9, 96:16, 96:17, 96:19, 96:21, 98:6, 99:21, 100:17, 104:3, 105:9, 105:11
remotely
74:18, 75:8, 80:1, 86:5, 96:12, 96:13
remove
147:3
render
54:9, 63:4
rendering
122:1
repeat
33:9, 104:14, 133:8, 140:7
repeated
41:14
rephrase
51:7, 110:11
reported
1:21
reporter
2:12, 2:13, 5:21, 6:2, 154:1, 154:3
represented
28:18, 154:13
request
74:16, 74:21, 75:6, 75:7
requested
134:15
require
39:8, 39:10, 39:16, 42:2, 42:7
required
59:9
requirements
92:8, 92:11, 92:12, 92:19, 93:15, 104:12, 104:13, 104:17, 104:21, 105:4, 105:12, 138:1, 138:7
requires
42:3, 42:8, 54:6, 108:12, 121:19, 124:7, 124:18, 126:2, 136:1, 152:9
requiring
94:1
research
27:7, 27:8
resolve
95:19
resources
104:7
respective
67:1, 71:2
respond
107:9, 112:6, 118:16, 151:16
respondent
3:11, 127:18
responding
11:16, 55:16, 62:10
response
11:14, 35:15, 36:6, 89:21, 91:9, 117:10, 118:13, 148:11
restrictions
100:22, 101:3
result
40:9, 40:16, 42:21, 49:14, 131:8
retained
7:8
reveal
12:12
review
13:21, 18:2, 34:2, 59:17
reviewed
12:16, 12:17, 13:1, 13:4, 15:10, 17:16, 33:14, 36:12, 73:8, 75:15, 75:20
reviewing
18:11, 66:15
rf
33:2, 33:3, 33:6, 33:11, 33:20, 34:17, 35:11, 36:1, 36:8, 36:13, 36:16, 36:19, 39:1, 39:2, 39:12, 39:18, 40:3, 40:8, 40:14, 40:21, 41:4, 41:10, 41:11, 41:18, 41:19, 42:13, 42:17, 43:4, 43:5, 46:2, 46:5, 46:8, 46:14, 46:22, 47:5, 47:8, 48:2, 48:9, 48:19, 49:17, 49:19, 50:16, 55:4, 55:12, 56:5, 58:10, 69:1, 72:1, 136:1
rid
94:11, 94:15
right
8:22, 20:8, 40:4, 40:5, 55:15, 60:8, 68:4, 68:5, 69:7, 71:3,

73:6, 82:10, 83:9, 85:12, 88:21, 91:22, 93:4, 95:5, 95:8, 95:18, 95:20, 95:22, 97:3, 100:16, 101:1, 101:3, 101:5, 107:13, 108:6, 108:9, 113:11, 114:19, 115:11, 116:13, 120:7, 126:9, 135:12, 139:20, 141:7, 142:10, 145:3, 146:1, 153:2
rpr
1:22
rules
5:18, 102:13
running
129:19, 140:22
russ
3:13, 7:6, 13:18

S

said
19:22, 20:18, 21:2, 24:14, 28:16, 29:13, 34:14, 44:11, 44:15, 46:20, 49:1, 51:20, 51:21, 53:17, 57:2, 57:22, 58:13, 58:16, 61:5, 62:19, 69:16, 77:15, 79:15, 81:13, 86:21, 87:6, 95:11, 96:1, 98:16, 99:16, 102:5, 104:1, 104:16, 107:10, 109:14, 114:1, 115:21, 117:1, 118:5, 120:14, 121:9, 123:22, 124:16, 133:20, 136:5, 140:14, 144:5, 145:4, 146:12, 146:21, 150:16, 151:21
same
6:5, 10:16, 13:15, 33:13, 49:11, 67:18, 103:20, 109:8, 109:12, 147:8, 147:16, 152:21
samsung
1:5, 153:16
satellite
27:3, 27:4
satisfy
82:7, 82:8, 82:19
saves
105:15, 105:21
saw
137:1
say
5:22, 7:4, 10:14, 12:4, 12:20, 15:10, 19:2, 19:7, 19:18, 20:1, 20:3, 24:1, 24:7, 29:16, 35:15, 36:5, 49:5, 49:18, 51:4, 57:7, 57:16, 57:17, 57:18, 61:1, 61:2, 65:16, 70:3, 77:11, 78:16, 81:5, 92:5, 93:21, 94:7, 94:15, 95:6, 96:2, 98:1, 100:11, 101:2, 101:9, 101:14, 104:4, 104:19, 105:15, 106:8, 106:10, 106:13, 108:11, 109:22, 110:16, 113:7, 114:22, 116:4, 116:6, 116:12, 117:17, 119:6, 119:19, 121:18, 122:3, 124:6, 130:11, 130:20, 130:22, 131:16, 134:2, 139:17, 141:11, 142:12, 144:6, 144:10, 147:19, 149:3, 152:13
saying
11:5, 11:10, 21:12, 25:18, 35:9, 37:16, 45:1, 51:13, 57:17, 62:5, 62:16, 70:1, 70:18, 72:11, 72:14, 72:17, 75:20, 80:17, 83:7, 83:15, 83:16, 83:20, 84:22, 94:16, 94:20, 97:10, 98:6, 98:10, 98:12, 98:13, 99:10, 102:15, 105:1, 107:13, 109:7, 115:5, 116:10, 119:9, 124:2, 125:21, 132:7, 132:13, 138:5, 139:13, 140:10, 141:22, 142:21, 143:1, 152:2, 152:5
says
18:6, 36:18, 40:3, 42:16, 46:21, 48:9, 48:13, 49:14, 64:10, 65:6, 65:10, 67:6, 67:20, 68:14, 70:7, 74:6, 75:7, 77:16, 79:3, 80:2, 80:11, 80:16, 82:2, 83:1, 84:15, 90:9, 97:6, 134:6, 134:12, 136:2, 143:22, 150:17
scenario
66:11, 72:11, 72:14, 79:9, 96:4, 97:19
scheme
98:12, 98:14
scope
37:7, 102:14, 135:20, 136:8, 148:5, 151:9
se
65:13
second
31:13, 36:13, 41:4, 50:5, 62:19, 70:21, 71:18, 71:19, 89:1, 132:8, 147:22
second-generation
22:1
section
17:19, 17:21, 18:3, 20:9, 31:7, 49:2
see
31:16, 31:17, 34:2, 35:22, 43:17, 53:5, 53:10, 59:6, 60:2, 62:15, 64:7, 64:17, 66:7, 69:20, 79:2, 79:8, 81:20, 87:3, 96:17, 110:12, 111:3, 138:2, 146:4

seem
84:4
seems
40:13, 49:9, 52:1, 52:11, 70:6, 81:11, 113:5, 124:1, 135:5, 137:7, 143:8
seen
26:2, 26:3, 151:19, 152:21
selected
61:1, 145:11, 149:19, 150:9, 151:4, 152:14
selects
53:22, 126:19
sense
65:8, 69:21, 69:22, 70:19, 71:7, 95:9, 108:22, 109:2, 148:7, 151:19
sent
126:21
sentence
64:10, 64:17, 70:10, 70:11, 74:20, 79:2, 79:12, 86:11, 87:14, 87:20, 89:14, 94:8, 94:10, 95:4, 102:15, 104:18, 105:1, 110:4
sentences
76:8
separate
19:12, 92:12, 93:16, 135:6, 136:20, 136:22, 137:9, 144:5
september
25:12, 25:17, 25:20
server
73:21, 74:3, 74:12, 74:19, 74:22, 75:8, 86:1, 86:19, 92:7, 92:14, 92:21, 93:9, 93:11, 93:17, 94:1, 95:16, 96:4, 96:8, 97:21, 98:4, 98:9, 100:13, 102:1, 103:19
service
36:3, 66:21, 67:22, 68:9, 70:20, 71:1, 72:6
set
151:2, 154:7, 155:3
several
17:17, 26:14, 62:7, 103:11
share
63:15, 109:8, 109:12
sharing
81:9
short
114:8, 115:21, 140:2
shortening
128:21, 128:22
shorthand
154:1
should
31:21, 32:3, 45:8, 59:2, 65:5, 79:15, 94:16, 103:15, 125:11, 125:15, 145:6
show
119:5, 143:21
side
9:16
signal
21:5, 27:11, 32:18, 40:11, 43:16, 43:19, 43:22, 44:1, 44:9, 44:10, 44:13, 45:12, 45:13, 45:16, 45:17, 64:14, 65:11, 66:12, 67:1, 67:9, 67:14, 68:2, 68:6, 68:10, 70:8, 71:2, 72:6, 129:20, 132:18, 133:2, 134:8, 136:21, 137:10, 139:14, 140:11, 140:19, 140:20, 141:1, 141:3, 141:7, 141:9, 141:12, 143:18, 143:22, 144:10, 147:8, 147:17, 150:21
signals
64:12, 68:1, 69:5, 70:21, 136:4
signature
14:21, 16:3, 16:19
signature-p1kal
155:9
signed
15:11, 30:5, 30:6, 30:7
significant
22:12, 26:2, 26:4, 26:10, 26:11, 28:5, 44:21, 93:2, 97:6, 99:2
significantly
27:10
similar
17:21, 76:16, 108:10
similarly
15:19, 16:3, 16:21
simplifies
93:9
simply
64:5, 64:12, 77:20, 116:11
since
10:21, 23:5, 26:1, 44:13, 44:21, 45:5, 53:16, 64:11, 91:8, 117:22
single
33:6, 33:11, 33:20, 34:17, 35:11, 81:8, 82:5, 86:10, 87:17, 87:22, 88:1, 88:16, 88:17, 89:15, 89:16, 89:22, 117:1, 117:5, 117:16, 118:9, 119:1, 120:19
sitting
29:9, 34:15, 44:8, 45:10, 117:15, 141:21, 142:12, 144:9, 152:12
situated
86:18
situations
109:11, 109:17, 109:20
six
8:21, 9:1, 9:2
skill
25:16, 37:14, 51:18, 80:18, 93:21, 98:7, 98:11, 98:17, 98:20, 99:7, 99:18, 100:3, 101:21, 103:17, 103:21, 105:14, 105:18, 106:11, 111:21
small
95:20

smaller
81:18
softer
27:12
software
26:15, 129:19, 140:22
sole
27:22
solve
104:1
some
8:7, 8:13, 10:20, 10:21, 11:5, 12:17, 15:7, 25:10, 27:6, 27:8, 27:16, 46:17, 47:15, 47:19, 55:20, 66:17, 73:9, 76:18, 78:18, 79:17, 82:8, 83:5, 84:22, 95:13, 98:2, 100:11, 100:22, 105:15, 105:21, 106:9, 111:3, 112:1, 127:22, 138:7, 146:5, 147:3, 149:17, 152:6, 152:8, 152:9, 152:22
somehow
70:14, 72:5
someone
111:22, 132:4, 132:5
something
9:22, 18:8, 24:4, 29:2, 37:6, 44:16, 45:21, 46:18, 48:11, 48:14, 49:1, 51:13, 57:4, 63:5, 65:22, 71:7, 71:22, 72:10, 76:15, 77:8, 77:12, 78:17, 85:4, 87:10, 95:14, 95:18, 97:3, 97:16, 98:19, 99:6, 101:15, 119:2, 120:20, 121:15, 126:8, 129:13, 132:1, 132:11, 133:11, 135:8, 139:18, 140:15, 143:16, 143:19, 144:13, 146:5, 146:16, 148:3, 151:12
sometime
7:11
sometimes
47:13
somewhat
62:13
somewhere
29:2, 34:7, 76:19, 78:19, 85:1, 85:5
sorry
19:15, 67:12, 71:11, 115:13, 115:15, 126:6, 151:10
sort
23:10, 149:17
spain
9:19, 73:3, 73:4, 73:13, 73:18, 73:20, 74:1, 74:5, 74:13, 74:16, 75:5, 75:7, 88:9
speak
13:17
speaking
6:5, 81:8, 102:17, 102:18
speaks
66:20
specific
17:17, 31:11, 51:2, 51:4, 51:8, 51:21, 52:4, 52:5, 53:6, 55:5, 55:13, 58:19, 58:22, 108:13, 109:5, 110:8, 113:14, 113:19, 114:6, 114:13, 114:19, 115:1, 115:6, 115:7, 115:20, 116:5, 116:11, 117:6, 117:19, 118:10, 121:19, 124:8, 124:10, 124:19, 124:22, 125:6, 126:2, 129:5, 133:6, 149:7, 149:8, 149:16
specifically
37:15, 54:20, 64:4, 89:12, 97:12
specification
54:10, 57:19, 58:2, 58:6, 59:3, 60:15, 61:11, 62:20, 62:21, 62:22, 63:16, 64:18, 66:3, 66:10, 66:20, 67:7, 68:16, 71:15, 71:17, 72:12, 72:16, 77:16, 77:18, 90:9, 90:17, 130:2, 134:2, 148:17, 148:20
spell
28:20
spelled
29:3
spend
11:20, 18:13, 18:15
spent
19:12, 19:13, 19:19
spoke
13:11, 13:13, 13:14, 13:15
spoken
13:8
stand
129:12, 131:22
standard
7:21, 27:10, 27:12, 27:13, 27:15, 27:17, 27:19, 27:21, 28:4, 28:7, 28:10, 28:17, 28:18, 28:19, 28:20, 29:6, 29:8, 29:13, 29:14
standard's
28:12, 28:14, 29:11
standards
22:11, 28:1, 28:2, 31:8
standing
126:19, 129:18, 133:15
stands
132:8, 132:17
start
15:4, 44:20, 147:2
starting
27:2, 61:18, 78:21
starts
64:5
state
2:14, 5:10, 22:2, 22:3, 25:11, 26:14, 31:11, 32:1, 34:21, 52:19, 67:8, 84:7, 88:11, 89:1, 90:5, 90:6, 90:11, 94:5,

120:9, 126:5, 137:18, 154:4, 155:12
stated 56:9, 57:1, 64:6, 64:22
statement 23:2, 142:18
states 1:1, 4:11, 4:13, 4:15, 7:20, 36:16, 88:6
stations 24:16, 24:17, 36:4
stay 126:11
stenographically 1:21
step 9:9, 36:15, 36:18, 38:22, 39:4, 39:7, 39:8, 39:11, 39:16, 40:10, 42:11, 43:14, 45:22, 46:4, 46:9, 46:21, 47:3, 47:11, 47:12, 48:1, 48:17, 49:20, 61:1, 136:6
steps 37:5, 37:18, 37:19, 37:20, 46:11, 49:9, 136:6, 137:5
stick 44:22
still 20:14, 24:7, 34:8, 41:11, 41:19, 59:11, 104:11, 105:3, 121:10, 130:16, 130:18, 135:3, 143:4, 147:10
stop 102:20
stopping 38:2
storage 65:13, 86:17, 92:8, 92:12, 92:19, 93:15, 104:12, 104:13, 104:17, 105:4, 105:12, 105:16, 105:22
store 70:21, 86:5
stored 69:6, 73:16, 73:18, 73:21, 74:2, 74:7, 74:12, 76:3, 76:11, 76:19, 78:19, 79:6, 80:1, 81:7, 83:8, 84:16, 84:21, 85:1, 85:4, 85:10, 85:22, 86:10, 87:17, 88:1, 89:16, 90:1, 90:4, 90:9, 93:8, 97:20, 139:15, 140:12, 141:7, 141:9, 141:12, 141:16, 142:6, 143:3, 143:18, 144:1
stores 70:9, 76:18
storing 92:6, 92:13, 92:20, 93:16, 94:1, 144:7, 144:10
straightforward 99:6
street 3:7
strength 43:22, 44:10, 45:13, 45:17, 64:14, 65:11, 66:12, 67:1, 67:9, 68:3, 68:11, 70:8, 132:18, 133:2, 137:11, 139:14, 140:11, 141:3, 143:18, 144:1, 144:10
strengths 40:11, 67:1, 67:14, 68:7, 71:2, 72:7, 129:20, 134:8, 136:21, 140:19, 140:21, 141:1, 141:7, 141:9, 141:12, 147:8, 147:18, 150:21
strike 29:4, 39:8
strokes 100:10
studied 21:5, 21:12, 23:4, 23:15, 24:4, 24:21
study 22:21, 23:11, 125:4, 125:5
sub-steps 42:11, 43:2, 46:9, 46:15, 48:16, 48:18, 49:20
submitted 7:11, 10:11, 11:15, 15:12, 73:11
subportion 82:5
subsequent 105:22
substance 12:12, 13:10
substantial 152:10
substantially 66:12, 66:22, 67:8, 68:10, 71:1
suddenly 139:17, 141:22
sufficiently 88:18, 138:5
suggesting 37:4, 125:11
suggestion 128:10
suggestions 31:12, 32:2
summarize 145:22, 150:3, 150:5, 151:1
summarized 146:15
summarizes 145:15
summarizing 145:16
sure 10:19, 21:15, 26:8, 33:10, 35:7, 37:9, 51:7, 59:4, 65:8, 92:15, 93:9, 110:5, 110:11, 111:8, 122:20, 142:17, 147:13
surrounding 129:21, 134:9, 141:2
switching 78:13
sworn 5:4, 154:8
system 22:1, 24:12, 52:4, 52:10, 52:14, 52:15, 53:6, 53:8, 53:9, 53:16, 71:6, 71:14, 72:4, 79:7,

81:7, 83:9, 84:16, 85:10, 90:4, 90:10, 90:18, 104:8, 137:22, 138:13, 141:8, 143:9, 143:10, 144:20, 145:2, 145:4
systems
21:1, 21:6, 21:8, 21:9, 21:13, 21:16, 21:18, 21:20, 22:15, 23:1, 23:11, 24:6, 24:9, 24:22, 26:16, 26:18, 27:1, 27:3, 27:4

T

take
9:9, 29:22, 34:10, 38:6, 38:8, 38:22, 39:11, 53:12, 54:15, 57:9, 57:18, 58:1, 59:17, 60:11, 60:17, 62:2, 63:9, 87:12, 91:13, 93:4, 94:20, 94:22, 97:14, 99:15, 101:15, 115:14, 115:17, 115:18, 122:18, 122:20, 126:12, 127:6, 129:13, 129:16, 132:1, 133:11, 133:13, 146:7, 149:12, 149:13
taken
31:4, 38:12, 58:21, 62:20, 62:21, 63:11, 91:15, 122:22, 125:9, 126:14, 127:9, 127:16, 154:10
takes
39:17
taking
59:4
talk
93:7, 128:15
talked
108:11
talking
10:22, 39:4, 43:1, 53:16, 59:6, 68:5, 81:3, 82:4, 82:11, 87:20, 99:1, 120:6, 124:3, 124:21
task
55:16, 60:7, 151:16
tdma
21:22
teach
26:14, 26:22, 27:1, 27:7
teaches
77:21, 78:6, 80:1, 86:16, 136:1
teaching
32:2, 78:2, 78:12, 118:18
teachings
31:11
technical
70:19, 88:20, 95:9
technically
69:20
technique
23:13, 24:5
techniques
21:5, 21:11, 21:14, 21:19, 22:6, 22:14, 22:22, 23:10, 25:4
telephone
67:20, 68:6, 68:8, 69:1, 69:5, 70:7, 70:20, 70:22, 71:18, 71:19, 72:1, 109:1
tell
49:4, 50:13, 84:12, 103:8, 106:20, 119:21
ten-minute
38:8
ten-minute-long
103:11
term
37:10, 37:12, 51:14, 51:17, 56:11, 57:15, 57:20, 58:14, 58:17, 59:5, 59:6, 108:11, 114:21, 116:6, 123:21, 125:2, 125:12, 125:20, 128:12, 129:1, 131:6, 134:22, 135:1, 135:5, 135:15, 136:19
terms
16:6, 110:12
testified
5:5, 51:14, 145:18
testify
6:18
testifying
146:14
testimony
36:11, 69:3, 90:21, 99:17, 117:3, 142:3, 142:18, 154:11
th
3:15, 155:4
thank
8:3, 30:14, 50:10, 63:8, 91:14, 122:19, 127:11, 127:20, 129:3, 130:1, 130:7
theater
54:1
thing
8:16, 8:17, 40:12, 97:19, 124:2, 130:20
things
8:14, 10:20, 10:21, 23:7, 23:8, 27:8, 42:21, 88:12, 93:9, 95:6, 107:5, 121:6, 146:11, 146:15, 146:20, 147:4
thinking
30:8
third
16:10
thoroughly
102:4
thought
71:11, 73:10, 151:20
thoughts
89:10
three
8:17, 8:18, 8:19, 10:11, 10:22, 12:17, 19:6, 19:19, 37:18, 37:19, 37:20, 46:9, 46:15, 49:8
threshold
40:19
through
60:22, 73:20, 76:1, 79:13, 90:3
throughout
22:3
time
6:3, 11:20, 12:1, 18:13, 18:16, 18:21,

19:12, 19:13, 19:20, 21:8, 23:5, 23:6, 24:18, 25:16, 37:13, 51:18, 54:16, 84:5, 93:2, 93:5, 99:3, 105:19, 107:19, 107:20, 118:2, 118:7, 127:12, 129:13, 133:11, 146:6, 148:2, 148:4, 153:6, 153:15
timely
106:2
times
5:15, 5:16, 57:2, 103:11, 111:11
tired
115:15
today
5:20, 6:9, 6:16, 6:19, 8:2, 8:6, 8:11, 8:22, 9:13, 10:4, 10:10, 10:22, 12:22, 13:14, 14:16, 20:15, 29:9, 34:15, 44:8, 44:17, 45:11, 93:6, 107:4, 107:6, 108:11, 114:1, 117:15, 118:7, 118:8, 127:12, 141:21, 142:12, 144:9, 145:18, 152:12
today's
11:21, 12:9, 13:9, 13:12, 13:19, 14:1, 38:17, 118:8
todor
1:15, 2:1, 4:2, 4:17, 5:3, 5:12, 154:6, 154:16
together
15:7, 70:9, 143:19, 144:2, 144:11
told
42:10, 60:10, 116:5, 121:4
took
13:4, 21:22, 58:3, 58:5, 58:13, 60:13
towards
23:19
trademark
1:1
transcribe
6:3
transcribing
5:21
transcript
14:14, 32:8, 72:21, 75:13
transfer
65:13
transmission
23:19
tremendous
26:5
trial
1:3
tried
89:19
true
109:17, 109:21, 154:10
truthfully
6:19, 102:4
try
11:1, 48:5, 52:6, 87:13, 100:9, 115:16, 128:16, 140:7, 144:16
trying
37:3, 47:11, 47:16, 47:17, 59:15, 71:5, 102:3, 102:16, 108:20, 113:9, 113:10, 113:12, 113:16, 117:2
tuesday
1:17, 154:17
turn
14:20, 16:2, 16:18, 17:12, 30:20, 32:11, 43:8, 43:11, 50:2, 50:12, 64:1, 73:12, 75:9, 77:1, 95:6, 108:2, 108:7, 129:8, 137:14
turning
139:12
tutorial
15:8, 22:17
tutorials
22:9, 22:11, 22:13
two
12:8, 17:22, 20:4, 20:7, 31:20, 48:16, 49:10, 74:13, 76:8, 84:8, 92:12, 92:20, 93:16, 96:10, 109:7, 109:11, 110:19
two-step
35:4
type
37:8, 105:17, 122:13
typically
81:18

U

under
6:15, 45:6, 45:7, 54:1, 102:13, 131:5, 152:6
undergraduate
20:21
undermines
119:15
understand
5:20, 6:1, 6:10, 6:15, 10:10, 11:2, 14:18, 15:21, 16:15, 24:10, 24:15, 24:19, 29:20, 34:12, 53:7, 59:16, 59:20, 60:6, 60:7, 61:10, 62:5, 67:12, 69:10, 69:17, 83:12, 100:1, 108:20, 113:12, 114:11, 114:17, 115:3, 116:17, 117:2, 121:17, 123:11, 124:1, 128:22, 136:7, 140:4, 142:3, 144:19, 146:2, 147:21
understandable
148:7
understanding
30:3, 31:7, 31:9, 42:1, 42:6, 54:2, 55:20, 56:2, 56:9, 57:19, 60:18, 61:7, 65:4, 68:15, 70:1, 77:21, 81:22, 112:8, 124:4, 125:17, 131:6, 145:5
understood
6:11, 8:20, 25:5, 35:7, 59:3, 80:18, 118:13
unit
68:17, 68:22,

69:4, 69:18, 71:17, 71:22, 73:16, 73:18, 74:3, 74:8, 74:17, 74:18, 74:22, 86:6, 94:13, 94:14, 95:6, 95:16, 95:17, 96:12, 96:15, 96:20, 96:22, 97:8, 100:7, 100:15, 106:17
united
1:1, 4:11, 4:13, 4:15
university
20:11
unless
59:8
unquestionably
122:6, 139:9
unreachable
132:6
updated
99:3, 100:17, 107:19
usable
89:3, 90:7, 119:7, 120:10, 122:4, 122:9, 123:5, 123:17, 137:21, 138:12
use
29:11, 33:6, 33:11, 33:20, 34:17, 35:11, 36:8, 95:10, 111:14, 131:17, 134:3
user
35:3, 35:21, 40:7, 41:10, 41:18, 42:20, 47:8, 53:22, 74:18, 74:21, 75:8, 79:5, 80:14, 80:21, 81:17, 82:4, 83:20, 83:22, 84:2, 85:9, 100:13, 126:18, 129:11, 129:18, 130:13, 131:3, 131:22, 132:8, 132:16, 133:10, 133:12, 133:13, 133:15, 134:3, 145:11, 146:5, 149:11, 149:19, 150:10, 151:5, 152:14
user's
65:15, 83:8, 149:20, 150:11, 151:6, 152:15
user-selected
51:9, 52:8, 52:16, 66:14, 67:5, 67:21, 68:13, 70:8, 70:13
users
80:22, 81:9, 82:4, 82:6, 84:6
using
24:6, 24:16, 24:17, 94:17, 111:9, 129:14, 137:21, 138:13

V

v-i-t-a
29:3
validity
144:17, 145:6
varying
43:15, 43:19, 44:1, 44:9, 44:12, 44:20, 45:12, 45:16
veer
61:18
version
15:11, 30:7
versions
30:4
virtually
1:16, 2:2, 154:16
vita
28:9, 28:11, 29:6, 29:10
vitae
29:17

W

wait
6:4
want
13:9, 24:15, 24:19, 30:12, 34:4, 44:19, 59:20, 60:6, 61:10, 83:18, 84:7, 92:15, 103:6, 114:15, 121:1, 121:17, 121:22, 122:18, 130:8
wanted
47:19
wants
111:22, 129:15, 133:13, 146:7
washington
3:8
way
11:6, 11:7, 11:12, 11:13, 27:3, 54:9, 80:21, 81:16, 82:18, 82:22, 83:4, 84:4, 85:7, 88:7, 88:10, 99:12, 111:20, 121:14, 123:11, 125:16, 136:7, 144:16, 145:5, 155:1
wayne
20:11
we're
10:22, 43:1, 50:19, 53:16, 68:5, 77:17
we've
38:2, 38:5
whenever
38:1
whereof
155:3
whether
15:3, 24:16, 24:20, 33:19, 34:16, 35:2, 35:10, 35:20, 41:8, 41:16, 44:13, 45:10, 45:18, 46:18, 50:16, 52:2, 52:12, 52:16, 55:4, 55:9, 55:11, 56:5, 56:12, 56:13, 58:7, 58:10, 59:21, 60:1, 60:2, 61:11, 69:11, 69:17, 89:13, 102:10, 109:16, 110:22, 111:17, 112:3, 134:3, 134:12, 135:10, 136:15, 138:14, 142:13, 144:13, 145:17, 146:19, 151:12, 152:13, 152:15
whole
80:7
wide
76:20, 78:20, 79:5, 85:2
willing
45:3
wilshire
3:14
window
10:6
wireless
23:19, 26:16, 76:20, 78:20, 79:5, 85:2,

95:21, 101:8, 101:10, 104:8
within
37:6, 40:7, 41:9, 41:17, 42:19, 47:7, 49:6, 66:13, 67:4, 68:12, 70:12, 70:16, 130:1, 148:5, 154:4
without
12:15, 14:5, 15:4, 94:21, 109:3
witness
12:11, 38:8, 61:21, 84:10, 84:11, 102:19, 103:1, 103:5, 103:7, 103:10, 103:14, 122:14, 122:19, 130:8, 154:7, 154:11, 155:3
word
30:1, 94:11, 94:17, 94:19, 94:22, 95:10, 95:22, 117:2, 117:22
worded
94:9, 95:5
words
5:21, 51:16, 51:17, 58:17, 68:2, 77:20, 80:17, 80:19, 84:15, 96:9, 97:15, 118:1, 118:6, 120:6
work
12:13, 14:3, 27:18, 28:5, 30:17, 30:18, 62:9, 83:18, 96:18
worked
27:20, 28:16
working
23:12, 29:12, 29:13
world
94:16, 109:1
wouldn't
23:3, 70:19, 85:6, 98:11
write
51:22
wrong
40:1, 86:4, 96:1, 144:22
wrote
15:3, 112:10

Y

yeah
32:21, 47:20, 52:13, 54:7, 54:17, 72:22, 88:11, 109:2, 121:9
yourself
54:21, 69:12

Z

zeilberger
3:4, 4:3, 4:5, 5:7, 30:14, 38:4, 38:10, 38:14, 63:9, 63:13, 84:14, 89:6, 91:12, 91:17, 91:19, 101:18, 102:17, 103:2, 103:9, 122:17, 122:20, 123:2, 123:3, 126:10, 126:12, 126:16, 126:17, 127:6, 127:11, 128:7, 128:20, 130:5, 130:10, 153:4, 153:8
zoom
10:4

.

.1700
3:9
.7474
3:17

0

00153
1:11, 10:12, 14:11
00154
1:11, 10:12
00155
1:11, 10:12
02
91:15
03
1:18, 127:10, 127:16, 154:18
08
127:17

1

1
63:11
10
72:22, 73:20
10,341,811
1:12
1001
4:11, 32:5, 32:7, 43:9, 50:3
1006
4:13, 75:9, 75:12
1011
4:15, 72:18, 72:20, 73:2, 73:13
11
1:18, 154:18
110
76:22
111
76:22
115
114:21
12
3:15, 38:12, 38:13, 76:1, 76:5, 76:9, 78:11, 78:17, 79:2, 84:17, 85:8, 85:17, 87:21, 88:4, 89:13, 91:2
12424
3:14
127
4:4
130
4:5
14
4:17, 76:1, 76:6, 76:9, 88:8, 153:10
15
14:20, 38:5, 78:21, 84:22, 91:16, 122:15, 122:16
153
14:17, 16:6, 17:2, 17:7, 30:21, 32:6, 91:21, 93:20, 104:5
154
15:16, 15:21, 16:8, 43:10
155
1:20, 16:11, 16:14, 17:3, 50:4, 86:8, 108:3, 117:4, 117:18, 137:15
17
74:15, 75:2
18
17:13, 17:15, 18:6, 76:1, 129:8, 129:11, 130:12, 130:18, 131:3, 131:11, 132:9, 133:1, 133:4, 134:1, 134:18, 137:1, 139:12, 140:9, 141:14, 142:1,

142:13, 143:22, 145:9, 147:7, 148:13, 151:2, 151:3
19
25:13, 38:12, 54:13, 54:21, 55:2, 55:8, 55:10, 56:4, 57:10, 58:8, 60:2, 60:21
1990
22:3, 22:4, 25:11, 25:22

2

2
63:12
20
38:3, 61:22, 74:15, 75:2, 78:17
2003
4:17, 14:10, 14:13, 15:16, 16:11, 17:9
20036
3:8
2006
25:13, 25:17, 25:20, 26:1, 79:20, 99:18, 101:20, 103:16, 106:21, 107:2, 107:3
202.551
3:9
2024
1:11, 1:17, 10:12, 154:17, 155:4
2028
155:7
2050
3:7
215
119:13
22
1:17, 153:16, 154:17
23
54:13, 54:21, 55:3, 55:8, 55:10, 56:4, 57:10, 58:8, 60:2, 60:22, 78:12
24
78:12
25
155:4
26
30:20, 30:22, 31:3, 31:6
27
31:11
28
122:22
29
79:3, 79:13, 85:8, 87:21, 88:5, 89:13, 90:3, 91:2

3

30
77:1, 78:1, 78:6
301
75:5, 75:7
31
79:3, 79:13, 84:16, 85:8, 87:21, 88:5, 89:13, 90:3, 91:3
310.826
3:17
32
4:11, 34:21, 35:6, 35:9, 35:16, 38:13, 49:3, 49:5, 77:2, 78:1
34
51:12, 51:22, 52:19, 108:8, 108:10, 109:22, 110:10, 117:3, 117:17, 124:5, 126:5, 131:16
35
85:18, 86:7, 86:13, 86:16, 86:22, 87:3, 87:8, 87:14, 88:6, 88:12, 89:9
36
89:1, 89:9, 90:6, 119:6, 119:20, 137:14, 137:18
37
92:2, 92:4, 92:17, 93:8
38
93:19, 97:11, 98:2, 100:1, 104:4, 104:19, 104:20

4

4
91:15, 91:16
40
5:16
42
123:1
43
63:12
46
129:8, 130:12, 131:3, 131:12, 132:9, 133:4, 134:19, 139:13, 140:10, 140:20, 141:14, 142:1, 142:13, 143:22, 145:9, 147:7, 148:13
49
28:9, 28:11, 29:3, 29:6, 29:10

5

5
122:22, 123:1, 126:14, 126:15, 127:9
51
63:11, 126:14
53
126:15
54
130:12, 131:3, 131:12, 132:9, 133:5, 134:19, 139:13, 140:10, 140:20, 141:14, 142:1, 142:14, 143:22, 145:9, 147:8, 148:13
556957
1:19
56
64:5, 127:9
583
14:12, 14:16, 25:14, 32:6, 32:9, 32:14, 33:1, 33:15, 33:21, 34:22, 35:4, 35:17, 36:15, 38:21, 40:22, 63:15, 63:18, 63:20, 64:2, 68:20, 91:21, 92:5, 92:18

6

6
74:6, 127:10, 127:16, 127:17
6,944,465
4:16, 73:5
61
65:10
62
66:2, 66:6
63
74:9

65
68:17, 73:15, 74:6
66
73:15
698
15:17, 15:20, 43:9, 43:13, 43:14, 44:15, 45:19, 46:1, 47:4, 48:4, 48:7, 48:17, 49:3, 63:15, 85:13, 86:22

7

7
153:10
700
7:22
72
4:15
75
4:13

8

8,170,583
1:12, 4:12
8,477,731
4:14, 75:11
8,594,698
1:12
811
16:14, 50:3, 50:6, 50:12, 50:15, 52:13, 54:11, 54:18, 55:3, 55:10, 56:4, 57:10, 58:8, 63:15, 87:4, 87:15, 108:4, 109:19, 114:10, 114:12, 114:17, 115:22, 116:4, 122:11, 123:8, 123:10, 123:12, 123:18, 123:20, 128:4, 128:5, 129:9, 130:2, 130:19, 135:16, 137:16, 139:11, 139:12, 140:9, 145:9

9

90025
3:16