IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

ALIGN TECHNOLOGY, INC., Plaintiff, v. 3SHAPE A/S and 3SHAPE INC., Defendants.	:	C.A. No. 17-1646-LPS-CJB
ALIGN TECHNOLOGY, INC., Plaintiff, v. 3SHAPE A/S and 3SHAPE INC., Defendants.	:	C.A. No. 17-1647-LPS-CJB

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MEMORANDUM OPINION

September 7, 2018
Wilmington, Delaware

STARK, U.S. District Judge:

Plaintiff Align Technology, Inc. ("Align") filed four separate suits against Defendants 3Shape A/S and 3Shape Inc. (together, "3Shape" or "Defendants") on November 14, 2017. On February 2, 2018, 3Shape moved to dismiss the complaints in Civil Action Nos. 17-1646-LPS-CJB and 17-1647-LPS-CJB (the "Complaints") for failure to state a claim, pursuant to Federal Rule of Civil Procedure 12(b)(6), based on its contention that Align failed to plausibly allege direct, indirect, and willful infringement of all asserted patents and that certain of the asserted patents are not directed to patent-eligible subject matter under 35 U.S.C. § 101. (C.A. No. 17-1646-LPS-CJB D.I. 21; C.A. No. 17-1647-LPS-CJB D.I. 21) 3Shape's motions are fully briefed and the Court heard oral argument on July 20, 2018. (*See* D.I. 55 ("Tr."))

For the reasons stated below, the Court will grant in part and deny in part Defendants' motions to dismiss.

I. BACKGROUND

The parties are competitors in the field of intraoral scanners and software. (D.I. 1 at ¶ 29) Align is a global medical device company selling products such as the iTero intraoral scanner and OrthoCAD software, both of which "help dental and orthodontic professionals deliver effective, cutting-edge dental and orthodontic options to their patients." (D.I. 1 at ¶ 23; D.I. 25 at 2) 3Shape "designs, develops, manufactures, and markets the TRIOS and TRIOS 3 scanners, as well as related Dental Software products" such as the Implant Studio, Ortho System, Ortho Analyzer, Ortho Planner, Appliance Designer, and Ortho Control Patent. (D.I. 1 at ¶ 28; D.I. 25 at 2)

On November 14, 2017, Align filed four actions against 3Shape in this District. The

patents asserted in each action are as follows:

> C.A. No. 17-1646-LPS-CJB: United States Patent Nos. 9,510,757; 7,112,065 ("'065 patent"); 9,451,873 ("'873 patent"); 9,299,192; 9,427,916; 8,454,364; and 8,845,330. (C.A. No. 17-1646-LPS-CJB D.I. 1 at ¶¶ 16-22)
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> C.A. No. 17-1647-LPS-CJB: U.S. Patent Nos. 9,566,132; 8,545,221; 8,092,215; 7,056,115; 8,734,149 ("'149 patent"); and 6,227,850 ("'850 patent"). (C.A. No. 17-1647-LPS-CJB D.I. 1 at ¶¶ 16-21)
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> C.A. No. 17-1648-LPS-CJB: U.S. Patent Nos. 7,092,107 ("'107 patent"); 9,615,901; 8,638,448; 8,638,447; 6,845,175; and 6,334,853. (C.A. No. 17-1648-LPS-CJB D.I. 1 at ¶¶ 16-21)
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> C.A. No. 17-1649-LPS-CJB: U.S. Patent Nos. 6,948,931; 6,685,470; 6,514,074 ("'074 patent"); 8,363,228; 8,451,456; 8,675,207; and 9,101,433. (C.A. No. 17-1649-LPS-CJB D.I. 1 at ¶¶ 16-22)

In total, Align asserts 26 patents, all of which relate to "dental scanning technology." (C.A. No. 17-1646-LPS-CJB D.I. 22 at 1)

Align also filed two complaints with the International Trade Commission ("ITC"), involving 11 of the 26 patents also at issue here. The ITC instituted investigations as to those 11 patents on December 14, 2017. (C.A. No. 17-1646-LPS-CJB D.I. 15 at 1) The 11 patents involved in the ITC proceedings include all but one of the patents at issue in C.A. No. 17-1648-LPS-CJB (the '107 patent) and all but one at issue in C.A. No. 17-1649-LPS-CJB (the '074 patent).

3Shape moved to stay all four District Court actions pending the ITC investigations. All of the patents subject to the ITC investigations were subject to a mandatory stay; Align stipulated on January 23, 2018 to a stay of both C.A. Nos. 17-1648-LPS-CJB and 17-1649-LPS-CJB as to

all claims, pending resolution of the ITC investigations. (C.A. No. 17-1648-LPS-CJB D.I. 19; C.A. No. 17-1649-LPS-CJB D.I. 20) 3Shape's motions to stay as to C.A. Nos. 17-1646-LPS-CJB and 17-1647-LPS-CJB remained pending.[1]

On February 1, 2018, 3Shape moved to dismiss the Complaints in C.A. Nos. 17-1646-LPS-CJB and 17-1647-LPS-CJB for failing to plausibly allege direct, indirect, and willful infringement of any of the 13 patents asserted in those actions (hereinafter, the "asserted patents" or "patents-in-suit"). (C.A. No. 17-1646-LPS-CJB D.I. 21; C.A. No. 17-1647-LPS-CJB D.I. 21) 3Shape's motions further sought to dismiss patent infringement claims as to some of the asserted patents on the grounds that they claim ineligible subject matter under Section 101. Specifically, this portion of 3Shape's motions is directed to the '873 and '065 patents in C.A. No. 17-1646-LPS-CJB and the '850 and '149 patents in C.A. No. 17-1647-LPS-CJB.[2]

II. LEGAL STANDARDS

A. Rule 12(b)(6) Motion to Dismiss

Evaluating a motion to dismiss under Federal Rule of Civil Procedure 12(b)(6) requires the Court to accept as true all material allegations of the complaint. *See Spruill v. Gillis*, 372 F.3d 218, 223 (3d Cir. 2004). "The issue is not whether a plaintiff will ultimately prevail but whether the claimant is entitled to offer evidence to support the claims." *In re Burlington Coat*

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[1] By separate Memorandum Order issued concurrently with this Memorandum Opinion, the Court has denied 3Shape's motions to stay.

[2] The Court addresses both motions together because the content of the briefs, as they pertain to the plausibility of Align's allegations of direct, indirect, and willful infringement, are essentially the same, reflecting that the counts in the Complaints "follow a single format." (C.A. No. 17-1646-LPS-CJB D.I. 22 at 2; C.A. No. 17-1647-LPS-CJB D.I. 22 at 2) For simplicity, hereinafter the Court will cite to the documents filed in C.A. No. 17-1646-LPS-CJB unless otherwise indicated.

Factory Sec. Litig., 114 F.3d 1410, 1420 (3d Cir. 1997) (internal quotation marks omitted). Thus, the Court may grant such a motion to dismiss only if, after "accepting all well-pleaded allegations in the complaint as true, and viewing them in the light most favorable to plaintiff, plaintiff is not entitled to relief." *Maio v. Aetna, Inc.*, 221 F.3d 472, 481-82 (3d Cir. 2000) (internal quotation marks omitted).

A well-pleaded complaint must contain more than mere labels and conclusions. *See Ashcroft v. Iqbal*, 556 U.S. 662, 678 (2009); *Bell Atl. Corp. v. Twombly*, 550 U.S. 544, 555 (2007). A plaintiff must plead facts sufficient to show that a claim has substantive plausibility. *See Johnson v. City of Shelby*, 135 S. Ct. 346, 347 (2014). A complaint may not be dismissed, however, for imperfect statements of the legal theory supporting the claim asserted. *See id.* at 346.

"To survive a motion to dismiss, a civil plaintiff must allege facts that 'raise a right to relief above the speculative level on the assumption that the allegations in the complaint are true (even if doubtful in fact).'" *Victaulic Co. v. Tieman*, 499 F.3d 227, 234 (3d Cir. 2007) (quoting *Twombly*, 550 U.S. at 555). A claim is facially plausible "when the plaintiff pleads factual content that allows the court to draw the reasonable inference that the defendant is liable for the misconduct alleged." *Iqbal*, 556 U.S. at 678. At bottom, "[t]he complaint must state enough facts to raise a reasonable expectation that discovery will reveal evidence of [each] necessary element" of a plaintiff's claim. *Wilkerson v. New Media Tech. Charter Sch. Inc.*, 522 F.3d 315, 321 (3d Cir. 2008) (internal quotation marks omitted).

The Court is not obligated to accept as true "bald assertions," *Morse v. Lower Merion Sch. Dist.*, 132 F.3d 902, 906 (3d Cir. 1997) (internal quotation marks omitted), "unsupported

conclusions and unwarranted inferences," *Schuylkill Energy Res., Inc. v. Pa. Power & Light Co.*, 113 F.3d 405, 417 (3d Cir. 1997), or allegations that are "self-evidently false," *Nami v. Fauver*, 82 F.3d 63, 69 (3d Cir. 1996).

B. Patentable Subject Matter

Under 35 U.S.C. § 101, "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." There are three exceptions to § 101's broad patent-eligibility principles: "laws of nature, physical phenomena, and abstract ideas." *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980). "Whether a claim recites patent eligible subject matter is a question of law which may contain disputes over underlying facts." *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1368 (Fed. Cir. 2018).

In *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 132 S. Ct. 1289 (2012), the Supreme Court set out a two-step "framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts." *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014). First, courts must determine if the claims at issue are directed to a patent-ineligible concept ("step one"). *See id.* If so, the next step is to look for an "'inventive concept' – i.e., an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself" ("step two"). *Id.* The two steps are "plainly related" and "involve overlapping scrutiny of the content of the claims." *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016).

At step one, "the claims are considered in their entirety to ascertain whether their

character ***as a whole*** is directed to excluded subject matter." *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1346 (Fed. Cir. 2015) (emphasis added); *see also Affinity Labs of Texas, LLC v. DIRECTV, LLC*, 838 F.3d 1253, 1257 (Fed. Cir. 2016) ("*Affinity Labs I*") (stating first step "calls upon us to look at the 'focus of the claimed advance over the prior art' to determine if the claim's 'character as a whole' is directed to excluded subject matter").

In conducting the step one analysis, courts should not "oversimplif[y]" key inventive concepts or "downplay" an invention's benefits. *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1337-38 (Fed. Cir. 2016); *see also McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1313 (Fed. Cir. 2016) ("[C]ourts 'must be careful to avoid oversimplifying the claims' by looking at them generally and failing to account for the specific requirements of the claims.") (quoting *In re TLI Commc'ns LLC Patent Litig.*, 823 F.3d 607, 611 (Fed. Cir. 2016)).

At step two, courts must "look to both the claim as a whole and the individual claim elements to determine whether the claims contain an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the ineligible concept itself." *McRo*, 837 F.3d at 1312 (internal brackets and quotation marks omitted). The "standard" step two inquiry includes consideration of whether claim elements "simply recite 'well-understood, routine, conventional activit[ies].'" *Bascom Glob. Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1350 (Fed. Cir. 2016) (quoting *Alice*, 134 S. Ct. at 2359). "Simply appending conventional steps, specified at a high level of generality, [is] not ***enough*** to supply an inventive concept." *Alice*, 134 S. Ct. at 2357 (internal quotation marks omitted; emphasis in original).

However, "[t]he inventive concept inquiry requires more than recognizing that each claim

element, by itself, was known in the art." *Bascom*, 827 F.3d at 1350. In *Bascom*, the Federal Circuit held that "the limitations of the claims, taken individually, recite generic computer, network and Internet components, none of which is inventive by itself," but nonetheless determined that an ***ordered combination*** of these limitations was patent-eligible under step two. *Id.* at 1349.

The Federal Circuit recently elaborated on the step two standard, stating that "[t]he question of whether a claim element or combination of elements is well-understood, routine and conventional to a skilled artisan in the relevant field is a question of fact. Any fact, such as this one, that is pertinent to the invalidity conclusion must be proven by clear and convincing evidence." *Berkheimer*, 881 F.3d at 1368; *see also Aatrix Software, Inc. v. Green Shades Software, Inc.*, 882 F.3d 1121, 1128 (Fed. Cir. 2018) ("While the ultimate determination of eligibility under § 101 is a question of law, like many legal questions, there can be subsidiary fact questions which must be resolved en route to the ultimate legal determination."); *Automated Tracking Sols., LLC v. Coca-Cola Co.*, 723 F. App'x 989, 995 (Fed. Cir. 2018) ("We have held that 'whether a claim element or combination of elements is well-understood, routine and conventional to a skilled artisan in the relevant field is a question of fact.'") (quoting *Berkheimer*, 881 F.3d at 1368).

"Whether a particular technology is well-understood, routine, and conventional goes beyond what was simply known in the prior art. The mere fact that something is disclosed in a piece of prior art, for example, does not mean it was well-understood, routine, and conventional." *Berkheimer*, 881 F.3d at 1369; *see also Exergen Corp. v. Kaz USA Inc.*, 725 F. App'x 959, 965 (Fed. Cir. 2018) ("Something is not well-understood, routine, and conventional merely because it

is disclosed in a prior art reference. There are many obscure references that nonetheless qualify as prior art.").

As part of the step two "inventive concept" inquiry, the Federal Circuit has looked to the claims as well as the specification. *See Affinity Labs of Texas, LLC v. Amazon.com Inc.*, 838 F.3d 1266, 1271 (Fed. Cir. 2016) ("*Affinity Labs II*") ("[N]either the claim nor the specification reveals any concrete way of employing a customized user interface."). Still, it is not enough just to disclose the improvement in the specification; instead, the Court's task becomes to "analyze the asserted claims and determine whether they ***capture these improvements***." *Berkheimer*, 881 F.3d at 1369 (emphasis added). In other words, "[t]o save a patent at step two, an inventive concept must be ***evident in the claims***." *RecogniCorp, LLC v. Nintendo Co., Ltd.*, 855 F.3d 1322, 1327 (Fed. Cir. 2017) (emphasis added); *see also Alice*, 134 S. Ct. at 2357 ("[W]e must examine the ***elements of the claim*** to determine whether it contains an 'inventive concept.'") (emphasis added); *Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1149 (Fed. Cir. 2016) ("The § 101 inquiry must focus on the language of the Asserted Claims themselves.").

At both steps one and two, it is often useful for the Court to compare the claims at issue with claims that have been considered in the now considerably large body of decisions applying § 101. *See Amdocs (Israel) Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288, 1294 (Fed. Cir. 2016).

Finally, as a procedural matter, the Federal Circuit has observed frequently that § 101 disputes may be amenable to resolution on motions for judgment on the pleadings, motions to dismiss, or summary judgment. *See, e.g.*, *Berkheimer*, 881 F.3d at 1368 ("Whether a claim recites patent eligible subject matter is a question of law which may contain disputes over underlying facts. Patent eligibility has in many cases been ***resolved on motions to dismiss or***

summary judgment. Nothing in this decision should be viewed as casting doubt on the propriety of those cases. When there is no genuine issue of material fact regarding whether the claim element or claimed combination is well-understood, routine, conventional to a skilled artisan in the relevant field, this issue can be decided on summary judgment as a matter of law.") (emphasis added); *buySAFE, Inc. v. Google, Inc.*, 765 F.3d 1350, 1351-52 (Fed. Cir. 2014) (affirming grant of Rule 12(c) motion for judgment on pleadings for lack of patentable subject matter).

IV. DISCUSSION

A. Plausibly Pleaded Allegations of Infringement

3Shape challenges the sufficiency of Align's allegations regarding direct, indirect, and willful infringement of the asserted patents on numerous grounds. The Court will address each in turn.

1. Direct Infringement of All Asserted Patents

In order to "survive a motion to dismiss under Rule 12(b)(6), a complaint must contain sufficient factual matter, accepted as true, to state a claim to relief that is plausible on its face." *Nalco Co. v. Chem-Mod, LLC*, 883 F.3d 1337, 1347 (Fed. Cir. 2018) (internal quotation marks and citation omitted). This does not require that a plaintiff "'prove its case at the pleading stage.'" *Id.* at 1350 (citation omitted). Additionally, the "'Federal Rules of Civil Procedure do not require a plaintiff to plead facts establishing that each element of an asserted claim is met.'" *Id.* (citation omitted). Instead, the complaint must merely "place the potential infringer . . . on notice of what activity . . . is being accused of infringement." *Id.* (internal quotation marks and citation omitted).

3Shape argues that the allegations of direct infringement in the Complaints are insufficient because they "fail to tie the Accused Products or actions of any part to the elements of the asserted patent claims." (D.I. 22 at 5) Align responds that its allegations give 3Shape "fair notice of what activity is being accused of infringement" and that "[n]o greater detail is required." (D.I. 25 at 6) The Court concludes that Align has sufficiently alleged direct infringement.

Each of the counts in the Complaints follows essentially the same format: reciting the language of a representative claim, alleging that the accused products practice that claim, and providing examples drawn from "product documentation, demonstration and informational videos, user manuals, and/or promotional materials" demonstrating the alleged use of some aspect of the accused product of the products performing at least some of the requirements of the representative claim. For example, Count Two in C.A. 17-1646-LPS-CJB alleges infringement of at least claim 28 the '192 patent. (D.I. 1 at ¶ 49) As described in that Complaint, "[t]he '192 patent is directed to modifying a virtual model of a physical structure with additional 3D data obtained from the physical structure to provide a modified virtual model." (*Id.* at ¶ 48) That paragraph goes on to recite the language of claim 28, which claims:

> **28.** A system to generate a modified virtual model of a physical structure, comprising:
>
> a display to display images of said modified virtual model; and
>
> a computer system operatively connected to the display and comprising a program that, when executed by the computer system, causes the computer system to, display an image of a first virtual model generated from
>
> first 3D scan data of the physical structure on the display,

> wherein said first virtual model fails to properly represent a first physical part of the physical structure,
>
> receive user input identifying at least a portion of the first virtual model that is desired to be modified, the user input generated by user interaction with the image of the first virtual model on the display,
>
> receive a second virtual model of the physical structure, the second virtual model generated from second 3D scan data of the physical structure, and
>
> modify the first virtual model by replacing at least said identified portion of the first virtual model with a corresponding portion of the second virtual model, thereby providing the modified virtual model.

('192 patent, cl. 28; *see also* D.I. 1 at ¶ 48) The next paragraph states that the accused products infringe at least that claim, and proceeds to reiterate the requirements of the claim. (D.I. 1 at ¶ 49)

The Complaint then includes two images drawn from marketing videos for the accused products that purport to show that the accused products practice claim 28. (*Id.* at 18-19) The first image depicts two graphical models of teeth side-by-side, the first being a representation of an area of teeth obscured by saliva and the second a representation of that same area without the saliva:

(*Id.* at 18) The second image shows a virtual representation of an area of teeth with digital artifacts, or areas that were not scanned properly. (*Id.* at 19) Text overlaying the image indicates that artifacts are trimmed away and the area is rescanned. (*Id.*)

The Court finds that the allegations and images described above are sufficient to place 3Shape on notice of what activity of its is being accused of infringement. *See Nalco Co.*, 883 F.3d at 1350. The first section of claim 28 requires a display, a computer system connected to that display, and a program that causes the system to display a 3D model. ('192 patent, col. 32:40-48) The computer, display, and 3D model are depicted in the second image above. Further limitations require a 3D scan of a structure that is displayed but fails to properly represent a part of the scanned structure. (*Id.*, col. 32:49-51) This is evident from the saliva obscuring the teeth in the first image and the artifacts in the second image. Still further limitations require user input to identify the improperly represented portion of the first model and that the improperly represented part of the first 3D scan is then replaced by a corresponding portion of a second scanned structure model. (*Id.*, col. 32:52-62) This is evident from the second image and its instruction that the artifacts from a scan can be fixed by being "trim[med] away" and then rescanning the structure at issue (here, teeth).

In the Court's view, Plaintiff's allegations are sufficient to give Defendants fair notice of how it is their accused products are alleged to infringe the asserted patents. *See Disc Disease Sols. Inc. v. VGH Sols., Inc.*, 888 F.3d 1256, 1260 (Fed. Cir. 2018) (finding allegations that accused products "meet 'each and every element of at least one claim of'" asserted patents, along with identifying accused products by name and attaching photos of product packaging and patents, sufficient to provide defendant with "fair notice of infringement of the asserted patents" where "case involve[d] a simple technology" and "[t]he asserted patents . . . consist of only four independent claims"). To require anything more at this stage of the case would require the equivalent of infringement contentions, which is more than the law demands. *See, e.g.*,

Transcript of Oral Argument Hearing dated Dec. 5, 2017, *Hanesbrands, Inc. v. Jacques Moret, Inc.*, Civil Action No. 17-595-LPS at 30-31 (hereinafter the "*Hanesbrands* Transcript") ("Essentially in my view, defendant asks for something analogous or akin to infringement contentions to be contained in the complaint. . . . And I'm not persuaded that the Supreme Court or the Federal Circuit or any other authority requires that that be done . . ."); *N. Star Innovations, Inc. v. Micron Tech., Inc.*, Civil Action No. 17-506-LPS-CJB, 2017 WL 5501489, at *3 (D. Del. Nov. 15, 2017) (explaining that sufficiently pleading direct infringement does not mean that "patentee will necessarily have to provide, along with its complaint, the equivalent of the detailed infringement charts that are called for by typical initial patent disclosures in this District").[3]

2. Direct Infringement of the Asserted Method Claims

3Shape further argues that Align's allegations regarding direct infringement of certain method claims are insufficiently pleaded. In order to be liable for direct infringement of a method claim, the alleged infringer "'must perform all the steps of the claimed method, either personally or through another acting under his direction or control.'" *Courtesy Prods., L.L.C. v. Hamilton Beach Brands, Inc.*, 73 F. Supp. 3d 435, 439 (D. Del. 2014) (quoting *Akamai Techs.,*

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[3] 3Shape also asserted for the first time in its reply brief in C.A. 17-1646-LPS-CJB that Count One (alleging infringement of the '757 patent) and Count Three (alleging infringement of the '065 patent) contain images that pre-date the priority date of the patents. (D.I. 29 at 2)

Align disputes that the cited material pre-dates the priority date of the patent, and that even if the product featured in the video does pre-date the patent, it is not necessarily an invalidating piece of prior art. (Tr. at 65-66)

The Court agrees that this argument presents a factual dispute not appropriate for resolution at the Rule 12(b)(6) stage. The Court is not in a position to assess the '757 patent's (or any other patent's) priority date, nor will it make a determination as to whether a piece of purported prior art is invalidating at this early stage of the case.

Inc. v. Limelight Networks, Inc., 692 F.3d 1301, 1307 (Fed. Cir. 2012)). The plaintiff must also specify "which entity is responsible for any particular infringing activity." *N. Star Innovations, Inc. v. Toshiba Corp.*, Civil Action No. 16-115-LPS-CJB, 2016 WL 7107230, at *2 (D. Del. Dec. 6, 2016); *see also M2M Sols. LLC v. Telic Commc'ns PLC*, Civil Action No. 14-1103-RGA, 2015 WL 4640400, at *3 (D. Del. Aug. 5, 2015).

Align has adequately pleaded direct infringement of the method claims identified above. As Align confirmed during argument, and as its Complaint indicates, Align is alleging that both of the Defendants did everything. (Tr. at 51) The allegations must at this stage, be taken as true. Time will tell if plaintiff can prove them.

3. Indirect Infringement

Indirect infringement consists of two different theories: induced infringement and contributory infringement. *See Courtesy Prods., L.L.C.*, 73 F. Supp. 3d at 440 (citing 35 U.S.C. § 271(b) & (c)). Under § 271(b), "whoever actively induces infringement of a patent shall be liable as an infringer." To prove induced infringement, the patentee "'must show direct infringement, and that the alleged infringer knowingly induced infringement and possessed specific intent to encourage another's infringement.'" *Princeton Dig. Image Corp. v. Ubisoft Entm't SA*, Civil Action No. 13-335-LPS-CJB, 2016 WL 6594076, at *3 (D. Del. Nov. 4, 2016) (quoting *Toshiba Corp. v. Imation Corp.*, 681 F.3d 1358, 1363 (Fed. Cir. 2012)) Contributory infringement under § 271(c) requires a patentee to demonstrate that the alleged infringer "has sold, offered to sell or imported into the United States 'a component of a patented machine, manufacture, combination or composition, or a material or apparatus for use in practicing a patented process . . . knowing the same to be especially made or especially adapted for use in an

infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use.'" *Id.*

To state a plausible claim for induced or contributory infringement, the plaintiff "must, *inter alia*, sufficiently allege some underlying act of direct infringement." *Varian Med. Sys., Inc. v. Elekta AB*, Civil Action No. 15-871-LPS, 2016 WL 3748772, at *3 (D. Del. July 12, 2016) (citing *Limelight Networks, Inc. v. Akamai Techs., Inc.*, 134 S. Ct. 2111, 2117 & n.3 (2014)). Additionally, for both types of indirect infringement, plaintiff must "allege facts allowing the reasonable inference that the defendant had knowledge of the patent-in-suit in the key time period, and that its products infringed that patent." *Princeton Dig. Image Corp.*, 2016 WL 6594076, at *4.

As already explained, Align has adequately alleged underlying acts of direct infringement. The Court now concludes Align has also adequately alleged Defendant's knowledge and intent.

The allegations Align asserts give rise to a plausible showing of 3Shape's pre-suit knowledge of the patents-in-suit, and can be fairly summarized as follows: (1) through knowledge of Align's intraoral scanners, which are covered by the patents-in-suit; (2) through its prior business dealings with Align and another intraoral scanner company (Cadent) acquired by Align in 2011; (3) through 3Shape's own patent prosecution activities, "wherein Align's patents at issue and/or family members were cited as prior art," including the '916, '364, '330, '757 patents; (4) through 3Shape's U.S. Food and Drug Section 510(k) premarket notification of intent to market the accused products; (5) through direct competition between 3Shape and Align, where 3Shape had the intent to directly compete with Align using the accused products; (6) through the small number of competitors in the market for intraoral scanners; and (7) because the

accused products are "knockoff products." (D.I. 1 at ¶¶ 29-30; D.I. 25 at 9-10 (citing D.I. 1 at ¶¶ 29-30, 35, 42))

3Shape points to authority supporting the proposition that none of these facts, standing alone, makes a finding of pre-suit knowledge plausible. (*See* D.I. 22 at 8-9 (citing cases); D.I. 26 at 6-7 (citing cases)) When viewed as a whole, however, Align's allegations here are sufficient. *See, e.g.*, *Elm 3DS Innovations, LLC v. Samsung Elecs. Co.*, 2015 WL 5725768, at *2-3 (D. Del. Sept. 29, 2015) (finding that allegations about patent's ubiquity in semi-conductor industry, combined with allegations that defendants received presentation regarding parent of patent in-suit at issue and had cited to four patents that shared specifications with that patent, made pre-suit knowledge allegation plausible).

4. Willful Infringement

In *Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 136 S. Ct. 1923, 1926 (2016), the Supreme Court abrogated the Federal Circuit's "objective recklessness" standard for willful infringement, adding that "[a] patent infringer's subjective willfulness, whether intentional or knowing, may warrant enhanced damages." The Court also explained that enhanced damages under 35 U.S.C. § 284 "should generally be reserved for egregious cases typified by willful misconduct." *Id.* at 1934.

3Shape argues that Align's willful infringement allegations are insufficient because: (1) Align fails to allege pre-suit knowledge of the patents-in-suit; and (2) Align has failed to include facts supporting its allegation that 3Shape acted "'in an egregious and wanton manner.'" (D.I. 22 at 12-13 (citing D.I. 1 at ¶ 42)) The Court has already concluded that Align's allegations of pre-suit knowledge are sufficient.

3Shape's remaining arguments, with respect to courts, including ones in this District,

have conflicting views as to the necessity of pleading egregious conduct in order to state a plausible claim of willful infringement. *Compare Valinge Innovation AB v. Halstead New England Corp.*, 2018 WL 2411218, at *6 (D. Del. May 29, 2018) (finding that "'egregiousness' should not be a part of the calculus for determining whether a patentee has set out a plausible claim of willful infringement"); *Bio-Rad Labs. Inc. v. Thermo Fisher Sci. Inc.*, 267 F. Supp. 3d 499, 501 (D. Del. 2017) ("At the pleading stage, it is not necessary to show that the case is egregious.") *with Varian Med. Sys., Inc.*, 2016 WL 3748772, at *8 ("[T]he [c]omplaint does not sufficiently articulate how the [defendants'] making, using, or offering for sale of the [accused product] actually amounted to an egregious case of infringement of the patent.").

This Court sides with those decisions that do not require allegations of egregiousness at the pleading stage. The issues of "willful infringement" and whether to enhance damages are two separate inquiries – the former being a question of fact (often for a jury), the latter a question of law for the Court. *See WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1341 & n.13 (Fed. Cir. 2016) ("[T]he factual components of the willfulness question should be resolved by the jury."); *see also Valinge Innovation AB*, 2018 WL 2411218, at *6-9. For willful infringement, then, a plaintiff need (only) plausibly allege that "the accused infringer: (1) knew of the patent-in-suit; (2) after acquiring that knowledge, it infringed the patent; and (3) in doing so, it knew, or should have known, that its conduct amounted to infringement of the patent." *Valinge Innovation AB*, 2018 WL 2411218, at *13. Align has adequately alleged each of these elements. The Court need not determine whether it has also adequately alleged egregious conduct (proof of which will be necessary to obtain enhanced damages).

Align has plausibly alleged a claim for willful infringement of the asserted patents here.

First, for the reasons discussed above, the Court found that Align sufficiently alleged pre-suit knowledge of the asserted patents. Additionally, it is alleged that 3Shape continued to sell "knockoff products" that infringed the asserted patents. (D.I. 25 at 13 (citing D.I. 1 at ¶ 42)) At this stage of the case, no further allegations are required.

B. Patentable Subject Matter Under Section 101

1. The '873 Patent

The '873 patent is entitled "Automatic Selection and Locking of Intraoral Images" and relates to a "method of locking intraoral images and generating a model based on both the locked images and the updated scans." (D.I. 1 at ¶ 78) Claim 1 of the '873 patent recites:

> **1.** A method, comprising:
>
> receiving an intraoral image of a first intraoral site;
>
> determining an identity of the first intraoral site;
>
> algorithmically performing the following by a processing device:
>
> > locking the intraoral image; and
> >
> > selecting, based at least in part on the identity of the first intraoral site, a portion of the intraoral image depicting a portion of the first intraoral site; and
> >
> > generating a model comprising the first intraoral site based at least in part on the locked intraoral image, wherein the portion of the locked intraoral image is used for a first region of the model, and wherein data from one or more additional intraoral images that also depict the portion of the first intraoral site is not used for the first region of the model.

a. Step One

At step one of the *Alice/Mayo* test, the question is whether the asserted claims are directed

to a patent-ineligible concept. "[A]ll inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas." *Mayo*, 132 S. Ct. at 1293. Thus, "an invention is not rendered ineligible for patent simply because it involves" a patent-ineligible concept. *Alice*, 134 S. Ct. at 2354. "Indeed, to preclude the patenting of an invention simply because it touches on something natural would 'eviscerate patent law.'" *Rapid Litig. Mgmt. Ltd. v. CellzDirect, Inc.*, 827 F.3d 1042, 1050 (Fed Cir. 2016) (quoting *Mayo*, 132 S. Ct. at 1293). "At step one, therefore, it is not enough to merely identify a patent-ineligible concept underlying the claim; we must determine whether that patent-ineligible concept is what the claim is 'directed to.'" *Id.*

3Shape argues that the claims of the '873 patent are directed to the abstract idea of "collecting, analyzing, and using data, without any improvement to a computer itself or another technical area." (D.I. 22 at 15; *see also* D.I. 29 at 11) Align responds that claim 1 of the '873 patent is instead "directed to an improved method for generating a model of an intraoral site."[4] The Court agrees with Align.

Claim 1 of the '873 patent purports to solve a problem with prior approaches to the generation of a model of an intraoral site, specifically by providing for the locking of a first image of an intraoral site so that subsequent scans do not interfere with that first image. (D.I. 25 at 18-19) As described in the specifications, a dental implant, such as a crown, is placed on a tooth that has been ground down to a stump. The border between that tooth's "unground" portion and the "ground" portion is called a "finish line." ('873 patent, col. 5:17-24) A good fit

[4] Prior to the hearing, the parties disputed whether claim 1 was representative. (*Compare* D.I. 25 at 15-16 *with* D.I. 29 at 11 n.2) At the hearing 3Shape agreed to limit its § 101 challenge (for now) to claim 1. (*See* Tr. at 73)

between the implant and the stump, along the finish line, is important to prevent infections and tooth decay. (*Id.*, col. 1:17-28) In order to ensure a good fit for the implant, a practitioner will create a model of the stump and surrounding intraoral area. To ensure a good scan of the finish line, the practitioner will wipe away blood and saliva from the stump and, "[i]n some instances, . . . insert a cord around the [stump] between the [stump] and the patient's gum." (*Id.*, col. 5:40-45) This cord holds the gum down so that the entire finish line is exposed for the first scan, however the gum "revert[s] back to its natural position, and in many cases collapse[s] back over the finish line, after a brief period." (*Id.*, col. 5:45-49)

A problem with prior art approaches is that additional scans taken after the first set of intraoral scans could degrade the quality of the finish line in the model. (*Id.*, col. 2:30-39) These additional scans were taken to ensure that the implant would fit inside the patient's mouth. (*Id.*, col. 5:64-66) However, the scans could also capture parts of the stump area captured by the first intraoral scans. When this happened, prior approaches would average the data received depicting the stump area with the first images of the stump area, which would "degrade the quality of the first tooth in the 3D model." (*Id.*, col. 2:34-39) The degradation in quality could cause the finish line, as depicted in the 3D model, to lack definition and make it impossible "to properly determine the finish line, and thus the margin of a restoration [i.e., the fit between the stump and the implant] may not be properly designed." (*Id.*, col. 1:22-28) Claim 1 of the '873 patent purportedly improved on these approaches "by automatically locking the images of the clean stump such that subsequent scans that may capture the unclean stump are ignored during the creation of the model." (D.I. 25 at 19) (citing '873 patent, cols. 5:66-6:3)

3Shape contends that Align's asserted improvement over prior approaches is not captured

in the claim language. (D.I. 29 at 12) Specifically, 3Shape argues that "[t]he claims fail to mention, much less require, an 'improved method for generating a model of an intraoral site,' and do not provide any explanation as to ***how*** such improvement might be accomplished." (*Id.* at 12-13; *See also generally Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat'l Ass'n*, 776 F.3d 1343, 1346 (Fed. Cir. 2014) ("We focus here on whether the claims of the asserted patents fall within the excluded category of abstract ideas."). The Court concludes that the asserted improvement is captured in the claim.

The asserted improvement is achieved by locking the first intraoral scan of a stump to prevent future scans that capture part of that same area from being combined with that first image and degrading its quality (making it harder to establish a clear finish line). (D.I. 25 at 19-20; '873 patent, cols. 1:24-28, 2:13-39) That asserted improvement is directly captured in claim 1: "A method, comprising . . . receiving an intraoral image of a first intraoral site; . . . locking the intraoral image; . . . and generating a model comprising the first intraoral site based at least in part on the locked intraoral image, wherein the portion of the locked intraoral image is used for a first region of the model, and wherein data from one or more additional intraoral images that also depict the portion of the first intraoral site is not used for the first region of the model." ('873 patent, cl. 1) Here, then, the claim is directed to that concept and not the abstract idea put forward by 3Shape.

Accordingly, 3Shape's motion will be denied with respect to § 101 and the '873 patent.[5]

2. The '065 Patent

The '065 patent, entitled "Method for Defining a Finish Line of a Dental Prosthesis",

[5] It is not necessary to address step 2.

provides "a method that enables a dental practitioner to define a finish line of a dental prosthesis of at least one tooth to be fitted over a tooth preparation." (D.I. 1 at ¶ 63) Claim 1 of the '065 patent recites:

> **1.** A computer-based prosthodontic method for enabling a dental practitioner to define a finish line of a dental prosthesis of at least one tooth to be fitted over a tooth preparation, comprising:
>
> (One) providing a three-dimensional (3D) digital data relating to the patient's dentition, said 3D data includes data representative of the surface topology of said preparation and its surroundings;
>
> (Two) generating first finish line data representative of at least a portion of said finish line and superimposing an image of said finish line on an image of said dentition;
>
> (Three)[]obtaining second finish line data determined on the basis of input received from a dental practitioner; and
>
> (Four) using said second finish line data to update said first finish line data and superimposing the updated data on the dentition image.

('065 patent, cl. 1)

a. Step One

3Shape argues that claim 1 of the '065 patent is directed to the "abstract concept of modifying a finish line of a dental prosthesis - - a concept well-known in the prior art." (D.I. 22 at 19) Specifically, 3Shape asserts that "claim 1 is directed . . . to nothing more than performing steps of this well-known process using basic computer functions." (*Id.*) Align counters that claim 1 "provides a novel way of obtaining a good finish line for placing a dental implant." (D.I. 25 at 22) The Court agrees with 3Shape.

As described in the specification, prior to the instant patent, a dentist would create a cast

of an "abutment tooth" (referred to in the '873 patent discussion as the stump) in order make an artificial crown for that tooth. ('065 patent, col. 1:15-25) The process entailed the dentist first cutting the tooth (down to a stump) and preparing two impressions and a wax bite of the patient's jaws. (*Id.*, col. 1:47-50) A technician would use those impressions and wax bite, along with instructions from the dentist, to create a cast. (*Id.*, col. 1:50-52) The cast version of the stump would be removed from the plaster cast to expose the finish line. (*Id.*, col. 1:52-55) The finish line was marked by the technician in ink, alternatively, a virtual 3D image of the cast was made and the technician marked the finish line on the 3-D version. (*Id.*, col. 1:55-63) At times, however, the finish line was "not clear and the transition between the cut area to the biological area [was] not well defined." (*Id.*, col. 2:6-8) In those instances, the technician would "either estimate himself where the line [was] or return[] the cast (or virtual 3D model) to the dentist for him to complete the finish line while in other cases the boundary was so blurred "that only the dentist himself [was] able to assess the cut area . . . and . . . define the finish line." (*Id.*, col. 2:8-14) There may have been multiple iterations between the dentist and technician in order to identify the finish line. (*Id.*, col. 4:33-38)

Align argues: "[t]he '065 patent provides an innovation that eliminates the need for the[] inefficient further iterations" between the dentist and technician to define the finish line. (D.I. 25 at 22) Instead, "the lab technician generates a 3D model and generates an initial finish line that is then conveyed to the dentist on a computer." (*Id.*) (citing '065 patent, col. 4:1-5) "The dentist then provides any updates to the finish line before the crown is constructed." (*Id.*) (citations omitted) Thus, rather than have multiple iterations with the technician, the dentist can view, "on the spot, an image of the patient's dentition and . . . immediately refine the finish line generated

by the lab." (*Id.* at 23) (citing '065 patent, col. 4:26-28)

Putting aside, for the moment, the claim's references to computers and computer functionality, the claim recites nothing more than the procedure by which dentists and technicians previously marked a finish line prior to manufacturing an artificial crown (i.e., the abstract concept of modifying a finish line of a dental prosthesis). Claims are often found abstract when "all of the steps of the claim could be performed by humans in non-computerized . . . contexts." *Intellectual Ventures I LLC v. Symantec Corp.*, 100 F. Supp. 3d 371, 383 (D. Del. 2015), *rev'd-in-part on other grounds*, 838 F.3d 1307; *see also Voter Verified, Inc. v. Election Sys. & Software LLC*, 887 F.3d 1376, 1385 (Fed. Cir. 2018) (finding that "claims as a whole [were] drawn to the concept of voting, verifying the vote, and submitting the vote for tabulation," which humans had performed for hundreds of years); *Content Extraction,* 776 F.3d at 1347 (finding that claims "drawn to the abstract idea of 1) collecting data, 2) recognizing certain data within the collected data set, and 3) storing that recognized data in a memory," which were "well-known" and "humans have always performed these functions").

The '065 patent itself describes the exact scenario embodied by claim 1, but instead of the technician marking the cast (or, as also disclosed in the specification, marking a 3D model) ('065 patent, col. 2:6-10) and returning the cast to the dentist to have her then provide a mark for the finish line, the same is done on a computer. (*See, e.g.*, *id.*, col. 2:45-50) ("[T]he present invention provides a computer-based system for enabling a dental practitioner to define a finish line of a dental prosthesis of at least one tooth to be fitted over a tooth preparation.")

Align's argument – that the patent improves over prior approaches by removing the need for multiple iterations of marks between the technician and the dentist – is merely the result of

the use of computer technology to mark the dentitions rather than marking the dentitions physically. Such routine computer functionality does not render a claim non-abstract at step 1. *See, e.g.*, *Kaavo Inc. v. Amazon.com Inc.*, 2018 WL 3032505, at *6 (D. Del. June 18, 2018) (disclosing a "cloud computing environment" was not a "particular improvement in the computers functionality"). This is no "technological improvement" at step one, including for the '873 patent discussed above.[6]

Having found that claim 1 is directed to the abstract idea of modifying a finish line of a dental prosthesis, the Court will move on to step two.

b. Step Two

As detailed above, at step two the Court evaluates whether the claim captures an inventive concept beyond what was well-understood, routine, and conventional in the relevant field at the time of the invention. 3Shape argues that claim 1 of the '065 patent is nothing more than the abstract idea of modifying a finish line on a dental prosthesis "performed on a computer." (D.I. 22 at 20) To 3Shape, "nothing in the claim[] or in the body of the '065 patent teaches or suggests that the claimed method offer[s] any improvement (in precision or otherwise) in the formation of a finish line over that previously known in the art." (*Id.*) Align responds that "the '065 patent offers substantial improvement in patient and dentist time involvement and resource utilization, as the invention enables the dentist to view and refine the model on the spot, rather than undertaking iterations with the lab technician." (D.I. 25 at 24)

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[6] Align also asserts that claim 1 of the '065 patent "specifies that the finish line must be generated in a unique and particular way" and restrains the type of data that can be used for updating the finish line in an improved manner." (D.I. 25 at 23) (internal quotation marks omitted) This argument is not substantively briefed.

All of the purported improvements by Align are the result of using a generic computer - - but performing an abstract concept on a generic computer is not an inventive concept. In *Intellectual Ventures I LLC v. Capital One Bank (USA)*, 792 F.3d 1363, 1370 (Fed. Cir. 2015), the Federal Circuit explained that "precedent is clear that merely adding computer functionality to increase the speed or efficiency of [a] process does not confer patent eligibility on an otherwise abstract idea." *See also Alice Corp,* 134 S. Ct. at 2358 ("Stating an abstract idea while adding the words 'apply it with a computer'" does not "transform a patent-ineligible abstract idea into a patent-eligible invention."). Here, the purported inventive concept of saving time because the dentist can "view and refine the model on the spot" is merely the benefit of the dentist being able to place a finish line on a 3D model by virtue of its transmission via a computer and computer network instead of the technician having to send the dentist a physical model to mark.

For these reasons, the Court finds that claim 1 of the '065 patent is directed to patent-ineligible subject matter under Section 101.[7]

3. The '850 Patent[8]

The '850 patent is entitled "Teeth Viewing System" and generally recites a method for

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[7] There has been no argument that the components and/or computer disclosed in the '065 patent were anything other than conventional components and/or computers performing their normal tasks. (*See* '065 patent, col. 3:50-57 (indicating that embodiment of invention can be implemented on personal computers); *see also id.*, col. 4:5-6 (explaining that the computer in Figure 1 includes processor, display, and user interface)) Thus, there is no fact dispute as to this issue that prevents the Court from finding that claim 1 of the '065 patent contains no inventive concept at *Alice*'s step two. *See Berkheimer*, 881 F.3d at 1370 (finding that claim lacked inventive concept because it "amounted to no more than performing the abstract idea . . . with conventional computer components").

[8] Hereafter, citations to the docket refer to documents filed in C.A. No. 17-1647-LPS-CJB, unless otherwise indicated.

"creating a plan for repositioning a patient's teeth." (D.I. 1 at ¶ 107) Claim 1 of the '850 patent recites:

> **1.** A method for displaying an orthodontic view of a patient's teeth, comprising:
>
> capturing three-dimensional (3D) data associated with the patient's teeth;
>
> determining a viewpoint for the patient's teeth;
>
> apply**[ing]** a positional transformation to the 3D data based on the viewpoint;
>
> rendering a graphical representation of the patient's teeth based on the positional transformation;
>
> determining a treatment plan for each tooth; and
>
> updating the graphical representation of the teeth to provide a visual display of the position of the teeth along the treatment plans.

('850 patent, cl. 1) 3Shape asks the Court to dismiss Align's claims for infringement of the '850 patent because, in 3Shape's view, the '850 patent is directed to patent-ineligible subject matter.

a. Step One

3Shape argues that claim 1 of the '850 patent "is directed to the abstract concept of describing an orthodontic 'treatment plan' [that] involv[es] nothing more than the simple steps of collecting, manipulating, and displaying images of a patient's teeth." (D.I. 22 at 15) Align counters that the claim "is directed to a method for displaying an orthodontic view of a patient's teeth." (D.I. 25 at 19) In particular, according to Align, the "claim 1 is directed to a particular improved non-conventional manner of enabling a dental practitioner to provide a treatment plan to a patient." (*Id.*) The Court agrees with 3Shape.

The patent discloses that orthodontists are tasked with straightening a patient's crooked teeth. ('850 patent, col. 1:16-17) One way orthodontists do so is through the use of braces. "Before fastening braces to a patient's teeth, at least one appointment is scheduled . . . so that X-rays and photographs of the patient's teeth and jaw structure can be taken." (*Id.*, col. 1:27-30) A mold of the patient's teeth is typically also made. (*Id.*, col. 1:31-33) Orthodontists use the X-rays, photographs, and mold "to formulate a treatment strategy." (*Id.*, col. 1:33-35) "The formulation of the treatment strategy is typically a trial-and-error process where the orthodontist arrives at the treatment strategy using a mental model based on the orthodontist's experience and skill." (*Id.*, col. 1:38-42) Additionally, "once the treatment strategy has been generated, it is difficult to explain the expected results to the patient in words." (*Id.*, col. 1:44-46)

The '850 patent purports to improve on "conventional practices . . . by utilizing 3D visualization to communicate treatment information to the patient." (D.I. 25 at 18) (citing '850 patent, col. 2:30-33) Align specifies that the key inventive concept of the '850 patent is that of enabling an orthodontist to "present[] a graphical representation of the patient's teeth to the patient and utilizing that representation to discuss and decide on treatment options." (*Id.* at 20) The 3D representation of the patient's teeth can include different angles and views of the teeth as well as animations "to provide a visual display of the movement of the teeth along the treatment paths." ('850 patent, cols. 1:60-2:2; *see also* D.I. 25 at 19) These "innovative features of the '850 patent provide the ability to visualize and interact with numerous digital models and processes without the attendant danger, impracticality, or significantly greater expense encountered in the same environment if it were physical." (D.I. 25 at 18-19) (citing '850 patent, col. 2:50-55)

In the Court's view, claim 1 of the '850 patent is directed to the abstract concept of describing an orthodontic treatment plan. By Align's own admission, "the generic idea of iteratively updating a treatment plan . . . existed prior to the invention." (*Id.* at 19) Further, as disclosed in the patent, an updated treatment plan was previously formulated in the mind of the orthodontist. ('850 patent, col. 1:38-42) Here, claim 1 of the '850 patent requires the capturing of 3D data of a patient's teeth, determining a viewpoint, transforming the 3D data based on that viewpoint, rendering a graphical representation of the patient's teeth, determining a treatment plan for each tooth, and updating the graphical representation of the teeth to provide a display of the teeth along the treatment paths. (*Id.*, cl. 1) Even though an orthodontist could not show a patient her mental model, she could express that mental model of the treatment plan to the patient using, for instance, photographs, physical models, or drawings. *See Intellectual Ventures I LLC*, 100 F. Supp. 3d at 383 (explaining that claim is abstract when "all of the steps of the claim could be performed by humans in non-computerized . . . contexts"); *Enfish, LLC*, 822 F.3d at 1336 (finding claim at issue was abstract idea "for which a computer [was] used in its ordinary capacity" and "merely as a tool").

The cases Align relies on for support do not persuade the Court otherwise. For example, in *Core Wireless Licensing S.A.R.L. v. LG Elecs., Inc.*, 880 F.3d 1356, 1356 (Fed. Cir. 2018), the Federal Circuit found that the claims at issue were "directed to an improved user interface for computing devices, not to the abstract idea of an index." The Court further explained that "[a]lthough the generic idea of summarizing information certainly existed prior to the invention, [the claims at issue] are directed to a particular manner of summarizing and presenting information in electronic devices." *Id.* And like the "improved systems" claimed in other cases,

the claims at issue "recite a specific improvement over prior systems, resulting in an improved user interface for electronic devices." *Id.* at 1362.

Unlike the claims at issue in *Core Wireless*, claim 1 of the '850 patent is not purporting to provide a technological improvement to prior systems. Rather, claim 1 is more akin to the claims at issue in cases like *Alice*, which found "the concept of intermediated settlement [was] a fundamental economic practice long prevalent in our system of commerce." *Alice*, 134 S. Ct. at 2356 (internal quotation marks and citation omitted). Similarly, claim 1 recites the formation of a treatment plan for orthodontic patients, a practice that has long been performed.

Thus, claim 1 of the '850 patent is directed to the abstract idea of describing an orthodontic treatment plan, and the Court must proceed to step two.

b. Step Two

3Shape argues that claim 1 of the '850 patent does "nothing more than automate a process that humans do already, using known and conventional computer functions recited at a high-level of generality for rendering a display of a patient's treatment plan." (D.I. 22 at 17) Align counters that 3Shape is overlooking the "key inventive concepts embodied in the '850 patent, including updating the graphical representation of the teeth to provide a visual display of where along the treatment plan the teeth are positioned, enabling orthodontists and patients to track the progress of the treatment plan contemporaneously." (D.I. 25 at 21)

The benefit of allowing an orthodontist to more easily explain a treatment plan to a patient via a 3D model, while an improvement over explaining the plan verbally, is not a technological improvement that supplies an inventive concept. Instead, claim 1 merely recites the abstract idea of providing a treatment plan along with generic computer functionality.

The patent's abstract describes the invention as follows: "A computer is used to create a plan for repositioning an orthodontic patient's teeth. The computer receives a digital data set representing the patient's teeth and uses the data sets to generate one or more orthodontic views of the patient's teeth." ('850 patent, Abstract; *see also id.*, col. 1:13-15 ("The invention relates generally to the field of orthodontics and, more particularly, to computer-automated development of an orthodontic treatment plan and appliance.")) "For the role of a computer in a computer-implemented invention to be deemed meaningful in the context of [the *Alice*] analysis, it must involve more than performance of 'well-understood, routine, [and] conventional activities previously known to the industry.'" *Content Extraction,* 776 F.3d at 1347-48 (quoting *Alice*, 134 S. Ct. at 2359). The '850 patent does not disclose a new method by which a 3D model of teeth could be made, or the method by which a 3D model can be repositioned virtually to display a different angle. (*See* '850 patent, col. 3:56-63 ("[T]he patient's teeth may be scanned or imaged using well known technology, such as X-rays, three-dimensional X-rays, computer-aided tomographic images or data sets, and magnetic resonance images. . . . [These] methods for digitizing such conventional images to produce useful data sets are well known and described in the patent and medical literature.")) Instead, the patent calls for the abstract idea of a treatment plan to be implemented on a generic computer. This is insufficient to meet the inventive concept requirement. Thus, claim 1 of the '850 patent is directed to patent ineligible subject matter under Section 101.

4. The '149 Patent

The '149 patent, "Systems and Methods for Fabricating a Dental Template," and relates generally to "fabricating a dental template to support [the] positioning [of] an object on a

patient's tooth[,] oriented in such a way that all the objects as a whole are lined up to a user defined ideal arrangement." (D.I. 1 at ¶ 92) Claim 13 of the '149 patent recites:

> 13. A system of fabricating a dental template to position a plurality of objects on a patient's teeth, the system comprising a computer comprising storage media comprising a program that, when executed, causes the computer to:
>
> receive digitized teeth of at least at least two of the patient's teeth;
>
> scale the digitized teeth to provide scaled digital teeth;
>
> add virtual objects to locations on the digitized teeth or the scaled or the scaled digital teeth, wherein the virtual objects are placed on one or more of the digitized teeth or the scaled digital teeth;
>
> superimpose the scaled digital teeth over the digitized teeth; and
>
> output fabrication data for fabricating a template to locate the orthodontic objects on the patient's teeth.

('149 patent, cl. 13)

a. Step One

3Shape argues that claim 13 of the '149 patent is directed to the abstract idea of providing, generating, or outputting "a pattern of data." (D.I. 22 at 18-19) 3Shape adds that "fabricating a dental template" is only alluded to "in the preamble and as an intended use of the data 'output' by the claimed computer software of asserted claim 13." (*Id.* at 19) The Court agrees with Align that claim 13 is directed to an improvement over prior approaches to indirect bonding techniques for orthodontic brackets. (D.I. 25 at 22)

The patent explains that orthodontists use brackets bonded to a patient's teeth that, over time, exert enough force to move the position of the teeth. ('149 patent, col. 1:19-30) Direct bonding of brackets entails placing adhesive on the base of the bracket and placing that bracket

on the patient's tooth. (*Id.*, col. 1:29-32) This process has several shortcomings, including that it is difficult to optimally place a bracket "on severely crowded teeth" or "the treatment provider may have difficulty seeing the precise position of the bracket relative to the tooth surface" for posterior teeth. (*Id.*, col. 1:36-42) One method that overcomes several of these shortcomings is "indirect bonding," in which an impression of a patient's teeth is taken and a plaster model is made. (*Id.*, col. 1:50-54) Brackets are then temporarily bonded to the plaster model and thereafter a "transfer tray is . . .made by placing matrix material [such as heated plastic sheet matrix material] over both the model and the brackets on the model." (*Id.*, col. 1:56-59) The material "then assume[s] a configuration that precisely matches the shape of the replica teeth of the stone. . . model with the brackets in the desired position." (*Id.*, col. 1:59-62) The temporary adhesive is then removed, permanent adhesive is added to the base of each bracket, "and the tray with the embedded brackets [is] then placed over matching portions of the patient's dental arches." (*Id.*, col. 1:63-67) Once the adhesive hardens, the matrix material is removed and the brackets are left in place. (*Id.*, col. 2:5-7)

Problems associated with indirect bonding include that "brackets may become dislodged during the removal of the matrix from the dental arches." (*Id.*, col. 2:7-10) But the '149 patent purports to be an advance over this prior approach because the template created by the claimed system and methods "may not necessarily contain the bracket as with traditional indirect bonding [] templates, but rather[] directs the user as to the precise location where the bracket should be placed based on geometric fit." (*Id.*, col. 2:57-60; *see also* D.I. 25 at 22) This eliminates the potential that the brackets may become dislodged during the removal of the template.

At step one, the Court must determine whether the claims "focus on a specific means or

method that improves the relevant technology." *Apple Inc. v. Ameranth, Inc.*, 842 F.3d 1229, 1241 (Fed. Cir. 2016) (internal quotation marks and citation omitted); *see also RecogniCorp*, 855 F.3d at 1326. Here the relevant technology consisted of templates that, in some instances, could dislodge orthodontic brackets during their removal from the patient's mouth. Claim 13 of the '149 patent purports to fix this problem by disclosing a method for creating a template that could guide the placement of the brackets without the brackets necessarily being contained within the template does not rebut this point. (*See* D.I. 29 at 13-14) 3Shape has not, therefore, persuaded the Court that the claim is directed to an abstract idea.

As 3Shape has not met its burden at step one, it is not necessary to address step two, and 3Shape's motion will be denied as to the '149 patent.

V. CONCLUSION

An order appropriate order follows.