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Paper 12
Entered: May 26, 2020

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

3SHAPE A/S AND 3SHAPE INC.,
Petitioner,

v.

ALIGN TECHNOLOGY, INC.,
Patent Owner.

IPR2020-00223
Patent 7,156,661 B2

Before HYUN J. JUNG, JOHN P. PINKERTON, and JAMES J. MAYBERRY, *Administrative Patent Judges*.

MAYBERRY, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. Background and Summary

3Shape A/S and 3Shape Inc. (collectively "Petitioner"), filed a Petition ("Pet.") requesting *inter partes* review of claims 1–4, 6, 19–22, and 26 (the "Challenged Claims") of U.S. Patent No. 7,156,661 B2 (Ex. 1001, the "'661 patent"). Paper 4. Patent Owner, Align Technology, Inc., filed a

Preliminary Response ("Prelim. Resp.") to the Petition. Paper 11. We have authority under 35 U.S.C. § 314 to determine whether to institute review. *See also* 37 C.F.R. § 42.4(a) (permitting the Board to institute trial on behalf of the Director).

To institute an *inter partes* review, we must determine that the information presented in the Petition shows "a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a). For the reasons set forth below, upon considering the Petition, Preliminary Response, and evidence of record, we institute an *inter partes* review.

B. Real Parties in Interest

Petitioner identifies 3Shape A/S, 3Shape Inc., 3Shape Holding A/S, 3Shape Trios A/S, and 3Shape Poland sp. z.o.o. as real parties-in-interest. Pet. 1.[1] Patent Owner identifies itself as the sole real party-in-interest. Paper 7, 1.

C. Related Matters

Petitioner identifies *Align Technology, Inc. v. 3Shape A/S*, No. 1:18-cv-01950 (D. Del.) ("Delaware litigation") and *In the Matter of Certain*

[1] "Out of an abundance of caution," Petitioner also identifies 3Shape Medical A/S, 3Shape Germany GmbH, 3Shape France SAS, 3Shape Italy SRL, 3Shape S.A.S., 3Shape (Shanghai) Co., Ltd., 3Shape Do Brasil Soluções Tecnologicas Para Saude Ltda, 3Shape Australia Pty Ltd., 3Shape Trios Sociedad Limitade, 3Shape Japan GK, 3Shape Ukraine Ltd., 3Shape (UK branch), SC Investment Company, LLC, Drop Dental LLC, Shenzhen Full Contour Design Company Ltd., Bosques Humedos Del sur Sociedad De Responsabilidad Limitada, Full Contour SRL, Full Contour LLC, 3Shape Medical Equipment Manufacture Shanghai Ltd., 3Shape Korea Ltd., 3Shape Manufacturing US LLC, Clausen Engineering APS, Tais Clausen, Deichmann Media APS, Nikolaj Hoffmann Deichmann, and the individuals listed in Appendix B of the Petition as real parties-in-interest. Pet. 1.

Dental and Orthodontic Scanners and Software, No. 337-TA-1144 (U.S. International Trade Commission) ("ITC Investigation") as related matters. Pet. 2. Petitioner also identifies that it filed a second petition challenging the '661 patent, in IPR2020-00222. *Id.*; *see also* Paper 3 ("Petitioners' Explanation of Material Differences between Petitions and Petition Ranking for U.S. Patent No. 7,156,661").

Patent Owner identifies these three proceedings and identifies IPR2020-00173 and IPR2020-00174 (both directed to U.S. 8,102,538 B2, which is also involved in the Delaware Litigation and ITC Investigation) as related matters. Paper 7, 1–2.

D. The '661 Patent

The '661 patent, titled "Systems and Methods for Treatment Analysis by Teeth Matching," issued January 2, 2007, from an application filed August 12, 2003, which purports to be a continuation-in-part of application No. 10/225,889, filed August 22, 2002. Ex. 1001, codes (54), (45), (22), (63).[2] The '661 patent is directed toward "a system, apparatus and computer-implemented method for analyzing an orthodontic treatment by using computer models of teeth." *Id.* at 1:51–53. Patent Owner characterizes the '661 patent as "disclos[ing] and claim[ing] a two-step matching process" for "matching computer models of a jaw." Prelim. Resp. 1. We reproduce Figure 10A from the '661 patent below.

[2] Application No. 10/225,889 issued as U.S. 7,077,647 B2, provided as Exhibit 1003.

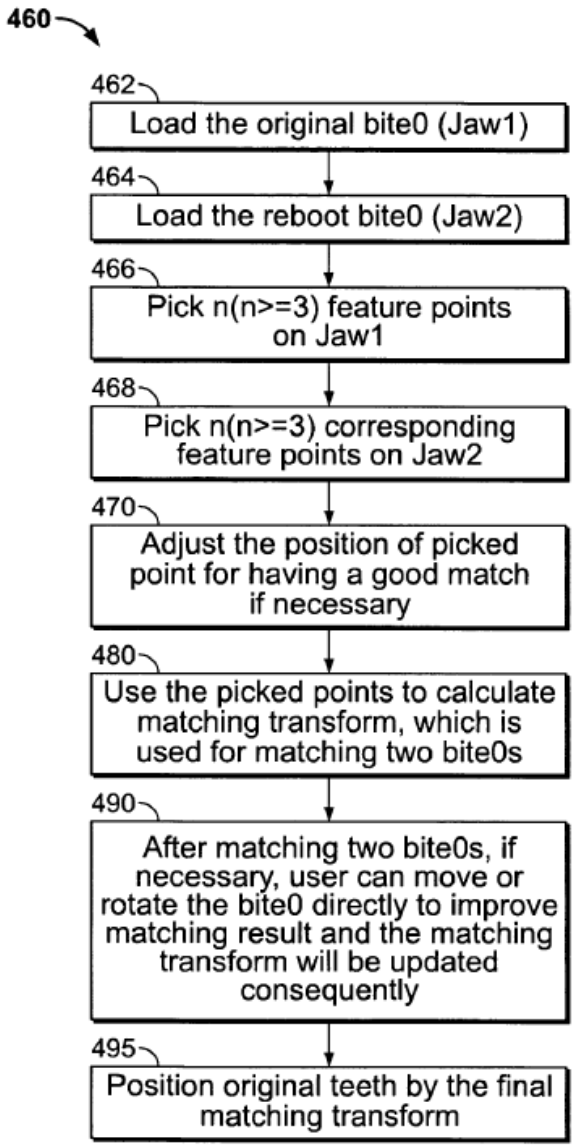

FIG. 10A

Figure 10A depicts "an exemplary embodiment for matching shapes based on rugae.[3]" Ex. 1001, 3:22–23. At steps 462 and 464, computer models representing an original impression of teeth ("Jaw1") and a subsequent ("reboot") impression of teeth ("Jaw2"), respectively, are loaded into a computer. *Id.* at 9:32–34. At steps 466 and 468, at least three points

[3] *See* Ex. 1029, 1192 (defining "rugae" as the plural of "ruga," "[a] fold, crease, or wrinkle"); *see also* Ex. 1016 (discussing palatal rugae as landmarks).

are identified on Jaw 1 and three corresponding points are identified on Jaw 2. *Id.* at 9:35–37. "In one embodiment, the user can match the jaws by the [identified] points on the captured jaw models." *Id.* at 9:39–41.

At step 480, method 460 uses the identified "points to calculate a matching transform, which is used for matching two scanned jaw models." Ex. 1001, 9:46–48. At step 490, "[a]fter matching two scanned jaw models, if necessary, user can move or rotate the jaw model directly to improve matching result and the matching transform will be updated." *Id.* at 9:48–51. Finally, at step 495, method 460 "positions the original teeth by the final matching transform." *Id.* at 9:51–52.

The '661 patent states that "teeth matching works by comparing the anatomy of the teeth from . . . two time points and find[ing] the best fit between them." Ex. 1001, 10:65–67. The Specification states that software embodying the matching method "uses selected internal reference points such as stable teeth to establish a relative position" and that "[s]table structures such as the palatal rugae can be used as stable external reference points." Ex. 1001, 11:1–4.

E. Illustrative Claims

Of the Challenged Claims, claims 1 and 19 are independent claims. Claim 1, reproduced below, is representative. We have associated numbers to the individual claim limitations of claim 1 to correspond to the numbering system referred to by Petitioner and Patent Owner.

> 1. [1.P] A method for matching computer models of a jaw, the method comprising:
>
> [1.1] loading a first computer model of a jaw having teeth in initial positions;
>
> [1.2] loading a second computer model of the jaw, wherein positions of at least some of the teeth in the second computer model are different than the initial positions;

> [1.3] identifying at least one reference point on a region of the first computer model, the region comprising a portion of the jaw other than the teeth;
>
> [1.4] identifying a corresponding reference point on a corresponding region of the second computer model for each point identified on the first model;
>
> [1.5] matching the region of the first computer model with the corresponding region of the second computer model, using the identified reference points;
>
> [1.6] matching the first and second computer models as a whole, using the matched regions; and
>
> [1.7] calculating positional differences between the teeth in their initial positions and the teeth in their positions in the second computer model, using the matched regions as non-moving reference regions.

Ex. 1001, 13:9–30. Claim 19 is directed to "[a] tangible computer readable medium containing code," comprising instructions corresponding to the steps of claim 1. *Id.* at 14:54–15:9. Claims 2 through 4 and 6 depend directly from claim 1 and claims 20 through 22 and 26 depend directly from claim 19. *Id.* at 13:31–52, 15:10–16:18.

F. Prior Art and Asserted Grounds

Petitioner asserts that the Challenged Claims are unpatentable based on a single ground:

Claims Challenged	35 U.S.C. §	References/Basis
1–4, 6, 19–22, 26	103(a)	Ashmore[4], Jovanovski[5]

[4] Ashmore, J. L., Kurland, B. F., King, G. J., Wheeler, T. T., Ghafari, J., & Ramsay, D. S. (2002). A 3-dimensional analysis of molar movement during headgear treatment, *Am. J. of Orthodontics & Dentofacial Orthopedics*, *121*(1), 18–29 ("Ashmore," Ex. 1009).

[5] Jovanovski, V., & Lynch, E. (2000). Analysis of the morphology of oral structures from 3-D co-ordinate data, *Assessment of Oral Health: Diagnostic Techniques and Validation Criteria*, *17* (Faller, R.V., ed.), 73–129 ("Jovanovski," Ex. 1010).

Petitioner also relies on the declaration testimony of Dr. Eli Saber. Ex. 1005; *see also* Ex. 1006 (providing the curriculum vitae of Dr. Saber).

The following subsections provide a brief description of the asserted prior art references.

1. Ashmore

Ashmore is non-patent literature, dated January 2002. Ex. 1009, 1; *see also* Ex. 1007 ¶ 42 (including testimony that Ashmore "was available in the Health Sciences Libraries at the University of Wisconsin – Madison on January 30, 2002"). Ashmore discusses a study that aimed "to develop a mathematical method for superimposing 3-dimensional data obtained from selected landmarks on . . . dental casts to describe . . . molar movement during headgear treatment." Ex. 1009, Abstract.

Ashmore's method identifies registration landmarks on the palatal rugae of an original ("T1") dental model and subsequent dental models for a patient undergoing headgear treatment. Ex. 1009, 19. The landmarks are placed on a cast of the patient's upper jaw and scanned. *Id.* at 20, col. 1. The T1 models for each patient are oriented on a similar spatial frame of reference and subsequent models for that patient are superimposed on the T1 model with a least squares rotational fit, using the palatal rugae registration landmarks. *Id.* at 21, col. 1. Following the superimposition step, the three-dimensional movement and rotation of molars were calculated. *Id.*

2. Jovanovski

Jovanovski is non-patent literature, contained within a book titled "Assessment of Oral Health: Diagnostic Techniques and Validation

Criteria," with a copyright notice of 2000. Ex. 1010, 3, 7;[6] *see also* Ex. 1007 ¶¶ 47, 49 (including testimony that Jovanovski "was available in the Morgan Library at Colorado State University as of June 28, 2001"). Jovanovski is directed to "[a] non-intrusive method . . . [that] can be used to determine the forms of oral structures . . . based on the [digitizing] of standard replicas with a co-ordinate-measuring machine." Ex. 1010, 73. Jovanovski states that "the techniques of greatest interest are those which can provide three-dimensional co-ordinate data acquired from an entire tooth surface with sufficient density and accuracy to permit the construction of a computer model." *Id.* at 73. That is, Jovanovski looks at building computer models of tooth surfaces.

Relevant to Petitioner's contentions, Jovanovski discusses superimposing sequential computer models to determine how the model surface changed over time. Ex. 1010, 93. Jovanovski discusses methods for registering corresponding points on two models that "ha[ve] been applied extensively," including using external markers and surface landmarks. *Id.* at 96–99. Jovanovski also discusses a "shape-based method," based on point-to-surface distances for two shapes, that "is robust and whose accuracy is operator independent." *Id.* at 99–102. Jovanovski then discusses a three-stage method, which builds on these superimposition methods, for superimposing non-identical surfaces. *Id.* at 102–105.

In the first stage, "an initial approximation of the transformation parameters is obtained by marking three or more pairs of corresponding points as in the landmark-based method." Ex. 1010, 103. In the second

[6] When we reference the text of Jovanovski's chapter, we cite to the page number in the original book. Other references to Exhibit 1010 are to the page number of the exhibit itself.

stage, an "operator marks the extent of the stable regions on the follow-up surface." *Id.* As a result, "a set of 3,000 representative points which lie in the stable region of the follow-up surface is automatically generated by random uniform sampling." *Id.* at 104. In the third, "main processing," stage, an iterative process employs the Gauss-Newton method to overlay the representative points based on the calculated transform on the baseline surface. *Id.* The iterations continue until the procedure converges and the software identifies the optimal transform. *Id.* at 104–105. "[T]he optimal transformation is applied to all the data points of the follow-up surface. From these transformed points a new, superposed follow-up surface is generated." *Id.* at 105.

II. ANALYSIS

A. Applicable Law

Petitioner's asserted ground of unpatentability is based on obviousness under 35 U.S.C. § 103(a).

> Section 103(a) [of 35 U.S.C.] forbids issuance of a patent when "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains."

KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art;[7] and (4) when available, objective evidence, such as

[7] We address the level of ordinary skill in the art in Section II.B., below.

commercial success, long felt but unsolved needs, and failure of others.[8] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

"[O]bviousness must be determined in light of *all the facts*, and . . . a given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine" teachings from multiple references. *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006) (emphasis added); *see also PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1196 (Fed. Cir. 2014) ("The presence or absence of a motivation to combine references in an obviousness determination is a pure question of fact.").

B. Level of Ordinary Skill in the Art

The level of skill in the art is "a prism or lens" through which we view the prior art and the claimed invention. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). Petitioner contends that a person having ordinary skill in the art at the time of the invention

> would have at least: (1) a bachelor's degree in electrical and/or computer engineering, or computer science (or equivalent course work) with two to three years of work experience in computer modelling of physical structures or (2) a master's degree in electrical and/or computer engineering, or computer science (or equivalent course work) with a focus in computer modelling of physical structures.

Pet. 11 (referencing Ex. 1005 ¶ 25). Petitioner asserts that "Patent Owner agree[s] that a [person having ordinary skill in the art] need not have any dental experience." *Id.* at 11 n.3 (referencing Ex. 1014, 8–10).

[8] At this stage of the proceeding, neither party has identified objective evidence in the record for us to consider.

Patent Owner does not dispute this characterization of the level of ordinary skill in the art at this stage of the proceeding or provide its own definition. We accept Petitioner's characterization of the level of ordinary skill in the art for the limited purposes considered for this Decision.

C. Claim Construction

In *inter partes* reviews, we interpret a claim "using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b)." *See* 37 C.F.R. § 42.100(b) (2019). Under this standard, we construe the claim "in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent." *Id.* "Any prior claim construction determination concerning a term of the claim in a civil action, or a proceeding before the International Trade Commission, that is timely made of record in the inter partes review proceeding will be considered." *Id.*

1. Petitioner's proposed constructions

Petitioner offers the express construction of four claim terms:[9] (1) "reference point," (2) "region(s)," (3) "matching/match … using the identified reference points," and (4) "comprising a portion of the jaw/model other than the teeth."[10] Pet. 15–17. In the ITC Investigation, the Administrative Law Judge (ALJ) construed these four terms and Petitioner entered those constructions into the record. *See* Ex. 1014. Petitioner

[9] Petitioner states that "[a]ny claim terms not addressed should be interpreted consistent with the *Phillips* standard." Pet. 15.

[10] The parties agreed to the construction of this fourth term in the ITC Investigation: "including at least a non-tooth portion of the jaw." Pet. 16–17; Prelim. Resp. 4 n.1.

presents its proposed constructions asserted in the ITC Investigation and the ALJ's constructions for the three disputed terms. Pet. 15–17. The table below presents the constructions adopted by the ALJ in the ITC Investigation.

Claim Term	ALJ's Construction
reference point	a point used to determine the position of a computer model, or part thereof, relative to another computer model, or part thereof
region(s)	area
matching/match . . . using the identified reference points	using the identified reference points to determine the position of a region of the first computer model relative to the corresponding region of the second computer model
comprising a portion of the jaw/model other than the teeth	including at least a non-tooth portion of the jaw

Id. For each of the four terms, Petitioner states that "[t]he ALJ's construction is applied" in Petitioner's analysis of how the combination of Ashmore and Jovanovski renders the Challenged Claims obvious. *See id.*

2. Analysis

Patent Owner contends that Petitioner's approach to claim construction failed to satisfy the requirements of 37 C.F.R. § 42.104. Prelim. Resp. 2–3. First, Patent Owner argues that prior Board decisions have rejected the type of approach to claim construction taken by Petitioner. *Id.* at 3–5. We determine that Patent Owner's reliance on these previous Board decisions is misplaced.

As an initial matter, we note that Patent Owner does not direct us to any precedential or informative decisions by the Board on this issue. Turning to the proceedings Patent Owner identified, we start with *Hologic, Inc. v. Enzo Life Sciences, Inc.*, IPR2018-00019, Paper 17 (PTAB Apr. 18,

2018) (Institution Decision). In *Hologic*, the petitioner presented the construction of the term "multihybrid" that petitioner proposed in parallel litigation and also presented the patent owner's construction, with which the petitioner disagreed. *Hologic, Inc.*, Paper 17, 7–8. The petitioner in that case presented its unpatentability positions using the patent owner's construction. *Id.* The panel rejected this approach, because it interpreted statements made by the petitioner to assert that its proposed construction was the correct construction, and the construction used to demonstrate unpatentability was an incorrect construction. *Id.* at 8–9.

The instant Petition is distinguishable from *Hologic*, in at least two ways. First, in the Petition, Petitioner does not affirmatively argue that the ALJ's constructions are wrong. Instead, Petitioner merely states the construction it asserted in the ITC Investigation and the construction applied by the ALJ in the proceeding. Indeed, as the *Hologic* panel made clear in its subsequent rehearing decision, "[n]early every time [p]etitioner discusses its use in the [p]etition of [p]atent [o]wner's proposed construction, [p]etitioner *affirmatively disagrees* with the construction it adopts." *Hologic, Inc.*, Paper 21, 4 (Rehearing Decision) (emphasis added). Again, that is not the case here.

Second, the competing constructions at issue in *Hologic* were proposed constructions—the judge in the parallel proceeding had not yet arrived at a claim construction. *See Hologic, Inc.*, Paper 17, 7–8. In the instant case, the ALJ has issued her claim construction order.

Carefusion Corp. v. Baxter International, Inc., IPR2016-01456, Paper 9 (PTAB Feb. 6, 2017) (Institution Decision), is equally inapposite. As in *Hologic*, the panel in *Carefusion* found the petitioner's claim construction insufficient, in part because the petitioner expressly stated that "it *does not*

agree that those constructions are in fact correct." *Carefusion Corp.*, Paper 9 at 7; *see also id.* at 11 ("That is, having stated that it does not agree that Patent Owner's claim constructions are correct (*see* Pet. 9), Petitioner's qualified agreement with this particular construction is insufficient to take ownership of that construction."). Also, the panel found that the petitioner failed to comply with our rules with respect to a means-plus-function limitations. *Id.* at 7–10, 11–17.[11] These facts are not present in the Petition here.

Next, Patent Owner argues that a petitioner is required to explain its claim construction positions. Prelim. Resp. 6 (referencing *Robert Bosch LLC v. Orbital Australia PTY Ltd.*, IPR2015-01249, Paper 9 at 6 (PTAB Dec. 21, 2015) (Institution Decision)). Patent Owner argues that "[s]imply presenting constructions with no supporting evidence and no explanation of why such constructions are correct is improper." *Id.* (referencing *Apple Inc. v. Immersion Corp.,* IPR2016-01371, Paper 7 (PTAB Jan. 11, 2017) (Institution Decision)). We do not agree. Our rules do not require a petitioner to provide a claim construction analysis. Instead, the plain language of the rules merely requires a petitioner to "identify . . . [h]ow the challenged claim is to be construed." 37 C.F.R. § 42.104(b)(3). Petitioner has done that here.

[11] Patent Owner also cites to *Toyota Motor Corp. v. Blitzsafe Tex., LLC*, IPR2016-00422, Paper 12 at 26 (PTAB July 6, 2016), quoting "[t]he 'construction' referred to by 37 C.F.R. §42.104(b)(3) is the construction proposed by the Petitioner, one that Petitioner believes is the correct construction under applicable law and should apply in the involved proceeding." Prelim. Resp. 4. The "construction" addressed in *Toyota* is directed at our rule for means-plus-function terms, which is not at issue here. *Toyota Motor Corp.*, Paper 12, 26.

Patent Owner misinterprets *Robert Bosch* and *Apple*. In *Robert Bosch*, the panel was persuaded by the patent owner's proposed construction, which was supported by "a detailed explanation . . . examining the claim language, the written description, and the prosecution history," with Petitioner's position not so supported. *Robert Bosch LLC*, IPR2015-01249, Paper 9 at 6–8. In *Apple*, the panel determined that *Apple*'s reliance on domestic industry claim charts, which included citations to exhibits not of record, was insufficient to support its claim construction position without further analysis. *Apple Inc.*, Paper 7 at 6–7. The panel also determined that it was not bound by statements at the ITC, which, at the time, employed a different claim construction standard. *Id.* at 7.

We determine that Petitioner's reliance on the constructions determined by the ALJ in the ITC Investigation is sufficient to inform us as to how Petitioner construes the challenged claims. Indeed, our present rules require us to consider such constructions in an *inter partes* review proceeding when these constructions are timely made of record. 37 C.F.R. § 42.100(b) (2019). Patent Owner has not provided any arguments or contrary evidence as to why, once we consider these constructions, we should not adopt them.

Accordingly, for the claim terms identified by Petitioner, we have considered and, for the purposes of this decision, adopt the constructions determined by the ALJ in the ITC Investigation.[12]

[12] Our claim constructions are preliminary at this stage of the proceeding and the parties may further develop the record at trial to support their claim interpretations.

D. Claims 1–4, 6, 19–22, and 26 as Allegedly Obvious Over Ashmore and Jovanovski

Petitioner contends that the combination of Ashmore and Jovanovski renders obvious independent claims 1 and 19 and dependent claims 2–4, 6, 20–22, and 26. Pet. 5, 17–70.

1. Independent claims 1 and 19

We first analyze Petitioner's contentions and Patent Owner's counter arguments directed to whether the combination of Ashmore and Jovanovski discloses the subject matter recited in claims 1 and 19. We then analyze Petitioner's contentions and Patent Owner's counter arguments directed to the motivation to combine the teachings of Ashmore and Jovanovski.

Our analysis of claim 1 applies equally to claim 19. Petitioner contends that, with the exception of the preamble of claim 19, the analysis for claim 19 is identical to that for claim 1. *See* Pet. 51–53. Patent Owner does not dispute this contention at this stage of the proceeding.

a) The subject matter of claims 1 and 19

The preamble of claim 1 recites "[a] method for matching computer models of a jaw." Ex. 1001, 13:9 (preamble "1.P"). Petitioner asserts that it "do[es] not concede that any preamble of the challenged claims is limiting." Pet. 17 n.4. Petitioner does contend that Ashmore discloses a method for matching computer models of a jaw. *Id.* at 17–20. We have reviewed Petitioner's contentions and determine Petitioner has made a sufficient showing, at this stage of the proceeding, that Ashmore discloses the subject matter of the preamble. Patent Owner does not dispute Petitioner's contentions with respect to the preamble of claim 1 at this time.

Similarly, the preamble of claim 19 recites "[a] tangible computer readable medium containing code for matching computer models of a jaw."

Ex. 1001, 14:54–55 (preamble "19.P"). Petitioner contends that Ashmore discloses that its matching process is embodied in software. Pet. 51 (referencing Ex. 1009, 20); *see id.* (explaining that Jovanovski also discloses this subject matter and referencing Ex. 1010, 75, 90, 93, 103–105). Petitioner further contends "[i]t was well known that software is contained on a tangible computer readable medium of a computer." *Id.* (referencing Ex. 1019, 6:45–58, Ex. 1018, 13:22–35). Petitioner adds that a person having ordinary skill in the art "would have understood that the computers disclosed by Ashmore and Jovanovski would include such a tangible computer readable medium containing code for performing the disclosed processes." *Id.* at 51–52 (referencing Ex. 1005 ¶ 111). We have reviewed Petitioner's contentions and determine that Petitioner has made a sufficient showing, at this stage of the proceeding, that Ashmore discloses the subject matter of the preamble of claim 19. Patent Owner does not dispute Petitioner's contentions with respect to the preamble of claim 19 at this time.

Claim 1 next recites "loading a first computer model of a jaw having teeth in initial positions." Ex. 1001, 13:11–12 (limitation "1.1"). Petitioner contends that Ashmore discloses loading an initial, "T1," computer model of a jaw into a computer, because the models are processed by software. Pet. 21 (referencing Ex. 1009, 19–20; Ex. 1027, 39:7–43:27; Ex. 1012 ¶ 120; Ex. 1005 ¶ 62); *see also id.* at 22 (explaining that Jovanovski discloses loading a first computer model of a jaw). Petitioner also contends that Ashmore's first computer models, which are computer models of dental casts of a jaw with teeth, have teeth in their initial position. Pet. 22–23 (referencing Ex. 1009, Abstract, 18–19, 20, Figs. 1–4).

We have reviewed Petitioner's contentions and determine Petitioner has made a sufficient showing, at this stage of the proceeding, that Ashmore

discloses the subject matter of limitation "1.1." Patent Owner does not dispute Petitioner's contentions with respect to this limitation at this time.

Similarly, claim 1 recites "loading a second computer model of the jaw, wherein positions of at least some of the teeth in the second computer model are different than the initial positions." Ex. 1001, 13:13–15 (limitation "1.2"). Petitioner argues that Ashmore discloses a subsequent or final model of a jaw loaded into a computer. Pet. 23 (referencing Ex. 1009, Abstract, 18, 19, 22, 25, Fig. 1; Ex. 1005 ¶ 67). Petitioner adds that these subsequent or final models represent the position of teeth after treatment and the "models have at least some teeth in different (moved) positions in comparison with a first (any earlier) model because Ashmore discloses that the teeth have moved as a result of treatment." *Id.* at 24 (referencing 18, 19, 21, Figs. 2–4; Ex. 1005 ¶ 68).

We have reviewed Petitioner's contentions and determine Petitioner has made a sufficient showing, at this stage of the proceeding, that Ashmore discloses the subject matter of limitation "1.2." Patent Owner does not dispute Petitioner's contentions with respect to this limitation at this time.[13]

Claim 1 next recites "identifying at least one reference point on a region of the first computer model, the region comprising a portion of the jaw other than the teeth." Ex. 1001, 13:16–18 (limitation "1.3"). Similarly, claim 1 recites "identifying a corresponding reference point on a corresponding region of the second computer model for each point identified

[13] Petitioner also asserts that the "loading" steps of limitations 1.1 and 1.2 would have been obvious in view of Ashmore. Pet. 67–68. Although we determine that Petitioner makes the requisite showing at this stage of the proceeding that Ashmore discloses this subject matter, the parties are invited to further brief this alternative theory during trial going forward.

on the first model." *Id.* at 13:19–21 (limitation "1.4"). Petitioner contends that Ashmore discloses identifying at least eight registration landmarks, or reference points, on the palatal rugae region of the initial, T1, model and corresponding points on subsequent models. Pet. 24–25 (referencing Ex. 1009, 18–21; Ex. 1005 ¶ 70), 29–30 (referencing Ex. 1009, 21).

Petitioner explains that Ashmore discloses that the "[s]pecific unique anatomical details are identified on the rugae region of a subject's dental jaw cast." Pet. 25 (referencing Ex. 1009, 20). Petitioner adds that these points are stable reference points used for determining the position of a computer model relative to another computer model. *Id.* at 26 (referencing Ex. 1009, 20; Ex. 1015). Petitioner further explains that the palatal rugae is a portion or area of the jaw other than teeth and does not consist of the entire jaw. Pet. 27 (referencing Ex. 1009, 18–21, Fig. 1; Ex. 1005 ¶¶ 73–75; Ex. 1016, 43, Fig. 1; Ex. 1028; Ex. 1029; Ex. 1030).

Petitioner contends that Ashmore discloses that the identified points (which are initially placed on the physical casts of the jaws) are digitized into computer models, satisfying the "identifying at least one reference point . . . of the first *computer* model" requirement. Pet. 26 (referencing Ex. 1009, 21; Ex. 1005 ¶ 71); *see also id.* at 30 ("Ashmore identifies a corresponding reference point 'on a corresponding region of the second computer model for each point identified on the first model' because Ashmore's digitized 'corresponding rugae registration points' are on the rugae of the second computer model."), 65 ("Ashmore discloses that the physically marked points are 'digitized,' . . . [and] identifies the digitized corresponding rugae reference points on each of the first and second computer models in order to superimpose the models.")

With respect to the subsequent models, Petitioner adds that Jovanovski discloses identifying corresponding reference points on a second model for each point identified on a first model. Pet. 31 (referencing Ex. 1010, 98–105, Fig. 15; Ex. 1005 ¶¶ 79, 80).

Alternatively, Petitioner argues that it would have been obvious to modify Ashmore with Jovanovski's teachings to virtually mark reference points on a computer model rather than marking the points on a physical cast and digitizing those marks. Pet. 65. Petitioner explains that Jovanovski discloses virtually marking points on the computer models. *Id.* at 65–66 (referencing Ex. 1010, 97–98). As Petitioner explains, Jovanovski discloses both the use of external markings, including markings on the surface of a physical model and virtual marking on a computer visualization system. *Id.* at 66 (referencing Ex. 1010, 97). We discuss Petitioner's reasons for modifying Ashmore in the section below.

Patent Owner contends that Ashmore does not disclose the subject matter of limitations 1.3 and 1.4, as Ashmore identifies reference points on physical casts, not computer models. Prelim. Resp. 12–14. Patent Owner adds that Petitioner did not present a claim construction position interpreting these limitations to encompass digitizing physical marks on a physical cast. *Id.* at 13–14. In response to Petitioner's alternative position that modifying Ashmore to virtually mark a computer model, as taught in Jovanovski, would have been obvious, Patent Owner argues that "[h]ow th[is] additional change[] to Ashmore would impact the [other] described modifications is entirely unexplained. Petitioners' attempt to hedge between various positions renders the exact combination being proposed indecipherable." *Id.* at 28.

We have considered each of Patent Owner's arguments, but do not find them sufficient at this stage of the proceeding to demonstrate a deficiency in Petitioner's position. Patent Owner does not direct us to any claim interpretation that would preclude the "identifying" aspect of limitations "1.3" and "1.4" from being satisfied by digitizing a physical mark. Also, we determine that Petitioner has clearly presented an alternative position for how Ashmore, as modified by Jovanovski's teaching of virtually marking a computer model, discloses the subject matter of limitations "1.3" and "1.4." *See* Pet. 65–67.

We determine Petitioner has made a sufficient showing, at this stage of the proceeding, that Ashmore, or Ashmore as modified by Jovanovski, discloses the subject matter of limitations "1.3" and "1.4."[14]

Claim 1 next recites "matching the region of the first computer model with the corresponding region of the second computer model, using the identified reference points." Ex. 1001, 13:22–24 (limitation "1.5"). Petitioner contends that Ashmore discloses matching the region of the first computer model (the points on the palatal rugae of the initial, T1, model) to the corresponding points in subsequent models. Pet. 33 (referencing Ex. 1009, 19, 21). Petitioner explains that Ashmore discloses superimposing the subsequent models on the T1 model using a least squares fit of the registration marks (the reference points) on the palatal rugae areas of the models. *Id.* (referencing Ex. 1009, 21).

[14] To be clear, we determine the information in the Petition with respect to Petitioner's alternative positions as to limitations "1.3" and "1.4" (Pet. 24–32, 65–67) is sufficient at this stage of the proceeding and the parties should address both of these positions with respect to these two limitations going forward.

Petitioner adds that Jovanovski also discloses the subject matter of limitation "1.5." Pet. 37 (referencing Ex. 1010, 75, 103; Ex. 1005 ¶ 86). Specifically, Petitioner directs us to the first stage of Jovanovski's three-stage process. *See id.* at 37–38. In Jovanovski's method's first stage, "an initial approximation of the transformation parameters is obtained by marking three or more pairs of corresponding points as in the [described] landmark-based method." Ex. 1010, 103; *see also id.* at 96–99 (describing landmark-based methods).

Patent Owner argues that Ashmore is a single-step matching that superimposes the models of the jaws using reference points identified on a physical cast. Prelim. Resp. 20. That is, Patent Owner argues that Ashmore discloses computing the position of a model as a whole. *Id.* at 21.

We have considered Patent Owner's arguments, but do not find them sufficient at this stage of the proceeding to demonstrate a deficiency in Petitioner's position. First, to the extent Patent Owner is arguing that Ashmore's digitizing of physical marks somehow takes its disclosed method outside the scope of limitation "1.5," we have addressed that argument above in connection with our analysis of limitations "1.3" and "1.4." Second, as for Patent Owner's argument that Ashmore discloses a one-step process, this argument ignores the combined teachings of Ashmore and Jovanovski and the invention of claim 1 as a whole. As we explain in greater detail below, in our analysis of limitation 1.6, we understand Petitioner's obviousness position to modify Ashmore with Jovanovski to arrive at a two-step matching process. This modified method would match the models as a whole as part of the second step.

We determine Petitioner has made the requisite showing that Ashmore teaches a matching process that matches a specific area (the palatal rugae) of

a first computer model with a corresponding area of a second computer model by using the identified reference points on the palatal rugae on one model to position that model relative to the second model, that is, the subject matter of limitation "1.5." *See* Pet. 33; Ex. 1009, 21.

Claim 1 next recites "matching the first and second computer models as a whole, using the matched regions." Ex. 1001, 13:25–26 (limitation "1.6"). Petitioner contends that the combination of Ashmore and Jovanovski discloses limitation "1.6." Pet. 38. Petitioner argues that Jovanovski discloses matching the first and second computer models as a whole. *Id.* at 38–39 (referencing Ex. 1010, 103–105).

Petitioner first explains that Jovanovski's first stage of its matching process is similar to the matching step disclosed in Ashmore, where a point-to-point matching of registration marks provides an initial approximation of how the models match up. Pet. 39, 40; *see also* Ex. 1010, 103 ("First, an initial approximation of the transformation parameters is obtained by marking three or more pairs of corresponding points as in the landmark-based method.").

Next, Petitioner explains that Jovanovski's second stage is "an iterative procedure where the representative points of the second model (e.g., 'follow-up surface') are fitted to the corresponding representative points of the first model (*e.g.*, 'baseline surface')." Pet. 39. Petitioner adds that this step "provides an 'optimal transformation' that is 'applied to all the data points' of the second model." *Id.* Petitioner explains that "Jovanovski discloses that '[o]n completion of the second stage, a set of 3,000 representative points which lie in the ***stable region*** of the follow-up surface is automatically generated'" and that Ashmore discloses that the palatal rugae is a stable region. *Id.* at 40. Petitioner further explains that

Jovanovski discloses that the resulting 3,000 points are fitted to the baseline surface using the Gauss-Newton method. *Id.* at 40; *see also* Ex. 1010, 100–102 (describing the Gauss-Newton method), 104 (explaining the Gauss-Newton method at the completion of the second stage).

We understand from the information in the Petition that Petitioner contends it would have been obvious to modify Ashmore with Jovanovski's teachings of its matching method. Pet. 38–41, 56–64. We understand the position to be that Ashmore's landmark-based matching would correspond to Jovanovski's first stage of its matching process, yet would include reference points on the palatal rugae, as a stable, non-tooth, area of the jaw. *See, e.g.*, *id.* at 38 ("Ashmore discloses . . . 'matched regions' of the first and second computer models. The matched regions would have been used in Jovanovski's refining matching step."); 40 ("Because Ashmore discloses using the palatal rugae area (e.g., medial palatal rugae) as a stable region, Ashmore's palatal rugae area is analogous to the stable region selected by the user in Jovanovski."), 59 ("Ashmore's method would have been modified to incorporate and adapt Jovanovski's second matching step (i.e., 'shape-based method') and employ same after Ashmore's matching of the models using rugae reference points, because Jovanovski's matching step is for refining an initial matching similar to Ashmore's matching."). At Jovanovski's second stage, Petitioner argues, a large number of points, still on the stable palatal rugae, would be used to match the shape of the subsequent model to the initial, T1 model, to arrive at an optimal transformation, which would be applied to the data points of the second, subsequent, model to match the two models as a whole. *See* Pet. 39–40; *see id.* at 57 ("A [person having ordinary skill in the art] would have had ample reasons to modify Ashmore in view of Jovanovski to employ an initial

matching step as an initial approximation (Elements [1.5], [19.5]), and a subsequent matching step for refined matching (Elements [1.6], [19.6]).”); *see also id.* at 59 (“Ashmore’s method would have been modified to incorporate and adapt Jovanovski’s second matching step (*i.e.*, ‘shape-based method’) and employ [the] same after Ashmore’s matching of the models using rugae reference points, because Jovanovski’s matching step is for refining an initial matching similar to Ashmore’s matching.”). In this way, Petitioner argues, Ashmore’s method would have been modified to a two-step method, where the second step matches the two models as a whole. We address Petitioner’s reasons for modifying Ashmore with Jovanovski’s teachings in the section below.

Patent Owner first argues that Jovanovski is directed to matching the models of single teeth and, thus, cannot teach matching using a non-tooth area. Prelim. Resp. 24–25. This argument is not sufficient, at this stage of the proceeding, to demonstrate a deficiency in Petitioner’s position. The argument ignores the combined teachings of Ashmore and Jovanovski, with Ashmore teaching using points on a stable, non-tooth area of the jaw.

Next, Patent Owner argues that Petitioner’s position is “incoherent.” Prelim. Resp. 25. We have considered this argument, but do not find it sufficient at this stage of the proceeding to demonstrate a deficiency in Petitioner’s position. As we explain above, we are able to discern Petitioner’s proposed combination of teachings from Ashmore and Jovanovski.

Accordingly, we have reviewed Petitioner’s contentions and determine Petitioner has made a sufficient showing, at this stage of the proceeding, that the combination of Ashmore and Jovanovski discloses the subject matter of limitation “1.6.”

Finally, claim 1 recites "calculating positional differences between the teeth in their initial positions and the teeth in their positions in the second computer model, using the matched regions as non-moving reference regions." Ex. 1001, 13:27–30 (limitation "1.7"). Petitioner contends that Ashmore discloses calculating molar translations and rotations as a result of its matching process. Pet. 41–44 (referencing Ex. 1009, 21, 24, 25, 28, Figs. 1–4; Ex. 1005 ¶¶ 96, 97). Petitioner adds that "Ashmore performs the molar positional difference calculations after matching the rugae regions of the first computer model (*e.g.*, 'initial model') and any one of many second computer models." *Id.* at 44. Petitioner also contends that Jovanovski discloses the subject matter of limitation "1.7." Pet. 45–46.

We have reviewed Petitioner's contentions and determine Petitioner has made a sufficient showing, at this stage of the proceeding, that the combination of Ashmore and Jovanovski discloses the subject matter of limitation "1.7." Patent Owner does not dispute Petitioner's contentions with respect to this limitation at this time.

b) Reasons to combine Ashmore and Jovanovski

We now turn to Petitioner's contentions with respect to the reasons for combining the teachings of Ashmore and Jovanovski. Petitioner contends that a person having ordinary skill in the art would have been motivated to modify Ashmore by incorporating Jovanovski's teachings of an additional matching step to "improve the accuracy of Ashmore's matching." Pet. 57. Petitioner explains that both references "recognize the desirability of obtaining an accurate matching of initial and subsequent models to obtain accurate model comparisons." *Id.* at 57–58 (referencing Ex. 1009, 20, 28; Ex. 1010, 98–99, 103–105; Ex. 1005 ¶ 126). Petitioner adds that Jovanovski discloses that its second matching step refines the approximation obtained

from the point-to-point matching of its first stage. *Id.* at 58. Petitioner also adds that Ashmore suggests that the accuracy of its method could be improved. *Id.* at 60.

Petitioner also contends that a person having ordinary skill in the art would have looked to Jovanovski to modify Ashmore given "the close similarities between Ashmore and Jovanovski." Pet. 61. Petitioner argues that the two references are in the same field of endeavor, address the same general problem, and provide similar solutions. That is, the two references are analogous art. Petitioner adds that a person having ordinary skill in the art "would have recognized that techniques for matching initial and subsequent models for measuring changes due to, e.g., tooth wear, would be applicable to a technique for measuring tooth movement, because both techniques seek to ascertain differences between the models." *Id.* at 61–62. Also, Petitioner contends that, in combining the teachings, a person having ordinary skill in the art would select a stable, non-tooth region, such as the palatal rugae, as taught by Ashmore. *Id.* at 62–63.

Petitioner contends that a person having ordinary skill in the art would have had a reasonable expectation of success in combining the teachings of Ashmore and Jovanovski. Pet. 64. First, Petitioner argues that Ashmore's matching step is similar to the first stage of Jovanovski's method. *Id.* Next, Petitioner argues that combining Jovanovski's second step after Ashmore's first step would yield predictable results because virtual modeling is a predictable art. *Id.*

Finally, Petitioner contends that a person having ordinary skill in the art "would been motivated to modify Ashmore to virtually mark reference points on the first and second computer models without physically marking the dental casts, because Jovanovski discloses that virtually identifying the

corresponding points improves accuracy and/or reliability in comparison with physically marking points." Pet. 65–66 (referencing Ex. 1010, 97–98). Petitioner explains that

> Given the finite number of alternatives (two) taught by Jovanovski, it would have been obvious to modify Ashmore to virtually mark reference points on the computer models, and not physically mark the dental casts. This would have yielded predictable results given that it was well-known that virtually identifying points is an alternative means for identifying corresponding points as taught by Jovanovski.

Id. at 66. Petitioner adds that "[t]here was a design need and market pressure (improved 'accuracy,' avoiding any 'changes of position' of physical markers) for virtually identifying points." *Id.*

Patent Owner contends that "Petitioner['s] proffered motivation to combine Ashmore and Jovanovski amounts to no more than a series of conclusory statements that allow Petitioner[] to forcibly arrive at the invention of the '661 patent." Prelim. Resp. 26–27. First, Patent Owner argues that Petitioner's proposed combination is ambiguous. *Id.* at 27. As we discussed above in our analysis of the subject matter of claims 1 and 19, we determine that Petitioner's positions are sufficiently clear at this stage of the proceeding.

Next, Patent Owner contends that Petitioner overstates the similarities of Ashmore and Jovanovski. Prelim. Resp. 28, 29. Patent Owner argues that Petitioner provides a "laundry list of superficial similarities" rather than articulating a reason to combine the teachings. *Id.* at 28. Patent Owner argues that showing the references are similar is not sufficient to show a reason to combine the references. *Id.* at 28–29. Patent Owner contends that Petitioner ignores "key differences between the two references." *Id.* at 29.

Patent Owner argues that Ashmore is directed to evaluating the change in position of teeth over time, and Jovanovski is directed to the change in shape of teeth over time. *Id.* Patent Owner concludes that "[t]hus Ashmore and Jovanovski address different concerns and solve different problems." *Id.* at 30.

We have considered each of these arguments, but do not find them sufficient at this stage of the proceeding to demonstrate a deficiency in Petitioner's position. Petitioner focuses on the similarities in the matching techniques and the broader problem (dental modeling). *See* Pet. 61–62. As Petitioner asserts (and Patent Owner does not dispute, at least at this stage of the proceeding), a person having ordinary skill in the art has training and experience in computer modeling, not orthodontia. That is, a person having ordinary skill in the art focuses on the modeling and matching aspects of the claimed subject matter.

Next, Patent Owner contends that Petitioner fails to substantiate its assertion that a person having ordinary skill in the art would have had a reasonable expectation of success. Prelim. Resp. 30. Specifically, Patent Owner argues that Petitioner ignored "statements in Jovanovski indicating that its process can lead to poor results." *Id.* at 31 (referencing Ex. 1010, 105).

We have considered Patent Owner's argument, but do not find it sufficient at this stage of the proceeding to demonstrate a deficiency in Petitioner's position. On the current record, we determine that Petitioner's position is sufficient. This determination is based, in part, on the similarity in Jovanovski's first stage (landmark-based approximate matching) with Ashmore's registration mark matching. *See* Pet. 64. This similarity supports a determination that a person of ordinary skill in the art, as defined

by Petitioner, would have had a reasonable expectation of success in modifying Ashmore with Jovanovski's teachings. That is, because both Ashmore and Jovanovski employ landmark-based matching, a person having ordinary skill in the art would have a reasonable expectation of success in modifying Ashmore to include both landmark-based matching of a region and shape-based matching of a model as a whole.

Next, Patent Owner challenges Petitioner's argument that a person of ordinary skill in the art would have been motivated by the potential for improved accuracy. Prelim. Resp. 31. Patent Owner argues that the Petition lacks "pertinent analysis" of improved accuracy. *Id.* Patent Owner argues that Petitioner ignores Jovanovski's misrepresentation error. *Id.* at 32. Patent Owner adds that Petitioner does not explain why a person of ordinary skill in the art would have "plucked" Jovanovski from the sea of prior art to modify Ashmore. *Id.* at 32–33.

We have considered Patent Owner's arguments, but do not find them sufficient at this stage of the proceeding to demonstrate a deficiency in Petitioner's position. Petitioner specifically asserts reasons why a person of ordinary skill in the art would have looked to Jovanovski, including because of the similarity between Jovanovski's first stage and Ashmore's matching step. *See* Pet. 61–62, 64. To the extent Patent Owner is arguing that Petitioner must show, quantitatively, that its proposed modification would result in improved accuracy, we do not understand the law of obviousness to include such a requirement. Petitioner relies on language from Jovanovski itself that at least suggests improved accuracy using its three-stage process over a landmark-based process only. *See* Pet. 58–59; *see, e.g.*, Ex. 1010, 99 ("[T]his [landmark-based] method is capable of quickly providing an initial approximation which can further be refined by other methods, described

next."); 99–105 (describing shape-based method including stages to refine landmark-based process).

With respect to Jovanovski's alleged misrepresentation error, we first note Jovanovski provides an extensive discussion on this potential error, and other possible errors in the method, including how to control error. *See* Ex. 1010, 105–114. We determine that Petitioner has made the requisite showing for a motivation to combine at this stage of the proceeding. We also determine that this specific issue would benefit from a full briefing during trial.

Finally, Patent Owner contends that contentions related to using the palatal rugae with Jovanovski's method are the product of hindsight. Prelim. Resp. 34. Patent Owner argues that "[n]othing in the prior art" suggests the two-step matching method claimed in claims 1 and 19. *Id.* at 34–35.

We have considered Patent Owner's argument, but do not find it sufficient at this stage of the proceeding to demonstrate a deficiency in Petitioner's position. Patent Owner seems to be arguing against the "prior art" references individually, and ignores the combined teachings as asserted by Petitioner. As we have discussed above, we determine, on the current record, Petitioner has made an adequate showing that a person having ordinary skill in the art would have had reason to modify Ashmore with the teachings of Jovanovski to arrive at the invention of claims 1 and 19, at least in part, from the express disclosures of the two references.

c) Conclusion as to claims 1 and 19

For the reasons provided above, we determine, on the current record, that the information in the Petition demonstrates a reasonable likelihood Petitioner would prevail in its contention that claims 1 and 19 are unpatentable under 35 U.S.C. § 103 over Ashmore and Jovanovski.

2. Dependent claims 2–4, 6, 20–22, and 26.

We must institute trial, if at all, on all challenged claims and grounds. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1355–56 (2018)*; see also PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) ("Equal treatment of claims and grounds for institution purposes has pervasive support in *SAS*."); Trial Practice Guide Update 31 (July 2019) ("The Board will not institute on fewer than all claims or all challenges in a petition."), available at https://www.uspto.gov/sites/default/files/documents/trial-practice-guide-update3.pdf. Because we determine that the Petition demonstrates a reasonable likelihood of prevailing as to the unpatentability of independent claims 1 and 19 over Ashmore and Jovanovski, we institute *inter partes* review on all Challenged Claims.

Moreover, we have reviewed Petitioner's contentions with respect to the combination of Ashmore and Jovanovski rendering obvious dependent claims 2–4, 6, 20–22, and 26 (Pet. 47–55) and determine that the information in the Petition demonstrates a reasonable likelihood it would prevail in its contention that dependent claims 2–4, 6, 20–22, and 26 are unpatentable under 35 U.S.C. § 103 over Ashmore and Jovanovski. Patent Owner does not provide separate arguments for claims 2–4, 6, 20–22, and 26.

III. DISCRETION UNDER § 314(A)

The Board has discretion not to institute an *inter partes* review. *See* 35 U.S.C. § 314(a) (2018) (authorizing institution of an *inter partes* review under particular circumstances, but not requiring institution under any circumstances); 37 C.F.R. § 42.108(a) (2019) (stating "the Board *may* authorize the review to proceed") (emphasis added); *Harmonic Inc. v. Avid*

Tech, Inc., 815 F.3d 1356, 1367 (Fed. Cir. 2016) (explaining that under § 314(a), "the PTO is permitted, but never compelled, to institute an IPR proceeding"); *see also Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2140 (2016) ("[T]he agency's decision to deny a petition is a matter committed to the Patent Office's discretion. See [5 U.S.C.] § 701(a)(2); 35 U.S.C. § 314(a) (no mandate to institute review).") (additional citation omitted). In determining whether to exercise our discretion not to institute a trial, we consider "[t]he purpose of the 'America Invents Act,' as reported by the Committee on the Judiciary, [which] is to . . . establish a more efficient and streamlined patent system that will improve patent quality and limit unnecessary and counterproductive litigation costs." H.R. REP. 112-98, pt. 1 at 40 (2011).

Patent Owner contends that we should exercise our discretion and not institute trial because of the advanced stage of the ITC Investigation. Prelim. Resp. 35. Patent Owner argues that "the ITC [I]nvestigation, where the validity of the '661 patent is also being challenged, will reach resolution well-before proceedings are underway before the Board . . . [so, m]oving forward with an *inter partes* review would be an inefficient use of Board resources and run counter to the goals of the" AIA. *Id.* at 36.

Petitioner contends that the ITC Investigation "do[es] not warrant denial." Pet. 70. Petitioner argues that additional claims are at issue in the instant proceeding, as compared to the ITC Investigation. *Id.* at 71. Petitioner also argues that the ITC cannot cancel a patent claim. *Id.*

We refrain from exercising our discretion not to institute trial here. As Petitioner argues, the ITC does not have the power to cancel a patent claim, even if that claim is demonstrated to be invalid. Also, the burden of proof in demonstrating that a patent claim is invalid differs between the ITC

and an *inter partes* review. Finally, the ITC Investigation will not resolve all claims at issue in this proceeding.

Our evaluation of the factors listed in *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 5–6 (PTAB Mar. 20, 2020) (Order) (precedential) do not indicate any concerns with efficiency, fairness, and the merits that would support exercising our authority to deny institution. The differences between the issues raised in the present Petition and in the parallel ITC Investigation, as per factor (4), and the strength of Petitioner's position, as per factor (6), outweigh other applicable factors, such as if the projected statutory deadline for a final written decision in this proceeding is after the date when the ITC Investigation would conclude, as per factor (2), or if there were great investment in the parallel proceeding, as per factor (3).

The ITC Investigation will not address the validity of claims 3, 4, 6, 21, 22, and 26 and, for those claims that are addressed, the ITC will apply a more stringent standard than applied in an *inter partes* review (factor 4). Pet. 71; *see Finitiv, Inc.*, Paper 11 at 8 (indicating a factor that may be considered is whether an ITC investigation will decide "the same or substantially similar issues"). The Delaware Litigation is stayed with no trial date set, but the ITC Investigation will likely end before we issue a final written decision (factors 1, 2). *Id.* at 70; Prelim. Resp. 35–36; *see* Ex. 2001 (delaying the Initial Determination).[15] On the facts of this proceeding, including the strength of the merits discussed in Section II, above (factor 6), we determine that efficiency and integrity of the system are best served by instituting review.

[15] We note that neither party has informed the panel that the Initial Determination has issued nor when the full Commission will issue its determination.

IV. CONCLUSION

After considering all the evidence and arguments presently before us, we determine Petitioner has established a reasonable likelihood that it would prevail with respect to at least one of the Challenged Claims. Accordingly, we institute an *inter partes* review on all Challenged Claims.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review is instituted as to claims 1–4, 6, 19–22, and 26 (the Challenged Claims) of the '661 patent; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial, which commences on the entry date of this Order.

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