

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CLEARCORRECT OPERATING, LLC,
Petitioner,

v.

ALIGN TECHNOLOGY INC.,
Patent Owner.

IPR2025-00817
Patent 10,791,936

Record of Oral Hearing
Held: July 31, 2026

Before KEVIN F. TURNER, NEIL T. POWELL, and
CYNTHIA M. HARDMAN, *Administrative Patent Judges*.

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P R O C E E D I N G S

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COURT REPORTER: We will start today's proceedings with
IPR2025-001 -- I'm sorry, 00816. Judge Turner, it's now in your hands.

JUDGE TURNER: Thank you. Good morning. This is an oral
hearing for IPR2025-00816. I'm sorry?

MR. ARGENTI: Your Honor, point of clarification. I believe
we're on hearing 817 first.

JUDGE TURNER: You are correct, it is 817.

COURT REPORTER: Sorry about that.

JUDGE TURNER: This is an IPR for IPR2025-00817 that's
involving U.S. patent 10,791,936 B2. I am Judge Turner. With me on the
panel are Judges Hardman and Powell. For the benefit of the opposing
counsel as well as the court reporter, please identify yourself when you
begin your argument and speak clearly into your microphone. Please do not
speak when others such as the judges are speaking.

We have the entire record including demonstratives. When
referring to demonstratives, papers, or exhibits, please do so clearly and
explicitly by a slide or paper number. Please also pause a few seconds after
identifying it to provide us time to find it and the court reporter to
acknowledge it. This helps with the preparation of an accurate transcript of
the hearing. Please keep in mind that the purpose of oral hearing is to
present your case based on the arguments and evidence of record. You may
not introduce new evidence or arguments in this oral argument.

I will note there does not appear to be any objections to the
demonstratives from either side. Please note that we do not permit standing

1 objections to be raised against opposing parties during their arguments. If an
2 advocate believes that new evidence or arguments are being raised, he or she
3 should make that known to the panel during their principal argument or
4 rebuttal argument.

5 Please note the Petitioner will have 45 minutes of argument time
6 and the Patent Owner will also have 45 minutes of total argument time.
7 Petitioner and Patent Owner will reserve time for rebuttal. Petitioner will go
8 first and present its case, then after Patent Owner will argue its opposition to
9 Petitioner's case. And if there's any rebuttal from Petitioner, we'll hear it
10 after Patent Owner's opposition. And finally, we'll hear from Patent Owner's
11 surrebuttal if requested.

12 I will endeavor to provide each party with a five-minute warning
13 through the use of the yellow light during opening argument, and a two-
14 minute warning during rebuttal and surrebuttal, also through the yellow
15 light. Once the red light comes on, you should finish up your present
16 argument or let the panel know you wish to extend your argument into the
17 prearranged rebuttal or surrebuttal time if available.

18 Please note that the arguments raised during rebuttal or surrebuttal
19 must be in response to arguments raised by the opposing party. Neither
20 period should be used to initiate new arguments. So we'll go ahead and get
21 that out of the way. First, let's go to party appearances. Who do we have
22 appearing on Petitioner's behalf?

23 MS. ZHANG: Thank you, Your Honor. My name is Xirui Zhang.
24 I represent Petitioner ClearCorrect. I'm here with my colleagues Jason
25 Stach, Charles Collins-Chase, and Luke McCammon. I'm also joined by our
26 in-house counsel Dave Scannell and David Mallaber from ClearCorrect

1 listening on the line. I will be presenting the argument today.

2 JUDGE TURNER: Okay. And would you like to reserve any time
3 for rebuttal?

4 MS. ZHANG: Yes, I would like to reserve 15 minutes.

5 JUDGE TURNER: Ten minutes, okay.

6 MS. ZHANG: Sorry, 15 minutes.

7 JUDGE TURNER: Oh, 15 minutes. So 30 principle and then 15
8 minutes.

9 MS. ZHANG: That's correct.

10 JUDGE TURNER: Okay. And who do we have appearing on
11 Patent Owner's behalf?

12 MR. ARGENTI: Good morning, Your Honors. Matt Argenti from
13 Wilson Sonsini on behalf of Patent Owner Align Technology. And with me
14 is my colleague, Tasha Thomas.

15 JUDGE TURNER: Okay. And in terms of -- do you want to
16 reserve any time for surrebuttal?

17 MR. ARGENTI: Yes, Your Honor. Can I reserve ten minutes,
18 please?

19 JUDGE TURNER: Ten. Yeah.

20 MR. ARGENTI: Okay. Thank you.

21 JUDGE TURNER: Thank you. If at any time anyone conflicts or
22 if I've done something wrong with the timer, please let me know. I've got it
23 set for 30 minutes and then eventually it will be 35 minutes for Patent
24 Owner. I think maybe -- well, I think the panel had difficulty hearing the
25 parties, but I think once you get up to the front, hopefully they'll -- if they
26 can't hear you, they'll let me know when you come to the podium and

1 approach. Any questions before we get started?

2 MR. ARGENTI: Not here, Your Honor.

3 MS. ZHANG: No, Your Honor. Thank you.

4 JUDGE TURNER: Okay. Petitioner, you may begin your
5 argument when ready.

6 MS. ZHANG: Good morning, Your Honors. May it please the
7 Board. I would like to begin our discussion today with our grounds and the
8 main disputes between the parties, unless Your Honors have any topics you
9 want to take up first. Can you hear me okay?

10 JUDGE TURNER: I'm going to let you decide however you want
11 to present.

12 MS. ZHANG: Thank you, Your Honor. Turning to slide 8, which
13 shows the instituted grounds in this proceeding. There are four instituted
14 grounds, and each ground is an obviousness ground. There's no anticipation
15 ground in this case. Ground 1 relies on the Boerjes reference. Ground 2
16 relies on Boerjes combined with Geng reference. And Grounds 3 and 4 add
17 Babayoff to Grounds 1 and 2. So, as you can see, Boerjes is a common
18 primary reference across the four grounds.

19 I would like to take you through the Boerjes teachings. But before
20 we get to Boerjes, I'd like to give you a preview of the main disputes
21 between the parties. Slide 9 shows claim 1. It's marked out to show you the
22 only limitations in dispute. They are limitations 1E and 1H. The remaining
23 limitations of claim 1 are not disputed.

24 Slide 10 shows the parties' primary disputes on those limitations.
25 And the main question that applies across all the challenges of the claims is
26 whether the prior art renders obvious partial replacements if a user identified

1 a portion of a model after physical change. So, at a high level, the question
2 centers around the inquiry of what a person of ordinary skill in the art would
3 have understood the prior art Boerjes to disclose or renders obvious.

4 Our petition, supported by Dr. Karam's testimony, have
5 demonstrated that Boerjes teaches a quality control process. That process is
6 for obtaining an accurate dental model for various dental procedures. And
7 Boerjes is expressed about why it performs that quality control process. It
8 improves efficiency and patient comfort by sparing the patient repeated
9 follow-up visits and reducing the chair time for the patient when the patient
10 is in the office. That is the key point of Boerjes, to obtain an accurate model
11 efficiently in a single visit where possible.

12 Now, I will talk about Boerjes in more detail in a moment. But in
13 a nutshell, Boerjes' quality control process allows the user to identify a
14 deficient region in a model and replaces that region by performing
15 supplemental scanning of those regions. And that quality control process
16 applies to all the different types of areas that Boerjes teaches that can exist in
17 the dental model, including both scanning errors and surface preparation
18 errors.

19 Now, Your Honors, you'll hear something very different from
20 Patent Owner. You'll hear that Boerjes teaches supplemental scanning and
21 replacement only to correct a scanning error of the model, like a hole or a
22 gap in the model. And you'll hear that the moment there is surface
23 preparation deficiency that calls for additional surface preparation before
24 rescanning, Boerjes teaches you need to forget all of that about regional
25 scanning, supplemental scanning, or its entire goal of efficiency
26 improvements, and you need to perform an entirely new scan of the

1 dentition, which Patent Owner asserts that that was the conventional
2 approach.

3 And with that background, now I'd like to take you through the
4 Boerjes reference. Turning to slide number 12, this slide shows Boerjes's
5 quality control process. Boerjes teaches this quality control process is for
6 obtaining an accurate digital model for dental and subject matter. This
7 flowchart shows this process is an interactive and iterative process that
8 continues until a satisfactory digital model is obtained. The user can be a
9 dentist or a dental professional that works in a dental laboratory.

10 They can evaluate whether the model is satisfactory, and if not,
11 you can identify erroneous regions in the model, perform supplemental
12 scanning to obtain new data, and use that new data to obtain another model.

13 Turning to slide 13, Boerjes teaches that this quality control
14 process can be performed in real time during a scan or between successive
15 scans. Boerjes teaches this process reduces or eliminates a need for follow-
16 up scans, and this process can be performed while the patient is still in the
17 dental chair. So the purpose of Boerjes's quality control process is to
18 improve scan efficiency by reducing the chair time and repeated visits for
19 the patient, and thereby improve the patient's experience and comfort.

20 So how does Boerjes do that? I'll walk you through in the next few
21 slides Boerjes' teaching about the various parts of the quality control
22 process. Turning to slide 14 and 15, here it shows Boerjes teaches during
23 the quality control process, the dentist can evaluate a model and identify
24 regions with various types of errors or deficiencies.

25 Boerjes provided different examples of errors or deficiencies. It
26 can be scanning errors such as, like what we mentioned, the holes, gaps, or

1 distortions in the data. It can also be margin line deficiencies, regions of a
2 prepared tooth surface that requires additional surface preparation.

3 And the regions, and the erroneous regions can be those regions
4 also requiring additional or supplemental scanning due to incomplete
5 erroneous or potentially erroneous data. Slide 16 shows you how Boerjes
6 characterized these various types of errors. They are deficiencies in the scan
7 and oral surface preparation.

8 Slide 17 shows Boerjes' quality control process provides feedback
9 of user-identified regions with errors. The feedback can highlight
10 questionable or erroneous areas of a preparation. It can identify regions with
11 inadequate margin. It can also identify corrective actions on the scan or
12 surface preparation, and then the corrective action can be additional
13 scanning or additional surface preparation.

14 So as you can see, Boerjes' quality control process allowed the user
15 to identify regions of the digital model that have various types of errors
16 including both scanning deficiencies and/or surface preparation deficiencies.

17 Slide number 18 shows the Board's preliminary findings on this
18 point in the institution's decision. At institution, the Board preliminary
19 found that Boerjes lets a user identify areas needing replacement, such as a
20 margin line, to be removed. And that the user can identify regions requiring
21 additional preparation and supplemental scanning.

22 Turning to slide 19, showing claim 1 again. And that preliminary
23 finding in the institution's decision supports that Boerjes discloses limitation
24 1E that recites identifying a portion of the model to be removed. As we
25 walked through Boerjes, as you can see, Boerjes' quality control process
26 identifying a region and correcting that region teaches that supports that

1 finding as well.

2 So that leaves us one more question, whether Boerjes disclosed or
3 renders obvious replacing the identified portion after physical change as
4 recited in limitation 1H. So in my following discussion, I'd like to walk you
5 through how Boerjes discloses or renders obvious that limitation.

6 First, turning to slide 20. Boerjes teaches region-specific partial
7 rescans. This slide shows Boerjes teaches that a scan may capture a three-
8 dimensional representation of some or all of the dentition according to the
9 particular purpose of the scan. It can be a tooth, a quadrant of a tooth, or it
10 can be a full arc.

11 And as to the supplemental scanning in Boerjes' quality control
12 process, Boerjes claims you can acquire additional three-dimensional
13 representations of one or more regions. And Boerjes' disclosure as a whole
14 also teaches various aspects of the system. Because this system is an
15 interactive and iterative process, it allows the user to edit and change the
16 models.

17 Slide 21 shows Boerjes teaches newly acquired three-dimensional
18 data can be fitted or stitched into existing three-dimensional data. Slide 22
19 shows that in Boerjes, a user can remove an unwanted portion of the model.

20 JUDGE TURNER: Counsel, if you can just go back one slide,
21 please. It does seem here that the view you said for the newly acquired two-
22 dimensional image can be fitted into three-dimensional. So that seems a
23 little bit different than the claims talking about replacement of a portion.
24 This seems more like you're sort of, in that quotation there, you're saying,
25 okay, I've got a two-dimensional image and I'm going to extrapolate that to
26 provide a three-dimensional, doesn't it?

1 MS. ZHANG: Thank you, Your Honor. I should read this whole
2 sentence here. The three-dimensional data for each newly acquired two-
3 dimensional image set may be derived. So the first part of this sentence
4 says, first, you obtain two-dimensional images, and then you derive the
5 three-dimensional data. And then that three-dimensional data is fitted and
6 stitched to existing three-dimensional data using a different number of
7 techniques.

8 So, of course, when you acquire the images, they are 2D images.
9 But the 2D images are processed by the computer to derive three-
10 dimensional data, and the three-dimensional data are stitched together.

11 JUDGE TURNER: Why does that have to be a portion? I guess
12 that's my question. If part of what you're doing in Boerjes is you're saying:
13 okay, I've got this type of error and I'm going to correct this type of scan
14 error, why is it replacing a portion of the 3D model?

15 MS. ZHANG: Yes, I'm happy to walk you through that. And that
16 is the key aspect of Boerjes that we want to make sure we can clarify on that.
17 Here, from this part of Boerjes, it teaches you you can stitch. Boerjes is
18 equipped with a tool for stitching different sets of three-dimensional data
19 together. I understand your question is more about replacement when you
20 have scanning errors. How do you use this tool to replace that scanning
21 deficiency? And how does Boerjes teach you to do that? And I'm happy to
22 walk through that in the next few slides.

23 So slides 23 and 25 show the same disclosure of Boerjes, but with
24 different portions highlighted. This paragraph 199 of Boerjes, and together
25 with figure 4, when you read this disclosure, in view of the entire disclosure,
26 Boerjes teaches the partial replacements of erroneous data in the model as

1 we talked about. Because it is very important for both parties, and I'd like to
2 read this paragraph very closely and one sentence at a time.

3 So beginning with the first sentence of this paragraph on slide 23,
4 Boerjes says, a determination may be made as to whether a scan and/or
5 surface preparation are satisfactory. So in this quality control process, as we
6 have mentioned, first, there is the user identifying -- providing feedback
7 where in this model have errors. It can be a scanning error. It can be a
8 surface preparation error. It can be both.

9 Moving to slide 24. Now, following that first sentence, the next
10 sentence, it says, if the data is not satisfactory, the process 400 may proceed
11 to step 414, where the digital model may be supplemented or replaced with
12 new scan data. So now, we have two sentences in this paragraph. You read
13 the first sentence. It says, you need to evaluate whether the model is
14 satisfactory. It can be due to scanning. It can be due to surface preparation.

15 And the second sentence says, if the data is not satisfactory, the
16 process proceeds to step 414 where you need to prepare -- you need to
17 perform supplemental scanning. And as you can see on the right --

18 JUDGE HARDMAN: Counsel, it's Judge Hardman. Can I just
19 clarify, surface preparation, that means you look at the model and you're
20 looking at a particular surface of a tooth or a bone? Is that what surface
21 preparation means?

22 MS. ZHANG: That is correct, Your Honor. When we talk about
23 surface preparation, and here also, in Boerjes in the '936 patent, it's one
24 application context, when the dentist is preparing a tooth surface for
25 installing a restoration. So during that preparation process, the dentist needs
26 to remove some materials from a tooth to make space for the restoration, like

1 a crown. So when we talk about surface preparation, it's that dental
2 procedure to prepare the tooth.

3 And sometimes, the first time the dentist prepares the tooth, he
4 may not be satisfied with that preparation. Maybe the margin line wasn't all
5 the way around, maybe some additional materials need to be removed. So
6 the dentist can decide, or a dental professional can decide, whether you need
7 to perform additional surface preparation. So that is what the surface
8 preparation is about.

9 JUDGE HARDMAN: Thank you.

10 MS. ZHANG: Thank you, Your Honor. So moving to slide 25,
11 now we're looking at the third sentence of this paragraph. Now, we have
12 looked at the first sentence and the second sentence. Those sentences
13 describe broadly this quality control process. We evaluate the model, we
14 determine whether it is satisfactory, determine the errors, and now you can
15 perform supplemental scanning or replace with new scan data.

16 And now, after that broad discussion, Boerjes says, this may
17 include, for example, new scanning to replace apparently erroneous or
18 inadequate scan data, or a new scan of the dental subject matter following.
19 For example, additional surface preparation consistent with errors identified
20 during quality control.

21 Now, looking at the sentence, the words, this may include, for
22 example, after everything Boerjes taught about the quality control process.
23 This language matters because it indicates that this sentence, this third
24 sentence here in this paragraph, is providing examples for the broader
25 teaching in the first and second sentence. It says it may include a separate
26 example. So these are examples of what the user can do in that quality

1 control process to correct the errors identified previously.

2 But based on this sentence, you'll hear that Align asks you to draw
3 a line that Boerjes doesn't really disclose here. They contend that a scanning
4 error can get a supplemental rescan and replacement. But when there is a
5 surface preparation deficiency, you need to start over from scratch. As we
6 are looking at this paragraph right now, Boerjes doesn't draw that line.
7 Boerjes used the word and/or in the beginning of this paragraph to include
8 the quality control process applies to both types of errors.

9 The second sentence says you can perform supplemental scanning
10 to address those errors. It doesn't draw a line. The third sentence here
11 simply provides exemplary scenarios in which the quality control process
12 applies, including the supplemental scanning step 414 as we can see here in
13 figure 4 on this slide.

14 So as we have shown in our petition and supported by Dr. Karam's
15 testimony, Boerjes' quality control process, the goal is to improve efficiency.
16 And it teaches performing supplemental scanning for both types of errors.

17 And, Your Honor, to your point, responding to your question
18 earlier, where is the partial replacement, this is the paragraph that teaches
19 partial replacement. Boerjes teaches you identify those regions and you can
20 perform supplemental scanning. And then after that, you can do different
21 things, and I'll give you examples. You can do replacement of the erroneous
22 data. You can do replacement after additional surface modification.

23 Now, turning to slide 29, in Align's Patent Owner response, they
24 raised Boerjes as teaching two alternatives. They're saying, as we are
25 showing here on this slide, Boerjes describes how each -- Boerjes describes
26 you need to perform new scanning to replace apparently erroneous or

1 inadequate scan data, or you perform a new scan of the dental subject matter
2 following additional surface preparation. They said the only option Boerjes
3 provides following additional surface preparation is an entirely new scan of
4 the dental subject matter.

5 And we just looked at paragraph 199. Boerjes doesn't say an
6 entirely new scan of the dental subject matter, and they advanced these two
7 alternative theories repeatedly in their Patent Owner response. For example,
8 on the right they said, paragraph 199 only discusses two alternatives that
9 may be performed after quality control process steps, supplementing the
10 digital model to replace apparently erroneous or inadequate scan data, or
11 replacing the digital model with a new scan of the dental subject matter
12 following additional surface preparation.

13 So they're saying there are two options. If you have erroneous
14 scan data, you supplement the digital model to replace the erroneous scan
15 data. But at the moment, there is some small regardless of what area that
16 you need to fix. You just need to do an entire rescan.

17 JUDGE TURNER: Counsel, am I correct that Boerjes nowhere
18 talks about a partial scan? And any discussion of a partial scan is really an
19 inference that would be drawn by one of ordinary skill in the art? It seems
20 like that's Petitioner's best argument, but maybe I'm missing.

21 MS. ZHANG: Your Honor, I disagree. I think Boerjes teaches it.
22 Because we just looked at paragraph 199. It says that when you are not
23 satisfied with the data, when there are scanning deficiencies and/or surface
24 preparation deficiencies, you can perform supplemental scanning. And after
25 that, supplemental scanning --

26 JUDGE TURNER: But Counsel, where does it say supplemental

1 scanning? That's what I'm looking for. It says where the digital model may
2 be supplemented or replaced. I'm looking for partial scanning, supplemental
3 scanning. I understand that the model may need to be supplemented, but
4 that may be due to an error. But where do we talk about partial or
5 supplemental scanning?

6 MS. ZHANG: Thank you, Your Honor. I'm happy to show you
7 the disclosures that support that supplemental scanning is a partial scan. So
8 first of all, if you look at this slide on the right, step 114 says supplemental
9 scan. That's the step that Boerjes teaches you need to take if you think the
10 data is not satisfactory, you perform supplemental scan. And the data you
11 obtain is new scan data that is used to supplement the digital model. And
12 you just saw that Patent Owner, in their Patent Owner response, admitted
13 that when you have scanning errors, you supplement the digital model with
14 the new scan data.

15 JUDGE TURNER: But I think Patent Owner would say, okay, if
16 you're doing a supplemental scan, it means you're doing an additional scan.
17 Why does that have to be a partial scan?

18 MS. ZHANG: And just going back to a few slides where we said
19 supplemental scanning are for scanning regions of the model. So Boerjes
20 teaches the scan can be made into part or all the dentition. It depends on the
21 particular purpose of the scan. It can be one or more regions in the scan.

22 And if you read that disclosure, read Boerjes' disclosure as a
23 whole, when you perform the supplemental scanning, you're not doing 100
24 percent rescan of the dental subject matter in the original model. You're
25 supplementing the original model. And supplementing means it's less than
26 100 percent. It means it's one or more regions according to the particular

1 purpose of your scan.

2 JUDGE TURNER: Okay.

3 MS. ZHANG: So now, Your Honor, let's consider what these two
4 alternative theory requires you to agree with. So let's give a hypothetical.
5 We just walked through Boerjes' quality control process. It's region-specific
6 error identification and supplemental scanning to correct those errors. And
7 in a hypothetical, for example, Boerjes teaches you can scan a full art. You
8 can scan as many teeth as you needed for the particular purpose.

9 And their argument is, no matter how much you scan in your
10 regular scan, even if there's a tiny bit of margin that the dentist is not
11 satisfied, just a bit, you need to rescan the whole thing. You need to do an
12 entire rescan, forget everything we just walked through. The whole point
13 about improving efficiency and patient comfort to accept that at the instance
14 where the dentist decides additional surface preparation is needed.

15 The dentist threw out the satisfactory data in the original model,
16 abandons the region-specific efficiency quality control process, and
17 disregards the supplemental scanning step we just looked at in figure 4 and
18 starts all over from scratch. That reading is irrational.

19 And Boerjes express purpose is to improve efficiency and avoid
20 repeated dental visits, avoid wasteful rescanning, and reduce chair time. So
21 that doesn't make sense. So we asked Dr. Foroosh, Align's expert, why he
22 thinks Boerjes teaches the two alternatives. We asked him, why do you
23 think Boerjes separates those two cases? And he said, I did not express an
24 opinion on that. And he said, it does what it does. I cannot say more than
25 that. I don't even need to understand.

26 So we have no reasonable explanation for that two-alternatives

1 theory via one. And when we asked him about a scenario where both
2 scanning error and inadequate surface preparation error existed -- as we have
3 shown you, Boerjes expressly contemplates that scenario. He said, that
4 sounds like not something I should be offering an opinion on. So Align has
5 no expert testimony to support their two-alternatives theory.

6 JUDGE TURNER: Counsel, you may see you have a yellow light.
7 So you have about two minutes. You can certainly go beyond your regular
8 time, but I know you haven't talked about Geng at all. So maybe you want
9 to get to that.

10 MS. ZHANG: Thank you, Your Honor. Thank you for the
11 reminder. Yes, I would like to talk about our second ground as well. Just a
12 quick word about another argument that Patent Owner has repeatedly made
13 in their Patent Owner response is that all the prior art teaches conventional
14 approach.

15 Your Honor, I may go into my rebuttal time, and I'm okay with
16 that. Thank you. So they argued that Boerjes and the Geng reference also,
17 they both followed the conventional approach at the time.

18 Turning to slide 38, showing the Board has previously evaluated a
19 parent patent, '192 patent in the same family. And the Board's prior finding
20 in the IPR of that parent '192 patent directly refuted Align's arguments of
21 what is conventional in the prior art. On slide 38 shows claim 1 of the '192
22 patents. It claims a similar workflow. It rejects modifying the first virtual
23 model by replacing at least identified portion of the first virtual model with
24 the corresponding portion of the second virtual model, thereby generating a
25 modified virtual model.

26 In the next slide, slide 39, some dependent claims further clarify

1 that when the second virtual model obtained, physical change was performed
2 on the tooth. It could be removing an object obscuring the surface of the
3 tooth, or it could be additional material removal.

4 JUDGE TURNER: You said you want additional time.

5 MS. ZHANG: Yes, please, Your Honor.

6 JUDGE TURNER: Do you want me to program some additional
7 time for you, or do you want to just go over and keep track of it?

8 MS. ZHANG: Yeah. Thank you, Your Honor. Can you give me
9 five more minutes?

10 JUDGE TURNER: Okay. Sure.

11 MS. ZHANG: In that IPR, the Board already found those claims
12 are unpatentable. In fact, in this IPR, in the referral decision, the decision
13 had observed that the prior examiner, during prosecution of the '936 patent,
14 was aware of that IPR. And the claims are substantially similar, but the
15 examiner did not discuss that IPR or the final written decision in that IPR.
16 And the examiner did not discuss why the challenge claims were patentably
17 distinct from those the Board found unpatentable, despite the strong
18 similarity between the claims.

19 And with respect to our second ground, I'd like to quickly
20 overview the combination. So Geng is an infrared scanning system like
21 Boerjes and like the '936 patent. It discloses various interactive tools you
22 can use to improve the efficiency of dental scanning. And those tools,
23 including an editor tool, allow you to remove any undesirable areas in the
24 model, and a merger tool for integrating multiple three-dimensional images
25 into one single image.

26 On slide 48, it shows Geng generally described the benefits and

1 purpose of these interactive tools in similar terms as Boerjes. It allows the
2 patient to perform a single visit restoration. It allows for the dentist to
3 improve quality of care, reduce cost and time waste. Geng does not limit
4 these interactive tools to any particular purpose. In fact, Geng teaches using
5 these tools in a similar context in dental restoration practices, as the Boerjes
6 have explained about surface preparation, getting an accurate model of a
7 prepared tooth.

8 So in our Ground 2, we had shown you Boerjes combined with
9 Geng teaches other disputed limitations, and the combination is
10 straightforward. Boerjes quality control workflow, we have shown you on
11 slide 15. We have shown in our petition, supported by Dr. Karam's
12 declaration, a person of ordinary skill in the art would have been motivated
13 to look to Geng when implementing Boerjes' quality control process and use
14 those editing functions to improve the undesirable portions on the model to
15 improve efficiency, and accuracy of Boerjes' replacement process and
16 improve patient comfort.

17 JUDGE TURNER: Counsel, just a quick question. It seems as if
18 the thrust of the patent with respect to the second ground is that Geng is
19 actually incorporated for its editing functions, that it sort of allows to remove
20 user-identified undesirable portion from the model. But you're not really
21 citing it for the replacement, this in terms of doing the supplemental scan
22 and replacing that, that's completely based on Boerjes. Is that correct?

23 MS. ZHANG: Your Honor, we rely on both limitations. The --

24 JUDGE TURNER: Where do you do that in the petition? Because
25 I know Patent Owner is going to bring this up because I've read their brief.
26 So we're -- because it doesn't appear in the section of the petition where

1 you're talking about this ground, that that's what you're doing. If I take you
2 to, let's say, for example, page 50 of the petition, where it has an annotated
3 version of figure 4, the only mention really there is you say, okay,
4 incorporate Geng's editing function into 408, which is the manual quality
5 control.

6 So even if we accept that Geng is going to create a better quality
7 control process, if we don't find that the base reference Boerjes actually
8 teaches partial replacement, does it generally help?

9 MS. ZHANG: Yes. The answer is yes, Your Honor. And we rely
10 on Geng for both limitations, the removal limitation and the replacement
11 limitation. And I'm happy to walk through that, even if I may go into my
12 rebuttal time.

13 JUDGE TURNER: Okay.

14 MS. ZHANG: So in our combination, we have shown you that
15 Boerjes teaches partial replacement. And we also have -- in our Ground 1,
16 we also have shown you that it would be obvious for a POSITA, based on
17 Boerjes' teachings, he would perform partial replacement when there is
18 surface preparation deficiency.

19 In our second ground, it's a separate, independent ground. Boerjes
20 teaches replacement. You can consider it teaches partial replacement. If
21 you disagree, you think that teaches entire replacement when there is
22 physical change, Geng's editing tools and merger tools will help you
23 improve the efficiency of that entire replacement process.

24 In our petition, we have shown you both limitations 1[E], 1[F], and
25 1[H]. We discussed Geng, like you all mentioned, in the institution
26 decision. We relied on Geng for all those limitations. It's the combination

1 that Boerjes teaches you need to complete the supplemental rescanning.
2 You need to get new data. You use the new data to replace the erroneous
3 data.

4 With the addition of Geng, you can remove the undesirable portion
5 in a model, as Boerjes suggests. And as Geng expressly teaches, you
6 remove undesirable portions. And after you remove the undesirable portions
7 in Boerjes' quality control process, you perform the supplemental scanning
8 and you can use Geng's merger tool to integrate that supplemental scan data
9 into the original model. That is the removal and replacement, and we need
10 both references for our Ground 2.

11 JUDGE TURNER: Okay.

12 MS. ZHANG: Thank you, Your Honor. Unless you have any
13 questions, I would like to reserve my remaining time for rebuttal.

14 JUDGE TURNER: Okay. You'll have nine minutes for rebuttal.

15 MS. ZHANG: Thank you, Your Honor.

16 JUDGE TURNER: As a reminder to me, it was 35 minutes of
17 principle, is that correct?

18 MR. ARGENTI: That's correct, Your Honor.

19 JUDGE TURNER: Thank you. You may begin when you're
20 ready.

21 MR. ARGENTI: Good morning again, Your Honors. My name,
22 again, is Matt Argenti on behalf of Patent Owner, Align. I'm going to be
23 referring to our demonstrative exhibits today, which we filed as paper
24 number 41 in this procedure. So turning to slide 2. As we heard when
25 Petitioner spoke, all grounds against the '936 patent involve the Boerjes
26 reference, either alone or in combination with Geng. This is a problem for

1 Petitioner because neither Boerjes nor Geng discloses a key claim
2 requirement.

3 Removing a portion of the digital model of the teeth and replacing
4 it with updated data after a physical change in the mouth. The Board
5 recognized at institution that Boerjes doesn't do this, which our expert Dr.
6 Foroosh confirmed during trial stage, and Geng doesn't do it either. I think
7 you just asked a direct question. They didn't identify any place in their
8 briefing where they had even argued that. You heard that they are using
9 Geng's tool to do that, not that Geng actually teaches it. Like Boerjes, Geng
10 just creates a new model separate from the first.

11 Petitioner's obviousness grounds necessarily fail because neither of
12 their references disclose these claim elements. They can't take two
13 references that don't disclose a key requirement and somehow arrive at the
14 claimed invention by combining them. That is the epitome of hindsight.
15 They have additional problems when we get to Grounds 3 and 4 that we see
16 here, but the problem with Boerjes and Geng is enough on its own to reject
17 all the grounds.

18 Turning to slide 3 and representative claim 1. In bold, we see the
19 claim elements that I just mentioned, which are the same claim elements that
20 Petitioner identified during their argument. Element 1[E] requires receiving
21 user input, defining a portion of the model to be removed. And 1H requires
22 replacing at least a portion of the removed surface portion of the model
23 using second scan data of the patient's teeth, including surface data of a
24 physically changed portion of the intraoral cavity.

25 So you have a user input that defines the portion of the model to be
26 removed. Then you remove that portion and replace it with updated scan

1 data after a physical change. That was a new approach.

2 Let's turn to slide 4. Prior to our invention, the conventional
3 approach was to rescan the entire subject matter after a physical change in
4 the mouth. So for instance, if you're preparing a tooth for a crown and the
5 dentist determines that additional removal is necessary, after you make that
6 update to the surface preparation, you would then take another scan of the
7 subject matter. Whether that's just the tooth or whether it's the whole mouth,
8 whatever is of interest, you take a new scan of it and generate a new model.
9 There was no combination of first scan data with second data.

10 As we see here, the patent office repeatedly acknowledged that the
11 composite scan updates in our claims are distinct from the prior art approach
12 of making a new model of a new scan. In fact, during prosecution of the
13 challenge patent, the examiner determined that the prior art, in fact, teaches
14 away from the claimed approach. We see that here on the slide. We've gone
15 through trial now in this IPR, and that teaching of finding away -- sorry,
16 finding of a teaching away is unrebutted. Petitioner argues that --

17 JUDGE HARDMAN: Counsel?

18 MR. ARGENTI: Yes.

19 JUDGE HARDMAN: It's Judge Hardman. What's your view on
20 the IPR -- the findings in the IPR that your opposing counsel just mentioned
21 on the patent that they said are inconsistent with the findings of this
22 conventional approach and the examiner didn't take that into proper
23 consideration?

24 MR. ARGENTI: There's no inconsistency there, Your Honor.
25 That was a different patent, different claim set, raising different prior art. So
26 to the extent that Petitioner is arguing that the '192 IPR drives the outcome

1 here, they chose not to rely on that approach. Moreover, the finding away
2 -- sorry, the teaching away finding involved a different reference, I believe,
3 by the same named inventor on the face of the reference, but it was a
4 different reference. So it wasn't before the examiner in the IPR. And correct
5 me if I'm -- that's correct, okay.

6 So Petitioner argues that Boerjes teaches the element that was
7 missing during prosecution, but the Board, as we know, rejected that at
8 institution. And as I will discuss, it's undisputed that Geng lacks that
9 element too, which leaves us with the office's prior determination that the
10 prior art teaches away from this approach. There is nothing in the grounds
11 references to overcome that.

12 So we turn to slide 5, and let's look at Boerjes. As we've seen,
13 Ground 1 relies on Boerjes alone for the disputed elements regarding
14 defining a portion of a model to be replaced, and then removing that portion
15 and replacing it with new scan data after a physical change. That is not what
16 Boerjes describes.

17 Turn to slide 6. As this panel recognized at institution, Boerjes
18 doesn't say anything about replacing a portion of a model with new data
19 after a physical change in the model. It doesn't disclose it, it doesn't suggest
20 it. So that was the state of Ground 1 at institution. Your Honor recognized
21 that the petition case was deficient because Boerjes doesn't support
22 Petitioner's arguments. Nothing has happened in the trial stage to disrupt or
23 change that institution determination. Petitioner didn't come back with any
24 new expert testimony. Their evidence is the same as before, and their case is
25 just as deficient.

26 JUDGE TURNER: Counsel, is it Patent Owner's position that

1 Boerjes doesn't teach 1[E]? Because it seems like, one, he has received user
2 input to finding a portion of the model to be removed. So it seems like if
3 there's an error in the scan, the Board just clearly talks about the user
4 pointing that out and maybe they do a whole new scan. But it seems like, at
5 least in Boerjes, they're receiving input, or Patent Owner's position is
6 different?

7 MR. ARGENTI: I think I would agree with Your Honor's
8 characterization. It at best identifies -- to the extent there's any disclosure of
9 removal in Boerjes, it's what we saw on, I think, Petitioner's slide 22. That's
10 all they could find, where it talks about removing material below the margin
11 line, which is completely removed from any discussion of updating or
12 supplementing or replacing the scan.

13 JUDGE TURNER: I'm just trying to understand, because if we
14 don't have to argue about 1[E], that's fine. Then we can argue about 1[H],
15 whether there's replacement. But since both parties are saying, well, here
16 are the critical elements that are 1[E] and 1[H], it helps the panel out if you
17 say, okay, there's no real dispute about 1[E]. Really, we're going to have a
18 fight about 1[H].

19 MR. ARGENTI: I would agree that the center of the dispute is on
20 element 1[H].

21 JUDGE TURNER: Okay, asked and answered. Thank you.

22 MR. ARGENTI: Turning back to slide 6. I'll point out, so not
23 only does Boerjes fail to teach removing and replacing a portion of a model
24 after a physical change in the mouth. In fact, it's even worse now for
25 Petitioner at the conclusion of the trial stage because the record here
26 establishes that Boerjes doesn't disclose removing and replacing a portion of

1 a model, period, whether as a result of a physical change or otherwise.

2 We just heard Petitioner argue to the contrary, putting words in our
3 mouth that we conceded that that is, in fact, taught. They argue that in their
4 petition reply. I thought we very directly addressed it in our surreply. That
5 is not our petition. Boerjes does not teach that.

6 So turning to slide 7. Here on this slide, we see a key paragraph in
7 Boerjes. I don't think there's any dispute about that. Petitioner read through
8 it line by line. It describes supplementing or replacing a digital model with
9 new scan data. Of particular relevance to the Ground 1 case, it says that this
10 can include a new scan of the dental subject matter following additional
11 surface preparation.

12 Dr. Foroosh explains that this is just describing the conventional
13 approach at the time. When you have a physical change, in particular an
14 updated surface preparation like they rely on, you take a new scan of the
15 subject matter to provide a new model, not a partial replacement of the first
16 one. Boerjes is explicit about doing this. If we look at the last sentence of
17 paragraph 199, it says that the process then returns to step 404, where a new
18 model is obtained. Not an update to the first model, a new model.

19 So the Board recognized this problem with Ground 1 at institution,
20 and the record is even worse for Petitioner now that we have the benefit of
21 the expert testimony.

22 We can turn to slide 8. Despite the recognized deficiencies of
23 Ground 1, petitioner elected not to use a reply witness for this case. But
24 their reply arguments confirm that Boerjes comes up short. For example,
25 they argue there is no dispute that Boerjes at least discloses replacing
26 erroneous or inadequate scan data. As I just mentioned, there are problems

1 with that.

2 First, that is an improper pivot away from the petition case. As we
3 just saw in paragraph 199, Boerjes talks about two distinct examples. One is
4 new scanning to replace erroneous or inadequate scan data, and the other is a
5 new scan of the dental subject matter following additional surface
6 preparation. The petition relies solely on that second example when
7 mapping to the physical change claim element.

8 If you look at element 1[G] in their petition and the corresponding
9 expert testimony, you won't find any mention of the erroneous or inadequate
10 scan data example. Instead, you'll see Dr. Karam explaining what a surface
11 preparation is.

12 So pivoting away from that and turning to the other example in
13 paragraph 199 (INDISCERNIBLE) argument. We turn to slide 9.
14 Regardless of that, neither the incomplete and erroneous scan data example
15 or the updated surface preparation example involves removing data from the
16 original model and replacing it with data from the second scan. Dr. Foroosh
17 addressed that at length during his deposition.

18 JUDGE POWELL: Counsel, I have a question about paragraph
19 199 of Boerjes.

20 MR. ARGENTI: Sure. I'll go back to slide 7, where the paragraph
21 is.

22 JUDGE POWELL: In particular, the second sentence of that. I
23 don't know if anybody commented on this or even argued about it. But I see
24 that the second sentence says the digital model may be supplemented or
25 replaced with new scan data. And I find myself wondering, what is the
26 difference between those two groups? Are they the same? And if it's not

1 replaced, what is supplemented? Why wouldn't one of those sort of suggest
2 a partial replacement?

3 MR. ARGENTI: Right. Dr. Foroosh did address that in his
4 deposition, and I believe we addressed it as well in our papers. I think when
5 Petitioner was up here today, we heard them say that supplement in this
6 context means less than 100 percent. Our interpretation, Dr. Foroosh's
7 explanation is different than that. The distinction between supplementing or
8 replacing is whether you are keeping the original model or not. If you are
9 supplementing, you are creating a second model and using them both. If you
10 are replacing, you have only the second model and you are deleting the first
11 model. Dr. Foroosh explained that in his deposition.

12 JUDGE POWELL: Sorry, I know perhaps I should have read that
13 more in detail. I don't quite -- so in the example then, keep a full model in
14 both instances, and that is supplementing somehow using the two full
15 complete models? Do I understand that correctly?

16 MR. ARGENTI: Well, I think this goes to a slightly different
17 question that Judge Turner had when Petitioner was speaking about whether
18 supplementing leads to partial scanning or equivalent full scanning of what
19 was in the first model. I would agree with what it sounded like from Judge
20 Turner's question was his interpretation of Boerjes, that Boerjes doesn't
21 actually say what the scope of the supplemental scan is. So I think it's silent
22 on that.

23 So I think the real distinction when you're talking about
24 supplementing or replacing is whether you are keeping the first model to
25 continue with using that as part of the analysis or whether you're just
26 deleting it.

1 JUDGE POWELL: Okay. So and beyond that, it's just unclear
2 because Boerjes just doesn't say it.

3 MR. ARGENTI: Correct, yes. I would agree on that. And just for
4 your reference, Your Honor, some of this is testimony that we cited in our
5 surreply after Dr. Foroosh's cross-examination. So for instance, he
6 addresses this in his transcript, which is Exhibit 1056, at pages 44 through
7 51. That's where he explains that supplement here means making a second
8 model while keeping the first. I think that's probably the key part.

9 We cite a bunch of other pages at around pages 4 and 5 of our
10 surreply, highlighting Dr. Foroosh's testimony that we think is relevant to
11 this issue of what does it mean to supplement? What does it mean to
12 replace? Is there any compositing in Boerjes? No, there is not on that last
13 point.

14 JUDGE POWELL: Thank you.

15 MR. ARGENTI: All right. So turning back to slide 9. And again,
16 to Dr. Foroosh's testimony where he explained that even the erroneous data
17 example does not involve replacing a portion of the model with new scan
18 data. Rather, as we just saw in Boerjes' paragraph 199, it says that a new
19 model is obtained from the second scan. He also explained repeatedly that
20 Boerjes talks about having multiple digital models, not just a single model,
21 and certainly not a single model that's updated by subsequent scans.

22 We see that in figure 4 where it says obtain digital model (S), and
23 corresponding discussion in Boerjes in paragraph 188. So there is no
24 disclosure in Boerjes of creating a composite model with first and second
25 scan data. There is no disclosure of removing part of a model and replacing
26 it with second scan data, and there is certainly no teaching to do that after an

1 updated sequence of preparation. So Ground 1 was deficient at institution
2 and remains deficient today. Which, turning to slide --

3 JUDGE HARDMAN: Counsel, can I ask you about -- I think you
4 said that Boerjes doesn't disclose (INDISCERNIBLE) the composite model.
5 Do you agree with that?

6 MR. ARGENTI: I agree with that.

7 JUDGE HARDMAN: Can I ask you about language in paragraph
8 163 of Boerjes?

9 MR. ARGENTI: Just give me one second, Your Honor, to turn to
10 that. Okay.

11 JUDGE HARDMAN: Line 16 in paragraph 163, that's on page 45.
12 It says the one aspect of scan may be obtained -- it goes on to talk about
13 combining historical three-dimensional data with a three-dimensional
14 representation of the prepared surface. Is that talking about the composite
15 image?

16 MR. ARGENTI: I don't believe it is. It's talking about fabricating
17 a restoration, so making a prosthetic from historical data as well as the
18 currently used scan model.

19 JUDGE HARDMAN: So combining historical three-dimensional
20 data, that would be a digital model. And then, are you saying that the three-
21 dimensional representation of the prepared surface is an actual physical
22 model?

23 MR. ARGENTI: No. I think what you have here is two three-
24 dimensional models that are used -- the information is used in combination
25 to create a prosthesis. That does not mean that the models themselves are
26 combined together.

1 JUDGE HARDMAN: Thank you.

2 MR. ARGENTI: We also address that issue in pages 28 and 29 of
3 our Patent Owner response, Your Honor. So this brings us to Ground 2 and
4 slide 11, where Petitioner adds Geng in combination with Boerjes. But
5 Geng does not remedy the deficiencies from Ground 1. The petition case for
6 Ground 2 is premised on using Geng's editing and merger tools to implement
7 Boerjes' quality control process. And in both of these excerpts, we see the
8 petition proposing to use Geng's tools to accomplish the replacement process
9 they say is described in Boerjes.

10 But as I just discussed with Ground 1, Boerjes doesn't disclose the
11 claim removing and replacing a portion of a model after a physical change.
12 And Petitioner never really tries to assert that Geng discloses that he
13 invented concept missing from Boerjes. It's undisputed that Geng doesn't
14 disclose either.

15 Turn to slide 12. The editor and merger tools in Geng don't
16 provide the functionality that's missing from Boerjes. As Dr. Foroosh
17 explains, the editor tool provides basic editing functions where you can
18 remove undesirable areas on the original 3D image obtained by the camera
19 or clean up noise in the image, whereas the merger tool allows users to
20 integrate multiple 3D images into what Geng calls a 3D digital impression.
21 That is the equivalent of creating the digital model from the scan data in
22 Boerjes. What Geng is merging is the 3D image scan data to form a model,
23 not merging multiple models.

24 JUDGE TURNER: Yeah, but in the part in the next sentence, this
25 is a manual -- this is in Geng. A manual mode requires operators to specify
26 a corresponding point among multiple 3D images. So couldn't those 3D

1 images be partial images?

2 MR. ARGENTI: I guess now we're getting outside of what Geng
3 discloses, which is the issue here. Petitioner wants to use Geng's tools.
4 They say, well, they could be used to do this thing, but they don't have this
5 thing that they're saying use the tools to do anywhere in the prior art. They
6 can't overcome the fact that not only does the prior art not have it, but the
7 office has previously recognized that the prior art teaches away from it.

8 So I think that's very much their argument of, well, couldn't you do
9 it with these tools? But that's not the issue. Neither Geng nor Boerjes talks
10 about doing it. They don't teach doing it.

11 JUDGE TURNER: But if you're taking multiple 3D images,
12 which is what Geng says, like in auto mode, and it's the rest of the
13 paragraph, that you're finding common points between multiple images, and
14 then you are merging them, that certainly seems a little bit close to sort of
15 partial restoration.

16 MR. ARGENTI: No, because the images, Your Honor, are just the
17 scan data. This is no different than the stitching that Boerjes talks about,
18 which does not practice the claimed invention. This is the creation of a
19 model, not removing part of a model and then replacing it with other models.
20 Like, this is the fact of how you take three-dimensional scan data and create
21 a model from it. But neither Boerjes nor Geng are talking about removing
22 part of that model and then plugging new scan data into that model after a
23 physical change.

24 JUDGE TURNER: Okay. So make sure that I understand. So
25 Patent Owner is saying that in Geng, those 3D images could be partial scans.
26 It could be 3D partial. So it could be one part, and then merging them

1 together, you're just saying that that's possible as opposed to, I think, Patent
2 Owner's position in Boerjes is like, this is a complete scan every time. In
3 Geng, it seems like you're saying, well, okay, those 3D images, well, they
4 could be partial, but it still doesn't get you there. Is that what you're saying?

5 MR. ARGENTI: I think we need to be careful with the language
6 partial, right? Because the way these 3D models are formed in the first place
7 is you're taking scan data, maybe with multiple passes of a handheld tool
8 over the dentition. So any particular motion of the scanner yields an
9 incomplete scan of what you're trying to capture, right? So from that
10 perspective, if we want to call it a partial scan, it's in the act of creating the
11 model, which is different than having a model and removing a portion of it
12 and then adding something else after an event like an updated surface
13 preparation.

14 JUDGE TURNER: Okay.

15 MR. ARGENTI: So in Geng, neither the editing tool nor the
16 merger tool allow the user to remove part of a model and replace it with new
17 scan data, let alone doing so after a physical change. Nor is there any
18 disclosure in Geng of using those tools together in that way. You can't do it,
19 and Geng doesn't describe that functionality. Turning to slide 13, what Geng
20 does provide, as Dr. Foroosh explains, is the conventional approach at the
21 time, much like Boerjes. Rather than replacing a portion of an original
22 model after an updated surface preparation, Geng creates an entirely new
23 model.

24 We see that here on slide 13. In the first excerpt from column 11
25 on the left, referring to step 520 of figure 5, Geng talks about obtaining
26 preliminary 3D imaging that can be used, among other things, to check

1 margin design and tooth production. Then on the right, Geng goes on to
2 discuss step 530 where a final 3D image is obtained. It's described as a
3 separate 3D image, not an update to the first one. And it's important to note
4 that there is no dispute about this, at least not in the briefing. Petitioner
5 never asserts that Geng discloses removing and replacing a portion of a
6 model after a physical change in the mouth.

7 So where does that leave us now that we've gone through this IPR?
8 We are in the same place as we were before it. Petitioner has been unable to
9 find any prior art that teaches the key claim requirement of replacing a
10 removed portion of a model after a physical change. Boerjes doesn't teach
11 that. Geng doesn't teach that. They fail to meet their burden to show that
12 the prior art discloses all elements of the claims. And the law says that that's
13 insufficient. For example, the Strathclyde and Arendi cases that we've cited
14 in our briefing.

15 Now I'm going to jump back to slide 4. What we are left with is
16 the patent office's determination that the prior art, in fact, teaches away from
17 the key disputed claim limitations. That stands un rebutted. Yet despite
18 being able to find any prior art that discloses this aspect of the claims,
19 Petitioner wants to hand wave and say that it would have been obvious in
20 view of general knowledge and common practice. That is an improper
21 obviousness case. The interim director's memo last year emphasized that
22 IPR grounds cannot use arguments about general knowledge to fill in gaps in
23 prior art disclosure.

24 And beyond that, Petitioner's arguments about general knowledge
25 don't address the un rebutted findings by the patent office that the prior art
26 teaches away from what is claimed. Petitioner's hindsight-driven arguments

1 cannot overcome the lack of necessary disclosure in their cited references,
2 nor the teaching away determination by the office.

3 With that, I will turn back to slide 14 now and address Grounds 3
4 and 4, which add Babayoff to Grounds 1 and 2 respectively. The issue here
5 is that Petitioner has not provided a logical reason to turn to Babayoff. The
6 petition's rationale for doing so was that Babayoff's color scanner would
7 improve the combination by providing color data. Here on this slide, we see
8 that proffered motivation. Petitioner argued Babayoff's intraoral scanner
9 would improve the combination by providing color data for presenting an
10 accurate 3D model.

11 They also argued that Babayoff's scanner with color data would
12 improve Boerjes' automatic identification of the margin line. So various
13 benefits, all allegedly resulting from introducing Babayoff's color scanner.
14 In case there was any doubt, during her deposition, Petitioner's expert
15 confirmed that these benefits she identified were based on adding color
16 scanning to the combination. You see that at the bottom of the slide.

17 Turning to slide 15, there's a big problem with that. Boerjes
18 already has color scanning. Boerjes says you can send a scanned model to a
19 dental laboratory for evaluation of color and shade matching to match a
20 dental prosthesis to the surrounding tissue in the mouth. And Boerjes also
21 talks about using known shade guides with color information for 3D models.
22 It is undisputed that Boerjes' scan is already in color. As we see here,
23 Petitioner's expert admitted this during her cross-examination.

24 Once we've pointed that out, Petitioner has tried to pivot to a new
25 motivation theory that Babayoff would merely provide a suitable option that
26 a POSITA would turn to for implementing the color scanning that Boerjes

1 itself describes. But that is not the case presented in the petition, nor do they
2 have any expert testimony supporting this. The petition rationale was based
3 on improving Boerjes by adding Babayoff's color scanning. But that
4 assertion fails in view of the developed record.

5 Now turning to slide 16, there is another problem with Grounds 3
6 and 4 that's specific to claims 7, 13, and 17. Those claims all require
7 discarding a remainder of the second scan data, where that remainder
8 includes the identifying surface data. Petitioner's mapping for this element
9 doesn't hold up. In Grounds 1 and 2, they map the claimed identifying
10 surface data to the corresponding data points or features in the two sets of
11 scan data that are used for registration.

12 They say the same thing for both Boerjes and Geng, for example,
13 at petition pages 53 and 54. Then when we get to this ground and the
14 discarding requirement, they say that Babayoff teaches discarding repetitive
15 data when stitching scan data. So they argue that the corresponding points
16 of Boerjes and Geng that they mapped to the identifying data would be
17 discarded because they would be repetitive.

18 Turning to slide 17, the problem here is that the corresponding
19 points in Boerjes and Geng would not be what Babayoff calls repetitive.
20 Babayoff's discarded data points are truly repetitive. That is, they are
21 identical repeated data points in the two sets of scans. But our expert, Dr.
22 Foroosh, explains that that is not the case for Boerjes or Geng.

23 This is because the corresponding data points in Boerjes and Geng
24 are aligned through algorithms that determine best fit or corresponding
25 geometric features. So most, if not all, of the corresponding data points are
26 not truly repetitive. They are just determined to be the closest match.

1 Petitioner argues that it doesn't matter if all the corresponding data
2 points are discarded so long as some of them are. But these dependent
3 claims require discarding the identified surface data, all of it. And the
4 petition maps that to the corresponding data points used for alignment in
5 Boerjes and Geng. So it matters very much whether that set of data is
6 discarded as the claims require or not. And it is not. And unless the panel
7 has any questions, I'll reserve the remainder of my time.

8 JUDGE TURNER: No further questions as far as I can see.

9 MR. ARGENTI: Thank you, Your Honors.

10 JUDGE TURNER: You'll have 15 minutes. Petitioner, you'll have
11 nine minutes, and you can start when you're ready.

12 MS. ZHANG: Sorry, Your Honor, my slides are not showing.
13 Just give me a moment.

14 JUDGE TURNER: Sure. Brian, would you be able to maybe
15 provide some assistance? I guess the slides aren't showing.

16 MS. ZHANG: Thank you, Your Honor. I would like to go to our
17 petition, as you mentioned, where does the second ground, the Boerjes
18 combined with Geng reference teaches the partial scanning? And I think
19 you just heard Patent Owner agree that the references teach removing a
20 portion from the model that has erroneous data. So as you can see here, in
21 figure 4, we're showing a combination. In Boerjes' quality control process --

22 JUDGE TURNER: I think -- if you'd pardon me. I think they
23 acknowledged identification of what would be removed, not necessarily
24 replaced.

25 MS. ZHANG: Right. So that's the (CROSSTALK). That's
26 correct. And that is the manual quality control process in Boerjes, you can

1 identify a portion that has erroneous data. And Geng teaches -- in similar
2 terms, Geng teaches the editing tool can be used just to remove any
3 undesirable areas in the model.

4 So here in figure 4, we have shown you the combination. When
5 you incorporate Geng's editing function in Boerjes' quality control process,
6 you can remove the undesirable portion of the model. That can be due to
7 scanning errors, and that can also be due to the surface preparation errors.
8 And then Boerjes teaches you perform the supplemental scanning, which we
9 just talked about.

10 The supplemental scanning is scanning a region or one or more
11 two regions of the model because Boerjes teaches you can perform a scan
12 according to the particular purpose of the scan. And here, you're performing
13 a supplemental scan, as Boerjes teaches, to replace erroneous data.

14 And I think Patent Owner argued that this is only for scanning
15 errors. This is not for physical preparation errors. But that is not what a
16 person of ordinary skill in the art would have understood Boerjes teachings.
17 And even if you think, to be honest, Boerjes doesn't expressly say the exact
18 words, partial replacement of a portion after physical change, Boerjes at
19 least suggests that because it already teaches you, you can scan a portion of
20 the model. You can replace the erroneous data with the new data in the
21 supplemented scanning.

22 And this is what we are showing here in figure 4. You receive the
23 second scan data, including surface data physically changed portion, in the
24 step 414. I use that data to replace a portion of the existing model by
25 registering the second scan data to the retained portion of the first scan.

26 JUDGE TURNER: Counsel, I can clearly see in the petition where

1 Petitioner is saying it is taught. But where in the petition are you saying that
2 it's suggested? I guess that's -- because it seems very much that there's
3 -- with respect to the discussion of 1[H], Petitioner is saying, well, Boerjes
4 discloses this, where is the -- you're saying, well, one of ordinary skill in the
5 art would understand the suggestion. But where is that suggestion in the
6 petition, I guess would be the question.

7 MS. ZHANG: Yes, Your Honor. I'd like to go to our petition page
8 43, where we were talking about Boerjes discloses or at least renders
9 obvious. Obtaining new scan data to replace the portion of the removed
10 surface portion following additional surface preparation. And we talked
11 about why Boerjes teaches that, and also why Boerjes suggests that.
12 Because Boerjes already teaches you can replace expressly. Boerjes said
13 those words, you can replace erroneous data.

14 And one of skill in the art would have understood under the
15 limitation 1[H], we have explained why that would also suggest you would
16 remove the data when after physical change. Actually, let me go to our
17 presentation. We have a slide showing our position as well.

18 This is slide 35 where we said Boerjes discloses, or at least renders
19 obvious. When we go to Ground 2, we have explained that with the
20 combination, because Boerjes teaches the replacement process, and when
21 you incorporate Geng's editing and merger tools, you would remove the
22 undesirable portion. And Your Honor, you just heard that Patent Owner
23 argued that Geng's tools, the editing tools and merger tools are not used for
24 replacement. And that is not a correct obviousness analysis.

25 Geng teaches broadly of how its tools can be used. Its tools can be
26 used to improve scanning efficiency and in a context of Boerjes' teachings.

1 And Boerjes also teaches scanning regions, rescan those regions that has
2 unsatisfactory data. So when you combine the teachings of Boerjes and
3 Geng, you can remove the undesirable portions and replace that portion with
4 satisfactory data in your second-order scanning.

5 JUDGE TURNER: Counsel, how do you respond to Patent
6 Owner's argument? Patent Owner's argument seems to be that Geng can talk
7 about merging of data, but it's not talking about replacement within the 3D
8 model.

9 MS. ZHANG: I think Patent Owner is focusing on Geng for
10 individual teachings, but we have presented a combination when we look at
11 Boerjes combined with Geng's teaching. Geng's tool, it teaches merging or
12 stitching together models. It can be used. One skilled in the art would have
13 used that tool to combine three-dimensional data in Boerjes. I think that's
14 what we are showing there. But Geng also teaches local corrections. And
15 we didn't go into detail about it, but Geng teaches those interactive tools can
16 correct local errors.

17 JUDGE TURNER: But isn't that problematic from the panel's
18 perspective? Because we didn't find that Ground 1 was one that we would
19 have instituted on. So you're saying, well, let's look at the combination.
20 Then if we say, well, okay, Ground 1 is not up to snuff, we've got to say,
21 okay, what's in Geng? And then the question is, okay, what's in there? And
22 you're saying, well, it's the combination.

23 And I go, yeah, but if the base doesn't have it, the information has
24 to come from the supplemental because it's got to augment something.
25 Because if I look at the panel's view in the institution, we say, okay, Boerjes
26 doesn't teach it. Well, then you've got to give me -- what does Geng

1 produce? If Geng is just saying here's how you make a better model, then
2 we're still looking for the replacement aspect, I think, right?

3 MS. ZHANG: So with respect to Ground 2, Your Honor, we have
4 shown you that Boerjes at least suggests that you need to replace the
5 erroneous scanning after physical change. You have seen language in
6 Boerjes paragraph 199, replace erroneous data using supplemented scanning.
7 Even if you don't think that teaches partial replacements after physical
8 change, that still suggests you can use that approach for errors that requires
9 physical change, because Borgers also teaches various types of errors.

10 It gives examples of how the quality control process can be applied
11 for those different types of various errors. It expressly says scan and/or
12 surface deficiency in that very first sentence of that paragraph. So even if
13 you think that those exact words are not there, partial replacement after
14 physical change, Boerjes still suggests that you can apply that quality
15 control, regional specific quality control process after physical change.

16 And Your Honor, just two quick points. I just heard Align seems
17 to be walking away from two alternative arguments. They seem to say they
18 never admit it. Boerjes performs partial rescanning for erroneous scan data.
19 But what do those statements mean in their Patent Owner response? They
20 said expressly, multiple times, two alternative theories. You either do
21 replacement when there are scanning errors, or you either do entire rescan.

22 Now, they seem to be retreating from that theory or that position.
23 That position is already without expert testimony support. And now they're
24 retreating that. So we don't understand what they're saying in their Patent
25 Owner response, with the multiple statements they said about erroneous
26 data. And Dr. Foroosh's testimony has multiple issues --

1 JUDGE TURNER: You're out of time, but please go ahead and
2 finish.

3 MS. ZHANG: Thank you. His testimony is inconsistent. Align
4 says, he said, you can perform supplemental scanning. You keep all the
5 models together. He didn't explain how to use it. But on the other hand, he
6 also said, you do an entire scan, you'll discard the old scan. His testimony is
7 internally inconsistent and not reliable. With that, thank you, Your Honors,
8 for your time. And we submit that the patent claims are unpatentable.
9 Thank you.

10 JUDGE TURNER: Thank you. Patent Owner's counsel, you have
11 15 minutes. And, yeah, the caution light will go on at two. Begin when
12 you're ready, please.

13 MR. ARGENTI: Thank you, Your Honor. I'll address a few
14 points that we just heard from Petitioner. Petitioner characterized Patent
15 Owner as agreeing that Boerjes discloses removing a portion of a model that
16 contains erroneous data. By no means did we agree to that. Your question,
17 Your Honor, was about element 1[E], which doesn't mention erroneous data
18 or updated surface preparations.

19 I think the only thing that we would agree to is, and here I'll
20 actually refer to Petitioner's demonstratives, in particular slide 22. This is
21 where they allege that Boerjes teaches removing a portion from a model.
22 They have two excerpts. Those are the only excerpts that they've identified
23 for that point, as far as I know. And I would agree that that is accurate
24 content from Boerjes. That is what Boerjes says. It certainly doesn't say
25 anything there about removing a portion of a model that teaches erroneous
26 data.

1 At the bottom, we see that there's a second tool to remove
2 unwanted or unneeded areas. It doesn't link that to the erroneous data. It's
3 also not clear about user input defining that area. So I believe that this is the
4 extent of what Boerjes teaches about removing data, and we did not make
5 the concession that they characterized us as making.

6 I would also point out that when Petitioner stood up here, they
7 pretty quickly went to address Geng's content and Geng's disclosure. That's
8 how they introduced what they were going to say. And yet for the entire
9 discussion, what they had on the screen was an annotated figure of Boerjes.
10 I think that highlights -- and we heard them say, well, you can't look at either
11 one of these individually. You have to look at the combination. I think
12 that's a pretty telling example of the whole problem with their obviousness
13 case, when they say they're addressing Geng's disclosure and yet they're
14 looking at their own annotations to a Boerjes figure.

15 At the end, we heard them address the two alternative theories.
16 We have not backed away by any means from those two alternatives or two
17 theories that Boerjes discloses in paragraph 199. I addressed them during
18 my portion of the oral argument today where Boerjes, in paragraph 199,
19 addresses both the need to, some scenarios, you're going to need to
20 supplement in view of erroneous scan data. Some scenarios, you're going to
21 take a new scan following an updated surface preparation. Those are the
22 two alternatives.

23 And I think I clarified earlier today that we have not -- or their
24 characterization of what our position was in the Patent Owner response has
25 been inaccurate the entire time. We addressed that in the surreply, and I've
26 addressed that today as well.

1 As to Dr. Foroosh's credibility, this is something that we also
2 addressed in our surreply. They accuse him of applying an improperly
3 narrow claim construction. He was responding to the case that they laid out.
4 As I explained earlier, Dr. Karam mapped the physical change to an updated
5 surface preparation. They did the same thing in their petition for element
6 1[G]. That's what he was responding to. To the extent that they're asking
7 him hypotheticals about another theory that's not proposed in the petition, he
8 properly said, I don't see that in Dr. Karam's declaration. I don't have
9 anything to respond to on that point.

10 They also characterized his testimony as inaccurate, unreliable,
11 incomplete. That's the same underlying problem here. To the extent he
12 declined to answer questions about hypotheticals during his deposition, that's
13 because they were hypotheticals or theories that were not raised in either the
14 petition or Dr. Karam's own testimony.

15 They also criticize him for failing to explain why Boerjes arrived
16 at the specific solutions that Boerjes teaches. And he properly explained that
17 Boerjes' underlying reason for that disclosure was irrelevant to the disclosure
18 itself. They have never identified any technical inaccuracies in what Dr.
19 Foroosh has explained about these references. They essentially attacked Dr.
20 Foroosh for explaining why Boerjes did not use the more efficient approach
21 that's taught by the '936 patent, but again, that's not sufficient. So unless
22 there are any other questions, I can take a seat. Thank you, Your Honors.

23 JUDGE TURNER: Just hold on. Does the panel have any
24 additional questions?

25 JUDGE HARDMAN: No.

26 JUDGE POWELL: None from me.

1 JUDGE TURNER: Okay. Thank you very much. Please go
2 ahead and take a seat. We'll go off the record.
3 (Whereupon, the above-entitled matter went off the record at 10:31
4 a.m.)

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