

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner
v.
ZENTIAN LIMITED,
Patent Owner.

IPR2023-00033
Patent 7,587,319 B2

Record of Oral Hearing
Held: March 11, 2024

Before KEVIN F. TURNER, JEFFREY S. SMITH, and
CHRISTOPHER L. OGDEN, Administrative Patent Judges.

APPEARANCES:

ON BEHALF OF THE PETITIONER:

JENNIFER BAILEY, ESQ.
Erise IP, P.A.
7015 College Boulevard
Suite 700
Overland Park, KS 66211
(913) 777-5600
Jennifer.bailey@eriseip.com

CHRISTINA CANINO, ESQ.
Erise IP, P.A.
5299 DTC Boulevard
Suite 1340
Greenwood Village, CO 80111
(720) 307-8382
Christina.Canino@eriseip.com

JENNY LIU, ESQ.
Apple Inc.
1 Apple Park Way
Cupertino, CA 95014
(408) 996-1010
jianing_liu@apple.com

ON BEHALF OF THE PATENT OWNER:

KAYVAN NOROOZI, ESQ.
PETER KNOPS, ESQ.
Noroozi PC
11601 Wilshire Boulevard
Suite 2170
Los Angeles, CA 90025
(310) 975-7074 ex. 1
kayvan@noroozipc.com
peter@noroozipc.com

JESSICA R. BERNHARDT, ESQ.
Bartlit Beck LLP
Courthouse Place
54 West Hubbard Street
Chicago, IL 60654
(312) 494-4460
Jessica.bernhardt@bartlitbeck.com

DARGAYE CHURNET, ESQ.
Fenwick & West LLP
555 California St. #12
San Francisco, CA 94104
(415) 875-2460
dchurnet@fenwick.com

The above-entitled matter came on for hearing Monday,
March 11, 2023, commencing at 1:03 p.m. EDT, via Video-conference.

P-R-O-C-E-E-D-I-N-G-S

1:03 p.m.

JUDGE OGDEN: Good afternoon. Welcome to the Patent Trial and Appeal Board. This is the final hearing in IPR2023-0033 between Petitioners Apple Inc., Amazon Web Services Inc., Amazon.com Services, LLC, and Patent Owner, Zentian Limited.

And I am Judge Ogden, and today with me on the panel are Judges Turner and Smith. And Judge Smith is appearing remotely, joining us remotely.

So let's start with counsel introductions. Who will present arguments for Petitioner, and who's at the Petitioner's counsel table today?

MR. TOROSSIAN: This is Charle Torossian. I'm sorry for the interruption. We don't hear the audio. I don't know if the mic is on on their desk. Sorry.

MS. BAILEY: Can you hear me now, Charle? Sorry.

MR. TOROSSIAN: Yes.

MS. BAILEY: I'll repeat. I'll start over.

Good morning. My name is Jennifer Bailey. I am from the law firm of Erise IP. I have with me today my co-counsel, Christina Canino, and I also have in-house counsel from Petitioner Apple Inc., Jenny Liu. Thank you.

JUDGE OGDEN: Okay. Go ahead.

MR. NOROOZI: Your Honor, Kayvan Noroozi on behalf of Patent Owner from Noroozi PC. I have with me Mr. Peter Knops, as well as Ms. Jessica Bernhardt.

1 JUDGE OGDEN: Thank you. Do we have an appearance
2 today for Amazon?

3 MR. CHURNET: Hello. Dargaye Churnet from Fenwick &
4 West representing Amazon.

5 JUDGE OGDEN: Thank you. Just a reminder, when you're
6 speaking today, please come closer to the microphone so that people
7 remotely can hear us.

8 So before we begin today, just a couple of things. I just remind
9 everybody to speak clearly into the microphone. We have a court reporter
10 that's working remotely, so please be sure that what you're saying in the
11 microphone is clear, so the reporter can hear.

12 And just a reminder, there's no objections during opposing
13 arguments. You can save any concerns or objections until your time to
14 speak. And this is a public hearing, so keep that in mind. I don't believe that
15 there is any confidential information to be discussed today, but just keep that
16 in mind.

17 So according to our hearing order, each side has a total of 45
18 minutes, but Petitioner has a LEAP practitioner, so that will include an
19 additional 15 minutes for that. And each side will have the opportunity to
20 reserve time for rebuttal or surrebuttal at the end, and so if you could tell us
21 at the beginning how much time you'd like to reserve for that. We have a
22 timer and we'll set the timer so that for principal arguments you'll have a
23 five-minute warning. The light will go yellow, and the amount of time left
24 for your arguments will appear up on the timer.

25 Sure. Do I need to repeat anything? Okay. Okay. Thank you.
26 Okay. So let's --

1 JUDGE TURNER: I'm sorry. This is Judge Turner. Is there a
2 question?

3 MR. NOROOZI: Yes, Your Honor.

4 JUDGE TURNER: You certainly may. Yes.

5 MR. NOROOZI: With respect to the LEAP additional time
6 issue, it's my understanding that Petitioner is only having the LEAP
7 practitioner argue one of the five proceedings, and that will not be in this
8 proceeding.

9 Does the additional 15 minutes apply, even if a LEAP
10 practitioner is not arguing in the proceeding?

11 JUDGE OGDEN: No. No. Okay, let me confirm that. Is that
12 the case, Petitioner?

13 MS. BAILEY: Yes, Your Honor.

14 JUDGE OGDEN: Okay.

15 MS. BAILEY: The LEAP practitioner is only participating in
16 one of the proceedings tomorrow, so we do not need the 15 extra minutes for
17 today's proceedings.

18 JUDGE OGDEN: Okay. Which proceeding will that be
19 tomorrow?

20 MS. BAILEY: It will be on the 377 patent, and I don't have the
21 IPR number off the top of my head. It's the 35.

22 JUDGE OGDEN: 35. Okay. Okay. Thank you for clarifying
23 that.

24 MS. BAILEY: Yes.

25 JUDGE TURNER: Just for clarification of the record, the
26 response was actually entered in all of these cases. So I think that's maybe

1 why we got confused. So it was acknowledged in all of the IPR
2 proceedings, but you only sought a LEAP practitioner in a single case.

3 MS. BAILEY: Correct.

4 JUDGE TURNER: Okay.

5 MS. BAILEY: Our request was only for one specific case.

6 JUDGE TURNER: Okay.

7 MS. BAILEY: Yes.

8 JUDGE TURNER: So every party will have 45 minutes per
9 case, per side.

10 MS. BAILEY: Thank you, Your Honor.

11 JUDGE TURNER: Thank you.

12 JUDGE OGDEN: Thank you. Okay. We'll start with
13 Petitioner then. So yeah, Petitioner will have a total of 45 minutes then.

14 If you could approach the podium, and how much time would
15 you like to reserve for rebuttal?

16 MS. BAILEY: I'd like to reserve 15 minutes for rebuttal,
17 please.

18 JUDGE OGDEN: Okay. We've put 30 minutes on the clock,
19 and you'll get a five-minute warning when the light goes yellow. You can
20 begin when you're ready.

21 MS. BAILEY: Thank you. May it please the board. Thank
22 you, Your Honors.

23 We don't have our slides on screen here today, but I'll be sure to
24 refer to the slides by their number. So let's start with Petitioner's
25 Demonstratives DX-3, please.

1 I want to quickly go through what the math combination is.
2 The combination is the Thelen, Bailey, and Chen, where Thelen's hierarchal
3 division of acoustic models, according to context, are put on the Chen
4 clustered processor architecture.

5 So, for example, with Thelen and its hierarchal divisions,
6 there's going to be one context of the lexicon specific to sports, one specific
7 to health, perhaps one specific to cooking. Bailey teaches us that multiple
8 speech recognition processors are connected to a single shared memory.
9 And then Chen, of course, teaches the clustered processor architecture.

10 So the combination is that Thelen's hierarchal arrangement of
11 context are divided up amongst the clusters of Chen, according to the
12 context. So, for example, Cluster 1 of Chen's clustered processor
13 architecture would be devoted to a sports context. Cluster 2 would be
14 devoted to health and so forth.

15 Turning to DX-4, this slide is just here to illustrate the
16 similarity between Chen's clustered processor architecture and the clustered
17 processor architecture described and claimed in the '319 patent. And as you
18 can see, both Chen and the '319 patent illustrate multiple processors
19 connected to a single shared memory. Each one of that arrangement is a
20 cluster, and then there are multiple clusters.

21 Chen also teaches that, I will note, that its architecture is, quote,
22 equally applicable to any type of parallel processing computer system. And
23 I'm quoting from Column 11, Lines 33 through 49 of Chen. So
24 understanding that Chen teaches the same clustered processing architecture
25 is the '319 patent, let's look at the petition's motivations to combine, turning
26 to DX-5.

1 So Zentian does not dispute that the claim limitations are
2 taught. Zentian's sole argument in this IPR is a lack of motivation to
3 combine for two related reasons. First, that the combination would create
4 tasks for which there would not be a reasonable expectation of success. And
5 then related to that, that the skilled person would not know how to address
6 these tasks when putting together the combination.

7 Neither of these arguments address the petition's actual
8 proffered motivations to combine, and Zentian actually has a fairly limited
9 response to the petition's motivations. Notably, Zentian has only a single
10 sentence at the end of its sur-reply responsive to what is arguably the
11 petition's primary motivation of reducing the duplication of lexical data
12 amongst the multiple memories. And I refer the board to Patent Owner's
13 sur-reply at Page 26. It's at the very bottom spanning to Page 27 for that
14 single sentence.

15 I want to quickly kind of go through the combination and why
16 we receive or have the benefit of the reduced duplication of lexical data. In
17 the combination, each cluster stores a portion of the acoustic model that is
18 for that context.

19 We've already discussed the Cluster 1, which stores the sports
20 context, Cluster 2 may store the health. Because similar contexts, for
21 example, all the sports-related terms are clustered together, an acoustic
22 model specific to sports-related words does not have to be saved in all of the
23 clusters' memories. This ends up reducing the duplication of lexical data
24 amongst all of the clusters' memories.

25 So let me give you an actual example. Let's take the word,
26 offsides. Offsides is a word that is specific to football and hockey and

1 soccer, but it's also a word that doesn't really show up in our lexicon outside
2 of sports. So the word offsides now does not have to be duplicated in all of
3 the memories of all of the clusters, because now we are clustering the sports
4 contexts together in a single shared memory. And because the word offsides
5 is common to multiple sports, we would also be obtaining increased
6 efficiency in the speech recognition by grouping all the sports contexts
7 together.

8 And I just want to hit home that all of that motivation that I just
9 described, that is described at length in the petition and the declaration, is
10 addressed by Zentian in that single sentence in their sur-reply at Page 26.
11 And Zentian understood this motivation. They asked Mr. Schmandt about it
12 during his deposition. I refer the board to Exhibit 2017, which is Mr.
13 Schmandt's depo transcript. Page 122, Line 13 through Page 125, 7.

14 So Zentian understood what this motivation was. It just chose
15 not to respond to it. That's not the only motivation that was provided in the
16 petition. There's also reduced financial costs because with the reduced
17 duplication of data, there is now less memory to operate. So therefore,
18 there's reduced financial costs there.

19 The combination also takes advantage of Chen's commercially
20 available processors. Cluster processing architecture was known to have
21 flexibility and scalability because you could continually add more
22 processors. Hon teaches that. And these motivations are provided in
23 Exhibit 1003, Paragraph 84.

24 We also have increased processing power for a given cost
25 because now we're using Chen's commercially available processors that are
26 inexpensive. We're using less memory. There are less memory transfers

1 from the huge data store. And so the overall result is the increased
2 processing power while not extending the raising of the financial costs.

3 I also want to note that the motivation to combine is not
4 contingent on adding additional processors to the combination. That's been
5 something that's discussed by Zentian. And I do want to make clear, we also
6 said this in our Petitioner reply, I believe at Pages 24 through 25, that it's not
7 contingent on that. Certainly more processors could be added, but it's not
8 contingent on that.

9 Turning now to DX-5, I want to address the task that Zentian
10 raises. So instead of substantively responding to the petition's mapping and
11 motivations, Zentian raises --

12 JUDGE SMITH: Yeah, Counsel, before we move on to that,
13 can I ask you about these advantages that you're talking about? I just have
14 some questions. It's not clear to me what advantages are provided by Chen
15 that aren't already in the primary reference Thelen.

16 MS. BAILEY: Yeah.

17 JUDGE SMITH: For example, if you have the first cluster-
18 shared memory devoted to sports with the sports vocabulary, Thelen would
19 already have that, wouldn't it?

20 MS. BAILEY: That's a good question, Your Honor. It's
21 actually one that I asked Mr. Schmandt when we were putting together the
22 combination. Let me address that.

23 So in Thelen, it talks about generic context and specific context.
24 So a generic context would be sports. The specific context would be
25 football or baseball. And in Thelen, it would be understood that each

1 recognizer would be associated with a specific context. So you would have
2 one for baseball, one for football.

3 Let's go back to the example that I gave earlier of offsides and
4 that it's used in multiple different sports. So now you would have the
5 duplication of the word offsides in multiple recognizers because these sports
6 recognizers were not grouped together. Mr. Schmandt said with respect to
7 Thelen that it is not a, quote, optimally efficient recognizer. And I refer the
8 board to Exhibit 2017, Page 122, Line 22 through Page 123, Line 19.

9 Does that answer your question, Your Honor?

10 JUDGE SMITH: Let me make sure I understand. So you're
11 saying the word offsides would be in the shared memory, and it would be
12 kind of to the memory model for soccer and hockey and what other sport
13 uses offsides. Whereas Thelen duplicates it for each of those sports? Is that
14 what you're saying?

15 MS. BAILEY: Yes, that's correct. And we could also come up
16 with terms that are common to sports, say, score or point. And I appreciate
17 that those words would show up in other contexts, but within the sports
18 context, those are very common words. And so these common vocabulary
19 within a particular generic or genus context would have to be duplicated
20 each time within Thelen's specific recognizers because Thelen has no
21 grouping of the clusters or of the context as we propose in the combination.

22 JUDGE SMITH: Okay. And then I have another question
23 about in Chen, these four different clusters, as far as I understand Chen, are
24 all operating at the same time, which in terms of dividing a task and
25 separating it among these multiple processes would provide an advantage in
26 terms of processing power.

1 But from what I understand, if you have these clusters for
2 sports in the first cluster, these other three clusters in Chen, those processors
3 would be idle; is that correct?

4 MS. BAILEY: No, that's not correct, Your Honor. Let me kind
5 of go further in what the combination would explain or would propose.

6 In Thelen, it teaches that it is going to determine what context is
7 being spoken by recognizing a few words. So a few words are spoken. It
8 recognizes, oh, they're talking about sports here.

9 And so what Thelen teaches and what we would propose in the
10 combination is that we have a large data store where it was holding the
11 entire acoustic model for the entire lexicon. And from that large data store,
12 you would pull the sports context. And at that point, you would pull sports
13 into all of the four clustered processors to gain the efficiency because we
14 know that the speech is specific to sports.

15 That is also, recall that I just mentioned, transferring the
16 acoustic models from the large data store, but also has increased efficiency
17 because you're now minimizing how much of the acoustic model has to be
18 transferred from the large data store for any particular recognition instance.

19 JUDGE SMITH: So in your combination, all of the clusters
20 would be accessing the shared memory that's colored red for the sports; is
21 that correct?

22 MS. BAILEY: Let me pull up the Chen. So let me change that
23 understanding just a little bit, Your Honor. I don't think it's quite what we're
24 proposing.

1 So there would be a large data store that will hold the entire
2 acoustic model. That's not one of the memories of the clustered processors
3 that we're looking at.

4 If, per Thelen, it recognizes that sports is being discussed, then
5 it will pull the sports context into each of the shared cluster memories of the
6 four clusters so that all four clusters can run the sports context. But then
7 once it moves to the next recognition task, the next instance, it recognizes,
8 for example, that health is being discussed, at which point it would transfer
9 out the acoustic models from the shared cluster memory and transfer in from
10 the large data store, the health model.

11 JUDGE SMITH: Okay. So one cluster would be doing
12 baseball, one would be doing football. Or they would all be doing
13 everything in sports?

14 MS. BAILEY: They would all be doing everything in sports.

15 JUDGE SMITH: And why would you want to duplicate that
16 processing four times?

17 MS. BAILEY: You would be then dividing up from the
18 acoustic model, and this is actually how most acoustic models are divided
19 up. And so then you would, say, have every phoneme that begins with, say,
20 A through F would be one cluster. The next cluster would be G through K.

21 So you would take your sports model and then divide it up
22 amongst the different phonemes. So it actually would not be duplicated.
23 You would have multiple processors operating for one cluster on one portion
24 of the sports acoustic model.

25 JUDGE SMITH: Okay. Thank you.

1 MS. BAILEY: Okay. Let's turn back to DX-6. Oh, sorry. Go
2 ahead.

3 JUDGE OGDEN: No. Hold on. Hold on for a second. Patent
4 Owner, do you have a question?

5 MR. NOROOZI: Your Honor, it's just as a matter of procedure.
6 If I have an objection on the basis that an argument is new or was not
7 disclosed before, should I keep that for my argument?

8 JUDGE OGDEN: Yes, please keep that. Yeah.

9 JUDGE TURNER: This is Judge Turner. While you're
10 stopped, let me ask maybe, hopefully, an edifying question. Is Petitioner
11 relying on all of the references of all of the teachings of Chen et al?

12 MS. BAILEY: No, Your Honor. We are only relying on the
13 portions of the reference needed to teach each of the limitations in Claim 46.

14 JUDGE TURNER: And I ask that because we recently had a
15 case also, coincidentally, involving a reference Chen where we were
16 reversed where we said there was no reasonable expectation of success. And
17 that was in *Netflix* we did it, where we said, well, we take the whole context
18 of the reference, and we think it does. And basically on appeal, in that case,
19 Petitioner said, oh, no, but I'm not relying on anything else. Just this one
20 section of Chen is what I'm working on.

21 So, do we have that situation here where we need to be very
22 cautious? Or can we take Chen for all that it teaches, for example?

23 MS. BAILEY: We rely on Chen for certain teachings. I'm not
24 familiar with the *Netflix* case, but I would say that the way that the
25 combination is put together, that any ground is put together, is that we start
26 with our primary, and we pull from the secondary and tertiary references as

1 needed. But we need to be mindful of not bodily incorporating elements
2 from the secondary and tertiary references because, of course, bodily
3 incorporation is impermissible.

4 Now there is case law that says that we look at all of the
5 references together and see what the combination would do to put together.
6 But in our proposed ground, you do not need to consider anything from the
7 secondary and tertiary references other than what we have mapped in the
8 limitations and have put into our combination.

9 Does that answer your question?

10 JUDGE TURNER: You said we don't need to, but I guess can
11 we, is sort of maybe the question that's begged there.

12 MS. BAILEY: I would actually disagree with that from a
13 matter of kind of academic point of view. Now there is case law, and I will
14 be citing it actually in a different one of these matters, that if you have a
15 primary reference, you can't modify that primary reference or say that it is
16 inoperable to modify the primary reference for reasonable expectation of
17 success if the context of that primary reference is not pertinent to the claim
18 limitations.

19 So let me know if I'm not answering your question, Your
20 Honor, but I do think that it would be inappropriate for you to take
21 something from Chen, which is a tertiary reference that is not relied on in the
22 combination and say that this particular feature in Chen would then
23 somehow impact the reasonable expectation of success argument. I am not
24 aware of any case law that does that, but I will be going back and reading the
25 Netflix case.

1 JUDGE TURNER: Okay, but let's say we're pruning, just for
2 hypothetical example, perhaps. Let's say we're pruning. I want to make sure
3 that are we going too far afield by looking at this? Because most of what
4 Patent Owner here is saying is, look, we don't have a reasonable expectation
5 of success because if you have A and B, and let's say we're putting them
6 together, that one of ordinary skill maybe wouldn't have done that, and there
7 wouldn't have been expectation of success.

8 So, when I sort of ask how much are we to take from your
9 referencing, you're sort of saying, well, just what I'm telling you. Maybe
10 that gives me some pause because I'm trying to figure out what that ground
11 is. How much expansion can the vision support or not?

12 MS. BAILEY: So I don't think the ground or Petitioner's
13 arguments require expansion beyond what was put into the petition and the
14 declaration, first of all. Second, if you analyze obviousness of taking the
15 references and mixing and matching their teachings to the point where you
16 could create something that had no reasonable expectation of success, I
17 suspect that that could be done in a large variety of grounds. That is not the
18 proper legal analysis for obviousness.

19 JUDGE TURNER: Okay. Thank you.

20 MS. BAILEY: So you did just ask a question about Zentian's
21 lack of reasonable expectation of success argument, so let's look at DX-6.
22 Zentian's argument is that there would be these tasks that are listed on DX-6
23 that would have to be performed that would lead to the lack of reasonable
24 expectation of success. I first note that the task sharing and the messaging
25 strategy identified by Zentian, they don't talk about at all in their briefing.
26 They just mention that that task would need to be performed, but there's no

1 explanation of why the combination would have these tasks that would be
2 insurmountable.

3 With respect to bandwidth, Zentian cites the section of the '319
4 patent copy below, but as you can see, the section says, by providing a
5 plurality of processors in a group with a common memory, bandwidth is
6 saved. Well, that's what's in the claimed combination. So, if anything, the
7 combination would not have bandwidth issues.

8 Zentian mostly discusses memory collision or memory
9 contention issues, which we will get to. But in the sur-reply, Zentian seems
10 to concede that these issues could be addressed. In other words, Zentian
11 doesn't argue that these tasks are insurmountable tasks. It argues that the
12 task just wouldn't be done by a skilled person. Zentian --

13 JUDGE OGDEN: I'd like to --

14 MS. BAILEY: Yes, Your Honor.

15 JUDGE OGDEN: -- ask a question about the level of ordinary
16 skill in the art.

17 MS. BAILEY: Yes.

18 JUDGE OGDEN: It's my understanding, and I hope you can
19 just clarify this for the record, that the level of ordinary skill in the art, that
20 Petitioner proposed in the petition, sticking with that, which is a person who
21 has an educational degree in computer engineering, computer science,
22 electrical engineering, or related field, and then also some experience in the
23 field of speech recognition.

24 But as you articulate that, it does not include any specific
25 additional experience in high-performance computing or deep hardware

1 experience beyond what would a person of ordinary skill in the art, as you
2 define it, would have had; is that correct? That's your position today?

3 MS. BAILEY: I have two responses to that question, Your
4 Honor. You're correct that the field of high-performance computing is not
5 listed here, but any skilled person with these credentials would be able to
6 address the tasks that Zentian identifies. Every EE, every CS that I have
7 ever met has taken a class on parallel processing architecture. But more
8 importantly, the art of record overwhelmingly shows that speech recognition
9 researchers at the time were investigating and addressing parallel processing
10 architectures.

11 So if we're going to talk about memory contention issues, which
12 is a common task in parallel processing, we have multiple art of record
13 showing that speech recognition researchers were working in parallel
14 processing systems at the time. There's no indication in the record that they
15 would not be able to address a simple memory contention issue.

16 JUDGE OGDEN: Do we have expert testimony positively
17 supporting that? That a person with one of these degrees would've had
18 enough experience in the field of the hardware field in order to address these
19 issues, such as memory collisions and tasks theory and so forth?

20 MS. BAILEY: We have evidence of the references that already
21 shows that. In other words, we don't need to have an expert also say what
22 the art of record already teaches. Chen already addresses memory collision
23 issues, Hon addresses memory bottlenecks. Ravishankar talks about parallel
24 processing and memory bottlenecks.

25 JUDGE OGDEN: Well, I think maybe the issue is, for
26 example, with Chen, I think Patent Owner is arguing that maybe, and Patent

1 Owner can correct me later if I'm wrong, but I think the argument is sort of
2 maybe a person of ordinary skill in the art may be able to start with Thelen
3 and the other reference, but the Chen reference is in a sort of a different field
4 that maybe this person of ordinary skill in the art wouldn't have had
5 experience with. And so maybe they wouldn't have been able to make that
6 combination involving Chen.

7 MS. BAILEY: So I do disagree that Chen is in a different field.
8 It is related to parallel processing architecture, and it says that it can be used
9 for any type of parallel processing system. But more pointedly to your
10 question or specific to your question, Federal Circuit case law does not
11 require that simple tasks that could be performed by the skilled artisan be
12 explained.

13 And I note, and this is in our briefing, that the '319 patent itself
14 doesn't address any of these issues, other than the bandwidth that we've
15 already talked about. So if these tasks were insurmountable that would lead
16 to a lack of reasonable expectation of success, as in you can't do it, then the
17 '319 patent should've addressed those issues, because at the end of the day,
18 all Claim 46 is reciting is a clustered processor architecture that happens to
19 have the data of the acoustic model stored. In other -- oh, sorry. Go ahead.

20 JUDGE OGDEN: Couldn't it be that the patent at issue is just
21 not enabled? And then likewise, Petitioner's proposed combination would
22 not have been able to have been performed by a person of level of ordinary
23 skill in the art. And obviously we don't decide the question of whether the
24 challenged patent, the claims of the challenged patent are enabled, but it
25 doesn't seem to follow necessarily that just because the challenged patent

1 doesn't describe things in that way, that necessarily that there's a reasonable
2 expectation of success.

3 MS. BAILEY: So on your last statement, Your Honor, we have
4 cited multiple examples of case law, and I could've cited even more, at our
5 Petitioner reply Pages 2 to 3 that address the standards to be held to the lack
6 of reasonable expectation success based on what the challenged patent
7 discloses. And respectfully, Your Honor, the law is very clear and
8 consistent that if there is issues and --

9 JUDGE OGDEN: I'm sorry, could you pause for a second?
10 We're getting some noise from somewhere. Okay. It seems to be stopped,
11 so go ahead.

12 MS. BAILEY: The law is clear and consistent that if there are
13 particular issues or problems in satisfying a claim to limitation, then those
14 issues or problems should be addressed in the '319 patent or in the
15 challenged patent. To the extent that they are not, the skilled person is
16 deemed to be able to address them.

17 I also want to note that with respect to these tasks, Zentian
18 essentially just lobs that they would be tasks without a reasonable
19 expectation of success without explaining why this particular combination
20 would be problematic. And if you look at Dr. Anderson's testimony, it's
21 often verbatim to what is in the petition without any additional explanation.

22 Have I answered your question?

23 JUDGE OGDEN: Yes. Thank you.

24 MS. BAILEY: Okay.

25 JUDGE SMITH: Counsel, I'd like to follow up on that point,
26 and I'd like you to answer based on what you defined as the level of skill in

1 the record and then fact testimony either from the expert or your definition
2 of ordinary skill, or not so much case law. In terms of the level of ordinary
3 skill, Patent Owner's point is that a person who's skilled in speech processing
4 wouldn't be skilled in parallel processing or high performance. At some
5 point these patents are written for a person of ordinary skill, but somebody
6 who's skilled in computer programming wouldn't pick up a chemical patent
7 about the composition of some miracle drug and be able to understand that.

8 So I guess in terms of saying, well, all of these patents, you use
9 computer programming and people know how to program computers, at
10 some point, there is a difference in the skill set between a person who can
11 program speech recognition algorithms versus a person who can program
12 these parallel processors.

13 To the extent that there's not, what did your experts say about
14 the ability of a programmer skilled in speech recognition to be able to
15 program in a parallel processing environment?

16 MS. BAILEY: So, to your last question, I asked my expert
17 that, and he said, this is silly. And I'm quoting from him. He felt like this
18 was a silly argument. Now that's probably not how you're going to base
19 your opinion, but it is an answer to your question.

20 Essentially, Zentian's argument is that there is no person that
21 could practice the claimed dimension that meets the skill level, because they
22 even denigrate their own expert and say that he was very knowledgeable
23 regarding parallel processing, and he couldn't do the combination. I've
24 actually never seen that argument.

25 JUDGE SMITH: I guess, Counselor, yeah, that's not really
26 what I'm asking you about evidence from your expert. I mean, to the extent

1 he says it's silly, I mean there has to be some factual basis for that opinion,
2 for us to -- what's his factual basis for saying that it's silly?

3 MS. BAILEY: For fear of repeating the answer that I gave
4 earlier. The factual basis is the numerous references that are cited where
5 speech recognition is being done with parallel processing to show that
6 speech recognition skilled persons were knowledgeable regarding parallel
7 processing.

8 To reach a decision that there is no one that can meet the skill
9 level, you would have to ignore all of the references that are cited, of which
10 there are a multitude, where skilled persons were doing parallel processing
11 speech recognition.

12 JUDGE SMITH: Okay. Thank you.

13 JUDGE OGDEN: And you're eating into your rebuttal time.
14 You can continue if you'd like, but just note that we'll deduct that from your
15 rebuttal time.

16 MS. BAILEY: Thank you, Your Honor.

17 I do want to make one additional comment that Zentian argues
18 that the combination would not be real time, and this is on DX-7 of our
19 slides. First of all, Bailey teaches a real time system at Column 12, Lines 6
20 through 11, where multiple recognizers are accessing a single memory.

21 So the issue of whether there would be real time because you
22 have multiple processors accessing a single memory, Bailey is responsive to
23 that because it teaches the same architecture. It's not clustered, just multiple
24 processors, but they are accessing the same memory and teaches that it's real
25 time.

1 Thank you, Your Honor. I'll save my remaining time for
2 rebuttal.

3 JUDGE OGDEN: Thank you, Counsel.

4 Patent Owner, how much time, if any, would you like to reserve
5 for surrebuttal?

6 MR. NOROOZI: 15 minutes, Your Honors.

7 JUDGE OGDEN: Okay. You can begin when you're ready.

8 MR. NOROOZI: Thank you, Your Honors. And may it please
9 the board, Kayvan Noroozi for Patent Owner.

10 Your Honors, I'd like to clarify a number of points in response
11 to the arguments made by my colleague on the other side. I'd like to
12 primarily focus my argument in the beginning on responding to what Ms.
13 Bailey has said in clarifying a number of issues.

14 Ms. Bailey referred to a large data store in explaining how the
15 combination would work. So we object to that description because it's not
16 something that was discussed in the briefing, and I don't see it in the petition.
17 If the board would look at the petition at Page 43, as well as the testimony
18 that we've cited from Mr. Schmandt, there's actually quite a clear
19 explanation of how the combination is supposed to work. And the problem
20 with this large data store new theory is that it would actually fail to meet the
21 claims.

22 So the claims require that in each of the cluster memories, there
23 is partial lexical data, and then across the totality of all of the cluster
24 memories, there has to be complete lexical data. So what Ms. Bailey
25 described was a scenario in which the complete lexical data resides in some
26 large data store, and then portions of that are fed into the cluster memories.

1 But in that scenario, which is a new theory, the totality of the data stored
2 across the cluster memories would not add up to complete lexical data
3 (audio interference) claims.

4 So that's not, in fact, how Mr. Schmandt conceived the
5 combination or how the petition conceived a combination. What the
6 combination really requires is easily demonstrated in a slide that, oddly
7 enough, both Patent Owner and Petitioner conceived independently. So we
8 can look at Slide Number 5 from Patent Owner slides. And you see here a
9 visual illustration of the combination that Petitioner has proposed.

10 So you have the design of Figure 4 in Thelen, and this is
11 responsive to another point Ms. Bailey made. Ms. Bailey said that Thelen
12 does not organize the subcontext recognition models underneath the context
13 to which they belong. Well, that's inconsistent with Thelen. Thelen is all
14 about hierarchical organization of its recognition model, starting with a more
15 generic level and going down to more specific levels.

16 So we see in Figure 4 of Thelen, for example, that you have the
17 Health Context 420, and one example of a subcontext that falls under that
18 would be the medical centers. And then example of a subcontext that further
19 falls under health and then medical centers is health farms. And on the right
20 of our demonstrative, you see Chen's Figure 4.

21 And so the combination, as Mr. Schmandt made very clear in
22 his deposition, and as you will see in the petition and his declaration, is to
23 take these four contexts, for example, sports, health, travel, and computer,
24 and store all of the necessary language models for those contexts and their
25 subcontexts within each of the cluster-shared memories. So there's actually
26 almost a color-coding correspondence.

1 Let's say, for example, that the sports one, 410, would go into
2 the cluster 104c. And so all of the subcontext of sports, football, baseball,
3 golf, and so forth would have their language model stored in the cluster-
4 shared memory for 104c. And then health would go in, let's say, 104a, just
5 because they're both kind of red. I'm using these as an example. And then
6 travel would go into 104d. And computers, let's say, would go into 104b.
7 This is how the combination has been designed.

8 And we also see here immediately a problem with another
9 aspect of Petitioner's argument, which is this notion of a reduction of
10 duplication of lexical data. Duplication compared to what, first of all? As I
11 said, Thelen is already hierarchically organized, so Thelen does not go about
12 saving the same lexical data for, let's say, the word offsides for the sports
13 subcontext in 20 different locations within Thelen. There's no evidence of
14 that. Thelen is already organized in this hierarchical fashion.

15 But what we also see is that there are going to be subcontexts
16 that relate to more than one higher-level context, and an example of that is
17 Health Farms 424. And this is really important because the Petitioner's
18 combination and the way that they theorize it, assumes a clean delineation
19 between the high-level contexts so that there's no overlap between the
20 subcontext for sports and the subcontext for health.

21 But in fact, in real life in language, that's not how things work,
22 and Thelen acknowledges that. It says, as one example, that health farms are
23 connected to both travel and health. So the language model that's responsive
24 to health farms would need to have vocabulary recognition capability,
25 language model capability that connects to both travel and health.

1 And that means that you would need that language model in
2 104d, which would be, let's say, for travel, and you would also need it in
3 104a, which would be for health. So you're going to have the same
4 subcontext language model stored across the different cluster memories, and
5 you will have a lot of duplication in the combination they proposed.

6 JUDGE SMITH: The way I understood that, maybe you could
7 correct me if I'm wrong, but the way I understood the patent making that
8 point is that the health farms data would be stored in one of these clusters,
9 and then if another cluster needed it, that other cluster would, for example,
10 let's say the health farms data is stored along with the health data in the
11 104a. And if the travel 104d needed to access it, it would just use the
12 connection it has to the shared memory in 104a to access that data. In that
13 sense, it's not duplicate.

14 Is that not right?

15 MR. NOROOZI: Your Honor, you're asking a really important
16 question, and I just want to make sure we're on the same page. What you
17 described is what Thelen teaches, correct?

18 JUDGE SMITH: I thought that was the combination that the
19 petition was making.

20 MR. NOROOZI: No, not to my understanding, Your Honor.

21 JUDGE SMITH: No?

22 MR. NOROOZI: To my understanding, Petitioner's
23 combination, and I think it's clear from Mr. Schmandt's testimony and the
24 petition, would require that all of the subcontext models that relate to a
25 context be stored in the cluster-shared memory assigned to that high-level

1 context. So therefore the answer to your question would be no based on the
2 way that Petitioner has conceived its theory.

3 But if, in fact, that were Petitioner's theory or if one were to
4 conceive such a theory, then we would run into the problem that Chen
5 expressly teaches that there is not direct and adjacent access from one cluster
6 memory to the processors of every other cluster.

7 So and this is a perfect illustration: If we had health in 104a and
8 we had travel in 104d, and we put the model for health farms only in 104d
9 under travel, and a language recognition task came up that required the
10 subcontext model for health farms within the context of health in 104a, Chen
11 teaches us that we could not directly or adjacently access the memory of
12 104d to get that health farm subcontext model from Cluster 104d. So then
13 we would run into another level of problem.

14 And all these problems that we've identified are specific to the
15 combination, and they arise from the fact that this is not a combination that
16 an engineer who's trying to create anything useful would've come up with.
17 It's a combination that starts with our claims and tries to work backwards
18 and figure out how they could get there by taking some different things from
19 different higher art. And it hasn't been thought through at a level that a
20 reasonable person of ordinary skill would think through what they're actually
21 going to do in a way that operates and makes sense.

22 JUDGE SMITH: So let me just follow up to make sure I
23 understand. So Petitioner's point that if the algorithm recognizes sports and
24 that the sports data is going to be loaded into each one of these cluster
25 memories and the phonemes are going to be divided among the cluster, so
26 the first cluster would do A through D, the second would do F through G,

1 and so on, you're saying that mapping, that combination is not in the
2 petition; is that right?

3 MR. NOROOZI: That's correct, Your Honor. And I also want
4 to make clear a very important distinction between two different things that
5 can sound confusing. At one level we talk about the different clusters in
6 Chen, and those are the four clusters that are illustrated in Figure 4. They
7 don't have to be four clusters, but they're at least four in the way shown in
8 Figure 4. And then at another level, we talk about the processors that are in
9 each one of the clusters.

10 And so within one cluster, Mr. Schmandt's theory is that if you
11 assign, let's say, 104a to sports, then each processor within 104a will be
12 assigned to a different subcontext of sports. So one processor in 104a will
13 be for golf. One will be for tennis. One will be for basketball. One will be
14 for skiing and so forth. And then the totality of all the language models for
15 those subcontexts will be in the one cluster-shared memory of 104a.

16 Now the consequence of that specific combination, in addition
17 to the teachings of Thelen, which says that you're going to run every
18 subcontext model at the same time for a given context-level recognition task,
19 is that every processor in that cluster of Chen is going to simultaneously call
20 the common shared clustered memory to get the language model information
21 it needs to do its recognition task.

22 Now there's been a lot of conflation of that problem with the
23 design of the '319 patent. But in fact, the '319 patent design is completely
24 different. The '319 patent design has a tree structure, and there's a search
25 controller, right? So there's no discussion of any kind of controller in the
26 petition with respect to Claim 1, but --

1 JUDGE SMITH: But let me ask you to that point, let's say, let's
2 go with this mapping that there's only one cluster looking at sports and each
3 processor is going to look at a different sub-level in the sports category.
4 You know, looking at Figure 3 of Thelen, doesn't Thelen already have that
5 with -- let's say that it recognizes it's talking about -- it gives the example of
6 health. It recognizes it's talking about health.

7 Either the user says it's health or it recognizes it on a form, the
8 word, health. And then these recognizers in Figure 3 of Thelen are going to
9 be looking at the different levels within the hierarchy of health by accessing
10 the data in the same memory.

11 Isn't Thelen already doing what you're saying that Chen can't do
12 with one of his clusters?

13 MR. NOROOZI: No, Your Honor. So Mr. Schmandt talked
14 about this. Thelen has a structure in which the necessary language model
15 information is moved from that large storage 340 into the appropriate
16 memory for each recognizer, and so there is a correspondence between the
17 memories and the recognizers.

18 So just to be clear, and in fact, this is a very important point.
19 We have testimony on this that I'd like to bring to the board's attention. If
20 we look at our Slide number 7, neither Thelen nor Bailey teach this structure
21 of the claims or the structure of the petition's combination wherein there are
22 multiple processors tied to one common memory in clusters.

23 So Thelen and Bailey do not teach having multiple processors
24 tied to a cluster memory that holds only partial lexical data and then having
25 multiple clusters across the sum of which you have complete lexical data.
26 And Mr. Schmandt admitted to that. And so Thelen does not replicate, in its

1 own teachings, this architectural design of the combination the Petitioner
2 needs to get at the claims.

3 JUDGE SMITH: And then just one last question on this point,
4 and then I'll be quiet. Let's say I'm looking at the Figure 4 of Chen with
5 these four different clusters, if we go with your combination where each
6 cluster has a different category, the green cluster is doing sports, for
7 example, in that combination, the other three clusters would be idle; is that
8 right?

9 MR. NOROOZI: Well, Your Honor, first of all, I just want to
10 make clear that it's not my combination, just for clarity for the board. It's --

11 JUDGE SMITH: I apologize. The Petitioner's combination.

12 MR. NOROOZI: And I would just like to give the board some
13 evidence and proof that that is the Petitioner's combination. So if you look
14 at our Slide 4, we cite to the petition at Pages 40 to 43. But I think you can
15 really focus on Exhibit 2017, Mr. Schmandt's testimony. Page 124 to 126,
16 we discussed this in detail. It's also stated consistent with that testimony at
17 Paragraph 83 of Exhibit 1003, which is Mr. Schmandt's declaration.

18 So the description of the combination comes from Petitioner's
19 own expert and the petition. It's also further elucidated on Slide 6 with Mr.
20 Schmandt's testimony at page 125-8 to 126-5 of his first deposition.

21 JUDGE SMITH: Yeah, okay. So I just to be clear, I'm looking
22 at Page 43 of the petition, right? That only full paragraph on that page, right
23 in the middle. In the modified Thelen system, each grouping of recognizers
24 and associated processes store the models associated with a particular
25 context.

1 For example, all sports-related recognitions models in a cluster
2 memory. And then that last sentence: Group 1 related to the context of
3 sports stores all sports-related recognition models in the first lexical
4 memory. Group 2 related to health, stores all health-related models in the
5 second lexical memory.

6 So I guess that's where you're getting at, right? Is that right?

7 MR. NOROOZI: Yes. Yes, Your Honor. And to answer your
8 question about idle clusters of processors, Petitioner does not address that
9 problem one way or another. So it's entirely possible that there would be
10 idle clusters in Petitioner's combination.

11 But to the extent that, let's say, suboptimality exists, that's
12 another problem with Petitioner's combination. It's not because of anything
13 that I've described in terms of Patent Owner's view or something that Patent
14 Owner has introduced as a problem from its own perspective.

15 JUDGE SMITH: Okay. Thank you.

16 MR. NOROOZI: Your Honors, I think I was getting at the
17 difference between the patent's architecture and the combinations, and I
18 think this is an important point because it's been raised a number of times.
19 So, if we look at the Petitioner's Slide DX-4, there we have a comparison of
20 Figure 2 of the patent with Figure 4 of Chen.

21 And could you enlarge that, Mr. Knops, please?

22 And this is taught extensively throughout the patent. So what
23 happens in the patent is that you've got the search controller at the top of
24 Figure 2. That's Item 27. And the search controller controls this process of
25 what each of these lexical processors is going to do within each cluster.

1 It farms out the relevant memory information, lexical data that's
2 necessary to each cluster. And it gives each lexical processor within the
3 cluster pointers to the portion of the memory that they need to access for the
4 part of the tree that they're going to analyze.

5 So there is an overall tree. It's broken up into pieces assigned
6 out to each of the different processors. The relevant data that's necessary to
7 the totality of the processors for the cluster is placed into the one lexical
8 memory for the cluster. Pointers are provided to tell each processor where
9 to go, and everything is organized here. And then the information goes back
10 to the results memory. Then it goes back to the search controller where the
11 next steps of the process are coordinated. And that's something that we can
12 talk about in more detail.

13 If you look at Chen's Figure 4, none of that architecture is in
14 Chen's Figure 4, and none of that architecture is part of the combination.
15 And so the combination requires a very different construct in terms of,
16 essentially, what becomes pure chaos, where you have all these processors in
17 Chen unleashed, bombarding a common memory with no coordination or
18 design beyond what Petitioner has described, where they're all trying to get
19 recognition of language model data from a common memory to run a
20 common problem at the same time.

21 And we can see that, for instance, in Mr. Schmandt's testimony
22 at Page 125 to Page 126, where he says that the particular subset of
23 vocabulary that's germane to its context would be pulled by a given
24 processor running at the same time as the other processors from a common
25 memory.

26 I'd like to move on to --

1 JUDGE OGDEN: Oh, before we move on, Counsel --

2 MR. NOROOZI: Yes.

3 JUDGE OGDEN: -- I was just wondering if you could respond
4 to Petitioner's argument that the '319 patent doesn't say a lot about the
5 specific hardware or the parallel processing that occurs. And that that's
6 evidence that a person of ordinary skill in the art would've been able to
7 understand that, the nuances of the parallel processing, particularly as you
8 just described it.

9 I was wondering if you could respond to that?

10 MR. NOROOZI: Yes, Your Honor. So there are two levels
11 involved in this topic. One is with respect to Petitioner's own combination.
12 And of course, the '319 patent doesn't purport to solve every problem that
13 comes out of the combination, because the combination is not an
14 embodiment that is described within the patent. As I just said, it's a totally
15 different construct that starts with Thelen, a very different architecture, and
16 they've come up with something very specific that is their construct. It's not
17 the patent's construct.

18 However, the patent does have significant and extensive
19 teachings about how its embodiments would operate and how the claim
20 would be enabled. And what I just described is a part of that.

21 And so for example, without limitation, the board could look to
22 Column 9 of the '319 patent with respect to the description of how the search
23 controller operates in conjunction with all of the lexical processors and the
24 acoustic model memories. And in that section onward, the board will see
25 description, for example, that the search controller distributes the initial

1 lexical tree data amongst the lexical tree processors. And this is starting at
2 Line 45 of Column 9, and it goes on through the entire process.

3 Furthermore, there is a third level actually involved in your
4 question, which has to do with the level of the skill in the art, the ordinary
5 person of skill in the art. We are responding to Petitioner's theories on the
6 basis of their own definition of the person of ordinary skill.

7 We are not stating that that particular definition would
8 necessarily be the proper definition for purposes of determining enablement.
9 It's their definition of the person of ordinary skill. And under the terms of
10 that definition, we have extensive evidence from our expert, who's a
11 professor at Georgia Tech in the field of speech recognition, as well as other
12 areas, that that person of ordinary skill as the petition has defined would not
13 be able to reasonably expect success with respect to the combination as
14 Petitioner has defined it.

15 JUDGE OGDEN: But you're not arguing that Petitioner's
16 articulation of the level of ordinary skill should be a higher level of skill for
17 this proceeding, right?

18 MR. NOROOZI: We are not taking a position on that one way
19 or another. So we're not conceding any such issue. It's not an argument that
20 we needed to reach because we believe that we defeat the petition on its own
21 terms. So we did not need to propose a correction to their definition of the
22 person of ordinary skill to the extent that any different pose of definition
23 would be appropriate.

24 JUDGE OGDEN: So with respect to the passages that you
25 pointed to in Column 9 of the '319 patent, would a person of ordinary skill in
26 the art need to have some sort of a background in parallel processing to be

1 able to understand and implement the teachings in these passages that you
2 refer to?

3 MR. NOROOZI: And just for the record clarification, so I
4 pointed to starting at Column 9, but of course, it extends beyond Column 9.

5 JUDGE OGDEN: Right. Right.

6 MR. NOROOZI: The answer to your question, Your Honor, is
7 that I don't have that evidence in the record to answer you with specificity,
8 because we have not tried to, for purposes of this proceeding, as the Patent
9 Owner, affirmatively craft the appropriate level of skill that would be
10 necessary for a person of skill to take the patent's teachings and make use of
11 them to achieve the claim.

12 So that's something that we would need expert testimony on.
13 So I don't want to speculate effectively in terms of yes, such a person could
14 or could not. But what we do know is that the patent's teachings are the
15 patent's own teachings. There's nothing like these teachings in the record
16 that explains how to create the patent's claimed invention in any of the prior
17 art.

18 And this goes to another point that Ms. Bailey raised. Yes,
19 there is prior art talking about the general use of some parallel processing of
20 some sort in the context of speech recognition. But there is no prior art
21 talking about creating a parallel processing speech recognition system like
22 the combinations. The way they get to the combination is to take Chen's
23 parallel processing architecture. And Chen says nothing about speech
24 recognition at all.

25 So Chen can't give them the enablement. And they take then
26 the sort of software design of Thelen, but Thelen doesn't talk about using

1 any kind of architecture or hardware like Chen. So they can't get the
2 enablement from Thelen. They look to Bailey for the processor to memory
3 architecture.

4 But as we've pointed out repeatedly, Bailey doesn't have the
5 processor to memory architecture of the claims. It talks about the prior art
6 way of having multiple processors go to one large memory, not multiple
7 groups of processors going to individual cluster memories across the totality
8 of which you then have all the lexical data.

9 So they don't have enabling art for their combination from any
10 of the three references and certainly not from Ravishankar or Mathew or any
11 of those other references, which don't describe their combination at all or
12 anything comparable to their combination. We're not saying that the other
13 references have to describe exactly their combination.

14 We're saying there needs to be adequate teaching of them to
15 provide enablement. They haven't demonstrated that through evidence and
16 the references on their face are directed to totally different designs.

17 Your Honors, there was a point made by Ms. Bailey that we
18 don't dispute, that the claim limitations are taught. I hope it's clear from my
19 argument and our briefing that, of course, we do. Our entire argument is that
20 the claim limitations must be taught by the combination as a whole. And so
21 everything in our arguments is directed to the fact that the combinations as a
22 whole don't teach the limitations.

23 But furthermore, in particular, with respect to the requirement
24 of the partial lexical data stored across different memories and the totality of
25 the different cluster memories having all lexical data, complete lexical data,
26 we've pointed out multiple times that they tried to get that from Bailey.

1 Bailey doesn't teach that. Thelen doesn't teach that. And we
2 have the testimony from their expert about that. And certainly Chen doesn't
3 teach that because Chen says nothing about speech recognition, much less
4 how to allocate memory storage in the speech recognition system using its
5 clusters.

6 Ms. Bailey stated that POSAs would know how to address
7 memory contention issues in general. Now whether there may be some type
8 of memory contention issue a person of skill as defined by the petition could
9 address is not demonstrated by the record.

10 They haven't put forth that evidence. But even if one were to
11 assume that capability out of thin air, that doesn't get us to any sort of
12 conclusion that the person of skill could have solved the memory contention
13 issues that come out of this specific combination.

14 And that's exactly why we have extensive expert testimony
15 from Dr. Anderson at Georgia Tech explaining exactly what is wrong with
16 this combination, why exactly this combination would create memory
17 contention issues, and why a person of skill would not be able to address
18 those challenges with a reasonable expectation of success.

19 So it's not the case that we simply raise problems in conclusory
20 fashion, and we don't explain why they exist. We have detailed testimony
21 from our expert of exactly why the design of the combination would cause
22 the problems that we have highlighted.

23 Your Honors, are there any other questions that I can address?

24 JUDGE SMITH: Just before you go, just let me just follow up
25 on your last point about a person of ordinary skill. So to Petitioner's point
26 that a person of ordinary skill in the speech recognition field does have a

1 background in parallel processing, did study a course in parallel processing
2 in college and the references in the records show that parallel processing was
3 within the skill of a speech recognition programmer,

4 Are you saying that's not true? A person of skill in speech
5 recognition doesn't have enough of a background in parallel processing to
6 make this combination?

7 MR. NOROOZI: Well, Your Honor, the short answer to the
8 last part of your question as you framed it is yes. And I'd like to address that
9 at two levels.

10 So it's with respect to this combination. Our showing from Dr.
11 Anderson who trains persons of ordinary skill in the art day in, day out for a
12 living and who's worked in this field far longer than the POSA, who's a
13 person of extraordinary skill by any definition, is that the person of ordinary
14 skill as defined would not have a reasonable expectation of success for the
15 combination in part because they would not have the adequate skill with
16 parallel computing architectures and hardware design and programming to
17 be able to do it.

18 However, whether the person of skill would have some level of
19 familiarity with parallel processing is something that Petitioner's counsel
20 stated today as attorney argument. There is no testimony from their expert
21 about that, nor what the level of knowledge would be. They're pointing to
22 the fact that there's some parallel processing taught in some of the prior art
23 that relates to speech recognition. But they haven't established that that art
24 was written by persons of ordinary skill, which it wasn't, or that it's directed
25 to persons of ordinary skill as they've defined it, of which there's no
26 evidence.

1 And at the end of the day, going back to what I said, that art
2 like Ravishankar or Mathew does not enable this combination. So what you
3 need to know for this combination is something that the person of ordinary
4 skill, as they defined it, would not know. And that's demonstrated by our
5 expert testimony. It's also, I'm sorry, demonstrated by the fact that Mr.
6 Schmandt himself has never done anything like the combination.

7 And I think the board should take note of his testimony. He
8 said he's never even designed the software to hardware architecture of any
9 speech recognition system. He's never supervised anyone porting speech
10 recognition software to any hardware like Chen's.

11 He didn't sit and think about what the person of ordinary skill
12 would have to do to achieve his combination before he reached his
13 conclusion of a reasonable expectation of success. He didn't identify the
14 steps the person would have to take in his declaration. And so we just have
15 a naked conclusion with a whole lot of evidence from our expert that
16 contradicts it.

17 Are there any other questions that I could address at this time,
18 Your Honors? Thank you. I'll reserve the rest of my time.

19 JUDGE OGDEN: Thank you.

20 Petitioner, you have 13 and a half minutes in your rebuttal time.

21 MS. BAILEY: Thank you, Your Honor.

22 JUDGE OGDEN: Give us a second and we'll set it for 14
23 minutes. And you'll have a two-minute warning, and the light will go
24 yellow at that time. And then time will be up when it goes red. You can
25 begin when you're ready.

26 MS. BAILEY: Thank you, Your Honor.

1 I want to address a question that Judge Smith asked me earlier,
2 and I think I might have misunderstood the question. You asked something
3 similar of Counsel, and so I had a better clarity. So I want to make sure that
4 the record is clear.

5 And this is regarding the division of the acoustic model and the
6 context. So each cluster's memory would store a sports or a health or a
7 medical. And if sports was being recognized, all of the other processors of
8 all of the other clusters are still actively recognizing.

9 They're still processing because they don't necessarily know
10 what the next word is going to be. So all of the processors of all clusters are
11 not sitting idle. And the entire acoustic model is stored in the collective
12 memories. So I just wanted to make sure that the record was clear on that.
13 Next --

14 JUDGE SMITH: Yeah, with that, I guess I don't see the
15 advantage of doing that over Thelen because Thelen is looking at it kind of
16 ranks the results of these different processors and whatever is using a model
17 that's providing the lowest-ranking result, it just replaces the model for that
18 processor with something that's closer to the highest-level match.

19 So to that extent, Thelen doesn't need to have processors
20 processing every single category. It's just taking these processors and to the
21 extent that the model that it's using is no longer a match, it switches to a
22 model that's a match. To the extent that you don't know what category is the
23 correct category, Thelen already addresses that without the additional
24 overhead of the multiple clusters in the multiple processors. What would be
25 the advantage of --

26 MS. BAILEY: Yeah.

1 JUDGE SMITH: -- having -- I see the huge cost in having all
2 these additional processors processing, but what would be the advantage?

3 MS. BAILEY: The advantage is, I recall that I mentioned that
4 Thelen is not an optimally efficient because it would have one recognizer to
5 each subcontext. So one recognizer to football, one recognizer to baseball.
6 So it's not clustering.

7 So once sports is recognized as the potential model to be
8 recognized, it's not taking advantage of having all of the similar language of
9 the sports context loaded in the same memory. In other words, you have
10 multiple recognizers at that point and from the memory from the (audio
11 interference).

12 Does that answer your question, Your Honor?

13 JUDGE SMITH: So the three clusters in Figure 4 of Chen
14 would be idle while the sports processor is processing. And I guess to patent
15 on this point that Thelen is already using this hierarchical memory structure
16 within categories. So what would, like, for example, offsides. Offsides is
17 already within a hierarchy in Thelen, and I guess I'm still not seeing the
18 advantage of your combination over Thelen by itself.

19 MS. BAILEY: Yeah. So Thelen wouldn't necessarily have a
20 sports recognition model. It would have one specific to each of the
21 subcontexts. And then you just said, I believe, Your Honor, that the other
22 processors in the clustered processor architecture would be sitting idle. And
23 I disagree with that. They would still be recognizing. It just happens to be
24 that increased likelihood of recognizing accurately because the sports
25 context is being recognized or --

1 JUDGE SMITH: Well, I guess at that point, they would have
2 close to a zero percent chance of recognizing accurately. And the only thing
3 they would be doing would be consuming power with little chance of
4 actually producing a benefit.

5 MS. BAILEY: Yeah. But you would also have instances
6 where perhaps the spoken language isn't specific to any particular context.
7 And so you would need all processors operating across the collective lexicon
8 to be able to recognize. And so in that instance, they would all be
9 processing heavily and recognizing. So again, I want to make sure I've
10 answered your question.

11 JUDGE SMITH: And then is that, just to follow up, but is that
12 in the petition?

13 MS. BAILEY: Let me refer you to perhaps the petition Page 40
14 and Paragraph 76 of Exhibit 1003. I might have been answering a question
15 that is not exactly at those pages.

16 I'm sorry. Did Your Honor have another question?

17 JUDGE SMITH: No, I'm just looking at Page 40 of the petition
18 that you're saying. Page 40 talks about all of the clusters we're running
19 together, if it can't recognize the category?

20 MS. BAILEY: Cannot recognize the category, I believe, would
21 be in the declaration. Otherwise, it may be at Page 43 of the petition.
22 Because it talks about the collective groups of recognizers recognize the
23 entire huge vocabulary in combination of the complete lexical data.

24 JUDGE SMITH: Okay.

1 MS. BAILEY: I also, if there are no more questions on that,
2 Your Honor, I want to make sure that you're clear on the advantage of the
3 combination over Thelen alone that's proposed.

4 JUDGE SMITH: The advantage as I understand it comes from
5 if it can't recognize a category, that then you would have all processors
6 searching the entire lexical database; is that right?

7 MS. BAILEY: That, but also in combination or in addition to
8 you have all of the sports context clustered together so that similar terms
9 within sports are not repeated across multiple memories as they would be in
10 Thelen.

11 JUDGE SMITH: Okay.

12 MS. BAILEY: Okay. With respect to more on the factual basis
13 for the skill level and whether a skilled person would understand parallel
14 processing, I want to give the board a few citations. From Schmandt's
15 Deposition Exhibit 2017, Page 87, Lines 18 through 23, where he said,
16 Parallelism and distributing tasks among multiple processors was well
17 within skill of the skilled person. Also Page 64, Line 15 through Page 65,
18 Line 2 and Page 99, Line 17 through Page 101, Line 3, also Exhibit 1003,
19 which is the Schmandt Declaration, Paragraph 60 and 71 discuss additional
20 speech recognition systems with parallel processing.

21 Also, Counsel did mention the huge vocabulary store 340 that's
22 taught in Thelen, but in case there are any more questions on that, I refer the
23 board to the petition, Pages 24 through 26 and 30, in Exhibit 1003,
24 Paragraph 177.

25 Also, Counsel made several comments about what the '319
26 patent's architecture is. And I would just like to note that none of that

1 architecture that was described is claimed. At the end of the day, the claim
2 is simply a clustered processing architecture, multiple processors connected
3 to a single memory performing speech recognition. So Counsel was
4 mentioning unclaimed and arguing unclaimed limitations.

5 JUDGE OGDEN: Counsel, even if they are unclaimed, isn't it
6 possible that you may have to implement some of those things and make
7 them efficient in order to really have a reason to do what's claimed in order
8 for it to be beneficial?

9 MS. BAILEY: If we're going back to the task that they
10 recognized, if that is where Your Honor is asking his question from, those
11 tasks would, again, arise in any parallel processing system. Counsel has
12 spent time talking about Chen as a clustered processing architecture, but that
13 it does not mention any speech recognition. But if we look at the claimed
14 invention as a clustered processing architecture for which the memory is
15 holding acoustic model data, at that point, Chen is operable for being able to
16 process data.

17 The type of data being processed, the fact that it is an acoustic
18 model stored in the memory versus any other type of data, does not
19 somehow make the claims or the combination not operable. In other words,
20 the claim recites clustered processor with a memory. It just happens to be
21 that the label on the memory is an acoustic model because it's performing
22 speech recognition.

23 But the claim has no other details of what is happening with the
24 speech recognition or how it's being performed, how it's being
25 communicated, how the results are being communicated, how the pruning is
26 done. None of that is claimed. So we have to look at the claim's breadth as

1 a whole and not import into the claim architectures or tasks. That would be
2 problematic when they're simply not claimed.

3 JUDGE OGDEN: My question is less about whether there's a
4 reasonable expectation of success to perform the claimed subject matter, but
5 going more to the issue of whether there's a motivation to combine and
6 whether there may need to be some of these optimizations and efficiencies in
7 order to have a reason to make the combination that you've proposed.

8 MS. BAILEY: Obviousness case law does not state that it is
9 non-obvious when additional tasks need to be done. That's not how our law
10 is set up. So there may be additional tasks that need to be done. Let's say
11 memory contention issues and putting together the combination. But these
12 are tasks that would be well within the skill level and would be expected
13 from implementing a parallel processing architecture.

14 Again, I refer the board to the case law in the Petitioner reply at
15 Pages 2 to 3. If we set up any obviousness ground that it requires additional
16 tasks to be performed and therefore it's non-obvious, well, then we would be
17 setting up something where many things would not meet our standards, but
18 that's not what our law requires for the obviousness analysis.

19 JUDGE SMITH: But there does have to be a benefit that
20 outweighs the disadvantages of the combination and Patent Owner is
21 pointing to several disadvantages in saying there's no real benefit. Even if
22 you do combine this, even if you do get it to work, there's no improvement
23 over Thelen by itself, given the amount of drawbacks that are present in the
24 combination.

25 What evidence is there in your petition to show that there is a
26 benefit that outweighs disadvantages of the combination?

1 MS. BAILEY: So the benefits of the combination are discussed
2 at the declaration in Paragraphs 83 through 84, along with the motivation to
3 combined section of the petition of Pages 40 through 43 that we have been
4 looking at. I want to go back to the drawbacks that Counsel has proposed.

5 First of all, there are always going to be trade-offs and the case
6 law allows for those trade-offs to be considered and do not otherwise defeat
7 the obviousness.

8 Second, we strongly disagree that there are no advantages to the
9 combination or that trying to address a memory contention issue would
10 somehow outweigh the proposed combination. Parallel processing to
11 improve speed and efficiency in general was extremely well-documented.
12 Clustered processing architecture and the advantages of it was extremely
13 well-documented.

14 So the combination achieves those benefits through Chen.
15 Addressing a memory collision issue or contention issue does not outweigh
16 the benefits that were set out in the declaration.

17 JUDGE OGDEN: Counsel, you're at the end of your time. Did
18 you have anything very briefly that you wanted to say to sum up?

19 MS. BAILEY: No. Thank you, Your Honors.

20 JUDGE OGDEN: Okay. Thank you. All right. Mr. Noroozi,
21 you have 13 minutes left on your time, and there'll be a two-minute warning.

22 MR. NOROOZI: Yes, Your Honors. So the argument was
23 made that obviousness law does not require the additional components of the
24 combination to be enabled if they're not aspects of the combination that
25 directly read onto a claim limitation, and that's incorrect as a matter of law,
26 Your Honors.

1 So the combination has to have a reasonable expectation of
2 success. It's not the patent claim that has to have a reasonable expectation of
3 success.

4 The expectation of success for the patent claim is the
5 enablement inquiry that's judged based on the teachings of the patent and
6 POSA's skill and knowledge. The expectation of success for the
7 combination is with respect to what it is that the combination would entail
8 and require. And that's how we've analyzed it and where we've
9 demonstrated the shortcoming.

10 So as a matter of case law in support of this issue, the board can
11 look to *Raytheon v. General Electric* that we cited, the *Arctic Cat* case as
12 well as *ActiveVideo v. Verizon*, which states that the patent challenger has to
13 explain how the combination would operate to actually meet the claims and
14 obviously showing reasonable expectation of success as to that, as well as
15 the *Keynetik* case.

16 There are two *Keynetik* cases. There's one that they've cited
17 and there's one we've cited. I'm referring to the one that we have cited. The
18 first case that we cited in *Keynetik* talks about the fact that there needs to be
19 a showing and a finding by the board on reasonable expectation of success
20 and the sort of relevant parameters of that. And the second case after
21 remand, the Federal Circuit found that that had been satisfied by the board's
22 subsequent finding, which is what Petitioner cited to.

23 The argument was made that the advantage over Thelen alone is
24 that Thelen alone does not already have a sports context. For example, it
25 doesn't have the higher-level context. Or alternatively, that Thelen alone
26 doesn't have the subcontext. I heard both arguments from Petitioner's

1 counsel, and both are incorrect as taught by Thelen. So if we look at Thelen,
2 at Column 9, Lines 24 to 25, say, if several more specific sports models
3 exist, e.g., for football, baseball, athletics, racing, et cetera, then all of these
4 models may be tested.

5 So Thelen clearly contemplates having a number of subcontext
6 models for the generic context of sports. And of course, it also contemplates
7 having a model for the generic sports context that's at Column 8, starting at
8 Line 54, where Thelen describes the generic models, the four most generic
9 models, 410, 420, 430, and 440 from Thelen's figure 4. And if we look at
10 Thelen's figure four, we saw that in Petitioner slides, and in the petition, they
11 say, for example, 410 could be sports.

12 So there's no doubt that Thelen already has this sort of generic
13 level model and the subcontext models. And that's not an advantage that
14 would arise out of the combination, if it were any advantage at all. There
15 was an argument that what we cited from the patent in Columns 9 and 10 is
16 not recited in the claims. And Judge Ogden, I think you raised a point with
17 respect to that distinction. I just want to touch on that further.

18 The claims don't need to recite everything that's necessary for
19 their enablement or relevant to their enablement or every embodiment. The
20 reason we went to Columns 9 and 10, by way of example, was to show that
21 the patent has very specific teachings of how to put together the invention of
22 the claims in ways that do provide enabling disclosure and also are very
23 distinct from what the combination requires.

24 The argument was made that Chen can process data and using
25 Chen for speech recognition data makes no difference compared to using it
26 for any other data. And that's incorrect, Your Honors. That generalizes the

1 entire field of computer hardware and software to an enormous level that is
2 not supported by the actual evidence and what people in this field
3 understand. The evidence from our expert is quite extensive, that when you
4 want to try to implement Thelen-specific approach in the way the Petitioner
5 has described it and its expert has described it on Chen's architecture, you're
6 going to run into a lot of problems.

7 So we're not saying Chen is not enabled to have any data run on
8 its clusters and memories. That's not the argument. We are saying there is a
9 very significant issue when you try to implement this specific software
10 architecture in the context of speech recognition on that specific hardware.
11 And there's evidence of that, and we can't just look past that with a
12 generality that if Chen can run some data, then it can run any data.

13 JUDGE SMITH: But let me ask you, I have a question just in
14 in terms of the advantages mentioned by Petitioner. You know, Petitioner
15 said that the advantages of parallel processing are well-known and outweigh
16 the benefits of the additional cost of making this combination. But still with
17 respect to Thelen it looks like Thelen does have parallel processing.

18 And then to the extent that what the advantages that Petitioner
19 brought up, that you have those four clusters that have those four different
20 categories, sports, health, travel, and computers. And if the topic is sports,
21 the sports cluster is processing, but there's still an advantage of having those
22 other four clusters processing looking for, whether the topic becomes health
23 or travel or computers.

24 What do you think about that advantage?

25 MR. NOROOZI: Yes, Your Honor. So let me address that at a
26 couple of levels. First of all, the prior art in this case establishes that it was

1 known that parallel processing and using additional processors in a parallel
2 processing architecture for speech recognition is not necessarily better,
3 right?

4 Because we have that evidence from Mathew. Mathew 1 taught
5 that, when you went from a two-processing parallel processing speech
6 recognition system to a five process one, you ended up with a slower system.
7 And so that it was disadvantageous to make such a transition.

8 So I think this general notion that the use of parallel processing
9 and more processors was known to be beneficial in speech recognition is
10 contradicted by the evidence. Then with respect to Thelen itself and any
11 distinction between Thelen and Chen, Thelen teaches that it can achieve real
12 time recognition in its architecture. And Mr. Schmandt admitted that there's
13 no problem with Thelen achieving real time recognition in the way that it
14 already exists and runs.

15 However, once you move Thelen's architecture, if you could
16 even do it, into Chen's parallel processing architecture with the clusters in
17 the way that the Petitioner has proposed, then you run into all of these
18 memory contention problems that would slow the system down to the point,
19 according to Dr. Anderson's testimony, that you could not achieve real time.

20 And so you have not only the lack of an advantage, but an
21 actually very specific and very significant disadvantage in the move from
22 Thelen to the combination of Thelen and Chen.

23 Does that address your question, Your Honor, or did I miss an
24 aspect of it?

25 JUDGE SMITH: Yes. Thank you. I understand your point to
26 that. And then your point to just looking at one cluster by itself processing

1 one topic, you're saying Thelen, for example, the word offsides doesn't need
2 to be repeated in each separate memory for each processor.

3 You're saying Thelen already does that?

4 MR. NOROOZI: Yeah, so Thelen, the way that it's organized
5 is by these hierarchical levels of models, and it already attempts to create
6 efficiency by aggregating and organizing its operation by context and
7 subcontext.

8 Now there's going to always be some level of duplication in
9 Thelen, by the way, let's just be clear, in terms of the language model
10 storage, because Thelen itself says if I have a subcontext for sports and I'm
11 trying to run recognition on a piece of a language that's come in, well, I still
12 need to recognize the words like and, and the, and general words in the
13 English lexicon and grammar. And so I need that additional nonspecific
14 sports context language stored in the language model for sports.

15 So Thelen is going to have duplication regardless. However,
16 there is no evidence of this difference in duplication level between what
17 Thelen already requires and what the combination requires.

18 And in fact, I think the evidence shows that the combination
19 would require more duplication because in the example of Figure 4, when
20 you have health centers as a shared subcontext between two general
21 contexts, in the petition's combination, you're now going to have to store
22 health centers across two different clusters.

23 JUDGE SMITH: Okay. Thank you.

24 MR. NOROOZI: The board was referred to by Petitioner Pages
25 87, 64, and 69 of Mr. Schmandt's deposition.

1 Page 87 simply states the conclusion from Mr. Schmandt, that
2 he believes a person of skill would have adequate knowledge of parallel
3 processing to enable his combination. As we've explained though, that
4 conclusion is not supported by either adequate evidence and testimony from
5 Mr. Schmandt, nor was it even formed after a consideration by him of what
6 the person of skill would need to do. It's simply a knee-jerk conclusion, and
7 it's certainly refuted extensively by detailed testimony from our expert.

8 So that was page 87. Page 64 is not directed to the petition's
9 combination. It just talks about the fact that there is some art of record that
10 uses parallel processing and speech recognition. But for example, one
11 significant piece of that art is Mathew, which tells you that when you go
12 from two processors to five in speech recognition using parallel processing,
13 you end up doing worse. So the art of record doesn't enable the combination
14 because it doesn't speak to the details of what the combination would
15 require, and it in fact also motivates against the combination.

16 Page 69, I believe, I heard. I didn't see anything relevant to this
17 topic on Page 69. But in any case, there is extensive question and answering
18 of Mr. Schmandt in his deposition about how he got to the conclusion that
19 the person of skill wouldn't be able to enable his combination using parallel-
20 processing hardwares taught in Chen. And he says, I didn't need to go into
21 that detail because the person of skill would know how to do it.

22 And it's a circular statement, and it in fact tries to do what
23 Petitioner's briefing did, which is weaponize the level of ordinary skill to
24 overcome the need to make specific showings of evidence, when in fact all
25 cite and the case law tells us that the level of ordinary skill is a primary

1 safeguard of objectivity to prevent against hindsight bias, not to fill in the
2 gaps in the evidence that Petitioner omitted.

3 If there are no further questions, Your Honor, I will rest. Thank
4 you.

5 JUDGE OGDEN: Okay. Thank you, Counsel. This concludes
6 this hearing, and I'd like to thank Counsel from both sides for their very
7 helpful presentations, and we will issue a decision in due course. And we
8 stand adjourned for this proceeding. And let's go off the record.

9 (Whereupon, the above-entitled matter went off the record at
10 2:44 p.m.)

PETITIONER:

Jennifer Bailey
Jennifer.bailey@eriseip.com
Adam Seitz
Adam.seitz@eriseip.com
Adam Sandwell
Adam.sandwell@eriseip.com

PATENT OWNER:

Peter Knops
peter@noroozipc.com
Katherine Rhoades
Katherine.rhoades@bartlitbeck.com
Kayvan Noroozi
kayvan@noroozipc.com