

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

---

ALIGN TECHNOLOGY, INC.,	:	
	:	
Plaintiff,	:	
	:	
v.	:	C.A. No. 17-1647-LPS-CJB
	:	
3SHAPE A/S, et al.,	:	
	:	
Defendants.	:	

---

John W. Shaw, Karen E. Keller, Jeff Castellano, SHAW KELLER LLP, Wilmington, DE

Blair M. Jacobs, Christina A. Ondrick, Elizabeth Bernard, John S. Holley, Mark Consilvio,  
PAUL HASTINGS LLP, Washington, DC

Thomas A. Counts, PAUL HASTINGS LLP, San Francisco, CA

Attorneys for Plaintiff.

Geoffrey Grivner, BUCHANAN INGERSOLL & ROONEY PC, Wilmington, DE

S. Lloyd Smith, Kimberly E. Coghill, Andrew R. Cheslock, David W.H. Leibovitch,  
BUCHANAN INGERSOLL & ROONEY PC, Alexandria, VA

Attorneys for Defendants.

---

**MEMORANDUM OPINION**

June 6, 2019  
Wilmington, Delaware



**STARK, U.S. District Judge:**

Plaintiff Align Technology, Inc. (“Plaintiff”) filed suit against Defendants 3Shape A/S, 3Shape, Inc., and 3Shape Trios A/S (“Defendants”) on November 14, 2017, alleging infringement of U.S. Patent Nos. 9,566,132 (the “’132 Patent”), 8,545,221 (the “’221 Patent”), 8,092,215 (the “’215 Patent”), 7,056,115 (the “’115 Patent”), 8,734,149 (the “’149 Patent”), and 6,227,850 (the “’850 Patent”). (D.I. 1) The patents-in-suit relate to various aspects of teeth analysis and smile correction.

Presently before the Court is the issue of claim construction. The parties completed briefing on February 27, 2019. (D.I. 100, 102, 110, 112) The Court held a claim construction hearing on April 4, 2019. (D.I. 131) (“Tr”)

## **I. LEGAL STANDARDS**

The ultimate question of the proper construction of a patent is a question of law. *See Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 837 (2015) (citing *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 388-91 (1996)). “It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (citation and internal quotation marks omitted). “[T]here is no magic formula or catechism for conducting claim construction.” *Id.* at 1324. Instead, the court is free to attach the appropriate weight to appropriate sources “in light of the statutes and policies that inform patent law.” *Id.*

“[T]he words of a claim are generally given their ordinary and customary meaning. . . . [which is] the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” *Id.* at 1312-13 (internal citations and quotation marks omitted). “[T]he ordinary meaning of a claim term is its meaning to the ordinary artisan after reading the entire patent.” *Id.* at 1321

(internal quotation marks omitted). The patent “specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.” *Vitronics Corp. v. Conceptoronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).

While “the claims themselves provide substantial guidance as to the meaning of particular claim terms,” the context of the surrounding words of the claim also must be considered. *Phillips*, 415 F.3d at 1314. Furthermore, “[o]ther claims of the patent in question, both asserted and unasserted, can also be valuable sources of enlightenment . . . . [b]ecause claim terms are normally used consistently throughout the patent.” *Id.* (internal citation omitted).

It is likewise true that “[d]ifferences among claims can also be a useful guide . . . . For example, the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim.” *Id.* at 1314-15 (internal citation omitted). This “presumption is especially strong when the limitation in dispute is the only meaningful difference between an independent and dependent claim, and one party is urging that the limitation in the dependent claim should be read into the independent claim.” *SunRace Roots Enter. Co., Ltd. v. SRAM Corp.*, 336 F.3d 1298, 1303 (Fed. Cir. 2003).

It is also possible that “the specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor’s lexicography governs.” *Phillips*, 415 F.3d at 1316. It bears emphasis that “[e]ven when the specification describes only a single embodiment, the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words or expressions of manifest exclusion or restriction.” *Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1372 (Fed. Cir. 2014) (quoting *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004)) (alteration in original) (internal quotation marks omitted).

In addition to the specification, a court “should also consider the patent’s prosecution history, if it is in evidence.” *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 980 (Fed. Cir. 1995), *aff’d*, 517 U.S. 370 (1996). The prosecution history, which is “intrinsic evidence,” “consists of the complete record of the proceedings before the [Patent and Trademark Office] and includes the prior art cited during the examination of the patent.” *Phillips*, 415 F.3d at 1317. “[T]he prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be.” *Id.*

“In some cases, . . . the district court will need to look beyond the patent’s intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period.” *Teva*, 135 S. Ct. at 841. “Extrinsic evidence consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises.” *Markman*, 52 F.3d at 980. For instance, technical dictionaries can assist the court in determining the meaning of a term to those of skill in the relevant art because such dictionaries “endeavor to collect the accepted meanings of terms used in various fields of science and technology.” *Phillips*, 415 F.3d at 1318. In addition, expert testimony can be useful “to ensure that the court’s understanding of the technical aspects of the patent is consistent with that of a person of skill in the art, or to establish that a particular term in the patent or the prior art has a particular meaning in the pertinent field.” *Id.* Nonetheless, courts must not lose sight of the fact that “expert reports and testimony [are] generated at the time of and for the purpose of litigation and thus can suffer from bias that is not present in intrinsic evidence.” *Id.* Overall, while extrinsic evidence “may be useful to the court,” it is “less reliable” than intrinsic evidence, and its consideration “is

unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence.” *Id.* at 1318-19. Where the intrinsic record unambiguously describes the scope of the patented invention, reliance on any extrinsic evidence is improper. *See Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1308 (Fed. Cir. 1999) (citing *Vitronics*, 90 F.3d at 1583).

Finally, “[t]he construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.” *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998). It follows that “a claim interpretation that would exclude the inventor’s device is rarely the correct interpretation.” *Osram GmbH v. Int’l Trade Comm’n*, 505 F.3d 1351, 1358 (Fed. Cir. 2007) (quoting *Modine Mfg. Co. v. U.S. Int’l Trade Comm’n*, 75 F.3d 1545, 1550 (Fed. Cir. 1996)).

**I. CONSTRUCTION OF DISPUTED TERMS<sup>1</sup>**

**A. The ’850 Patent**

**1. “Updating/Update”<sup>2</sup>**

<b>Plaintiff</b>
No construction necessary, but if necessary: changing/change
<b>Defendants</b>
animating/animate
<b>Court</b>
No construction necessary

Defendants seek to replace the term “updating/update” with “animating/animate” – the latter being defined as “[t]he process of displaying a sequential series of still images to achieve a motion effect.” (D.I. 100-1) Defendants point out that the ’850 Patent repeatedly uses “animating/animate” rather than “updating/update” throughout the specification. (D.I. 100

---

<sup>1</sup> The Court will also adopt the parties agreed-upon constructions.

<sup>2</sup> This term appears in claims 1 and 20 of the ’850 Patent.

at 3-5) Plaintiff responds that “animate” “may improperly imply that the updating of the graphical representation must be smooth,” which would improperly exclude some embodiments. (D.I. 102 at 5-6) The Court agrees with Plaintiff.

Defendants’ proposed construction would improperly exclude certain embodiments. “Animate” implies displaying images in a sequential, chronological order (akin to video playback) to achieve a motion effect. (D.I. 100-1) The specification, however, describes the ability not only to “play” an animation, but also to “step forward” or “step back” through a series of images, “one key frame or treatment step at a time” (within an “animation routine”), to “allow the clinician to jump immediately to the final image or initial image.” ’850 Patent, col. 18 ll. 16-37 (internal reference numbers omitted). “Updating/update” adequately captures such features, while “animating/animate” may not.<sup>3</sup>

Defendants argue that “update” is confusing and “leads to the question of what exactly results” from such a process, but those same questions arise from “animate.” (D.I. 100 at 3) Nor is the Court persuaded that dependent claim 14, which recites “the animation” without antecedent basis, necessitates reading “animate/animating” into independent claim 1, given the persuasive value of the other intrinsic evidence and arguments made by Plaintiff.

---

<sup>3</sup> Defendants respond that there is no evidence “updating” was intended to cover flipping through still images, as such “non-fluid displays” do not “display [] the position of the teeth along the treatment path.” (D.I. 110 at 2) (quoting ’850 Patent, cl. 1) The Court is persuaded, however, that “updating” does cover flipping through still images in a non-sequential or non-chronological manner. In the Court’s view, the claim’s recitation of “the position” (as compared to “the change in position”) suggests the claim is describing single points or frames “along” the path. *See* ’850 Patent, cl. 1 (“updating the graphical representation [to display] **the position** of the teeth along the path”) (emphasis added).

**B. The '115 and '149 Patents**

**2. “scale/scaling/scaled digital teeth”<sup>4</sup>**

<b>Plaintiff</b> No construction necessary, but if necessary: enlarging or shrinking
<b>Defendants</b> Isotropically enlarging or shrinking an object by a scale factor (i.e., where the scale factor is the same in all directions); digital, isotropically scaled representation of a patient’s teeth.
<b>Court</b> No construction necessary

Defendants seek to read in the limitation that any scaling must be “isotropic” (i.e., the same in all directions). (D.I. 100 at 9) Defendants’ theory rests on a series of disclosures in the specification that associate “scaling” with the entire object, rather than a portion of the object. (*Id.*) However, none of the cited portions of the specification (or any other) state that scaling must be equal in all directions, even if applied to the entire object. (*Id.*; Tr. at 25-26) In fact, nothing in the claims precludes the entire tooth model from being scaled along a single axis. Without any other intrinsic or extrinsic support for Defendants’ position, it would be improper to read Defendants’ limitation into the claims. Having reached that conclusion, the Court finds that no construction of this term is necessary.

**3. “virtual object(s)”<sup>5</sup>**

<b>Plaintiff</b> Virtual orthodontic appliance(s)
<b>Defendant</b> No construction necessary
<b>Court</b> No construction necessary

<sup>4</sup> This term appears in claims 18 and 20 of the '115 Patent, and claims 13, 15, and 20 of the '149 Patent.

<sup>5</sup> This term appears in claim 18 of the '115 Patent, and claims 13, 20, and 21 of the '149 Patent.

Plaintiff seeks to limit “virtual objects” to “virtual orthodontic appliances” based on the parties’ agreement that the “plurality of objects” are “orthodontic objects,” and that the specification repeatedly refers to “virtual brackets.” (D.I. 102 at 14-15) Defendants argue that the claims’ repeated reference to “orthodontic objects” indicates the patentee chose not to limit the claims in the manner Plaintiff proposes. (D.I. 100 at 12) Furthermore, Plaintiff’s proposed construction would violate the doctrine of claim differentiation, as claim 16 of the ’149 Patent claims “virtual objects [that] comprise 3D virtual models of physical brackets’ . . . *i.e.* the ‘virtual orthodontic appliances.’” (D.I. 100 at 12-13) (quoting ’149 Patent, cl. 13)

Neither party disputes that “virtual objects” are associated with a patient’s (digitized) teeth. (D.I. 100 at 12; D.I. 102 at 14; ’115 Patent, cl. 18; ’149 Patent, cl. 13) Nonetheless, the Court agrees with Defendants that the repeated use of “orthodontic object” throughout the specification and claims strongly suggests that the patentee knew how to claim a (virtual) “orthodontic object,” and chose not to do so. *See Takeda Pharm. Co. Ltd. v. Zydus Pharms. USA, Inc.*, 743 F.3d 1359, 1365 (Fed. Cir. 2014) (refusing to limit claim when inventors knew to include those limitations “when they so desired.”).

Nor is the Court persuaded to limit the term to “appliance,” which has a narrower scope than “object.” For support, Plaintiff points to portions of the specification that associate a “virtual object” with a “virtual [orthodontic] bracket.” (D.I. 102 at 15) (citing ’149 Patent, col. 4 ll. 7-14; Figs. 3A-B) This teaching, however, does not associate “objects” with “appliances,” and Plaintiff does not argue that “objects” should be limited to the even narrower term “brackets.” (Tr. at 53) Rather, the ’149 Patent specification distinguishes between “object” and “appliance.” *See* ’149 Patent, col. 8 ll. 42-56 (“A *virtual object* can be placed on the superimposed scaled tooth. A *virtual object* can be placed at a predetermined location and

orientation in the superimposed scaled tooth model. The tooth model can be removed from the scaled tooth model to form a *virtual appliance.*”) (emphasis added).

The Court concludes no construction is necessary, as the term is used consistent with its plain and ordinary meaning.

**B. The '215, '221, and '132 Patents**

**2. “image”<sup>6</sup>**

<b>Plaintiff</b>
No construction necessary, but if necessary: two-dimensional or three-dimensional image
<b>Defendant</b>
Two-dimensional image
<b>Court</b>
two-dimensional or three-dimensional image

The parties dispute whether an “image” is limited to two-dimensional representations or also includes three-dimensional models. (D.I. 100 at 15) Defendants cite several portions of the Patents<sup>7</sup> that discuss using an “image” in ways that are purportedly unachievable in three dimensions. (*See, e.g., id.* at 15-16 (arguing '221 Patent’s focus on “boundary area” connotes two dimensions, and “superimpos[ing]” image cannot occur in three dimensions); *id.* at 17-18 (arguing '215 and '132 Patents’ “frontal image” cannot be in three dimensions, and “images” are claimed separately from “models”)) Plaintiff responds by identifying several portions of each Patent that, it argues, show an image can be two *or* three dimensional. (D.I. 102 at 17-18)

---

<sup>6</sup> This term appears in claim 1 of the '215 Patent, claims 1, 8-10, 14, 16, 17, and 19-22 of the '221 Patent, and claims 1, 9, and 17 of the '132 Patent.

<sup>7</sup> The '132 Patent is a continuation of the '221 Patent, which is a continuation of the '215 Patent. The three Patents share substantially similar, but not identical, specifications.

The Patents' specifications do little to clarify the dispute.<sup>8</sup> Most of their discussions of "images" are limited to two-dimensional representations. *See* '221 Patent, col. 2 l. 51-col. 6 l. 32 (discussing "images" in context of photographs and photo-editing software). There is some suggestion, though, that the term does not preclude three-dimensional models. *See id.* at col. 7 l. 66-col. 8 l. 4 ("FIG. 3 illustrates an embodiment of an *image* of a patient's teeth . . . [which are] photographed and/or *scanned*." (emphasis added); *but see* col. 8 ll.13-19 ("In some embodiments, a number of images are taken . . . from a number of angles and perspectives. These *images can be used in combination with* an impression of the patient's teeth and/or a digital *model*") (emphasis added).

Extrinsic evidence also does not provide a clear answer. For instance, Merriam-Webster defines "image" as "a *visual representation* of something: such as (1): a likeness of an object produced on a *photographic* material; (2): a *picture* produced on an electronic display (such as a television or computer screen)" (emphasis added). *See also Duncan Parking Techs., Inc. v. IPS Group, Inc.*, 914 F.3d 1347, 1364 (Fed. Cir. 2019) (turning to dictionary for "reasonable meaning" when specification provides little guidance). This definition, like the specification, neither endorses nor precludes images being three-dimensional representations.

Ultimately, the Court is not persuaded that the term precludes three-dimensional representations. Hence, the Court the Court will adopt Plaintiff's alternative construction.

---

<sup>8</sup> The Court is not persuaded that the Patents' references to "boundary area" or "superimposing" has any impact on the construction; a three-dimensional representation can produce these features (e.g., a three-dimensional model can be flattened to a two-dimensional projection to find the "boundary area," and Defendants offer no persuasive reason why superimposing cannot occur in three-dimensional space).

### **III. CONCLUSION**

The Court will construe the disputed terms as explained above. An appropriate Order follows.

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

---

ALIGN TECHNOLOGY, INC.,	:	
	:	
Plaintiff,	:	
	:	
v.	:	C.A. No. 17-1647-LPS-CJB
	:	
3SHAPE A/S, et al.,	:	
	:	
Defendants.	:	

---

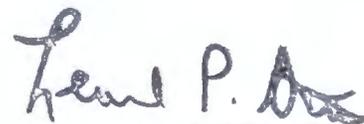
**ORDER**

At Wilmington this **6th** day of **June, 2019**:

For the reasons set forth in the Memorandum Opinion issued this date,

**IT IS HEREBY ORDERED** that the following claim terms of U.S. Patent Nos. 9,566,132 (the “132 Patent”), 8,545,221 (the “221 Patent”), 8,092,215 (the “215 Patent”), 7,056,115 (the “115 Patent”), 8,734,149 (the “149 Patent”), and 6,227,850 (the “850 Patent”), are construed as follows:

<b>Claim Term</b>	<b>Court's Construction</b>
<b>updating/update</b> [claims 1 and 20 of the '850 Patent]	No construction necessary
<b>scale/scaling/scaled digital teeth</b> [claims 18 and 20 of the '115 Patent; claims 13, 15, and 20 of the '149 Patent]	No construction necessary
<b>virtual object(s)</b> [claim 18 of the '115 Patent; claims 13, 20, and 21 of the '149 Patent]	No construction necessary
<b>image</b> [claim 1 of the '215 Patent; claims 1, 8-10, 14, 16, 17, and 19-22 of the '221 Patent; claims 1, 9, and 17 of the '132 Patent]	two-dimensional or three-dimensional image




---

 UNITED STATES DISTRICT JUDGE