

J13858093 eb

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

MICROSOFT CORPORATION,
Petitioner,

v.

PARTEC AG,
Patent Owner,

IPR2025-00318
Patent No. 11,537,442

VIDEOCONFERENCED DEPOSITION OF DAVID RICHARD Kaeli, PhD

Date Edith A. Boggs, CSR

12-9-2025 HOUSTON, TEXAS



MICROSOFT EXHIBIT 1029

Microsoft v. Partec
IPR2025-00318

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DEPOSITION OF DAVID RICHARD Kaeli, PhD

DEPOSITION AND ANSWERS of DAVID RICHARD Kaeli, PhD,
taken before Edith A. Boggs, a certified shorthand
reporter in Harris County for the State of Texas, taken
via videoconference with the witness appearing from
Boston, Massachusetts, on the 9th day of December, 2025,
between the hours of 9:54 a.m. central and 4:17 p.m.
central.

A P P E A R A N C E S

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By: Cameron Clawson, Esq.
(Present via videoconference)
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ATTORNEY FOR THE PATENT OWNER:

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(Present via videoconference)

REPORTED REMOTELY BY:

Ms. Edith A. Boggs

EXAMINATION INDEX

QUESTIONS BY

PAGE

Mr. Clawson

5

Mr. Limbacher

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INDEX OF EXHIBITS

NO.

MARKED

DESCRIPTION

Exhibit 1028

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Digital Technical Journal

1 DAVID RICHARD KAEI, PhD
2 was called as a witness and, being first duly sworn by
3 the notary, testified as follows:

4 EXAMINATION

5 Q. (BY MR. CLAWSON) Good morning, Dr. Kaeli. Can
6 you please state your full name for the record.

7 A. David Richard Kaeli.

8 Q. And what's your home address?

9 A. 77 Spring Park Avenue, Unit 2, Boston,
10 Massachusetts 02130.

11 Q. What's your current occupation?

12 A. I'm a professor in the Department of Electrical
13 and Computer Engineering at Northeastern University.

14 Q. How long have you been at Northeastern
15 University?

16 A. I believe at this time about 31 or 32 years.
17 32 years, I think.

18 Q. Have you been deposed before?

19 A. Yes.

20 Q. About how many times would you say?

21 A. 15 or so.

22 Q. Were all those depositions in IPR proceedings?

23 A. No.

24 Q. Could you say about how many depositions you've
25 done in IPR proceedings?

1 A. Probably 12.

09:55AM

2 Q. And when was the last time you were deposed
3 before today?

09:56AM

09:56AM

4 A. I believe it was back in October.

09:56AM

5 Q. And do you understand that you've been sworn to
6 testify truthfully today?

09:56AM

09:56AM

7 A. Yes.

09:56AM

8 Q. Do you agree to testify truthfully today?

09:56AM

9 A. I do.

09:56AM

10 Q. Do you agree to testify accurately today?

09:56AM

11 A. I do.

09:56AM

12 Q. Is there anything that would in any way impair
13 your ability to testify truthfully and accurately today?

09:56AM

09:56AM

14 A. No.

09:56AM

15 Q. Okay. So today I'll -- I'll endeavor to take a
16 break about every hour or so, but if any time you ever
17 feel you need a break, please tell me, and I'll try to
18 take one as -- if I'm able or as soon as I'm able. Does
19 that sound good to you?

09:57AM

09:57AM

09:57AM

09:57AM

09:57AM

20 A. That sounds good to me.

09:57AM

21 Q. And you will tell me if you need a break?

09:57AM

22 A. Yes, I will.

09:57AM

23 Q. And do you understand that under the rules of
24 IPR proceedings that you are not allowed to communicate
25 with counsel for ParTec about the substance of your

09:57AM

09:57AM

09:57AM

1 testimony when we are on break today?

09:57AM

2 A. I do understand that.

09:57AM

3 Q. And you agree to follow that rule?

09:57AM

4 A. Yes.

09:57AM

5 Q. I know you said it earlier, but just for
6 record, where are you currently located?

09:57AM

09:57AM

7 A. I'm located on the second floor of 77 Spring
8 Park Avenue in Boston. This is my home office.

09:57AM

09:57AM

9 Q. And are you joining this video recording on
10 your personal computer?

09:58AM

09:58AM

11 A. I am.

09:58AM

12 Q. And I'd like to ask you to not -- or during
13 this deposition to not have any applications open except
14 for this video call and whatever application that you
15 might need to view the files that we will be discussing
16 today. Do you agree to that?

09:58AM

09:58AM

09:58AM

09:58AM

09:58AM

17 A. Yes, I do.

09:58AM

18 Q. And do you currently have any other
19 applications open other than those I mentioned, so
20 specifically this video call and an application to view
21 the documents we'll be discussing, presumably Adobe
22 Acrobat?

09:58AM

09:58AM

09:58AM

09:58AM

09:58AM

23 A. The only thing I have open is my declaration, a
24 file listing of all the documents and the '442 patent
25 that's under discussion.

09:58AM

09:59AM

09:59AM

1 Q. Okay. And will you agree to let me know if you 09:59AM
2 open any other applications aside from this video call 09:59AM
3 or applications to view the documents that we are 09:59AM
4 discussing today? 09:59AM

5 A. Yes. 09:59AM

6 Q. And so just for the record, I'm envisioning web 09:59AM
7 browsers or a chat box or messaging applications. So 09:59AM
8 please let me know if you open or use any applications 09:59AM
9 like that. 09:59AM

10 A. I logged out of them before this call. 09:59AM

11 Q. Okay. Great. 09:59AM

12 A. If something happens to ring, I missed it. 09:59AM
13 It's not my intent. 09:59AM

14 Q. And will you agree to tell me if at any point 09:59AM
15 during this deposition you are in communication, other 09:59AM
16 than with -- during this video call, with counsel for 09:59AM
17 ParTec? 10:00AM

18 A. Yes. 10:00AM

19 Q. Dr. Kaeli, how did you prepare for today's 10:00AM
20 deposition? 10:00AM

21 A. I read -- I reviewed my declaration. I 10:00AM
22 reviewed the documents that are associated with this 10:00AM
23 case. I met with counsel multiple times to discuss 10:00AM
24 my -- 10:00AM

25 MR. LIMBACHER: Hold on. I'm going to 10:00AM

1 caution the witness not to discuss the substance of any 10:00AM
2 communications he had with counsel. 10:00AM

3 A. I met with counsel and I -- again, I reviewed 10:00AM
4 my declaration. 10:00AM

5 Q. (BY MR. CLAWSON) And you said you reviewed 10:00AM
6 documents associated with this case. Can you recall 10:01AM
7 what specific documents those were? 10:01AM

8 A. The -- so there's a set of exhibits from 10:01AM
9 Microsoft and a set of exhibits from ParTec. The ones 10:01AM
10 that are relevant to my declaration I reviewed, those 10:01AM
11 that I reference. There's also -- that's the -- that's 10:01AM
12 the scope of the documents that I was reviewing. 10:01AM

13 Q. And you testified that you met with counsel for 10:01AM
14 ParTec multiple times. Do you recall when those 10:01AM
15 meetings were? 10:01AM

16 A. Those meetings were over the last couple of 10:01AM
17 weeks. 10:02AM

18 Q. And how many days would you say you met with 10:02AM
19 counsel for ParTec? 10:02AM

20 A. Probably two or three. I think there were 10:02AM
21 three days that we met specifically recently. 10:02AM

22 Q. And can you say for about how long you met on 10:02AM
23 those days? 10:02AM

24 A. So I know one day, I spent five hours with 10:02AM
25 them. One day, I spent three hours with them. One day, 10:02AM

1 I spent one hour with them. 10:02AM

2 Q. You said those meetings were recently. Can you 10:03AM
3 say specifically when those were? 10:03AM

4 A. We had a meeting some day last week. I forget 10:03AM
5 which day. We had a meeting on this past Sunday because 10:03AM
6 it worked with my schedule. And we had a meeting 10:03AM
7 yesterday afternoon. 10:03AM

8 Q. And when you say you met with counsel for 10:03AM
9 ParTec, who specifically did you meet with? 10:03AM

10 A. Counsel that's on this call, Chris Limbacher. 10:03AM

11 Q. Anybody else? 10:03AM

12 A. Yes. We met with -- I'm going to -- I forget 10:03AM
13 counsel's name because I met with him infrequently 10:04AM
14 during this case. 10:04AM

15 Q. Can you remember maybe a first name? 10:04AM

16 A. I'm embarrassed that I forget it. 10:04AM

17 Q. That's okay. 10:04AM

18 MR. LIMBACHER: Cameron, I'm willing to 10:04AM
19 fill this in if you want me to or I can stay out of it. 10:04AM

20 MR. CLAWSON: That's okay. It's not 10:04AM
21 important. 10:04AM

22 MR. LIMBACHER: Okay. 10:04AM

23 A. Michael. Michael was his first name. Sorry. 10:04AM

24 Q. (BY MR. CLAWSON) Okay. Thank you. 10:04AM

25 A. I was just blanking on that. 10:04AM

1	Q. Okay. Dr. Kaeli, can you please open IPR	10:04AM
2	Exhibit 2021, so 2021.	10:04AM
3	A. I have it open.	10:05AM
4	Q. And do you recognize this document?	10:05AM
5	A. Yes.	10:05AM
6	Q. This is your declaration you submitted in this	10:05AM
7	case?	10:05AM
8	A. That's correct.	10:05AM
9	Q. And I'll ask you to turn to the last page, so	10:05AM
10	that's Page 52.	10:05AM
11	A. I'm there.	10:05AM
12	Q. And just for the record, I'm referring to the	10:05AM
13	internal page number rather than the exhibit page number	10:05AM
14	on the bottom right.	10:05AM
15	And on Page 52 here, is that your	10:05AM
16	signature?	10:05AM
17	A. It is.	10:05AM
18	Q. And you signed this on September 30, 2025; is	10:06AM
19	that right?	10:06AM
20	A. Yes.	10:06AM
21	Q. Did you read this declaration carefully before	10:06AM
22	signing it?	10:06AM
23	A. Yes, I did.	10:06AM
24	Q. Did you review this declaration in preparation	10:06AM
25	for this deposition?	10:06AM

1 A. Yes. And if I have an opportunity now, I did
2 find one typo.

3 Q. So have you identified any errors in your
4 declaration?

5 A. Yes. In paragraph 55, I reference Exhibit 107,
6 and that should be Exhibit 106. I'm sorry. 1007. It
7 should be 1006.

8 Q. Understood. Thanks for that.

9 Are there any other errors in this
10 declaration that you are aware of?

11 A. None that I'm aware of.

12 Q. And going forward today, if I refer to this
13 document as your declaration, you'll understand I'm
14 referring to this Exhibit 2021?

15 A. Yes.

16 Q. Who wrote your declaration?

17 A. I developed the first ideas that are in the
18 declaration, I presented them to counsel, and then we
19 worked on the language. Particularly counsel helped me
20 with understanding some of the legal aspects that --

21 MR. LIMBACHER: Hold on. I'm going to
22 caution you not to get into the substance of what you
23 discussed with counsel.

24 A. So in terms of developing my declaration, as I
25 say in my -- on Page 4, in terms of the legal

1 principles, I'm not a lawyer. In forming my opinions as
2 set forth in the declaration, I've relied upon legal
3 principles supplied to me by the attorneys for ParTec.

4 Q. And did you physically write this whole
5 declaration?

6 A. I developed the first version of this.

7 Q. What do you mean by that?

8 A. The ideas that are in it, the arguments that
9 are in it are my ideas.

10 Q. But the words of this declaration, did you
11 write them?

12 A. Many of them, yes.

13 Q. What do you mean by "many of them"?

14 A. Together with counsel, we went through and
15 reviewed, but I -- all the ideas in here are my ideas.
16 I support them.

17 Q. But you did not physically write this entire
18 declaration; is that right?

19 MR. LIMBACHER: Objection, form.

20 A. What do you mean by "physically write"?

21 Q. (BY MR. CLAWSON) Type on your keyboard, pen to
22 paper.

23 A. Much of this -- much of the language and much
24 of the writing and editing is my work.

25 Q. That means not all of it is your work?

1 MR. LIMBACHER: Objection, form. 10:10AM

2 A. That's not what I said. So the ideas in this 10:10AM
3 are mine. The writing -- much of the writing I wrote 10:10AM
4 and much of the -- and all of the editing is mine as 10:10AM
5 well. 10:10AM

6 Q. (BY MR. CLAWSON) When you say much of the 10:10AM
7 writing is yours, does that mean there's some writing 10:10AM
8 that is not yours? 10:10AM

9 MR. LIMBACHER: Objection, form. 10:10AM

10 A. Again, most of the writing is mine. 10:11AM

11 Q. (BY MR. CLAWSON) That wasn't the question, 10:11AM
12 sir. Is there some writing in here that's not yours? 10:11AM

13 MR. LIMBACHER: Objection, form. 10:11AM

14 A. The material that's in my declaration is -- are 10:11AM
15 my opinions, and in terms of the writing, all of the 10:11AM
16 ideas that are in this declaration are my ideas. 10:11AM

17 In terms of putting this to a single 10:11AM
18 document, I had help from counsel, but again, all of the 10:11AM
19 ideas are my ideas. 10:11AM

20 Q. (BY MR. CLAWSON) So counsel for ParTec wrote 10:11AM
21 some of this declaration? 10:11AM

22 MR. LIMBACHER: Objection, form. Asked and 10:11AM
23 answered. 10:12AM

24 A. So I can repeat again, on Page 4 of 10:12AM
25 Exhibit 2021, legal principles, I'm not a lawyer. In 10:12AM

1 forming my opinions as set forth in this declaration, I
2 relied upon legal principles supplied to me by the
3 attorneys for ParTec. In forming my opinions, I have
4 not relied upon ParTec's attorneys for any purpose other
5 than the following legal principles.

6 MR. CLAWSON: I'll move to strike as
7 nonresponsive.

8 Q. (BY MR. CLAWSON) Dr. Kaeli, I think that was a
9 pretty simple question. So somebody typed this
10 document. All I'm asking is that work, did you do all
11 of that?

12 MR. LIMBACHER: Objection, form. Asked and
13 answered.

14 A. The ideas that are in this document and --
15 besides what I've just read from Page 4 of my -- from my
16 declaration, these are my ideas. The original version
17 of this is -- was my writing, and that's -- I think I've
18 answered your question.

19 Q. (BY MR. CLAWSON) Is this the original version
20 that you are referring to?

21 MR. LIMBACHER: Objection, form.

22 A. The original version of my ideas are reflected
23 here in the document.

24 Q. (BY MR. CLAWSON) Dr. Kaeli, please turn to
25 paragraph 42 of your declaration.

1 A. I am there.

10:14AM

2 Q. And this paragraph gives your opinion as to the
3 level of ordinary skill in the art; is that correct?

10:14AM

10:14AM

4 A. That is correct.

10:14AM

5 Q. Can you please read this paragraph for the
6 record?

10:14AM

10:14AM

7 A. "In my opinion, a POSITA at the time of
8 invention would have had, one, a bachelor's degree in
9 computer science or computer engineering and
10 approximately two years of experience in the field of
11 heterogenous computing systems or, two, a master's
12 degree in computer science or computer engineering with
13 a focus on heterogenous computing systems."

10:14AM

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10:15AM

14 Q. And the acronym used in this paragraph, POSITA,
15 that means a person with ordinary skill in the art; is
16 that right?

10:15AM

10:15AM

10:15AM

17 A. That is correct.

10:15AM

18 Q. So going forward in this deposition, if I use
19 the acronym POSITA, you'll understand that to mean a
20 person of ordinary skill in the art?

10:15AM

10:15AM

10:15AM

21 A. Yes.

10:15AM

22 Q. And please turn to paragraph 16 of your
23 declaration.

10:15AM

10:16AM

24 A. Did you say 16 or 60?

10:16AM

25 Q. 16. 1-6.

10:16AM

1 A. Okay. Thank you. I'm at 16.

10:16AM

2 Q. And this paragraph lays out your understanding
3 of what a POSITA is; is that right?

10:16AM

10:16AM

4 MR. LIMBACHER: Objection, form.

10:16AM

5 A. So this portion of my declaration, as I've
6 mentioned before, is in the legal principles portion of
7 my declaration, and I'll read it again from 4. I'm not
8 a lawyer. In forming my opinions as set forth in this
9 declaration, I relied upon legal principles supplied to
10 me by attorneys for ParTec.

10:16AM

10:16AM

10:17AM

10:17AM

10:17AM

10:17AM

11 So in terms of -- you're asking about claim
12 construction in -- which is the section A, and then 16
13 is -- again, I say I understand the claims are construed
14 from the perspective of a person of ordinary skill of
15 the art at the time of the purported invention.

10:17AM

10:17AM

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10:17AM

10:17AM

16 Is there something else you would like to
17 ask about?

10:17AM

10:17AM

18 Q. Do you believe that you are a POSITA?

10:17AM

19 A. I believe that the term POSITA has context that
20 needs to be considered. So if you'd maybe rephrase your
21 question more specifically, I might be able to answer
22 it.

10:18AM

10:18AM

10:18AM

10:18AM

23 Q. Well, what context do you mean?

10:18AM

24 MR. LIMBACHER: Objection, form.

10:18AM

25 A. I'm not a POSITA in underwater basket weaving.

10:18AM

1 If you are asking about a POSITA with a particular
2 context, I can answer the question.

3 Q. (BY MR. CLAWSON) Let's go back to paragraph 42
4 of your declaration.

5 Are you at paragraph 42?

6 A. I am.

7 Q. Do you believe you meet the definition of
8 POSITA as defined in paragraph 42 of your declaration?

9 A. Yes, I do.

10 Q. And do you believe you met that definition in
11 2018?

12 A. Yes, I do.

13 Q. And in preparing for your deposition, did you
14 review the CV of Dr. Darrel Long?

15 A. The CV of Dr. Long? I don't remember if that
16 was -- if his CV was something that was provided to me.
17 I would have to go back and look at my documents.

18 Q. That's okay. I'll withdraw that question.

19 Do you have any reason to doubt that Dr.
20 Darrel Long was a POSITA in 2018 according to the
21 definition you give in paragraph 42?

22 MR. LIMBACHER: Objection, form.

23 A. I don't believe I have offered an opinion on
24 whether Dr. Long is a POSITA. So I don't have any
25 reason to doubt it. I also don't have any way that I

1 can confirm it without some analysis.

10:21AM

2 Q. (BY MR. CLAWSON) Okay. Dr. Kaeli, I'll ask
3 you to turn to Exhibit 1001.

10:21AM

10:21AM

4 A. I am there.

10:21AM

5 Q. And Exhibit 1001 is U.S. Patent No. 11,537,442;
6 is that right?

10:21AM

10:22AM

7 A. Yes.

10:22AM

8 Q. And do you understand that this is the patent
9 that's in dispute in this proceeding?

10:22AM

10:22AM

10 A. Yes.

10:22AM

11 Q. I'll ask you to turn to column number 3 and
12 line number 44.

10:22AM

10:22AM

13 A. I am there.

10:22AM

14 Q. And I'll ask you to read for the record the
15 sentence starting at line 44, so starting, "A job." Can
16 you please read that sentence out loud for the record?

10:22AM

10:22AM

17 A. "A job to be computed by the system may
18 comprise a number of tasks, some of which or all may be
19 repeated a number of times during the execution of the
20 job."

10:23AM

10:23AM

10:23AM

10:23AM

21 Q. And did a POSITA understand the term "a job" to
22 be a term of art?

10:23AM

10:23AM

23 MR. LIMBACHER: Objection, form.

10:23AM

24 A. So the definition here in the '442 patent
25 describes it as, "A job to be computed by the system may

10:23AM

10:24AM

1 be" -- "may comprise a number of tasks, some of which or
2 all may be repeated a number of times during the
3 execution of the job."

4 So it's describing a job and what it means
5 and it's breaking it down.

6 So back to your question, I think the
7 specification is giving a clarification of the context
8 of what a job is at this point, and again, the
9 specification provides examples.

10 Q. (BY MR. CLAWSON) Does the specification
11 provide a definition of a job?

12 MR. LIMBACHER: Objection, form.

13 A. The specification provides an example of a job.

14 I'm going on to the next sentence. "For
15 example, the job may be a Monte Carlo based simulation
16 where an effect is modeled using a random number, the
17 calculations being repeated many times in succession."

18 Q. (BY MR. CLAWSON) Would a POSITA understand
19 other examples of a job?

20 MR. LIMBACHER: Objection, form.

21 A. I'm not sure what you mean by would they
22 understand. The -- if you could give me a specific
23 example of what you are discussing about a job, then I
24 could comment on whether a POSITA would understand that
25 that's -- that could possibly be something defined as a

1 job.

10:26AM

2 Q. (BY MR. CLAWSON) Well, I mean, that's what I'm
3 trying to ask you is what a POSITA would understand a
4 job to be. How would a POSITA define a job?

10:26AM

10:26AM

10:26AM

5 A. Well, again, I like to put things in context,
6 and in this particular use of the term "job," it's
7 basically describing and giving an example of what a job
8 might be. So it's an example.

10:26AM

10:26AM

10:26AM

10:26AM

9 Would a POSITA understand this particular
10 example of a job? Yes, I do believe that someone -- a
11 POSITA -- a person with skill in the art would
12 understand what a -- a Monte Carlo based simulation.

10:26AM

10:26AM

10:26AM

10:27AM

13 Q. (BY MR. CLAWSON) Are you able to tell me today
14 how a POSITA would define the term "job" as it's used in
15 the '442 patent?

10:27AM

10:27AM

10:27AM

16 MR. LIMBACHER: Objection, form.

10:27AM

17 A. Again, I think the -- the term "job" is defined
18 in the context -- not defined but it's described here
19 and it provides an example of what a job could be.
20 That's the purpose of the language here at 44 in column
21 3.

10:27AM

10:27AM

10:27AM

10:27AM

10:27AM

22 Q. (BY MR. CLAWSON) I'll ask you just yes or no,
23 can you tell me today what a POSITA would understand the
24 term "job" to mean in the context of the '442 patent?

10:27AM

10:27AM

10:27AM

25 MR. LIMBACHER: Objection, form.

10:27AM

1 Q. (BY MR. CLAWSON) Yes or no, please. 10:27AM

2 MR. LIMBACHER: Objection, form. 10:27AM

3 A. A POSITA would understand from line 44 the 10:27AM

4 example that's provided for a job as it's described, "A 10:28AM

5 job to be computed by the system may comprise a number 10:28AM

6 of tasks, some of which may or all be repeated a number 10:28AM

7 of times during the execution of the job." And then it 10:28AM

8 goes on further to describe a Monte Carlo based 10:28AM

9 simulation as an example of a job. 10:28AM

10 Q. (BY MR. CLAWSON) Can you think of any other 10:28AM

11 examples of "job" that a POSITA would be aware of? 10:28AM

12 MR. LIMBACHER: Objection, form. 10:28AM

13 A. So again, is there a particular context that 10:28AM

14 you are asking this? POSITAs, I'm sure, are aware of 10:28AM

15 other examples of jobs, but if you have a specific, you 10:28AM

16 know, context, what would they be familiar with, it 10:29AM

17 might help me answer your question. 10:29AM

18 Q. (BY MR. CLAWSON) What do you mean "specific 10:29AM

19 context"? 10:29AM

20 A. Well, you are asking -- some job is offered 10:29AM

21 here in a specific context as an example, describing an 10:29AM

22 example of a job so that -- as part of the specification 10:29AM

23 for this patent, and if you provided a similar context 10:29AM

24 for your question of how the term "job" is used, I could 10:29AM

25 answer your question because then I could apply what I 10:29AM

1 believe for this case a POSITA would understand and I 10:29AM
2 can then use that definition to understand the context 10:29AM
3 of how "job" is being used in your context. 10:29AM

4 Q. I'm referring to the same context of "a job" as 10:30AM
5 how it's used in the specification of the '442 patent. 10:30AM

6 A. So a POSITA would understand a job to be 10:30AM
7 computed by the system may comprise a number of tasks, 10:30AM
8 some of which or all may be repeated a number of times 10:30AM
9 during the execution of the job. 10:30AM

10 Q. And a Monte Carlo simulation is one example of 10:30AM
11 such a job? 10:30AM

12 A. That is correct. 10:30AM

13 Q. And would a POSITA be aware of other examples 10:30AM
14 of jobs in the context of how "job" is used in the '442 10:30AM
15 patent? 10:30AM

16 MR. LIMBACHER: Objection, form. 10:30AM

17 A. Again, I'm being very specific about -- you 10:30AM
18 asked me to comment on this particular discussion in the 10:31AM
19 specification. If you're asking about the context, so I 10:31AM
20 can answer your question specifically as the term is 10:31AM
21 used here in line 44 in column 3. 10:31AM

22 If you're asking more generally, why don't 10:31AM
23 you point to a particular use, and I can then answer 10:31AM
24 whether a POSITA would have that -- that expertise. 10:31AM

25 Q. (BY MR. CLAWSON) So it's your opinion that you 10:31AM

1 can't -- strike that question.

10:31AM

2 How does a job relate to a task?

10:31AM

3 MR. LIMBACHER: Objection, form.

10:32AM

4 A. In the example that's provided here in the
5 specification, a job -- one example is a job can be
6 computed by the system may comprise a number of tasks,
7 so in that sense, it's a one to many.

10:32AM

10:32AM

10:32AM

10:32AM

8 But again, the specification is not
9 defining the term "job." It's giving you examples of
10 what a job might be.

10:32AM

10:32AM

10:32AM

11 Q. (BY MR. CLAWSON) Can you define the term
12 "job"?

10:32AM

10:32AM

13 MR. LIMBACHER: Objection, form.

10:32AM

14 A. Again, I would need a context.

10:33AM

15 Q. (BY MR. CLAWSON) And what's a Monte Carlo
16 simulation?

10:33AM

10:33AM

17 A. A Monte Carlo simulation is where you have a
18 particular process. I actually, in my own research, do
19 Monte Carlo simulation on understanding how light
20 transfers through human tissue.

10:33AM

10:33AM

10:33AM

10:33AM

21 So you would take -- we take the simulation
22 of one photon that's passing through human tissue and
23 that becomes one task that -- and then we repeat that
24 experiment to understand probabilistically how the
25 photon traverses the tissue matter, and from this, we

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10:33AM

10:34AM

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10:34AM

1 can describe how -- what's in the tissue just by using
2 photonic imaging.

3 Q. And is a Monte Carlo simulation an example of a
4 job that includes a number of tasks?

5 MR. LIMBACHER: Objection, form.

6 A. In the context of the '442 patent, the Monte
7 Carlo simulation is offered as an example of a job. And
8 in the '442 patent, again, as a -- you know, an example
9 of a job, it's basically -- it may comprise a number of
10 tasks, some of which or all may be repeated a number of
11 times during execution of the job.

12 Q. (BY MR. CLAWSON) And does the '442 patent
13 describe -- carry out its alleged invention using a
14 Monte Carlo simulation?

15 MR. LIMBACHER: Objection, form.

16 A. The '442 patent is offering Monte Carlo
17 simulation as an example of a job.

18 MR. CLAWSON: I'll strike that answer as
19 nonresponsive. Move to strike, rather.

20 Q. (BY MR. CLAWSON) Let's see. Dr. Kaeli, I'll
21 ask you to turn to column 5 of Exhibit 1001.

22 A. I'm there.

23 Q. And do you see Claim 1 in column 5?

24 A. I do.

25 Q. And I'll ask you to read for the record lines

1 starting at line 33 through the end of line 36. 10:37AM

2 A. Okay. I think it's important -- do you mind if 10:37AM

3 I read the whole -- the preamble as well? 10:37AM

4 Q. Can you just read those lines that I asked you 10:37AM

5 to for the record? 10:37AM

6 A. Sure. 10:37AM

7 MR. LIMBACHER: Objection, form. 10:37AM

8 A. "In the first computing iteration, assigning 10:37AM

9 and processing the plurality of subtasks by at least a 10:38AM

10 portion of the plurality of computation nodes and at 10:38AM

11 least a portion of the plurality of booster notes in a 10:38AM

12 first distribution and." So that was 33 through 36. 10:38AM

13 Q. (BY MR. CLAWSON) Thank you. 10:38AM

14 And how would a POSITA understand the term 10:38AM

15 "subtask" as it's used in Claim 1 of the '442 patent? 10:38AM

16 MR. LIMBACHER: Objection, form. 10:38AM

17 A. So as I suggested, I should read the preamble, 10:38AM

18 which I will do from 26. "A method of operating a 10:39AM

19 heterogenous computing system comprising a plurality of 10:39AM

20 computation nodes and a plurality of booster nodes, at 10:39AM

21 least one of the plurality of computation nodes and a 10:39AM

22 plurality of booster nodes being arranged to compute a 10:39AM

23 computation task, the computation task comprising a 10:39AM

24 plurality of subtasks," and then it goes on to discuss 10:39AM

25 the limitations. 10:39AM

1 Q. (BY MR. CLAWSON) Is that your answer to my 10:39AM
2 question? 10:39AM

3 MR. LIMBACHER: Objection, form. 10:39AM

4 A. In terms of the Claim 1, a subtask basically is 10:39AM
5 a computation task, you have a computation task which is 10:39AM
6 comprised of a plurality of subtasks. 10:40AM

7 Q. (BY MR. CLAWSON) And what is a computation 10:40AM
8 task? 10:40AM

9 MR. LIMBACHER: Objection, form. 10:40AM

10 A. Are you asking in the context of the '442 10:40AM
11 patent? 10:40AM

12 Q. (BY MR. CLAWSON) Yes. 10:40AM

13 A. So if I go to the abstract of the patent, I 10:40AM
14 basically have in the 6th line, "The computation task 10:40AM
15 comprising a plurality of subtasks," and it goes 10:40AM
16 through -- so basically -- it's basically the -- in the 10:41AM
17 context of this patent, a method of operating a 10:41AM
18 heterogenous computing system that involves 10:41AM
19 computation nodes -- a plurality of computation nodes, a 10:41AM
20 plurality of booster nodes that are being arranged to 10:41AM
21 compute the computation task. 10:41AM

22 So that's how it's defined -- that's how 10:41AM
23 it's described in terms of this particular patent. 10:41AM

24 Q. Is that what a POSITA would understand the term 10:41AM
25 "computation task" to be in the context of the '442 10:41AM

1 patent?

10:42AM

2 MR. LIMBACHER: Objection, form.

10:42AM

3 A. Again, the specification gives examples and is
4 describing what a computation task is, that it's
5 comprised of subtasks.

10:42AM

10:42AM

10:42AM

6 MR. CLAWSON: I'll move to strike the
7 answer as nonresponsive.

10:43AM

10:43AM

8 Q. (BY MR. CLAWSON) Is a subtask a portion of a
9 computation task?

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10:43AM

10 MR. LIMBACHER: Objection, form.

10:43AM

11 A. Is there a specific -- are you talking about in
12 the context of the '442 patent?

10:43AM

10:43AM

13 Q. (BY MR. CLAWSON) In the context of the '442
14 patent, yes.

10:43AM

10:43AM

15 MR. LIMBACHER: Objection, form.

10:43AM

16 A. So in the preamble on the first claim, a
17 computation task is comprising a plurality of subtasks,
18 so in that sense, in this context, a computation task is
19 made up of a plurality of subtasks.

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10:44AM

20 Q. (BY MR. CLAWSON) And in the context of Claim 1
21 of the '442 patent, what is "computation node"?

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10:44AM

22 A. So if I can go to column 3 in the specification
23 at 24, "The computation nodes 20" -- referring to a
24 figure -- "may be identical to one or have different
25 characteristics. Each computation node incorporates one

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10:45AM

1 or more multi-core processors such as the Intel 10:45AM
2 XeonE5-2680 processor." And it goes on to describe. 10:45AM

3 And then it says, "The computation nodes 10:45AM
4 interface via the communication interface to the 10:45AM
5 plurality of booster nodes." And again, the Intel Xeon 10:45AM
6 is a great example of a computation node. 10:45AM

7 Q. Was the Intel XeonE5-2680, was that a 10:45AM
8 commercially available processor? 10:46AM

9 A. I believe so, but I'd have to go and check 10:46AM
10 Intel documentation to verify that. I'm familiar with 10:46AM
11 an Intel Xeon processor. 10:46AM

12 Q. Was a POSITA familiar with an Intel Xeon 10:46AM
13 processor in 2018? 10:46AM

14 MR. LIMBACHER: Objection, form. 10:46AM

15 A. So the Intel Xeon is a family of processors 10:46AM
16 produced by Intel, and a POSITA would be familiar with 10:46AM
17 Intel x86 processors and the Xeon being one of those. 10:46AM

18 Q. (BY MR. CLAWSON) Turning back to Claim 1, what 10:47AM
19 is a booster node in the context of Claim 1 of the '442 10:47AM
20 patent? 10:47AM

21 A. Going back to column 3, as we were -- I'll 10:47AM
22 continue on where I was, which is at 31. "The 10:47AM
23 computation nodes interface via the communication 10:47AM
24 interface to the plurality of booster nodes, ideally 10:47AM
25 through a series of booster interfaces." Excuse me. 10:47AM

1 "As shown, the booster nodes host at least 10:48AM
2 one accelerator type processor, for example, an Intel 10:48AM
3 Xeon Phi many core processor, capable of autonomously 10:48AM
4 booting and running its own operating system." That's 10:48AM
5 an example. 10:48AM

6 Q. Was a POSITA familiar with Intel Xeon Phi 10:48AM
7 processors? 10:48AM

8 A. Yes. 10:48AM

9 Q. Claim 1 starting at line 33 reads, "assigning 10:48AM
10 and processing the plurality of subtasks by at least a 10:49AM
11 portion of the plurality of computation nodes and at 10:49AM
12 least a portion of the plurality of booster nodes in a 10:49AM
13 first distribution." Can you tell me what a POSITA 10:49AM
14 would understand those lines to mean? 10:49AM

15 MR. LIMBACHER: Objection, form. 10:49AM

16 A. So in a first computing iteration, so we can -- 10:49AM
17 you know, in the context of the example that we 10:49AM
18 discussed earlier, we basically -- we would have -- so 10:49AM
19 in the Monte Carlo simulation, "assigning and processing 10:49AM
20 the plurality of subtasks by at least a portion of the 10:50AM
21 plurality of computation nodes," so a portion means at 10:50AM
22 least one. 10:50AM

23 "And at least a portion" -- and a key word 10:50AM
24 here "and" -- "a portion of the plurality of booster 10:50AM
25 nodes." So at least one computation node and at least 10:50AM

1 one booster node in a first distribution. That's what a
2 POSITA would understand.

3 Q. (BY MR. CLAWSON) Does Claim 1 require a Monte
4 Carlo simulation?

5 MR. LIMBACHER: Objection, form.

6 A. No, it does not. It's an example of an
7 application or as used in the language above, a job.

8 Q. (BY MR. CLAWSON) So is it your opinion that
9 this claim requires that in a given computing iteration,
10 at least some subtasks be assigned to computation nodes
11 and at least some subtasks be assigned to booster nodes?

12 MR. LIMBACHER: Objection, form.

13 A. It's my opinion that in a first computing
14 iteration, assigning and processing the plurality of
15 subtasks by at least a portion of the plurality of
16 computation nodes and at least a portion of the
17 plurality of the booster nodes in a first distribution,
18 so this can mean that a single subtask could require at
19 least one computation node and at least one booster
20 node.

21 And as described actually right above in
22 column 5, line 1, "The system 10 may have computation
23 nodes and/or booster nodes added to the system which
24 differ in characteristics from the other
25 computation/booster nodes."

1 So the actual computation node itself or 10:52AM
2 booster node may be heterogenous itself, having 10:52AM
3 different capabilities. So the subtasks are assigned to 10:52AM
4 at least -- so you could have a single subtask that is 10:52AM
5 assigned to a part of it to a computation node and also 10:52AM
6 a booster node in the same distribution or you can have 10:52AM
7 where you have subtasks -- some of the subtasks will run 10:52AM
8 on computation nodes and some will run on booster nodes. 10:52AM
9 The '442 allows for both of these scenarios. 10:52AM

10 Q. (BY MR. CLAWSON) So either of those scenarios 10:53AM
11 that you discussed would satisfy this limitation of 10:53AM
12 Claim 1, that limitation being from line 33 of column 5 10:53AM
13 to line 36? 10:53AM

14 MR. LIMBACHER: Objection, form. 10:53AM

15 A. I don't think either. I think it would have to 10:53AM
16 be both. That's how I believe a POSITA would understand 10:53AM
17 this language. 10:53AM

18 Q. (BY MR. CLAWSON) So just to be clear, the 10:53AM
19 first scenario you mentioned is a single subtask that's 10:53AM
20 divided between computation nodes and booster nodes, do 10:53AM
21 I have that right? 10:53AM

22 A. No. 10:53AM

23 MR. LIMBACHER: Objection, form. 10:53AM

24 Q. (BY MR. CLAWSON) Can you repeat that answer? 10:54AM

25 MR. LIMBACHER: Same objection. 10:54AM

1 A. So I said that the assigning and processing the
2 plurality of subtasks by at least a portion of the
3 plurality of computation nodes and at least a portion of
4 the plurality of booster nodes in a first distribution
5 would include the ability of a single subtask to be
6 running on a portion -- or at least one computation node
7 and one booster node and would include also the option
8 of where you have subtasks that are running just on
9 computation nodes or just on booster nodes, but as I
10 read up above, those may be heterogenous computation
11 nodes and booster nodes where the processors are
12 different from each other, not the same.

13 Q. (BY MR. CLAWSON) So in your prior testimony,
14 you described two scenarios. I'm just trying to get a
15 clear record of what those two scenarios are.

16 So is it fair to say that the first
17 scenario is a single subtask being assigned to at least
18 a portion of the computation nodes and a portion of the
19 booster nodes?

20 MR. LIMBACHER: Objection, form.

21 A. Again, the -- Claim 1 is describing a system
22 that allows for -- that enables a single subtask to be
23 assigned to a plurality of computation nodes and a
24 plurality of booster nodes and where that plurality can
25 be at least just a portion of it, which would be at

1 least one. So a single subtask could run on both a
2 computation node and a booster node.

3 And in addition, if subtasks are only
4 assigned to either a computation node or a booster node,
5 those computation nodes and booster nodes as described
6 in the specification can be heterogenous themselves,
7 which means they are running on processors of multiple
8 types, not all the same.

9 MR. LIMBACHER: Counsel, we've been going
10 about an hour, so just when you get a chance.

11 MR. CLAWSON: Sure. I'll wrap up this line
12 of questioning and then we will take a break.

13 Q. (BY MR. CLAWSON) Dr. Kaeli, in your previous
14 answer, is it your opinion that all of those aspects you
15 discussed are required by Claim 1 of the '442 patent?

16 MR. LIMBACHER: Objection, form.

17 A. The claim allows for both of those scenarios
18 and is consistent with the specification as -- as I read
19 before.

20 Q. (BY MR. CLAWSON) Are both of those scenarios
21 required by the claim?

22 MR. LIMBACHER: Objection, form.

23 A. The claim is describing a system that enables
24 both of those.

25 Q. (BY MR. CLAWSON) That wasn't my question.

1 Does it require both of those to satisfy the claim? 10:58AM

2 MR. LIMBACHER: Objection, form. 10:58AM

3 A. And I'm saying that the description of the 10:58AM
4 claim enables both of those. 10:58AM

5 Q. (BY MR. CLAWSON) Is the claim met by only 10:58AM
6 carrying out the first scenario that you discussed? 10:58AM

7 MR. LIMBACHER: Objection, form. 10:58AM

8 A. The claim allows for the first scenario that I 10:58AM
9 described. 10:58AM

10 Q. (BY MR. CLAWSON) If the first scenario is 10:58AM
11 carried out but the second scenario is not carried out, 10:58AM
12 does that satisfy Claim 1 of the '442 patent? 10:58AM

13 MR. LIMBACHER: Objection, form. 10:58AM

14 A. The way the patent is written, it enables both 10:58AM
15 of those scenarios. 10:58AM

16 Q. (BY MR. CLAWSON) That didn't answer my 10:58AM
17 question. If one scenario is satisfied and the other 10:59AM
18 isn't, does that satisfy Claim 1 of the '442 patent? 10:59AM

19 MR. LIMBACHER: Objection, form. 10:59AM

20 A. Again, I'm -- I'm -- the patent is written to 10:59AM
21 enable both of those scenarios that I just described. 10:59AM
22 That's -- that's how it's written. 10:59AM

23 MR. CLAWSON: I'll strike that answer as 10:59AM
24 nonresponsive -- I'll move to strike that answer as 10:59AM
25 nonresponsive. 10:59AM

1 Q. (BY MR. CLAWSON) Can you give me an opinion 10:59AM
2 here today of whether Claim 1 of the '442 patent is 10:59AM
3 satisfied if one of the two scenarios mentioned is 10:59AM
4 satisfied and the other is not? 10:59AM

5 MR. LIMBACHER: Objection, form. 10:59AM

6 A. I can tell you that the '442 patent Claim 1 10:59AM
7 enables both of those to be possible. 11:00AM

8 Q. (BY MR. CLAWSON) But you can't tell me whether 11:00AM
9 Claim 1 of the '442 patent requires both of those? 11:00AM

10 A. I'm saying it -- it describes a distribution -- 11:00AM
11 in a first computing iteration, assigning and processing 11:00AM
12 the plurality of subtasks by at least a portion of the 11:00AM
13 plurality of computation nodes and at least a portion of 11:00AM
14 the plurality of booster nodes in the first 11:00AM
15 distribution. So it's describing both of those 11:00AM
16 scenarios. 11:00AM

17 Q. All right. Let's consider a scenario where 11:00AM
18 there's no distribution of different subtasks between 11:01AM
19 computation nodes and booster nodes. So there's not one 11:01AM
20 entire subtask assigned to at least a portion of the 11:01AM
21 computation nodes and there's no entire subtask that's 11:01AM
22 distributed to at least a portion of the booster nodes. 11:01AM
23 Could that satisfy Claim 1 of the '442 patent? 11:01AM

24 MR. LIMBACHER: Objection, form. 11:01AM

25 A. You're saying that the sub -- all subtasks run 11:01AM

1 on one or the other but not both? Is that what you are
2 asking?

3 Q. (BY MR. CLAWSON) Yeah, you can answer that.

4 MR. LIMBACHER: Same objection.

5 A. So again, the '442 patent Claim 1, in a first
6 computing iteration, assigning and processing the
7 plurality of subtasks by at least a portion of the
8 plurality of computation nodes and at least a portion of
9 the plurality of booster nodes, it supports the scenario
10 that you just asked me about, and it also supports where
11 a single subtask is executed on both a computation node
12 and booster node in the same distribution.

13 MR. CLAWSON: Yeah, I think this is a fine
14 spot to take a break, so why don't we go off the record.

15 (Short recess.)

16 Q. (BY MR. CLAWSON) Dr. Kaeli, before the break,
17 we were discussing Claim 1 of the '442 patent and
18 specifically lines 33 to 36 and what it means by
19 assigning and processing the plurality of subtasks by at
20 least a portion of the plurality of computation nodes
21 and at least a portion of the plurality of booster nodes
22 in a first distribution.

23 And you had what you described as two
24 scenarios that you said this claim enabled. What was
25 the first scenario?

1 MR. LIMBACHER: Objection, form. 11:15AM

2 A. So I'm going to refer back -- so the first 11:15AM
3 scenario that I described was, "In a first computing 11:15AM
4 iteration, assigning and processing the plurality of 11:16AM
5 subtasks by at least a portion of the plurality of 11:16AM
6 computation nodes and at least a portion of the 11:16AM
7 plurality of booster nodes in a first distribution." 11:16AM

8 What I was describing was the ability for a single 11:16AM
9 subtask to be assigned to at least one computation node 11:16AM
10 and one booster node. 11:16AM

11 If we go up to column 3 and at -- right 11:16AM
12 before where we were discussing Monte Carlo at 50. "The 11:16AM
13 tasks may comprise a number of subtasks or kernels. 11:16AM
14 Each of these subtasks may be more or less suitable for 11:16AM
15 processing by one or more computation nodes or one or 11:16AM
16 more of the boosters. In particular, the scalability of 11:16AM
17 the subtask may indicate whether it is more appropriate 11:16AM
18 for the subtask to be processed by a computation node or 11:16AM
19 a booster. The system is flexible in all directions, 11:16AM
20 also permitting joint processing of subtasks by all 11:17AM
21 nodes addressed herein, as well as reshuffling of 11:17AM
22 processing between the nodes." 11:17AM

23 Does that help? 11:17AM

24 Q. (BY MR. CLAWSON) And in your discussion of 11:17AM
25 this first scenario, does this assignment of a single 11:17AM

1 subtask to both a computation node and a booster node,
2 does that occur in a single computing iteration?

3 MR. LIMBACHER: Objection, form.

4 A. As described in Claim 1, in this first
5 limitation, it's describing what happens in a first
6 distribution.

7 Q. (BY MR. CLAWSON) So is that a yes?

8 MR. LIMBACHER: Objection, form.

9 A. Can you ask the question again?

10 Q. (BY MR. CLAWSON) In the first scenario, does
11 the assignment of a single subtask to both a computation
12 node and a booster node occur in a single computing
13 iteration?

14 MR. LIMBACHER: Objection, form.

15 A. Again, the patent states that in a first
16 computing iteration, so it's in the context of the first
17 computing iteration, assigning and processing the
18 plurality of subtasks by at least a portion of the
19 plurality of computation nodes and at least a portion of
20 the plurality of booster nodes in a first distribution.
21 So it's discussing a first computing iteration and first
22 distribution in that particular language right there,
23 and I provided you with two scenarios that are possible
24 and supported by this claim.

25 I also read in column 3 in the

1 specification where a description is provided that 11:19AM
2 supports my understanding and my reading of Claim 1. 11:19AM

3 Q. (BY MR. CLAWSON) And you read from column 3. 11:19AM
4 This is a sentence from line 56 to 58. You read, "The 11:19AM
5 system is flexible in all directions, also permitting 11:19AM
6 joint processing of subtasks by all nodes addressed 11:19AM
7 herein, as well as reshuffling of processing between the 11:19AM
8 nodes." And that's the portion of the specification 11:19AM
9 that you read to support your opinion regarding scenario 11:19AM
10 one; is that right? 11:19AM

11 MR. LIMBACHER: Objection, form. 11:19AM

12 A. When I look at claims, I look at the 11:19AM
13 specification for examples that are describing or 11:20AM
14 supporting elements in the claims. So I referred to the 11:20AM
15 specification, and again, my reading is consistent with 11:20AM
16 that specification. 11:20AM

17 Now, in addition, a booster node or a 11:20AM
18 computation node is heterogenous itself, it can be. As 11:20AM
19 described in column 5, line 1, "The system 10 may have 11:20AM
20 computation nodes and/or booster nodes added to the 11:20AM
21 system which differ in characteristics from the other 11:20AM
22 computation/booster nodes." 11:20AM

23 In column 4 at 64, "While the computation 11:20AM
24 nodes in Figure 1 have been given the same reference 11:20AM
25 numeral, as have the booster nodes, this does not imply 11:20AM

1 that all the computation nodes are identical to each 11:21AM
2 other and all the booster nodes are also identical to 11:21AM
3 each other." 11:21AM

4 Each one of these are heterogenous. 11:21AM
5 Booster nodes and computation nodes are heterogenous. 11:21AM
6 So the term "heterogenous" applies in both scenarios. 11:21AM

7 Q. (BY MR. CLAWSON) So turning back to column 3 11:21AM
8 and lines 56 to 58, is it your opinion that where the 11:21AM
9 sentence states, "permitting joint processing of 11:21AM
10 subtasks by all nodes addressed herein," that that 11:21AM
11 applies to splitting a subtask between a computation 11:21AM
12 node and a booster node in a given computing iteration? 11:21AM

13 MR. LIMBACHER: Objection, form. 11:21AM

14 A. I wouldn't use the word "splitting" that you 11:21AM
15 provided in your description. I would -- that the -- a 11:21AM
16 subtask can be assigned to at least a portion of the 11:22AM
17 plurality of computation nodes and at least a portion of 11:22AM
18 the plurality of booster nodes in a distribution, that 11:22AM
19 is consistent with what I read in the language of 56 in 11:22AM
20 column 3. 11:22AM

21 Q. (BY MR. CLAWSON) And just to clarify for the 11:22AM
22 record, that's a single subtask that you're talking 11:22AM
23 about? 11:22AM

24 MR. LIMBACHER: Objection, form. 11:22AM

25 A. When a single subtask -- I'm describing it for 11:22AM

1 Claim 1, that a single subtask can be assigned to at 11:22AM
2 least one computation node and one booster node in the 11:22AM
3 same distribution. 11:22AM

4 Q. (BY MR. CLAWSON) And is that same distribution 11:22AM
5 in a given computing iteration? 11:23AM

6 A. In Claim 1, it's describing the first -- what I 11:23AM
7 just read, the first computing iteration at line 33, and 11:23AM
8 again, this is in the first distribution. We haven't 11:23AM
9 discussed beyond line 36, so -- 11:23AM

10 Q. In your previous answer, you said you wouldn't 11:23AM
11 use the word "splitting" to describe scenario one, 11:24AM
12 splitting a subtask. Why would you not describe it that 11:24AM
13 way? 11:24AM

14 MR. LIMBACHER: Objection, form. 11:24AM

15 A. So the language describes that a subtask is 11:24AM
16 assigned to at least a portion of the computation nodes 11:24AM
17 and a portion of the plurality of booster nodes. 11:24AM

18 In terms of the computation, as you are 11:24AM
19 describing it with splitting, that -- that's -- they 11:24AM
20 would -- the computation nodes may be working 11:24AM
21 collaboratively with the booster nodes on the subtask. 11:25AM

22 Q. (BY MR. CLAWSON) Okay. Let's move on to the 11:25AM
23 second scenario. So what's the second scenario that you 11:25AM
24 discussed previously that you claim is enabled by lines 11:25AM
25 33 to 36 of column 5 for Claim 1 of the '442 patent? 11:25AM

1 MR. LIMBACHER: Objection, form. 11:25AM

2 A. So the language in the -- in 33 through 36 11:25AM
3 enables the ability to assign and -- you know, assigning 11:25AM
4 and processing the plurality of subtasks by at least a 11:26AM
5 portion of the plurality of computation nodes and at 11:26AM
6 least a portion of the plurality of booster nodes in a 11:26AM
7 first distribution. 11:26AM

8 So there could be a subtask that's only 11:26AM
9 using computation nodes or only using booster nodes, 11:26AM
10 though as described up above in columns 4 and 5 that I 11:26AM
11 read before, those themselves can be heterogenous. And 11:26AM
12 so even though you are going to just computation nodes 11:26AM
13 or booster nodes, there's no guarantee that your nodes 11:26AM
14 will be homogeneous. 11:26AM

15 Q. (BY MR. CLAWSON) Do you know what it means for 11:26AM
16 a claim to be met or satisfied? 11:28AM

17 MR. LIMBACHER: Objection, form. 11:28AM

18 Q. (BY MR. CLAWSON) A claim of a patent, that is. 11:28AM

19 MR. LIMBACHER: Same objection. 11:28AM

20 Q. (BY MR. CLAWSON) I'll strike the question and 11:28AM
21 reask it. 11:28AM

22 Do you know what it means for a claim of a 11:28AM
23 patent to be met or satisfied? 11:28AM

24 MR. LIMBACHER: Same objection. 11:28AM

25 A. Are you referring to enablement? 11:28AM

1 Q. (BY MR. CLAWSON) No. Do you know what it 11:29AM
2 means for a claim of a patent to be met or satisfied? 11:29AM
3 MR. LIMBACHER: Objection, form. 11:29AM
4 A. Can you define what you mean by "met or 11:29AM
5 satisfied"? 11:29AM
6 Q. (BY MR. CLAWSON) So you don't know what I mean 11:29AM
7 without defining those terms? 11:30AM
8 MR. LIMBACHER: Objection, form. 11:30AM
9 A. I'm asking for some context. 11:30AM
10 Q. (BY MR. CLAWSON) What type of context do you 11:30AM
11 need? 11:30AM
12 A. Do you have a scenario that you would want me 11:30AM
13 to assess whether a claim met or satisfied a particular 11:30AM
14 scenario? 11:30AM
15 Q. If I gave you a scenario, would you be able to 11:30AM
16 determine whether a scenario met or satisfied the claim? 11:30AM
17 A. I should be able to if it's specific. 11:30AM
18 Q. And how would you do that? 11:30AM
19 MR. LIMBACHER: Objection, form. 11:30AM
20 A. So I would use the -- you know, the ordinary 11:30AM
21 language of the -- of the claim, so -- and how it would 11:31AM
22 be understood by a POSITA. 11:31AM
23 Q. (BY MR. CLAWSON) What would you do with that? 11:31AM
24 MR. LIMBACHER: Objection. 11:31AM
25 A. So I would apply the claim terms that are 11:31AM

1 given, the plain and ordinary meaning to a POSITA, and
2 also I would consider the -- in view of the
3 specification, which I've been doing -- I've been
4 consistently going back to the specification, helping to
5 explain to you my understanding of the claims based on
6 the specification examples that are provided and also
7 the file history.

8 There's also the concept that it's a -- you
9 know, a POSITA at the time of the -- of when the
10 invention was first claimed. For this patent, it's
11 January 2018.

12 Q. (BY MR. CLAWSON) When you say you would apply
13 the claim terms, what do you mean by that? You would
14 apply them to the given scenario?

15 MR. LIMBACHER: Objection, form.

16 A. Again, I would apply the claims from the
17 perspective of a person of ordinary -- a person who has
18 skill in the art at the time of the purported invention,
19 and so -- and I would also consider any other aspects
20 that -- you know, I'm just looking at the plain and
21 ordinary meaning.

22 Q. (BY MR. CLAWSON) When you say you apply the
23 claims, what does that mean?

24 MR. LIMBACHER: Objection, form.

25 A. I would look at the claim terms in their plain

1 and ordinary meaning to someone who is an expert in the 11:33AM
2 field. 11:33AM

3 Q. (BY MR. CLAWSON) And that's your understanding 11:33AM
4 of applying the claims? 11:33AM

5 MR. LIMBACHER: Objection, form. 11:33AM

6 A. Again, I'm applying, you know, the -- from the 11:33AM
7 perspective of a person of ordinary skill in the art at 11:34AM
8 the time of the purported invention just the 11:34AM
9 understanding as the -- as the patent is written. 11:34AM

10 Q. (BY MR. CLAWSON) But what do you mean by 11:34AM
11 "applying"? How do you apply the terms of the claim to 11:34AM
12 a given scenario? 11:34AM

13 MR. LIMBACHER: Objection, form. 11:34AM

14 A. I'm looking at them from how a person of 11:34AM
15 ordinary skill in the art would -- would read the claim 11:34AM
16 terms, as well as as they are related to the 11:34AM
17 specification and the file history. 11:35AM

18 Q. (BY MR. CLAWSON) So let's look at column 5 and 11:35AM
19 Claim 1, starting at the start of Claim 1. And this 11:35AM
20 reads, "A method of operating a heterogenous computing 11:35AM
21 system." Do you see those lines? 11:35AM

22 A. I do. 11:35AM

23 Q. So if you are looking at a certain method of 11:35AM
24 operating a heterogenous computing system, how would you 11:35AM
25 go about determining whether that given system meets the 11:35AM

1 claims -- or meets the limitations in Claim 1 of the
2 '442 patent?

3 MR. LIMBACHER: Objection, form.

4 A. Well, first of all, the -- where you are
5 reading, which is column 5, line 26, from 26 until 32 is
6 the preamble, which is the introductory phrase of a
7 claim, and it recites structure and steps. You know,
8 it -- you know, it -- so it basically -- it's not
9 limiting where the patent is defined.

10 So it's, "A method of operating a
11 heterogenous computing system comprising a plurality of
12 computation nodes and a plurality of booster nodes, at
13 least one of a plurality of computation node and a
14 plurality of booster nodes being arranged to compute a
15 computation task, the computation task comprising a
16 plurality of subtasks, the method comprising."

17 And so it basically is introductory. It --
18 you know, it's giving sort of structure and -- and sets
19 up the claims that will follow. So I think that's how
20 that portion of the claim language is structured.

21 Is that what you are asking?

22 Q. (BY MR. CLAWSON) Do you believe that Claim 1
23 requires a method of operating a heterogenous computing
24 system?

25 A. Claim 1 describes a method of operating a

1 heterogenous computing system.

11:37AM

2 Q. I asked you whether it requires a method of
3 operating a heterogenous computing system. Do you
4 understand that to be different from Claim 1 describing
5 a method of operating a heterogenous computing system?

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6 MR. LIMBACHER: Objection, form.

11:38AM

7 A. Could you state that again?

11:38AM

8 Q. (BY MR. CLAWSON) Do you understand that --
9 where a patent claim claims a limitation -- sorry.

11:38AM

11:38AM

10 Strike that.

11:38AM

11 So where Claim 1 recites, "A method of
12 operating a heterogenous computing system," do you
13 believe that limitation must be satisfied to meet this
14 claim?

11:38AM

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15 MR. LIMBACHER: Objection, form.

11:39AM

16 A. I think you have to read the entire preamble.
17 "A method of operating a heterogenous computing system
18 comprising a plurality of computation nodes and a
19 plurality of booster nodes, at least one of the
20 plurality of computation nodes and a plurality of
21 booster nodes being arranged to compute a computation
22 task, the computation task comprising a plurality of
23 subtasks, the method comprising."

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24 So for Claim 1 to be satisfied, basically
25 this is the context that we're describing Claim 1. You

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1 are asking me a much broader question, and I'm -- I'm 11:40AM
2 trying to get us back to the claim language. 11:40AM

3 Q. (BY MR. CLAWSON) Do you understand that where 11:40AM
4 a patent claim claimed a limitation, that limitation 11:40AM
5 must be satisfied for the patent claim to be met? 11:40AM

6 MR. LIMBACHER: Objection, form. 11:40AM

7 A. Could you state the question one more time? 11:40AM

8 MR. CLAWSON: Can the reporter read that 11:40AM
9 question back, please? 11:40AM

10 (Whereupon, the requested testimony was read back 11:40AM
11 as follows: 11:40AM

12 QUESTION: Do you understand that where a patent 11:40AM
13 claim claimed a limitation, that limitation must be 11:40AM
14 satisfied for the patent claim to be met?) 11:40AM

15 MR. LIMBACHER: Same objection. 11:41AM

16 A. Again, if you have a specific example that you 11:41AM
17 would like me to address, I can talk to that. I think 11:41AM
18 you are asking a much broader question, and again, I 11:41AM
19 want to be very specific in my answer. 11:41AM

20 Q. (BY MR. CLAWSON) So sitting here now, you 11:41AM
21 can't give an answer to that question? 11:41AM

22 MR. LIMBACHER: Objection, form. 11:41AM

23 A. Again, I'm asking for specifics of particular 11:41AM
24 claim and claim language. 11:41AM

25 Q. (BY MR. CLAWSON) Can you give an answer to 11:41AM

1 that question that was read back to you? Yes or no?

11:41AM

2 A. My answer is could you give me a specific
3 example that I can talk to specifically?

11:41AM

11:42AM

4 Q. Do you believe that a limitation of a claim in
5 a patent being met is the same as that limitation being
6 enabled?

11:42AM

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7 MR. LIMBACHER: Objection, form.

11:42AM

8 A. So I can tell you what "enablement" is. And if
9 you go to Page 10 of my declaration, so a prior art can
10 be an enabling disclosure in order to invalidate a
11 challenged claim.

11:42AM

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12 "I understand that a prior art reference is
13 assumed to be enabling unless it appears to not be
14 enabling on its face. I understand that enablement
15 relates to whether a disclosure describes an invention
16 in such terms that one skilled in the art can make and
17 use the invention. The standard for determining whether
18 a disclosure is enabling is whether the experimentation
19 needed to practice the invention based on that
20 disclosure is undue or unreasonable. What is reasonable
21 will depend on the nature of the invention and the
22 underlying art. I understand that several factors are
23 often applied to determine whether experimentation is
24 reasonable or undue, including," and it goes through the
25 breadth of the claims, the nature of the invention, the

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1 state of the prior art and, most importantly, the last
2 one, the quantity of experimentation needed to make or
3 use the invention based on the content of the
4 disclosure.

5 Q. And what you just read me was your
6 understanding of the enablement requirement for prior
7 art; is that right?

8 MR. LIMBACHER: Objection, form.

9 A. This is in the portion of my declaration that I
10 worked on with counsel, as I describe under legal
11 principles, and this is my understanding of enablement
12 for prior art.

13 Q. (BY MR. CLAWSON) And is enablement of a
14 limitation of a claim the same as that limitation being
15 met?

16 MR. LIMBACHER: Objection, form.

17 A. I don't believe I've provided an opinion on an
18 enablement of a claim of a patent. I think I basically
19 have offered an opinion on enablement through a prior
20 reference -- a prior art reference.

21 Q. (BY MR. CLAWSON) Well, earlier in this
22 deposition, we discussed two separate scenarios as they
23 relate to the first limitation of Claim 1, so that
24 limitation being from 33 -- line 33 of claim 5 to
25 line 36 of claim 5, and your testimony was that the

1 claim enabled those two scenarios; is that correct?

11:45AM

2 MR. LIMBACHER: Objection, form.

11:45AM

3 A. My opinion, which is consistent with the
4 reading of the specification, that the first computing
5 iteration, assigning the processing -- assigning and
6 processing the plurality of subtasks by at least a
7 portion of the plurality of the computation nodes and at
8 least a portion of the plurality of the booster nodes in
9 a first distribution could -- included the -- assigning
10 a single subtask to both a computation node and a
11 booster node and included the ability to assign a
12 subtask to only computation nodes or only booster nodes
13 but allowing, consistent with the specification, those
14 could be heterogenous computation nodes and booster
15 nodes.

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16 Q. (BY MR. CLAWSON) So I'm just trying to
17 understand. So for that limitation to be satisfied, is
18 it sufficient that only one of those scenarios is
19 practiced or is it required that both of those scenarios
20 be performed for this limitation of Claim 1, so that
21 limitation from lines 33 to line 36, column 5, to be
22 satisfied?

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23 MR. LIMBACHER: Objection, form.

11:47AM

24 A. I -- my reading and my opinion on this
25 particular claim and the language is that we're enabling

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11:47AM

1 the ability to have either of those scenarios, and 11:47AM
2 again, in terms of one and not the other, that's not 11:47AM
3 something -- I'm reading the claim language, and it is 11:47AM
4 enabling both of those. 11:48AM

5 Q. (BY MR. CLAWSON) What do you mean when you say 11:48AM
6 the claim language is enabling those scenarios? 11:48AM

7 A. The claim language includes the ability to have 11:48AM
8 a single subtask be assigned at least one booster node 11:48AM
9 and one computation node and supports where a subtask is 11:48AM
10 only assigned to a booster node or a computation node, 11:48AM
11 but where those computation nodes or booster nodes may 11:48AM
12 be heterogenous booster nodes/computation nodes. 11:48AM

13 Q. Do you understand that there's a difference 11:48AM
14 between whether a claim element is met by a certain 11:48AM
15 action and whether a claim element is enabled? 11:48AM

16 MR. LIMBACHER: Objection, form. 11:48AM

17 A. Again, I can -- you are asking me about how 11:48AM
18 I'm -- how I'm reading this patent claim and as it -- as 11:48AM
19 it's also supported by the specification, and I've tried 11:49AM
20 to describe that as well I can, and the language is very 11:49AM
21 consistent in terms of supporting my understanding and 11:49AM
22 my description of it. 11:49AM

23 Q. (BY MR. CLAWSON) During this deposition, every 11:49AM
24 time I've asked you about whether a claim element is 11:49AM
25 met, you've answered with a discussion of enablement, 11:49AM

1 which is a different issue. Do you understand that 11:49AM
2 there's a difference between a claim element being met 11:49AM
3 by a certain action and whether a claim is enabled? 11:49AM

4 MR. LIMBACHER: Objection, form. 11:49AM

5 A. Again, I don't think I've offered an opinion 11:49AM
6 on -- I've given you -- I've offered an opinion on what 11:49AM
7 Claim 1 is enabling. 11:49AM

8 Q. (BY MR. CLAWSON) So I'll just repeat my 11:49AM
9 question. 11:50AM

10 Do you -- do you understand that there is a 11:50AM
11 difference between whether a claim element is met by a 11:50AM
12 certain action and whether a claim is enabled? I'm not 11:50AM
13 asking about your opinion on whether this claim is 11:50AM
14 enabled. 11:50AM

15 MR. LIMBACHER: Objection, form. 11:50AM

16 A. Again, I -- for this claim, I have provided two 11:50AM
17 scenarios that -- that are supported by the claim 11:50AM
18 language. So I'm not sure what you're looking for. 11:50AM

19 Q. (BY MR. CLAWSON) What do you mean when you say 11:50AM
20 those scenarios are supported by the claim language? 11:51AM

21 MR. LIMBACHER: Objection, form. 11:51AM

22 A. So I've described two scenarios. The first is 11:51AM
23 where, in a first computing iteration, assigning the 11:51AM
24 plurality of subtasks by at least a portion of the 11:51AM
25 plurality of the computation nodes and at least a 11:51AM

1 portion of the plurality of the booster nodes in a first 11:51AM
2 distribution, where that assignment of a single subtask 11:51AM
3 is assigned to at least one computation node and one 11:51AM
4 booster node and also supports the ability where the 11:51AM
5 assignment for a subtask is only to either a booster 11:51AM
6 node or a computation node wherein those nodes can be 11:51AM
7 themselves heterogenous, as supported by the 11:51AM
8 specification. 11:51AM

9 Q. (BY MR. CLAWSON) I don't believe that answered 11:51AM
10 my question. When you say the claim supports those 11:52AM
11 scenarios, what do you mean it supports those scenarios? 11:52AM

12 MR. LIMBACHER: Objection, form. 11:52AM

13 A. When I'm looking at the -- you know, my 11:52AM
14 understanding, you know, of someone -- a person of 11:52AM
15 ordinary skill in the art and reading the language of 11:52AM
16 the claim, I'm providing you with my understanding of -- 11:52AM
17 that the -- that the two scenarios that I just described 11:52AM
18 are both supported by the claim language. 11:52AM

19 Q. (BY MR. CLAWSON) Again, when you say those 11:52AM
20 scenarios are supported by the claim language, what does 11:52AM
21 that mean? 11:52AM

22 A. So I'll give you another example of what's 11:52AM
23 supported by the claim language. It could -- for 11:53AM
24 instance, it says at least one of a plurality of 11:53AM
25 computation nodes. That could be one or two. 11:53AM

1 So the claim language is written in a way
2 to allow for a range of possibilities, and I'm
3 describing to you those that -- from my understanding
4 that are -- consistent with the specification, are
5 enabled.

6 Q. What do you mean by "enabled"?

7 MR. LIMBACHER: Objection, form.

8 A. Again, the -- enabled that the language is
9 consistent, when I read the language, it's clear that
10 the two scenarios that I describe are supported by both
11 the claim language and by the specification.

12 Q. (BY MR. CLAWSON) So if you had a method of
13 operating a heterogenous computing system that performed
14 the -- that performed scenario one that you've
15 discussed, would that satisfy the limitation stated at
16 lines 33 to 36 of column 5 of the '442 patent?

17 MR. LIMBACHER: Objection, form.

18 A. So a method -- so let's read the whole -- the
19 whole claim and not just the portions of it because --

20 Q. (BY MR. CLAWSON) Well, I'm asking about this
21 limitation in isolation. Because, I mean, we've so far
22 discussed this limitation and you discussed two
23 scenarios with regard to this limitation.

24 So all I'm asking is if a method of
25 operating a heterogenous computing system performed the

1 first scenario that you discussed, does that satisfy
2 this first limitation of Claim 1?

3 A. So the ability to be able to do either is a --
4 is like an attractive capability because it allows for
5 better use of the computing infrastructure.

6 So the ability to be able to do either and
7 both at the same time is -- is enabled by this claim.
8 So I -- you know, you are -- you want me to sort of say,
9 well, does -- if it satisfies one, is it good enough.

10 Q. That's what I'm asking.

11 MR. LIMBACHER: Objection, form.

12 A. And I'm suggesting that the claim language is
13 pretty clear in terms of it is enabling both of those,
14 and so --

15 Q. (BY MR. CLAWSON) Is one scenario --

16 A. -- that's my opinion.

17 Q. Is one scenario sufficient to satisfy this
18 element?

19 MR. LIMBACHER: Objection, form.

20 A. I'm not sure what you mean by "sufficient."
21 I'm explaining what's enabled by the language. And the
22 language in the claim and the specification are
23 consistent, and I've given you a clear, you know, point
24 in the specification that are supporting those -- those,
25 you know, plain readings of -- of the language.

1 Q. (BY MR. CLAWSON) When you say the claim 11:57AM
2 language enables both scenarios, do you mean that the 11:58AM
3 claim language is met by both scenarios? 11:58AM

4 MR. LIMBACHER: Objection, form. 11:58AM

5 A. Again, I'm saying that the claim language 11:58AM
6 enables both of those scenarios. 11:58AM

7 Q. (BY MR. CLAWSON) To be clear for the record, 11:58AM
8 I'm not asking whether the claim language enables both 11:58AM
9 scenarios. I'm asking whether the claim language is met 11:58AM
10 by either scenario? 11:58AM

11 MR. LIMBACHER: Objection, form. 11:58AM

12 Q. (BY MR. CLAWSON) Can you answer that question? 11:58AM

13 MR. LIMBACHER: Objection, form. 11:58AM

14 A. I think I've answered the question that the -- 11:58AM
15 the claim language enables both of those scenarios. 11:58AM

16 Q. (BY MR. CLAWSON) You still haven't answered 11:58AM
17 the question that I'm asking you. Do you understand the 11:58AM
18 question I'm asking you? 11:58AM

19 MR. LIMBACHER: Objection, form. 11:58AM

20 A. Again, I think I've been clear with my answer 11:59AM
21 of what Claim 1 is describing and -- and I've -- I've 11:59AM
22 been able to provide you with explanations that are 11:59AM
23 consistent with the specification that support it. 11:59AM

24 Q. (BY MR. CLAWSON) Again, to be clear for the 11:59AM
25 record, I'm not asking whether the first element of 11:59AM

1 Claim 1 enables either of the scenarios that we've been
2 discussing. I'm asking if the first limitation of Claim
3 1 is met by either scenario? Can you tell me whether
4 the first limitation of Claim 1 is met by either
5 scenario?

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6 MR. LIMBACHER: Objection, form.

12:00PM

7 A. The language in claim -- in the first
8 limitation is enabling both of those.

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12:00PM

9 Q. (BY MR. CLAWSON) Do you understand that I'm
10 not asking you about whether the claim limitation
11 enables those scenarios?

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12 MR. LIMBACHER: Objection, form.

12:00PM

13 A. You are asking me if it enables one of them,
14 and I'm telling you it enables both of them. So I think
15 I'm being very consistent here.

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16 Q. (BY MR. CLAWSON) So you believe I'm asking
17 about enablement?

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18 MR. LIMBACHER: Objection, form.

12:01PM

19 A. Again, I'm -- I'm telling you what the claim
20 language as understood by a person skilled in the art
21 would understand it in plain language. And again, that
22 understanding is consistent with what's in the
23 specification.

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24 Q. (BY MR. CLAWSON) That wasn't my question.
25 Again, do you think I'm asking you about enablement?

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12:01PM

1 MR. LIMBACHER: Objection, form. 12:01PM

2 A. Again, you are using terms that I -- you know, 12:01PM
3 they are legal terms that I -- I've -- I've looked at, 12:02PM
4 you know, enablement in terms of enabling disclosure of 12:02PM
5 a challenged claim by a prior art reference, in that 12:02PM
6 context. I haven't considered enablement otherwise. 12:02PM

7 Q. (BY MR. CLAWSON) But you've told me over and 12:02PM
8 over that the first limitation of Claim 1 enables the 12:02PM
9 scenarios that you were discussing; is that right? 12:02PM

10 MR. LIMBACHER: Objection, form. 12:02PM

11 A. I have been telling you that Claim 1 enables 12:02PM
12 both of those and, you know, I'll use the term allows 12:02PM
13 for. 12:03PM

14 Q. (BY MR. CLAWSON) Do you understand that a 12:03PM
15 claim requiring an action is different from a claim 12:03PM
16 allowing an action? 12:03PM

17 MR. LIMBACHER: Objection, form. 12:03PM

18 A. Again, these are terms that I have not 12:03PM
19 discussed with counsel. They are legal terms, and so I 12:03PM
20 don't have an opinion on them at this point in time. 12:03PM

21 Q. (BY MR. CLAWSON) So that means that you can't 12:03PM
22 tell me whether a given action -- strike that question. 12:03PM

23 That means that you can't tell me whether a 12:03PM
24 claim limitation requires a given action? 12:03PM

25 MR. LIMBACHER: Objection, form. 12:03PM

1 A. I don't know what you mean by "a given action."
2 I think I've been clear trying to explain Claim 1, and
3 I've provided you with support for that claim from the
4 specification and that understanding of the -- of the
5 language as someone skilled in the art would do.

6 Q. (BY MR. CLAWSON) And is it your testimony
7 today that you are unable to testify whether a given
8 action satisfies a given claim element?

9 MR. LIMBACHER: Objection, form.

10 A. Again, in terms of terminology, I'm able to
11 explain how Claim 1 would be understood by a person
12 of -- who is skilled in the art based on its plain
13 language writing. That's what I'm asked to do as an
14 expert.

15 Q. (BY MR. CLAWSON) But you can't tell me whether
16 that plain language is satisfied by a given action?

17 MR. LIMBACHER: Objection, form.

18 A. Again, you are using terms that I'm less
19 familiar with.

20 Q. (BY MR. CLAWSON) What term is that?

21 A. "Action."

22 Q. Is it your testimony today that you are unable
23 to say whether a given method satisfies a given claim
24 element?

25 MR. LIMBACHER: Objection, form.

1 A. No. Claim 1 is about a method.

12:05PM

2 Q. (BY MR. CLAWSON) That didn't answer my
3 question.

12:06PM

12:06PM

4 A. Ask your question again.

12:06PM

5 Q. Can you tell me today if you are looking at a
6 given method whether that method satisfies the claim
7 elements of Claim 1 of the '442 patent?

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8 MR. LIMBACHER: Objection, form.

12:06PM

9 A. I can -- from reading -- for instance, for
10 Claim 1, "A method of operating a heterogenous computing
11 system comprising a plurality of computation nodes and a
12 plurality of booster nodes, at least one of the
13 plurality of computation nodes and a plurality of
14 booster nodes being arranged to compute a task, the
15 computation task comprising a plurality of subtasks, the
16 method comprising," in terms of -- the method here is
17 setting up the first limitation, you know, "First
18 computing iteration, assigning and processing the
19 plurality of subtasks by at least a portion of the
20 plurality of computation nodes and at least a portion of
21 the plurality of booster nodes in a first distribution,"
22 and so on.

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23 And so if you are asking me do I have an
24 opinion on whether -- on what's -- what -- what the
25 patent language here is trying to describe, I think I've

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12:07PM

1 done that clearly by giving you the two scenarios and
2 supporting the language that comes from the
3 specification.

4 Q. (BY MR. CLAWSON) But you have not testified as
5 to whether the first limitation of Claim 1 at lines 33
6 to 36 are met by either scenario; is that right?

7 MR. LIMBACHER: Objection, form.

8 A. Again, the language -- the two scenarios that I
9 described are enabled by this language. And when I'm
10 using "enabled," I'm not referring to the legalese
11 enablement. I'm basically saying that they are allowing
12 for this range of implementations.

13 Q. (BY MR. CLAWSON) So I'll make it perfectly
14 clear for the record. For my next question, I'm not
15 asking about whether the scenarios are enabled by the
16 claims. Do you understand that?

17 MR. LIMBACHER: Objection, form.

18 A. So ask your question again.

19 Q. (BY MR. CLAWSON) So I'll preface this
20 question, to make it perfectly clear, that I'm not
21 asking about whether the first limitation of Claim 1 of
22 the '442 patent enables the scenarios that you've laid
23 out.

24 So with that preface , is the first
25 limitation of Claim 1 of the '442 patent met by the

1 first scenario that we discussed?

12:09PM

2 MR. LIMBACHER: Objection, form.

12:09PM

3 A. So the first scenario that I described was
4 where a single subtask is assigned to at least a portion
5 of the plurality of computation nodes and at least a
6 portion of the plurality of booster nodes.

12:09PM

12:10PM

12:10PM

12:10PM

7 Reading the -- the language of -- the plain
8 language that's written, the plurality of subtasks,
9 there's -- there's multiple subtasks, and those subtasks
10 can be assigned to both a computation node and a booster
11 node or just a computation node or a booster node, where
12 those computation nodes and booster nodes can be
13 heterogenous themselves.

12:10PM

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14 Q. (BY MR. CLAWSON) So does that first scenario
15 meet the first limitation of Claim 1 of the '442 patent?

12:11PM

12:11PM

16 MR. LIMBACHER: Objection, form.

12:11PM

17 A. Again, the language supports both scenarios.

12:11PM

18 Q. (BY MR. CLAWSON) Does it support either
19 scenario by itself?

12:11PM

12:11PM

20 MR. LIMBACHER: Objection, form.

12:11PM

21 A. The language supports both scenarios.

12:11PM

22 Q. (BY MR. CLAWSON) Was that my question?

12:11PM

23 MR. LIMBACHER: Objection, form.

12:11PM

24 A. I'm answering it in the context of what you are
25 asking, yes.

12:11PM

12:11PM

1	Q. (BY MR. CLAWSON) Do you understand the	12:11PM
2	difference between "either" and "both"?	12:12PM
3	MR. LIMBACHER: Objection, form.	12:12PM
4	A. Yeah, I do.	12:12PM
5	Q. (BY MR. CLAWSON) Is the first limitation of	12:12PM
6	Claim 1 of the '442 patent -- strike that question.	12:12PM
7	Does the language of the first limitation	12:12PM
8	of the '442 patent support either scenario by itself?	12:12PM
9	And to be clear for the record, I'm not talking about	12:12PM
10	both scenarios. I'm talking about either scenario	12:12PM
11	individually.	12:12PM
12	MR. LIMBACHER: Objection, form.	12:13PM
13	A. The language supports both scenarios.	12:13PM
14	Q. (BY MR. CLAWSON) So sitting here today, you	12:13PM
15	can't tell me whether the language supports either	12:13PM
16	scenario by itself?	12:13PM
17	MR. LIMBACHER: Objection, form.	12:13PM
18	A. Again, I'm -- my reading of the plain language	12:13PM
19	is it supports both scenarios.	12:13PM
20	Q. (BY MR. CLAWSON) And sitting here today, you	12:13PM
21	can't tell me whether the first limitation of Claim 1 is	12:13PM
22	met by either scenario by itself?	12:13PM
23	MR. LIMBACHER: Objection, form.	12:13PM
24	A. I'm saying that it's my -- the clear reading of	12:13PM
25	the language says that both scenarios are supported.	12:14PM

1 Q. (BY MR. CLAWSON) And to be clear, again, for 12:14PM
2 the record, I'm not asking about both scenarios. The 12:14PM
3 question is is the first limitation of Claim 1 of the 12:14PM
4 '442 patent met by scenario one alone? I'm not asking 12:14PM
5 about both scenarios. I'm asking about scenario one 12:14PM
6 alone. 12:14PM

7 MR. LIMBACHER: Objection, form. 12:14PM

8 A. The language is written to allow for both 12:14PM
9 scenarios. 12:14PM

10 Q. (BY MR. CLAWSON) So sitting here today, you 12:14PM
11 can't tell me whether the first limitation of Claim 1 of 12:14PM
12 the '442 patent is met by scenario one alone? 12:14PM

13 MR. LIMBACHER: Objection, form. 12:14PM

14 A. My interpretation of the language in Claim 1 is 12:14PM
15 consistent and supported by the examples provided in the 12:15PM
16 specification. 12:15PM

17 Q. (BY MR. CLAWSON) Was that a yes or a no? 12:15PM

18 MR. LIMBACHER: Objection, form. 12:15PM

19 A. Again, I've tried to be clear in how each of 12:15PM
20 those specification -- each of those scenarios is 12:15PM
21 supported by the claim language and the specification. 12:15PM

22 Q. (BY MR. CLAWSON) So I'll ask you a yes or a no 12:15PM
23 question. Sitting here today, can you tell me whether 12:15PM
24 the first limitation of Claim 1 is satisfied by the 12:15PM
25 first scenario? 12:15PM

1 MR. LIMBACHER: Objection, form. 12:15PM

2 A. And I'll tell you the Claim 1 is -- its clear 12:15PM
3 meaning is to allow for both scenarios to be possible. 12:16PM

4 Q. (BY MR. CLAWSON) And sitting here today, is it 12:16PM
5 your testimony that -- strike that question. 12:16PM

6 Sitting here today, can you tell me whether 12:16PM
7 the first limitation of Claim 1 is satisfied by scenario 12:16PM
8 two alone? Yes or no? 12:16PM

9 MR. LIMBACHER: Objection, form. 12:16PM

10 A. Again, the language is written, in my 12:16PM
11 understanding, and the specification supports it, that 12:16PM
12 both of the scenarios that I provided are supported by 12:16PM
13 the -- by the claim language. 12:16PM

14 Q. (BY MR. CLAWSON) Are you able to answer my 12:17PM
15 last question without discussing both scenarios? 12:17PM

16 MR. LIMBACHER: Objection, form. 12:17PM

17 A. I'm telling you what's in Claim 1 and my 12:17PM
18 understanding as an expert in the field. 12:17PM

19 Q. (BY MR. CLAWSON) So just to be clear for the 12:17PM
20 record, I'm not talking about both scenarios. Sitting 12:17PM
21 here today, you cannot tell me whether either scenario 12:17PM
22 on its own meets the first limitation of Claim 1 of the 12:17PM
23 '442 patent? 12:17PM

24 MR. LIMBACHER: Objection, form. 12:17PM

25 A. I'm telling you that the reading of the -- of 12:17PM

1 the -- of the language and my -- and applying my 12:18PM
2 expertise as a person skilled in the art, that the -- 12:18PM
3 that both of the scenarios I've described are supported 12:18PM
4 by the claim language. 12:18PM

5 Q. (BY MR. CLAWSON) Is it your testimony that you 12:18PM
6 cannot tell me here today whether your scenario one by 12:18PM
7 itself satisfies the first limitation of Claim 1 of the 12:18PM
8 '442 patent? 12:18PM

9 MR. LIMBACHER: Objection, form. 12:18PM

10 A. What I'm saying is that both of my scenarios 12:18PM
11 are supported by the claim language just from -- and 12:18PM
12 also, my understanding, it's supported by examples from 12:18PM
13 the specification. 12:19PM

14 Q. (BY MR. CLAWSON) Now, what do you mean when 12:19PM
15 you say that the claim supports those scenarios? 12:19PM

16 A. So starting at 33, "In a first computing 12:19PM
17 iteration, assigning and processing the plurality of 12:19PM
18 subtasks by at least a portion of the plurality of 12:19PM
19 computation nodes and at least a portion of the 12:19PM
20 plurality of booster nodes in the first distribution," 12:19PM
21 that can mean -- so basically, we can have a single 12:19PM
22 subtask that's assigned to a computation node and a 12:19PM
23 booster node or we can have subtasks that are assigned 12:20PM
24 to only computation nodes or only booster nodes and 12:20PM
25 where those booster nodes and computation nodes are -- 12:20PM

1 can be heterogenous and that's consistent with the
2 specification.

3 Q. And when you say that the claim supports those
4 two scenarios, sitting here today, can you tell me
5 whether that means that the claim is met by those two
6 scenarios?

7 MR. LIMBACHER: Objection, form.

8 A. Again, I'm just -- I'm telling you what the
9 language is describing, what the claim language is
10 describing --

11 Q. (BY MR. CLAWSON) Can you answer my question?

12 A. -- and pointing back to the specification with
13 examples that are described.

14 Q. Yes or no, sitting here today, can you say
15 whether the claim supporting those scenarios is the same
16 as the claim being met or satisfied by those scenarios?

17 MR. LIMBACHER: Objection, form.

18 A. Again, I think I've been clear on my -- on the
19 two scenarios that I've described that are supported by
20 the language of the patent.

21 You are asking me to -- you know, you are
22 introducing language that has some meaning that I'm very
23 careful about -- I'm being very consistent in my
24 answering because I'm -- I've been very clear with
25 describing -- offering two scenarios that are supported

1 by the claim language and then bringing it back to 12:22PM
2 examples from the specification that are supporting 12:22PM
3 that. 12:22PM

4 Q. (BY MR. CLAWSON) I've been asking you for an 12:22PM
5 hour now whether those scenarios meet the language of 12:22PM
6 the first limitation of Claim 1 of the '442 patent, and 12:22PM
7 you still have not answered that. So I'll just ask you 12:22PM
8 one more time. 12:22PM

9 Do those scenarios meet the first 12:22PM
10 limitation of Claim 1 of the '442 patent? 12:22PM

11 MR. LIMBACHER: Objection, form. 12:22PM

12 A. And I'll answer again, the -- you know, the 12:23PM
13 language of Claim 1 is, you know, supporting both of 12:23PM
14 those scenarios, and that's my reading of the plain 12:23PM
15 language of this particular claim. 12:23PM

16 Q. (BY MR. CLAWSON) Does your scenario two meet 12:23PM
17 the first limitation of Claim 1 of the '442 patent? 12:23PM

18 MR. LIMBACHER: Objection, form. 12:23PM

19 A. As I said before, both of the scenarios that 12:23PM
20 I've provided are supported by the claim language as -- 12:23PM
21 as described, and I've also offered consistent examples 12:23PM
22 from the specification to support my understanding and 12:23PM
23 my reading. 12:24PM

24 Q. (BY MR. CLAWSON) Yes or no, does a scenario 12:24PM
25 being supported by the claim language mean that that 12:24PM

1 scenario satisfies the claim language?

12:24PM

2 MR. LIMBACHER: Objection, form.

12:24PM

3 A. Again, the -- I'm describing my understanding
4 of Claim 1 and that the language supports both of those
5 scenarios that I've described.

12:24PM

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12:24PM

6 MR. LIMBACHER: Counsel, we have been going
7 well over an hour now.

12:24PM

12:24PM

8 MR. CLAWSON: Okay. We'll take a break
9 once we are done with this line of questioning if that's
10 okay.

12:25PM

12:25PM

12:25PM

11 Q. (BY MR. CLAWSON) And when you state that the
12 language supports both scenarios, does that mean that
13 the scenarios satisfy the first limitation of Claim 1?

12:25PM

12:25PM

12:25PM

14 MR. LIMBACHER: Objection, form.

12:25PM

15 A. Again, the language supports the two scenarios
16 that I described. So, you know, the language also
17 supports the use of two computation nodes and two
18 booster nodes instead of one computation node and one
19 booster node.

12:25PM

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20 So I'm not sure what you are -- what you
21 are getting at. I think I've been very clear and
22 consistent with the my answering and offering examples
23 of exactly my understanding and reading of the plain
24 language as written.

12:25PM

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25 Q. (BY MR. CLAWSON) And in your answers, you've

12:26PM

1 repeatedly used the language that the claim supports 12:26PM
2 these scenarios. Is the claim supporting the scenario 12:26PM
3 the same as the claim being satisfied by the scenario? 12:26PM

4 MR. LIMBACHER: Objection, form. 12:26PM

5 A. And again, you are introducing new language -- 12:26PM
6 new terms that may have a meaning that I may not be as 12:26PM
7 knowledgeable about, and so I'm -- 12:26PM

8 Q. (BY MR. CLAWSON) What language -- 12:26PM

9 A. -- describing -- I'm describing -- you changed 12:26PM
10 one word in what I said. 12:26PM

11 Q. What language are you talking about? 12:27PM

12 A. So you used the word "satisfied." 12:27PM

13 Q. Do you understand what I mean when I'm asking 12:27PM
14 whether a claim limitation is satisfied? 12:27PM

15 A. So, you know, the terms "met" and "satisfied," 12:27PM
16 I'm not as -- I'm not a lawyer, so if you want to define 12:27PM
17 those for me. I mean, I have a general understanding, 12:27PM
18 but I -- again, you took my words and changed one word, 12:27PM
19 and I'm being very consistent on what I'm saying. So I 12:27PM
20 feel that I'm being extremely clear and consistent in my 12:27PM
21 answering. 12:27PM

22 Q. Do you know what it means for a claim element 12:27PM
23 to be satisfied? 12:28PM

24 MR. LIMBACHER: Objection, form. 12:28PM

25 A. Again, I've been able to describe to you my 12:28PM

1 understanding, as a person skilled in the art, of the 12:29PM
2 plain language of Claim 1, and so I'm describing what is 12:29PM
3 supported by the claim language in terms of the two 12:29PM
4 scenarios that I described. 12:29PM

5 Q. (BY MR. CLAWSON) Yes or no -- 12:29PM

6 A. I've also offered examples from the 12:29PM
7 specification. 12:29PM

8 Q. Yes or no, is it your testimony that you have 12:29PM
9 no understanding of what it means for a patent term to 12:29PM
10 be satisfied? 12:29PM

11 MR. LIMBACHER: Objection, form. 12:29PM

12 A. No. I do have an understanding of when 12:29PM
13 something is satisfied or not. 12:29PM

14 Q. (BY MR. CLAWSON) Tell me your understanding, 12:29PM
15 please. 12:29PM

16 A. So do you have a specific scenario that you 12:29PM
17 want me to ask -- or answer? 12:30PM

18 Q. You just told me you had an understanding, and 12:30PM
19 I asked for that understanding. Yes or no, can you tell 12:30PM
20 me your understanding of what it means for a claim 12:30PM
21 element to be satisfied? 12:30PM

22 MR. LIMBACHER: Objection, form. 12:30PM

23 A. So again, you know, "satisfied" has a 12:30PM
24 particular legal meaning. My understanding in plain 12:30PM
25 language of satisfied, I can answer. 12:30PM

1 And basically, you know, whether the -- you 12:30PM
2 know, and I'm usually looking at satisfying terms of 12:30PM
3 prior art, you know, whether a particular prior art -- 12:30PM
4 it's -- what it's describing satisfies a particular 12:30PM
5 claimed invention. 12:31PM

6 Q. (BY MR. CLAWSON) And what does it mean for 12:31PM
7 prior art to satisfy a claim element? 12:31PM

8 MR. LIMBACHER: Objection, form. 12:31PM

9 A. I'm not sure I have the exact legal definition, 12:31PM
10 but I can offer that it should -- it should be able to 12:31PM
11 cover that -- that particular claim, the claimed 12:31PM
12 invention in terms of having the elements of the claimed 12:31PM
13 invention that are in the claims. 12:31PM

14 Q. (BY MR. CLAWSON) And using that definition -- 12:31PM
15 and to be clear, for the record, I'm not asking whether 12:31PM
16 Claim 1 supports either scenario that we've been 12:31PM
17 discussing. 12:32PM

18 Using your definition of satisfying a claim 12:32PM
19 element, does scenario one satisfy the first element of 12:32PM
20 Claim 1 of the '442 patent? 12:32PM

21 MR. LIMBACHER: Objection, form. 12:32PM

22 A. I believe that the first claim element of Claim 12:32PM
23 1 in the '442 patent is supporting both scenarios that 12:32PM
24 I've described, and so that's -- that's my plain 12:32PM
25 reading, and the specification is consistent with that 12:32PM

1 reading, and I provided you with examples of that
2 reading.

3 Q. (BY MR. CLAWSON) You provided me with your
4 understanding of what it means for a claim element to be
5 satisfied. Do you understand that to be different from
6 a claim element supporting a scenario?

7 MR. LIMBACHER: Objection, form.

8 A. So if you're asking me if a system that only
9 allows you to assign subtasks to a homogenous computing,
10 you know -- you know, nodes is better, homogenous, then
11 I would say that it doesn't satisfy the claimed
12 invention. That's one example.

13 Q. (BY MR. CLAWSON) Did I ask that question?

14 A. I'm giving you a very specific example. You
15 know --

16 Q. And I'm asking the specific example of scenario
17 one alone, does that satisfied the claimed invention?

18 MR. LIMBACHER: Objection, form.

19 A. I think we had a -- sorry. Could you read that
20 back? You froze.

21 Q. (BY MR. CLAWSON) So you just gave me one
22 example of a situation that does not satisfy the claimed
23 invention. So does scenario one alone satisfy element
24 one -- the first element of Claim 1 of the '442 patent?

25 MR. LIMBACHER: Objection, form.

1 A. The language in Claim 1 of the '442 patent is
2 basically describing enabling both of those scenarios
3 that I described. So -- and again, I'm -- and I gave
4 you an example of a scenario that would not be satisfied
5 by the '442 patent -- I'm sorry -- a scenario that would
6 not satisfy the claims of the '442.

7 Q. (BY MR. CLAWSON) You gave me an example of a
8 scenario that would not satisfy the claims of the '442
9 patent.

10 A. Correct.

11 Q. Looking specifically at scenario one alone,
12 does that satisfy the first element of Claim 1 of the
13 '442? To be clear for the record, I'm asking whether it
14 satisfies the claim element. I'm not asking whether the
15 claim supports or enables that scenario.

16 MR. LIMBACHER: Objection, form.

17 A. Again, I think the language, as I understand
18 it, allows for both of those and so -- both of the
19 scenarios that I described.

20 Q. (BY MR. CLAWSON) To be clear for the record,
21 I'm not asking whether the language allows for, supports
22 or enables those scenarios. I'm asking specifically
23 whether scenario one satisfies the first element of
24 Claim 1 of the '442 patent?

25 MR. LIMBACHER: Objection, form.

1 A. And again, I'm describing what the '442 patent,
2 as I understand it from its plain language, as a person
3 skilled in the art would be reading it. So --

4 MR. LIMBACHER: I'm sorry to break in,
5 Counsel, but I am going to have to insist on a break in
6 the next ten minutes.

7 MR. CLAWSON: That's fine. We'll wrap up
8 this line of questioning in the next ten minutes.

9 Q. (BY MR. CLAWSON) So to be clear, you gave me
10 an example of a scenario that would not satisfy the
11 first element of the '442 patent, and that scenario was
12 distributing some tasks in a homogeneous system; is that
13 right?

14 MR. LIMBACHER: Objection, form.

15 A. I don't believe that's what I said. I think I
16 said where subtasks -- where a subtask is only able to
17 be assigned to homogenous nodes, where all the -- where
18 all the processors are the same. That's an example that
19 would not satisfy the claims of the '442.

20 Q. (BY MR. CLAWSON) So to be clear, you can tell
21 me that that example does not satisfy the claims of the
22 '442 patent, but you cannot tell me whether scenario one
23 satisfies the first element of Claim 1 of the '442
24 patent?

25 MR. LIMBACHER: Objection, form.

1 A. Again, the '442 patent allows for both of the
2 scenarios that I've described.

3 Q. (BY MR. CLAWSON) Can you tell me whether --
4 when you say "allows for," is that the same as
5 satisfying a claim element?

6 MR. LIMBACHER: Objection, form.

7 A. And again, I'm going to maintain that my -- my
8 reading and understanding of the claim language allows
9 for both scenarios. So again, it's -- my reading and my
10 understanding in the claim -- the specification supports
11 those scenarios, and so I'm trying to be as accurate in
12 my answering as possible.

13 Q. (BY MR. CLAWSON) Have you told me in your
14 testimony whether scenario one satisfies the first
15 element of Claim 1 of the '442 patent?

16 MR. LIMBACHER: Objection, form.

17 A. I have told you that the first claim and the
18 first claim element in Claim 1 describes a -- a system
19 that -- or method and system that would support --
20 actually, just a method because it's a method claim --
21 the assignment of -- in both scenarios where one subtask
22 is assigned to a computation node and a booster node and
23 also supports the assignment of a subtask to only either
24 a computation node or a booster node where those nodes
25 can be heterogenous themselves, as supported by the

1 specification.

2 MR. CLAWSON: Okay. I think this is a good 12:41PM
3 time to take a break. Why don't we go off the record. 12:41PM

4 (Lunch recess.) 12:41PM

5 Q. (BY MR. CLAWSON) Dr. Kaeli, before the break, 01:16PM
6 you gave me one example of a scenario that would not 01:16PM
7 satisfy the first limitation of Claim 1 of the '442 01:16PM
8 patent. And when I say "the first limitation," I'm 01:16PM
9 talking about the limitation in the paragraph on lines 01:16PM
10 33 to 36. 01:16PM

11 And my understanding of that example was a 01:16PM
12 system where all subtasks in a given iteration -- a 01:16PM
13 given computing iteration are assigned only to 01:16PM
14 homogeneous processors, so meaning all subtasks in a 01:16PM
15 given iteration are assigned to the same processor type. 01:17PM
16 Is my understanding of that scenario, is that correct? 01:17PM

17 MR. LIMBACHER: Objection, form. 01:17PM

18 A. So what I said -- I don't think you captured 01:17PM
19 what I said accurately. Can you restate it? 01:17PM

20 Q. (BY MR. CLAWSON) First, what part do you think 01:17PM
21 was not captured accurately? 01:17PM

22 A. You said that all the subtasks, and I was 01:17PM
23 referring to a system where a subtask may be assigned to 01:17PM
24 multiple processors and that those -- those processors 01:17PM
25 had to be of the same type. And clearly, the '442 01:18PM

1 patent is describing systems where those do not have to
2 be of the same type. So that was specifically what I
3 was talking about.

4 Q. Okay. Thanks for that clarification.

5 So let's consider a system that does
6 include processors of different types, but in a first
7 computing iteration, all subtasks are processed using a
8 single processing type. Can you tell me whether that
9 would satisfy the first limitation of Claim 1 of the
10 '442 patent?

11 MR. LIMBACHER: Objection, form.

12 A. So the '442 patent provides the ability to --
13 describes -- this first claim describes a method for a
14 heterogenous computing system with a plurality of
15 computation nodes and a plurality of booster nodes and
16 then can assign a range -- you know, the computing
17 tasks -- the computation tasks comprising the plurality
18 of subtasks and then in the first iteration assigns
19 those subtasks to a portion of the plurality of
20 computation nodes and at least a portion of booster
21 nodes.

22 What you just described is a system that
23 only assigned in the first iteration to a single type of
24 node. Do I understand your scenario correctly?

25 Q. (BY MR. CLAWSON) Yes. It's only a single type

1 of node during a given computing iteration.

01:20PM

2 MR. LIMBACHER: Objection, form.

01:21PM

3 Q. (BY MR. CLAWSON) To rephrase, in the system
4 during a first computing iteration, all subtasks to be
5 processed in that iteration are assigned to a single
6 type of processor even though the system has different
7 processor types.

01:21PM

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8 MR. LIMBACHER: Objection, form.

01:21PM

9 A. Again, the '442 talks about assigning and
10 processing the plurality of subtasks by at least a
11 portion of the plurality of computation nodes and at
12 least a portion of the plurality of booster nodes in a
13 first distribution.

01:21PM

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14 You've described to me a scenario where in
15 a first distribution, all of the computation is done
16 on -- and you didn't say whether these were booster or
17 compute, but basically just in one type of node, and the
18 Claim 1 specifically says that -- that it's a -- there's
19 a -- at least a plurality of the -- at least one of the
20 plurality of computation nodes and the plurality of
21 booster nodes is assigned to the computation task. So I
22 would say that that's different.

01:21PM

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23 Q. (BY MR. CLAWSON) Would you say that that does
24 not satisfy the limitation -- the first limitation of
25 this claim?

01:22PM

01:22PM

01:22PM

1 MR. LIMBACHER: Objection, form. 01:22PM

2 A. I would say that the scenario that you just 01:22PM
3 gave me does not -- is not using a portion of the 01:23PM
4 plurality of computation nodes and at least a portion of 01:23PM
5 the plurality of booster nodes. So it would not -- you 01:23PM
6 know, it would not satisfy this claim. 01:23PM

7 Q. (BY MR. CLAWSON) So in a system that has 01:23PM
8 computation nodes and booster nodes and where all 01:23PM
9 subtasks in a given iteration are assigned only to 01:23PM
10 computation nodes, it's your opinion that that would not 01:23PM
11 satisfy this first element of Claim 1 of the '442 01:23PM
12 patent? 01:23PM

13 MR. LIMBACHER: Objection, form. 01:23PM

14 A. Again, I'm telling you that the '442 patent as 01:23PM
15 I read it in the plain language describes the processing 01:24PM
16 of the plurality of subtasks but at least a portion of 01:24PM
17 the plurality of computation nodes and at least a 01:24PM
18 portion of the plurality of booster nodes in a first 01:24PM
19 distribution. 01:24PM

20 Q. (BY MR. CLAWSON) So how does that apply to 01:24PM
21 this scenario that I just gave in the last question? 01:24PM

22 MR. LIMBACHER: Objection, form. 01:24PM

23 A. Again, it's -- I think I'm pretty clear that 01:24PM
24 Claim 1 is describing an assignment where there's at 01:24PM
25 least a portion of the plurality of computation nodes 01:24PM

1 and a portion of the plurality of booster nodes in a 01:24PM
2 first distribution, and again, we know that the booster 01:25PM
3 nodes and the computation nodes in the '442 patent can 01:25PM
4 be heterogenous as well, but given the scenario that you 01:25PM
5 just gave me, that would not satisfy the -- this claim 01:25PM
6 of the '442 patent. 01:25PM

7 Q. (BY MR. CLAWSON) And in the scenario of a 01:25PM
8 system having both computation nodes and booster nodes, 01:25PM
9 where in a first iteration also tasks to be processed 01:25PM
10 are assigned only to booster nodes, would that satisfy 01:25PM
11 this first element of Claim 1 of the '442 patent? 01:25PM

12 MR. LIMBACHER: Objection, form. 01:25PM

13 A. So you're asking me if it was a system that 01:25PM
14 only was used in the booster nodes on an assignment? 01:26PM

15 Q. (BY MR. CLAWSON) So -- that's right. I 01:26PM
16 previously asked you about a system only using 01:26PM
17 computation nodes. Now I'm asking you about that system 01:26PM
18 only using booster nodes for all subtasks in a given 01:26PM
19 iteration. 01:26PM

20 MR. LIMBACHER: Objection, form. 01:26PM

21 A. So in that first computing iteration, they 01:26PM
22 would have needed to use at least a portion of the 01:27PM
23 plurality of computation nodes and at least a portion of 01:27PM
24 the plurality of booster nodes, so that -- that scenario 01:27PM
25 wouldn't necessarily -- the system would not be able 01:27PM

1 to -- if the assignment was -- it's not satisfying -- so
2 there's a question of whether the system that you are
3 describing can actually assign to -- you know, to the --
4 the computation nodes or the booster nodes, but what you
5 are telling me is they are only assigning to one type of
6 node and -- and whether it's a booster or a computation,
7 that would seem not to satisfy Claim 1 of the '442.

8 Q. (BY MR. CLAWSON) Okay. Let's move on to the
9 next limitation, and I'll refer to this as the second
10 limitation of Claim 1, and this starts at line 37 and
11 goes down to line 43 of column 5 of the '442 patent.

12 And I'll read starting at line 40. This
13 limitation reads, "A further distribution of the
14 plurality of subtasks between the plurality of
15 computation nodes and the plurality of booster nodes for
16 processing thereby in a further computing iteration."

17 So my question to you is what is meant by a
18 further distribution of the plurality of subtasks
19 between the plurality of computation nodes and the
20 plurality of booster nodes?

21 A. So if we read the entirety of that subclaim,
22 "Generating, using information relating to the
23 processing of the plurality of subtasks by at least the
24 portion of the plurality of computation nodes and at
25 least the portion of the plurality of booster nodes,"

1 referring to what happened in the first iteration, "a
2 further distribution of the plurality of subtasks
3 between the plurality of computation nodes and the
4 plurality of booster nodes for processing thereby in a
5 further computing iteration."

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6 So the -- the performance of the
7 previous -- of the first mapping of the first computing
8 iteration is assessed, and they are considering whether
9 to -- how to reassign the subtasks to the plurality of
10 computation nodes and booster nodes in the further
11 computing iteration.

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12 Q. And does that further distribution require
13 anything in terms of moving a subtask from one node
14 type, either booster nodes or computation nodes, to
15 another type from one iteration to another?

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16 A. Does it require a site?

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17 Q. So I'm asking does -- does this claim require
18 between a first iteration and a further computer
19 iteration that at least one subtask be either moved from
20 a computation node to a booster node or from a booster
21 node to a computation node?

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22 A. The claim basically is -- the subclaim is
23 describing, you know, what's happening in a second
24 iteration in terms of a mapping, what information it's
25 using that is the -- that was based on the -- the

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1 computing of the subtasks in the first iteration and 01:32PM
2 then reassigning those subtasks to boosters and -- so 01:32PM
3 you're asking me in terms of this claim, does this 01:32PM
4 require the ability to move from one type of node to 01:32PM
5 another type of node? 01:32PM

6 Q. Right. I'm trying to get an understanding of 01:32PM
7 what a further distribution and a further computation 01:32PM
8 means and whether that requires a movement of a subtask 01:32PM
9 from one node type to another between a first and 01:32PM
10 further computation iteration? 01:32PM

11 MR. LIMBACHER: Objection, form. 01:33PM

12 A. So based on the decision that's being made 01:33PM
13 to -- on the remapping, there may need to be information 01:33PM
14 communicated from one -- one type of node to another 01:33PM
15 type of node and so that the computation can continue in 01:33PM
16 the next iteration. 01:33PM

17 Q. (BY MR. CLAWSON) But does the claim require 01:33PM
18 executing a subtask in a further computation iteration 01:33PM
19 on a different node type from the node type that 01:33PM
20 executed that subtask in the first iteration? 01:33PM

21 MR. LIMBACHER: Objection, form. 01:33PM

22 A. The assignment may be the information tells us 01:33PM
23 that performance is great and I don't need to move 01:34PM
24 anything, but the idea is that the system will -- 01:34PM
25 because applications are dynamic and they have prime 01:34PM

1 time characteristics that may not be, you know, well 01:34PM
2 behaved, they -- generally, there will be some 01:34PM
3 computation that will move from one node to another node 01:34PM
4 or maybe one node to multiple nodes. Those are all 01:34PM
5 anticipated, I think, in terms of the -- you know, by 01:34PM
6 this subclaim. 01:34PM

7 Q. (BY MR. CLAWSON) So in a system that takes the 01:34PM
8 information related to the processing and based on 01:34PM
9 information says, yeah, the first iteration was great, 01:34PM
10 we don't need to make any changes here, here's your 01:35PM
11 first -- your further distribution, which is the same as 01:35PM
12 the first distribution for the further iteration, is it 01:35PM
13 your opinion that that -- 01:35PM

14 A. That's possible. 01:35PM

15 Q. -- satisfies -- 01:35PM

16 A. That's possible. It doesn't satisfy anything. 01:35PM

17 MR. LIMBACHER: Objection. 01:35PM

18 Dave, if you can just give me a second 01:35PM
19 before you answer so I can get in there. Sorry. 01:35PM

20 THE WITNESS: Sorry. 01:35PM

21 Q. (BY MR. CLAWSON) So just to rephrase my 01:35PM
22 question, where a system maintains a mapping in a 01:35PM
23 further iteration based on the information related to 01:35PM
24 the processing of subtasks, would that satisfy this 01:35PM
25 second limitation of Claim 1? 01:35PM

1 MR. LIMBACHER: Objection, form. 01:35PM

2 A. So just having -- so if it does not have the 01:35PM

3 ability to take the -- in -- for the further 01:36PM

4 distribution, the ability to choose to move or not to 01:36PM

5 move a subtask from -- 01:36PM

6 Q. (BY MR. CLAWSON) Assume it does have that 01:36PM

7 ability. 01:36PM

8 MR. LIMBACHER: Objection, form. 01:36PM

9 A. So the fact that the current distribution of -- 01:36PM

10 of subtasks to computation nodes and booster nodes is 01:36PM

11 performing well, the system can choose to maintain -- in 01:36PM

12 the next computing iteration, maintain that 01:37PM

13 configuration. 01:37PM

14 Again, the probability of that, it may 01:37PM

15 happen, but the system has to have the ability to move 01:37PM

16 computation from compute nodes to booster nodes and vice 01:37PM

17 versa. 01:37PM

18 Q. (BY MR. CLAWSON) But just to be clear for the 01:37PM

19 record, where a system does have that ability to move 01:37PM

20 subtasks between computation and booster nodes but 01:37PM

21 affirmatively decides to maintain the distribution from 01:37PM

22 a first iteration to a further computing iteration, that 01:37PM

23 would satisfy the second limitation of Claim 1? 01:37PM

24 MR. LIMBACHER: Objection, form. 01:37PM

25 A. Well, it would have to satisfy also that -- 01:37PM

1 that the processing of the plurality of subtasks is by 01:38PM
2 at least a portion of the plurality of computation nodes 01:38PM
3 and at least a portion of the plurality of booster 01:38PM
4 nodes. So if that is satisfied and the -- the 01:38PM
5 performance analysis that's performed dynamically says 01:38PM
6 we don't need to move for the next computing iteration, 01:38PM
7 it can be maintained. 01:38PM

8 Q. (BY MR. CLAWSON) Dr. Kaeli, I'll ask you to 01:38PM
9 turn to -- turn now to Exhibit 1005. 01:39PM

10 A. I have Exhibit 1005. 01:39PM

11 Q. And turning to -- let's see. This will be 01:39PM
12 Page 7 of the PDF. It doesn't have a page number 01:39PM
13 listed, but it's the page before Page 388. 01:39PM

14 A. 388. I'm there. 01:39PM

15 Q. The page before 388? 01:40PM

16 A. Oh, that's 377, yes -- or 387. Yes, I'm there. 01:40PM

17 Q. And this exhibit is a journal article titled A 01:40PM
18 Method For the Online Use of Offline Derived Remappings 01:40PM
19 of Iterative Automatic Target Recognition Tasks Onto a 01:40PM
20 Particular Class of Heterogenous Parallel Platforms; is 01:40PM
21 that correct? 01:40PM

22 A. That's correct. 01:40PM

23 Q. And the first listed author is John R. 01:40PM
24 Budenske? 01:40PM

25 A. That's correct. 01:40PM

1 Q. I'll ask you to turn to Page 391.

01:40PM

2 A. I am there.

01:41PM

3 Q. And please go ahead and read for the record the
4 first sentence of the first full paragraph on Page 391
5 of Exhibit 1005.

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6 A. "Each application task will be an instantiation
7 of a DDG, data dependency graph, whose nodes are the
8 subtasks that need to be executed to perform the
9 application and whose arcs are the data dependencies
10 among subtasks. The expected number of subtasks is 10
11 to 50. The DDG will be structured" --

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12 Q. You don't need to read any more. That's fine.
13 I just need the first sentence.

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14 So looking at that first sentence of the
15 first full paragraph, would you agree that it describes
16 subtasks as being a part of an application task?

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17 MR. LIMBACHER: Objection, form.

01:42PM

18 A. So it's describing each application task as a
19 graph of nodes where the nodes represent the subtasks.

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20 Q. (BY MR. CLAWSON) And would you say that those
21 subtasks are a part of an application task?

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01:42PM

22 A. As described here, it's -- they are part of the
23 application task. Along with the application task are
24 the data dependencies that are actually the edges of the
25 data dependency graph.

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1 Q. And please go ahead and turn to Page 392. 01:43PM

2 A. I am there. 01:44PM

3 Q. And I'll go ahead and read the second sentence 01:44PM

4 of the second full paragraph. So this sentence states, 01:44PM

5 "Given this and the symmetry property of the 01:44PM

6 inter-processor communications among processors of the 01:44PM

7 same type, the expected execution time of a particular 01:44PM

8 microprocessor" -- I'm sorry -- "multiprocessor 01:44PM

9 implementation of a subtask is independent of which 01:44PM

10 fixed size subset of the processors of a given type are 01:44PM

11 assigned to execute the subtask." Do you see that? 01:44PM

12 A. I do. 01:44PM

13 Q. And that sentence discusses "a subtask" and 01:44PM

14 then "the subtask." Do you see those in that sentence? 01:44PM

15 MR. LIMBACHER: Objection, form. 01:44PM

16 A. So there's "a subtask" referenced and there's 01:44PM

17 "the subtask." 01:45PM

18 Q. (BY MR. CLAWSON) Would you agree that where 01:45PM

19 that sentences uses "the subtask," that that's referring 01:45PM

20 to the same "a subtask" previously in the same sentence? 01:45PM

21 MR. LIMBACHER: Objection, form. 01:45PM

22 A. Well, if you read the whole paragraph, it 01:45PM

23 starts off by saying, "For simplicity, it is assumed 01:45PM

24 that if an implementation of a given subtask uses 01:45PM

25 multiple processors, all processors will be of the same 01:46PM

1 type. Given this and the symmetry property of the 01:46PM
2 inter-processor communications among processors of the 01:46PM
3 same type, the expected execution time of a particular 01:46PM
4 multiprocessor implementation of a subtask is 01:46PM
5 independent of which fixed size subset of processors of 01:46PM
6 a given type are assigned to execute the subtask." 01:46PM

7 So they are saying for a subtask, it's 01:46PM
8 assuming all processors are of the same type and that 01:46PM
9 they have this fixed intercommunication pattern, which 01:46PM
10 they describe above and when they are talking about the 01:46PM
11 daughter -- Mercury daughter board. 01:46PM

12 MR. CLAWSON: I'll move to strike that 01:46PM
13 answer as nonresponsive. 01:46PM

14 Reporter, can you please repeat the 01:46PM
15 question that I did ask? 01:46PM

16 (Whereupon, the requested testimony was read back 01:46PM
17 as follows: 01:46PM

18 QUESTION: Would you agree that where that 01:45PM
19 sentences uses "the subtask," that that's referring 01:45PM
20 to the same "a subtask" previously in the same 01:45PM
21 sentence?) 01:45PM

22 MR. LIMBACHER: Same objection. 01:47PM

23 A. And again, I'm giving the complete context for 01:47PM
24 the subtask, that basically is the subtask that's using 01:47PM
25 multiple processors, all of the processors to be of the 01:47PM

1 same type, and given this and the symmetry property of 01:47PM
2 the inter-processor communications among processors of 01:47PM
3 the same type, those are key elements of what we are 01:47PM
4 talking about here, that we have a subtask that's 01:47PM
5 running on processors of the same type. 01:47PM

6 Q. (BY MR. CLAWSON) And where that sentence uses 01:47PM
7 "a subtask" and then "the subtask," it's talking about 01:47PM
8 the same subtask? 01:48PM

9 A. It's talking about the subtask -- 01:48PM

10 MR. LIMBACHER: Objection, form. 01:48PM

11 A. It's talking about, from the first sentence 01:48PM
12 that I described, of a given subtask that uses multiple 01:48PM
13 processors and where those processes are all of the same 01:48PM
14 type. 01:48PM

15 Q. (BY MR. CLAWSON) So where this paragraph in 01:48PM
16 the first sentence says "a given subtask," and then in 01:48PM
17 the subsequent sentence, it says "a subtask" and then 01:48PM
18 "the subtask," it's your opinion that all of those are 01:48PM
19 discussing the same subtask? 01:48PM

20 MR. LIMBACHER: Objection, form. 01:48PM

21 A. They are all referring to a subtask that uses 01:48PM
22 multiple processors. 01:48PM

23 Q. (BY MR. CLAWSON) And where this second 01:48PM
24 sentence -- or the second full paragraph of Page 392 01:49PM
25 describes a subtask, it's referring to a single subtask, 01:49PM

1 right?

01:49PM

2 MR. LIMBACHER: Objection, form.

01:49PM

3 A. So it's referring to what's in the first
4 sentence of that paragraph, which is of a given subtask
5 that uses multiple processors. So that's what the --
6 the subtask that's being referenced later in that
7 paragraph is referring to.

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8 Q. (BY MR. CLAWSON) And a given subtask is a
9 single subtask?

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10 MR. LIMBACHER: Objection, form.

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11 A. I'm not sure what you mean by a sub -- a
12 subtask is a single subtask.

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13 Q. (BY MR. CLAWSON) When it says "a given
14 subtask," is it talking about a single subtask or it
15 talking about more than one subtask?

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16 MR. LIMBACHER: Objection, form.

01:50PM

17 A. So there may be multiple subtasks that use --
18 that individually use multiple processors but --

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19 Q. (BY MR. CLAWSON) So --

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20 A. -- they would use all the same type of
21 processors for computing that subtask.

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22 And the rest of the paragraph is discussing
23 a given subtask that basically is using multiple
24 processors.

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25 Q. And I just wanted to clarify that this is

01:50PM

1 discussing a single subtask using multiple processors 01:50PM
2 and not multiple subtasks using multiple processors. So 01:51PM
3 again, the question is where it says "a given subtask," 01:51PM
4 is that talking about a single individual subtask or is 01:51PM
5 it talking about multiple subtasks? 01:51PM

6 MR. LIMBACHER: Objection, form. 01:51PM

7 A. Again, there may be multiple subtasks that are 01:51PM
8 individual subtasks that use multiple processors, and 01:51PM
9 there may be multiple of those subtasks. 01:51PM

10 So I want to be clear that the rest of the 01:51PM
11 paragraph is referring to a -- you know, one of those 01:51PM
12 subtasks that is -- that uses multiple processors. 01:51PM

13 Q. (BY MR. CLAWSON) Right. So there may be 01:51PM
14 multiple subtasks, but this is discussing each subtask 01:51PM
15 individually, would you agree to that? 01:51PM

16 MR. LIMBACHER: Objection, form. 01:52PM

17 A. So I read "a given subtask" is referring to a 01:52PM
18 specific one, but not necessarily -- you know, one in a 01:52PM
19 group of subtasks, and so there can be multiple subtasks 01:52PM
20 that use multiple processors. 01:52PM

21 Q. (BY MR. CLAWSON) So each of those subtasks may 01:52PM
22 use multiple processors; is that correct? 01:52PM

23 A. That's correct. But they're all going to use 01:52PM
24 the same type of processor, so they're homogeneous in 01:52PM
25 computation. 01:52PM

1 Q. And what do you understand to mean in the 01:52PM
2 second sentence by a "multiprocessor implementation of a 01:53PM
3 subtask"?

4 MR. LIMBACHER: Objection, form. 01:53PM

5 A. So we expected -- so the -- "of a particular 01:53PM
6 multiprocessor implementation of a subtask." So I have 01:53PM
7 a subtask and I basically -- I have an implementation 01:53PM
8 that targets a multiprocessor implementation of it. If 01:53PM
9 we refer back to the paragraph before, that could be the 01:53PM
10 Mercury daughter board with six SHARC processors. So it 01:53PM
11 could be that we have implementations that will run on 01:53PM
12 those six SHARC processors. 01:54PM

13 Q. (BY MR. CLAWSON) And where it says "a 01:54PM
14 particular multiprocessor implementation of a subtask," 01:54PM
15 so using that example that you just discussed, does that 01:54PM
16 mean that those six SHARC processors are all processing 01:54PM
17 that given subtask? 01:54PM

18 MR. LIMBACHER: Objection, form. 01:54PM

19 A. It means that the -- for that particular 01:54PM
20 subtask that uses multiple processors where all the 01:54PM
21 processors are of the same type, it will be all those 01:54PM
22 SHARC -- there will be an implementation of that subtask 01:54PM
23 that will run on the six SHARC processors and work -- 01:54PM
24 work collectively. 01:55PM

25 Q. (BY MR. CLAWSON) So the six SHARC processors 01:55PM

1 are collectively processing a single subtask for this 01:55PM
2 given implementation? 01:55PM

3 MR. LIMBACHER: Objection, form. 01:55PM

4 A. That is the scenario that's described here 01:55PM
5 where they're describing the six SHARC processors that 01:55PM
6 share a DRAM that allows for, you know, symmetric 01:55PM
7 property of intercommunication that they are describing 01:55PM
8 in the second sentence in the paragraph that we're 01:55PM
9 looking at. 01:55PM

10 Q. Dr. Kaeli, I'll ask you to turn to paragraph 62 01:55PM
11 of Exhibit 2021. That's your declaration. 01:56PM

12 A. I'm there. 01:56PM

13 Q. And would you go ahead and read that paragraph 01:56PM
14 for the record? 01:56PM

15 A. "In my opinion, Budenske, either alone or in 01:56PM
16 combination with Lippert, fails to teach or render 01:57PM
17 obvious distributing subtasks to both computation nodes 01:57PM
18 and booster nodes in a further computing iteration based 01:57PM
19 on the claimed information." 01:57PM

20 Q. Can you go ahead and read the rest of that 01:57PM
21 paragraph, please? 01:57PM

22 A. "It is not difficult to see why, given that 01:57PM
23 Budenske comes right out and states that when assigning 01:57PM
24 a task to multiple processors, 'all processors will be 01:57PM
25 of the same type.'" 01:57PM

1 Q. Will you read the rest of the paragraph? 01:57PM

2 A. "A POSITA would have understood that such a 01:57PM
3 limitation precludes distributing subtasks between 01:57PM
4 processors of different types, computation nodes and 01:57PM
5 booster nodes, as recited in the challenged claims." 01:57PM

6 Q. So just so I'm clear on your opinions, is it 01:57PM
7 your opinion that Budenske does not distribute subtasks 01:58PM
8 between different types of processors in the given 01:58PM
9 iteration? 01:58PM

10 MR. LIMBACHER: Objection, form. 01:58PM

11 A. It's my claim that -- and Budenske supports 01:58PM
12 this in multiple places -- that a single subtask will 01:58PM
13 only be computed on one type of processor in a computing 01:58PM
14 iteration. 01:58PM

15 Q. (BY MR. CLAWSON) I'm sorry. Can you repeat 01:58PM
16 that? 01:59PM

17 MR. LIMBACHER: Objection, form. 01:59PM

18 A. Could you repeat the question? 01:59PM

19 Q. (BY MR. CLAWSON) So is it your opinion that 01:59PM
20 Budenske does not disclose -- I'm sorry. Scratch that. 01:59PM

21 Is your opinion that Budenske does not 01:59PM
22 distribute subtasks between different types of 01:59PM
23 processors in a given computing iteration? 01:59PM

24 MR. LIMBACHER: Objection, form. 01:59PM

25 A. So the -- it's my understanding that -- that 01:59PM

1 Budenske does not support a single subtask being
2 assigned to different processor types in the same
3 iteration.

4 Q. (BY MR. CLAWSON) And is it your contention
5 that the '442 patent requires distributing a single
6 subtask between computation nodes and booster nodes in a
7 single iteration?

8 MR. LIMBACHER: Objection, form.

9 A. No. I believe I said that -- we'll go back to
10 the '442 just to be -- that a -- the '442 describes a
11 method of operating a heterogenous computing system
12 comprising of a plurality of computation nodes and a
13 plurality of booster nodes, at least one of the
14 plurality of computation nodes and a plurality of
15 booster nodes being arranged to compute a computation
16 task, the computation task comprising a plurality of
17 subtasks, the method comprising in a first computing
18 iteration, assigning and processing the plurality of
19 subtasks by at least a portion of the plurality of
20 computation nodes and at least a portion of the
21 plurality of booster nodes in a first distribution."

22 Now, I offered two scenarios where -- that
23 are supported by this claim, and so I'm sort of going
24 back again.

25 Q. I'm just trying to understand what you're

1 trying to say in this paragraph, in paragraph 62. So
2 your opinions in paragraph 62, so these relate
3 specifically to that first scenario that we discussed
4 earlier?

5 MR. LIMBACHER: Objection, form.

6 A. So Budenske -- one way in which Budenske does
7 not satisfy the '442 claims is the -- the distributing
8 of subtasks between different processor types,
9 computation nodes and booster nodes. Again, there --
10 Budenske is basically, for a subtask, only allocating to
11 a single processor type.

12 Q. (BY MR. CLAWSON) And that's what you're saying
13 here in paragraph 62?

14 MR. LIMBACHER: Objection, form.

15 A. I mean, I can read the language.

16 Q. (BY MR. CLAWSON) I'm not asking you to read
17 the language. I'm asking you is that what this
18 paragraph is trying to support?

19 MR. LIMBACHER: Objection, form.

20 A. So I'm saying in addition to Budenske, Budenske
21 either alone or in combination with Lippert -- Lippert
22 being the original -- being the patent that came before
23 the '442 that included Lippert as one of the
24 inventors -- fails to teach or render obvious
25 distributing subtasks to both computation nodes and

1 booster nodes in a further computing iteration.

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2 And, again, it's crystal clear. It's, you
3 know -- Budenske, in multiple places, talks about all
4 the processors will be of the same type.

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5 A later publication that was based on
6 Budenske, I think it's Exhibit 1008, right in the
7 introduction talks about that it will do homogeneous
8 computing and uses that term specifically where all the
9 processors are the same type. So I think it's pretty
10 clear that Budenske, a single subtask has to be running
11 on just one type of processor.

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12 Q. (BY MR. CLAWSON) And so you say, "I think it's
13 pretty clear that a single subtask has to be running on
14 just one type of processor." Is that for a single
15 iteration?

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16 MR. LIMBACHER: Objection, form.

02:04PM

17 A. I don't think that Budenske qualified it to
18 only a particular iteration. I think it's on any
19 iteration.

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20 Q. (BY MR. CLAWSON) Does Budenske explicitly say
21 it applies to all iterations?

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02:05PM

22 A. No, but it says that -- that all processors
23 will be of the same type, so I'm -- it's pretty clear
24 that that's for all iterations. It's not qualifying it
25 in any way whatsoever in the text.

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1 Q. So I'm not talking about a single subtask. So 02:05PM
2 talking about multiple subtasks, does Budenske disclose 02:06PM
3 distributing multiple subtasks between different 02:06PM
4 processor types? 02:06PM

5 MR. LIMBACHER: Objection, form. 02:06PM

6 A. Budenske describes being able to distribute 02:06PM
7 subtasks to different processor types. 02:06PM

8 Q. (BY MR. CLAWSON) Does Budenske describe being 02:06PM
9 able to distribute different subtasks to different 02:06PM
10 processor types in the same computing iteration? 02:06PM

11 MR. LIMBACHER: Objection, form. 02:06PM

12 A. So Budenske describes that a portion of the 02:06PM
13 subtasks can be mapped to one processor type and a 02:07PM
14 portion of the subtasks to another processor type, then 02:07PM
15 based on the input, the actual image for the ATR 02:07PM
16 application, make a change in that allocation of -- of 02:07PM
17 which -- which of the subtasks are mapped to which 02:07PM
18 computing type. And all of that is actually done 02:07PM
19 offline, not online, as is done in the '442. 02:08PM

20 Q. (BY MR. CLAWSON) So is it your testimony that 02:08PM
21 Budenske describes reallocating a given subtask from one 02:09PM
22 processor to another between iterations? 02:09PM

23 MR. LIMBACHER: Objection, form. 02:09PM

24 A. Budenske describes a -- you know, the 02:09PM
25 capability of remapping a task and -- and again, the -- 02:09PM

1 you know, for a subtask that uses multiprocessors, all
2 the processors will be of the same type.

3 Q. (BY MR. CLAWSON) In Budenske, can some tasks
4 not use multiprocessors?

5 MR. LIMBACHER: Objection, form.

6 A. So Budenske describes, for instance, in their
7 example on Page 391, two types of processors, a SHARC
8 DSP processor and a PowerPC RISC processor. And this is
9 their mix of what they are calling a heterogenous
10 parallel architecture.

11 Now, understand, this is in, what, 1998.
12 This is, you know -- they are only allowing a single
13 application, the ATR application. Everything that's
14 done in terms of mapping and redistribution is only for
15 this one application. And so this is a very customized
16 implementation, which is appropriate for heterogenous
17 systems at this time.

18 I mean, they were very simple. They
19 couldn't do online assignment because it was -- it would
20 cost too much in terms of performance. So they computed
21 all these configurations offline and then based on the
22 program input would adapt -- you know, would pick one of
23 them. And so, in that sense -- so they're using two
24 types of processors.

25 Q. (BY MR. CLAWSON) My question is whether it's

1 your opinion that in Budenske all the subtasks must use
2 multiple processors? Does every individual subtask in
3 Budenske need to use multiple processors?

4 MR. LIMBACHER: Objection, form.

5 A. Are you asking whether a subtask would be
6 assigned to a unit processor versus a multiprocessor?
7 Is that what you are asking? Or are you asking -- yeah,
8 let's go with that question.

9 Q. (BY MR. CLAWSON) I'm asking you is it your
10 opinion that Budenske requires that every subtask use
11 multiple processors?

12 MR. LIMBACHER: Objection, form.

13 A. The only requirement that Budenske talks about
14 multiprocessors is for a given subtask that uses
15 multiprocessors, all processors will be of the same
16 type.

17 I don't believe there's language that talks
18 about using a single versus multiprocessor. I'd have
19 take another look at Budenske to look for that
20 particular discussion.

21 Q. (BY MR. CLAWSON) So sitting here now, you
22 can't recall any language in Budenske that limits --
23 that requires subtasks to use multiple processors?

24 MR. LIMBACHER: Objection, form.

25 A. Again, the only discussion about using multiple

1 processors in Budenske is where a given subtask has to
2 use processors of the same type when using
3 multiprocessors with a given subtask.

4 MR. LIMBACHER: Counsel, we're at about an
5 hour, when you reach a good stopping point.

6 MR. CLAWSON: Yeah, we can go ahead and
7 take a break here.

8 (Short recess.)

9 Q. (BY MR. CLAWSON) Dr. Kaeli, please go ahead
10 and turn to Page 392 of Exhibit 1005.

11 A. I'm there.

12 Q. And in the first full paragraph on Page 395 --
13 sorry. In the first full paragraph on Page 392, the
14 third sentence in reads, "For example, a Mercury
15 daughter board can be populated with six SHARC
16 processors that physically share a DRAM." Do you see
17 that?

18 A. Yes.

19 Q. And so this is providing just one example of a
20 processor type that Budenske used; is that right?

21 MR. LIMBACHER: Objection, form.

22 A. The example that he's describing in this is
23 having SHARC processors in this configuration and having
24 PowerPC RISC processors.

25 It's interesting, I used to work with these

1 Mercury cards, and I worked very closely with analog 02:30PM
2 devices on SHARC processors, so that was great to see. 02:30PM

3 Q. (BY MR. CLAWSON) You mentioned PowerPC RISC 02:30PM
4 processors, so that's mentioned in Budenske on the 02:30PM
5 previous page, on Page 391 in the next to last 02:30PM
6 paragraph; is that correct? 02:31PM

7 A. That's correct. 02:31PM

8 Q. And this paragraph states, "For example, two 02:31PM
9 types may be SHARC DSP processors and PowerPC RISC 02:31PM
10 processors." Do you see that? 02:31PM

11 A. Yes. 02:31PM

12 Q. And so SHARC DSP processors and PowerPC RISC 02:31PM
13 processors are exemplary types of processors that are 02:31PM
14 contemplated by Budenske? 02:31PM

15 MR. LIMBACHER: Objection, form. 02:31PM

16 A. These two types of -- so basically, they are 02:31PM
17 talking about the types of target hardware platforms 02:31PM
18 that they were using in this study that they were doing 02:31PM
19 on ATR applications for the U.S. Army Research Lab, and 02:31PM
20 they mentioned that they could have -- so their IOS 02:32PM
21 environment, which was something that they said later 02:32PM
22 they actually didn't implement, but they were thinking 02:32PM
23 that it would have four types of processors and, you 02:32PM
24 know, up to a total of 64 of all types combined and, for 02:32PM
25 example, what they're talking about here is giving an 02:32PM

1 example of two of them, a SHARC DSP, which basically can
2 be thought of as a booster node, and it's a booster
3 multiprocessor in the configuration they are describing
4 on the next page, and a PowerPC RISC processor, which is
5 generally a unit processor. It might be multi-threaded.
6 I would have to look at the particular generation they
7 are running, but I think it was single threaded.

8 Q. (BY MR. CLAWSON) All right. Let's go back to
9 Page 392. And the first sentence of the first paragraph
10 on this page reads, "All the processors of all types
11 will have communication paths to one another."

12 And then it reads, "Communications among
13 processors of the same type are assumed to be symmetric
14 in the sense that the conflict-free time for any pair of
15 processors to communicate is the same." Do you see
16 that?

17 A. I do.

18 Q. So this states that communications among
19 processors of the same types are assumed to be
20 symmetric; is that correct?

21 A. Yes. And in that sense, they are deterministic
22 in terms of there's no -- generally, there's no latency
23 involved. It -- you have a deterministic latency when
24 accessing memory and communicating between processors.

25 Q. Just for clarification, can you explain what

1 you mean by "deterministic latency"?

02:34PM

2 A. Sure. So when I access memory from a
3 computing -- from a CPU or an accelerator, I'm doing
4 load and store operations that are to the memory. So
5 I'm either bringing -- fetching data or I'm storing
6 data.

02:34PM

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7 And to have a communication path as they
8 are describing here with a shared DRAM, basically, I get
9 a -- I should have the ability to have a -- a
10 predictable performance of accessing that shared DRAM.

02:34PM

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11 So there may be some cueing but probably
12 very little versus going across a bus, like the VME bus
13 that they are referring to in next sentence, that then
14 involves a nondeterministic amount of latency.

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15 Now, I will say later on in that same -- on
16 that same page, they do say the IOS design, which is
17 sort of their back end design, should be capable of
18 working with any hardware platform of the type described
19 above.

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20 So they need to have that sort of
21 synchronous communication to have predictability in
22 terms of how they are using those values and if they
23 had -- you know, given a hardware platform, maybe for
24 many -- you know, they are restricting the class of
25 systems that their solution would apply.

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1 But again, the IOS design was something 02:36PM
2 that wasn't really implemented. The focus of this paper 02:36PM
3 was on the front end design, on their HC kernel, their 02:36PM
4 heterogenous computing kernel. 02:36PM

5 Q. Where does Budenske say that symmetric 02:36PM
6 communication is required? 02:36PM

7 A. It says that the IOS design should -- on 02:37PM
8 Page 392, basically it's describing -- I can start at 02:37PM
9 the top. "All the processors of all types will have 02:37PM
10 communication paths to one another. Communications 02:37PM
11 among processors of the same type are assumed to be 02:37PM
12 symmetric in the sense that the conflict-free time for 02:37PM
13 any pair of processors to communicate is the same." 02:37PM

14 And then they give the examples and -- and 02:37PM
15 later on, they say, "The IOS design should be capable of 02:37PM
16 working with any hardware platform of the type described 02:37PM
17 above," so that they are requiring this symmetry between 02:37PM
18 processors of the same type as well, and then that gives 02:37PM
19 them certain ability to do prediction of performance 02:37PM
20 when they're doing their reassignment. 02:37PM

21 Q. All right. Let me ask you to turn to 02:38PM
22 Exhibit 1001. 02:38PM

23 A. I'm there. 02:38PM

24 Q. And let's see. I'll have you turn to column 3, 02:38PM
25 starting at line 44. 02:39PM

1 A. Yes, I'm there.

02:39PM

2 Q. And so we discussed this a little bit earlier,
3 but -- so starting on line 46, it states, "For example,
4 the job may be a Monte Carlo based simulation." Do you
5 see that?

02:39PM

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02:39PM

6 A. I do.

02:39PM

7 Q. And so a Monte Carlo simulation is an example
8 job contemplated by the '442 patent?

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02:39PM

9 A. It provides an example of a job.

02:39PM

10 Q. Did you testify that you've used Monte Carlo
11 simulations in the past?

02:39PM

02:39PM

12 A. Yes.

02:39PM

13 Q. And when was that?

02:39PM

14 A. I continue working on it. I have an NIH 401
15 that's funded to work on understanding, you know, human
16 tissue using plutonic imaging.

02:39PM

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02:40PM

17 Q. When did you first start working with Monte
18 Carlo simulations?

02:40PM

02:40PM

19 A. So earlier in my career, I was using Monte
20 Carlo simulations in work. I was part of an engineering
21 research center called CenSSIS that was doing subsurface
22 sensing and imaging, and we were using Monte Carlo
23 methods for some of the imaging experiments, and that
24 was approximately 20 years ago.

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25 Q. All right. Let me ask you -- or let me direct

02:40PM

1 you to line 50 of this column 3. So here line 50 of the
2 '442 patent states, "The tasks may comprise a number of
3 subtasks or kernels. Each of these subtasks may be more
4 or less suitable for processing by one or more of the
5 computation nodes or one or more of the boosters." Do
6 you see that?

7 A. I do.

8 Q. So where it's discussing each of these subtasks
9 may be more or less suitable for processing on a
10 computation node or a booster node, would a POSITA
11 understand that to apply to a Monte Carlo simulation?

12 MR. LIMBACHER: Objection, form.

13 A. The Monte Carlo simulation was offered as an
14 example of a job that has a number of tasks that are --
15 that may or may not be repeated multiple times during
16 the execution of a job.

17 The paragraph that we are talking about,
18 while it's, again, giving discussion of tasks may
19 comprise a number of subtasks or kernels and each of the
20 subtasks could be more suitable for processing by one or
21 more of the computation nodes or more of the boosters.

22 So does -- could -- does that apply to
23 the -- to the workload of Monte Carlo simulation? It
24 possibly can.

25 And it's also the fact that -- if you read

1 on later in that paragraph, "The system is flexible in 02:43PM
2 all directions, also permitting joint processing of 02:43PM
3 subtasks by all nodes addressed herein." 02:43PM

4 For instance, for Monte Carlo simulation, 02:43PM
5 I'm presently using a combination of CPU and GPU for 02:43PM
6 that Monte Carlo simulation of a single photon. There's 02:43PM
7 portions of the subtask that can run efficiently on the 02:43PM
8 CPU and portions of that subtask that can run on the 02:43PM
9 GPU. 02:44PM

10 Is that helpful? 02:44PM

11 Q. (BY MR. CLAWSON) Yeah. 02:44PM

12 So just going back to what you just 02:44PM
13 mentioned, you discussed this Monte Carlo simulation 02:44PM
14 that you are working on, and you say that there's 02:44PM
15 portions of the subtasks that can run efficiently on the 02:44PM
16 CPU and portions of the subtasks that can run on the 02:44PM
17 GPU. 02:44PM

18 Are those subtasks limited to a CPU and a 02:44PM
19 GPU? In other words, can the subtasks only be run on a 02:44PM
20 CPU or a GPU or is it that they run better on one versus 02:44PM
21 the other? 02:44PM

22 MR. LIMBACHER: Objection, form. 02:44PM

23 A. I think maybe you were misunderstanding my 02:44PM
24 discussion. My discussion was for a single task, I'm 02:44PM
25 running concurrently on a CPU and a GPU for a single 02:44PM

1 task. That's what I was mentioning. 02:45PM

2 And again, that's described in that same 02:45PM
3 paragraph where -- permitting joint processing of 02:45PM
4 subtasks by all nodes addressed herein. 02:45PM

5 Again, that's -- I just wanted to -- since 02:45PM
6 you wanted me to talk about my Monte Carlo work, how 02:45PM
7 it's relevant to this particular patent, it's quite 02:45PM
8 relevant. 02:45PM

9 Q. (BY MR. CLAWSON) Sure. I'm trying to explore 02:45PM
10 that a little bit. So what you're saying is that a 02:45PM
11 single subtask is -- sorry. 02:45PM

12 Okay. Where you discuss a single task 02:45PM
13 running concurrently on a CPU and a GPU, does that mean 02:45PM
14 that certain aspects of that task can only run on a CPU 02:45PM
15 or a GPU or is it that certain aspects of that task -- 02:45PM
16 sorry -- of that subtask can only run on a CPU or a GPU 02:46PM
17 or can those -- certain tasks that can be run on either 02:46PM
18 and they are just more efficient on one versus the 02:46PM
19 other? 02:46PM

20 MR. LIMBACHER: Objection, form. 02:46PM

21 A. So the way that we program a CPU and GPU is 02:46PM
22 we're taking portions of the computation that work 02:46PM
23 better on a compute node and have it run on the compute 02:46PM
24 node. 02:46PM

25 And on the booster node, the GPU, we 02:46PM

1 basically have the portion of the computation that runs
2 most efficiently on the GPU run on the GPU. They work
3 together, and it's a single -- it's basically a single
4 subtask. It's a thread.

5 Q. (BY MR. CLAWSON) So for a portion of a task
6 that works better on a compute node, could that task be
7 made to run on a GPU node?

8 MR. LIMBACHER: Objection.

9 Q. (BY MR. CLAWSON) I'm sorry. Let me rephrase
10 that question.

11 For a portion of a task that works better
12 on a CPU, could that portion of the task be made to run
13 on the GPU instead?

14 MR. LIMBACHER: Objection, form.

15 A. Yes. There is the possibility that a
16 computation, while it would execute more efficiently on
17 the CPU, could that portion of the subtask run on a GPU,
18 but it would perform very poorly, so you wouldn't do
19 that in practice.

20 Q. (BY MR. CLAWSON) And was that concept known to
21 a POSITA that a portion of a subtask that would run more
22 efficiently on a CPU could also be run on a GPU?

23 MR. LIMBACHER: Objection, form.

24 A. A POSITA would understand that there's -- that
25 a -- that portion that's running on the CPU should be on

1 the CPU because it has certain characteristics where it 02:49PM
2 won't perform well on the GPU. 02:50PM

3 If you're asking me would a POSITA know 02:50PM
4 that they could make a bad decision, they would be aware 02:50PM
5 that that's a bad decision. 02:50PM

6 Q. (BY MR. CLAWSON) Can you think of any 02:50PM
7 circumstance where a GPU might be used even though -- 02:51PM
8 sorry. Scratch that question. Strike that question. 02:51PM

9 Can you think of any circumstance in 02:51PM
10 processing a subtask where a GPU might be used for 02:51PM
11 processing that subtask even though it might be 02:51PM
12 processed more efficiently on a CPU? 02:51PM

13 MR. LIMBACHER: Objection, form. 02:51PM

14 A. So I'm unclear on the question. What's the 02:51PM
15 motivation for moving it to the GPU if it's not going to 02:52PM
16 perform well there? 02:52PM

17 Q. (BY MR. CLAWSON) I'm asking you can you think 02:52PM
18 of any motivation for doing so? 02:52PM

19 MR. LIMBACHER: Same objection. 02:52PM

20 A. So if I'm concerned about the performance of 02:52PM
21 the subtask as a whole, I -- I can't think of a scenario 02:52PM
22 where I would move that portion of the subtask to the 02:52PM
23 GPU to compute. 02:52PM

24 Q. (BY MR. CLAWSON) What if -- what about a 02:52PM
25 scenario where you had multiple GPUs available for 02:53PM

1 multiprocessing the subtask but only a single CPU 02:53PM
2 available, might that be a scenario where you would go 02:53PM
3 with GPUs over a CPU? 02:53PM

4 MR. LIMBACHER: Objection, form. 02:53PM

5 A. Again, we're talking about a single subtask 02:53PM
6 and, yes, that subtask could use multiple GPUs and we 02:53PM
7 might have a single CPU. 02:53PM

8 If I'm concerned about the performance of 02:53PM
9 the GPU -- of the -- of the subtask, I would, you 02:53PM
10 know -- and if there's not enough compute capability on 02:54PM
11 the CPU, then the subtask will run faster by allocating 02:54PM
12 some of that computation on a GPU, but that's just a 02:54PM
13 capacity problem, that's not an efficiency problem. 02:54PM

14 So it's basically I'm forced down that path 02:54PM
15 by having the wrong set of heterogenous components on my 02:54PM
16 system. 02:54PM

17 Q. (BY MR. CLAWSON) Let's see. Can you please 02:54PM
18 look at line 27. Start at line 27 of column 3. 02:55PM

19 A. I'm there. 02:56PM

20 Q. And the sentence starting on the line reads, 02:56PM
21 "The nodes are connected together by means of a 02:56PM
22 communication interface which may be based on a Mellanox 02:56PM
23 InfiniBand ConnectX fabric capable of transferring data 02:56PM
24 at a rate of many Gbit per second." Do you see that? 02:56PM

25 A. I do. 02:56PM

1 Q. Are you familiar with Mellanox InfiniBand? 02:56PM

2 A. Yeah. I purchased lots of switches over the 02:56PM
3 days, yes. 02:56PM

4 Q. Can you explain what Mellanox InfiniBand is? 02:56PM

5 A. So InfiniBand is an interconnect fabric that's 02:56PM
6 very high speed, has properties of being able to have a 02:56PM
7 fastest themed data rate in terms of between -- so you 02:56PM
8 can think of it as a switch, and this particular -- the 02:57PM
9 ConnectX, I would have to go look up the exact 02:57PM
10 configuration of it, but -- so basically, you'll have 02:57PM
11 each of your -- your compute nodes and your booster 02:57PM
12 nodes would have a network interface card. That 02:57PM
13 InfiniBand is basically running fiber to a switch and 02:57PM
14 then you are switching very fast at optical speeds. 02:57PM

15 Q. And was Mellanox InfiniBand, was that a 02:57PM
16 commercially available product? 02:57PM

17 A. In this timeframe -- so I don't know this 02:57PM
18 particular ConnectX, but Mellanox was -- did have 02:57PM
19 products on the market. They were the leader in 02:58PM
20 interconnects for large scale clusters in high 02:58PM
21 performance computing, and I believe they were bought by 02:58PM
22 NVIDIA. 02:58PM

23 Q. I'd like to go back to your declaration. 02:58PM
24 That's Exhibit 2021. 02:58PM

25 A. Sure. Go ahead. 02:58PM

1 Q. And please take a look at paragraph 13. 02:58PM

2 A. "In forming my opinions in this proceeding, I 02:59PM
3 have reviewed each of the references cited in this 02:59PM
4 declaration, including the petition, the Long 02:59PM
5 declaration and the references that the petition and 02:59PM
6 Long declaration rely upon as invalidating prior art." 02:59PM

7 Q. Did you review any other materials in forming 02:59PM
8 your opinions in this declaration? 02:59PM

9 A. There are documents that I did as part of my 02:59PM
10 search for, you know, background information but nothing 02:59PM
11 that I -- I think I identify all the exhibits that I 03:00PM
12 reference pretty clearly. 03:00PM

13 Q. Can you recall any of the documents that you 03:00PM
14 reviewed for background information? 03:00PM

15 A. I remember going off and looking at the -- some 03:00PM
16 documentation on the project that was described in the 03:00PM
17 Budenske work. I went to -- I tried to find 03:00PM
18 documentation on the Mercury system since I hadn't used 03:01PM
19 it in probably 20, 25 years, just to refresh my memory. 03:01PM

20 In terms of other materials, I would have 03:01PM
21 to go back to my notes to give you a detailed list. 03:01PM

22 Q. Is it fair to say that if you thought that 03:01PM
23 other documents were relevant to the analysis in your 03:01PM
24 declaration, you would have cited them in your 03:01PM
25 declaration? 03:01PM

1 MR. LIMBACHER: Objection, form. 03:01PM

2 A. So at the time of my declaration, those were 03:01PM
3 the ones that I thought were most relevant to my 03:01PM
4 opinions in my declaration. 03:01PM

5 Q. (BY MR. CLAWSON) I'd ask you to turn to 03:01PM
6 paragraph 63 of your report -- of your declaration 03:02PM
7 rather. 03:03PM

8 A. Okay. I'm there. 03:03PM

9 Q. And it says -- the first sentence reads, "As I 03:03PM
10 explained above in Section IX.B, that limitation of the 03:03PM
11 Budenske disclosure is really not surprising given the 03:03PM
12 listed publication date of October 1998, a time in which 03:03PM
13 heterogenous systems in the context of cluster computing 03:03PM
14 were in their infancy (and a time in which splitting a 03:03PM
15 subtask between different processor types would have 03:03PM
16 been exceptionally unlikely)." 03:03PM

17 What do you mean in the sentence in the 03:03PM
18 parenthetical, "splitting a subtask between different 03:03PM
19 processor types"? 03:04PM

20 MR. LIMBACHER: Objection, form. 03:04PM

21 A. So I'm just referring to having a subtask that 03:04PM
22 would actually run efficiently across two different 03:04PM
23 processor types was an unusual thing back in 1998. 03:04PM

24 You know, the Budenske disclosure is 03:04PM
25 basically -- you know, it's customized for a single 03:04PM

1 application. Parts of it weren't even implemented, and
2 it was more of a theoretical study about how you could
3 compute offline, how to distribute computation to
4 different types of nodes.

5 Q. (BY MR. CLAWSON) Dr. Kaeli, I'm asking you
6 about splitting a subtask. Can you please stick to the
7 question?

8 The question is what do you mean when you
9 say "splitting a subtask between different processor
10 types"? What does that mean? What does it mean to
11 split a subtask between different processor types?

12 MR. LIMBACHER: Objection, form. And I'm
13 going to say if he needs to give context for his answer,
14 he can give context for his answer.

15 A. So again, given 1998, the ability to take a
16 subtask and run it on two different types of processors
17 wasn't something that was regularly being done, whereas,
18 you know, in the context of 2018 where we have GPUs and
19 other types of accelerators running with CPUs, so
20 computation nodes and booster nodes, we see more
21 evidence of -- of a subtask running across, you know --
22 with a potential of running across different processors
23 of the same type and, you know, that capability was
24 something that was relatively unheard of, and I'm not
25 aware of, you know, processors splitting subtasks and

1 different processors types back in 1998.

03:06PM

2 Q. (BY MR. CLAWSON) So to clarify, is this
3 talking about within a single computing iteration
4 splitting a subtask between different processor types?

03:06PM

03:06PM

03:06PM

5 MR. LIMBACHER: Objection, form.

03:07PM

6 A. I'm just talking in general about splitting a
7 subtask between different processor types. I'm not
8 talking here specifically in the context of the '442.
9 I'm just talking about a subtask being split to
10 different processor types.

03:07PM

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11 Heterogenous systems in 1998 were -- you
12 know, they were just starting to appear, and they were
13 very difficult to program. I mean, I worked on the
14 Mercury system. It was very difficult to program. I
15 think he used two different languages to program it, the
16 boosters and the computation nodes. So this has a lot
17 of -- this is not an offhanded comment. I have
18 experience and in that timeframe.

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19 Q. (BY MR. CLAWSON) I'll ask you to turn to
20 paragraph 38 of your declaration.

03:08PM

03:09PM

21 A. Okay. I'm there.

03:09PM

22 Q. In this paragraph, you discuss a straggler
23 problem?

03:09PM

03:09PM

24 A. Yes.

03:09PM

25 Q. What is a straggler problem?

03:09PM

1 A. When you are assigning computation to
2 heterogenous elements, and it could be at different
3 levels of granularity, you have -- you may have a
4 computation that finishes early on one of the nodes and
5 takes a lot longer on another one of the nodes, and so
6 you generally have to wait until that slowest straggler
7 is done with its computation to continue the
8 computation.

9 So that's -- and again, it's just one of
10 the types of issues that we have when we are mapping
11 subtasks across different processors.

12 Q. And does the '442 patent anywhere discuss the
13 straggler problem?

14 MR. LIMBACHER: Objection, form.

15 A. So the '442 patent deals with computing
16 multiple iterations and doing a performance assessment
17 between computing iterations to really balance the
18 computation to get the best performance, and so in terms
19 of the straggler problem, I could -- I argue that --
20 that the '442 patent is -- this is one of the classes of
21 issues that the '442 is addressing.

22 MR. CLAWSON: We've been going for a while
23 now. Why don't we take another ten-minute break. Off
24 the record.

25 (Short recess.)

1 Q. (BY MR. CLAWSON) Dr. Kaeli, I'll ask you to 03:26PM
2 turn to Exhibit 2010. 03:26PM
3 A. I'm familiar with this. I've got it open. 03:26PM
4 Q. And what is this document? 03:26PM
5 A. This is a copy of my CV from April 13, 2025. 03:26PM
6 Q. Would you say that this CV is up to date? 03:27PM
7 A. I've published work since this, but it's fairly 03:27PM
8 up to date. Is there a particular area that you are -- 03:27PM
9 Q. Was this CV posted to your university's 03:27PM
10 website? 03:27PM
11 MR. LIMBACHER: Objection, form. 03:27PM
12 A. So there is a version of my CV on the 03:27PM
13 university website that I don't always keep up to date. 03:27PM
14 I manage my own CV in Overleaf, and that's the most -- 03:27PM
15 most up to date. Keeping the one that's online -- I'm 03:28PM
16 not sure who that's for. I mean, the university decided 03:28PM
17 to put my CV up. That wasn't my choice. 03:28PM
18 Q. (BY MR. CLAWSON) But it's fair to say that's a 03:28PM
19 prior version of your CV on your website? 03:28PM
20 A. I would have to go look at it. I actually 03:28PM
21 don't even know what version is up there. 03:28PM
22 Q. And is this CV the same that you provide for 03:28PM
23 other types of professional obligations? 03:28PM
24 A. I generally -- so I have a version of -- I have 03:28PM
25 a single copy of my CV that I update continuously and -- 03:29PM

1 and, you know, I have found issues in the past with 03:29PM
2 what's in my CV, but in general, no. It's -- it should 03:29PM
3 be accurate. If it's not, I correct it. 03:29PM

4 Q. And are you aware of any issues with this 03:29PM
5 version of the CV -- 03:29PM

6 MR. LIMBACHER: Objection, form. 03:29PM

7 Q. (BY MR. CLAWSON) -- specifically Exhibit 2010? 03:29PM

8 A. In terms of what? 03:29PM

9 Q. I'll reask the question. 03:29PM

10 Do you -- are you aware of any issues with 03:29PM
11 this version of the CV that's shown as Exhibit 2010? 03:29PM

12 MR. LIMBACHER: Objection, form. 03:29PM

13 A. I do remember in -- I think in my last case 03:29PM
14 that I worked on, we found some inconsistencies between 03:30PM
15 my online experience in terms of patent -- in terms of 03:30PM
16 IPRs and other activities, professional activities, and 03:30PM
17 that was due to -- I wasn't clear at the time on -- on 03:30PM
18 how I should be listing these, and since then, those 03:30PM
19 have been corrected and updated. That's the only thing 03:30PM
20 I can think of where there was an inconsistency. 03:30PM

21 And in the last -- last deposition that I 03:30PM
22 prepared for and the materials for that, we corrected 03:30PM
23 it. And again, it was nothing -- it was just my lack of 03:31PM
24 understanding of how to report that information. 03:31PM

25 Q. (BY MR. CLAWSON) And I'll direct you to Page 4 03:31PM

1 of Exhibit 2010.

03:31PM

2 A. Page 4. My journal publications?

03:31PM

3 Q. Correct. So it's page -- it has the heading
4 "Journal Publications"?

03:31PM

5 A. That's correct.

03:31PM

6 Q. So does this list published journal articles?

03:31PM

7 A. Yes.

03:32PM

8 Q. And how do you determine what articles are
9 listed in this section?

03:32PM

10 A. So if a particular publication is in a journal,
11 I would include it under journals. And, you know, I try
12 to provide as much information. Here I'm listing DOIs,
13 which allow you to identify online that particular
14 publication. For my older publications, many of them
15 don't have DOIs because we didn't assign them back in
16 the day.

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17 Q. So all of the articles listed in this section
18 are articles that were published in journals?

03:32PM

03:33PM

19 MR. LIMBACHER: Objection, form.

03:33PM

20 A. Again, they are listed under journals in that
21 that's where I -- you know, some of the conference
22 publications get published as journals.

03:33PM

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23 Personally, in my field, conference
24 publications are treated much more prestigiously than
25 journal publications, while I have a lot of both.

03:33PM

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1 Is there something in particular that you 03:33PM
2 are pointing at? 03:33PM

3 Q. (BY MR. CLAWSON) So I think I understand. I'm 03:33PM
4 just trying to make sure I understand correct. So this 03:33PM
5 is just telling a reader of your CV what articles have 03:33PM
6 been published and what journals they were published in; 03:34PM
7 is that correct? 03:34PM

8 MR. LIMBACHER: Objection, form. 03:34PM

9 A. The -- my publication list should be only the 03:34PM
10 articles that I have co-authored that -- that are, you 03:34PM
11 know, at least accepted for publication. I may post 03:34PM
12 them in my CV when they are -- when they are accepted. 03:34PM

13 I generally do not list publications in my 03:34PM
14 CV that have not been accepted for publication. Some 03:34PM
15 people list papers that are under review. I do not do 03:34PM
16 that. 03:34PM

17 Q. (BY MR. CLAWSON) So this may include journal 03:34PM
18 articles that were not actually published? 03:35PM

19 MR. LIMBACHER: Objection, form. 03:35PM

20 A. That's not what I said. My CV includes a 03:35PM
21 record of my publications. I don't generally list them 03:35PM
22 here unless they have been accepted for publication. 03:35PM
23 Some people do that. I don't do that. 03:35PM

24 I only list those that I believe have 03:35PM
25 appeared or are accepted for publication. 03:35PM

1 If there's a particular publication that 03:35PM
2 you are interested in, I would be happy to talk about 03:35PM
3 it. 03:35PM

4 Q. (BY MR. CLAWSON) Yeah, I'm going to share a 03:35PM
5 new exhibit in the chat, and this exhibit is -- will be 03:36PM
6 designated as Exhibit 1028. And it's just taking a 03:36PM
7 minute to upload, so bear with me. So when you see it, 03:36PM
8 just please go ahead and open it. 03:36PM

9 (Exhibit 1028 marked.) 03:37PM

10 A. Digital Technical Journal, take me back. 03:37PM

11 MR. LIMBACHER: I'm going to object to this 03:37PM
12 for the time being. Objection based off of 03:37PM
13 authenticity, attention lack of foundation. 03:37PM

14 Q. (BY MR. CLAWSON) Dr. Kaeli, do you recognize 03:37PM
15 this article? I'm sorry. Do you recognize this 03:38PM
16 document? 03:38PM

17 A. I recognize the Digital Technical Journal, and 03:38PM
18 I believe I have a paper in this journal, "Tracing and 03:38PM
19 Characterization of Windows NT System Workloads." 03:38PM

20 Q. And so this is an issue of the Digital 03:38PM
21 Technical Journal; is that correct? 03:38PM

22 A. This is Digital Equipment Corporation's Digital 03:38PM
23 Technical Journal, yes, Volume 10, Number 1 from 1998. 03:38PM

24 Q. And that volume and issue number and date are 03:38PM
25 on the bottom right of the cover; is that right? 03:38PM

1 A. Yes.

03:38PM

2 Q. Do you have any reason to doubt that this
3 document is not what it purports to be, meaning the
4 Digital Technical Journal, Volume 10, Number 1 of 1998?

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5 A. I haven't had the time to verify that it's
6 exactly the same, but I have no reason to doubt it.

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03:39PM

7 Q. I'll ask you to turn to Page 6 of the journal,
8 and that's on the ninth page of the PDF.

03:39PM

03:39PM

9 A. Yes. I'm there.

03:39PM

10 Q. And this is an article titled "Tracing and
11 Characterization of Windows NT-based System Workloads";
12 is that right?

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03:40PM

13 A. That's correct.

03:40PM

14 Q. And your name is listed here as an author on
15 this article?

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03:40PM

16 A. That is correct.

03:40PM

17 Q. And does this look to be an accurate version
18 of -- scratch that -- strike that question.

03:40PM

03:40PM

19 So going back to your CV, so Exhibit 2010,
20 does that article correspond to the article listed at
21 number 80 on Page 10 of your CV?

03:40PM

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03:41PM

22 MR. LIMBACHER: Objection, form.

03:41PM

23 A. It does.

03:41PM

24 Q. (BY MR. CLAWSON) In looking back to
25 Exhibit 1028, does this look to be an accurate version

03:41PM

03:41PM

1 of that article?

03:41PM

2 MR. LIMBACHER: Objection, form.

03:41PM

3 A. I'm looking. 10, 1, 6 through 21,
4 September 1998. Yeah, it looks -- looks like it's the
5 same, one and the same.

03:41PM

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6 Q. (BY MR. CLAWSON) And that's your photograph on
7 Page 21 of Exhibit 1028?

03:42PM

03:42PM

8 A. Oh, my God, was I young. Yeah, that was me. I
9 had hair back then.

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03:42PM

10 Q. And looking back to Exhibit 2010 and on Page 10
11 of that exhibit, can you read the article that's listed
12 at number 81?

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03:43PM

13 A. 80 is -- you want me to read 81?

03:43PM

14 Q. Please.

03:43PM

15 A. "Program Remapping Using Estimated Profiles,
16 with H. Hashemi, B. Calder, J. Kalamatianos and W.
17 Meleis, Digital Technical Journal, 10, 2, 1999."

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18 Q. So 81 states that this article, Program
19 Remapping Using Estimated Profiles, was published in the
20 Digital Technical Journal; is that right?

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21 A. That's -- and I remember there was an issue
22 with this, I think, at the time because DEC was going
23 under during this time period. This may not have
24 actually issued, but it was accepted and was -- you
25 know, I have documentation on that, if that's the

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1 question. Boy, that was hard to find. Is that the
2 issue you're raising?

3 Q. Is it standard to practice to list articles in
4 a CV that were accepted but not published?

5 MR. LIMBACHER: Objection, form.

6 A. I don't think there's a -- you know, generally
7 there's a -- the paper was accepted and, if necessary, I
8 can go back and demonstrate that. I might have some
9 difficulty given the number of years that have passed,
10 but I certainly could do that, but the work -- you know,
11 the work resulted in a high profile paper, as well as in
12 a patent.

13 Q. (BY MR. CLAWSON) What's the high profile paper
14 you are referring to?

15 A. So that was with Hashemi, Calder and myself.
16 Later on Kalamatianos and Meleis were involved in the
17 journal version.

18 And that would be -- let me go find it. If
19 you look at publication 293 in my conference
20 publications, "Efficient Procedure Mapping Using Cache
21 Line Coloring," with A. H. Hashemi and B. Calder, in the
22 Proceedings of ACM SIGPLAN Conference on Programming
23 Languages Design and Implementation. This is the top
24 conference in the area of compiler technology. And that
25 was published in 1997. So the -- the follow-on work was

1 published with the other two authors and submitted to
2 DEC Technical Journal and accepted.

3 Q. Would you expect other academics to have papers
4 on their CV that were never published but listed as
5 journal publications?

6 MR. LIMBACHER: Objection, form.

7 A. I think the circumstances around this
8 particular issue was that a company was going under at
9 the time that the paper was reviewed and accepted, and
10 so I -- I don't think this is improper in any way.

11 Clearly, the work permits publication as
12 it's -- again, I can go to the -- do you want me to go
13 to the patent? I can go to the patent too. So a patent
14 was issued on it and also a conference paper that
15 preceded the journal paper.

16 Q. (BY MR. CLAWSON) But would you expect another
17 academic to leave a paper on their CV for over 20 years
18 if that paper was never published?

19 MR. LIMBACHER: Objection, form.

20 A. Again, it was accepted to a journal
21 publication. There's no issue. I have no issue with
22 anyone leaving an accepted publication that they had
23 accepted into -- on their CV.

24 Let me go on the record also that I think I
25 identified what you were -- you thought was an issue

1 prior to you bringing it up. So obviously, I'm not
2 embarrassed by it in any way.

3 Q. (BY MR. CLAWSON) Would you expect --
4 apologies. I'm not trying to cut you off.

5 A. No. I was done.

6 Q. Would you expect other academics to follow this
7 same practice of leaving publications on their CV that
8 were never published?

9 MR. LIMBACHER: Objection, form.

10 A. Again, your suggestions are inappropriate, and
11 I think the -- the circumstances around that particular
12 paper are not something that any academic would feel
13 inappropriate, in my opinion.

14 The paper was reviewed and accepted by the
15 journal. The journal didn't have the opportunity to
16 publish it only because the company went under.

17 Q. (BY MR. CLAWSON) So you are saying you would
18 expect other academics to engage in the same practice?

19 MR. LIMBACHER: Objection, form.

20 A. There's nothing inappropriate with listing a
21 paper that's accepted to a journal on your CV at the
22 point that it's accepted.

23 Q. (BY MR. CLAWSON) So you would expect other
24 academics to engage in that same practice?

25 MR. LIMBACHER: Objection, form. Asked and

1 answered.

03:50PM

2 A. Again, there is nothing in the least bit
3 unusual with someone publishing -- listing a publication
4 on their CV that was accepted for publication.

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5 Q. (BY MR. CLAWSON) So does that mean you expect
6 that same practice from other academics?

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03:51PM

7 MR. LIMBACHER: Objection, form.

03:51PM

8 A. Again, I don't think there's -- I would expect
9 a CV to contain publications that have been -- have been
10 reviewed by peers, rigorously reviewed by peers and
11 accepted for publication. That's what I would expect
12 would be on a CV.

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13 Q. (BY MR. CLAWSON) So you would expect other
14 academics to leave an unpublished article on their CV as
15 published for over 20 years?

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16 MR. LIMBACHER: Objection, form. Asked and
17 answered.

03:52PM

03:52PM

18 A. Again, when a publication is peer reviewed and
19 accepted for publication, it's quite appropriate for a
20 journal article to be listed on your CV at that point.

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21 Q. (BY MR. CLAWSON) I'll ask you to turn back to
22 Exhibit 1028.

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03:52PM

23 A. Go ahead.

03:52PM

24 Q. And I'll direct you to Page 3 of the PDF. So
25 that doesn't appear to actually have a page number, but

03:52PM

03:53PM

1 it's Page 3 of the PDF.

03:53PM

2 A. 1, 2, 3. Okay.

03:53PM

3 Q. And can you go ahead and read the first three
4 paragraphs on this page? Please read them out loud.

03:53PM

5 A. "December 1998. A letter to readers of the
6 Digital Technical Journal. This issue is the last
7 Digital Technical Journal to be published. Since 1985,
8 the journal has been privileged to publish" -- so this
9 is the last one that appeared. Generally, there's a
10 great lag time between when something comes out and when
11 it's accepted, if that's what you are concerned about.

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12 Q. I -- it wasn't clear on the record what you
13 were reading and what you were not reading. Can you
14 please read it again?

03:53PM

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03:53PM

15 A. I'll continue reading.

03:53PM

16 So the -- so it says, "December 1998. A
17 letter to readers of the Digital Technical Journal.

03:53PM

03:54PM

18 This issue is the last Digital Technical Journal to be
19 published. Since 1985, the Journal has been privileged

03:54PM

03:54PM

20 to publish information about significant engineering

03:54PM

21 accomplishments for DIGITAL, including standards-setting

03:54PM

22 network and storage technologies, industry-leading VAX

03:54PM

23 systems, record-breaking Alpha microprocessors and semi

03:54PM

24 conductor technologies and advanced application software

03:54PM

25 and performance tools. The Journal has been awarded by

03:54PM

1 continual growth in the number of readers and by their 03:54PM
2 expressions of appreciation for the quality of content 03:54PM
3 and presentation. The editors thank the engineers who 03:54PM
4 somehow made the time to write, the engineering managers 03:54PM
5 who supported them, the consulting engineers and 03:54PM
6 professors who reviewed manuscripts and made the process 03:54PM
7 a learning experience for all of us and, of course, the 03:54PM
8 readers who are the reason the Journal came into 03:54PM
9 existence 13 years ago." 03:55PM

10 Q. And do you have any reason to doubt that this 03:55PM
11 was the last issue of the Digital Technical Journal? 03:55PM

12 A. This was the last that was printed. 03:55PM

13 Q. And so would you agree that the article listed 03:55PM
14 in your CV on Page 10, number 81 was never printed in 03:55PM
15 the Digital Technical Journal? 03:55PM

16 MR. LIMBACHER: Objection, form. 03:55PM

17 A. It was never printed because the company went 03:55PM
18 out of business. 03:55PM

19 MR. CLAWSON: Okay. I have no further 03:56PM
20 questions. I'll go ahead and pass the witness. 03:56PM

21 MR. LIMBACHER: If y'all don't mind, can I 03:56PM
22 have 15 minutes to go back through my notes and see if I 03:56PM
23 have anything. Off the record. 03:56PM

24 (Short recess.) 03:56PM

25 EXAMINATION 04:12PM

1	Q. (BY MR. LIMBACHER) Can I please get you to	04:12PM
2	turn to Exhibit 2021, your declaration.	04:12PM
3	A. Just a second.	04:13PM
4	I am in 2021.	04:13PM
5	Q. Can you please turn to paragraphs 15	04:13PM
6	through 17?	04:13PM
7	A. Claim construction.	04:13PM
8	Q. All right. Are these the claim construction	04:13PM
9	principles that you applied in your claim construction	04:14PM
10	analysis throughout your declaration?	04:14PM
11	A. Yes.	04:14PM
12	Q. Can you go to paragraph 17?	04:14PM
13	A. I'm there.	04:14PM
14	Q. Do you see where it says, "A preamble limits	04:14PM
15	the invention if it recites essential structure or steps	04:14PM
16	or if it is necessary to give life, meaning and vitality	04:14PM
17	to the claim"?	04:14PM
18	A. I do.	04:14PM
19	Q. Is it your opinion that that applies to the	04:14PM
20	'442 patent?	04:14PM
21	A. The -- I believe the -- in the '442 patent, the	04:14PM
22	language in the preamble is only stating purpose and	04:14PM
23	intended use of the invention.	04:15PM
24	Q. Can you go to the '442 patent, Claim 1, please?	04:15PM
25	A. I'm there.	04:15PM

1 Q. All right. Do you -- so do you consider the 04:15PM
2 preamble to be for Claim 1, column 5, lines 26 to 31? 04:15PM

3 A. Yes. To 32. 04:15PM

4 Q. Okay. To 32. And do you agree that it recites 04:15PM
5 the structure in the form of computation nodes, booster 04:15PM
6 nodes, computation tasks and a plurality of subtasks? 04:15PM

7 A. Yes. 04:15PM

8 Q. Can you please go back to your declaration and 04:15PM
9 turn to paragraphs 20 to 27? 04:16PM

10 A. I'm there. 04:16PM

11 Q. Are these the legal principles you applied when 04:16PM
12 analyzing obviousness in your declaration? 04:16PM

13 MR. CLAWSON: Objection, scope. Objection, 04:16PM
14 form. 04:16PM

15 A. In terms of obviousness, I applied the criteria 04:16PM
16 as described here in 20, 21, 22, 23, 24, 25, 26 and 27. 04:16PM

17 Q. Okay. And then, finally, can you turn to 04:16PM
18 paragraphs 29 and 30 for me? 04:16PM

19 A. Yes, I'm there. 04:16PM

20 Q. Are these the legal principles you applied when 04:16PM
21 analyzing enablement of the prior art in your 04:17PM
22 declaration? 04:17PM

23 MR. CLAWSON: Objection, scope. Objection, 04:17PM
24 form. 04:17PM

25 A. Yes, they are. 04:17PM

1 MR. LIMBACHER: Okay. I'm going to pass
2 the witness.

04:17PM

04:17PM

3 MR. CLAWSON: Yeah, I have no further
4 questions.

04:17PM

04:17PM

5 (Whereupon at 4:17 p.m. the
6 deposition was concluded.)

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E R R A T A S H E E T

Correction	Page	Line
From: "so even though you are going to just computation nodes"		
To: "so even though you are going to use just computation nodes"		
(mistranscription)	43	12
From: "Does it require a site?"		
To: "Does it require a --"	85	16
(mistranscription - did not say "site")		
From: "prime"		
To: "run"	86	25
(mistranscription)		
From: "unit processor"		
To: "uni-processor"	104	6
(mistranscription)		
From: "I'd have"		
To: "I'd have to"	104	18
(mistranscription)		
From: "unit processor"		
To: "uni-processor"	107	5
(mistranscription)		
From: "cueing"		
To: "queuing"	108	11
(mistranscription)		
From: "401"		
To: "R01"	110	14
(mistranscription)		
From: "plutonic"		
To: "photonic"	110	16
(mistranscription)		
From: "themed"		
To: ""		
(mistranscription - did not say "themed")	117	7

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I, DAVID RICHARD KAEI, PhD, have read the foregoing deposition and hereby affix my signature that same is true and correct, except as noted above.



DAVID RICHARD KAEI, PhD

THE STATE OF _____
COUNTY OF _____

Before me, _____, on this day personally appeared DAVID RICHARD KAEI, PhD, known to me (or proved to me under oath or through _____) (description of identity card or other document) to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that they executed the same for the purposes and consideration therein expressed.

Given under my hand and seal of office this 15 day of December, 2025.

NOTARY PUBLIC IN AND FOR
THE STATE OF _____

1 STATE OF TEXAS *

2 COUNTY OF HARRIS *

3 I, the undersigned certified shorthand
4 reporter and notary public in and for the State of
5 Texas, certify that the facts stated in the foregoing
6 pages are true and correct.

7 I further certify that I am neither attorney
8 or counsel for, nor related to or employed by, any of
9 the parties to the action in which this deposition is
10 taken and, further, that I am not a relative or employee
11 of any counsel employed by the parties hereto, or
12 financially interested in the action.

13 SUBSCRIBED AND SWORN TO under my hand and seal
14 of office on this the 10th day of December, 2025.

15 *Edith A. Boggs*

16 EDITH A. BOGGS, CSR
17 Certified Shorthand Reporter and
18 Notary Public in and for
19 the State of Texas

20 Notary Expires: 7-21-2028
21 Certificate No. 3022
22 Expiration date: 7-31-2026
23 Esquire Deposition Solutions, LLC
24 Registration No. 3
25