

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

MERCEDES-BENZ USA, LLC, §
§ IPR2023-01345
PETITIONER, §
§ U.S. PATENT NO.
V. § 10,705,588
§
DAEDALUS PRIME LLC, §
§
PATENT OWNER. §
§
§
§

ORAL AND VIDEOTAPED DEPOSITION OF
MICHAEL CHARLES BROGIOLI, PH.D.
AUGUST 23, 2024

ORAL AND VIDEOTAPED DEPOSITION OF MICHAEL CHARLES
BROGIOLI, PH.D., produced as a witness at the
instance of the Petitioner and duly sworn, was taken
in the above styled and numbered cause on Friday,
August 23, 2024, from 8:36 a.m. to 10:39 a.m.,
before TAMARA CHAPMAN, CSR, RPR-CRR in and for the
State of Texas, reported by computerized stenotype
machine, at the offices of Scott Douglass &
McConnico, LLP, 303 Colorado Street, Austin, Texas,
pursuant to the Federal Rules of Civil Procedure and
any provisions stated on the record herein.

Job No. PA 6861546

A P P E A R A N C E S

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I N D E X

	PAGE
APPEARANCES.....	2
MICHAEL CHARLES BROGIOLI, PH.D.	
EXAMINATION	
BY MR. ROTZ.....	5
CORRECTION PAGE.....	59
SIGNATURE PAGE.....	60
REPORTER'S CERTIFICATION.....	61

E X H I B I T S

NO.	DESCRIPTION	PAGE
Exhibit 1	Petitioner's Notice of Deposition of Michael C. Brogioli, Ph.D. (No Bates - 4 pages)	8
Exhibit 2	Curriculum Vitae of Michael C. Brogioli, Ph.D. (No Bates - 26 pages)	13
Exhibit 3	Declaration of Michael C. Brogioli in Support of Patent Owner's Response (No Bates - 30 pages)	23
Exhibit 4	U.S. Patent No. 10,705,588 (No Bates - 13 pages)	34
Exhibit 5	U.S. Patent No. 7,392,411 (Petitioner Mercedes Ex-1006, 0001 to Petitioner Mercedes Ex-1006, 0013)	45

1 THE VIDEOGRAPHER: Good morning. We
2 are going on the record at 8:36 a.m. on August 23rd,
3 2024. Please note that the microphones are
4 sensitive and may pick up whispering and private
5 conversations. Please mute your phones at this
6 time. Audio and video recording will continue to
7 take place unless all parties agree to go off the
8 record.

9 This is Media Unit 1 of the
10 video-recorded deposition of Michael Brogioli,
11 Ph.D., taken by counsel for plaintiff in the matter
12 of Mercedes-Benz USA, LLC v. Daedalus Prime, LLC,
13 filed in the United States Patent and Trademark
14 Office, Case No. IPR2023-01345.

15 The location of the deposition is the
16 offices of Scott Douglass & McConnico in Austin,
17 Texas. My name is Rosie Jones, representing
18 Veritext, and I am the videographer. The court
19 reporter is Tamara Chapman from the firm Veritext.
20 I am not authorized to administer an oath. I am not
21 related to any party in this action, nor am I
22 financially interested in the outcome.

23 If there are any objections to
24 proceeding, please state them at the time of your
25 appearance.

1 Counsel and all present, including
2 remotely, will now state their appearances and
3 affiliations for the record, beginning with the
4 noticing owner.

5 MR. ROTZ: My name is Nicholas
6 William Rotz. I am with Hogan Lovells US LLP and I
7 represent Petitioner in this matter, Mercedes-Benz
8 US, LLC. I am joined by my co-counsel, Joseph
9 Raffetto, also from Hogan Lovells.

10 MR. FAHMI: Tarek Fahmi of Ascenda
11 Law Group on behalf of the Patent Owner, Daedalus
12 Prime.

13 THE VIDEOGRAPHER: Will the court
14 reporter please swear in the witness.

15 MICHAEL CHARLES BROGIOLI, PH.D.,
16 having been first duly sworn, testified as follows:

17 EXAMINATION

18 BY MR. ROTZ:

19 Q. Could you please state your full name for
20 the record.

21 A. Yes. It's Michael Charles Brogioli.

22 Q. And you understand you're being deposed
23 today in connection with a declaration you submitted
24 in an IPR proceeding. Is that correct?

25 A. Yes.

1 Q. And that proceeding is IPR2023-01345?

2 A. That's right, yes.

3 Q. And what do you have in front of you in
4 that binder?

5 A. Just a copy of my declaration, the
6 patent, and I believe the prior art references that
7 I reference in my declaration. And they have no
8 notes. They're clean copies.

9 THE VIDEOGRAPHER: Can we go off the
10 record?

11 MR. ROTZ: Yes.

12 THE VIDEOGRAPHER: The time is
13 8:38 a.m. We're off the record.

14 (Break.)

15 THE VIDEOGRAPHER: The time is
16 8:41 a.m. We're on the record.

17 Q. And this IPR is related to U.S. Patent
18 10,705,588?

19 A. That's correct.

20 Q. And if I refer to this as the '588
21 patent, you'll understand what I mean?

22 A. Yes.

23 Q. How many times have you been deposed
24 before?

25 A. I think on the order of 60 or so.

1 Q. When was the last time you were deposed?

2 A. It was in relation to these parties, so I
3 think two or three weeks ago.

4 Q. So the previous Daedalus deposition
5 involved with Mercedes?

6 A. That's right.

7 Q. When was the last time you testified at
8 trial?

9 A. I think it was spring of 2023.

10 Q. And you understand that you're under oath
11 today?

12 A. Yes.

13 Q. Would anything prevent you from
14 testifying truthfully, competently, and accurately?

15 A. No.

16 Q. I'd like to go over some ground rules.
17 Is that okay?

18 A. Sure.

19 Q. If you do not understand a question, do
20 you agree to ask me for clarification?

21 A. Okay.

22 Q. And counsel may object, but you
23 understand that you'll still need to answer the
24 question, unless specifically instructed not to?

25 A. Yes.

1 Q. And you agree to avoid talking over me
2 and I'll agree to do the same?

3 A. Yes.

4 Q. And if you can provide audible answers,
5 that will be helpful for the court reporter so that
6 she can create an accurate transcription.

7 A. Understood.

8 (Exhibit 1 was marked.)

9 Q. And I'm marking for this Deposition
10 Exhibit No. 1. It's a three-page document entitled:
11 Petitioner's Notice of Deposition of Michael C.
12 Brogioli, Ph.D.

13 And I printed four copies. Have you seen
14 this document before?

15 A. Yes. I have, it was sent to me maybe
16 last week or so, or before that, as my deposition
17 notice.

18 Q. And you're appearing here pursuant to
19 this deposition notice?

20 A. Yes, that's right.

21 Q. And you're aware that Daedalus Prime LLC
22 is the patent owner of the '588 patent?

23 A. That's my understanding, yes.

24 Q. And if I reserve -- refer to Daedalus
25 Prime LLC as "Daedalus," you'll understand what I

1 mean?

2 A. Yes.

3 Q. Who requested that you submit a
4 declaration in this matter?

5 A. It would have been in a discussion with
6 counsel.

7 Q. The counsel defending you here in this
8 deposition?

9 A. That's right.

10 Q. And who first approached you about
11 providing a declaration in this matter?

12 A. I think it would be Mr. Fahmi.

13 Q. How much are you being compensated per
14 hour for working on this matter?

15 A. I think it's 750 per hour.

16 Q. And is Daedalus being billed that amount
17 for your time?

18 A. That's my understanding. I'm not sure
19 where my invoices go once they go out, but that's my
20 understanding.

21 Q. When were you first retained by Daedalus?

22 A. I need to go back to my records, but in
23 this matter maybe at the beginning of the year or
24 possibly late last year, something like that.

25 Q. And for any matter, when were you first

1 retained by Daedalus?

2 A. What do you mean by "any matter"?

3 Q. I believe in your CV you referenced a
4 couple earlier matters.

5 A. That -- that sounds right. I -- the
6 dates would be -- well, at least to the year listed
7 on my CV. Maybe 2023 or possibly slightly before
8 that.

9 Q. And who approached you to be retained by
10 Daedalus in any prior matters?

11 A. I don't recall specific people's names,
12 but it would have been generally the attorneys for
13 the firm representing them.

14 Q. Was that Desmarais?

15 A. Possibly.

16 Q. Reichman Jorgensen?

17 A. That I do remember, yes.

18 Q. How much have you billed to Daedalus
19 since 2022?

20 A. I don't know. There would be invoices
21 for that, but I don't recall the numbers.

22 Q. Do you have a ballpark?

23 A. No. Only in that different things have
24 come up and sort of gone away from my -- from my
25 viewpoint in looking at different things.

1 Q. How did you prepare for today's
2 deposition?

3 A. A fairly standard process I use. I
4 reviewed my declaration, reviewed the patent, the
5 '588 patent, the prior art material that I reference
6 in my declaration. I probably would have looked at
7 at least some portions of -- I think Dr. Horst was
8 Mercedes' expert. So perhaps portions of his
9 declaration. And then a couple of meetings with
10 counsel between last week leading up to today.

11 Q. Do you know Dr. Horst?

12 A. I do not.

13 Q. Have you been opposite to Dr. Horst in
14 any proceedings previously?

15 A. I don't think so. I remember seeing his
16 name probably in some of the earlier -- or that
17 we've already had depositions for, but in the
18 earlier matters, but I don't think I had crossed
19 paths with him before.

20 Q. Did you review any documents or materials
21 not discussed in your declaration when you prepared
22 for this deposition?

23 A. That shouldn't be the case, no. Anything
24 I would have reviewed or relied on is -- my
25 intention is to list in my materials.

1 Q. Is there anything in your declaration
2 that you wish to change or correct?

3 A. No, not sitting here now.

4 Q. And apart from counsel defending you here
5 today, did you discuss preparation for your
6 deposition with anyone else?

7 A. No.

8 Q. How many hours did you spend preparing
9 your declaration in this matter?

10 A. I would have to refer back to my
11 invoices. And I say that because if I remember
12 right, there were five declarations sort of somewhat
13 overlapping with each other in the drafting process,
14 but I -- in my invoices would have attempted to
15 break out what I was working on each day or for each
16 block of time.

17 Q. Who drafted your declaration?

18 A. I did.

19 Q. And what did you rely on in preparing
20 your declaration?

21 A. It would be the materials I cited in
22 there and my experience in the industry and academia
23 and so forth over 20 or so plus years. And the
24 materials cited in the declaration.

25 Q. Do you have any staff that assisted you

1 in this matter?

2 A. In this matter, no.

3 (Exhibit 2 was marked.)

4 Q. And I'd like to hand you a document
5 that's been marked Exhibit 2. It begins with
6 Appendix A.

7 A. Okay.

8 Q. And if I told you that this is your CV
9 attached to the declaration that you submitted in
10 this matter, would you have any reason to doubt
11 that?

12 A. No, that looks right. This would have
13 been a version from May 1st of this year.

14 Q. And the information in that CV accurately
15 reflects your education and work experience as of
16 that date?

17 A. That's right, yes.

18 Q. And you received each of the degrees and
19 certificates listed here at the listed times?

20 A. That's right. I think one of them was
21 completed earlier, but I got the certificate -- or
22 the degree January of '99.

23 Q. And underneath professional experience,
24 you worked in each of these roles at the listed
25 times?

1 A. That's right.

2 Q. And among these roles, which were
3 full-time?

4 A. I'd say the Polymathic -- so I'm starting
5 on Page 1 going backwards for you. The Polymathic
6 consulting role. Freescale Semiconductor on Page 2.
7 The second Freescale Semiconductor on Page 2.
8 Method Seven on Page 2. Texas Instruments on
9 Page 3.

10 Fulbright & Jaworski at times or for a
11 period was full-time, prior to that, I don't think I
12 was. Intel would have been full-time at that time.

13 Vicarious Visions would have been
14 full-time during that period. Stratus Computer
15 would probably be the last one that was a full-time.
16 Full-time 40-plus hours a week kind of thing, yeah.

17 Q. And your current position is managing
18 director at Polymath- -- Polymathic Consulting?

19 A. That's right.

20 Q. What are your responsibilities in that
21 role?

22 A. So it ranges from -- I would say expert
23 work like -- like what we're discussing today to
24 things like technical diligence. I've held CTO
25 roles under -- under Polymathic at times. Technical

1 advising, other general engineering consulting and
2 things like that.

3 Q. Do you own Polymathic?

4 A. At least a portion of it. I'd have to go
5 back and look at the -- the documents, but it's a --
6 it's a practice that I started.

7 Q. Are there any other employees or people
8 who work for Polymathic?

9 A. There are administrative folks and then
10 others who come on depending on projects on a
11 contractual basis.

12 Q. You're also currently an adjunct
13 professor at Rice University?

14 A. That's right.

15 Q. Do you perform any research in that role?

16 A. At times, yes. Although -- so I say "at
17 times, yes" in terms of future-facing projects and
18 proposals, things like that, and at times have been
19 on thesis committees.

20 Q. And what are your general -- what are
21 your responsibilities as an adjunct professor?

22 A. So just as I had mentioned earlier, in
23 addition I have done -- once in a while would sit in
24 to do an undergrad class or something but generally
25 more graduate student Ph.D candidate-facing emerging

1 topics, if you will, things like that.

2 I have also advised -- advised/led design
3 projects and things like that that were
4 industry-backed or industry donors or partners,
5 things like that.

6 And then there may have been joint
7 industry work along the way as well at times.

8 Q. And you obtained your master's and
9 doctorate degrees both from Rice University?

10 A. That's right.

11 Q. Your Ph.D. dissertation is entitled
12 "Heterogeneous dsp/fpga based imbedded
13 architecture"?

14 A. That's -- that's part of it, yes.
15 It's -- it's "Reconfigurable --

16 Q. Oh.

17 A. -- "heterogeneous dsp/fpga --

18 Q. Oh.

19 A. -- "based embedded architectures for
20 numerically intensive embedded computing workloads."

21 Q. Was that related to multicore processor
22 power management?

23 A. Aspects of it were in terms of multicore
24 systems or multicore heterogenous systems and
25 aspects of configurability and things like that.

1 And the systems being looked at were generally --
2 the systems that I was researching or that the tools
3 were then used by later on by other people to design
4 other solutions were in, I would say,
5 power-constrained environments versus servers,
6 things like that.

7 Q. And from 2008 to 2009 you worked for
8 Freescale Semiconductor?

9 A. That's right.

10 Q. What kind of work did you do there?

11 A. Actually, I think it was late 2007, if
12 I'm looking at my CV.

13 So I had a couple of different roles
14 there, but that role was doing a couple of different
15 buckets of things. One was our compiler and build
16 tools team, so design, development tools for people
17 making applications in things like wireless telecom,
18 signal processing, computer vision-type things.

19 And then the other 50 percent of my role
20 was working on next generation silicon architecture.
21 So heterogenous or kind of highly heterogenous
22 processor systems in the overall solution there that
23 we were selling to customers.

24 And then I had another thread that was
25 things like the multicore association or internal

1 research or university research partnerships and
2 things like that.

3 Q. What do you mean by "heterogenous
4 processors"?

5 A. In this work, and I would say in the work
6 in my Ph.D. work, so a system or a solution where
7 you have multiple processing cores, some of them
8 might be what we would call general purpose
9 processors or something like that.

10 Others might be a signal processing
11 engine for telecom or very mathematically intensive
12 things.

13 Others might be custom hardware
14 accelerators for multi-media processing, video
15 processing, telecom, things like that generally.

16 Q. How many processing cores did the
17 processors that you worked on at Freescale have?

18 A. Including accelerators, we had solutions
19 that ranged from -- that were really sort of more
20 simplistic, you know, 1 or 2 to, I want say like 15
21 or 16 or 18 in some of the solutions. And that 18
22 being two or three different flavors in the mix.

23 Q. Were any of those on SoCs?

24 A. Yes.

25 Q. And what was the intended application of

1 the processors, for example, servers or cell phones
2 or something in between?

3 A. We sold solutions in kind of all of the
4 above. So everything from, you know, 30-year-old,
5 plus simple embedded devices to SoCs for mobile
6 handsets to what -- telecom infrastructure, so
7 things that go into cell towers and things like
8 that, to automotive systems to, you know, at one
9 point things that went in Apple laptops and
10 computers and things like that. Gaming consoles
11 were -- were another one.

12 Q. From 2005 to 2007 you worked at
13 Fulbright & Jaworski, LLP?

14 A. I did while I was still in grad school,
15 and a little bit afterwards.

16 Q. Were you a testifying witness in any
17 legal proceedings in that capacity?

18 A. No.

19 Q. Were you disclosed in any legal
20 proceedings as a expert?

21 A. Not that I'm aware of. I think I may
22 have been cleared on protective orders, as I recall,
23 but that -- from my recollection, that would be it.

24 Q. In 2005 you worked at Texas Instruments
25 also?

1 A. That's right. They were funding the
2 fellowship that I was on for my Ph.D. and so I
3 would -- I spent -- obviously, we worked together
4 fairly closely and then there was a big bunch of
5 time when I was working there full-time in-house.

6 Q. What kind of work did you do there?

7 A. We were working on next generation
8 system-on-chip technology that had multiple
9 different flavors of processors in it. And if I
10 remember right, there might have been multiple of
11 each flavor. And I was working in modeling and
12 simulation and some hardware design technology or
13 hardware design modeling technology around these
14 next generation architectures and what we could or
15 couldn't do with them in terms of performance and
16 things like that. And I generally remember having a
17 focus on -- at least part of the time, on bus
18 interconnects and things like that.

19 Q. How many processing cores did the DaVinci
20 SoC have?

21 A. I don't remember. I remember that there
22 were at least two different flavors in there or some
23 variant of an ARM processor or multiple of them, and
24 then a C6000 series Texas Instruments DSPs or one or
25 more of them.

1 Q. How many graphics processing cores?

2 A. I don't remember. I know one of the
3 target markets for it was video processing as a
4 whole for things like set top boxes and maybe
5 computer security and real-time vision analytics.

6 I don't recall how many processors are
7 possible, like graphics or other motion accelerators
8 were or weren't in there at that time.

9 Q. You also worked for Intel in 2000?

10 A. That's right.

11 Q. What kind of work did you do there?

12 A. I was in the microprocessor research
13 labs, I guess it was called at the time, working on
14 what was IA64 or the next 64-bit or the first real
15 shift to 64-bit for Intel. And looking at
16 architecture things and working in the compiler
17 group or the compiler research group with the
18 architecture group looking at things like threads
19 and how to cram more computation through these types
20 of CPUs or what the CPUs needed it should look like
21 and what the software should look like.

22 Q. Did that involve processor development?

23 A. In the sense of the work we were doing in
24 the microprocessor research division was informing
25 what needed to go into these new types of

1 microprocessors, at least in part.

2 Q. Do you know any of the inventors on the
3 '588 patent?

4 A. I don't. Some of the names rung a bell,
5 just I may have seen their names in the past, but I
6 don't -- I don't recall personally knowing any of
7 them.

8 Q. Avinash Ananthakrishnan?

9 A. No, I don't know him.

10 Q. Inder Sodhi?

11 A. I don't know them.

12 Q. Efraim Rotem?

13 A. I don't know them, no.

14 Q. Doron Rajwan?

15 A. No, I don't believe I know them.

16 Q. Eliezer Weissmann?

17 A. No, I don't think so.

18 Q. Ryan Wells?

19 A. No. Same answer.

20 Q. What is a lookup table?

21 A. I guess we need to be more specific. But
22 I think one of the things the patent talks about --

23 Q. Which patent?

24 A. The '588.

25 Q. Okay.

1 A. -- is the ability to go use this table,
2 for example, that may be mapping a frequency for a
3 graphics unit, for example, to a frequency of an
4 interconnect is one example it talks about.

5 Q. Would it be fair to characterize one of
6 those values as the input and the other as the
7 output?

8 A. I don't know. I don't -- I don't recall
9 talking about that in my declaration.

10 Q. How would you characterize the value of
11 the bus frequency and the lookup table that's
12 mentioned in the '588?

13 A. So I talk about this in my declaration.
14 I think you just handed me a copy of. Nope, I
15 didn't.

16 In the Table 1, I have on my Page 13, and
17 it's described as a mapping of selectable
18 frequencies of graphics processing circuitry to
19 selectable frequencies of the interconnect. And so
20 we can see that the various frequencies are listed
21 as just that, 300 hertz, for example, 900 hertz --
22 megahertz, I'm sorry, and so forth.

23 (Exhibit 3 was marked.)

24 Q. While we're on your declaration I'll mark
25 this copy of the Declaration of Michael C. Brogioli

1 in Support of Patent Owner's Response, Exhibit 3.

2 Speaking more generally what is a look-up
3 table?

4 A. I guess we'd need to look at a more
5 concrete example. It's used in various capacities
6 in hardware design or software design or firmware
7 design or what have you. And there's probably
8 different ways the data structures you're using or
9 if it's hardware or software that something may
10 operate.

11 Q. Can you provide examples?

12 A. I think a generic example would be if you
13 had a table of three entries and I went to look at
14 what's at Row 2 or something, there would be some
15 values there in a generic sense.

16 Q. In that generic example of three entries
17 at Row 2, if you looked at one of the values as --
18 strike that.

19 What reasons would a computer processing
20 system use a look-up table?

21 A. There's probably many, many, many reasons
22 that hardware or software or a custom circuit or
23 different things might use something like a look-up
24 table generically.

25 Q. Could it be used to save processing power

1 so you don't have to compute the relationship
2 between two values?

3 A. I guess you need to be more specific.

4 Q. In the look-up table on -- strike that.
5 What didn't you understand about my
6 question?

7 A. That it -- I'm not sure I can answer it
8 given sort of the -- if I recall the question, it's
9 difficult to answer given the generic nature of the
10 question.

11 Q. Why does the '588 patent use a look-up
12 table?

13 A. (Pause.)

14 So I'm going back to my description of
15 the '588 in my declaration starting on 11 --
16 Page 11. And I don't see that I cite to language in
17 the '588 that uses the phrase "look-up table"
18 specifically, although it does talk about things
19 such as maintaining a map -- this mapping can be
20 maintained in a table that I describe in my
21 Paragraph 29.

22 I have a copy of the '588 if you'd like
23 me to take it out.

24 Q. That's all right for now.

25 Is the table that you included in your

1 declaration fairly characterized as a look-up table?

2 A. The table that I talk about in my
3 declaration is the Table 1 from the patent that's in
4 Column 5 of the '588. And I'm just revisiting the
5 language around this section from the '588.

6 So the invention refers to this table as
7 a mapping or a table -- mapping table. And so what
8 the table is, is just as it's shown in Column 5
9 where you have a noncore frequency, for example, at
10 Entry 300 or 4 -- of 400, and then you have a
11 minimum interconnect frequency associated with that
12 in this Table 1 example of 800.

13 Q. Is it fair to describe that as a look-up
14 table?

15 A. I guess the patent doesn't use that
16 language. It's just saying I go into this table
17 with a -- so it says at the top of Column 5: The
18 PCU can access the table based on frequency at which
19 the noncore domain is operating to obtain the
20 corresponding target interconnect frequency.

21 So it might go into the table with -- in
22 my previous example, 400 for the noncore frequency
23 and get 800 for the minimum interconnect frequency.

24 Q. So would you not describe that as the
25 look-up table?

1 A. Depending on context, it might be. There
2 are probably thousands and thousands of other
3 references that might use the phrase "look-up table"
4 differently. But I'm -- the way it's describing it
5 is I'm taking the noncore frequency and it is giving
6 me -- or it's mapping, as the patent uses, the
7 minimum interconnect frequency.

8 Q. Would it be fair to characterize the
9 noncore frequency as the input of Table 1 and the
10 minimum interconnect frequency as the output?

11 A. (Pause.)

12 I don't know. I don't see that this
13 paragraph that I'm referring to at the bottom of
14 Column 4 through Column 5 is saying when you're
15 using input the language input that describes to me
16 sort of how the -- things are designed or accessed
17 to get into or out of the table.

18 The patent's just saying that at the top
19 of Column 5, Line 2: The PCU can access the table
20 based on a frequency at which the noncore domain is
21 operating.

22 Q. Is there another term that you'd prefer
23 to use for the noncore frequency other than input,
24 such as independent variable?

25 A. I would just use the language of the

1 patent, that it's saying the PCU can access this
2 Table 1 based on a frequency of that -- I'm sorry --
3 the noncore domain.

4 So based on whatever the frequency is
5 that the PCU is contemplating for the noncore
6 domain, it's getting that minimum interconnect
7 frequency via this table.

8 Q. So the noncore frequency isn't an input?

9 A. I -- it sounds like you're asking sort of
10 a implementation detail like how someone might
11 design a system doing this. I don't see that this
12 section of the patent is talking about that one way
13 or the other.

14 Q. So for someone looking at Table 1 to
15 understand how the operation is performed? Strike
16 that.

17 Stepping back from the '588 patent, what
18 is the frequency of a processing core?

19 A. We generally consider it if you have a
20 core and you're feeding it a clock -- a clocked
21 signal that it needs to operate at. It would be --
22 if the clock is coming in at one megahertz, the
23 processor might be considered one megahertz.

24 There's other fancy things that we do
25 with clocks and circuit design and things that --

1 that's not necessarily always the case, but in a
2 simple example it's kind of the clock speed the
3 thing is running at.

4 Q. And the units are hertz?

5 A. Typically hertz, or, you know, megahertz
6 or gigahertz or what-have-you.

7 Q. And does the same definition apply for
8 the processing core of a graphics processor?

9 A. In the sense that, yes, the integrated
10 circuit for a graphics professor has clocks in it
11 that run at certain frequencies.

12 Q. Does the same definition apply to buses?

13 A. In the sense that buses or
14 interconnects -- buses usually had a frequency
15 associated with them, like in the days of PCI it
16 would be 33 megahertz or 66. In other technologies
17 there is a clock associated with it, but we
18 sometimes talk about it in throughput rates or
19 things like that.

20 Q. And the clock associated with the bus
21 would be a clock frequency?

22 A. It can be. If a bus is clocked at
23 33 megahertz, you know, PCI, we would say it's a
24 33 megahertz PCI bus.

25 Q. How does the frequency of a processing

1 core affect its throughput?

2 A. I guess you'd have to ask a more specific
3 question. A core can be run -- if I've got a core
4 and it's running some thread or workload, if it's
5 processing data, there's presumably a rate the
6 data's coming in and being processed and going out.

7 Q. So the same core running at twice the
8 frequency could have twice the throughput?

9 A. Not necessarily. But in some examples
10 with -- ignoring the rest of the system if I'm just
11 hypothetically feeding data in and measuring data
12 coming out and I run it twice as fast, that might be
13 the case. There's a lot of other variables that go
14 with that.

15 Q. Turning to your declaration at -- this is
16 the declaration at Exhibit 3 that you submitted in
17 this matter. Correct?

18 A. That's correct, yes.

19 Q. And at Paragraph 25 of your declaration I
20 believe it's on -- around Page 10, you opined on the
21 level of knowledge required of a person of ordinary
22 skill in the art for the '588 patent?

23 A. That's right.

24 Q. What is your understanding of a person of
25 ordinary skill in the art in the context of a patent

1 analysis?

2 A. It's the definition of someone, for
3 example, in the field and the skill that they would
4 have or possess in terms of the subject matter or
5 technology described in the patent, for example.

6 Q. It's fair to characterize that as the
7 perspective that one takes when performing patent
8 analysis such as obviousness?

9 A. That is my understanding of one example,
10 yes.

11 Q. In Paragraph 25 you describe the
12 petitioner's proposal for the level of skill in the
13 art and you explained that you applied a somewhat
14 modified version. Do you see that?

15 A. Yes, I do.

16 Q. That is the same in all respects except
17 for your definition limits the individuals' work
18 experience in a designated field to two years?

19 A. That's right. I think Petitioner and
20 Dr. Horst were saying at least two years and here
21 I'm saying two years, not -- let me see. That
22 limited the individual's work experience to two
23 years, yes.

24 Q. Who asked you to apply this standard?

25 A. It probably would have come out of

1 discussions with counsel since that's the only --
2 the only people that I talked to on this matter.

3 Q. Why?

4 MR. FAHMI: Objection. Calls for
5 work product immunity discussions. I instruct you
6 not to answer.

7 THE WITNESS: Okay.

8 Q. Do you agree with Petitioner's standard?

9 A. Yes.

10 Q. Were you a POSITA at the time of the
11 invention of the '588 patent?

12 A. I was, yes.

13 Q. How many years of experience did you have
14 in the relevant field in 2011?

15 A. Give me a second to count backwards.
16 Maybe like 13 or so.

17 Q. Let's talk about the '588 patent.

18 A. Okay.

19 Q. You reviewed and analyzed the '588 patent
20 which has previously not been marked with an
21 exhibit, but I'll give that to you in a little bit.
22 When did you first learn about the '588 patent?

23 A. So I -- at minimum it would have been
24 when I was I guess retained or engaged on this
25 matter. It may have been prior to that. How far

1 back, I don't know.

2 The named -- some of the named inventors'
3 names were familiar, and some of the subject matter
4 was familiar to me. So I don't recall if I -- I
5 didn't do an exercise of looking, had I analyzed
6 this patent in the past.

7 Q. So it's fair to say before you were
8 engaged by Daedalus, you hadn't read the patent
9 cover to cover?

10 A. I don't recall one way or the other.

11 Q. Did you have any reactions when first
12 reading the '588 patent in this engagement?

13 A. I don't know that I would have had a
14 reaction -- I wouldn't use the word "reactions." I
15 would have read it front to back and understood what
16 it was contemplating.

17 Q. Did the --

18 A. At least to the extent of the points I
19 talk about in my declaration.

20 Q. Did the '588 patent teach you anything
21 new that you didn't previously understood --
22 understand that you've since implemented in your
23 consulting or teaching work?

24 A. I would say there are novel aspects of
25 the patent that I talk about in my declaration. If

1 you're asking have I taken things that the patent
2 articulated or taught and implemented them since or
3 used them in a course subject matter, no, I don't
4 believe so.

5 Q. Outside of this IPR or any other matters
6 involving Daedalus, have you referenced or credited
7 the '588 patent in your work?

8 A. I don't remember. There -- I would add
9 to that, there have been some matters that Intel was
10 involved in, where they cited a very, very large
11 amount of prior art that was from Intel. This may
12 have been one of those references. I just don't
13 recall.

14 Q. Do you recall what the noncore is in the
15 '588?

16 A. Let's see. So it's talking about a core
17 domain and a noncore domain. And it looks like even
18 in the figure on the front page we see there's a
19 core logic and then there's an uncore logic, which
20 has things like the power control unit and so forth
21 and I think...

22 (Exhibit 4 was marked.)

23 Q. While you're looking at it, I'll mark
24 this as Exhibit 4. It's U.S. Patent No. 10,705,588.

25 A. Thank you.

1 Q. I believe that's the same as your
2 version.

3 A. So as I was saying earlier, there are
4 components, for example, shown in the first figure
5 of the patent, and it looks like Figure 3, that talk
6 about components that comprise the uncore portion of
7 the device.

8 Q. And uncore is the same as noncore?

9 A. The patent uses noncore and I sometimes
10 have said uncore. I'll try to stick to noncore,
11 what the patent talks about.

12 Q. I believe the patent also uses "uncore,"
13 for example, in Figure 3.

14 A. Okay. Okay. That's right.

15 Q. Do you have any reason to believe those
16 terms are not being used consistently, as you sit
17 here?

18 A. I don't know if the patent uses uncore
19 and noncore equivalently throughout. I don't know
20 that there's a difference in what I talk about in my
21 declaration, though.

22 Q. And for a device that isn't one of the
23 processing cores, is it fair to refer to that as the
24 noncore?

25 A. I think in the sense of things like the

1 shared cache and interconnect and graphics engine,
2 those are part of that noncore/uncore portion of the
3 system.

4 Q. So components like the graphics
5 processing circuitry, such as a GPU or the
6 interconnect, could be characterized as a noncore?

7 A. So it looks like at the bottom of
8 Column 1, the last line: By allowing a noncore
9 domain to have control over an interconnect
10 frequency, and thus a bandwidth -- memory bandwidth
11 used by noncore domain can be more efficient.

12 And then it goes on to talk about
13 multi-domain systems or multi-domain processors.
14 And then at Column 2, Line 19: In particular
15 implementations described herein, the noncore domain
16 can be a graphics domain that includes one or more
17 graphics engines.

18 Q. In the context of the '588 patent, what
19 is a mapping?

20 A. (Pause.)

21 So one example that we talked about
22 earlier is the Table 1 in the description in
23 Column 4 and 5, where Table 1 is a mapping table and
24 it has this plurality of entries with two
25 parameters, one being a noncore frequency and one

1 being a minimum interconnect frequency.

2 And I'll just continue on. At the bottom
3 of 4 it says: The configuration may be via
4 specification of pairwise entries to identify a
5 target interconnect frequency for a corresponding
6 noncore domain frequency.

7 And then as we talked about earlier, the
8 PCU can access the table based on a frequency at
9 which the nondomain -- sorry -- the noncore domain
10 is operating to obtain the corresponding target
11 interconnect frequency.

12 Q. Is it fair to say the mapping table
13 associates the noncore domain operating frequencies
14 and corresponding operating frequencies of the
15 interconnect?

16 A. That the Table 1 is mapping a noncore
17 frequency value to a minimum of interconnect
18 frequency value.

19 Q. And what does the word "minimum" refer to
20 in the minimum interconnect frequency?

21 A. (Pause.)

22 I'm trying to find where in the
23 specification it talks about that.

24 (Pause.)

25 Okay.

1 (Pause.)

2 So I'm looking in Column 3 about halfway
3 down. Just give me a second to review.

4 (Pause.)

5 So it says in Column 3 at 24: Note that
6 the interconnect structure can be within the core
7 domain and thus the core domain frequency itself is
8 controlled. Note also that the frequency thus read
9 from the table is a minimum frequency at which the
10 interconnect is to operate. And accordingly, if the
11 core domain is operating at a higher frequency than
12 this value, the update to the interconnect frequency
13 does not occur. And when the processor is power or
14 thermally limited, the frequency is not guaranteed.

15 That's my answer.

16 Q. And as a person of skill in the art
17 reading the '588, what does the word "minimum" in
18 "minimum interconnect frequency" mean?

19 A. Well, I think looking at the Table 1, the
20 person of skill realizes that the right-most column
21 are these frequencies. For example, 800 or
22 800 megahertz. And it's describing that as a
23 minimum interconnect frequency for that table entry.

24 And then it looks like table -- I'm
25 sorry -- Column 3 is describing other aspects of it.

1 For example, if there's a power or thermal limit
2 going on, that the -- that frequency may not be
3 guaranteed.

4 Q. And so in Table 1 at Table Entry 1,
5 whenever the noncore is operating at 300 megahertz,
6 it provides that the -- the table provides that the
7 minimum interconnect frequency should be at least
8 800 megahertz?

9 A. It says that the minimum interconnect
10 frequency is 800.

11 Q. Why would be the minimum be 800 rather
12 than 700?

13 A. Because that's what the entry in the
14 table says.

15 Q. Why would the table have a minimum
16 interconnect frequency?

17 A. For purposes, as the patent describes,
18 that for a noncore frequency, the -- that component
19 is mandating the minimum interconnect frequency of
20 the interconnect, and that's the 800 listed in that
21 table, Entry 1 of the table.

22 Q. Could that be to prevent the interconnect
23 from bottlenecking the noncore component?

24 A. I would say the patent generally talks
25 about it, and I talk about in my declaration that,

1 for instance, on the graphics component those
2 components are sensitive to memory bandwidth. And
3 so if the graphics component is running at 300, it's
4 saying here's the minimum interconnect of 800 for
5 things to perform according to how the patent
6 describes.

7 Q. And is that why the patent also calls it
8 the target interconnect frequency?

9 A. So the top of Column 5, the second line:
10 The PCU can access the table based on frequency at
11 which the noncore domain is operating to
12 obtain -- excuse me, the -- to obtain the
13 corresponding target interconnect frequency.

14 And so that's that target frequency that
15 the system is shooting for here. And as we talked
16 about earlier there seem to be some caveats to it
17 that may be described in Column 3.

18 Q. And in Table 1, the far left column that
19 says "table entry," those could fairly be
20 returned -- referred to as operating points.

21 Correct?

22 A. I don't know if I recall the patent using
23 the word "operating points." But I would say there
24 are various entries in the table, the mapping table
25 for a noncore frequency and its corresponding

1 minimum interconnect frequency.

2 This example, it looks like the table has
3 22 entries. And as the patent describes, those can
4 be updated over time as the system is running.

5 Q. And each of those entries would refer to
6 a simultaneous time, for example, when the noncore
7 frequency is 300. At the same time the minimum
8 interconnect frequency would be 800?

9 A. I'm not -- I'm not sure I understand the
10 language you're using. I would phrase it that at
11 any given point in time the Table 1, for example, in
12 the PCU, if it has 22 entries like Table 1 shows,
13 each of those presumably has a noncore frequency and
14 a minimum interconnect frequency that are, you know,
15 available for use or available in the table at a
16 given instant (sic) in time.

17 Q. Why would the interconnect minimum
18 frequency be higher than the noncore frequency?

19 A. One example is what the patent talks
20 about in Column 3 at 26, saying: Note also that the
21 frequency thus read from the table is a minimum
22 frequency at which the interconnect is the
23 operate -- let me pause for a second.

24 It looks like it's describing if the core
25 domain is operating at a higher frequency than this

1 value, the update to the interconnect frequency may
2 not occur.

3 Q. So I don't think you answered my
4 question. It was why would the internet -- the --
5 strike that.

6 Why would the minimum interconnect
7 frequency be higher than the noncore frequency
8 corresponding in Table 1?

9 A. Oh. Oh. I guess there could be a number
10 of reasons, depending on how the system's designed.
11 But as I mentioned earlier, and the patent points
12 out, some of these components, like graphics, for
13 example, are memory-intensive. They have a lot of
14 input and output of data.

15 And so very generically speaking -- and
16 those graphics processors are big and wide. They do
17 a lot of math in parallel. So depending on what
18 kind of interconnect you're using, you may need to
19 run it at a higher minimum frequency to get whatever
20 your data needs are, for example, input and output.

21 Q. When you say "big and wide," what are you
22 referring to?

23 A. Just generically that graphics processors
24 do a lot of parallel computation versus like a
25 general purpose microprocessor that may only execute

1 a couple of instructions in parallel per clock tick.
2 Graphics processors typically do much more than
3 that.

4 Q. And could one possible reason that the
5 minimum interconnect frequency here be higher than
6 the noncore frequency is that it's contemplating
7 that the interconnect has a narrower bus width than
8 the noncore?

9 A. Where in the patent are you referring to?

10 Q. In Table 1.

11 A. Right. I'm -- I am -- my -- I guess my
12 question was about where the patent describes the
13 interconnect width or architecture.

14 Q. My question is about how a person of
15 ordinary skill would understand Table 1 and the
16 patent -- when the patent doesn't explicitly mention
17 that bus width.

18 A. I would say in a general sense there are
19 systems where that's the case. For example, if I
20 have a 64-bit processor and it's trying to get data
21 over something like PCI Express that's serial or
22 serial lengths that typically aren't 64 wide, the
23 frequency of that kind of PCI Express interconnect
24 runs at a pretty high rate.

25 Q. And so it has to operate at a higher

1 frequency to transmit the same amount of data in the
2 same time frame?

3 MR. FAHMI: Objection; form.

4 A. I would say in a really generic example,
5 if I have an 8-bit wide bus running at 100 hertz,
6 you're going to get 800 bits per second. If I have
7 a 1-bit live bus running at 100 hertz you're going
8 to get 100 bits per second.

9 So just -- if the whiteboard's, as an
10 example, I could turn up the operating speed or
11 frequency of the 1-bit wide bus to go to 200 or 400
12 or something like that.

13 There's a lot of reasons why you can't do
14 that but as a sort of illustrative example that's
15 one thing that may be going on.

16 Q. I believe you mentioned earlier that the
17 noncore may be sensitive to memory bandwidth. What
18 does that mean?

19 A. That a compute device may be sensitive to
20 the amount of, for instance, data that you can get
21 in and out of a given memory over a unit -- unit of
22 time.

23 Q. What does "sensitive" mean in that
24 sentence?

25 A. Generically, if I've got a compute device

1 that's trying to perform some kind of computation
2 but the memory it's connected to can't feed it data
3 quickly enough, then whatever's running on the --
4 the processor or that type of compute device may
5 slow down.

6 Q. And that's colloquially known as
7 "bottlenecking"?

8 A. In some examples. It's been referred to
9 as, like, the processor-to-memory bottleneck.

10 (Exhibit 5 was marked.)

11 Q. And I'd like to pass you a document
12 that's been premarked as Exhibit 5. This is
13 U.S. Patent 7,392,411 to Shakkarwar.

14 THE WITNESS: I don't know if we're
15 at a good restroom break, but I could use one.

16 MR. ROTZ: Oh. Yeah, we can take a
17 break now.

18 THE WITNESS: Okay.

19 THE VIDEOGRAPHER: The time is
20 9:47 a.m. We're off the record.

21 (Break.)

22 THE VIDEOGRAPHER: The time is
23 10:01 a.m. We're on the record.

24 Q. Welcome back.

25 A. Thank you.

1 Q. Did you and counsel discuss this case
2 during the break?

3 A. No.

4 Q. Turning back to Paragraph 25 of your
5 declaration where you have the definition of POSITA,
6 25 and so forth. The definition of POSITA that you
7 used in your analysis is: Someone with a bachelor's
8 degree in electrical engineering, computer science,
9 computer engineering, material science, physics,
10 applied physics or related field, and two years of
11 experience in the research design, development or
12 testing of electronic circuits or components or
13 software for controlling electronic circuits or
14 components or the equivalent with additional
15 education substituting for experience and additional
16 experience substituting for formal education.

17 Is that correct?

18 A. Yeah, I believe you said the two years'
19 experience. Yes, that would be correct.

20 Q. And I believe you said earlier that you
21 had about 13 years of experience in the relevant
22 fields in 2011 which is the date of invention of the
23 '588 patent?

24 A. That sounds right or generally in that
25 area. That time frame, I should say.

1 Q. Is it fair to say that you wouldn't have
2 qualified as a person of ordinary skill in the art
3 under your definition in 2011?

4 A. Is it fair to say that I wouldn't have?

5 Q. Yes.

6 A. No, I would have been at least a person
7 of skill in the art in 2011.

8 Q. But you removed the "at least two years"
9 provision. So you -- you wouldn't have been a
10 person of skill in the art --

11 A. Oh.

12 Q. -- under your definition?

13 A. I understand. I would have had -- in
14 my -- under my definition I would have had more than
15 two years of experience.

16 Q. You would have exceeded a person of
17 ordinary skill in the art. You would have been a
18 person of extraordinary skill in the art?

19 A. That's -- given my understanding of the
20 law, yes, that sounds right.

21 Q. I'd like to mark for this -- I'm not sure
22 if it had already been marked, but the -- mark for
23 Exhibit 5 U.S. Patent No. 7,392,411 to Shakkarwar.

24 Hand that to the witness.

25 A. Thank you.

1 Q. If I refer to this document as Shakkarwar
2 you'll understand what I'm referring to?

3 A. Yes.

4 Q. And Shakkarwar discloses: Systems and
5 methods for dynamic power management of electronic
6 devices and their components.

7 Correct?

8 A. Generally, yes. It's talking about power
9 management and Shakkarwar's way of going about that,
10 among other things.

11 Q. Do you know the inventor on this patent?

12 A. No, I don't.

13 Q. And among Shakkarwar's methods, it
14 discloses: Determining a bus frequency using a
15 look-up table including a list of clock speeds
16 required to process information for devices.

17 Correct?

18 A. Where in Shakkarwar are you reading from?

19 Q. If you turn back to Exhibit 3, your
20 declaration.

21 A. Uh-huh.

22 Q. I'm reading from Paragraph 41.

23 A. Yes, that's right. Column 7. Thank you.

24 Q. Oh, yes. Referencing Column 7.

25 A. Okay. So yes, as I say in -- in my

1 Paragraph 41 that: Shakkarwar determines a
2 frequency to change the bus to by using what
3 Shakkarwar refers to as the look-up table, may
4 include a list of clock speeds...required to process
5 information for specific devices and/or groups of
6 devices.

7 Q. And so it's -- is it your understanding
8 that given a bandwidth that the bus needs to
9 transmit the look-up table would provide you with
10 the frequency of the bus needs to operate at?

11 A. What Shakkarwar talks about here in -- in
12 his Column 7, roughly around Line 7, is that there's
13 a look-up table and that table has clock speeds
14 and/or voltage levels for processing information for
15 devices or multiple devices.

16 The bandwidth -- and then continuing on
17 to Shakkarwar's Line 10: The bandwidth requirements
18 associated with a component, hardware, device,
19 et cetera, are calculated empirically knowing
20 requirements of the data bandwidth for each of the
21 devices.

22 Q. And so is it fair to say that if you know
23 the required data bandwidth, you could use the
24 look-up table to determine the clock speed that the
25 bus needs to be operating at to facilitate that

1 bandwidth?

2 A. Well, what Shakkarwar here is monitoring
3 is the bandwidth of the component itself. And --

4 Q. Which component?

5 A. I'm referring us back to Column 7,
6 Lines 7 to 10 or so.

7 So it's --

8 Q. Uh-huh.

9 A. -- looking at for a given component
10 and -- and the requirement to process a certain
11 amount of information, it's using a table for that
12 component that has a list of clock speeds or
13 voltages associated with it.

14 Q. Are those the clock speeds and voltages
15 of that component or of the bus?

16 A. It looks like the table in Shakkarwar is
17 talking about the speed requirements for that given
18 device in the system.

19 And we see -- continuing in Shakkarwar,
20 like, Line 13, he mentions: A first module of
21 device requiring 20 megabits of data, a second
22 module of the device requiring 10 megabits of data.

23 And then the table is talking about a
24 clock speed of -- and/or a voltage for those
25 devices.

1 Q. And from that you understand that
2 Shakkarwar uses the look-up table to determine the
3 bus frequency? As, I think, stated in your
4 declaration at Paragraph 41.

5 A. (Pause.)

6 The -- yeah, the look-up table is
7 including the list of those clock speeds and voltage
8 levels for that processing information for the
9 devices or groups of devices.

10 Q. Are the bus clock speeds listed in the
11 look-up table as well?

12 A. (Pause.)

13 So what Shakkarwar is doing is monitoring
14 the bandwidth requirements that those 10 megabits
15 per second or 20 megabits per second for the
16 component, and then it's consulting that table,
17 which I believe is that look-up table that's
18 mentioned in Column 7 or previously, and that table
19 includes the clock speeds and voltages or voltage
20 levels for processing information for a -- for a
21 given device.

22 And then it describes roughly at 18 that:
23 Upon determining bandwidth needed based on active
24 components or applications...

25 And so this is being done based on what's

1 running on a given component or the software
2 running -- an application on a component.

3 It goes to Step 404 where the
4 determination is made "whether a specific
5 characteristic such as data rate or voltage level of
6 a data bus should be modified."

7 And it says, generally: The
8 characteristic will be modified if the bandwidth
9 determined at 403 is significantly different than
10 the current rate.

11 So then it's going to set the bandwidth
12 based on what the future requirements are.

13 Q. You may have misunderstood my question so
14 I'll ask it again.

15 Are the bus clock speeds listed in the
16 look-up table in Shakkarwar as well?

17 A. It looks like Shakkarwar is saying that
18 the look-up table has just the clock speeds and
19 voltage levels for processing information for the
20 devices themselves or groups of devices.

21 Q. Is the bus a device as referred to in
22 that section that you read?

23 A. (Pause.)

24 So it looks like the Figure 4 is talking
25 about changes in system processing conditions. And

1 if we go to the bottom of Column 6 referring to
2 Figure 4: When a change in processing conditions is
3 detected --

4 I'm sorry. At 64 of this column.

5 "A change in processing conditions occurs
6 during system start-up or when any number of modules
7 are added or removed from use during operation."

8 "A module can be removed when it becomes
9 enabled or disabled, for example, not used for a
10 specific amount of time, time-outs, et cetera."

11 So it looks like those devices are
12 computational components, for example, for which the
13 look-up table includes clock speeds and voltage
14 levels for processing information.

15 Q. So the phrase "specific devices" and/or
16 "groups of devices," you understand that wouldn't
17 include something like a bus or the bus referred to
18 in Shakkarwar?

19 A. That seems to be what Shakkarwar is
20 saying, that it's talking about the required data
21 bandwidth of devices and whether those devices are
22 active or idle or what requirements they have.

23 Q. Based on your understanding of
24 Shakkarwar's look-up table, can you describe what
25 are in the rows and columns of that table?

1 A. That as I talk about in my declaration,
2 that -- I'm at the very bottom of Paragraph 43; the
3 last line. All we are advised is that the table in
4 Shakkarwar specifies a required clock speed of an
5 affected device. And that's what's being used to
6 determine the bandwidth of the associated -- in
7 Shakkarwar's computation, the bandwidth of the data
8 connection. But there's no mapping going on. The
9 table's really just telling you, hey, here's a clock
10 rate or a clock rate and a voltage level for a
11 device.

12 Q. So are you saying that the table would
13 have one column that says, for example, GPU clock
14 rate and then a column that says -- might say GPU
15 voltage level, and then different entries for, like,
16 if the clock rate is 1 megahertz, 2 megahertz, this
17 is the voltage level? Is that your understanding of
18 the table, how it might be implemented by a person
19 of ordinary skill in the art?

20 A. I would say that the table will contain
21 information such as a clock speed or a voltage level
22 or a clock speed and voltage level for a device or
23 group of devices. I don't see in the language of
24 Shakkarwar, at least that I've cited in my
25 declaration, sort of how that might be laid out or

1 structured. Beyond, you know, it talks about the
2 language of the look-up table and a table. But
3 there's probably a number of ways to go about doing
4 that.

5 Q. And what are some ways that you could --
6 if you had to describe a way to implement that, what
7 would be in a row and what would be in a column?

8 A. Well, I would say, you know, if you're --
9 if Shakkarwar has -- what he says, include a list of
10 clock speeds and/or voltage levels, they may be
11 grouped different or maybe you're just using a
12 generic random access memory or maybe you would try
13 with a content addressable memory or something like
14 that. I haven't discussed that in my declaration,
15 but it sounds like it would be some kind of way to
16 store these settings or retrieve them from a table,
17 some form of table.

18 Q. And in preparing your declaration you
19 were asked to compare the claims of the '588 patent
20 with the references asserted in the petition filed
21 in this IPR proceeding. Correct?

22 A. No. I was only asked to look at, I
23 believe, Claim 5 and 12.

24 Q. And so you offered opinions about
25 Claims 5 and 12 in your declaration. And you --

1 that they're not unpatentable in view of the prior
2 art?

3 A. That's correct.

4 Q. And you also offer opinions about
5 Claims 6 and 13 that are based on your opinions
6 about Claims 5 and 12. Is that correct?

7 A. Let me go back to the patent.

8 (Pause.)

9 So I think in my declaration I only --
10 and correct me if I'm misremembering -- explicitly
11 talk about Claims 5 and 12. But it would seem that
12 if Claim 5 -- well, I don't -- I guess I don't know
13 that I talk about 6 and 13 explicitly. Maybe you
14 can point me to where I do.

15 Q. Oh, they're briefly at the end of each
16 section. They're dependent claims from Claims 5 and
17 12.

18 Oh, I don't -- they may not have section
19 headers. Oh, I was thinking of the petition, not
20 your declaration, or the patent owner's response.
21 That's my mistake. They don't have individual
22 headers here.

23 But in your declaration you did not offer
24 opinions about the remaining claims not being
25 unpatentable? Is that correct?

1 A. That sounds right. I believe I'm only
2 discussing Claims 5 and 12 in the declaration.

3 Q. And turning back to Exhibit 4, the '588
4 patent, at Column 5, at Line 2 the patent describes
5 that: The PCU can access the table based on a
6 frequency at which the noncore domain is operating
7 to obtain the corresponding target interconnect
8 frequency.

9 Is that a function that a look-up table
10 can perform?

11 A. I guess I would say I don't recall the
12 patent using -- the '588 patent using the term
13 "look-up table." But what the patent says is that
14 the PCU can -- can have access to a table, and it
15 can go into that table based on a frequency that the
16 noncore domain is operating in.

17 Q. So based on the noncore domain, the PCU
18 can access the table to look up the corresponding
19 target interconnect frequency?

20 A. Well, I would say the PCU accesses the
21 table based on the frequency that the noncore domain
22 is operating at, and it does that to obtain the
23 target interconnect frequency. The table -- the
24 patent, the '588, doesn't use the phrase "look-up
25 table" that I am aware of.

1 Q. And that's a function that could be
2 performed by a look-up table?

3 A. I guess -- I'm not sure what the universe
4 of prior art references that talk about look-up
5 tables are. As I mentioned this morning, it's a
6 very broadly used term in circuit design, hardware
7 design, software programming languages, et cetera.

8 The patent is just saying that the PCU
9 can access a table based on a frequency.

10 MR. ROTZ: Okay. I think I may be
11 ready for a break.

12 THE WITNESS: Okay.

13 MR. ROTZ: If we can go off the
14 record.

15 THE VIDEOGRAPHER: The time is
16 10:25 a.m. We're off the record.

17 (Break.)

18 THE VIDEOGRAPHER: The time is
19 10:39 a.m. We're on the record.

20 MR. ROTZ: I pass the witness.

21 MR. FAHMI: Patent owner has no
22 questions.

23 THE VIDEOGRAPHER: The time is
24 10:39 a.m. We're off the record.

25 (Deposition concluded at 10:39 a.m.)

PAGE	LINE	CHANGE	REASON
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SIGNATURE PAGE

I, MICHAEL CHARLES BROGIOLI, PH.D., have read the foregoing deposition and hereby affix my signature that same is true and correct, except as noted on the correction page.

MICHAEL CHARLES BROGIOLI,
PH.D.

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

MERCEDES-BENZ USA, LLC, §
§ IPR2023-01345
PETITIONER, §
§ U.S. PATENT NO.
V. § 10,705,588
§
DAEDALUS PRIME LLC, §
§
PATENT OWNER. §
§
§
§

REPORTER'S CERTIFICATION

DEPOSITION OF MICHAEL CHARLES BROGIOLI, PH.D.
TAKEN AUGUST 23, 2024

I, TAMARA CHAPMAN, Certified Shorthand Reporter in
and for the State of Texas, hereby certify to the
following:

That the witness, MICHAEL CHARLES BROGIOLI, PH.D.,
was duly sworn by the officer and that the
transcript of the oral deposition is a true record
of the testimony given by the witness;

That the original deposition was delivered to
NICHOLAS ROTZ;

That a copy of this certificate was served on all
parties and/or the witness shown herein on

_____.

I further certify that pursuant to FRCP No.
30(f)(i) that the signature of the deponent:

9 I further certify that I am neither counsel for,
10 related to, nor employed by any of the parties in
11 the action in which this proceeding was taken, and
12 further that I am not financially or otherwise
13 interested in the outcome of the action.

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&	57:2	2022 10:19	4
& 1:19 4:16 14:10 19:13	12-31-24 62:20	2023 7:9 10:7	4 3:14,18 26:10 27:14 34:22,24 36:23 37:3 52:24 53:2 57:3
0	13 3:15,18 23:16 32:16 46:21 50:20 56:5,13	2024 1:12,17 4:3 61:11 62:14	40 14:16
0001 3:20 0013 3:20 08/23/2024 59:3	13288 62:19 13th 2:4 15 18:20 16 18:21	2150 2:9 22 41:3,12 23 1:12,17 3:17 61:11 23rd 4:2	400 26:10,22 44:11 403 52:9 404 52:3 41 48:22 49:1 51:4 420 2:9 43 54:2 45 3:20
1	1600 62:22 18 18:21,21 51:22 19 36:14 1st 2:9 13:13	24 38:5 25 30:19 31:11 46:4,6 26 3:15 41:20 28th 62:14 29 25:21	5
1 3:12 4:9 8:8 8:10 14:5 18:20 23:16 26:3,12 27:9 28:2,14 36:8 36:22,23 37:16 38:19 39:4,4 39:21 40:18 41:11,12 42:8 43:10,15 44:7 44:11 54:16 10 30:20 49:17 50:6,22 51:14 10,705,588 1:5 3:18 6:18 34:24 61:5 100 44:5,7,8 1006 3:20,20 10:01 45:23 10:25 58:16 10:39 1:17 58:19,24,25 11 25:15,16 12 55:23,25 56:6,11,17	2	3	5 3:6,19 26:4,8 26:17 27:14,19 36:23 40:9 45:10,12 47:23 55:23,25 56:6 56:11,12,16 57:2,4 50 17:19 555 2:4 571 62:21 588 6:20 8:22 11:5 22:3,24 23:12 25:11,15 25:17,22 26:4 26:5 28:17 30:22 32:11,17 32:19,22 33:12 33:20 34:7,15
	2 3:4,14 13:3,5 14:6,7,8 18:20 24:14,17 27:19 36:14 54:16 57:4 20 12:23 50:21 51:15 200 44:11 2000 21:9 20004 2:4 2005 19:12,24 2007 17:11 19:12 2008 17:7 2009 17:7 2011 32:14 46:22 47:3,7 202-637-5600 2:5	3 3:16 14:9 23:23 24:1 30:16 35:5,13 38:2,5,25 40:17 41:20 48:19 30 3:17 19:4 61:25 62:3 300 23:21 26:10 39:5 40:3 41:7 62:22 303 1:19 33 29:16,23,24 34 3:18	

36:18 38:17 46:23 55:19 57:3,12,24 59 3:8	8:38 6:13 8:41 6:16	actually 17:11 add 34:8 added 53:7 addition 15:23 additional 46:14,15 addressable 55:13 adjunct 15:12 15:21 administer 4:20 administrative 15:9 advised 16:2,2 54:3 advising 15:1 affect 30:1 affected 54:5 affiliations 5:3 affix 60:3 ago 7:3 agree 4:7 7:20 8:1,2 32:8 allowing 36:8 amount 9:16 34:11 44:1,20 50:11 53:10 analysis 31:1,8 46:7 analytics 21:5 analyzed 32:19 33:5 ananthakrish... 22:8	answer 7:23 22:19 25:7,9 32:6 38:15 answered 42:3 answers 8:4 apart 12:4 appeal 1:1 61:1 appearance 4:25 appearances 3:4 5:2 appearing 8:18 appendix 13:6 apple 19:9 application 18:25 52:2 applications 17:17 51:24 applied 31:13 46:10 apply 29:7,12 31:24 approached 9:10 10:9 architecture 16:13 17:20 21:16,18 43:13 architectures 16:19 20:14 area 46:25 arm 20:23 art 6:6 11:5 30:22,25 31:13 34:11 38:16 47:2,7,10,17,18
6	9		
6 53:1 56:5,13 60 3:8 6:25 61 3:9 64 21:14,15 43:20,22 53:4 66 29:16 6861546 1:25	900 23:21 95131 2:9 99 13:22 9:47 45:20		
7	a		
7 48:23,24 49:12,12 50:5 50:6 51:18 7,392,411 3:19 45:13 47:23 700 39:12 7248 62:20 750 9:15 76102 62:22	a.m. 1:17,17 4:2 6:13,16 45:20,23 58:16 58:19,24,25 ability 23:1 above 1:17 19:4 academia 12:22 accelerators 18:14,18 21:7 access 26:18 27:19 28:1 37:8 40:10 55:12 57:5,14 57:18 58:9 accessed 27:16 accesses 57:20 accurate 8:6 accurately 7:14 13:14 action 4:21 62:11,13 active 51:23 53:22		
8			
8 3:14 44:5 800 26:12,23 38:21,22 39:8 39:10,11,20 40:4 41:8 44:6 800-336-4000 62:23 866-877-4883 2:10 8:36 1:17 4:2			

54:19 56:2 58:4 articulated 34:2 ascenda 2:8 5:10 ascendalaw.c... 2:10 asked 31:24 55:19,22 asking 28:9 34:1 aspects 16:23 16:25 33:24 38:25 asserted 55:20 assisted 12:25 associated 26:11 29:15,17 29:20 49:18 50:13 54:6 associates 37:13 association 17:25 attached 13:9 62:5 attempted 12:14 attorneys 10:12 audible 8:4 audio 4:6 august 1:12,17 4:2 61:11 62:14	austin 1:19 4:16 authorized 4:20 automotive 19:8 available 41:15 41:15 avinash 22:8 avoid 8:1 aware 8:21 19:21 57:25 b b 3:11 bachelor's 46:7 back 9:22 12:10 15:5 25:14 28:17 33:1,15 45:24 46:4 48:19 50:5 56:7 57:3 backed 16:4 backwards 14:5 32:15 ballpark 10:22 bandwidth 36:10,10 40:2 44:17 49:8,16 49:17,20,23 50:1,3 51:14 51:23 52:8,11 53:21 54:6,7 based 16:12,19 26:18 27:20 28:2,4 37:8	40:10 51:23,25 52:12 53:23 56:5 57:5,15 57:17,21 58:9 basis 15:11 bates 3:14,15 3:17,18 beginning 5:3 9:23 begins 13:5 behalf 5:11 believe 6:6 10:3 22:15 30:20 34:4 35:1,12 35:15 44:16 46:18,20 51:17 55:23 57:1 bell 22:4 benz 1:3 4:12 5:7 61:3 beyond 55:1 big 20:4 42:16 42:21 billed 9:16 10:18 binder 6:4 bit 19:15 21:14 21:15 32:21 43:20 44:5,7 44:11 bits 44:6,8 block 12:16 board 1:1 61:1 bottleneck 45:9	bottlenecking 39:23 45:7 bottom 27:13 36:7 37:2 53:1 54:2 boxes 21:4 break 6:14 12:15 45:15,17 45:21 46:2 58:11,17 briefly 56:15 broadly 58:6 brogioli 1:12 1:16 3:5,13,15 3:16 4:10 5:15 5:21 8:12 23:25 59:2 60:2,6 61:10 61:15 buckets 17:15 build 17:15 bunch 20:4 bus 20:17 23:11 29:20,22 29:24 43:7,17 44:5,7,11 48:14 49:2,8 49:10,25 50:15 51:3,10 52:6 52:15,21 53:17 53:17 buses 29:12,13 29:14
---	---	---	--

c	change 12:2 49:2 53:2,5 59:4 changes 52:25 62:5,6 chapman 1:18 4:19 61:12 62:20 characteristic 52:5,8 characterize 23:5,10 27:8 31:6 characterized 26:1 36:6 charles 1:12,15 3:5 5:15,21 59:2 60:2,6 61:10,15 chip 20:8 circuit 24:22 28:25 29:10 58:6 circuitry 23:18 36:5 circuits 46:12 46:13 cite 25:16 cited 12:21,24 34:10 54:24 civil 1:20 claim 55:23 56:12 claims 55:19,25 56:5,6,11,16,16	56:24 57:2 clarification 7:20 class 15:24 clean 6:8 cleared 19:22 clock 28:20,22 29:2,17,20,21 43:1 48:15 49:4,13,24 50:12,14,24 51:7,10,19 52:15,18 53:13 54:4,9,10,13,16 54:21,22 55:10 clocked 28:20 29:22 clocks 28:25 29:10 closely 20:4 colloquially 45:6 colorado 1:19 column 26:4,8 26:17 27:14,14 27:19 36:8,14 36:23 38:2,5 38:20,25 40:9 40:17,18 41:20 48:23,24 49:12 50:5 51:18 53:1,4 54:13 54:14 55:7 57:4	columns 53:25 come 10:24 15:10 31:25 coming 28:22 30:6,12 committees 15:19 compare 55:19 compensated 9:13 competently 7:14 compiler 17:15 21:16,17 completed 13:21 completion 62:2,8 component 39:18,23 40:1 40:3 49:18 50:3,4,9,12,15 51:16 52:1,2 components 35:4,6 36:4 40:2 42:12 46:12,14 48:6 51:24 53:12 comprise 35:6 computation 21:19 42:24 45:1 54:7 computational 53:12
----------	---	---	---

compute 25:1 44:19,25 45:4 computer 14:14 17:18 21:5 24:19 46:8,9 computerized 1:18 computers 19:10 computing 16:20 concluded 58:25 concrete 24:5 conditions 52:25 53:2,5 configurability 16:25 configuration 37:3 connected 45:2 connection 5:23 54:8 consider 28:19 considered 28:23 consistently 35:16 consoles 19:10 constrained 17:5 consulting 14:6 14:18 15:1 33:23 51:16	contain 54:20 contains 62:5 contemplating 28:5 33:16 43:6 content 55:13 context 27:1 30:25 36:18 continue 4:6 37:2 continuing 49:16 50:19 contractual 15:11 control 34:20 36:9 controlled 38:8 controlling 46:13 conversations 4:5 copies 6:8 8:13 copy 6:5 23:14 23:25 25:22 61:21 core 28:18,20 29:8 30:1,3,3,7 34:16,19 38:6 38:7,11 41:24 cores 18:7,16 20:19 21:1 35:23 correct 5:24 6:19 12:2 30:17,18 40:21	46:17,19 48:7 48:17 55:21 56:3,6,10,25 60:3 correction 3:8 59:1 60:4 corresponding 26:20 37:5,10 37:14 40:13,25 42:8 57:7,18 counsel 4:11 5:1,8 7:22 9:6 9:7 11:10 12:4 32:1 46:1 62:9 count 32:15 couple 10:4 11:9 17:13,14 43:1 course 34:3 court 4:18 5:13 8:5 cover 33:9,9 cpus 21:20,20 cram 21:19 create 8:6 credited 34:6 crossed 11:18 crr 1:18 62:20 csr 1:18 62:20 62:20 cto 14:24 current 14:17 52:10 currently 15:12	curriculum 3:14 custom 18:13 24:22 customers 17:23 cv 10:3,7 13:8 13:14 17:12
d			
d 3:1 d.c. 2:4 daedalus 1:6 4:12 5:11 7:4 8:21,24,25 9:16,21 10:1 10:10,18 33:8 34:6 61:6 data 24:8 30:5 30:11,11 42:14 42:20 43:20 44:1,20 45:2 49:20,23 50:21 50:22 52:5,6 53:20 54:7 data's 30:6 date 13:16 46:22 59:3 62:3,20 dates 10:6 davinci 20:19 day 12:15 62:14 days 29:15 62:3 declaration 3:16 5:23 6:5,7			

9:4,11 11:4,6,9 11:21 12:1,9 12:17,20,24 13:9 23:9,13 23:24,25 25:15 26:1,3 30:15 30:16,19 33:19 33:25 35:21 39:25 46:5 48:20 51:4 54:1,25 55:14 55:18,25 56:9 56:20,23 57:2	deposition 1:11 1:15 3:13 4:10 4:15 7:4 8:9,11 8:16,19 9:8 11:2,22 12:6 58:25 60:3 61:10,17,19 62:2,8 depositions 11:17 describe 25:20 26:13,24 31:11 53:24 55:6 described 23:17 31:5 36:15 40:17 describes 27:15 39:17 40:6 41:3 43:12 51:22 57:4 describing 27:4 38:22,25 41:24 description 3:12 25:14 36:22 design 16:2 17:3,16 20:12 20:13 24:6,6,7 28:11,25 46:11 58:6,7 designated 31:18 designed 27:16 42:10	desmarais 10:14 detail 28:10 detected 53:3 determination 52:4 determine 49:24 51:2 54:6 determined 52:9 determines 49:1 determining 48:14 51:23 development 17:16 21:22 46:11 device 35:7,22 44:19,25 45:4 49:18 50:18,21 50:22 51:21 52:21 54:5,11 54:22 devices 19:5 48:6,16 49:5,6 49:15,15,21 50:25 51:9,9 52:20,20 53:11 53:15,16,21,21 54:23 difference 35:20 different 10:23 10:25 17:13,14	18:22 20:9,22 24:8,23 52:9 54:15 55:11 differently 27:4 difficult 25:9 diligence 14:24 director 14:18 disabled 53:9 disclosed 19:19 discloses 48:4 48:14 discuss 12:5 46:1 discussed 11:21 55:14 discussing 14:23 57:2 discussion 9:5 discussions 32:1,5 dissertation 16:11 division 21:24 doctorate 16:9 document 8:10 8:14 13:4 45:11 48:1 documents 11:20 15:5 doing 17:14 21:23 28:11 51:13 55:3 domain 26:19 27:20 28:3,6 34:17,17 36:9
--	--	---	---

36:11,13,13,15 36:16 37:6,9 37:13 38:7,7 38:11 40:11 41:25 57:6,16 57:17,21 donors 16:4 doron 22:14 doubt 13:10 douglass 1:19 4:16 dr 11:7,11,13 31:20 drafted 12:17 drafting 12:13 dsp 16:12,17 dsps 20:24 duly 1:16 5:16 61:16 dynamic 48:5	eliezer 22:16 embedded 16:19,20 19:5 emerging 15:25 empirically 49:19 employed 62:10 employees 15:7 enabled 53:9 engaged 32:24 33:8 engagement 33:12 engine 18:11 36:1 engineering 15:1 46:8,9 engines 36:17 entitled 8:10 16:11 entries 24:13 24:16 36:24 37:4 40:24 41:3,5,12 54:15 entry 26:10 38:23 39:4,13 39:21 40:19 environments 17:5 equivalent 46:14 equivalently 35:19	et 49:19 53:10 58:7 ex 3:20,20 examination 3:6 5:17 example 19:1 23:2,3,4,21 24:5,12,16 26:9,12,22 29:2 31:3,5,9 35:4,13 36:21 38:21 39:1 41:2,6,11,19 42:13,20 43:19 44:4,10,14 53:9,12 54:13 examples 24:11 30:9 45:8 exceeded 47:16 except 31:16 60:3 excuse 40:12 execute 42:25 exercise 33:5 exhibit 3:12,14 3:16,18,19 8:8 8:10 13:3,5 23:23 24:1 30:16 32:21 34:22,24 45:10 45:12 47:23 48:19 57:3 experience 12:22 13:15,23 31:18,22 32:13	46:11,15,16,19 46:21 47:15 expert 11:8 14:22 19:20 expiration 62:20 explained 31:13 explicitly 43:16 56:10,13 express 43:21 43:23 extent 33:18 extraordinary 47:18
e			f
e 2:1,1 3:1,11 earlier 10:4 11:16,18 13:21 15:22 35:3 36:22 37:7 40:16 42:11 44:16 46:20 education 13:15 46:15,16 efficient 36:11 efraim 22:12 electrical 46:8 electronic 46:12,13 48:5			f 61:25 facilitate 49:25 facing 15:17,25 fahmi 2:8 5:10 5:10 9:12 32:4 44:3 58:21 fair 23:5 26:13 27:8 31:6 33:7 35:23 37:12 47:1,4 49:22 fairly 11:3 20:4 26:1 40:19 familiar 33:3,4 fancy 28:24 far 32:25 40:18 fast 30:12 federal 1:20 feed 45:2

feeding 28:20 30:11 fellowship 20:2 field 31:3,18 32:14 46:10 fields 46:22 figure 34:18 35:4,5,13 52:24 53:2 filed 4:13 55:20 financially 4:22 62:12 find 37:22 firm 4:19 10:13 62:21 firmware 24:6 first 5:16 9:10 9:21,25 21:14 32:22 33:11 35:4 50:20 five 12:12 flavor 20:11 flavors 18:22 20:9,22 focus 20:17 folks 15:9 following 61:14 follows 5:16 foregoing 60:3 form 44:3 55:17 formal 46:16 fort 62:22 forth 12:23 23:22 34:20	46:6 four 8:13 fpga 16:12,17 frame 44:2 46:25 frcp 61:24 freescale 14:6,7 17:8 18:17 frequencies 23:18,19,20 29:11 37:13,14 38:21 frequency 23:2 23:3,11 26:9 26:11,18,20,22 26:23 27:5,7,9 27:10,20,23 28:2,4,7,8,18 29:14,21,25 30:8 36:10,25 37:1,5,6,8,11 37:17,18,20 38:7,8,9,11,12 38:14,18,23 39:2,7,10,16,18 39:19 40:8,10 40:13,14,25 41:1,7,8,13,14 41:18,18,21,22 41:25 42:1,7,7 42:19 43:5,6 43:23 44:1,11 48:14 49:2,10 51:3 57:6,8,15 57:19,21,23	58:9 friday 1:17 front 6:3 33:15 34:18 fulbright 14:10 19:13 full 5:19 14:3 14:11,12,14,15 14:16 20:5 function 57:9 58:1 funding 20:1 further 61:24 62:9,12 future 15:17 52:12	getting 28:6 gigahertz 29:6 give 32:15,21 38:3 given 25:8,9 41:11,16 44:21 47:19 49:8 50:9,17 51:21 52:1 61:18 giving 27:5 go 4:7 6:9 7:16 9:19,19,22 15:4 19:7 21:25 23:1 26:16,21 30:13 44:11 53:1 55:3 56:7 57:15 58:13 goes 36:12 52:3 going 4:2 14:5 25:14 30:6 39:2 44:6,7,15 48:9 52:11 54:8 good 4:1 45:15 gpu 36:5 54:13 54:14 grad 19:14 graduate 15:25 graphics 21:1,7 23:3,18 29:8 29:10 36:1,4 36:16,17 40:1 40:3 42:12,16 42:23 43:2
		g	
		gaming 19:10 general 15:1,20 18:8 42:25 43:18 generally 10:12 15:24 17:1 18:15 20:16 24:2 28:19 39:24 46:24 48:8 52:7 generation 17:20 20:7,14 generic 24:12 24:15,16 25:9 44:4 55:12 generically 24:24 42:15,23 44:25	

ground 7:16 group 2:8 5:11 21:17,17,18 54:23 grouped 55:11 groups 49:5 51:9 52:20 53:16 guaranteed 38:14 39:3 guess 21:13 22:21 24:4 25:3 26:15 30:2 32:24 42:9 43:11 56:12 57:11 58:3	heterogeneous 16:12,17 heterogenous 16:24 17:21,21 18:3 hey 54:9 high 43:24 higher 38:11 41:18,25 42:7 42:19 43:5,25 highly 17:21 hogan 2:3 5:6,9 hoganlovells.... 2:5,6 horst 11:7,11 11:13 31:20 hour 9:14,15 hours 12:8 14:16 house 20:5 huh 48:21 50:8 hypothetically 30:11	implementati... 28:10 implementati... 36:15 implemented 33:22 34:2 54:18 include 49:4 53:17 55:9 included 25:25 includes 36:16 51:19 53:13 including 5:1 18:18 48:15 51:7 independent 27:24 inder 22:10 individual 56:21 individual's 31:22 individuals 31:17 industry 12:22 16:4,4,7 information 13:14 48:16 49:5,14 50:11 51:8,20 52:19 53:14 54:21 informing 21:24 infrastructure 19:6	input 23:6 27:9 27:15,15,23 28:8 42:14,20 instance 1:16 40:1 44:20 instant 41:16 instruct 32:5 instructed 7:24 instructions 43:1 instruments 14:8 19:24 20:24 integrated 29:9 intel 14:12 21:9 21:15 34:9,11 intended 18:25 intensive 16:20 18:11 42:13 intention 11:25 interconnect 23:4,19 26:11 26:20,23 27:7 27:10 28:6 36:1,6,9 37:1,5 37:11,15,17,20 38:6,10,12,18 38:23 39:7,9 39:16,19,20,22 40:4,8,13 41:1 41:8,14,17,22 42:1,6,18 43:5 43:7,13,23 57:7,19,23
h			
h 3:11 halfway 38:2 hand 13:4 47:24 handed 23:14 handsets 19:6 hardware 18:13 20:12,13 24:6,9,22 49:18 58:6 headers 56:19 56:22 held 14:24 helpful 8:5 hertz 23:21,21 29:4,5 44:5,7	ia64 21:14 identify 37:4 idle 53:22 ignoring 30:10 illustrative 44:14 imbedded 16:12 immunity 32:5 implement 55:6		

interconnects 20:18 29:14	joseph.raffetto 2:6	laptops 19:9	little 19:15
interested 4:22 62:13	k	large 34:10	32:21
internal 17:25	kind 14:16 17:10,21 19:3 20:6 21:11 29:2 42:18 43:23 45:1 55:15	late 9:24 17:11	live 44:7
internet 42:4	know 10:20 11:11 18:20 19:4,8 21:2 22:2,9,11,13,15 23:8 27:12 29:5,23 33:1 33:13 35:18,19 40:22 41:14 45:14 48:11 49:22 55:1,8 56:12	law 2:8 5:11 47:20	llc 1:3,6 4:12,12 5:8 8:21,25 61:3,6
invention 26:6 32:11 46:22	knowing 22:6 49:19	leading 11:10	llp 1:19 2:3,8 5:6 19:13
inventor 48:11	knowledge 30:21	learn 32:22	location 4:15
inventors 22:2 33:2	known 45:6	led 16:2	logic 34:19,19
invoices 9:19 10:20 12:11,14	l	left 40:18	look 15:5 21:20 21:21 24:2,4 24:13,20,23 25:4,11,17 26:1,13,25 27:3 48:15 49:3,9,13,24 51:2,6,11,17 52:16,18 53:13 53:24 55:2,22 57:9,13,18,24 58:2,4
involve 21:22	labs 21:13	legal 19:17,19 62:21	looked 11:6 17:1 24:17
involved 7:5 34:10	laid 54:25	lengths 43:22	looking 10:25 17:12 21:15,18 28:14 33:5 34:23 38:2,19 50:9
involving 34:6	language 25:16 26:5,16 27:15 27:25 41:10 54:23 55:2	level 30:21 31:12 52:5 54:10,15,17,21 54:22	looks 13:12 34:17 35:5 36:7 38:24 41:2,24 50:16 52:17,24 53:11
ipr 5:24 6:17 34:5 55:21	languages 58:7	levels 49:14 51:8,20 52:19 53:14 55:10	
ipr2023-01345 1:3 4:14 6:1 61:3		limit 39:1	
j		limited 31:22 38:14	
january 13:22		limits 31:17	
jaworski 14:10 19:13		line 27:19 36:8 36:14 40:9 49:12,17 50:20 54:3 57:4 59:4	
job 1:25		lines 50:6	
joined 5:8		list 11:25 48:15 49:4 50:12 51:7 55:9	
joint 16:6		listed 10:6 13:19,19,24 23:20 39:20 51:10 52:15	
jones 2:12 4:17			
jorgensen 10:16			
jose 2:9			
joseph 2:3 5:8			

lookup 22:20 23:11 lot 30:13 42:13 42:17,24 44:13 lovells 2:3 5:6,9	master's 16:8 material 11:5 46:9 materials 11:20 11:25 12:21,24 math 42:17 mathematically 18:11 matter 4:11 5:7 9:4,11,14,23,25 10:2 12:9 13:1 13:2,10 30:17 31:4 32:2,25 33:3 34:3 matters 10:4,10 11:18 34:5,9 mcconnico 1:19 4:16 mean 6:21 9:1 10:2 18:3 38:18 44:18,23 measuring 30:11 media 4:9 18:14 meetings 11:9 megabits 50:21 50:22 51:14,15 megahertz 23:22 28:22,23 29:5,16,23,24 38:22 39:5,8 54:16,16 memory 36:10 40:2 42:13	44:17,21 45:2 45:9 55:12,13 mention 43:16 mentioned 15:22 23:12 42:11 44:16 51:18 58:5 mentions 50:20 mercedes 1:3 3:19,20 4:12 5:7 7:5 11:8 61:3 method 14:8 methods 48:5 48:13 michael 1:12 1:15 3:5,13,14 3:16 4:10 5:15 5:21 8:11 23:25 59:2 60:2,6 61:10 61:15 microphones 4:3 microprocessor 21:12,24 42:25 microprocess... 22:1 minimum 26:11,23 27:7 27:10 28:6 32:23 37:1,17 37:19,20 38:9 38:17,18,23 39:7,9,11,15,19	40:4 41:1,7,14 41:17,21 42:6 42:19 43:5 misremember... 56:10 mistake 56:21 misunderstood 52:13 mix 18:22 mobile 19:5 modeling 20:11 20:13 modified 31:14 52:6,8 module 50:20 50:22 53:8 modules 53:6 monitoring 50:2 51:13 morning 4:1 58:5 motion 21:7 multi 18:14 36:13,13 multicore 16:21,23,24 17:25 multiple 18:7 20:8,10,23 49:15 mute 4:5
machine 1:19 made 52:4 maintained 25:20 maintaining 25:19 making 17:17 management 16:22 48:5,9 managing 14:17 mandating 39:19 map 25:19 mapping 23:2 23:17 25:19 26:7,7 27:6 36:19,23 37:12 37:16 40:24 54:8 mark 23:24 34:23 47:21,22 marked 8:8 13:3,5 23:23 32:20 34:22 45:10 47:22 markets 21:3 marking 8:9			n
			n 2:1,9 3:1 n.w. 2:4

name 4:17 5:5 5:19 11:16 59:2 named 33:2,2 names 10:11 22:4,5 33:3 narrower 43:7 nature 25:9 necessarily 29:1 30:9 need 7:23 9:22 22:21 24:4 25:3 42:18 needed 21:20 21:25 51:23 needs 28:21 42:20 49:8,10 49:25 neither 62:9 new 21:25 33:21 nicholas 2:2 5:5 61:20 nicholas.rotz 2:5 noncore 26:9 26:19,22 27:5 27:9,20,23 28:3,5,8 34:14 34:17 35:8,9 35:10,19,24 36:2,6,8,11,15 36:25 37:6,9 37:13,16 39:5 39:18,23 40:11	40:25 41:6,13 41:18 42:7 43:6,8 44:17 57:6,16,17,21 nondomain 37:9 nope 23:14 note 4:3 38:5,8 41:20 noted 60:3 notes 6:8 notice 3:12 8:11,17,19 noticing 5:4 novel 33:24 number 42:9 53:6 55:3 numbered 1:17 numbers 10:21 numerically 16:20	occur 38:13 42:2 occurs 53:5 offer 56:4,23 offered 55:24 office 1:1 4:14 61:1 officer 61:16 offices 1:19 4:16 oh 16:16,18 42:9,9 45:16 47:11 48:24 56:15,18,19 okay 7:17,21 13:7 22:25 32:7,18 35:14 35:14 37:25 45:18 48:25 58:10,12 old 19:4 once 9:19 15:23 operate 24:10 28:21 38:10 41:23 43:25 49:10 operating 26:19 27:21 37:10,13,14 38:11 39:5 40:11,20,23 41:25 44:10 49:25 57:6,16 57:22	operation 28:15 53:7 opined 30:20 opinions 55:24 56:4,5,24 opposite 11:13 oral 1:11,15 61:17 order 6:25 orders 19:22 ordinary 30:21 30:25 43:15 47:2,17 54:19 original 61:19 outcome 4:22 62:13 output 23:7 27:10 42:14,20 outs 53:10 outside 34:5 overall 17:22 overlapping 12:13 own 15:3 owner 1:7 2:7 5:4,11 8:22 58:21 61:7 owner's 3:17 24:1 56:20
	o		p
	oath 4:20 7:10 object 7:22 objection 32:4 44:3 objections 4:23 obtain 26:19 37:10 40:12,12 57:7,22 obtained 16:8 obviously 20:3 obviousness 31:8		p 2:1,1 pa 1:25 page 3:2,8,8,12 8:10 14:5,6,7,8 14:9 23:16

25:16 30:20 34:18 59:1,4 60:1,4 62:5 pages 3:14,15 3:17,18 pairwise 37:4 paragraph 25:21 27:13 30:19 31:11 46:4 48:22 49:1 51:4 54:2 parallel 42:17 42:24 43:1 parameters 36:25 part 16:14 20:17 22:1 36:2 particular 36:14 parties 4:7 7:2 61:22 62:10 partners 16:4 partnerships 18:1 party 4:21 62:1 62:7 pass 45:11 58:20 past 22:5 33:6 patent 1:1,1,4,7 2:7 3:17,18,19 4:13 5:11 6:6 6:17,21 8:22 8:22 11:4,5	22:3,22,23 24:1 25:11 26:3,15 27:6 28:1,12,17 30:22,25 31:5 31:7 32:11,17 32:19,22 33:6 33:8,12,20,25 34:1,7,24 35:5 35:9,11,12,18 36:18 39:17,24 40:5,7,22 41:3 41:19 42:11 43:9,12,16,16 45:13 46:23 47:23 48:11 55:19 56:7,20 57:4,4,12,12,13 57:24 58:8,21 61:1,1,4,7 patent's 27:18 paths 11:19 pause 25:13 27:11 36:20 37:21,24 38:1 38:4 41:23 51:5,12 52:23 56:8 pci 29:15,23,24 43:21,23 pcu 26:18 27:19 28:1,5 37:8 40:10 41:12 57:5,14 57:17,20 58:8	people 15:7 17:3,16 32:2 people's 10:11 percent 17:19 perform 15:15 40:5 45:1 57:10 performance 20:15 performed 28:15 58:2 performing 31:7 period 14:11,14 person 30:21 30:24 38:16,20 43:14 47:2,6 47:10,16,18 54:18 personally 22:6 perspective 31:7 petition 55:20 56:19 petitioner 1:4 1:16 2:2 3:19 3:20 5:7 31:19 61:4 petitioner's 3:12 8:11 31:12 32:8 ph.d 15:25 ph.d. 1:12,16 3:5,13,15 4:11 5:15 8:12	16:11 18:6 20:2 59:2 60:2 60:7 61:10,15 phones 4:5 19:1 phrase 25:17 27:3 41:10 53:15 57:24 physics 46:9,10 pick 4:4 place 4:7 plaintiff 4:11 please 4:3,5,24 5:14,19 plurality 36:24 plus 12:23 14:16 19:5 point 19:9 41:11 56:14 points 33:18 40:20,23 42:11 polymath 14:18 polymathic 14:4,5,18,25 15:3,8 portion 15:4 35:6 36:2 portions 11:7,8 posita 32:10 46:5,6 position 14:17 possess 31:4 possible 21:7 43:4
---	--	--	---

possibly 9:24 10:7,15 power 16:22 17:5 24:25 34:20 38:13 39:1 48:5,8 practice 15:6 prefer 27:22 premarked 45:12 preparation 12:5 prepare 11:1 prepared 11:21 preparing 12:8 12:19 55:18 present 2:12 5:1 presumably 30:5 41:13 pretty 43:24 prevent 7:13 39:22 previous 7:4 26:22 previously 11:14 32:20 33:21 51:18 prime 1:6 4:12 5:12 8:21,25 61:6 printed 8:13 prior 6:6 10:10 11:5 14:11 32:25 34:11	56:1 58:4 private 4:4 probably 11:6 11:16 14:15 24:7,21 27:2 31:25 55:3 procedure 1:20 proceeding 4:24 5:24 6:1 55:21 62:11 proceedings 11:14 19:17,20 process 11:3 12:13 48:16 49:4 50:10 processed 30:6 processing 17:18 18:7,10 18:14,15,16 20:19 21:1,3 23:18 24:19,25 28:18 29:8,25 30:5 35:23 36:5 49:14 51:8,20 52:19 52:25 53:2,5 53:14 processor 16:21 17:22 20:23 21:22 28:23 29:8 38:13 43:20 45:4,9 processors 18:4 18:9,17 19:1	20:9 21:6 36:13 42:16,23 43:2 produced 1:16 product 32:5 professional 13:23 professor 15:13 15:21 29:10 programming 58:7 projects 15:10 15:17 16:3 proposal 31:12 proposals 15:18 protective 19:22 provide 8:4 24:11 49:9 provides 39:6,6 providing 9:11 provision 47:9 provisions 1:20 purpose 18:8 42:25 purposes 39:17 pursuant 1:20 8:18 61:24	questions 58:22 quickly 45:3
			r
			r 2:1 raffetto 2:3 5:9 rajwan 22:14 random 55:12 ranged 18:19 ranges 14:22 rate 30:5 43:24 52:5,10 54:10 54:10,14,16 rates 29:18 rather 39:11 reaction 33:14 reactions 33:11 33:14 read 33:8,15 38:8 41:21 52:22 60:2 reading 33:12 38:17 48:18,22 ready 58:11 real 21:5,14 realizes 38:20 really 18:19 44:4 54:9 reason 13:10 35:15 43:4 59:4 reasons 24:19 24:21 42:10 44:13 62:6 recall 10:11,21 19:22 21:6
		q	
		qualified 47:2 question 7:19 7:24 25:6,8,10 30:3 42:4 43:12,14 52:13	

22:6 23:8 25:8 33:4,10 34:13 34:14 40:22 57:11 receipt 62:4 received 13:18 recollection 19:23 reconfigurable 16:15 record 1:20 4:2 4:8 5:3,20 6:10 6:13,16 45:20 45:23 58:14,16 58:19,24 61:17 recorded 4:10 recording 4:6 records 9:22 refer 6:20 8:24 12:10 35:23 37:19 41:5 48:1 reference 6:7 11:5 referenced 10:3 34:6 references 6:6 27:3 34:12 55:20 58:4 referencing 48:24 referred 40:20 45:8 52:21 53:17	referring 27:13 42:22 43:9 48:2 50:5 53:1 refers 26:6 49:3 reflects 13:15 registration 62:21 reichman 10:16 related 4:21 6:17 16:21 46:10 62:10 relation 7:2 relationship 25:1 relevant 32:14 46:21 relied 11:24 rely 12:19 remaining 56:24 remember 10:17 11:15 12:11 20:10,16 20:21,21 21:2 34:8 remotely 5:2 removed 47:8 53:7,8 reported 1:18 reporter 4:19 5:14 8:5 61:12 reporter's 3:9 61:10 represent 5:7	representing 4:17 10:13 requested 9:3 62:1,7 required 30:21 48:16 49:4,23 53:20 54:4 requirement 50:10 requirements 49:17,20 50:17 51:14 52:12 53:22 requiring 50:21,22 research 15:15 18:1,1 21:12 21:17,24 46:11 researching 17:2 reserve 8:24 respects 31:16 response 3:17 24:1 56:20 responsibilities 14:20 15:21 rest 30:10 restroom 45:15 retained 9:21 10:1,9 32:24 retrieve 55:16 returned 40:20 62:3,4 review 11:20 38:3	reviewed 11:4 11:4,24 32:19 revisiting 26:4 rice 15:13 16:9 right 6:2 7:6 8:20 9:9 10:5 12:12 13:12,17 13:20 14:1,19 15:14 16:10 17:9 20:1,10 21:10 25:24 30:23 31:19 35:14 38:20 43:11 46:24 47:20 48:23 57:1 role 14:6,21 15:15 17:14,19 roles 13:24 14:2,25 17:13 rosie 2:12 4:17 rotem 22:12 rotz 2:2 3:6 5:5 5:6,18 6:11 45:16 58:10,13 58:20 61:20 roughly 49:12 51:22 row 24:14,17 55:7 rows 53:25 rpr 1:18 62:20 rules 1:20 7:16 run 29:11 30:3 30:12 42:19
---	---	---	--

rung 22:4 running 29:3 30:4,7 40:3 41:4 44:5,7 45:3 52:1,2 runs 43:24 ryan 22:18	see 23:20 25:16 27:12 28:11 31:14,21 34:16 34:18 50:19 54:23 seeing 11:15 seem 40:16 56:11 seems 53:19 seen 8:13 22:5 selectable 23:17,19 selling 17:23 semiconductor 14:6,7 17:8 sense 21:23 24:15 29:9,13 35:25 43:18 sensitive 4:4 40:2 44:17,19 44:23 sent 8:15 sentence 44:24 serial 43:21,22 series 20:24 served 61:21 servers 17:5 19:1 set 21:4 52:11 settings 55:16 seven 14:8 shakkarwar 45:13 47:23 48:1,4,18 49:1 49:3,11 50:2	50:16,19 51:2 51:13 52:16,17 53:18,19 54:4 54:24 55:9 shakkarwar's 48:9,13 49:17 53:24 54:7 shared 36:1 shift 21:15 shooting 40:15 shorthand 61:12 shown 26:8 35:4 61:22 shows 41:12 sic 41:16 signal 17:18 18:10 28:21 signature 3:8 60:1,3 61:25 62:3,5,19 significantly 52:9 silicon 17:20 simple 19:5 29:2 simplistic 18:20 simulation 20:12 simultaneous 41:6 sit 15:23 35:16 sitting 12:3	skill 30:22,25 31:3,12 38:16 38:20 43:15 47:2,7,10,17,18 54:19 slightly 10:7 slow 45:5 soc 20:20 socs 18:23 19:5 sodhi 22:10 software 21:21 24:6,9,22 46:13 52:1 58:7 sold 19:3 solution 17:22 18:6 solutions 17:4 18:18,21 19:3 62:21 somewhat 12:12 31:13 sorry 23:22 28:2 37:9 38:25 53:4 sort 10:24 12:12 18:19 25:8 27:16 28:9 44:14 54:25 sounds 10:5 28:9 46:24 47:20 55:15 57:1
s			
s 2:1 3:11 san 2:9 save 24:25 saying 26:16 27:14,18 28:1 31:20,21 35:3 40:4 41:20 52:17 53:20 54:12 58:8 says 26:17 37:3 38:5 39:9,14 40:19 52:7 54:13,14 55:9 57:13 school 19:14 science 46:8,9 scott 1:19 4:16 second 14:7 32:15 38:3 40:9 41:23 44:6,8 50:21 51:15,15 section 26:5 28:12 52:22 56:16,18 security 21:5			

speaking 24:2 42:15 specific 10:11 22:21 25:3 30:2 49:5 52:4 53:10,15 specifically 7:24 25:18 specification 37:4,23 specifies 54:4 speed 29:2 44:10 49:24 50:17,24 54:4 54:21,22 speeds 48:15 49:4,13 50:12 50:14 51:7,10 51:19 52:15,18 53:13 55:10 spend 12:8 spent 20:3 spring 7:9 staff 12:25 standard 11:3 31:24 32:8 start 53:6 started 15:6 starting 14:4 25:15 state 1:18 4:24 5:2,19 61:13 stated 1:20 51:3	states 1:1 4:13 61:1 stenotype 1:18 step 52:3 stepping 28:17 stick 35:10 store 55:16 stratus 14:14 street 1:19 2:4 2:9 62:22 strike 24:18 25:4 28:15 42:5 structure 38:6 structured 55:1 structures 24:8 student 15:25 styled 1:17 subject 31:4 33:3 34:3 submit 9:3 submitted 5:23 13:9 30:16 substituting 46:15,16 suite 2:9 62:22 support 3:16 24:1 sure 7:18 9:18 25:7 41:9 47:21 58:3 swear 5:14 sworn 1:16 5:16 61:16	system 18:6 20:8 24:20 28:11 30:10 36:3 40:15 41:4 50:18 52:25 53:6 system's 42:10 systems 16:24 16:24 17:1,2 17:22 19:8 36:13 43:19 48:4	51:2,6,11,16,17 51:18 52:16,18 53:13,24,25 54:3,12,18,20 55:2,2,16,17 57:5,9,13,14,15 57:18,21,23,25 58:2,9 table's 54:9 tables 58:5 take 4:7 25:23 45:16 taken 1:16 4:11 34:1 61:11 62:11 takes 31:7 talk 23:13 25:18 26:2 29:18 32:17 33:19,25 35:5 35:20 36:12 39:25 54:1 56:11,13 58:4 talked 32:2 36:21 37:7 40:15 talking 8:1 23:9 28:12 34:16 48:8 50:17,23 52:24 53:20 talks 22:22 23:4 35:11 37:23 39:24 41:19 49:11 55:1
		t	
		t 3:11 table 22:20 23:1,11,16 24:3,13,20,24 25:4,12,17,20 25:25 26:1,2,3 26:6,7,7,8,12 26:14,16,18,21 26:25 27:3,9 27:17,19 28:2 28:7,14 36:22 36:23,23 37:8 37:12,16 38:9 38:19,23,24 39:4,4,6,14,15 39:21,21 40:10 40:18,19,24,24 41:2,11,12,15 41:21 42:8 43:10,15 48:15 49:3,9,13,13,24 50:11,16,23	

tamara 1:18 4:19 61:12 62:20 tarek 2:8 5:10 tarek.fahmi 2:10 target 21:3 26:20 37:5,10 40:8,13,14 57:7,19,23 taught 34:2 teach 33:20 teaching 33:23 team 17:16 technical 14:24 14:25 technologies 29:16 technology 20:8,12,13 31:5 telecom 17:17 18:11,15 19:6 telling 54:9 term 27:22 57:12 58:6 terms 15:17 16:23 20:15 31:4 35:16 testified 5:16 7:7 testifying 7:14 19:16 testimony 61:18	testing 46:12 texas 1:18,19 4:17 14:8 19:24 20:24 61:13 62:22 thank 34:25 45:25 47:25 48:23 therefor 62:6 thermal 39:1 thermally 38:14 thesis 15:19 thing 14:16 29:3 44:15 things 10:23,25 14:24 15:2,18 16:1,3,5,25 17:6,15,17,18 17:25 18:2,12 18:15 19:7,7,9 19:10 20:16,18 21:4,16,18 22:22 24:23 25:18 27:16 28:24,25 29:19 34:1,20 35:25 40:5 48:10 think 6:25 7:3 7:9 9:12,15 11:7,15,18 13:20 14:11 17:11 19:21 22:17,22 23:14 24:12 31:19	34:21 35:25 38:19 42:3 51:3 56:9 58:10 thinking 56:19 thousands 27:2 27:2 thread 17:24 30:4 threads 21:18 three 7:3 8:10 18:22 24:13,16 throckmorton 62:22 throughput 29:18 30:1,8 tick 43:1 time 4:6,24 6:12,15 7:1,7 9:17 12:16 14:3,11,12,12 14:14,15,16 20:5,5,17 21:5 21:8,13 32:10 41:4,6,7,11,16 44:2,22 45:19 45:22 46:25 53:10,10 58:15 58:18,23 times 6:23 13:19,25 14:10 14:25 15:16,17 15:18 16:7 today 5:23 7:11 11:10 12:5	14:23 today's 11:1 together 20:3 told 13:8 tools 17:2,16,16 top 21:4 26:17 27:18 40:9 topics 16:1 towers 19:7 trademark 1:1 4:13 61:1 transcript 61:17 62:4 transcription 8:6 transmit 44:1 49:9 trial 1:1 7:8 61:1 true 60:3 61:17 truthfully 7:14 try 35:10 55:12 trying 37:22 43:20 45:1 turn 44:10 48:19 turning 30:15 46:4 57:3 twice 30:7,8,12 two 7:3 18:22 20:22 25:2 31:18,20,21,22 36:24 46:10,18 47:8,15
---	--	---	--

type 17:18 45:4 types 21:19,25 typically 29:5 43:2,22	unit 4:9 23:3 34:20 44:21,21 united 1:1 4:13 61:1 units 29:4 universe 58:3 university 15:13 16:9 18:1 unpatentable 56:1,25 update 38:12 42:1 updated 41:4 usa 1:3 4:12 61:3 use 11:3 23:1 24:20,23 25:11 26:15 27:3,23 27:25 33:14 41:15 45:15 49:23 53:7 57:24 used 17:3 24:5 24:25 34:3 35:16 36:11 46:7 53:9 54:5 58:6 uses 25:17 27:6 35:9,12,18 51:2 using 24:8 27:15 40:22 41:10 42:18 48:14 49:2	50:11 55:11 57:12,12 usually 29:14 v v 1:5 4:12 61:5 value 23:10 37:17,18 38:12 42:1 values 23:6 24:15,17 25:2 variable 27:24 variables 30:13 variant 20:23 various 23:20 24:5 40:24 veritext 4:18,19 62:21 version 13:13 31:14 35:2 versus 17:5 42:24 vicarious 14:13 video 4:6,10 18:14 21:3 videographer 2:12 4:1,18 5:13 6:9,12,15 45:19,22 58:15 58:18,23 videotaped 1:11,15 view 56:1 viewpoint 10:25	vision 17:18 21:5 visions 14:13 vitae 3:14 voltage 49:14 50:24 51:7,19 52:5,19 53:13 54:10,15,17,21 54:22 55:10 voltages 50:13 50:14 51:19 w want 18:20 washington 2:4 way 16:7 27:4 28:12 33:10 48:9 55:6,15 ways 24:8 55:3 55:5 we've 11:17 week 8:16 11:10 14:16 weeks 7:3 weissmann 22:16 welcome 45:24 wells 22:18 went 19:9 24:13 whatever's 45:3 whispering 4:4 whiteboard's 44:9
---	--	--	---

wide 42:16,21 43:22 44:5,11	worth 62:22
width 43:7,13 43:17	x
william 5:6	x 3:1,11 62:7
wireless 17:17	y
wish 12:2	yeah 14:16 45:16 46:18 51:6
witness 1:16 5:14 19:16 32:7 45:14,18 47:24 58:12,20 59:2 61:15,18 61:22	year 9:23,24 10:6 13:13 19:4
word 33:14 37:19 38:17 40:23	years 12:23 31:18,20,21,23 32:13 46:10,18 46:21 47:8,15
work 13:15 14:23 15:8 16:7 17:10 18:5,5,6 20:6 21:11,23 31:17 31:22 32:5 33:23 34:7	
worked 13:24 17:7 18:17 19:12,24 20:3 21:9	
working 9:14 12:15 17:20 20:5,7,11 21:13,16	
workload 30:4	
workloads 16:20	

Federal Rules of Civil Procedure

Rule 30

(e) Review By the Witness; Changes.

(1) Review; Statement of Changes. On request by the deponent or a party before the deposition is completed, the deponent must be allowed 30 days after being notified by the officer that the transcript or recording is available in which:

(A) to review the transcript or recording; and

(B) if there are changes in form or substance, to sign a statement listing the changes and the reasons for making them.

(2) Changes Indicated in the Officer's Certificate. The officer must note in the certificate prescribed by Rule 30(f)(1) whether a review was requested and, if so, must attach any changes the deponent makes during the 30-day period.

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THE ABOVE RULES ARE CURRENT AS OF APRIL 1, 2019. PLEASE REFER TO THE APPLICABLE FEDERAL RULES OF CIVIL PROCEDURE FOR UP-TO-DATE INFORMATION.

VERITEXT LEGAL SOLUTIONS

COMPANY CERTIFICATE AND DISCLOSURE STATEMENT

Veritext Legal Solutions represents that the foregoing transcript is a true, correct and complete transcript of the colloquies, questions and answers as submitted by the court reporter. Veritext Legal Solutions further represents that the attached exhibits, if any, are true, correct and complete documents as submitted by the court reporter and/or attorneys in relation to this deposition and that the documents were processed in accordance with our litigation support and production standards.

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