UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

CANFIELD SCIENTIFIC, INC.,
Petitioner

v.

QUANTIFICARE S.A.,
Patent Owner

CASE NO. IPR 2021-01511

PATENT NO. 10,070,119

PATENT OWNER'S NOTICE OF APPEAL

Pursuant to 35 U.S.C. §§ 141, 142 and 319, and 37 C.F.R. §§ 90.2 and 90.3, Patent Owner QuantifiCare S.A. hereby provides notice that it appeals to the United States Court of Appeals for the Federal Circuit from the Final Written Decision of the Patent Trial and Appeal Board ("the Board") dated March 9, 2023 (Paper 61) and from all underlying orders, decisions, rulings, and opinions regarding U.S. Patent No. 10,070,119 B2 in Inter Partes Review No. IPR2021-01511. This Notice is timely under 37 C.F.R. § 90.3, having been filed within 63 days after the date of the Final Written Decision. A copy of the Final Written Decision is attached as Exhibit A.

Pursuant to 37 C.F.R. § 90.2(a)(3)(ii), Patent Owner anticipates that the issues on appeal may include but are not limited to: the Board's determination that claims 1–4 and 8-11 are unpatentable under 35 U.S.C. § 103(a); the Board's claim constructions; the Board's failure to consider material evidence presented in the proceeding; the Board's consideration of new arguments and evidence presented by Petitioner for the first time in its reply; the Board's failure to adequately explain the rationales for the foregoing; and any other of the Board's findings or determinations supporting or relating to these issues, as well as all other issues the Board decided adversely to Patent Owner in any order, decision, ruling, or opinion.

Pursuant to 35 U.S.C. § 142, 37 C.F.R. § 90.2(a), and Fed. Cir. R. 15(a)(1), this Notice is being filed with the Patent Trial and Appeal Board, the Clerk's Office

of the United States Court of Appeals for the Federal Circuit via CM/ECF, and the Director of the United States Patent and Trademark Office.

Date: May 9, 2023

Respectfully Submitted

By: /Mark D. Giarratana/

Mark D. Giarratana
Reg. No. 32,615
mgiarratana@mccarter.com
Kevin L. Reiner
Reg. No. 43,040
kreiner@mccarter.com
McCarter & English, LLP
CityPlace I
185 Asylum Street, 36th Floor
Hartford, CT 06103
(860) 275-6700
(860) 724-3397 (fax)

Attorneys for Patent Owner QuantifiCare S.A.

CERTIFICATE OF FILING AND SERVICE

Pursuant to 37 C.F.R. § 42.6(e), Fed. R. App. P. 25 and Fed. Cir. R. 25, the undersigned hereby certifies that on May 9, 2023, a true and correct copy of the foregoing PATENT OWNER'S NOTICE OF APPEAL has been caused to be filed with the Patent Trial and Appeal Board through the Board's electronic filing system, filed with the Director of the United States Patent and Trademark Office by USPS Express Mail service (Label No. EK 844420670 US) to the following address:

Director of the United States Patent and Trademark Office
c/o Office of the General Counsel
P.O. Box 1450
Alexandria, VA 22313-1450

filed with the Clerk's Office of the United States Court of Appeals for the Federal Circuit via CM/ECF, along with the required filing/docketing fees; and served via electronic and first class mail on counsel of record for Petitioner as set forth below:

Thomas L. Duston
Michael Weiner
Marshall, Gerstein & Borun LLP
6300 Willis Tower
233 South Wacker Drive
Chicago, IL 60606-6357
tduston@marshallip.com
mweiner@marshallip.com
docket@marshallip.com

Date: May 9, 2023

Respectfully Submitted

By: / Kevin L. Reiner/
Mark D. Giarratana
Reg. No. 32,615
mgiarratana@mccarter.com

Kevin L. Reiner
Reg. No. 43,040
kreiner@mccarter.com
McCarter & English, LLP
CityPlace I
185 Asylum Street, 36th Floor
Hartford, CT 06103
(860) 275-6700
(860) 724-3397 (fax)

Attorneys for Patent Owner
QuantifiCare S.A.

EXHIBIT A

Trials@uspto.gov
571-272-7822

Paper 61
Date: March 9, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CANFIELD SCIENTIFIC, INC.,
Petitioner,

v.

QUANTIFICARE S.A.,
Patent Owner.

IPR2021-01511
Patent 10,070,119 B2

Before BRIAN J. MCNAMARA, JOHN D. HAMANN, and BRIAN D. RANGE, *Administrative Patent Judges.*

RANGE, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
Denying In Part and Dismissing In Part Patent Owner's Motion to Exclude
35 U.S.C. § 318(a)

I. INTRODUCTION

This is a Final Written Decision addressing the *inter partes* review challenging claims 1–4 and 8–11 of U.S. Patent No. 10,070,119 B2 ("the '119 patent," Ex. 1001). We have jurisdiction under 35 U.S.C. § 6. The evidentiary standard is a preponderance of the evidence. *See* 35 U.S.C. § 316(e) (2018); 37 C.F.R. § 42.1(d) (2019). We issue this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73 (20222). For the reasons that follow, we determine that Canfield Scientific, Inc. ("Petitioner") demonstrates, by a preponderance of the evidence, that the challenged claims are unpatentable.

II. BACKGROUND

A. *Procedural History*

Petitioner filed a Petition (Paper 1, "Pet.") requesting *inter partes* review of claims 1–4 and 8–11 of the '119 patent. After institution, QuantifiCare S.A. ("Patent Owner") filed a Patent Owner Response. *See* Paper 21 ("PO Resp."). Petitioner filed a Reply (Paper 30, "Reply"), and Patent Owner filed a Sur-Reply (Paper 42, "PO Sur-reply"). Additionally, Patent Owner filed a motion to exclude evidence (Paper 46, "Mot. Excl."), Petitioner responded (Paper 47, "Opp. Mot. Excl."), and Patent Owner provided a reply brief (Paper 53, "Mot. Excl. Reply").

We heard oral argument for this *inter partes* review (as well as for two related *inter partes* reviews, IPR2021-01518 and IPR2021-01519) on December 14, 2022, and a transcript of the hearing is part of the record of this proceeding. Paper 60 ("Tr.").

B. Related Matters

The parties identify the following as a related matter: *QuantifiCare, Inc. v. Canfield Scientific, Inc.*, C.A. No. 1:20-cv-12305 (D.N.J.). Pet. 3;

Paper 4, 1. In addition, Petitioner has filed a petition for *inter partes* review of two additional patents related to the '119 patent that are also owned by Patent Owner: (i) U.S. Patent No. 10,165,253 B2 (IPR2021-01518) and (ii) U.S. Patent No. 10,681,334 B2 (IPR2021-01519).

C. The '119 Patent (Ex. 1001)

The '119 patent is titled "Device and Method to Reconstruct Face and Body in 3D." Ex. 1001, code 54. The challenged patent relates to a stereophotogrammetry device used "to picture and reconstruct in 3D the surface of objects of different sizes," e.g., different body parts such as the face and the torso. *Id.* at 3:22–25; *see id.* at 1:6–14, 1:41–48. By way of background, the '119 patent explains that "[s]tereophotogrammetry consists in [simultaneously] gathering the images of a subject from at least two views with a calibrated camera," i.e., a "stereo-pair." *Id.* at 1:24–29. The stereo-pair is used to "reconstruct . . . a dense representation in 3-Dimensions of the surface of the observed object." *Id.* at 1:30–32.

Figures 1 and 2, reproduced below, respectively show side- and top-views of an "implementation" of a stereophotogrammetry device and its components. *Id.*

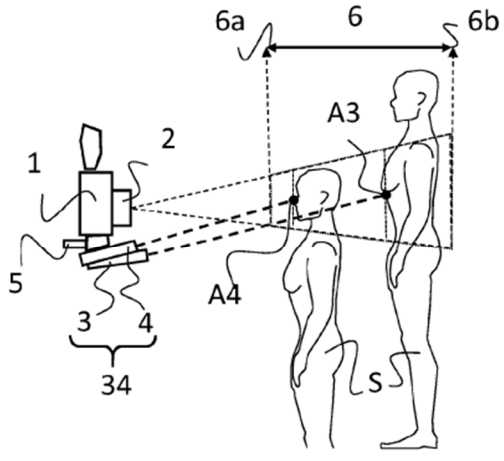

FIG.1

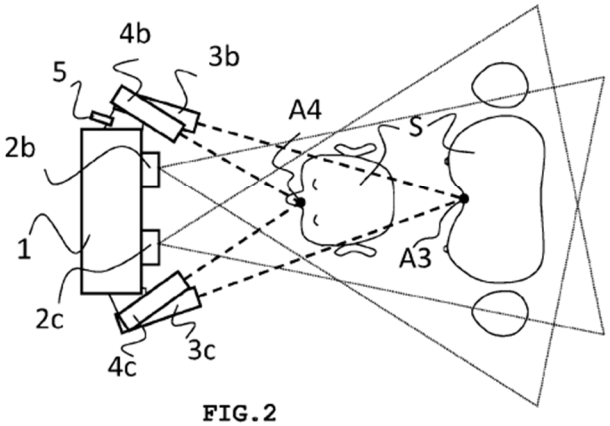

FIG.2

Figure 1 represents a possible implementation of the '119 patent's device as viewed from the side, and Figure 2 represents a possible implementation of the device as viewed from the top. *Id.* at 3:48–51. As shown in Figures 1 and 2, camera body (1) includes double optics (2). *Id.* at 8:23–24. As shown in Figure 2, double optics (2) are "composed of two sub-optics (2*b*) and (2*c*), enabling the acquisition of a stereo[-]pair [of images] corresponding to two slightly different viewing angles" simultaneously. *Id.* at 8:24–27; *see id.* at 3:28–31. For example, Figure 8, shown below, shows a series of stereo-pair images taken at different angles for a face. *Id.* at 11:1–8.

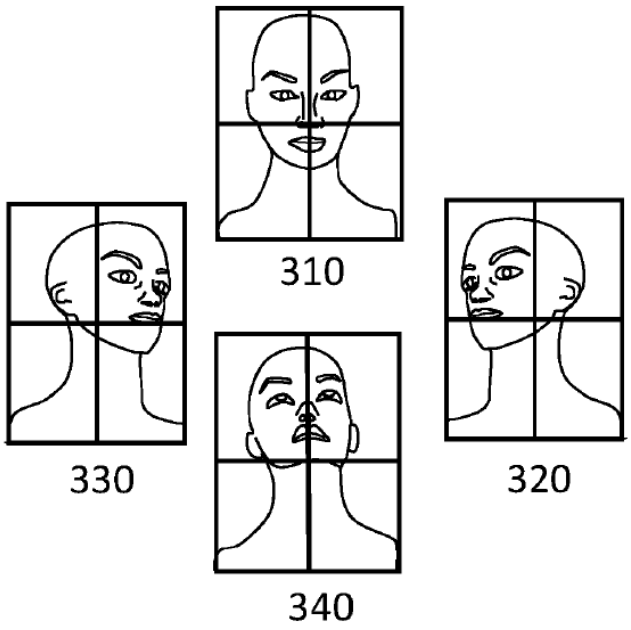

FIG. 8

The '119 patent specification describes Figure 8 as presenting "viewpoints optimized for imaging a face using a field of view close to an A4 surface format." *Id.* at 3:66–67. Using the captured stereo-pairs, "a comprehensive representation in 3D of the surface of the subject (S)" can be constructed. *Id.* at 10:26–37.

Further, the stereophotogrammetry device captures stereo-pairs of images at "two distinct distances for picture taking corresponding respectively to position (A3) and (A4)" such that the stereo-pairs of images are in focus at positions A3 and A4, which are within the device's depth of field 6. *Id.* at 8:29–39; *see id.* at 6:23–26. For example, position A3 is used for capturing images of the torso while position A4 is used for capturing images of the face. *Id.* at 6:3–12; *see id.* at 1:41–48. Positions A3 and A4 can be identified by the convergence of respective light patterns projected onto the subject to be imaged, the respective light patterns converging at the distances for positions A3 and A4. *Id.* at 4:46–67. For example, as shown in Figure 2, a light pattern emitted by first pair of light beamers (3b) and (3c) converge at point (A3) and a different light pattern emitted by second pair of light beamers (4b) and (4c) converge at point (A4). *Id.* at 8:40–44; *see id.* at 4:56–59. Accordingly, "by placing the subject so that the light patterns projected by a first pair of beamers are superposed on the surface of the subject[,] one is placing the subject at" the first pre-defined position (and similarly for the light pattern emitted by the second pair of beamers converging at the second position). *Id.* at 4:48–56; 5:10–26.

D. Challenged Claims

Petitioner challenges claims 1–4 and 8–11 of the '119 patent. Pet. 1. Claim 1 is the only challenged independent claim. Claim 1 is illustrative of the claimed subject matter, and we reproduce claim 1 with Petitioner's added bracketed identifiers and line breaks for claim elements.

1. [1.01] A device for stereophotogrammetry comprising

[1.02] a camera body (1) and

> [1.03] a double-optics (2) comprising two sub-optics (2*b*) and (2*c*), configured for a simultaneous acquisition of two views according to two different angles,
>
> [1.04] wherein the device is comprising a positioning system (34) configured to define a position of a target subject (S) for one of at least two distinct pre-defined point positions (A3, A4) of the target subject (S) relative to the stereophotogrammetry device,
>
> [1.05] the at least two distinct predefined point positions comprising a closer point position (A4) and a farther point position (A3), the closer point position (A4) being closer to the stereophotogrammetry device than the farther point position (A3), and wherein the positioning system (34) is comprising at least two pairs of light beamers (3*b*, 3*c*) and (4*b*, 4*c*) where a first pair of light beamers (3*b*, 3*c*) is converging to the farther point position (A3) and a second pair of light beamers (4*b*, 4*c*) is converging to the closer point position (A4), and
>
> [1.06] wherein the device comprises a switch (5) comprising a first selection position configured to select the farther point position (A3) and a second selection position configured to select the closer point position (A4),
>
> [1.07] wherein the switch (5) is configured to switch on the first pair of light beamers (3*b*, 3*c*) in the first selection position and wherein the switch (5) is configured to switch on the second pair of light beamers (4*b*, 4*c*) in the second selection position.

Ex. 1001, 11:32–57; *see also* Pet. 16 (using same identifiers).

E. Asserted Grounds of Unpatentability

We instituted trial based on the following grounds of unpatentability, which are all the grounds of unpatentability raised in the Petition:

Ground	Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1	1–4, 8	103	Plassmann[1], Treuillet[2],

[1] WO 2010/097572 A2, published Sept. 2, 2010 (Ex. 1007).
[2] Sylvie Treuillet et al., *Three-Dimensional Assessment of Skin Wounds Using a Standard Digital Camera*, IEEE Transactions on Medical Imaging, Vol. 28, No. 5 at 752 (2009) (Ex. 1016).

Ground	Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
			Staller[3]
2	9–11	103	Plassmann, Treuillet, Staller, Peng[4]

Pet. 5. The Petition and Reply are supported, for example, by declarations of Dr. Gerhardt Paul Otto, Ph.D. Exs. 1003, 1053. The Response and Sur-Reply are supported, for example, by declarations of Dr. Daniel van der Weide. Exs. 2006, 2013.

III. PATENT OWNER'S MOTION TO EXCLUDE

Patent Owner's Motion to Exclude seeks to exclude two areas of evidence. We address each in turn.

A. *Exclusion of Dr. Otto's Testimony to the Extent it Espouses and Relies on Inadmissible Hearsay*

Patent Owner argues that testimony of Petitioner's witness, Dr. Otto, should be excluded to the extent Dr. Otto relies on statements regarding the depth of field of the MAVIS II system discussed in Treuillet because Treuillet's statements are hearsay and not the kinds of fact an expert would reasonably rely upon. Mot. Excl. 1–12. Patent Owner further argues that Treuillet's description of MAVIS II is inconsistent with Plassmann's writings concerning MAVIS and should be excluded for this reason as well. *Id.* at 13–14.

Patent Owner's argument for exclusion is unpersuasive for three reasons. First, as Petitioner argues in opposition to the motion to exclude, Treuillet is admissible as prior art. Opp. Mot. Excl. 2–3. Petitioner and Dr.

[3] US 7,257,322 B2, issued Aug. 14, 2007 (Ex. 1006).
[4] Qi Peng et al., *Automated 3D Scenes Reconstruction Using Multiple Stereo Pairs from Portable Four-Camera Photographic Measurement System*, International Journal of Optics, Vol. 2015 (2015).

Otto rely on Treuillet for what the Treuillet reference teaches to a person having ordinary skill in the art at the relevant time. Treuillet's suggestions to a person having ordinary skill in the art remain relevant even if Treuillet were factually incorrect in some respects.

Second, even if considered hearsay, Dr. Otto properly relied on Treuillet. Opp. Mot. Excl. 4–7. Under Federal Rule of Evidence 703, an expert may rely on facts and data that "need not be admissible," including hearsay (double or otherwise). Here, the evidence supports that Treuillet was published in an independent, respected, and peer-reviewed IEEE journal. *Id.* at 5–6 (citing evidence regarding reliability of the IEEE journal). In addition, we find unavailing Patent Owner's arguments concerning "Reference 45."[5] Mot. Excl. 3–5; Reply Mot. Excl. 1–5. Rather, we find that it is appropriate for an expert also to rely on the sourcing in article published in such an IEEE journal. Thus, Treuillet is the kind of evidence we would expect an expert witness or person having ordinary skill in the art to rely upon, and Dr. Otto was entirely reasonable on relying on Treuillet in forming his opinions

Third, even if Treuillet were inconsistent with other evidence, such as Plassmann, this issue would go to the credibility of Dr. Otto's testimony and the weight given to it in deciding ultimate issues of fact rather than admissibility in the first instance.

For the reasons above, we deny Patent Owner's motion to exclude with respect to Dr. Otto's testimony.

---

[5] Treuillet cited this reference as follows: "MAVIS II: 3-D wound instrument measurement Univ. Glamorgan, 2006 [Online]. *Available: http://www.imaging.research.glam.ac.uk/projects/wm/mavis/*." Ex. 1016, 762.

B. *Exhibits 1018, 1019, 1026, 1028–1030, 1033, and 1034*

Patent Owner seeks to exclude Exhibits 1018, 1019, 1026, 1028–1030, 1033, and 1034 because "the Petition does not cite or otherwise rely on them." Mot. Excl. 14–15. Petitioner argues that it relied on all of these exhibits aside from Exhibits 1018 and 1019.

In rendering our decision, we only consider Petitioner's evidence to the extent it is properly presented in the Petition or the Reply. We consider Petitioner's evidence that Dr. Otto cites only to the extent explanation of the evidence is properly presented in the Petition or the Reply or only for purposes of assessing whether Dr. Otto's testimony presented in the Petition or the Reply is well-grounded. As such, resolution of Patent Owner's motion to exclude with respect to these exhibits would not affect our decision making and is therefore moot.

For the reasons above, we dismiss as moot Patent Owner's motion to exclude these exhibits.

IV. PATENT OWNER'S OBJECTIONS TO PETITIONER'S DEMONSTRATIVES

Patent Owner objects to a number of Petitioner's demonstratives for oral argument because, for example, the demonstratives constitute evidence that Petitioner did not reference or discuss in a prior paper. *See, e.g.*, Paper 58, 2. Patent Owner also objects to certain demonstratives as mischaracterizing the record. *Id.* at 1.

Demonstratives for oral argument are not evidence, and we do not rely on demonstratives as evidence in our decision making. Paper 45, 2 (Order Setting Oral Argument). Because demonstratives do not affect our decision making, Patent Owner's objections to the demonstratives likewise do not affect our decision making and are therefore moot.

V. ANALYSIS

A. Level of Ordinary Skill in the Art

To determine whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of the invention. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). In assessing the level of ordinary skill in the art, various factors may be considered, including the "type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field." *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citing *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962–63 (Fed. Cir. 1986)). "[O]ne or more factors may predominate." *Id.*

Petitioner argues that

> [a] person of ordinary skill in the art ("POSITA") would have had a working understanding of photography, stereophotogrammetry, and distance measuring in photography or stereophotogrammetry. Such an individual would have a master's degree with a scientific focus on subjects such as optics and/or image processing, with at least about three years of experience in the field of photography, and stereophotogrammetry, as well as image processing in these fields, or an equivalent qualification.

Pet. 15 (citing Ex. 1003 ¶¶ 17–20).

Patent Owner argues that a person having ordinary skill in the art "would have a Bachelor's degree in Physics or Electrical engineering or a similar field and two to three years of experience, including in image processing and computer graphics" and that Petitioner's "assertion of a higher level . . . is incorrect." PO Resp. 23.

The parties do not substantively address the differences in their proposed definitions for one of ordinary skill in the art. Pet. 15; PO Resp. 23; *see generally* Reply; PO Sur-reply. Moreover, the parties agree that which definition we adopt does not substantively impact our analysis of the parties' arguments concerning unpatentability. Tr. 29:19–30:9, 75:20–25.

Because Patent Owner's definition of the level of skill in the art is consistent with the '253 patent and the asserted prior art, we adopt it for purposes of this Final Written Decision. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *GPAC*, 57 F.3d at 1579; *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978). In addition, we do not find support in the record for requiring one of ordinary skill in the art to have had a master's degree. Pet. 15; Ex. 2013 ¶ 31 (testifying why a master's degree was unnecessary). Our analysis herein, however, does not turn on which of the parties' definitions we adopt.

B. Claim Construction

Because the Petition was filed after November 13, 2018, we apply the same claim construction standard that would be used in a civil action under 35 U.S.C. § 282(b), following the standard articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). 37 C.F.R. § 42.100(b) (2021). In applying such standard, claim terms are generally given their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art, at the time of the invention and in the context of the entire patent disclosure. *Phillips*, 415 F.3d at 1312–13. "In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence." *DePuy Spine, Inc. v.*

Medtronic Sofamor Danek, Inc., 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

Petitioner submits "that [no] express constructions are required for any terms." Pet. 17. Patent Owner argues that the claim terms should have their plain and ordinary meaning. PO Sur-reply 1. The parties dispute, however, the scope of the plain and ordinary meaning of "two sub-optics (2*b*) and (2*c*), configured for a simultaneous acquisition of two views according to two different angles." Thus, we address the parties' dispute. *See Eon Corp. IP Holdings v. Silver Spring Networks*, 815 F.3d 1314, 1318 (Fed. Cir. 2016) (finding that disputes between the parties over the plain and ordinary meaning of a term need to be resolved as a matter of claim construction).

The gravamen of the parties' dispute is what "different angles" refers to in the context of this limitation. According to Patent Owner, "different angles" refers to the orientation of the optical axis of each sub-optic. *E.g.*, PO Resp. 5–7. Specifically, Patent Owner argues that the limitation excludes configurations where the sub-optics' optical axes are spaced in parallel, such as in a conventional stereophotogrammetry device, because the two views would be acquired at the same angle. *E.g.*, *id.* In contrast, Petitioner argues that "different angles" refers to the sub-optics viewing a *subject* from different angles, such as when the sub-optics are spaced apart—parallel configurations are not excluded. *E.g.*, Pet. Reply 1.

We address in detail the parties' arguments below, starting with the intrinsic evidence.

1. Claim Language

Patent Owner argues that "[t]he claim language does not mention light 'from the subject' or 'object to be imaged,' much less angles at which light

is received from different points on a subject/object." PO Resp. 19 (citing Ex. 2013 ¶ 101). "Rather, the 'two different angles' limitation defines an intrinsic characteristic of the sub-optics, *i.e.*, how they are 'configured'" or angled, according to Patent Owner. *Id*. (citing Ex. 2013 ¶ 100).

We find this argument unavailing. Rather, we agree with Petitioner and determine that the claim language does not mean that the sub-optics are angled but instead means that they each view a subject from different angles. Ex. 1020, 11:43–45; Pet. Reply 7. Specifically, this limitation recites that the two sub-optics are "configured for a simultaneous acquisition of two views according to two different angles." Ex. 1020, 11:43–45. Notably, "according to two different angles" directly follows "two views," rather than directly following "configured." *Id.* And "view" means "[a] scene or an arrangement of subject material for a photograph," according to a technical dictionary provided by Patent Owner. Ex. 2014,[6] 210 (defining "view"). In other words, the term "view" itself refers to viewed subject material—a target subject.

We also find unavailing Patent Owner's argument that "the 'subject' is claimed only in connection with the 'positioning system (34)' 'configured to define . . . pre-defined point positions (A3, A4) of the target subject (S)." PO Resp. 19 (citing Ex. 1001, 11:36–40; Ex. 2013 ¶ 102). Again, the term "view" implicates the subject. Ex. 2014, 210.

We also find unavailing Patent Owner's argument that the claims "disclose configuring the sub-optics according to 'two different angles' as a prerequisite to 'pre-defining' the 'positions (A3, A4) of the target subject

[6] Leslie Stroebel & Hollis N. Todd, *Dictionary of Contemporary Photography* (1974).

(S),' as further claimed, and locating the subject at such positions within the two views." PO Resp. 19–20 (citing Ex. 2013 ¶ 103); *see also id.* at 20 (arguing that dependent claims also support this argument). This argument is inapposite, and does not exclude parallel sub-optics. Rather, as Patent Owner acknowledges, conventional stereophotogrammetry devices can include parallel sub-optics "configured (spaced) to acquire two views," and provide a stereoscopic binocular area where "the parallel views intersect to form stereo-pairs that can be reconstructed into three-dimensional representations." PO Resp. 5–6; Ex. 2013 ¶ 67; Ex. 2015,[7] 90. Hence, positions (A3, A4) can be predefined distances for the target subject S within that stereoscopic binocular area.

We likewise find unavailing Patent Owner's argument that "the 'two different angles' limitation has nothing to do with the angles at which the sub-optics receive light from a subject but rather defines the space within which the subject must be located to be imaged in the first place." *Id.* at 20 (citing Ex. 2013 ¶ 100); PO Sur-reply 2. This argument also is inapposite, and does not indicate that the claimed sub-optics' axes are not in parallel, as Patent Owner argues. Rather, the space within which the subject must be located can be the stereoscopic binocular area. Ex. 2015, 90; PO Resp. 4.

We also find unavailing Patent Owner's argument that because "[d]isplaced sub-optics may be configured to acquire two views at the same angle, or at 'two different angles,'" "construing 'two different angles' to mean any displaced sub-optics would read the 'two different angles' limitation out of the claims." PO Resp. 22 (citing Ex. 2013 ¶ 107); PO Sur-reply 5 (making same argument). Rather, we conclude that "according

[7] Richard W. Kroon, *3D A-to-Z, An Encyclopedic Dictionary* (2012).

to two different angles," in the context of the limitation, is needed to claim a stereophotogrammetry device. Put differently, we agree with Petitioner and conclude that claim 1 does not otherwise recite that the two sub-optics are spaced, such as in a conventional stereophotogrammetry device. Ex. 1001, 11:32–57; Pet. Reply 7 (citing Ex. 1053 ¶ 31).

Although the preamble for claim 1 recites "[a] device for stereophotogrammetry," "[g]enerally, the preamble does not limit the claims." Ex. 1001, 11:32–57; *Georgetown Rail Equip. Co. v. Holland L.P.*, 867 F.3d 1229, 1236 (Fed. Cir. 2017) (citation omitted). We also are persuaded by Petitioner's argument that "the preamble here is not limiting, because the body of the claim provides a complete description of the device." Pet. Reply 7 (citing *Rowe v. Dror*, 112 F.3d 473, 478 (Fed. Cir. 1997)). Hence, "two different angles" is not read out of the claim, but rather serves to claim a stereophotogrammetry device (e.g., by requiring spacing of the sub-optics).

Regardless, as Petitioner notes, no "canon of claim construction is absolute in its application and [] some surplusage may exist in some claims." Pet. Reply 7 (quoting *Decisioning.com, Inc. v. Federated Dep't Stores, Inc.*, 527 F.3d 1300, 1312 (Fed. Cir. 2008) (acknowledging that proper construction of "'remote interface' arguably renders the term 'public' in [a dependent claim] surplusage")). And we view the phrase "configured for a simultaneous acquisition of two views according to two different angles" as referring to a stereophotogrammetry device, regardless if every word is needed to convey it.

In addition, we find unavailing Patent Owner's argument that Petitioner makes new arguments concerning viewing the subject from different angles and the preamble not being limiting. PO Sur-reply 1 & n.1.

Simply put, these arguments from Petitioner involve issues related to claim construction regarding the scope of the plain and ordinary meaning of this limitation and which were raised by Patent Owner in its Response. Petitioner argument is, thus, allowable. *See* Consolidated Trial Practice Guide (November 2019)[8] ("CTPG"), 45 ("The petitioner may respond to any such new claim construction issues raised by the patent owner.").

2. *The '119 Patent Specification*

The parties each argue that the '119 patent Specification supports their arguments for the plain and ordinary meaning of this claim limitation. More specifically, Patent Owner argues that Figures 2–5 support that the sub-optics are oriented to have non-parallel (i.e., inwardly angled) optical axes. *See, e.g.*, PO Resp. 6. Patent Owner illustrates this position by annotating Figure 2 of the '119 patent. PO Resp. 17. We reproduce Patent Owner's annotated figure below.

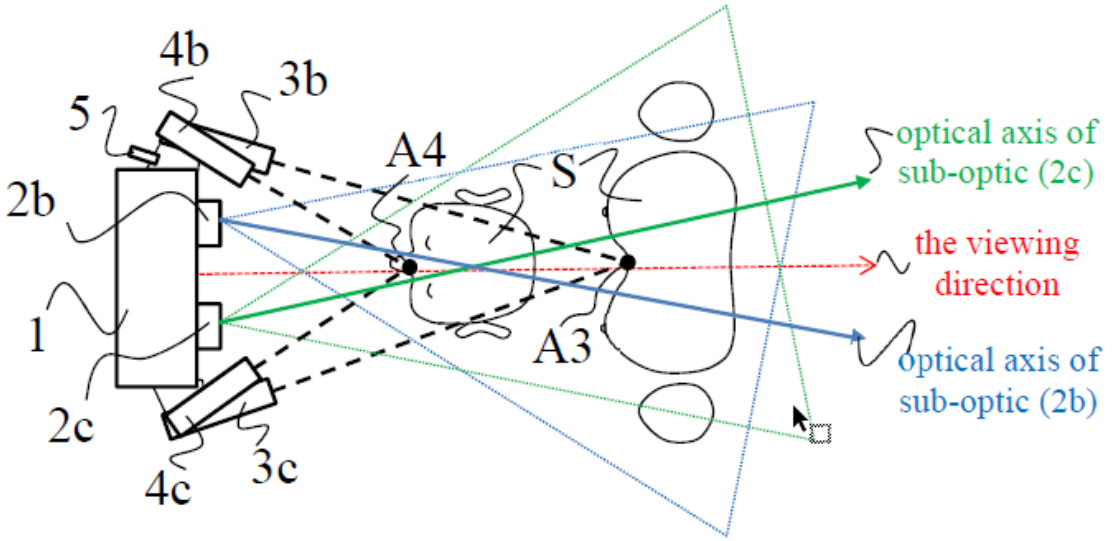

Figure 2 "represent[s] a possible implementation of the device viewed from the top." Ex. 1001, 3:50–51. Patent Owner annotates Figure 2 by coloring

[8] *Available at* https://www.uspto.gov/TrialPracticeGuideConsolidated.

the pyramid extending from sub-optic 2b blue and coloring the pyramid extending from sub-optic 2c green. PO Resp. 17. Patent Owner also adds a solid blue arrow and a solid green arrow from each sub-optic to perpendicularly bisect the base of each pyramid, respectively. *Id.* Patent Owner labels each of these arrows as the "optical axis" of the respective sub-optic. *Id.* Patent Owner also adds a dotted arrow from the midpoint between the sub-optics through the centerpoint of an illustrtaed face and torso, and labels the arrow "the viewing direction." *Id.*

We agree with Patent Owner that Figures 2–5 illustrate pyramid-shaped views acquired by the sub-optics where the pyramids are inwardly angled (rather than being perpendicular to the device's plane). Ex. 1001, Figs. 2–5. But the Specification indicates that all of these figures illustrate *possible* or *exemplary* implementations. *See, e.g.*, *id.* at 3:50–54 (stating that Figures 2 and 3 each illustrate a "possible implementation"); 9:26–30 (stating that Figure 4 is an "exemplary device"); 9:34–35 (stating that Figure 5 is an "exemplary device"). Thus, the Specification does not indicate that optical axes of the pyramids are essential to the invention; the Specification never even uses the term "optical axis." To the contrary, the Specification provides that "[t]he double optics of the stereophotogrammetry device can be manufactured in different ways without impacting the functionality of the invention, provided that it is characterized by an increased depth of field." *Id.* at 4:25–28.

Moreover, the Specification repeatedly refers to the different angles of the sub-optics relative to the viewed subject in a manner similar to the claims. *See, e.g.*, Ex. 1001, 4:7–14 (referring to "double optics enabling the acquisition of two simultaneous views with different angles *of the subject*") (emphasis added), 4:20–31 (referring to "double optics" using "secondary

mirrors each receiving one image *of the subject* with a slightly different angle") (emphasis added); Pet. Reply 3–5 (citing Ex. 1053 ¶¶ 19–29).

In addition, we find unavailing Patent Owner's arguments concerning problems described in the Background section of the Specification and the advantages of the '119 patent. PO Resp. 10–15. For example, the '119 patent discloses that portable stereophotogrammetry devices previously developed included "a single, nominal distance for picture taking which is optimized either for the face or for breast, but not optimized for both applications at the same time," according to Patent Owner. PO Resp. 9 (quoting Ex. 1001, 3:10–18; citing Ex. 2013 ¶ 73). Patent Owner argues that the '119253 patent "ties the 'two different angles' limitation to overcoming the problem in the prior art and achieving the advantage of the invention" (i.e., a single stereophotogrammetry device for both distances). *Id.* at 10 (citing Ex. 1001, 3:28–31); *see also id.* (citing Ex. 1001, 4:25–29, 8:24–27; Ex. 2013 ¶ 76) (making same argument).

According to Patent Owner, however, if the sub-optics are configured for parallel views the field of view at point (A4) in Figure 2 "is too small to image the face and would not achieve the 'advantage of the invention,' *i.e.*, 'a single portable stereophotogrammetry system . . . enabling the 3D reconstruction of the head . . . and . . . torso.'" *Id.* at 15 (quoting Ex. 1001, 8:8–15; citing Ex. 2013 ¶¶ 56, 87). This argument is unavailing. Rather, we agree with Petitioner and find that "[s]imply moving the subject further from the camera would place the face" within the view pyramids. *See* Pet. Reply 3–5; Ex. 1053 ¶ 29. As can be seen for the version of Figure 2 modified by Patent Owner to show parallel view pyramids, a sufficient field of view for the face and torso is within the binocular area if the subject is moved further from the camera. *See* PO Resp. 14 (modifying Ex. 1020, Fig. 2); *see also* Ex.

1053 ¶ 29 (testifying that moving further away "[i]f no other changes were made, . . . would slightly lower the 3D resolution of the surface captured by the device compared to using angled frustrums," "[h]owever, in this application area a slight decrease in resolution is acceptable").

In sum, we find that the '119 Specification does not address optical axes and does not serve to limit the plain and ordinary meaning of this limitation so as to exclude parallel sub-optics.

3. *Prosecution History*

We now turn to the prosecution history the '119 patent. The prosecution history "can often inform the meaning of the claim language by demonstrating how the inventor understood the invention." *Phillips*, 415 F.3d at 1317. Such is the case here.

In particular, Patent Owner treated the "according to two different angles" language differently during prosecution than it does now. During prosecution, the Examiner rejected the challenged claims over Hoffmeier[9] and concluded that Hoffmeier disclosed a stereophotogrammetry device comprising "two sub-optics (2b) and (2c) configured for a simultaneous acquisition of two views according to two different angles." Ex. 1002, 63–66; Ex. 1053 ¶ 12; Pet. Reply 1–3. Hoffman's Figure 3 depicts its device and illustrates two views of its subject in Figure 4. Ex. 1005 ¶¶ 25–26; Ex. 1053 ¶ 13. We reproduce these two figures side by side below.

[9] US 2011/0175987 A1, published July 21, 2011 (Ex. 1005)

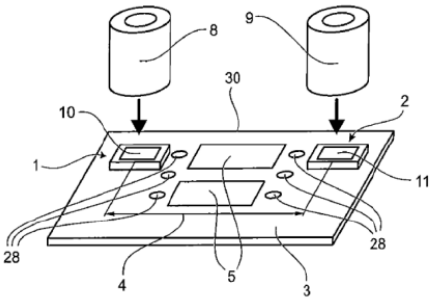

FIG. 3

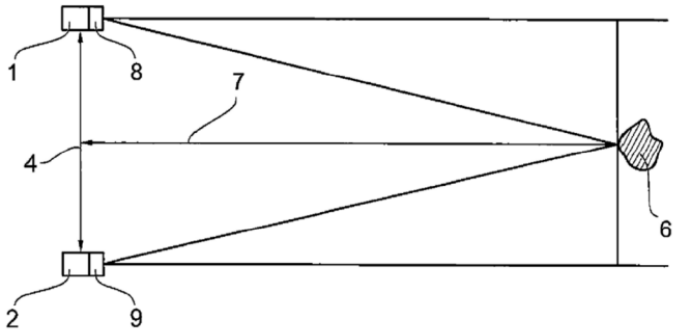

FIG. 4

Ex. 1005, Figs. 3–4. Hoffman's Figure 3 is a perspective view of the Hoffman system. *Id.* ¶ 25. Hoffman's Figure 4 "shows a schematic structure of a stereo camera system with the Hoffman stereo camera system board." *Id.* ¶¶ 10, 26. The evidence supports that Hoffman's lenses face forward rather than at an angle. *Id.* at Figs. 3–4, ¶ 37 ("The two optical systems 8, 9 can be coupled to the board 3 such that the respective optical axis of an optical system 8, 9 runs through the center point of the image sensing area 10, 11 of an image detection sensor 1, 2"); *see also* Ex. 1053 ¶ 14 (Petitioner's expert opining that Hoffmeier's Figure 4 "shows components 8 and 9 as having parallel axes").

During prosecution, Patent Owner submitted of a statement of its CEO and '119 patent inventor, Jean-Philippe Thirion, responding to the rejection. Ex. 1002, 88–107; Ex. 2019 ¶ 8. Importantly, in that submission, Patent Owner admitted that Hoffmeier teaches claim 1's "two different angles" recitation as follows:

> Being devoid of any positioning system external to the stereovision system itself makes Hoffmeier quite different from the invention described in '981 [(referencing the '981 application that led to the '119 patent)]. Hoffmeier therefore discloses "*A device for stereophotogrammetry comprising a camera body (1) and a double-optics (2) comprising two sub-optics (2b) and (2c), configured for a simultaneous acquisition of two views*

> ***according to two different angles***" as in claim 1 of '981, but it is all that Hoffmeier discloses relative to claim 1 of '981.

Ex. 1002, 92 (bold emphasis added). Patent Owner further admitted that "8 and 9 in FIG 3 of Hoffmeier exactly correspond to 2b and 2c in FIG 2 of [the '119 patent]." *Id.* at 91–92.

Patent Owner's admissions during prosecution suggest to the public that Patent Owner understood that spaced optics with parallel optical axes may, nonetheless, fall within the scope of claim 1. Patent Owner now downplays these admissions by arguing that Hoffmeier "is ambiguous as to whether the optical axes of 8, 9 are angled inwards, or are parallel." PO Sur-reply 8. Although we agree Hoffmeier is ambiguous in this regard, the ambiguity does not help Patent Owner's position. Rather, despite ambiguity, Patent Owner admitted that Hoffmeier taught "two views according to two different angles." Ex. 1002, 92. The prosecution history, thus, suggests that Hoffmeier's optical axes orientation is not important to whether the "two different angles" recitation is met. As such, Patent Owner's prosecution history statement aligns with the present arguments of Petitioner, not Patent Owner.

4. *Parallel Litigation*

During district court litigation involving the '119 patent, Patent Owner responded to Petitioner's invalidity allegations regarding the Plassmann reference by agreeing that Plassmann teaches the now disputed "according to two different angles language":

> QuantifiCare agrees that the quoted language and figure include, *inter alia*, a double-optics comprising two sub-optics configured for a simultaneous acquisition of two views according to two different angles.

Ex. 1037, 2; *see also* Pet. Reply 6.

Patent Owner now disputes that Plassmann teaches this recitation. *See, e.g.*, PO Resp. 27–30 (arguing that Petitioner's contention that Plassmann acquires "two views according to two different angles" is incorrect). Thus, Patent Owner's position in the district court litigation was consistent with its position during prosecution but inconsistent with its position in the current proceeding.[10] Thus, this inconsistency at least somewhat weighs against Patent Owner's arguments.

In addition, we find unavailing Patent Owner's argument that its agreement was subject to an objection that Petitioner failed to identify specifically where in Plassmann the limitation was taught. PO Sur-reply 8 (Ex. 1037, 2). Rather, Petitioner identified Plassmann's Figure 1B and a passage describing it, which is the same structure Petitioner relies on here. Ex. 1037, 2.

In addition, we find unavailing Patent Owner's argument that this issue was raised belatedly by Petitioner. PO Sur-reply 8. As we discuss above, Petitioner may make this argument because it is responsive to issues of claim construction Patent Owner raises in its Response. CTPG, 45.

5. Summary

In view of the record as a whole, the weight of the evidence supports that claim 1's "two views according to two different angles" language does not require that the optical axis of each sub-optic be angled differently but

[10] Patent Owner argues that this extrinsic evidence should be disregarded. PO Sur-reply 8–9. We disagree. While the extrinsic evidence is entitled to less weight, it nonetheless bolsters the intrinsic evidence establishing that Patent Owner—outside of the instant proceeding—understood "two views according to two different angles" in accordance with Petitioner's claim construction.

instead requires only that the sub-optics view the subject from different angles. Put differently, we conclude that this disputed limitation covers configurations of the two sub-optics that are spaced, regardless of whether the sub-optics' optical axes are orientated in parallel.

C. Principles of Law

"In an [inter partes review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable." *Harmonic Inc. v. Avid Tech., Inc*., 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring inter partes review petitions to identify "with particularity . . . the evidence that supports the grounds for the challenge to each claim")). This burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

A claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time of the invention to a person having ordinary skill in the art. *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; and (4) objective evidence of non-obviousness, if present. *See Graham*, 383 U.S. at 17–18. When evaluating a claim for obviousness, we also must "determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

D. Objective Indicia of Non-Obviousness

Patent Owner argues that considerations of "commercial success, copying, long-felt need, and praise for the invention, further demonstrate non[-]obviousness." PO Resp. 55–67.

Objective indicia of nonobviousness may include long-felt but unsolved need, failure of others, unexpected results, commercial success, copying, licensing, industry praise, and expert skepticism. *Mintz v. Dietz & Watson, Inc.*, 679 F.3d 1372, 1379 (Fed. Cir. 2012). Objective indicia are only relevant to the obviousness inquiry if there is a nexus between the claimed invention and the objective indicia of nonobviousness. *In re Affinity Labs of Tex., LLC*, 856 F.3d 883, 901 (Fed. Cir. 2017). A rebuttable presumption of nexus applies only "when [a patent owner] shows that the asserted objective evidence is tied to a specific product and that product 'embodies the claimed features, and is coextensive with [the claims].'" *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019) (quoting *Polaris Indus. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1072 (Fed. Cir. 2018)). On the other hand, a patent owner is not entitled to a presumption of nexus if the patented invention is only a component of a commercially successful machine or process. *Id.* (reaffirming the importance of the "coextensiveness" requirement).

Applying *Fox Factory*, the Board uses a two-step analysis in evaluating nexus between the claimed invention and objective evidence of nonobviousness, also referred to as secondary considerations. *Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper 33 at 33 (PTAB Jan. 24, 2020) (precedential). We first consider whether Patent Owner has demonstrated "that its products are coextensive (or nearly coextensive) with the challenged claims," resulting in a rebuttable presumption of nexus. *Id.* at 33. If not, that

"does not end the inquiry into secondary considerations"; "the patent owner is still afforded an opportunity to prove nexus by showing that the evidence of secondary considerations is the 'direct result of the unique characteristics of the claimed invention.'" *Id.* (quoting *Fox Factory*, 944 F.3d at 1373–75). For the reasons discussed below, we find that Patent Owner does not demonstrate (i) that its products are coextensive with the challenged claims for a presumption to attach, and (ii) the requisite nexus with evidence that the secondary considerations are the direct result of the unique characteristics of the claimed invention.

1. Presumption of Nexus

Patent Owner argues that "its LifeViz Infinity ('Infinity') product is disclosed and claimed in the patent." PO Resp. 55 (citing Ex. 2013 ¶ 213). Patent Owner argues that Petitioner "does not dispute this assertion." *Id.* (citing Pet. 72). Patent Owner thus states that, "Therefore, nexus of secondary considerations regarding the Infinity to the invention is presumed." *Id.* (citing *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1330 (Fed. Cir. 2016)).

We disagree. Patent Owner does not provide an analysis demonstrating that its Infinity product is coextensive (or nearly coextensive) with the challenged claims. Rather, Patent Owner cites to the following testimony of Dr. van der Weide: "I have reviewed the LifeViz Infinity device and conclude that it embodies the invention of the [']253 Patent. More specifically, the Infinity possesses all the features listed in claim 1 of the patent." *Id.* (citing Ex. 2013 ¶ 213). Simply put, Patent Owner fails to provide any analysis whatsoever. *Id.*; *see also* 37 C.F.R. § 42.65(a) ("Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.").

Moreover, Patent Owner's reliance on *WBIP* is misplaced. In that decision, "WBIP presented evidence that specific products . . . [we]re embodiments of the invention as claimed in the asserted claims," and that provided a basis for finding a presumption of nexus. *WBIP*, 829 F.3d at 1329–31. Such is not the case here.

In sum, Patent Owner does not provide the required analysis demonstrating that Infinity is coextensive (or nearly coextensive) with the challenged claims. PO Resp. 55; *Lectrosonics*, Paper 33 at 33. We, therefore, find that a presumption of nexus is inappropriate.

2. Direct Result of the Unique Characteristics of the Claims

For the second step of our analysis, we look to whether Patent Owner demonstrates the requisite nexus with evidence that any secondary considerations are the direct result of the unique characteristics of the claimed invention. In particular, we address below Patent Owner's arguments directed to the secondary considerations of (i) commercial success, (ii) copying, (iii) long-felt need, and (iv) praise for the invention. PO Resp. 55–67.

a) Commercial Success

For the commercial success indicia to support nonobviousness, Patent Owner needs "to show both commercial success and that a nexus exists between that success and the merits of the claimed invention." *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1350 (Fed. Cir. 2012). We start with the latter of these requirements and look to Patent Owner's arguments that a nexus exists between the purported commercial success and the challenged claims.

First, Patent Owner argues that "[a] nexus between sales of Infinity and the claimed invention is presumed because Infinity 'is the invention

disclosed and claimed in the patent.'" PO Resp. 61 (citing *WBIP*, 829 F.3d at 1330). We find this argument unavailing because as we find above, Patent Owner does not demonstrate that a presumption should attach. *See supra* Section (V)(A).

We also find unavailing Patent Owner's argument that "customers have identified claimed features as important to their use of the invention." PO Resp. 61 (citing PO Resp. 59–60 (arguing that the claimed invention has received praise)). This argument does not address whether any sales, for example, of the Infinity product were owed to the merits of the claimed invention, nor that such purported praise lead to actual demand.

We also find unavailing Patent Owner's argument that "Infinity sales were due to claimed features of the invention, *e.g.*, its 'dual-distance' functionality, which permitted customers to avoid buying multiple products or a non-portable multi-head system to accomplish the same tasks – as was noted by the EuroMediCom press release." PO Resp. 62 (citing Ex. 2020,[11] 4). The announcement identifies the Infinity product as "BEST AESTHETIC DEVICE," and describes the product, but does not evidence any specific demand for, or sales of, the Infinity product due to any features of the challenged claims. *See* Ex. 2020, 4. Nor does Patent Owner sufficiently address whether dual-distance functionality comprises the unique characteristics of the claimed invention.

We also find unavailing Patent Owner's argument that "[t]he primary functional difference between [Petitioner's] H2 and H1 [products] is that H2 can image the body (at a different distance) in addition to the face," and that

[11] *Winners 2018-2019*, EuroMediCom (Jan. 29, 2021) https://www.euromedicom.com/mca-2018/en/trophy/Winners-2018-2019.html.

"[i]t follows that the large differential in production of the H2 as compared to H1 is due to that additional functionality." PO Resp. 62 (citing Ex. 2034[12] (arguing that Vectra H1 images face only); Ex. 2030[13] (arguing that Vectra H2 captures a face or body image). Patent Owner provides no evidence for why this purported differential in production occurred; rather, Patent Owner speculates.

Second, we do not find that Patent Owner demonstrates commercial success of the Infinity product. To establish commercial success, Patent Owner relies on a declaration from its CEO, Dr. Thirion. PO Resp. 61–64 (citing Ex. 2019 ¶¶ 29–37). Although Dr. Thirion provides evidence of increasing sales of Infinity, Dr. Thirion does not give any specific information about unit sales, revenue, or the Infinity's market share relative to the greater medical imaging market. Ex. 2019 ¶¶ 29–37.

In addition, we find unavailing Patent Owner's argument that Petitioner "does not contest that its H2 infringes, and thus its sales are relevant to the invention's commercial success." PO Sur-reply 25 (citing *Truswal Sys. Corp. v. Hydro-Air Eng'g, Inc.*, 813 F.2d 1207, 1215 (Fed. Cir. 1987) & n. 12 (citing Ex. 2013 ¶¶ 215–219). We find insufficient support for Patent Owner's assertion that Petitioner does not contest infringement. And we find Patent Owner's reliance on *Truswal* misplaced. First, we note that Patent Owner cites to Judge Rich's dissent in *Truswal*. Second, Judge Rich stated the "once an infringer is sued *and proved to be an infringer*, its sales are appropriately proved and added to the others," and that "[i]t *is* necessary to establish that the alleged copies are actual infringements of the patent in

[12] *Vectra H1 Quick Reference Guide*, Canfield (2014).
[13] *Vectra H2: Capturing a FACE or BODY image*, Canfield.

suit before they can possibly be relevant and counted as successes *of the patented invention*." *Truswal*, 813 F.2d at 1215 (Rich, J., dissenting). Petitioner, as of now, has not been proved to infringe.

In sum, we find that Patent Owner does not show sufficient nexus between the purported commercial success and the claimed invention and fails to show commercial success.

b) Copying

Patent Owner alleges that Petitioner's Vectra H2 "is a copy of *the invention*, in structure, function, operation, and use." PO Resp. 64–66 (emphasis added). Patent Owner argues that Petitioner's the Vectra H2 mimics patented features and Infinity's use of red and green light beamers. *Id.* at 64. Patent Owner emphasizes that Petitioner launched its H2 device "[e]ighteen months after Quantificare launched its Infinity." *Id.* Based on these allegations, is unclear whether Patent Owner alleges that Petitioner copied Patent Owner's patent disclosure, subject matter of Patent Owner's patent claims, or Patent Owner's Infinity device.

Petitioner argues that it did not copy Patent Owner's invention and identifies technical distinctions between the parties' products. Reply 29–30. Petitioner's witness, Dr. Otto, credibly opines that Petitioner's choice of red and green light beamers was made for functional reasons (it is easier to get bright LEDs in red and green than in other colors). *Id.* at 30 (citing Ex. 1053 ¶¶ 80, 81).

Here, Patent Owner lacks evidence that Petitioner copied the '119 patent or any claim of the '119 patent. Patent Owner has no evidence, for example, that Petitioner was aware of the '119 patent during development of the H2 device. Patent Owner further lacks evidence that any particular aspect of the '119 patent was copied. *In re GPAC Inc.*, 57 F.3d 1573, 1580

(Fed. Cir. 1995) ("more than the mere fact of copying by an accused infringer is needed to make that action significant to a determination of the obviousness issue") (citation omitted).

Patent Owner also lacks evidence that Petitioner copied any patented product. As we explain above, Patent Owner lacks evidence that the Infinity is coextensive or nearly coextensive with any challenged claim; the record, thus, does not establish that Infinity is a "patented product" in a relevant sense.

Moreover, our reviewing court has held that "copying requires evidence of efforts to replicate a specific product, which may be demonstrated through internal company documents, direct evidence such as disassembling a patented prototype, photographing its features, and using the photograph as a blueprint to build a replica, or access to the patented product combined with substantial similarity to the patented product." *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1246 (Fed. Cir. 2010). Here, Patent Owner lacks evidence that Petitioner studied any Patent Owner product or documents when developing the H2 device. Just to the contrary, the preponderance of the evidence supports that Petitioner's H2 product differs from Patent Owner's product because it refocuses at different distances (a design present in prior art systems). Ex. 1053 ¶¶ 79–81; *see also* Reply 29.

Thus, based on the record as a whole, Patent Owner's allegation of copying is unpersuasive and does not support non-obviousness.

c) Long-Felt Need

Patent Owner argues that there was a long-felt need which the invention of the '253 patent addresses. PO Resp. 55–59; PO Sur-reply 26. First, Patent Owner argues that in 2007, it "developed and launched the LifeViz stereophotogrammetry camera," which "was a portable, handheld,

single camera device with one pair of beamers converging at the focus distance of the camera, and subjects were imaged at that distance." PO Resp. 57 (citing Ex. 2019 ¶¶ 9–12).

Second, Patent Owner argues that "[a]t the time of invention [of the '253 patent], there were no portable, 'all-in-one' handheld stereophotogrammetry devices for imaging both face and breast/torso." *Id.* at 58 (citing Ex. 2019 ¶¶ 25–26, 29). "To image both, practitioners had to purchase one device for face and one for breast/torso, or purchase the large, costly multi-head Canfield XT," which had disadvantages, according to Patent Owner. *Id.* (citing Ex. 2019 ¶¶ 25–26, 29; Ex. 1001, 1:49–52).

Patent Owner argues that "[a]ccordingly, since at least the 2007 introduction of LifeViz, there was a long-felt need for a portable single-camera stereophotogrammetry device that avoided the disadvantages of purchasing multiple devices or a multi-head device like the Canfield XT." *Id.* at 58–59 (footnote omitted) (citing Ex. 2013 ¶ 212; Ex. 2019 ¶ 30; Ex. 2020, 4). "To address that deficiency, [Patent Owner] developed Infinity in 2015, filed for a patent thereon on October 14, 2015, and began commercial sales one year later," according to Patent Owner. *Id.* at 59 (citing Ex. 2019 ¶¶ 28–29). Patent Owner argues that its Infinity product satisfied the long-felt need as demonstrated by industry praise and commercial success. *Id*. (citing Ex. 2019 ¶ 30; Ex. 2020, 4). Patent Owner also cites for support Dr. Otto's deposition testimony that "it 'was desired to do breast imaging,' there was 'a big demand' to image 'both areas,[]' and [Petitioner] 'didn't want to have a separate product to do breast imaging.'" PO Sur-reply 26 (citing Ex. 2037, 17:22–18:17).

We find that Patent Owner does not show that there was a long-felt need that the claimed invention addresses. "[L]ong-felt need is analyzed as

of the date of an articulated identified problem and evidence of efforts to solve that problem." *Texas Instruments Inc. v. U.S. Int'l Trade Comm'n*, 988 F.2d 1165, 1178 (Fed. Cir. 1993). Patent Owner does not show that the LifeViz product having only one pair of beamers converging at one distance was identified as a problem needing solution in 2007. *See* Ex. 2019 ¶¶ 9–12. Rather, Dr. Thirion testifies to the capabilities of the 2007 LifeViz product. *Id.* That a later generation product, such as Infinity, has additional capabilities does not evidence that a long-felt need existed and was met. Rather, evidence must be provided that shows there was an articulated identified problem and efforts to solve that problem, which Patent Owner does not do. Nor does Patent Owner provide evidence that Infinity was met with skepticism or that persons of ordinary skill in the art tried and failed to achieve the claimed invention.

Nor are we persuaded that industry praise and commercial success alone is sufficient to evidence a long-felt need that the claimed invention addresses. Both can exist without a long-felt need having existed. *See* Ex. 2019 ¶ 30 (testifying that Infinity created a new market for sales, but not providing direct evidence that a long-felt need had existed in the industry); Ex. 2020, 4 (stating that Infinity "is the first portable 3D imaging system capable of capturing face, body, and breast areas thanks to two sets of dual beamer pointers which allow for two distance settings," but without stating it met a long-felt need). Furthermore, Dr. Otto's deposition testimony cited by Patent Owner does not evidence that there was a long-felt need that the claimed invention solved. Ex. 2037, 17:22–18:17.

In sum, we find that Patent Owner does not show that there was a long-felt need. Moreover, Patent Owner does not provide analysis to show

the requisite nexus between the purported long-felt need and the unique characteristics of the claimed invention.

d) Praise

Patent Owner argues that Infinity won a prestigious award, the 2018 EuroMediCom Best Aesthetic Device Award, and that this award establishes industry praise. PO Resp. 59–60. In addition, Patent Owner argues that this award has nexus with the invention. *Id.* To that end, Patent Owner quotes three portions of the EuroMediCom announcement, and argues that "[t]his praise is squarely directed to the claimed invention." *Id.* at 59–60 (citing Ex. 2020, 4; Ex. 2013 ¶ 214).

Below we produce the entirety of the announcement, and we italicize the portions Patent Owner quotes in its Response.

> *The **LifeViz® Infinity** is the first portable 3D imaging system capable of capturing face, body, and breast areas thanks to two sets of dual beamer pointers which allow for two distance settings.* This unique system has two acquisition modes. A tripod mounted camera and turntable quickly capture a 360° 3D body image. Eight images are automatically taken and seamlessly stitched to produce a "life-like["] 3D image of the body for visualization by the physician and patient. In hand-held mode, the camera is capable of generating 3D images of face and breast to simulate procedures and photo-document before/after interventions, without blocking an entire exam room with cumbersome equipment.
> *With a simple flip of a switch, dual beam pointers adjust to the distance ideal for face or body applications without the need for cumbersome repositioning and/or multi-headed systems.* Superior image quality has been achieved by improving the optic performance. *The LifeViz® Infinity produces excellent pictures from both near and far thanks to an increased deep field of view.* Finally, a powerful external flash removes the need for specific lighting conditions and additional equipment ensuring reproducible images from one session to the next. The LifeViz® Infinity is comprised of a portable stereovision camera, a

> software suite including an image database, 3D viewer tool, 3D skin analysis, face, breast, and body measurements and simulation modules. All aspects of 3D documentation, comparison, simulation, and measurement ranging from medical to cosmetic applications are possible with this single unique device.

Ex. 2020, 4 (italics emphases added). As can be seen above, the announcement broadly describes the Infinity product, including many additional features that Patent Owner does not identify, such as "a tripod mounted camera and turntable"; "[e]ight images are automatically taken and seamlessly stitched to produce a 'life-like' 3D image of the body for visualization"; "a powerful external flash"; and "a software suite including an image database, 3D viewer tool, 3D skin analysis, face, breast, and body measurements and simulation modules." *Id.*

Patent Owner does not show that the purported praise is a direct result of the unique characteristics of the claimed invention. The announcement touts additional features of Patent Owner's product. Based on the announcement, we cannot assess whether praise for Patent Owner's product is grounded in a claimed feature, other features, or a combination thereof. Patent Owner does not directly compare the announcement with the challenged claims and does not clearly identify what Patent Owner contends are the unique characteristics of the claimed invention being praised. Moreover, the challenged claims are of varying scope, and Patent Owner does not address those differences.

In addition, Patent Owner argues that three "medical professionals' praise is directed to the claimed invention." PO Resp. 60–61 (citing

Ex. 2021,[14] 11, 19–20). In particular, Patent Owner quotes from Dr. Lee's testimonial that "[a]lthough regular 2D pictures are inconvenient, capturing a face or body in 3D with the 3D LifeViz® Infinity is easier. First of all, you have a unique device for standardized photography with a switch that adjusts the ideal distance for face and body." *Id.* at 60 (citing Ex. 2021, 19). Patent Owner does not relate this portion of Dr. Lee's testimonial to the claims, including failing to show that the purported praise is a direct result of the unique characteristics of the claimed invention.

In addition, Patent Owner quotes from the testimonial of Dr. Karimi who states that Infinity is "a state of the art, easy to use photographic system that has become an essential part of our consultation for face and body procedures." *Id.* at 61 (citing Ex. 2021, 20). And Patent Owner argues that "Dr. Myriam Fopp uses LV Infinity for face ('Wrinkles, Pores') and body," and Dr. Fopp states that "[w]e also use our LifeViz® Infinity technology for body treatments." *Id.* (citing Ex. 2021, 11). As above, Patent Owner does not relate these portions of Drs. Karimi's and Fopp's testimonials to the claims, including failing to show that the purported praise is a direct result of the unique characteristics of the claimed invention.

In sum, we find that Patent Owner does not show sufficient nexus between the purported praise and the claimed invention.

E. Ground One: Obviousness Based on Plassmann, Treuillet, and Staller

Petitioner asserts that the '119 patent's claims 1–4 and 8 would have been obvious over Plassmann, Treuillet, and Staller. Pet. 29–58. We provide

[14] *Testimonials: What our customers say*, QuantifiCare https://www.quantificare.com/learn/testimonials/.

an overview of Plassmann, Treuillet, and Staller before we address this ground.

1. Plassmann (Ex. 1007)

Plassmann is a World Intellectual Property Organization publication that relates to an apparatus for the production of stereoscopic images. Ex. 1007, at codes (10), (19), (57). Plassmann describes variations of the "MAVIS" system. *Id.* at 12:25–5. Plassmann's apparatus captures "two images [which are] needed to form a stereo image . . . to produce a three-dimensional representation of the subject." *Id.* at 12:25–29. The apparatus further includes two light emitting diodes (LEDs) emitting respective beams which converge at a particular distance in front of the apparatus. *Id.* at 12:7–13.

Below, we reproduce Plassmann Figures 1A and 1B.

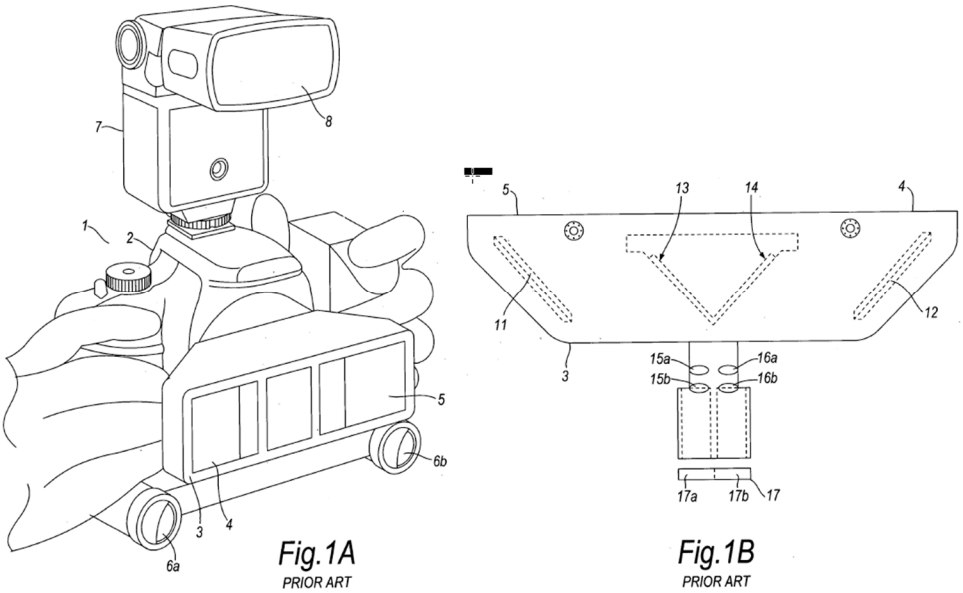

Figure 1A is a perspective representation of an apparatus for obtaining stereoscopic images, showing body 2, e.g., a camera, and adaptor 3. *Id.* at 11:3–4, 11:28–12:4. Further Figure 1B shows a "plan view" of adaptor 3 in further detail. *Id.* at 11:5–6, 12:13–14. Adaptor 3 has two apertures 4, 5

which respectively collect light which is respectively focused onto charge coupled device parts 17a, 17b, forming respective first and second images. *Id.* at 12:15–25. The first and second images form a stereo image used to produce a three-dimensional representation of a subject. *Id.* at 12:25–29.

> Additionally, as shown in Figure 1A, the apparatus includes
>
> two low-powered light emitting diodes (LEDs) 6a, 6b, each provided with a [focusing] lens to produce a beam of light and being arranged so that the beams converge and meet at a point a fixed and desired distance from the apparatus, this distance corresponding to the distance at which the camera lens is [focused].

Id. at 12:8–13. The converging beams act as "a guide to show distance between the apparatus and subject." *Id.* at 16:12–14.

2. Treuillet (Ex. 1016)

Treuillet is a paper that relates to an "approach to build 3-D models of skin wounds from color images." Ex. 1016, 752. Treuillet explains that "[b]y taking two color images from different points of view, stereophotogrammetry allows the computation of the 3-D coordinates of numerous points on the skin lesion." *Id.* at 754.

By way of imaging technology background, Treuillet describes the MAVIS II system as "a reflex digital camera equipped with special dual lens optics for recording two images from slightly different viewpoints, generating a stereo pair" which includes "two tube-shaped projectors produce beams of light which intersect in a single spot when the camera is held at the right distance" at "about 80 cm from the wound," with a tolerance of plus or minus 15 cm. *Id.* at 755.

3. Staller (Ex. 1006)

Staller is a United States patent that relates to a diffuser attachment for a camera including a "distance measurement device [that] uses a pair of light beams which intersect at a repeatable distance from the diffuser body to readily enable positioning of an object to be photographed at that repeatable distance." Ex. 1006, codes (10), (12), (57).

Below, we reproduce Figure 2, which shows a front perspective view of a diffuser. *Id.* at 3:13–14.

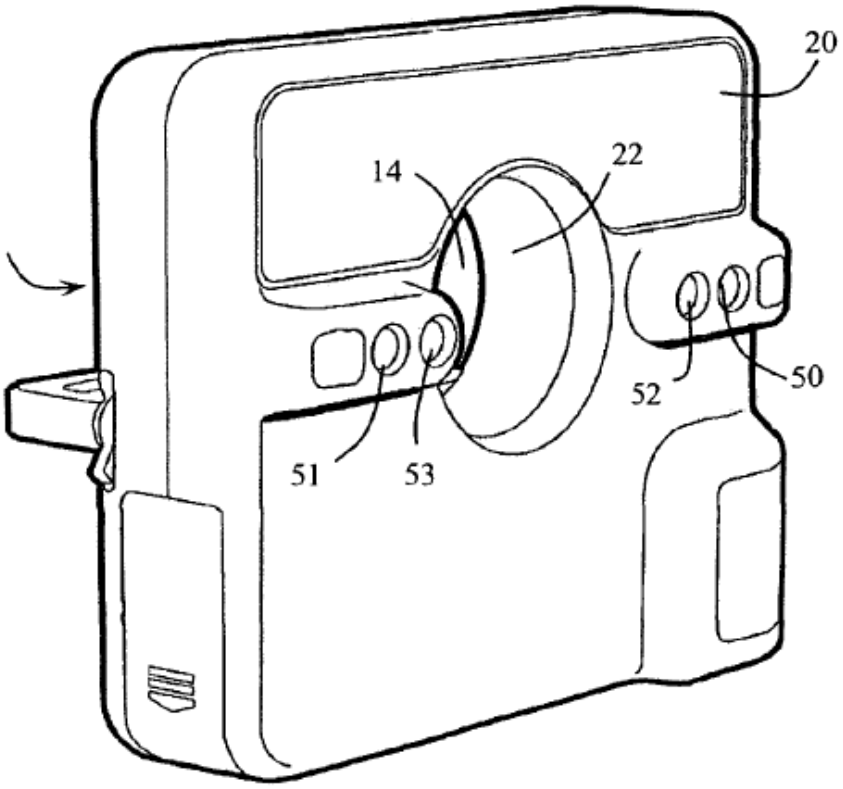

Fig. 2

As shown in Figure 2, the diffuser "includes a distance measurement device or indicator in the form of a plurality of light beam emitters 50–53." *Id.* at 5:13–15. "Each pair of emitters 50–51, 52–53 creates a pair of angled light beans which intersect at different distances in front of diffuser body 12." *Id.* at 5:17–18. As such, "[e]ach of the pairs of light beams allows diffuser 10 to be relocated at the same repeatable 20 distance from a subject." *Id.* at 5:18–

21; *see id.* at Fig. 4. That is, each pair of emitters indicates a different distance. *Id.* at 2:30–35; *see id.* at 5:64–6:2.

Further, either of the emitter pairs, i.e., pair 50–51 or pair 52–53, are selected using a selector switch. *Id.* at 5:38–41. By selecting a particular emitter pair, the distance measurement device indicates a particular distance measurement. *See id.*

4. Discussion

Because Petitioner's ground requires combining the teachings of Plassmann, Treuillet, and Staller (Pet. 5), we first address motivation to combine. *See KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring "articulated reasoning with some rational underpinning to support the legal conclusion as to obviousness")). We then address the recitations of each claim that this ground addresses.

a) Reason to Combine

Petitioner relies on Plassmann as teaching most of claim 1's recitations. For example, Plassmann teaches a stereoscopic adaptor and teaches one pair of light beamers producing intersecting light beams to position a subject within Plassmann's depth of field. Pet. 17, 34–36; Ex. 1003, Figs. 6a, 6b, ¶ 111. Petitioner does not allege that Plassmann, by itself, discloses claim 1's recitations regarding two pairs of light beamers converging on two different point positions.

To explain why the two pairs of light beamers recitations nonetheless would have been obvious, Petitioner relies on Treuillet and Staller. Petitioner's declarant, Dr. Paul Otto, testifies that a person of skill in the art would have understood that the Plassmann device "has a depth of field which contains many distances at which 'the camera lens is focused.'"

Ex. 1003 ¶ 113. Petitioner relies on Treuillet to confirm that Plassmann was capable of an expanded depth of field. Pet. 36; Ex. 1003 ¶ 113.

Petitioner persuasively argues that Treuillet teaches that the Plassmann MAVIS II device may take acceptable wound photographs from 65 centimeters to 95 centimeters (within its "depth of field"). Pet. 36; Ex. 1003 ¶ 113; Ex. 1016, 755. A person of skill in the art would have understood that acceptable medical wound photographs would have to be adequately focused and that Treuillet, therefore, suggests a depth of field from 65 centimeters to 95 centimeters for the Plassmann device. Ex. 1003 ¶ 113 (explaining that a person of skill in the art would understand that Plassmann has an expanded depth of field because it can "accurately image a subject at multiple positions").

Petitioner then relies on Staller as teaching multiple light beamers to define more than one imaging position within a depth of field. Pet. 41–42; Ex. 1006, Fig. 4, 2:29–34, 5:56–6:2. Staller teaches plurality of pairs of light beams that "intersect at a different repeatable distance from the diffuser body." Pet. 23; Ex. 1006, code (57), 2:29–32, 5:13–15; *see also id.* at 5:56–6:2 ("[T]wo pairs of light beam emitters . . . may be used to provide three or four separate pairs of intersecting bea[m]s and three or four corresponding repeatable distances for diffuser 10."). In other words, Staller teaches having at least two distinct predefined distance positions for the camera. Ex. 1006, code (57), 2:29–32, 5:13–15, 5:56–6:2. The advantage of the plurality of pairs of light beams is taught by Staller: repeatability. Ex. 1006, 6:10–15 (referring a concern for "repeatable scale" to "improve[] the usefulness of close range photographs for medical" applications).

Petitioner persuasively argues that a person of skill in the art would have been motivated to predefine two distances from a device in order to

provide for varying levels of magnification. Pet. 45–46. Petitioner persuasively explains that a person of skill in the art would have had a reasonable expectation of success in combining the references' teachings. *Id.* at 46–47.

Patent Owner argues that a person or ordinary skill in the art would not have "add[ed] beamers converging where Plassmann's camera is less than optimally focused so as to purposely obtain images of degraded focus and quality." PO Resp. 31 (citing Ex. 2013 ¶¶ 142, 154–155). Patent Owner first argues that image focus is critical to patient treatment and that a person of skill in the art would understand that a person using Plassmann would want high image quality. *Id.* at 31–33. Patent Owner then argues that, in view of the criticality of image sharpness to wound measurement, a person having ordinary skill in the art would not modify Plassmann to "image at a distance of degraded focus." *Id.* at 34 (emphasis omitted); *see also* PO Sur-reply 17–20 (making similar arguments that optimal focus to ensure precision and accuracy of the image of a wound).[15] Patent Owner emphasizes that Plassmann refers to "***the*** distance at which the camera lens is focused" and that this is a singular distance of optimal focus. *Id.* at 35

[15] Patent Owner refers to Exhibits 2039 and 2040 in its Sur-reply. Patent Owner used these exhibits (which Petitioner served on Patent Owner, but did not file in this proceeding) during a deposition of Dr. Otto, and filed them in this proceeding with its Sur-reply, which is late under our Rules. *See* Paper 41 (Order), 3 (authorizing refiling of exhibits to correct numbering, but stating that "this order does not address the merits of whether or not the exhibits at issue are proper"). We consider these exhibits in evaluating Dr. Otto's testimony, but "not as evidence supporting [Patent Owner's] arguments on the merits." *Ascend Performance Materials Operations LLC, v. Samsung SDI Co.*, IPR2020-00349, Paper 53, at 12 (PTAB. July 15, 2021). Regardless, the disclosures in these exhibits do not change our depth of field analysis.

(citing Ex. 1007, 12). Patent Owner emphasizes that other art such as Treuillet also refers to a single point of optimal distance. *Id.* at 36–40. Patent Owner's witness, Dr. van der Weide, testifies that image will degrade if distance moves away from the optimally focused position and that a person of skill in the art would, thus, not modify Plassmann to include additional beamers. Ex. 2013 ¶¶ 146–189.

Patent Owner's argument is unavailing because stereophotogrammetry devices having depth of field were known in the art. Ex. 1003 ¶¶ 113, 115, 385; Pet. Reply 19; s*ee Randall Mfg. v. Rea*, 733 F.3d 1355, 1362–63 (Fed. Cir. 2013) (providing that it is appropriate to consider such knowledge as part of an obviousness analysis). For example, Treuillet teaches with respect to the MAVIS II stereophotogrammetry device that "[t]o simplify the image capture, two tube-shaped projectors produce beams of light which intersect in a single spot when the camera is held at the right distance (about 80 cm from the wound)," and that "[e]xact positioning is not required: images can be taken in a volume of +/– 15 cm around this point." Ex. 1016, 755. This teaching supports that exact positioning is not required and that images can be taken within a 30 cm region evidences the depth of field for the MAVIS II. Ex. 1016, 755; Ex. 1053 ¶¶ 55–56.

Similarly, we find unavailing Patent Owner's argument that Treuillet's teaching that the beams of light intersect at "the right distance" equates to "the distance of optimal focus or where the image is sharpest," and limits the MAVIS II to using that distance. PO Resp. 36 (citing Ex. 1016, 755; Ex. 2013 ¶154). This teaching refers to reaching the pre-defined distance, rather than limiting the depth of field. Ex. 1016, 755. We also find unavailing Patent Owner's arguments that Treuillet teaching that "images can be taken in a volume of +/– 15 cm" does not teach a depth of field, and

that "'[c]an' is not 'should.'" PO Resp. 41–42 (citing Ex. 2013 ¶¶ 180–182). The references' teachings correspond to what depth of field means and "can" expresses that capability of taking focused images within the depth of field. Ex. 1016, 755; Ex. 1003 ¶ 37; Ex. 2006 ¶ 47; Ex. 1001, 6:15–16; Ex. 1020, 4:20–24.

In addition, Hoeffelin[16] teaches a stereophotogrammetry device having a 40 cm depth of field, which is sufficient to image both the face and torso. *See* Ex. 1015, 8–9 (disclosing "that the focal length needs to be respected (between 80 and 120 cm)"; Ex. 1003 ¶ 169; Ex. 1053 ¶ 61. We find unavailing Patent Owner's argument that Hoeffelin teaches that "the focal length needs to be respected," or otherwise brings risk of distortion. PO Resp. 36–37 (citing Ex. 1015, 8–9; Ex. 2013 ¶ 156). Patent Owner ignores the "(between 80 and 120 cm)" range that immediately follows and modifies the focal length statement, and expresses a depth of field. Ex. 1015, 8–9.

Moreover, we find unavailing Patent Owner's arguments to the extent that they focus only on Plassmann's depth of field. *See* PO Resp. 31–36; PO Sur-reply 17–20. These arguments are directed to Plassmann's teachings individually, which is the incorrect focus. *Cf. In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) ("Non-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references"); *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). In addition, these arguments are akin to arguing that Plassmann and Treuillet's teachings cannot be physically combined, which

[16] H. Hoeffelin, et al., *A Methodological Evaluation of Volumetric Measurement Techniques including Three-Dimensional Imaging in Breast Surgery,* BioMed Research Int'l, vol. 2014, 8 (Jan. 2014) (Ex. 1015).

is an improper focus for determining non-obvious. *See Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC*, 825 F.3d 1373, 1381 (Fed. Cir. 2016) (quoting *In re Sneed*, 710 F.2d 1544, 1550 (Fed. Cir. 1983)); *see also id.* (quoting *In re Etter*, 756 F.2d 852, 859 (Fed. Cir. 1985) (en banc)) ("Etter's assertions that Azure cannot be incorporated in Ambrosio are basically irrelevant, the criterion being not whether the references could be physically combined but whether the claimed inventions are rendered obvious by the teachings of the prior art as a whole.").

We also find unavailing Patent Owner's argument that that there would be no reason to combine Staller's teachings with Plassmann because Plassmann has no need for additional beamers to provide repeatable scale. PO Resp. 38–40. More specifically, Patent Owner argues that "with Plassmann, the scale of the 3D reconstruction is already known exactly from the calibration and triangulation methodology," and "[t]herefore, Plassmann already enables wound images to be viewed over successive examinations at repeatable scale(s) and at varying levels of magnification." *Id.* (citing Ex. 2013 ¶ 165). Even if, as Patent Owner argues, one of ordinary skill in the art could develop or utilize different solutions to address scale, this does not make Staller's solution less obvious. *Cf. Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006) ("[A] given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine."). Moreover, the ability to consistently take images from different positions using multiple beamers would still have utility.

We also find unavailing Patent Owner's argument that "Treuillet criticizes MAVIS II, calling it 'cumbersome' and stating 'all the previous systems are unsuitable for general use in clinical settings.'" PO Resp. 43–44

(quoting Ex. 1016, 752, 755, 761). Patent Owner further argues that Treuillet criticizes that Plassmann's MAVIS II requires "careful calibration." *Id.* at 44. These arguments, however, do not undermine our finding above that a person having ordinary skill in the art would have understood that the MAVIS II device had a useable depth of field and that Plassmann would benefit from having multiple positioning beamers within that depth of field. Treuillet does not denigrate the notion of using multiple beamers with MAVIS II. *Cf. In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004) ("The prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the [claimed solution].").

We also find unavailing Patent Onwer's argument that the "MAVIS II" device that Treuillet describes is not the same as the "MAVIS" device Plassmann refers to. PO Resp. 41. The preponderance of the evidence supports that a person of ordinary skill in the art would have understood that a "MAVIS" device of the Plassmann reference, regardless of whether or not it was precisely the same as MAVIS II, would have had the same depth of field (or, at a very minimum, some usable depth of field). In particular, Dr. Plassmann referred to MAVIS as also having a 30 centimeter depth of field. Exhibit 2040 (originally marked Exhibit 1048 during deposition) is an article by Dr. Plassmann entitled "Accuracy and Precision of the Hand-Held MAVIS Wound Measurement Device." In that article, Dr. Plassmann explains that the MAVIS includes a projector that "produces two beams of light that intersect at the centre of the middle of the field of view and in halfway in the field of depth (approximately 80 cm in front of the camera)." Ex. 2040, 3; *see also* Ex. 1054, 120:9–12 (inventor, Dr. Thirion, testifying that he saw the Exhibit 2040 article before filing the application leading to

the ’119 patent). Also, the ’119 patent’s inventor, Dr. Thirion, acknowledged that the device from the Plassmann reference resemble[d] the MAVIS II system.” Ex. 1054, 85:19–88:1. Dr. Otto also testifies that a person of ordinary skill in the art would have understood that the Plassmann article refers to the “MAVIS II” device when using the term “MAVIS.” Ex. 1003 ¶ 114.

Patent Owner does not persuasively dispute that Plassmann’s device would have some depth of field. Rather, Patent Owner’s witness, Dr. van der Weide, admits that every stereophotogrammetry device has some depth of field. Ex. 2006 ¶ 78 (“[A] stereophotogrammetry device does not have zero depth of field.”); *see also* Ex. 1054, 119:11–16 (the ’119 patent’s inventor, Dr. Thirion, stating that “every camera has a depth of field”). Patent Owner also does not present persuasive evidence disputing that a person of skill in the art would have understood that the Plassmann’s MAVIS device would have the depth of field described in Treuillet.

Thus, in light of the above, we find that one of ordinary skill in the art would have found it obvious to modify Plassmann’s stereophotogrammetry device, based on what was known in the art, to have multiple predefined distance positions for repeatability. Plassmann already teaches use of one pair of light beams for positioning, and a person of skill in the art would have understood that the Plassmann device could benefit from multiple pairs of light beams in the same way the Staller device benefits from the multiple pairs of light beams to enable positioning at more than one repeatable distance from the camera. Ex. 1003 ¶¶ 138–139. As the Supreme Court has explained:

> *[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would*

> *improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill,* . . . [A] court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.

KSR, 550 U.S. at 417 (emphasis added).

c) Claim 1

We next address obviousness of each claim recitation starting with claim 1.

The preamble of claim 1 recites "[a] device for stereophotogrammetry comprising." For purposes of our analysis, we do not need to decide whether or not this preamble is limiting. Even if the preamble were limiting, the preponderance of the evidence supports that Plassmann discloses a device for stereophotogrammetry. Pet. 30–31; Ex. 1007, Figs. 1A, 1B, 12:25–29; Ex. 1003 ¶ 103. Patent Owner does not persuasively dispute this recitation.

Claim 1 next recites "a camera body." As Petitioner argues, the preponderance of the evidence supports that Plassmann discloses a camera body. Pet. 31; Ex. 1007, Fig. 1A, 5:29–30, 12:3–4; Ex. 1003 ¶ 105. Petitioner adds that Plassmann teaches using "a camera body such as is well-known to those skilled in the art." *Id.* at 30 (quoting Ex. 1007, 5:29–30, 12:3–4). Patent Owner does not persuasively dispute this recitation.

Claim 1 next recites "a double-optics (2) comprising two sub-optics (2*b*) and (2*c*), configured for a simultaneous acquisition of two views according to two different angles." Pet. 32–34 (citing Ex. 1007, 21:14–25, Fig. 1B; Ex. 1003 ¶¶ 107–110). As Petitioner argues, the preponderance of the evidence supports that Plassman teaches this recitation.

Petitioner annotates Plassmann's Fibure 1B, which we reproduce below with Petitioner's annotations. Pet. 33.

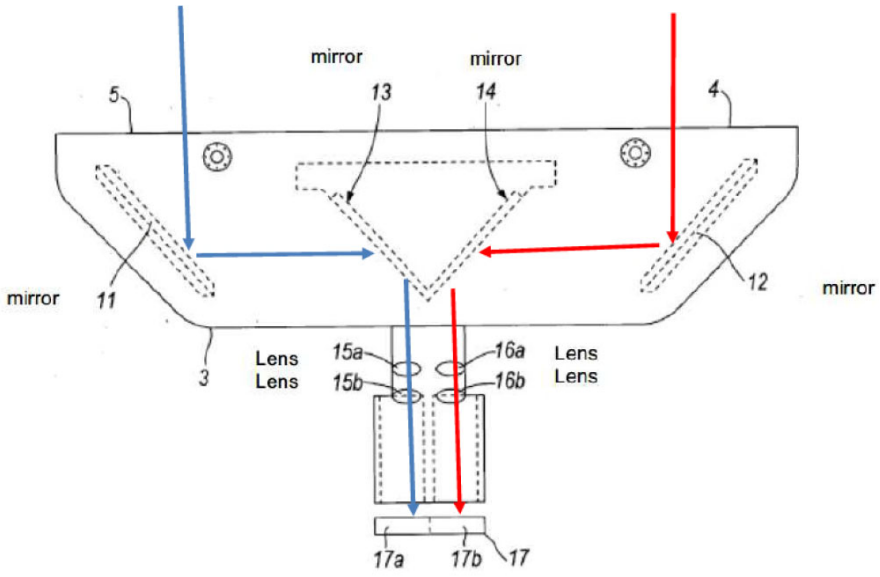

Fig.1B
PRIOR ART

Plassmann's Figure 1B depicts a plan view of an adaptor used with the MAVIS apparatus. Ex. 1007, 11:5–6, 11:25–12:29. Petitioner annotates Figure 1B with red and blue lines to illustrate that Plassmann "comprises double-optics employing two sets of sub-optics (i.e.[,] 11, 13, 15a, and 15b (blue) and 12, 14, 16a, and 16b (red))." Pet. 34.

Petitioner persuasively argues that "Plassmann's Figure 1B is substantially identical to the '119 patent's figures depicting the claimed double optics and two sub-optics." Pet. 33–34 (citing Ex. 1007, Fig. 6; Ex. 1003 ¶¶ 108–109). Petitioner argues that Plassmann teaches, for example, that light forming the first image (depicted by blue annotations) hits the adaptor, hits mirror 11 and then mirror 13 before passing through lenses (15a,b). *Id.* at 20–21 (citing Ex. 1007, 1214–22; Ex. 1003 ¶ 78). According to Petitioner, one of ordinary skill in the art "would recognize that the combination of mirrors and lenses traversed by each light path in Plassmann . . . comprises double-optics employing two sets of sub-optics (*i.e.* 11, 13,

15a, and 15b (blue) and 12, 14, 16a, and 16b (red)) as recited." *Id.* at 34 (citing Ex. 1003 ¶ 109). Petitioner adds that "because of the spaced mirrors 11 and 12, the two images are necessarily taken at different angles." *Id.* In addition, Petitioner argues that "[b]ecause the images are captured using a single camera . . . [one of ordinary skill in the art] would understand that they are obtained simultaneously." *Id.*

We agree with Petitioner and find that one of ordinary skill in the art would have recognized that the combination of mirror and lenses comprises double-optics employing two sets of sub-optics (*i.e.* 11, 13, 15a, and 15b (blue) and 12, 14, 16a, and 16b (red)). Ex. 1007, 12:14–25, Fig. 1B; Ex. 1003 ¶ 235; Pet. 32. More specifically, we agree with Petitioner and find that Plassmann teaches having two sub-optics, which are displaced from one another, and which each collect light from the subject to be imaged (viewed). *See, e.g.*, Ex. 1007, 12:14–25, Fig. 1B. Plassmann teaches that the light collected by each sub-optic comprises the light that passes through the respective aperture 4 or 5, and traverses different sets of mirrors and lenses to be focused on a different part of a charged coupled device to form respective first and second images (views). *Id.* at 12:14–25, Fig. 1B.

We also agree with Petitioner and find that due to spaced mirrors 11 and 12—which are part of different light paths and which are hit by the light that passes through their respective aperture 4 or 5—the two images (views) are necessarily acquired at different angles. Ex. 1007, 12:14–25, Fig. 1B; Ex. 1003 ¶ 235; Pet. 32. Moreover, each sub-optic receives light from, for example, the center point of the object to be imaged from a different angle due to the spaced mirrors 11 and 12, as well as depending on the curvature of the subject and which point on the subject from which the light originates. *Id.*; *see also* PO Resp. 28 (admitting that "[i]t is true that, when a subject is

imaged using a stereophotogrammetry device having two sub-optics, the 'angle' between a point of the subject and each sub-optic is different").

In addition, the '119 patent Specification describes the claimed double optics as follows: "A double optics (2) adapted to the camera body (1) and composed of two sub-optics (2b) and (2c), enabling the acquisition of a stereo pair corresponding to two slightly different viewing angles." Ex. 1001, 8:24–27. Notably, the passage provides that having two sub-optics enables acquiring a stereo pair "corresponding to two slightly different viewing angles," without addressing the sub-optics' orientation. *Id.*

Lastly, we agree with Petitioner and find that because images (views) are captured using a single camera, one of ordinary skill in the art would have understood they are obtained simultaneously. Ex. 1003 ¶ 235.

We find unavailing Patent Owner's arguments disputing that Plassmann teaches this limitation. PO Resp. 23–30. Patent Owner's arguments are premised on its construction (which we do not adopt) of the plain and ordinary meaning for this limitation which excludes parallel view sub-optic configurations. *Id.* Put differently, Patent Owner argues that having the sub-optics spaced apart from each other is insufficient to teach "two views according to two different angles." *Id.* As we discuss above, this is incorrect. Thus, Patent Owner's discussions regarding the optical axes of the sub-optics and their orientations are inapposite in light of the proper construction for "two views according to two different angles." *Id.*

Moreover, we afford the testimony of Dr. van der Weide, Patent Owner's declarant, little weight with regard to this issue, as it is based on the incorrect claim construction for "according to two different angles," and

does not explain otherwise a basis for the testimony that the two images are acquired at the same angle. Ex. 2013 ¶¶ 113–141.[17]

In sum, we are persuaded that Petitioner demonstrates by a preponderance of the evidence that Plassmann teaches "a double-optics (2) comprising two sub-optics (2b) and (2c), configured for a simultaneous acquisition of two views according to two different angles."

Claim 1 next recites "wherein the device is comprising a positioning system (34) configured to define a position of a target subject (S) for one of at least two distinct pre-defined point positions (A3, A4) of the target subject (S) relative to the stereophotogrammetry device." Ex. 1001, 11:32–57. As Petitioner argues, the preponderance of the evidence supports that the combination of Plassmann, Treuillet, and Staller steaches or suggests this limitation and, as we explain above, the evidence supports that a person of ordinary skill in the art would have had reason to combine these references' teachings to meet this limitation with a reasonable expectation success. Pet. 34–40.

First, as Petitioner argues, the preponderance of the evidence supports that Plassmann teaches a positioning system that uses a pair of light beamers to signal when a target subject is reaching a predefined distance position to the camera. *See* Ex. 1007, Fig. 1A (light beamers 6a, 6b); Pet. 34–35. Plassmann teaches that these light beams converge at a predefined distance

[17] Petitioner argues that Plassmann and its Figure 3A suggest that its sub-optics are angled inwardly such that this recitation would be met "[e]ven if the Board were to exclude parallel suboptics from the claims." Pet. Reply 8. It is not necessary to reach this issue because we did not adopt Patent Owner's construction.

"corresponding to the distance at which the camera lens is focused." Ex. 1007, 12:7–13. More specifically, Plassmann states the following:

> The apparatus is also provided with two low-powered light emitting diodes (LEDs) 6a, 6b, each provided with a focussing lens to produce a beam of light and being arranged so that the beams converge and meet at a point a fixed and desired distance from the apparatus, this distance corresponding to the distance at which the camera lens is focussed.

Id.; Pet. 34–35. Accordingly, we find that Plassmann teaches the limitation, save for having a second predefined distance position—if there are two different distance positions, one necessarily is closer to the camera body and the other one farther. Ex. 1007, 12:7–13, Fig. 1A.

Second, as Petitioner argues, a preponderance of the evidence supports that Staller teaches a positioning system having more than one predefined imaging distance position. Pet. 41–42. More specifically, we find that Staller teaches a strobe diffuser attachment for a camera, which includes a "distance measurement device [that] may be adapted to selectively produce one of a plurality of pairs of light beams which intersect at different repeatable distances from the diffuser body." Ex. 1006, code (57), 2:29–32, 5:13–15; *see also id.* at 5:56–6:2 ("[T]wo pairs of light beam emitters . . . may be used to provide three or four separate pairs of intersecting bea[m]s and three or four corresponding repeatable distances for diffuser 10."); Pet. 38. In other words, Staller teaches having at least two distinct predefined distance positions for the camera. Ex. 1006, code (57), 2:29–32, 5:13–15, 5:56–6:2.

We also find that Staller teaches that its "distance indicator improves the usefulness of close range photography by providing a repeatable scale to photographs[, which] . . . improves the usefulness of close ranges

photographs for medical and other organic growth measurement applications." Ex. 1006, 6:10–15. Plassmann also teaches that "[s]tereoscopic imaging has been known for many years," and "ha[s] been used to measure the shape of wounds and the like which are otherwise difficult to measure by conventional techniques." Ex. 1007, 1:6–15. We find that it was known in the art before the '253 patent to use a camera having multiple predefined distances for imaging a subject in connection with wound or lesion treatment. *See* Ex. 1017,[18] 579; Ex. 1011,[19] 164, Fig. 2, Table 2; Ex. 1008,[20] 481.

Based on the record as a whole and as we explain when addressing reasons to combine, *supra* Sec. V.F.4.a, we determine that Petitioner has adequately established that a person of skill in the art would have had reason to modify Plassmann to include predefined distances as suggested by the combined teachings of Plassmann, Treuillet, and Staller.

Claim 1 next recites "wherein the device comprises a switch (5) comprising a first selection position configured to select the farther point position (A3) and a second selection position configured to select the closer point position (A4)." As Petitioner argues, a preponderance of the evidence supports that Staller teaches such a switch. Ex. 1006, Fig. 1, 5:38–43; Ex. 1003 ¶¶ 131–133; Pet. 43–44. Patent Owner does not persuasively dispute this point.

---

[18] Gwen Clarke, *Recording Wounds: Polaroids New Medically Designed Camera*, British Journal of Community Nursing, vol. 5, no. 11 (Sept. 27, 2013) ("Clarke").
[19] Melvin A. Shiffman, *A New Camera for Cosmetic Surgery*, The Am. J. Cosmetic Surgery, vol. 15, no. 2 (June 1, 1998) ("Shiffman").
[20] Clare Williams, *Wound care assessment with the Polaroid Macro 3 SLR,* British J. Community Nursing, vol. 6, no. 9 (2001) ("Williams").

Claim 1 next recites "wherein the switch (5) is configured to switch on the first pair of light beamers (3*b*, 3*c*) in the first selection position and wherein the switch (5) is configured to switch on the second pair of light beamers (4*b*, 4*c*) in the second selection position." As Petitioner argues, a preponderance of the evidence supports Staller teaches such a switch. Ex. 1006, Fig. 1, 5:38–43; Ex. 1003 ¶¶ 131–136; Pet. 44–45. Patent Owner does not persuasively dispute this point.

In summary, we determine that Petitioner shows by a preponderance of the evidence that claim 1 would have been obvious to one of ordinary skill in the art in view of the combination of Plassmann, Treuillet, and Staller.

c) Claim 2

Claim 2 recites "[t]he device according to claim 1 wherein the at least two distinct pre-defined positions (A3, A4) are included in a space region corresponding to a depth of field (6) of the double-optics (2)." Ex. 1001, 11:58–61. As Petitioner argues, the preponderance of the evidence supports that a person having ordinary skill in the art would have reason to ensure that each predefined position falls within Plassmann's depth of field to obtain focused images. Ex. 1003 ¶¶ 145–146; Pet. 47. Patent Owner does not persuasively dispute this point.

d) Claim 3

Claim 3 recites "[t]he device according to claim 1 wherein the closer point position (A4) and the farther point position (A3) are such that a surface of a field of view corresponding to the farthest point position (A3) is at least 25% larger than a surface of a field of view corresponding to the closer point position (A4)." Ex. 1001, 11:62–67. To address this recitation, Petitioner

argues that it would have been obvious to a person having ordinary skill in the art to define a farther position 25% larger than the closer position. Pet. 49. Petitioner persuasively argues that Plassmann and Treuillet both disclose that Plassmann could be used for wound monitoring. *Id.* Petitioner also persuasively argues that a person of ordinary skill in the art would have understood that wound-monitoring devices could employ close and far positions which differ in magnification by more than 200%. *Id.* A preponderance of the evidence including the Clark reference evidences this point. Ex. 1017; Ex. 1003 ¶ 153.

Petitioner further argues a person having ordinary skill in the art would have also understood that a Plassmann-type stereophotogrammetry device could be used for imaging face or breasts. Pet. 50. A preponderance of the evidence also supports this position. The '119 patent acknowledges that stereophotogrammetry devices had been used for 3D reconstructions of face and breasts in A3 and A4 surface format. Ex. 1001, 1:41–48; Ex. 1003 ¶¶ 154–155. Note, however, that the '119 patent states that specialists use "two distinct stereophotogrammetry cameras" for acquiring 3D representation of faces or breasts. Ex. 1001, 1:49–52.

Petitioner's witness, Dr. Otto, calculates that Plassmann's 30-centimeter depth of field would be sufficient to encompass a "surface field of view" equivalent to the A4 format and equivalent to the A3 format (different by more than 25%). Pet. 50–51 (citing Ex. 1003 ¶¶ 156–157). Dr. Otto also testifies that, while Plassmann and Treuillet do not disclose focal length of the Plassmann device's lenses, a person having ordinary skill in the art would understand that different lenses could be employed to achieve different results. Pet. 51 (citing Ex. 1003 ¶¶ 158–166). Dr. Otto further explains that a person of ordinary skill could configure a Plassmann

device to take both A3 and A4 formats within the depth of field of the Plassmann device. *Id.* Dr. Otto further explains that a person of ordinary skill would understand that any suitable lens could be used to achieve imaging goals. *Id.* at 51–52, 54 (citing Ex. 1003 ¶¶ 167, 172–173).

Petitioner further argues that a person having ordinary skill in the art would have known that similar stereophotogrammetry devices could image face and bodies, such as the LifeViz II device. Pet. 52–53; Ex. 1014, 2 (depicting images of faces and breasts using LifeViz II); Ex. 1003 ¶ 168. Petitioner argues that Hoefflin teaches that LifeViz II has a depth of field from 80–120 cm and that a person of ordinary skill in the art would have thus understood that a 40-centimeter depth of field would be sufficient to encompass A4 format and 100% larger A3 format. Pet. 53 (citing Ex. 1003 ¶¶ 169–170; Ex. 1015, 8–9). Dr. Otto confirmed that such a device could encompass these formats. *Id.* (citing Ex. 1003 ¶ 171).

Patent Owner argues that Dr. Otto's analysis and conclusions are flawed. PO Resp. 46. Patent Owner argues, as Petitioner acknowledged, that neither Plassmann nor Treuillet disclose actual focal length of the lenses, and Patent Owner argues that this means neither references teaches "field of view." *Id.* (citing Ex. 2013 ¶¶ 102–193; Ex. 1003 ¶ 158). Patent Owner, thus, emphasizes that Dr. Otto relies on replacing Plassmann's lenses to reach A4 and A3 formats. *Id.* at 47.

Patent Owner then argues that Dr. Otto's calculations and approach err because they are based on a single pyramidal view rather than considering, as is necessary for stereophotogrammetry, the intersection of two separate view frustums. *Id.* at 48. Patent Owner's witness, Dr. van der Weide, explains this error. Ex. 2013 ¶¶ 196–199. Patent Owner further argues that depth of field is controlled by lens aperture and that Dr. Otto

could not evaluate Plassmann's depth of field without lens aperture dimensions. PO Resp. 49–50 (citing Ex. 2013 ¶ 200).

Patent Owner also argues that, even under Dr. Otto's calculations, the subject would have to be imaged 64.5 cm from the camera which is outside of the 65–95 cm depth of field Dr. Otto calculates. *Id.* at 50 (citing Ex. 1003 ¶ 157; Ex. 2013 ¶ 201).

Patent Owner also disputes that Petitioner and Dr. Otto incorrectly contend that LifeViz II could image the face and torso. Patent Owner emphasizes that the face image is from a QuantifiCare advertisement while the torso image is from Hoefflin, which used a different camera. *Id.* at 51–53 (citing Ex. 1014, 1–2; Ex. 1015, 2, 3, 4); Ex. 2013 ¶¶ 204–205; Ex. 2019 ¶¶ 20, 23–24). Patent Owner further argues that Hoefflin only provides focal length rather than depth of field. PO Resp. 53 (citing Ex. 1005, 8–9; Ex. 1015, 4; Ex. 2013 ¶ 296). Patent Owner also argues that Polaroid's Macro SLR 3 and 5 used different lenses with different focus distances to achieve different magnification. *Id.* at 53–54 (citing Ex. 2013 ¶¶ 207–208).

Patent Owner then argues that, because of Dr. Otto's analytic errors, Petitioner has not shown that modified devices would meet claim 3 or that a person having ordinary skill in the art could determine how to modify the devices with a reasonable expectation of success. PO Resp. 54.

Considering all of the evidence before us, the preponderance of the evidence supports that a person having ordinary skill in the art would have had reason to configure Plassmann as claim 3 recites (to be able to take both face and breast stereo-photos) and would have understood that suitable lenses and focus distance could be employed to achieve claim 3's field of view. We find Dr. Otto's testimony credible and Petitioner's position persuasive based on the evidence the Petition cites.

In particular, the preponderance of the evidence suggests that a person of skill in the art would have known the benefit of creating stereophotogrammetric 3–D images of both faces and breasts. *See* Ex. 1001, 1:41–48 (admitting known desire to create images of faces and breasts); Ex. 1014, 2 (suggesting that LifeViz device can create 3–D face image); Ex. 1015, 3 (suggesting LifeViz device can create 3-D breast images). The preponderance of the evidence further supports that a person having ordinary skill in the art would have known that the device described by Plassmann and Treuillet could be configured to create these images with a reasonable expectation of success by making use of various lenses, focal lengths, depth of field, and so forth to define closer and farther imaging positions as desired and, in particular, to reach the recitations of claim 3 for face and breast imaging. Pet. 54; Ex. 1003 ¶ 172; Ex. 1053 ¶¶ 69–74.

Patent Owner's arguments that Petitioner's witness, Dr. Otto, miscalculates the precise adjustments that would allow such imaging (PO Resp. 46–53) do not undermine Petitioner's rationale as to why a person having ordinary skill in the art would combine the references' teachings to reach claim 3 or would have reasonable expectation of success reaching claim 3. As Petitioner points out, Patent Owner lacks evidence that would undermine Petitioner's position that such a device would have been desired and achieving such a device would have been within ordinary skill in the art. Reply 21. Thus, the preponderance of evidence as to this more general proposition remains true even if Patent Owner were correct that Dr. Otto's precise calculations were in error. Petitioner does not have a burden to provide precise dimensions of an obvious device within the scope of claim 3. Rather, Petitioner needs to show that a person having ordinary skill in the art would have had both a reason to combine and reasonable expectation of

success as to reaching claim 3's recitations. As we explain above, Petitioner meets this burden.

In sum, we find that Petitioner demonstrates by a preponderance of the evidence that claim 10 would have been obvious to one of ordinary skill in the art over Plassmann, Treuillet, and Staller.

e) Claim 4

Claim 4 recites:

> The device according to claim 3 wherein the field of view corresponding to the closer point position (A4) is equal to a normalized surface format A4, that is 21 cm times 29.7 cm, with possible variations of plus or minus 40% of a surface of the normalized surface format A4 and the field of view corresponding to the farther point position (A3) is equal to a normalized surface format A3, that is 29.7 cm times 42 cm, with possible variation of plus or minus 40% of a surface of the normalized surface format A3.

Ex. 1001, 12:1–9. For largely the same reasons as claim 3, Petitioner argues that it would have been obvious to a person having ordinary skill in the art to select a field of view that corresponds to A3 surface format and a second field that corresponds to A4. Pet. 54–55. Patent Owner argues that Petitioner does not meet its burden for the same reasons as claim 3. PO Resp. 54–55. As we explain above, the preponderance of the evidence supports Petitioner's position. *See also* Ex. 1003 ¶¶ 176–178 (Dr. Otto addressing claim 4).

f) Claim 8

Claim 8 first recites "[a] method comprising using the stereophotogrammetry device according to claim 1 comprising." Ex. 1001, 12:31–32. As explained above, the combined teachings of Plassmann, Treuillet, and Staller disclose each recitation of claim 1. As explained below,

Petitioner also adequately establishes that the references disclose all steps of the method of using the claim 1 device. Pet. 56.

Claim 8 next recites "activating the switch (5) of the positioning system (34) to select one out of the at least two distinct point positions (100)." Ex. 1001, 12:33–35. As we explain above and as Petitioner argues, the preponderance of the evidence supports that Staller discloses such a switch. A person of ordinary skill in the art would also understand that Staller suggests activating the switch. Pet. 56; Ex. 1003 ¶ 182. Patent Owner does not persuasively dispute this point.

Claim 8 next recites "switching on the first pair of light beamers (3*b*, 3*c*) if the first selection position configured to select the farther point position (A3) is selected or switching on the second pair of light beamers (4*b*, 4*c*) if the second selection position configured to select the closer point position (A4) is selected." Ex. 1001, 12:42–44. As we explain above and as Petitioner argues, the preponderance of the evidence supports that Staller discloses such a switch. A person of ordinary skill in the art would also understand that Staller suggests activating the switch. Pet. 56; Ex. 1003 ¶ 184. Patent Owner does not persuasively dispute this point.

Claim 8 next recites "moving the stereophotogrammetry device and/or the target subject (S) so that the target subject (S) is at that selected pre-defined point position (200)." Ex. 1001, 12:42–44. As explained above and as Petitioner argues, the preponderance of the evidence supports that Plassmann and Treuillet disclose a positioning system configured to allow the device "to be relocated at the same repeatable distance from a subject as demonstrated in FIG. 4." Ex. 1006, 5:19–21; Pet. 57; *see also* Ex. 1003 ¶¶ 186–188. Patent Owner does not persuasively dispute this point.

Claim 8 next recites "taking one or several stereo-pairs at that selected

predefined point position (300).” Ex. 1001, 12:45–46. As explained above and as Petitioner argues, the preponderance of the evidence supports that Plassmann teaches taking a stereo-pair at the selected point position. Pet. 57–58; Ex. 1007, 12:9–26; Ex. 1003 ¶¶ 189–190. Patent Owner does not persuasively dispute this point.

In summary, Petitioner adequately establishes that the cited art teaches each recitation of each claim subject to this ground, and Petitioner adequately establishes reason to combine the references teachings to reach each claim subject to this ground. Thus, after fully considering the entire record including the weight of the evidence as to the cited references teaching each recitation of claims 1–4 and 8, the weight of the evidence supporting reason to combine the cited references with reasonable expectation of success, and the weight of evidence supporting objective indicia of non-obviousness, we conclude that Petitioner persuasively establishes by a preponderance of the evidence that the subject matter of claims 1–4 and 8 would have been obvious in view of Plassmann, Treuillet, and Staller.

F. Ground Two: Obviousness Based on Plassmann, Treuillet, Staller, and Peng

Petitioner asserts that the ’119 patent’s claims 9–11 would have been obvious over Plassmann, Treuillet, Staller, and Peng. We provide an overview of Peng before we address this ground.

1. Peng (Ex. 1009)

Peng is a paper that relates to an “automatic 3D reconstruction method” to reconstruct a 3D scene using “complementary stereo information from four cameras.” Ex. 1009, 1. In particular, Peng’s “3D model

reconstruction system us[es] images acquired from multiple stereo pairs." *Id.* at 2. Peng explains that a "normal camera" has a "limited field-of-view." *Id.* at 6. Accordingly, Peng describes a process to "reconstruct a large and integrated scene" by "finding more than three spatial matched points between different 3D models [and] can achieve 3D model stitching." *Id.*; *see id.* at 2–3.

2. Discussion

Because Petitioner's ground requires combining the teachings of Plassmann, Treuillet, Staller, and Peng (Pet. 5), we first address motivation to combine. *See KSR Int'l Co.*, 550 U.S. 398 at 418. We then address the recitations of each claim that this ground addresses.

a) Reason to combine

Petitioner argues that a person of ordinary skill in the art would have had reason to combine the disclosures of Plassmann, Treuillet, and Staller for the reasons we address above. Pet. 66. Petitioner argues that a person of ordinary skill in the art would have had reason to combine Peng's teachings with the combined disclosures of Plassmann, Treuillet, and Staller because Peng relates to reconstruction of comprehensive 3-Dimensional representations. *Id.* Petitioner emphasizes that the '119 patent admits that techniques of matching and stitching images were already known to persons of ordinary skill in the art. *Id.* (citing Ex. 1001, 2:6–39; Ex. 1003 ¶ 216). Petitioner argues that a person of ordinary skill in the art would recognize that Peng's disclosures regarding reconstruction of 3-D images would be useful in the context of Plassmann, Treuillet, and Staller because they relate to providing stereophotogrammetry images of the face and torso of a subject as Peng discloses. *Id.* Petitioner argues that a person of ordinary skill in the art would expect success because such 3-D image reconstruction was known

in the art and because the '119 patent does not specify how such reconstruction should be performed. *Id.* at 67. A preponderance of the evidence supports Petitioner's position regarding reason to combine with reasonable expectation of success. Ex. 1001, 2:6–39, 7:20–27, 10:31–37; Ex. 1003 ¶¶ 216–219. Patent Owner does not persuasively dispute this position. PO Resp. 66–67.

a) Claim 9

Claim 9 first recites "[t]he method according to claim 8 comprising taking several stereo-pairs at the selected pre-defined point position and." Ex. 1001, 12:47–49. Petitioner argues that the '119 patent and prior art acknowledge that a person of ordinary skill in the art would have understood that more than one stereo-pairs is necessary to create a 3-D construction of certain curved surfaces. Pet. 59–60. Petitioner further argues that Hoefflin teaches stitching five views together. *Id.* Thus, Petitioner argues that the combination of references discloses this element. The preponderance of the evidence supports Petitioner's position. Ex. 1001, 1:65–2:5, 2:6–15; Ex. 1003 ¶¶ 193–196; Ex. 1015, 2. Patent Owner does not persuasively dispute this point.

Claim 9 next recites "reconstructing 3-Dimensional surfaces of the target subject (S) corresponding to each of the stereo-pairs (400); and." Ex. 1001, 12:50–52. Petitioner argues that reconstructing 3-Dimensional purposes is the primary purpose of stereophotogrammetry for image pairs and a person of ordinary skill in the art would have been well acquainted with techniques for such reconstruction. Pet. 60–64. The preponderance of the evidence including, for example, disclosures of Treuillet and Peng, supports Petitioner's position. Ex. 1003 ¶¶ 197–211; Ex. 1009, 6; Ex. 1016, 755, 756. Patent Owner does not persuasively dispute this point.

Claim 9 next recites "matching the different 3-Dimensional surfaces in space (500); and." Ex. 1001, 12:53–54.As Petitioner argues, the preponderance of the evidence supports that Peng supports such matching to achieve reconstruction as referenced in Plassmann and Treuillet. Pet. 64; Ex. 1003 ¶¶ 210–212; Ex. 1009, 1–2, 6. Patent Owner does not persuasively dispute this point.

Claim 9 next recites "stitching together the different surface pieces of the target subject (S) into a comprehensive 3-Dimensional representation (600)." Ex. 1001, 12:55–57. As Petitioner argues, the preponderance of the evidence supports that Peng teaches such stitching. Pet. 65–66; Ex. 1003 ¶¶ 213–215; Ex. 1009, Figs. 9(b), 2, 7, 8. Patent Owner does not persuasively dispute this point.

b) Claim 10

Claim 10 recites "[t]he method according to claim 9 comprising using a computer program product stored on a non-transitory media to operate the steps of reconstructing, matching, and stitching." Ex. 1001, 12:58–61. As Petitioner argues, Plassmann and Treuillet suggest using a computer executing software to accomplish the recited steps. Pet. 67–68; Ex. 1003 ¶¶ 220–222; Ex. 1007, 12:25–29; Ex. 1009, 2–6; Ex. 1016, 754–758. Patent Owner does not persuasively dispute this point.

c) Claim 11

Claim 11 first recites "[t]he method according to claim 8 comprising selecting (100): Either the closer point position (A4) and then placing a face of the target subject (S) at the closer point position." Ex. 1001, 12:62–65. As Petitioner persuasively argues, the preponderance of the evidence supports that the cited references teach this recitation. Pet. 68; Ex. 1003 ¶ 223. Patent Owner does not persuasively dispute this point.

Claim 11 next recites "and then taking several stereo-pairs of the face of the target subject (S) at the closer point position, processing these stereo-pairs to reconstruct 3-Dimensional surfaces of the face of the target subject (S), then matching these different 3-Dimensional surfaces in space and finally stitching together these different 3-Dimensional surfaces into a comprehensive 3-Dimensional surface representation (710) of the face of the target subject (S); or." Ex. 1001, 12:66–13:7. As Petitioner argues, the cited references teach this recitation. Pet. 69; Ex. 1003 ¶ 224.

Claim 11 next recites

> the farther point position (A3) and then placing a torso of the target subject (S) at the farther point position, and then taking several stereo-pairs of the torso of the target subject (S) at the farther point position, processing these stereo-pairs to reconstruct 3-Dimensional surfaces of the torso of the target subject (S), then matching these different 3-Dimensional surfaces in space and finally stitching together these different 3-Dimensional surfaces into a comprehensive 3-Dimensional surface representation (720) of the torso of the target subject (S).

Ex. 1001, 13:8–18.

As Petitioner persuasively argues, the cited references disclose the step of taking several stereo-pairs of the torso, when the closer position is selected, and matching and stitching resulting 3-dimensional surfaces in space to produce a comprehensive 3-D surface representation thereof. Pet. 69–70; Ex. 1003 ¶ 226.

Patent Owner argues that the Petition does not substantively discuss why claim 11 is obvious and, instead, incorrectly refers back to its explanation of claims 3 and 4. PO Resp. 68–69. In particular, Patent Owner argues that, as to claims 3 and 4, Petitioner fails to establish that it would have been obvious to create a device capable of imaging both the face and

torso. *Id.* We disagree. Petitioner meets its burden as to claim 11 for substantially the same reasons we explain above as to claims 3 and 4.

In summary, Petitioner adequately establishes that the cited art teaches each recitation of each claim subject to this ground, and Petitioner adequately establishes reason to combine the references teachings to reach each claim subject to this ground. Thus, after fully considering the entire record including the weight of the evidence as to the cited references teaching each recitation of claims 9–11, the weight of the evidence supporting reason to combine the cited references with reasonable expectation of success, and the weight of evidence supporting objective indicia of non-obviousness, we conclude that Petitioner persuasively establishes by a preponderance of the evidence that the subject matter of claims 9–11 would have been obvious in view of Plassmann, Treuillet, Staller, and Peng.

G. Legal Sufficiency of the Petition

Patent Owner argues that the Petition is legally deficient because first, in related District Court litigation, Petitioner alleged that various claim recitations of claims 9 and 11 should be construed under Section 112(f) and, second, Petitioner violated 37 C.F.R. § 42.104(b) by not identifying how these recitations should be construed and by not identifying corresponding portions of the specification. PO Resp. 67–69.

Patent Owner's arguments are unpersuasive. In this *inter partes* review, Petitioner argues that express construction is not necessary for any claim term. Pet. 17. This is sufficient under our Rules. *See* CTPG 44 ("[A] petitioner may include a statement that the claim terms require no express construction."). Patent Owner does not identify any requirement that Petitioner must take a claim construction position in this proceeding that is

identical to a position taken in a still pending district court litigation. An inconsistency, however, can weigh against an argument on how to construe a claim term. Here, however, Patent Owner does not argue that Section 112(f) actually should apply to any claim term.

In addition, we do not find persuasive Patent Owner's reliance on *Orthopediatrics Corp. v. K2M, Inc.*, IPR2018-01548, Paper 9, at 9–12 (PTAB Mar. 1, 2019). PO Resp. 67–68. This Board decision is non-precedential and we find that under the facts here. For example, in *Orthopediatrics Corp.*, the construction of the term was in dispute, which is not the situation here as neither party argues Section 112(f) applies. Paper 9, at 9. And the petitioner in *Orthopediatrics Corp.* argued, *inter alia*, that its "petition is based on the claim constructions urged by Patent Owner in the related district court litigation," but failed to "set forth Patent Owner's position in the related [d]istrict [c]ourt litigation." *Id.* at 9–10.

In sum, we do not find that the Petition in this proceeding is insufficient under 37 C.F.R. § 42.104(b).

VI. CONCLUSION[21]

For the above reasons, we determine that Petitioner establishes, by a preponderance of the evidence, that

[21] Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. *See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. §§ 42.8(a)(3), (b)(2).

(a) claims 1–4 and 8 of U.S. Patent No. 10,070,119 B2 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Plassmann, Treuillet, and Staller; and

(b) claims 9–11 of U.S. Patent No. 10,070,119 B2 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Plassmann, Treuillet, Staller, and Peng.

In summary:

Claims	**35 U.S.C. §**	**Reference(s)/Basis**	**Claims Shown Unpatentable**	**Claims Not Shown Unpatentable**
1–4, 8	103	Plassmann, Treuillet, Staller	1–4, 8	
9–11	103	Plassmann, Treuillet, Staller, Peng	9–11	
Overall Outcome			1–4, 8–11	

VII. ORDER

In consideration of the foregoing, it is hereby

ORDERED that Petitioner establishes by a preponderance of the evidence that claims 1–4 and 8–11 of U.S. Patent No. 10,070,119 B2 are unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Exclude is *denied* with respect to evidence addressed by § III.A, *supra*, and is *dismissed as moot* with respect to evidence addressed by § III.B, *supra*;

FURTHER ORDERED that Patent Owner's Objections to Petitioner's Demonstratives are *overruled*; and

FURTHER ORDERED that, because this is a Final Written Decision, the parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

For PETITIONER:

Michael Weiner
Thomas Duston
MARSHALL, GERSTEIN & BORUN LLP
mweiner@marshallip.com
tduston@marshallip.com

For PATENT OWNER:

Mark Giarratana
Kevin Reiner
MCCARTER & ENGLISH, LLP
mgiarratana@mccarter.com
kreiner@mccarter.com