

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ARASHI VISION (U.S.) LLC (D/B/A INSTA360),
Petitioner,

v.

GOPRO, INC.,
Patent Owner

IPR2024-01052
Patent No. 11,336,832

ARASHI VISION (U.S.) LLC (D/B/A INSTA360)'S NOTICE OF APPEAL

via P-TACTS
Patent Trial and Appeal Board

via Email
Director of the United States Patent and Trademark Office
c/o Office of the General Counsel
efileSO@uspto.gov

via CM/ECF
United States Court of Appeals for the Federal Circuit

INTRODUCTION

Arashi Vision (U.S.) LLC (d/b/a Insta360)’s (“Insta360”) appeal stems from the Patent Trial and Appeal Board’s Final Written Decision (Paper 59) (the “Final Written Decision”), entered on December 2, 2025, and the Director’s Order (Paper 63) denying Insta360’s timely request for Director Review, entered on March 25, 2026, in the above-captioned *inter partes* review of United States Patent No. 11,336,832 (“the ’832 patent”). This notice is timely filed within 63 days of the Order denying Director Review. 37 C.F.R. §§ 90.3(a)(1), 42.75(e)(3).

INSTA360’S APPEAL

Please take notice that—under 35 U.S.C. §§ 141(c), 142, 319; 37 C.F.R. §§ 42.75(e)(3), 90.2(a), 90.3(a); and Federal Rule of Appellate Procedure and Federal Circuit Rule 15—Insta360 hereby appeals to the United States Court of Appeals for the Federal Circuit from the Final Written Decision and all underlying decisions and orders in this action on which that decision is based.

INSTA360’S ISSUES ON APPEAL

Insta360’s issues on appeal include at least (37 C.F.R. § 90.2(a)(3)(ii)):

- (1) the Board’s conclusion that challenged claims 3-6 and 13-16 of the ’832 patent had not been shown unpatentable; and
- (2) any findings, analysis, or determinations supporting or related to that issue, as well as all other issues decided adversely to Insta360, in any orders,

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decisions, rulings, or opinions in this proceeding.

Simultaneously with this submission, Insta360 is filing a true and correct copy of this Notice of Appeal with the Director of the United States Patent and Trademark Office and a true and correct copy (or copies) of the same, along with the required filing fee, with the Clerk of the United States Court of Appeals for the Federal Circuit as set forth in the accompanying Certificate of Filing.

Dated: May 20, 2026

Respectfully submitted,

By: /s/ Alex S. Yap

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CERTIFICATE OF FILING

The undersigned hereby certifies that, in addition to being electronically filed through P-TACTS, a true and correct copy of the above ARASHI VISION (U.S.) LLC (D/B/A INSTA360)'S NOTICE OF APPEAL is being filed via email with the Director on May 20, 2026, at efileSO@uspto.gov, the email address indicated on the United States Patent and Trademark Office's web page for the Office of the General Counsel.

The undersigned also hereby certifies that a true and correct copy (or copies) of the above ARASHI VISION (U.S.) LLC (D/B/A INSTA360)'S NOTICE OF APPEAL and the filing fee is being filed via CM/ECF with the Clerk's Office of the United States Court of Appeals for the Federal Circuit on May 20, 2026.

Dated: May 20, 2026

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IPR2024-01052

Patent No. 11,336,832

CERTIFICATE OF SERVICE

The undersigned hereby certifies that on May 20, 2026, the above ARASHI VISION (U.S.) LLC (D/B/A INSTA360)'S NOTICE OF APPEAL was served in its entirety via electronic mail on the following:

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ARASHI VISION (U.S.) LLC (D/B/A INSTA360),
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GOPRO, INC.,
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IPR2024-01052
Patent 11,336,832 B1

Before WILLIAM V. SAINDON, NABEEL U. KHAN, and
BRIAN D. RANGE, *Administrative Patent Judges*.

RANGE, *Administrative Patent Judge*.

DECISION
Final Written Decision
Determining Some Challenged Claims Unpatentable
35 U.S.C. § 314

I. INTRODUCTION

Arashi Vision Inc. (d/b/a Insta360) (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1–20 of U.S. Patent No. 11,336,832 B1 (Ex. 1001, “the ’832 patent”). Paper 2 (“Pet.”). GoPro, Inc. (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”).¹ On January 7, 2025, we instituted *inter partes* review. Institution Decision, Paper 10 (“Inst. Dec.”).

After institution, Patent Owner filed a Patent Owner Response (Paper 23, “PO Resp.”), Petitioner filed a Reply (Paper 31, “Pet. Reply”), and Patent Owner filed a Sur-Reply (Paper 40, “PO Sur-Reply”).² An oral hearing was held on October 7, and a transcript of the hearing will be included in the record. We have jurisdiction under 35 U.S.C. § 6. This decision is issued pursuant to 35 U.S.C. § 318(a). For the reasons that follow, we determine that Petitioner has shown, by a preponderance of the evidence, that claims 1, 2, 7–12, and 17–20 of the ’832 patent are unpatentable. We determine that Petitioner has not shown, by a preponderance of the evidence, that claims 3–6 and 13–16 of the ’832 patent are unpatentable.

¹ We note that a publicly available version of the Preliminary Response is Paper 7.

² Redacted, public versions of these documents are available at Paper 25 (Patent Owner Response), Paper 32 (Petitioner’s Reply), and Paper 39 (Patent Owner’s Sur-Reply).

II. BACKGROUND

A. *Real Parties in Interest*

Petitioner identifies “Arashi Vision Inc. (d/b/a Insta360)” as the real party in interest. Pet. 87. Patent Owner identifies itself as the real party in interest. Paper 4, 2.

B. *Related Matters*

The parties identify the following matters as related to this proceeding:

1. *In the Matter of Certain Cameras, Camera Systems, and Accessories Used Therewith*, Inv. No. 337-TA-1400 (USITC)
2. *GoPro, Inc. v. Arashi Vision Inc. et al.*, No. 8:24-cv-00681-HDE-JCV (C.D. Cal.)
3. *Arashi Vision Inc. v. GoPro, Inc.*, IPR2024-00984

Pet. 87–88; Paper 4, 2.

C. *The ’832 patent*

The ’832 patent is titled “Systems and Methods for Horizon Leveling Videos,” relates to “horizon leveling videos based on a punchout of video frames,” and issued May 17, 2022 with claims 1–20. Ex. 1001, codes (45), (54), 1:6–7, 28:26–30:60. The ’832 patent addresses a problem that “motion of the image capture device . . . may cause the video to depict a tilted view of a scene.” *Id.* at 1:13–15. Generally speaking, the disclosed solutions control the rotation, zoom level, ratio, size, and/or distortion of a viewing window (i.e., punchout). *See, e.g., id.* at 9:48–13:27, 22:44–23:37.

Figure 4A of the ’832 patent illustrates the problem (*id.* at 3:60–61, 9:25–27) and is reproduced below:

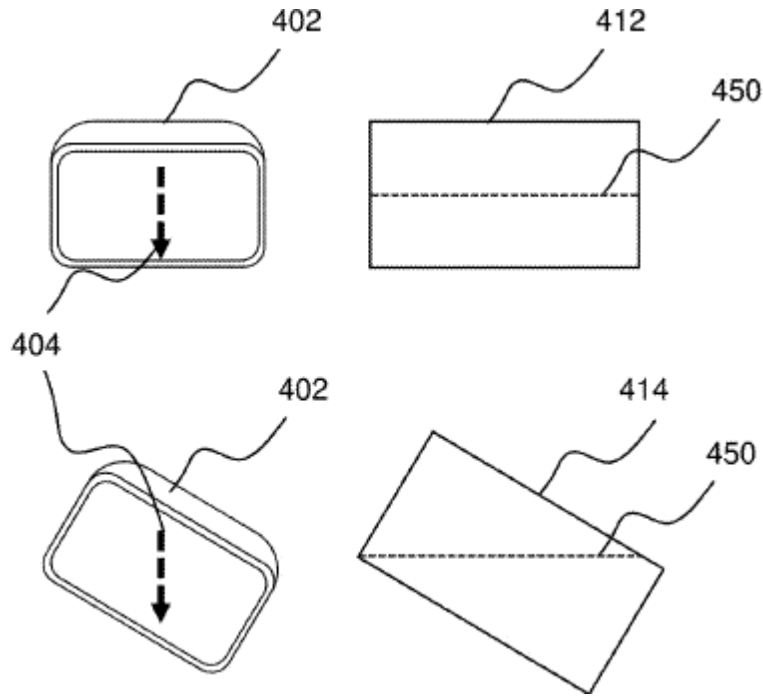


Figure 4A shows images 412, 414 are captured by an image capture device 402 having different rotational positions. *Id.* at 3:60–61, 9:25–27. The gravity direction 404 of the image capture device 402 during capture of the images 412, 414 is perpendicular to (i.e., defines) the horizon 450 of the images 412, 414. *Id.* at 9:27–43.

Figure 4B of the '832 patent further illustrates the problem (*id.* at 3:60–61, 9:25–27) and is reproduced below:

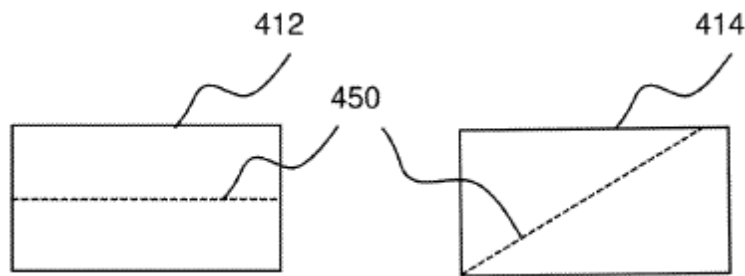


Figure 4B also shows an example image captured by an image capture device from different rotational positions. *Id.* at 3:60–61. As shown, because the image capture device 402 had respectively level and non-level rotational

positions during the image captures of the images 412 and 414, the horizon 450 is level in the first image 412 and tilted in the second image 414. *Id.* at 9:27–43.

Figure 5A of the '832 patent illustrates a solution (*id.* at 3:62, 9:48–10:51) and is reproduced below:

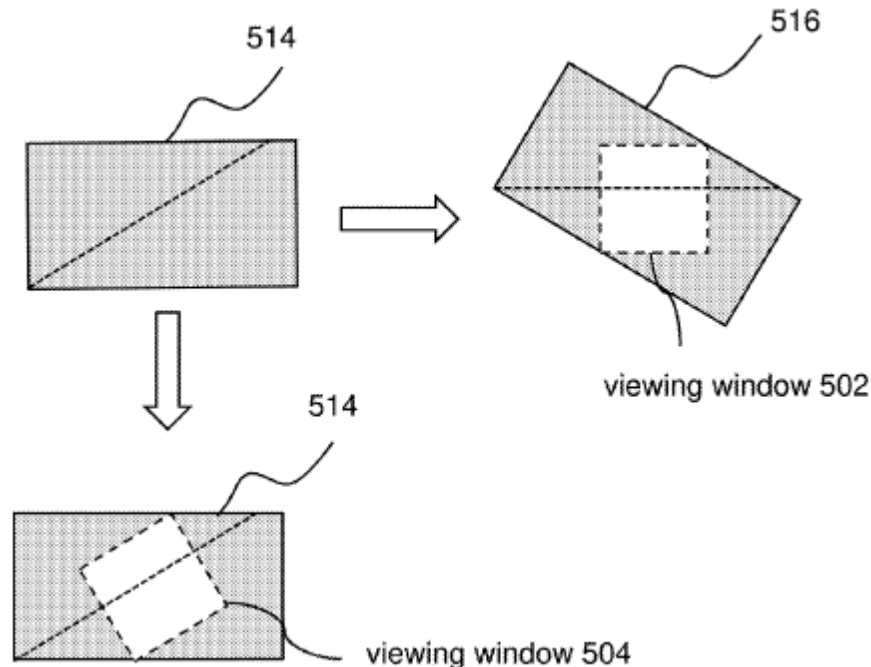


Figure 5A “illustrates example horizon leveling of an image.” *Id.* at 3:62. As shown, the viewing window of the captured visual content is rotated to compensate for the rotation of the image capture device during the capture duration such that the visual content depicts a leveled scene, e.g., based on readings from a position sensor to determine the direction of gravity when visual content was captured. *Id.* at 9:52–10:26. Here, the viewing window 502 of image 516 and the viewing window 504 of image 514 are the same; the arrows point to examples of how automated rotation of the viewing window 504 to the horizon of the tilted image 514 before viewing is, for

viewing of a leveled image, equivalent to the user leveling the tilted image 516 by rotating the image capture device during viewing. *Id.* at 10:1–26.

Figure 5B of the '832 patent illustrates an option (*id.* at 3:62, 10:52–11:55) of the above horizon-leveling and is reproduced below:

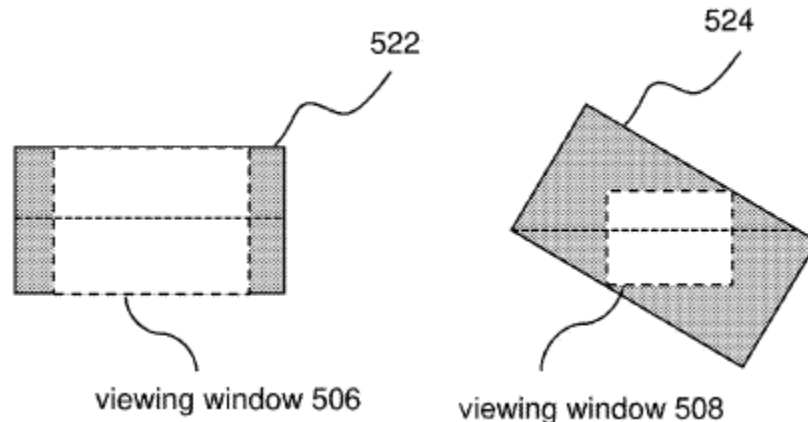


Figure 5B “illustrates example viewing windows to provide horizon-leveled views of images.” *Id.* at 3:63–64. As shown, the maximum size of the horizon-leveled viewing window 508 for the non-level visual content 544 is smaller than the maximum size of the viewing window 506 for the same aspect ratio of the level visual content 522. *Id.* at 10:52–11:52. To address this inconsistency, the zoom level of the viewing window 506 for the first visual content 522 may be increased to equal the zoom level of the viewing window 508 for the second visual content 524 so as to maintain a consistent display size of the video’s scene when depicted by the windows 506, 508 (e.g., when the video is displayed at the full-screen aspect ratio and size). *Id.* at 11:56–12:59.

Figure 5C of the '832 patent illustrates another option (*id.* at 3:65–66, 12:60–13:27) of the above horizon-leveling and is reproduced below:

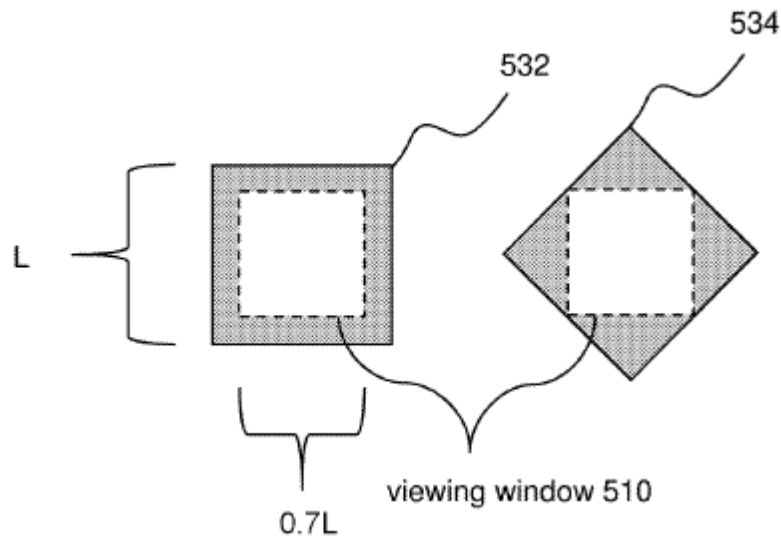


Figure 5C “illustrates an example viewing window to provide horizon-leveled views of images.” *Id.* at 3:65–66. As shown, the above-discussed inconsistency of viewing window sizes can also be addressed by (e.g., in lieu of the zoom-level adjustment) maintaining a same viewing window 510 in the images of the video. *Id.* at 12:60–13:26. In the illustrations, the leveled viewing window 510 maintains an aspect ratio and size that fits within images 532, 534 captured at different degrees of rotation, e.g., a square window sized to fit images captured at all degrees of rotation. *Id.* at 13:1–26.

Figure 7 of the '832 patent illustrates another option (*id.* at 4:1–2, 21:40–23:2) of the above horizon-leveling and is reproduced below (with reformatting):

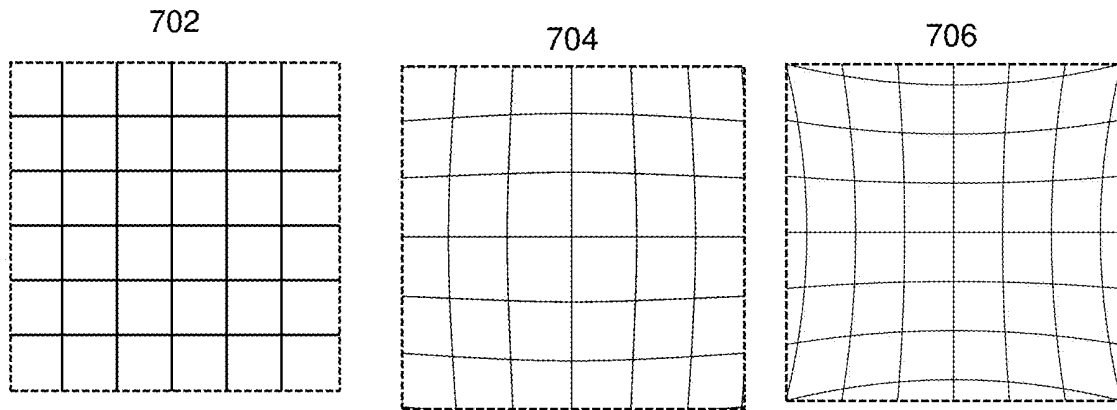


Figure 7 “illustrates example non-distorted and distorted images.” *Id.* at 4:1–2. As shown, variations of camera lenses can result in an image of the same scene having no distortion as in the first image 702, barrel roll distortion as in the second image 704, and pincushion distortion as in the third image 706. *Id.* at 21:62–22:15. The distortions can be added or adjusted to improve the appearance of a horizon-leveled viewing window. *Id.* at 21:40–23:3. That is, horizon-leveling of a viewing window can deviate from the true horizon to produce an off-axis horizon of the captured image and the above distortions can be included to reduce the perception of the off-axis horizon by the user. *Id.*

Figure 8 of the '832 patent illustrates another option (*id.* at 4:3–4, 23:4–27) of the above horizon-leveling and is reproduced in part below (with reformatting):

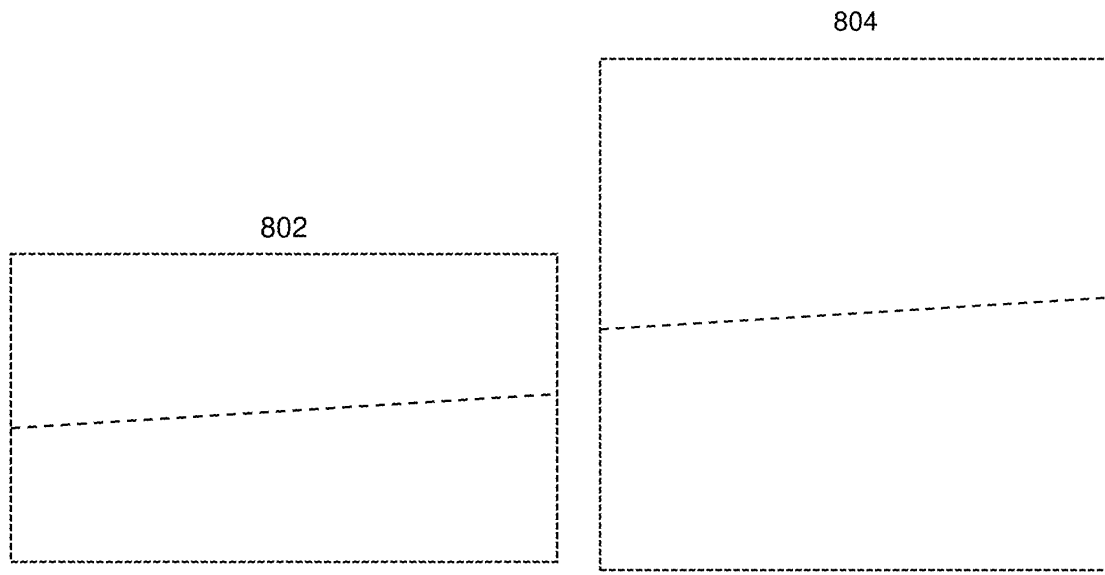


Figure 8 “illustrates example sizes and aspect ratios of viewing windows.” *Id.* at 4:3–4. As shown, viewing windows can have different aspect ratios such as the illustrated 16:9 viewing window 802 or the illustrated 1:1 viewing window 804. *Id.* at 23:13–16. The aspect ratio can be changed to reduce perception of an off-axis horizon by the user (e.g., reduced by a narrowed viewing window). *Id.* at 23:4–29.

D. Illustrative Claims

Claims 1 and 11 are independent. *See* Ex. 1001, 28:26–30:60. The other challenged claims 2–10 and 12–20 respectively depend from claims 1 and 11. *Id.*

Claim 1 is illustrative and is reproduced below (with Petitioner’s identifiers of claim elements, *see, e.g.*, Pet. 13–35).

1. [Preamble] A system for horizon leveling videos, the system comprising:

[a] one or more physical processors configured by machine-readable instructions to:

[b][i] obtain video information defining a video, 1[b][ii] the video including video content captured by an image capture

device during a capture duration, 1[b][ii] the video content having a progress length, the video content including visual content captured at different moments within the capture duration, 1[b][iv] the visual content viewable as a function of progress through the progress length, the visual content having a field of view;

[c] obtain rotational position information for the video, the rotational position information characterizing rotational positions of the image capture device as a function of progress through the capture duration;

[d][i] determine a viewing window for the visual content as a function of progress through the progress length based on the rotational positions of the image capture device as the function of progress through the capture duration, 1[d][ii] the viewing window defining extents of the visual content to be included within horizon-leveled visual content as the function of progress through the progress length, 1[d][iii] wherein determination of the viewing window includes determination of a placement of the viewing window within the field of view of the visual content as the function of progress through the progress length based on the rotational positions of the image capture device as the function of progress through the capture duration; and

[e][i] generate the horizon-leveled visual content based on the viewing window, the horizon-leveled visual content including a punchout of the extents of the visual content defined by the viewing window, 1[e][ii] wherein inclusion of the extents of the visual content defined by the viewing window within the horizon-leveled visual content effectuates horizon leveling of the visual content.

Ex. 1001, 28:27–65.

E. Asserted Grounds of Unpatentability

Petitioner, supported by the declaration of Dr. Aggelos Katsaggelos (Ex. 1002), asserts the following grounds of unpatentability (Pet. 8):

Claims Challenged	35 U.S.C. §	References/Basis
1, 2, 7–12, 17–20	103	Thomason, ³ Pacurariu ⁴
3–6, 13–16	103	Thomason, Pacurariu, Watanabe ⁵
1, 2, 7–12, 17–20	103	Voss, ⁶ Derbanne ⁷
3–6, 13–16	103	Voss, Derbanne, Watanabe

Patent Owner disputes the grounds and supports its position with the declaration of Dr. Hassan Foroosh. PO Resp., *passim* (citing Ex. 2021).

III. ANALYSIS OF PETITIONER’S GROUNDS

A. *Legal Standard*

A patent claim is unpatentable under 35 U.S.C. § 103 “if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains.” 35 U.S.C. § 103; *see also 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

³ US 2005/0168583 A1, published August 4, 2005, Ex. 1004.

⁴ US 2015/0181123 A1, published June 25, 2015, Ex. 1005.

⁵ US 10,778,896 B2, issued September 15, 2020, Ex. 1006.

⁶ WO 2015/183636 A1, published December 3, 2015, Ex. 1007.

⁷ US 10,341,564 B1, issued July 2, 2019, Ex. 1008.

skill in the art; and (4) when in evidence, objective evidence of nonobviousness.⁸ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

In order to determine whether an invention would have been obvious at the time the application was filed, we consider the level of ordinary skill in the pertinent art at the critical time. *Graham*, 383 U.S. at 17. The resolution of this question is important because it allows us to “maintain[] objectivity in the obviousness inquiry.” *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991). 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) (quotation omitted). Generally, it is easier to establish obviousness under a higher level of ordinary skill in the art. *Innovation Toys, LLC v. MGA Entm’t, Inc.*, 637 F.3d 1314, 1323 (Fed. Cir. 2011) (“A less sophisticated level of skill generally favors a determination of nonobviousness . . . while a higher level of skill favors the reverse.”).

Petitioner contends that a person of ordinary skill in the art would have the following characteristics: “a bachelor’s degree in engineering or computer science, or equivalent field, and two years of experience working on image or video processing or digital cameras[; a]lternatively, . . . four years of experience working on image or video processing or digital

⁸ Objective evidence of nonobviousness is presently asserted. Prelim. Resp. 23–30.

cameras.” Pet. 6 (citing Ex. 1002 ¶¶ 36–38). Petitioner further contends “[a]n advanced graduate degree in the disciplines cited above may make up for the work experience indicated above.” *Id.* Patent Owner does not dispute and applies Petitioner’s proposed level of skill. PO Resp. 6.

We find that Petitioner’s proposal is reasonable and consistent with the ’832 patent specification and the prior art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (the prior art may reflect an appropriate level of skill in the art). Thus, we apply Petitioner’s proposal in our analysis.

C. Claim Construction

In *inter partes* reviews, the Board interprets claim language using the district-court-type standard, as described in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). *See* 37 C.F.R. § 42.100(b). Under that standard, we generally give claim terms their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art at the time of the invention, in light of the language of the claims, the specification, and the prosecution history. *See Phillips*, 415 F.3d at 1313–14. Although extrinsic evidence, when available, may also be useful when construing claim terms under this standard, extrinsic evidence should be considered in the context of the intrinsic evidence. *See id.* at 1317–19.

Petitioner states, in the Petition, that it “does not believe any terms require a formal construction.” Pet. 6. Patent Owner also does not argue for any express claim constructions. PO Resp. 7.

In our Institution Decision, we construed “determin[ing] a viewing window for the visual content as a function of progress through the progress length” as “requiring determining a viewing window for different times of

the video.” Inst. Dec. 21. Neither party disputes this construction. PO Resp. 7; Pet. Reply 1–7. We maintain this same construction.

In its Reply, Petitioner argues that Patent Owner’s arguments raise claim construction disputes as to the terms “including” (claims 1 and 11), “the visual content” (all claims), “simulate changes in zoom” (claims 8 and 18), and “determination of a location of the viewing window (claims 10 and 20). Where necessary to resolve the issues before us, we address these claim terms below when addressing Petitioner’s comparison of the asserted prior art to the claims.

Other than the terms discussed above, we do not discern a need to address the construction of any other claim language at this juncture because doing so would have no effect on our analyses below of Petitioner’s asserted grounds and will not assist in resolving the present controversy between the parties at this time. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’”) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

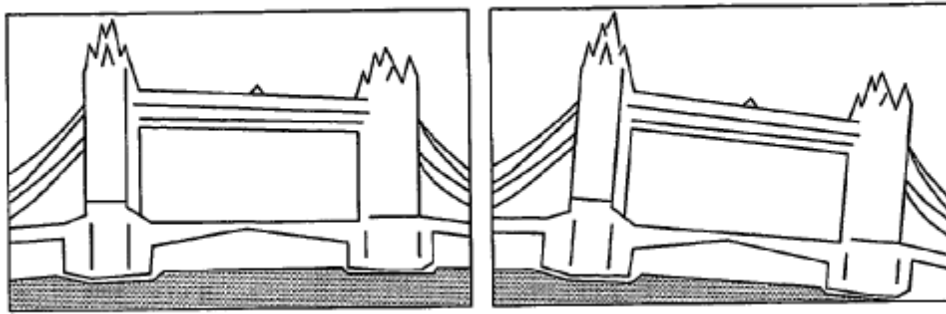
D. Overview of the Asserted Art

1. Thomason (Exhibit 1004)

Thomason relates to “processing of image information, particularly in video or photographic equipment, and to apparatus for recording images such as video or photographic images.” *Id.* ¶ 1. Thomason addresses a problem that camera operators sometimes fail to “correctly orient[] the camera” and “a need for a camera capable of reducing the effect of poor

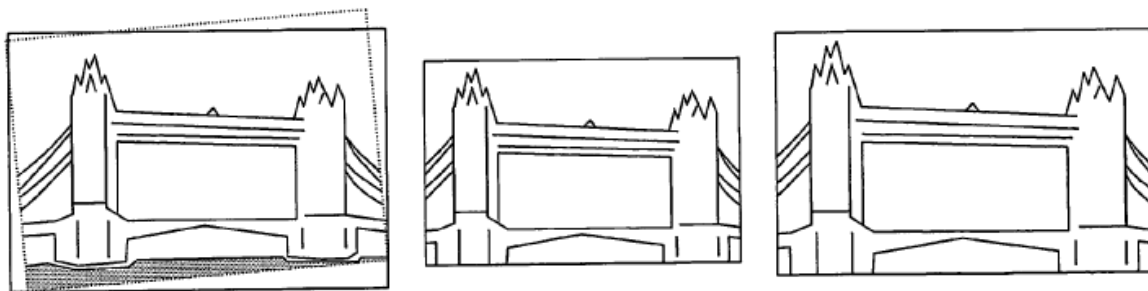
orientation.” *Id.* ¶ 2. Generally speaking, the disclosed solutions control the rotation, size, and aspect ratio of the image frame. *See, e.g., id.* ¶¶ 29–40.

Figures 3a–b of Thomason illustrate the problem (*id.* ¶¶ 22, 34) and are reproduced below at respectively left and right:



Thomason Figure 3 is a schematic illustrating the Thomason method. *Id.* ¶ 22. As shown, Figure 3a illustrates an aligned image (i.e., true horizontal aligned within the image frame) that would have been captured if the camera was horizontally-aligned during image capture. *Id.* ¶ 34. Figure 3b illustrates a misaligned image that was captured because the camera was horizontally misaligned during image capture. *Id.*

Figures 3c–e of Thomason illustrate the solution (*id.* ¶¶ 22, 33–37) and are reproduced below at respectively left, center, and right:



As shown, Figure 3c illustrates rotation of Figure 3b’s misaligned image to align the image (e.g., rotated to compensate tilting detected by an accelerometer of the camera during image capture) and resulting “blank” regions at some edges of the aligned image frame (most notably at the

corners). *Id.* ¶¶ 30, 33, 36. Figure 3d illustrates cropping of the Figure 3c image, such that the blank spaces at the edges of the image frame have been removed. *Id.* ¶ 36. Figure 3e illustrates expanding of the Figure 3d image, such that the cropped image has become the same size as the original image frame (i.e., the size before cropping). *Id.* ¶ 37.

Figure 4 of Thomason illustrates an option (*id.* ¶¶ 23, 38) of the above aligning and is reproduced below:

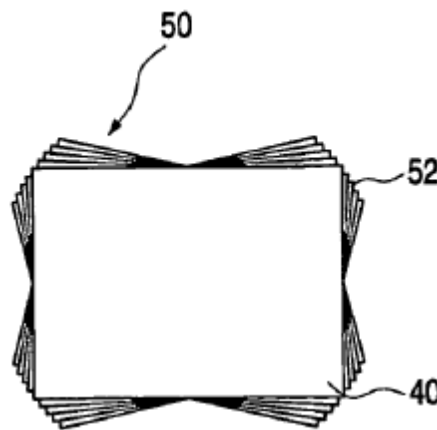


Figure 4 illustrates the frame area. *Id.* ¶ 23. As shown, the image recording area 50 is greater than the captured image frame 40—thus having “marginal” pixels 52 outside of the captured image frame 40. *Id.* ¶ 38. During aligning of the image, rotation of the image frame can incorporate marginal pixels 52 to avoid the above-noted creation of blank regions in an aligned image frame. *Id.* That is, incorporation of the marginal pixels 52 can avoid the cropping and resizing steps described for Figures 3d–e. *Id.*

Figure 5 of Thomason illustrates another option (*id.* ¶¶ 24, 39) of the above aligning and is reproduced below:

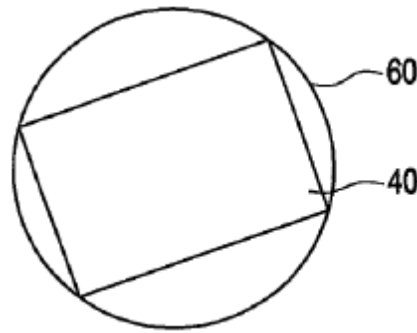


Figure 5 illustrates a circular image frame. *Id.* ¶ 24. As shown, the image recording area 60 is not only greater than the captured image frame 40, but also a fully circular sensor area 60 that accommodates full rotation of the image frame 40. *Id.* ¶ 39. That is, during aligning of the image, any amount of rotating the image frame 40 can incorporate outer pixels of the image recording area 60 (i.e., outside of the captured image frame 40) and thus avoid the cropping and resizing steps described for Figures 3d–e. *Id.*

Figures 6 and 7 of Thomason illustrate another option (*id.* ¶¶ 24, 39) of the above aligning:

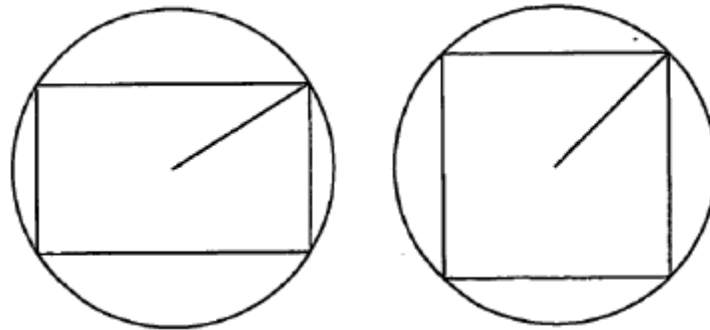
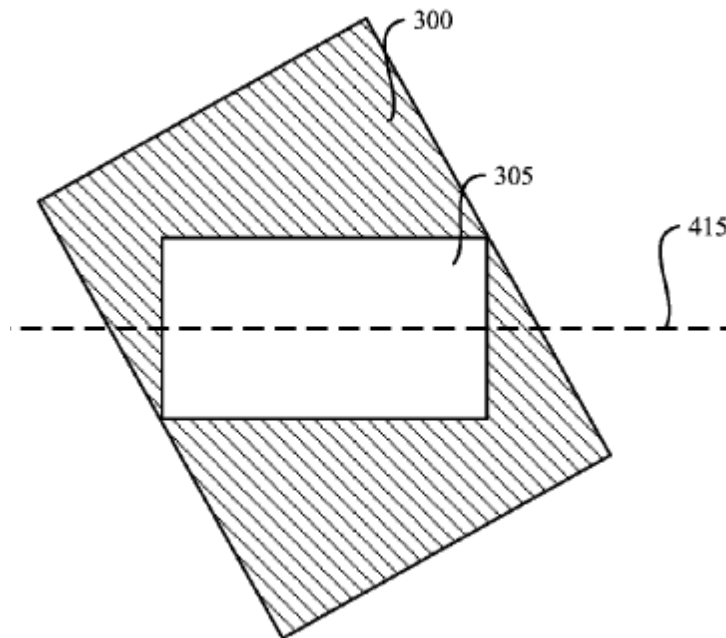


Figure 6, reproduced above and on the left, illustrates a frame aspect ratio of 760:480 in a circular image frame. *Id.* ¶ 25. Figure 7, reproduced above and on the right, illustrates a frame aspect ratio of 1:1 in a circular image frame. *Id.* ¶ 26. As shown, a fully circular sensor area can accommodate varying aspect ratios and sizes of image frames. *Id.* ¶ 40.

2. *Pacurariu (Exhibit 1005)*

Pacurariu relates to “to image orientation adjustment based on camera orientation.” *Id.* ¶ 1. Pacurariu discloses an image capture device that horizontally aligns the captured image to an image frame by “receiv[ing] a value from the accelerometer that corresponds . . . to an orientation of the image sensor relative to the Earth’s gravitational field” and “then rotat[ing] the pixels in the image based on the value.” *Id.* ¶ 3. The aligning of Pacurariu may also include resizing and cropping of the image. *Id.* ¶¶ 45–46.

Figures 5A–5C of Pacurariu illustrate the horizontal aligning and resizing/cropping of the captured image (*id.* ¶¶ 17–19, 44–49) of the above aligning and are respectively reproduced top, below left, and below right:



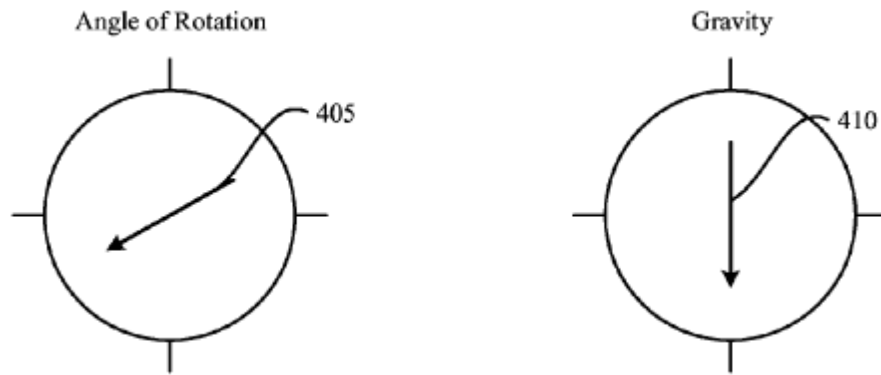


Figure 5A, shown at above at top, “illustrates a graphical representation of the sensor array that is tilted relative to the gravitational field and a reduced area of the image area according to some embodiments” of Pacurariu. *Id.*

¶ 17. Figure 5B, shown above at bottom left, “shows [a] tilt angle vector of the sensor array according to some embodiments.” *Id.* ¶ 18. Figure 5C, shown above at bottom right, “shows a gravity vector according to some embodiments.” *Id.* ¶ 19.

As shown in Figures 5A–C, the image sensor array 300 of the image capture device is misaligned with the true horizon 415. *Id.* ¶¶ 44–45. The degree of tilt (i.e., amount of misalignment) is determined by sensing, from an accelerometer, the angle of rotation 405 that the image sensor array 300 deviates from the gravitational vector 410 and thus from the true horizon 415. *Id.* ¶¶ 34–38, 44–45, 50–42 (Figure 6 flowchart). The sensed image (i.e., equivalent to the image sensor array 300) is cropped to form corrected image area 305 that is both rotated into alignment with the true horizon 415 (as determined from the accelerometer) and reduced in size to fit entirely within the sensed image. *Id.* ¶¶ 44–45, 54–58 (Figure 7 flowchart).

3. *Watanabe (Exhibit 1006)*

Watanabe relates to “image shake correction on an image” having “image distortion caused by . . . barrel distortion [or] pincushion distortion.”

Id. at 1:13–18. Image shake correction crops images of a video such that the same portion of the video scene remains centered within the cropped images; i.e., maintains consistent centering of the scene in the images though shaking of the image capture device (by the operator) has caused shaking of the device’s optical axis (which corresponds to the center of the captured image before cropping). *Id.* at 5:18–35, 11:24–36.

Figure 5 of Watanabe illustrates distortion correction processing and distortion addition processing and we reproduce the upper two images of Figure 5 below. *Id.* at 3:32–34, 11:7–54.

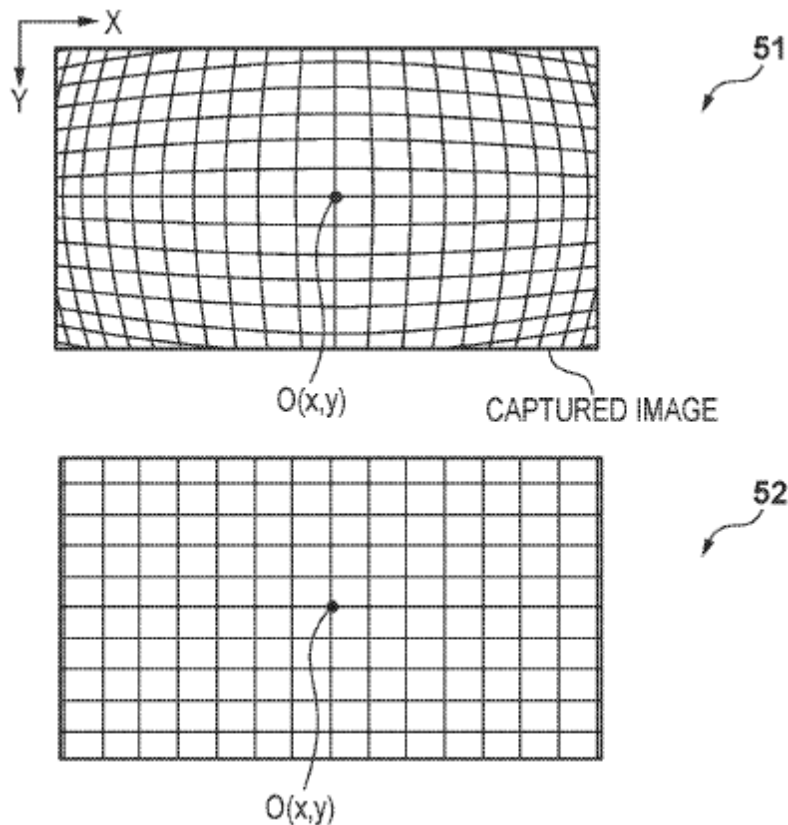
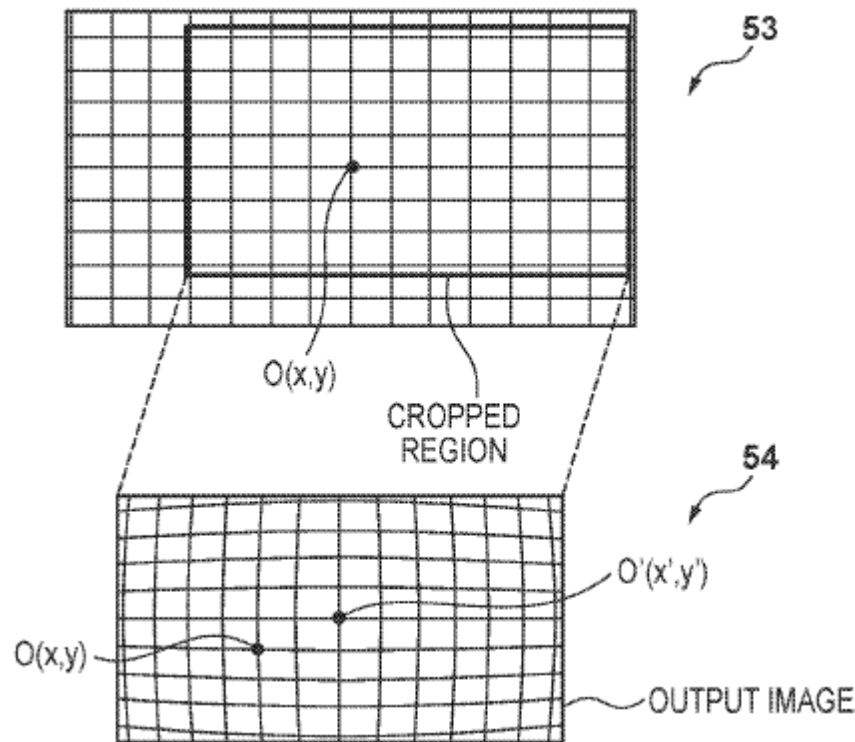


Figure 5 “is a diagram for explaining effects of distortion correction processing and distortion addition processing” according to a Watanabe embodiment. *Id.* at 3:32–34. A top portion of Figure 5, reproduced above, illustrates removal of barrel distortion from an image that will undergo

image shake correction. *Id.* at 11:7–23. Captured image 51 has a barrel distortion centered on the image's center coordinates x, y corresponding to the optical axis O . *Id.* at 11:7–10. The distortion is removed to create a distortion-corrected image 52 having the same center coordinates x, y (i.e., still corresponding to the optical axis O). *Id.* at 11:18–23.

The bottom two images of Figure 5, reproduced below, illustrate image shake correction of the distortion-corrected image 52 and distortion addition to a resulting shake-corrected image 53. *Id.* at 11:24–50.



Again, Figure 5 “is a diagram for explaining effects of distortion correction processing and distortion addition processing” according to a Watanabe embodiment. *Id.* at 3:32–34. As shown, the distortion-corrected image 52 is cropped to create the shake-corrected image 53 (i.e., cropped region). *Id.* at 11:24–33. Because of the cropping, the center coordinates x', y' of the shake-corrected image 53 are different than the coordinates x, y

corresponding to the optical axis O. *Id.* at 11:33–36. Barrel distortion is reintroduced to create the output image 54; but the distortion is centered on the center coordinates x' , y' of the cropped image 53 instead of being centered on the coordinates x , y corresponding to the optical axis O. *Id.* at 11:36–50.

4. *Voss (Exhibit 1007)*

Voss relates to “maintaining a horizontal framing of a video” such that “[t]he resulting recording . . . maintain[s] a single orientation with a stable horizon.” *Id.* at 3:5–9. That is, “[t]he system permits the user to freely rotate the device while filming.” *Id.* at 3:6.

Figure 2 of Voss, reproduced below, illustrates “an active display 200 . . . operative for allowing a user to . . . freely rotate their device while shooting, visualiz[e] the final output in an overlay on the device’s viewfinder during shooting[,] and ultimately correct[] for their orientation in the final output.” *Id.* at 9:14–19.

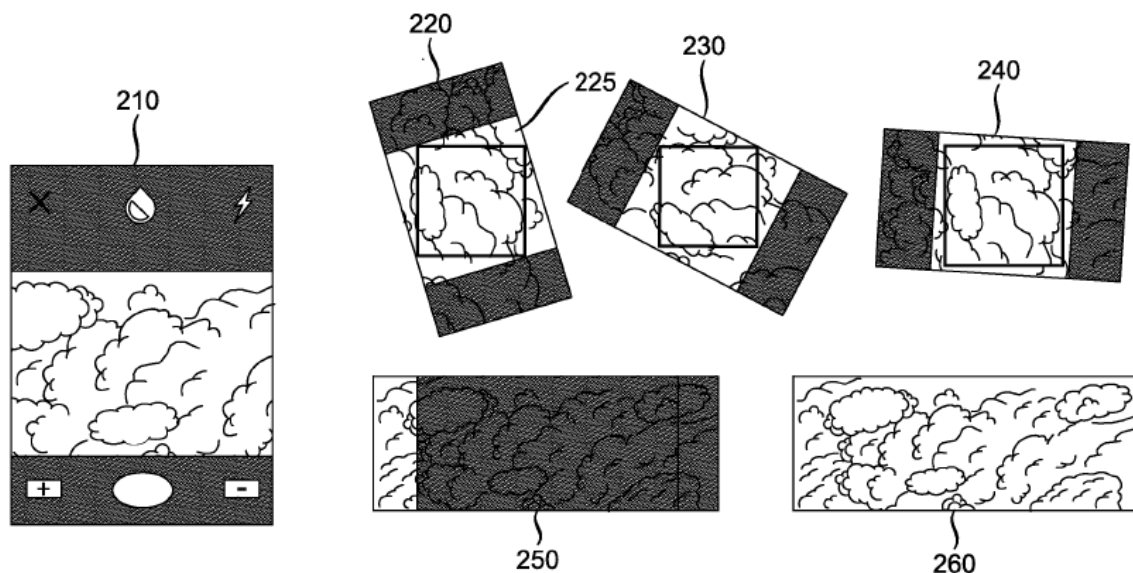


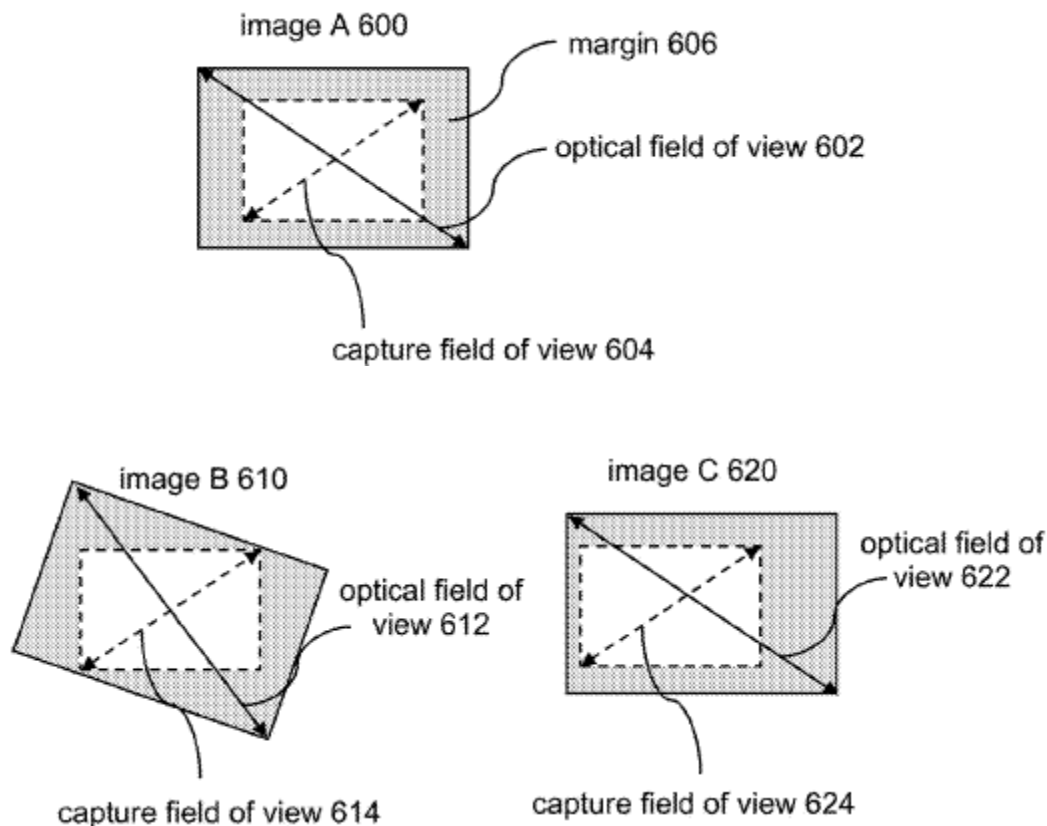
Figure 2 illustrates Voss’s “method for stabilizing videos.” *Id.* at 3:23. As shown, to compensate for rotation 220, 230, 240 of the device, an inset

rectangle 225 is inscribed to best-fit within maximum boundaries set by optimal aspect ratios of 1:1 for portrait and 16:9 for landscape. *Id.* at 10:2–15. During rotation, the inner rectangle 225 is adjusted to interpolate between the two optimal aspect ratios and relative to the amount of rotation. *Id.* at 10:9–11. For example, for a selected output dimension of 4:3 and portrait content, the inset rectangle 225 is cropped or pillar-boxed to fit the 4:3 output. *Id.* at 10:17–21, 12:22–23. For a selected output dimension of 16:9 and a combination of portrait and landscape content, the output would oscillate between being pillar-boxed portrait content and cropped landscape content. *Id.* at 10:22–11:2.

5. *Derbanne (Exhibit 1008)*

Derbanne relates to “stabilizing videos” so as to not appear “jerky/shaky” despite “motion of the image capture device during the capture.” *Id.* at 1:6–18. “An observed trajectory of the image capture device reflects the positions of the image capture device at different moments.” *Id.* at code (57). “Orientations of punch-outs for the images are determined based on the capture trajectory.” *Id.*

Figures 6A and 6B of Derbanne, reproduced below at respectively top, bottom-left, and bottom-right, each illustrate an optical field of view and capture field of view for each of three video images captured by a different orientation of the image capturing device; i.e., each captured at different moments. *Id.* at 12:3–5, 13:18–22, 13:28–31.



Derbanne Figure 6A, above and at top, “illustrates example optical field of view and capture field of view.” *Id.* at 3:29–30. Derbanne Figure 6B, above and at bottom left and bottom right, includes image B 610 and image C 620 and “illustrates example orientations of a capture field of view with respect to an optical field of view.” *Id.* at 3:31–32. As shown, the optical field of view 602, 612, 622 is the image captured by the image capture device. *Id.* at 1:18–20. The capture field of view 604, 614, 624 is the image cropped (from the optical field of view 602, 612, 622) and displayed to maintain a video stabilized to a capture trajectory intended by the user of the image capture device (as opposed to an observed actual trajectory). *Id.* at 1:24–46. The illustrations demonstrate that the placement of the capture field of view 604, 614, 624 to stabilize the video (based on the capture trajectory) is restricted by the margin 606 and, more particularly, the correspondingly permitted

disparity of orientation between the capture field of view 604, 614, 624 and respective optical field of view 602, 612, 622. *Id.* at 12:3–22.

E. Unpatentability Grounds

1. Unpatentability over Thomason and Pacurariu (Ground 1)

Petitioner asserts that claims 1, 2, 7–12, and 17–20 are unpatentable under 35 U.S.C. § 103 as obvious over Thomason and Pacurariu. Pet. 8–46. Below, we address: (1) Petitioner’s arguments regarding rationale to combine the teachings of Thomason and Pacurariu, and (2) each challenged claim.

a. Combining Thomason and Pacurariu

Petitioner argues that both Thomason and Pacurariu “relate to techniques for rotating visual content in video data to compensate for motion of the image capture device.” Pet. 23. Petitioner argues that Thomason has a rotation sensor 14. *Id.* at 19. Petitioner argues that Thomason’s image data includes image data and “angle data representing the angle measured by the rotation sensor.” *Id.* at 20–21 (emphasis omitted). Thus, Petitioner argues that angle data is “correlated with a time point over the capture duration.” *Id.* at 21.

Petitioner argues that Pacurariu discloses “rotational position information for the video” and teaches saving “tilt angle data . . . as a part of each video frame.” *Id.* at 21–22 (emphasis omitted). Petitioner cites, for example, Pacurariu Figure 6 as having step 610 “Determine a tilt value relative to gravity from the acceleration” and having a step 615 “Save tilt value for each video frame as metadata.” *Id.* at 22.

Petitioner argues that it would have been obvious to combine the teachings of Thomason and Pacurariu because both relate to techniques for rotating visual content in video data to compensate for motion. *Id.* at 23. Petitioner argues, for example, that the asserted Thomason-Pacurariu combination “results in a system in which rotational position information, such as a tilt value as taught by Pacurariu, may be obtained for each video frame in Thomason’s video content, be saved as metadata or as part of each video frame as taught by Pacurariu, and be used to generate a rotated image for each video frame in Thomason’s video content.” *Id.* at 23 (citing Ex. 1002 ¶ 81). Petitioner also argues that Pacurariu discloses that the viewing window is determined for sequential video frames and thus as a function of progress through the progress length and that it would have been obvious to combine this teaching with Thomason. *Id.* at 29–30; *see also id.* at 32–34 (arguing for combination of Pacurariu’s determining placement of a viewing window within the field of view with Thomason); *id.* at 35 (arguing for combination of Pacurariu’s horizon leveled visual content with Thomason); *id.* at 35–36 (arguing for combining Pacurariu’s horizon leveling with Thomason). Petitioner further argues that combining Pacurariu would predictably improve Thomason by allowing a horizon-leveled video frame to be obtained effectively. *Id.* at 23, 30, 34–36.

Patent Owner argues that Petitioner’s argued rationale for combining Thomason and Pacurariu is “merely a series of conclusory statements.” PO Resp. 42. Patent Owner argues that the declaration of Dr. Katsaggelos is, likewise, conclusory. *Id.* (citing Ex. 1002). Patent Owner, however, focuses only on certain parts of the Petition while ignoring, for example, Petitioner’s summary of each prior art reference.

We find, based on a preponderance of the evidence, Pacurariu and Thomason are in the same field of endeavor. Thomason describes a camera and method for correctly orientating pictures from the camera. *See, e.g.*, Ex. 1004 ¶¶ 1, 2 29–40, Figs. 3a–3b. In particular, Thomason is interested in rotating and cropping images to reduce the effect of poor orientation. Pet. 9 (citing Ex. 1004 ¶¶ 2, 34, 36). Pacurariu likewise describes aligning and resizing/cropping of a captured image to correct poor orientation. *See, e.g.*, Ex. 1005 ¶¶ 1, 3, 45–56, Figs. 5A–5C.

The preponderance of the evidence also supports that a person having ordinary skill in the art would have had reason to combine the Pacurariu’s teachings with Thomason to predictably improve Thomason. Thomason teaches correct rotation of video data and makes use of rotation sensor to correct rotated images. Pet. 19–21 (citing, e.g., Ex. 1004 ¶¶ 4, 27, 29, 35; Ex. 1002 ¶¶ 76–77). Pacurariu similarly uses sensors and measures tilt angle of the camera. *Id.* at 21–22 (citing, e.g., Ex. 1005 ¶¶ 51–52, Fig. 6; Ex. 1002 ¶ 78). Pacurariu further teaches that its tilt data angle can be stored for each “video frame.” *Id.* at 22 (citing Ex. 1005 ¶ 52). Petitioner, with support from credible testimony of Dr. Katsaggelos, explains how the teachings of Thomason and Pacurariu could be successfully combined. *Id.* at 23 (citing, for example, Ex. 1002 ¶ 81). A person of ordinary skill in the art could have known that Thomason’s system could be improved by saving rotation data for each video frame and correcting images on a frame-by-frame basis. *Id.* at 23–24. The testimony of Dr. Katsaggelos is credible in this regard. Ex. 1002 ¶¶ 80–81.

Petitioner and Dr. Katsaggelos explain the references’ teachings and, based on these teachings, assert that a person having skill in the art would

have had reason to combine with reasonable expectation of success based on those teachings. Reason to combine may properly come from the references themselves. *KSR Int’l Co.*, 550 U.S. at 418 (explaining reason to combine may come from “interrelated teachings of multiple patents”). Based on the evidence presented, Petitioner establishes by a preponderance of the evidence that a person having ordinary skill in the art would have had reason to combine the teachings of Thomason and Pacurariu with a reasonable expectation of success. Ex. 1002 ¶¶ 76–81, 89–92; Ex. 1004 ¶¶ 4, 8–9, 27, 29, 35; Ex. 1005 ¶¶ 26, 41, 46, 51–52, 55–57, Figs. 6, 7.

Petitioner also argues that the Thomason and Pacurariu combination would have been obvious to try. Pet. 23–24. Patent Owner argues that Petitioner does not adequately explain this rationale. PO Resp. 43. We need not address these arguments because we find, above, that a person of ordinary skill in the art would have had reason to combine Thomason and Pacurariu’s teachings without relying on an obvious to try rationale.

b. *Claims 1 and 11*

Petitioner contends that the combined teachings of Thomason and Pacurariu teach or suggest each recitation of claim 1. Pet. 13–36. Claim 11 is a method claim, but its recitations are similar to claim 1 in relevant respects. Petitioner and Patent Owner each argue claim 11 the same as claim 1. *See, e.g.*, Pet. 43–46; PO Resp. 40–46.

Patent Owner does not address recitations of claim 1 except where otherwise noted below. PO Resp. *passim*. We address each recitation of claim 1 below. Our analysis below equally applies for claim 11.

[Preamble] A system for horizon leveling videos, the system comprising:

Petitioner argues that, to the extent the preamble is limiting, Thomason discloses systems that “allow the captured image to be rotated for display to have the true horizontal displayed as horizontal.” Pet. 13–14. (For claim 11, Petitioner argues that Thomason discloses a method for horizon leveling videos. *Id.* at 43.) Petitioner’s argument is supported by a preponderance of the evidence. *See, e.g.*, Ex. 1004, code (57), ¶ 17.⁹

1[a] one or more physical processors configured by machine-readable instructions to:

Petitioner argues that Thomason teaches processor 22 and processor 16 that are configured to correct images. Pet. 14–15. Petitioner’s argument is supported by a preponderance of the evidence. Ex. 1004 ¶¶ 33, 42; Ex. 1002 ¶ 60.

1[b][i] obtain video information defining a video,

Petitioner argues that Thomason teaches use of a video camera that records moving images. Pet. 15–16. Petitioner’s argument is supported by a preponderance of the evidence. Ex. 1004 ¶¶ 27, 44; Ex. 1002 ¶¶ 61–62.

1[b][ii] the video including video content captured by an image capture device during a capture duration,

Petitioner argues that Thomason teaches video content captured by video cameras such as camera 2 in Figure 1. Pet. 16. Petitioner’s argument is supported by a preponderance of the evidence. Ex. 1004, Fig. 1; Ex. 1002 ¶¶ 63–64.

⁹ Because Petitioner establishes that Thomason teaches the preamble’s recitation, we do not determine whether or not the preamble is limiting.

1[b][iii] the video content having a progress length, the video content including visual content captured at different moments within the capture duration,

The '832 patent explains that “progress length” may correspond to capture duration or be longer or shorter. Ex. 1001, 14:12–24. We note that both parties argue that ordinary meaning should apply to this and other claim terms. Pet. 6–7; PO Resp. 7.

Petitioner argues that Thomason’s video content may be played back over a period of time and thus has a progress length. Pet. 17. Petitioner further argues that Thomason teaches play back on a display device and that the play back period may be the same or different than capture duration. *Id.* Petitioner’s argument is supported by a preponderance of the evidence. Ex. 1004 ¶¶ 27, 32; Ex. 1002 ¶¶ 67–68.

We also note here that Petitioner argues that “visual content” does not have to be *only* “original visual content.” Pet. Reply 2. We agree. Claims 1 and 11 recite “visual content” a number of times including, for example, referring to “horizon-leveled visual content.” *See, e.g.*, Ex. 1001, 28:58–65. Thus, the claims contemplate that visual content may be original or may be modified as a result of its instructions or process.

1[b][iv] the visual content viewable as a function of progress through the progress length, the visual content having a field of view;

Petitioner argues that Thomason teaches that its content may be played back by “playback device 20” over a progress length and is thus viewable as a function of progress over progress length. Pet. 18. Petitioner also argues that Thomason teaches a field of view as illustrated, for example, by Figure 3b, Figure 4, and Figure 5. *Id.* at 18–19. Petitioner’s argument is

supported by a preponderance of the evidence. Ex. 1004 ¶¶ 24, 34, 38;
Ex. 1002 ¶¶ 71–74.

I[c] obtain rotational position information for the video, the rotational position information characterizing rotational positions of the image capture device as a function of progress through the capture duration;

Petitioner argues that Thomason’s system includes rotation sensor 14 “that measures the angle of the camera to the vertical and outputs a corresponding measurement signal.” Pet. 19. Petitioner argues that the video data comprises “a sequence of items of image data 8 representing sequential frames of the moving image.” *Id.* at 20 (quoting Ex. 1004 ¶ 27) (emphasis omitted). Petitioner argues that Thomason discloses that an image (as in Figure 3b) is recorded in memory together with camera angle. *Id.* According to Petitioner, each angle data is associated with a corresponding captured image in a sequence of images and angle data is therefore characterized as a function of progress through the capture duration. *Id.* at 21. Petitioner’s argument is supported by a preponderance of the evidence. Ex. 1004 ¶¶ 4, 27, 29, 76–77; Ex. 1002 ¶¶ 76–77.

Petitioner also argues that Pacurariu discloses determining tilt angle data of the image sensor array 300 within the camera based on acceleration data. Pet. 21. Pacurariu teaches that “tilt angle data may be saved with each video frame.” *Id.* at 22 (quoting Ex. 1005 ¶ 52) (emphasis omitted). Petitioner argues that tilt values of video frames thus may be expressed as a function of progress through the capture duration. *Id.* Petitioner’s argument is supported by a preponderance of the evidence. Ex. 1005 ¶¶ 51–52; Ex. 1002 ¶¶ 78–80.

As we discuss in Section III(E)(1)(a), *supra*, Petitioner also argues a person having ordinary skill in the art would have combined these teachings of Thomason and Pacurariu. Pet. 22–23. Petitioner argues that the combination

results in a system in which rotational position information, such as a tilt value as taught by Pacurariu, may be obtained for each video frame in Thomason’s video content, be saved as metadata or as part of each video frame as taught by Pacurariu, and be used to generate a rotated image for each video frame in Thomason’s video content.

Id. at 23. Petitioner’s argument is supported by a preponderance of the evidence. Ex. 1004, code [54]; Ex. 1005, code [57], ¶¶ 52, 55–57, Figs. 6, 7; Ex. 1002 ¶¶ 80–81.

I[d][i] determine a viewing window for the visual content as a function of progress through the progress length based on the rotational positions of the image capture device as the function of progress through the capture duration,

Petitioner argues that Thomason discloses Figure 3b as “visual content” and Figure 3d as a “viewing window.” Pet. 24. Petitioner argues that the Figure 3b image is recorded in memory along with a camera angle and that the processor calculates the image in Figure 3c so that true horizontals appear as horizontal. *Id.* Petitioner argues that the image is cropped to eliminate blank space as illustrated in Figure 3d. *Id.* Petitioner argues that Figure 5 provides another example of visual content being adjusted with image 40 as a “viewing window.” *Id.* at 25–26. Similarly, Petitioner argues that Figure 4 explains how the recorded image area 50 is greater than nominal image frame 40. *Id.* at 26–27.

Petitioner argues that Thomason discloses its viewing windows are determined “as a function of progress through the progress length.” Pet. 27.

In particular, Petitioner argues that Thomason discloses that its processed image data can be played back with “processed sequential frames of the video (with each processed frame defined by a viewing window).” *Id.* Based on the current record, we determine that Petitioner’s argument is supported by a preponderance of the evidence. Ex. 1004 ¶¶ 34–36, 39, 83–86, Figs. 3a–3e, 4, 5; Ex. 1002 ¶¶ 83–86.

Petitioner also argues that Pacurariu determines a reduced area 305 out of an image area 300 as illustrated by Figures 5A–C. Pet. 27. Petitioner argues that the reduced area 305 may be used to compensate for any rotation. *Id.* Petitioner argues that Pacurariu Figure 7 shows that each video frame in a video is based on a frame-specific tilt value. *Id.* at 28. Petitioner argues that “Pacurariu provides a playback of processed sequential frames of the video (with each processed frame defined by a viewing window), thus disclosing that the viewing window is determined for the visual content as a function of progress through the progress length.” *Id.* at 29–30. Also, as discussed above, Petitioner explains a rationale for combining the teachings of these references. Pet. 29–31. Petitioner’s argument is supported by a preponderance of the evidence. Ex. 1004 ¶¶ 8–9; Ex. 1005 ¶¶ 26, 41, 44, 46, 57; Ex. 1002 ¶¶ 87–92.

1[d][ii] the viewing window defining extents of the visual content to be included within horizon-leveled visual content as the function of progress through the progress length,

Petitioner argues that Thomason discloses viewing windows that define a portion of captured visual content to be included within horizon-leveled visual content. Pet. 31. Petitioner’s argument is supported by a preponderance of the evidence. Ex. 1004 code (57); Ex. 1002 ¶ 93.

1[d][iii] wherein determination of the viewing window includes determination of a placement of the viewing window within the field of view of the visual content as the function of progress through the progress length based on the rotational positions of the image capture device as the function of progress through the capture duration; and

Petitioner argues that Thomason teaches viewing windows and determining placement of viewing windows based on rotation data. Pet. 32. Petitioner argues that placement of the window is determined based on a function of progress through progress length. *Id.*

Petitioner also argues that Pacurariu discloses this recitation. For example, Petitioner argues that Figure 3 shows area 300 as a “field of view of the visual content.” Pet. 32–33. Similarly, Petitioner argues Pacurariu Figure 5A discloses determination of the viewing window within the field of view to compensate for rotation. *Id.* Petitioner refers back to its previously stated rationale for combining the references’ teachings. *Id.* at 34.

Petitioner’s argument is supported by a preponderance of the evidence. Ex. 1002 ¶¶ 96–102; Ex. 1005 ¶¶ 40, 44, Figs. 3, 5A.

1[e][i] generate the horizon-leveled visual content based on the viewing window, the horizon-leveled visual content including a punchout of the extents of the visual content defined by the viewing window,

Petitioner argues that Thomason generates horizon-leveled visual content for display in a manner similar to the ’832 patent. Pet. 35. Petitioner also argues that Pacurariu also teaches this recitation and that it would have been obvious to combine the references’ teachings. *Id.* Petitioner’s argument is supported by a preponderance of the evidence. Ex. 1004 ¶¶ 33; Ex. 1002 ¶¶ 107–110.

1[e][ii] wherein inclusion of the extents of the visual content defined by the viewing window within the horizon-leveled visual content effectuates horizon leveling of the visual content.

Petitioner argues that Thomason teaches this subject matter by disclosing, for example, that “image data can be used to output a corrected image with the horizontal of the scene captured by the camera displayed horizontally even if the camera is not exactly aligned.” Pet. 36 (quoting Ex. 1004 ¶ 5). Petitioner argues that Pacurariu also teaches this recitation and that it would have been obvious to combine the references’ teachings. *Id.* Petitioner’s argument is supported by a preponderance of the evidence. Ex. 1004 ¶ 5; Ex. 1002 ¶ 113.

Conclusion as to claims 1 and 11

We determine that Petitioner has shown by a preponderance of evidence that the combination of Thomason and Pacurariu teaches or suggests all elements of claims 1 and 11 and that Petitioner sufficiently shows that a person of ordinary skill in the art would have had reason to combine the references’ teachings with rational underpinning and reasonable expectation of success. Thus, based on the above and based on objective indicia of non-obviousness as we discuss below,¹⁰ we determine Petitioner has established claims 1 and 11 are unpatentable over the combination of Thomason and Pacurariu.

¹⁰ Although we discuss objective indicia near the conclusion of this opinion, all of our ultimate conclusions of obviousness throughout this opinion are holistic considering the entirety of the record including all evidence of objective indicia.

c. *Claims 7 and 17*

Claim 7 recites: “The system of claim 1, wherein the determination of the viewing window further includes determination of a size of the viewing window as a function of progress through the progress length based on the rotational positions of the image capture device as the function of progress through the capture duration.” Ex. 1001, 29:19–24. Claim 17 is similar but depends from claim 11.

Petitioner argues that Thomason applies such an image correction. Pet. 37–39. Petitioner cites, for example, Figures 3a through 3e of Thomason that illustrate a picture being cropped to eliminate blank space based on rotation correction. *Id.* (citing Ex. 1004 ¶ 36, Figs. 3a–3d; Ex. 1002 ¶¶ 119–122).

Patent Owner argues that “Thomason never discloses that it determines a size of the viewing window for *multiple frames in a video*.” PO Resp. 28 (citing Ex. 2021 ¶ 84) (Patent Owner’s emphasis). Patent Owner argues that Thomason’s teachings are, instead, consistent with “tak[ing] an initial, one-time orientation measurement appl[ying] that measurement as a correction factor across all subsequent frames.” *Id.* at 29 (citing Ex. 2021 ¶ 85); *see also* PO Sur-Reply 2–7. Patent Owner further argues that Thomason only teaches use of a “single accelerometer” and that such a configuration is not suitable for rotational information for a moving camera because such a camera may rotate in three dimensions. PO Resp. 31 (citing Ex. 1004 ¶ 29; Ex. 2021 ¶ 89).

In an initial determination, the Administrative Law Judge at the International Trade Commission found that Thomason teaches “adjusting the size of a viewing window (*i.e.*, punchout) on a frame-by-frame basis.”

Ex. 1027, 146–148. The Administrative Law Judge reached this finding based upon the testimony of Mr. Goodin (testimony not before us) and also based upon Thomason at paragraphs 8, 27, 36, and Figures 3a–3e. *Id.*

A preponderance of the evidence supports that Thomason teaches adjusting window size (via cropping) based on rotation. For example, Thomason Figures 3a through 3e along with Thomason’s associated text demonstrate that viewing window size is adjusted based on rotation. Ex. 1004, Figs. 3a–3e, ¶¶ 34–37 (noting that, for Figure 3d “the image is cropped to eliminate blank space”); *see also id.* ¶ 12 (“the rotated image may be resized slightly compared with the normal image”).

A preponderance of the evidence also supports that Thomason suggests this adjustment on a frame-by-frame basis. Thomason teaches a camera for capturing image data that “may record either still images or moving images, in the latter case by capturing a sequence of items of image data 8 representing sequential frames of the moving image.” Ex. 1004 ¶ 27. Thomason then teaches that a *frame* may be cropped based upon rotation. *Id.* ¶ 36 (“Frame 40 represents the recorded image and frame 42 represents the image frame of the displayed image.”). By teaching that moving images have multiple frames and adjustment takes place at the level of a “frame,” Thomason reasonably suggests adjusting size on a frame-by-frame basis. Dr. Katsaggelos’s testimony is credible in this regard. Ex. 1002 ¶¶ 122–128. Our determination in this regard is consistent with the ITC determination. Ex. 1027, 146–148.

Patent Owner’s argument regarding Thomason only disclosing use of a single accelerometer to collect rotational information does not persuade us otherwise. PO Resp. 31; PO Sur-Reply 4. Patent Owner’s argument relies on

the declaration of Dr. Foroosh to establish that a single accelerometer is not suitable for multiple frames of a video. Ex. 2021 ¶ 89. The declaration, however, is unpersuasive because it is conclusory. Even if a camera were unable to correct for rotation in all three-dimensions, this would not prevent it from correcting for rotation, on a frame-by-frame basis, in one dimension. Thus, this evidence does not outweigh the evidence from Thomason suggesting that videos have multiple frames and that correction should happen at the level of a frame.

Patent Owner further argues that one of Petitioner's later patent applications indicates only a one-time adjustment to video. PO Sur-Reply 5–6. The content of Petitioner's patent application, however, has little relevance to how a person of ordinary skill in the art would have viewed Thomason.

The preponderance of the evidence also supports that the Thomason-Pacurariu combination would work on a frame-by-frame basis. Pet. 23 (explain how the resulting system would work on a frame-by-frame basis) (citing Ex. 1005 ¶¶ 52, 55–57, Figs. 6–7; Ex. 1002 ¶ 81). Pacurariu Figure 7, for example, indicates applying its process to “the next frame in the video” as necessary. Ex. 1005, Fig. 7.

We determine that Petitioner has shown by a preponderance of evidence that the combination of Thomason and Pacurariu teaches or suggests all elements of claims 7 and 17 and that Petitioner shows by a preponderance of the evidence that a person of ordinary skill in the art would have had reason to combine the references' teachings with rational underpinning and reasonable expectation of success. Thus, based on the above and based on objective indicia of non-obviousness as we discuss

below, we determine Petitioner has established claims 7 and 17 are unpatentable over the combination of Thomason and Pacurariu.

d. *Claims 8 and 18*

Claim 8 recites: “The system of claim 7, wherein the size of the viewing window changes as the function of progress through the progress length to simulate changes in zoom for the visual content.” Ex. 1001, 29:25–28. Claim 18 is similar but depends from claim 17.

Petitioner argues that Thomason teaches changing viewing window size and that a person having ordinary skill in the art “would understand that a smaller viewing window may make the object in the viewing window appear more zoomed-in.” Pet. 39–40 (citing Ex. 1002 ¶ 124).

Patent Owner argues that claim 8’s “simulate changes in zoom” language must require more than simply changing size of the viewing window because, otherwise, claim 8 and claim 7 would have the same scope. PO Resp. 33 (emphasis omitted). Patent Owner argues that the resizing without regard to zoom “may result in pronounced (e.g., rapid, jittery) changes in zoom/viewing window size within the horizon-leveled visual content.” *Id.* at 34 (citing Ex. 1001, 18:32–37). Thus, the ’832 patent provides methods of “artificially” making the viewing window smaller or larger by, for example, providing a “smoothed zoom curve.” *Id.*

Petitioner argues that Patent Owner argued that any size change is simulated zoom at the International Trade Commission. Pet. Reply 13. Petitioner also argues that Petitioner addressed claim 7 and claim 8 differently. *Id.* Petitioner emphasizes that Petitioner points to Thomason’s Figure 3d as teaching claim 7 and Figure 3e as teaching claim 8. *Id.* Figure 3e shows the picture in a larger “zoomed-in” format. Petitioner further

argues that claim 8 does not require a smoothed zoom curve and, even if it did, Pacurariu discloses a “smoothed” zoom effect. *Id.* at 14; *see also id.* at 4 (arguing, as a matter of claim construction, that simulating changes in zoom does not require smoothing).

At the International Trade Commission, the Administrative Law Judge stated that, “when the viewing window is smaller or larger, and then fitted to an output viewing space, this necessarily results in changes in zoom.” Ex. 1027, 148. Based on this understanding of claim 8, the Administrative Law Judge determined that Thomason discloses the recitation of claim 8. *Id.* at 149.

To address this claim, we first address claim construction. We agree with Petitioner that claim 8 (and 18) does not require smoothing. Pet. 4. Patent Owner does not dispute this point, but argues that claim 8 requires “[a]ny one of the various ‘artificial’ zoom effects described by the Patent.” PO Sur-Reply 8.

We also agree with Petitioner that resizing a window, without necessarily using a particular effect, simulates zoom. Pet. Reply 4, 13. Nothing in the ’832 patent limits “simulate changes in zoom” to require any particular artificial zoom effect as Patent Owner argues. Rather, just as the International Trade Commission reasoned (Ex. 1027, 148), when an image is first cropped and then enlarged to fit an output viewing space, this results in a simulated zoom.

On this construction of claim 8, claim 8 is distinguishable from claim 7 because claim 7 merely determines size of a viewing window. For example, claim 7 might determine how much of a captured image is cropped. Claim 8 relates to, for example, the further step of changing the

size of the cropped image (for example, to fit an output viewing space). Also, claim 8 relates to automatically changing the size of the cropped image without user intervention (distinguishing “simulated zoom” from conventional zoom). *See* Ex. 1001, 12:3–11, 12:34–40; 15:45–48.

We agree with Petitioner that, on the claim construction explained above, a preponderance of the evidence supports that Thomason teaches the recitation of claims 8 and 18. Pet. 39–40; Ex. 1002 ¶ 124; Ex. 1004 ¶ 37, Figs. 3a–3e. Thus, based on the above and based on objective indicia of non-obviousness as we discuss below, we determine Petitioner has established claims 8 and 18 are unpatentable over the combination of Thomason and Pacurariu.

e. *Claims 10 and 20*

Claim 10 recites:

The system of claim 1, wherein the determination of the placement of the viewing window within the field of view of the visual content includes determination of a location of the viewing window within the field of view of the visual content, the location of the viewing window within the field of view of the visual content determining framing of the visual content.

Ex. 1001, 29:34–40. Claim 20 is similar in relevant respects but depends from claim 11. *Id.* at 30:54–60.

Petitioner argues, for example, that Thomason Figures 3a through 3e and Pacurariu Figure 4 disclose this recitation. Pet. 41–43.

Patent Owner argues that claim 10’s recitations requiring determining location of the viewing window require more than merely determining placement and/or rotation. PO Resp. 35. Patent Owner argues that claim 1, from which claim 10 depends, requires “placement” and claim 9 requires

that placement also includes determining rotation. *Id.* Under the doctrine of claim differentiation, claim 10 requires something more than just placement and rotation, according to Patent Owner. *Id.* Patent Owner also argues that “determination of the location of the viewing window requires an algorithmic process that allows for change of the location” and that “[t]he viewing window cannot have the same location throughout the video.” *Id.* at 35–36. Patent Owner thus argues that, based on plain meaning and context in the specification, “location of the viewing window” refers to “the x-y coordinate at which the viewing window is placed.” *Id.* (citing Ex. 2021 ¶ 98; Ex. 1001, 10:51–54. 15:6–10). Patent Owner also argues that determining location of the viewing window determines the “framing of the visual content” by, for example, drawing attention to certain elements within a visual image by centering the elements. *Id.* at 36–37 (citations omitted). Patent Owner argues that, under this understanding of claim 10, Thomason and Pacurariu do not teach claim 10’s recitations. *Id.* at 37–40.

Petitioner argues in reply, with regard to claim construction, that “determination of a location of the viewing window” should not require determination of an “x-y coordinate” that must “change” across frames. Pet. Reply 5. Petitioner then argues that Thomason demonstrates a change of location because the viewing window of Thomason Figure 3d is “not perfectly centered” as compared to the original image. *Id.* at 15.

Patent Owner argues in sur-reply, with regard to claim construction, that it is not arguing that claim 10 requires determination of an x-y coordinate that must change. PO Sur-Reply 10. Rather, the claim requires a process that allows for change. *Id.* Patent Owner further argues that

Thomason's figures cannot adequately support that Thomason's Figure 3d image is "not perfectly centered."

We agree with Petitioner that claim 10 (and 20) does not require change of an x-y coordinate. The claim does require, however, a system with instructions (or a method, for claim 20) to determine a viewing window by determining location in a manner that determines framing of the visual content. Here, Petitioner has not established by a preponderance of evidence that the cited art meets this requirement. The cited figures of Thomason and Pacurariu illustrate rotation and cropping of the original image, but Petitioner does not persuasively explain, with evidence, how either of these references go beyond this by also determining location of a viewing window where the location determines framing of visual content.

We, thus, do not determine that claims 10 and 20 are obvious over Thomason and Pacurariu.¹¹

f. Remaining Claims 2, 9, 12, and 19

Each of claims 2, 9, 12, and 19 depends from one of independent claims 1 and 11. Ex. 1001, 28:27–30:60. Petitioner accounts for the limitations of dependent claims 2 and 9 directly (*id.* at 36–43) and accounts for claims 12 and 19 (depending from claim 11) by asserting that the claims respectively "mirror" the limitations of claims 2 and 9 (*id.* at 45–46). Patent Owner does not, aside reason to combine as addressed above, argue against Petitioner's position as to claims 2, 9, 12, and 19.

¹¹ We note that the parties have not directed us to any relevant ITC or other determination regarding any claims other than claims 1, 3, 4, 7, and 8. See Ex. 1027, 140 (ITC initial determination stating that "Insta360 contends that claims 1, 3, 4, 7, and 8 are invalid").

Petitioner shows by a preponderance of the evidence that each element of claims 2, 9, 12, and 19 is taught or suggested by the combined teachings of Thomason and Pacurariu and that there is a reason to combine the references' teachings with rational underpinning and reasonable expectation of success. Thus, we determine that Petitioner has established that claims 2, 9, 12, and 19 would have been obvious in view of Thomason and Pacurariu.

2. *Unpatentability over Thomason, Pacurariu, and Watanabe (Ground 2)*

Petitioner asserts that claims 3–6 and 13–16 are unpatentable under 35 U.S.C. § 103 as obvious over Thomason, Pacurariu, and Watanabe. Pet. 46–54. Claims 4–6 depend from claim 3, and claims 14–16 depend from claim 13. Claim 3 recites:

The system of claim 1, wherein the visual content includes a distortion such that a straight line within a scene depicted within the visual content appears as a curved line, the distortion of the visual content reducing impact of an off-axis horizon depicted within the horizon-leveled visual content.

Ex. 1001, 29:3–8. Claim 13 depends from claim 11 but is similar in relevant respects.

Petitioner argues that Watanabe “discloses two examples of visual content including distortions.” Pet. 48. Petitioner argues that Watanabe Figure 5 depicts correcting an image distortion and that Watanabe’s addition circuit 108 then “adds a distortion effect to the image subjected to image shake correction.” *Id.* at 48–49 (quoting Ex. 1006, 11:37–39) (emphasis omitted).

Petitioner then argues that Watanabe’s addition of a distortion meets claim 3’s language as follows:

A [person of ordinary skill in the art] would have understood that an off-axis horizon *may* be less noticeable in a distorted image than in a non-distorted image, for example, because the curvature may make the off-axis horizon less noticeable.

Pet. 49–50 (emphasis added). The Petition cites paragraph 153 of the declaration of Dr. Katsaggelos to support this point. *Id.* Dr. Katsaggelos does not provide additional evidence in support. Ex. 1002 ¶ 153. We note that the emphasized “may” in Petitioner’s argument leaves room for types of distortion that *may not* reduce impact of an off-axis horizon depicted within the horizon-leveled visual content.

Patent Owner argues that the Thomason, Pacurariu, and Watanabe combination “fails to teach the distortion reducing the impact of an off-axis horizon.”¹² PO Resp. 15 (emphasis omitted). Patent Owner argues that none of the three references teach a distortion that reduces impact of an off-axis distortion. *Id.* at 16. Patent Owner notes that the Petition relies only on Dr. Katsaggelos’s conclusionary distortion. *Id.*; *see also* PO Sur-Reply 12–13.

Petitioner responds to Patent Owner by arguing that Patent Owner did not address this “off-axis” limitation when asserting the ’832 patent before the International Trade Commission. Pet. Reply 17. This response is unpersuasive. Petitioner does not argue estoppel, and Petitioner does not identify particular evidence at the ITC inconsistent with Patent Owner’s position here. *See* PO Sur-Reply 13, n. 5 (addressing this argument further).

¹² Patent Owner makes several arguments regarding claim 3 (PO Resp. 14–24), but it is unnecessary to address Patent Owner’s additional arguments in view of the persuasive argument addressed above.

Petitioner also argues that image 54 of Watanabe (the bottom most image of Watanabe Figure 5) is a distorted image and that a person having ordinary skill in the art “would understand that the existence of distortion in image 54 would reduce the impact of an off-axis horizon depicted in the image.” Pet. Reply 18. Petitioner, however, again relies on conclusory testimony of Dr. Katsaggelos as support. Ex. 1019 ¶ 65. The testimony also does not explain why the distortion introduced by Watanabe discloses something that would “reduce impact of an off-axis horizon depicted within the horizon-leveled visual content.”

Petitioner cites the ’832 patent as supposedly teaching “if a distortion exists, the impact of an off-axis horizon would be reduced.” Pet. Reply 17–18 (citing Ex. 1001, 22:15–18). Petitioner misinterprets the ’832 patent in this regard. The ’832 patent states that “[e]xistence of *such* distortion(s) within the image may create curves within the image, which may make an off-axis horizon less noticeable than in an image without distortion.” Ex. 1001, 22:15–18 (emphasis added). By referring to “such distortion(s),” the ’832 patent refers back to the ’832 patent’s distorted image. The ’832 patent’s distortion explains how the ’832 patent’s distortion can make impact of an off-axis horizon less noticeable. *Id.* at 21:60–23:3. But Watanabe lacks a similar suggestion regarding impact of an off-axis horizon. Watanabe’s distortions may not be the same, and the preponderance of the evidence does not support that Watanabe’s distortions will make an off-axis horizon less noticeable. *See Univ. of Strathclyde v. Clear-Vu Lighting LLC*, 17 F.4th 155, 160–62 (Fed. Cir. 2021) (holding that Board erred in finding claim element obvious when element was not suggested by the cited art).

Also, even if Watanabe’s distortions would reduce the impact of an off-axis horizon, Petitioner has not established by a preponderance of the evidence that a person of ordinary skill in the art would have had reason to modify Thomason or Pacurariu to include Watanabe’s distortions. Petitioner asserts that adding Watanabe’s image processing would create “a moving image that appears natural after image shake correction” (Pet. Reply 20 (quoting Ex. 1006, 1:47–48)), but Petitioner is merely pointing to a generic description of Watanabe’s invention. Watanabe adds barrel distortion because the original optical image has a barrel distortion that is removed during image processing; Watanabe adds this original distortion back into the image. Ex. 1006, 4:36–42; 11:20–24. Petitioner has not explained sufficiently why a POSA would seek to add barrel or pincushion distortion to the Thomason or Pacurariu systems where those references do not teach images that originally have such distortion. Ex. 2021 ¶ 71 (Patent Owner’s expert, Dr. Foroosh, noting that “neither Thomason nor Pacurariu describe using a lens that causes barrel distortion”). Although Petitioner points to the ‘832 patent as evidence that barrel or pincushion distortion minimizes the effects of off-axis horizons, such a teaching in the ‘832 patent alone cannot properly motivate the proposed combination of Thomason and Watanabe. *KSR Int’l Co.*, 550 U.S. at 421 (“A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.”).

Petitioner also argues that Dr. Foroosh (Patent Owner’s witness) agreed at deposition that “the existence of distortion makes off-axis horizon less noticeable.” Pet. Reply 18 (quoting Ex. 1018, 111:12–112:1). Upon review of the deposition’s context, however, Dr. Foroosh was merely

quoting the '832 patent when asked to read the '832 patent. Ex. 1018, 109:19–113:14 (referring to the '832 patent, Ex. 1001). At most, Dr. Foroosh was testifying that existence of the '832 patent's distortion makes off-axis horizon less noticeable. Dr. Foroosh does not address whether or not a person having ordinary skill in the art would understand that Watanabe would have the same effect.

Petitioner further argues that Watanabe, Thomason, and Pacurariu all address the problem of an off-axis horizon. Pet. 18. Even if generally correct, this argument does not particularly address claim 3's recitation at issue.

In the Reply, Petitioner argues that Thomason and Pacurariu (without Watanabe) disclose claim 3. Pet. Reply 23–24. Petitioner's argument does not explain or evidence how Thomason or Pacurariu teach or suggest introducing a distortion that makes off-axis horizon less noticeable.

We note that, at the ITC, the Administrative Law Judge determined (as part of an initial determination) that claim 3 was obvious over Thomason and Watanabe. Ex. 1027, 163–166. The Administrative Law Judge's initial determination, however, does not identify how or why a person of ordinary skill in the art would have known that Watanabe's distortion, in particular, would have reduced impact of an off-axis horizon depicted within the horizon-leveled visual content. It also does not identify why, based on the teachings of Watanabe, a person of ordinary skill in the art would have introduced pin-cushion or barrel distortion to images that originally did not have such distortion. Our decision differs from the ITC decision because the evidence and arguments before us are different.

Petitioner’s argument that claims 3 and 11 are obvious over Watanabe, Thomason, and Pacurariu is not supported by the preponderance of the evidence before us. We, thus, do not determine that claims 3 and 11 are obvious over Watanabe, Thomason, and Pacurariu. We also do not determine that any of claims 4–6 or 14–16 are unpatentable over Watanabe, Thomason, and Pacurariu because those claims depend from claim 3 or claim 11.

3. *Unpatentability over Voss and Derbanne (Ground 3)*

Petitioner asserts that claims 1, 2, 7–12, and 17–20 are unpatentable under 35 U.S.C. § 103 as obvious over Voss and Derbanne. Pet. 54–80. Patent Owner argues that the cited art does not teach or suggest various recitations of claims 1, 7, 8, and 10 and argues that Petitioner has not adequately established a rationale for combining the references’ teachings. PO Resp. 56–69. We address Petitioner’s and Patent Owner’s arguments below.

a. *Combining Voss and Derbanne*

Petitioner argues that Voss discloses a system that “dynamically maintain[s] a horizontal framing of a video.” Pet. 55 (quoting Ex. 1007, code (57)). Petitioner argues that Figure 2 of Voss, for example, illustrates use of an inset rectangle 225 to compensate for rotation. *Id.* Petitioner refers to Voss’s international application as providing a better rendering of Voss Figure 2. *Id.* at 55–56.

Petitioner argues that Derbanne discloses “stabilizing videos using positions of an image capture device during a capture duration.” Pet. 56 (quoting Ex. 1008, 1:6–7). Petitioner argues that Derbanne discloses an

optical field of view and capture field of view where the optical field of view may be greater than the capture field of view. *Id.* at 57–58.

Petitioner argues, for example, that it would have been obvious to combine Voss’s and Derbanne’s teachings because both relate “to techniques for rotating visual content in video data to compensate for motion of the image capture device.” Pet. 61–62. Petitioner argues that the combination would result in a system where data is captured, stored, and maintained in accordance with Derbanne and a punchout may be generated to predictably improve management and processing capabilities of Voss. *Id.* at 62. Petitioner argues that Derbanne’s techniques would improve Voss. *Id.* Petitioner also argues that combining the teachings would not require much effort and would have a reasonable expectation of success. *Id.*; *see also* Pet. 64–65 (arguing that it would have been obvious to combine Derbanne’s optical field of view teachings with Voss); 67 (arguing it would have been obvious to combine Derbanne’s teachings regarding use of position information as a function of progress with Voss).

Patent Owner argues that Petitioner’s rationale to combine is conclusory. PO Resp. 67–69. Again, Patent Owner focuses only on certain parts of the Petition while ignoring, for example, Petitioner’s summary of each prior art reference. *Id.*

We find, based on a preponderance of the evidence, that Derbanne and Voss both involve motion correction. Derbanne discloses motion correction in three axes while Voss compensates motion in the roll direction. Pet. Reply 32 (citing Ex. 1019 ¶¶ 103–104); *see also* Pet. 54–58 (citations omitted). Derbanne’s teachings relating to formatting video data and use of rotational data would predictably help a person having ordinary skill in the

art implement Voss’s horizon-leveling algorithm. Pet. Reply 32 (citations omitted). Petitioner, with support from credible testimony of Dr. Katsaggelos, explains how the teachings of Thomason and Pacurariu could be successfully combined. Pet. 62 (citing, for example, Ex. 1002 ¶ 184).

Petitioner and Dr. Katsaggelos explain the references’ teachings and, based on these teachings, assert that a person having skill in the art would have had reason to combine with reasonable expectation of success based on those teachings. Reason to combine may properly come from the references themselves. *KSR Int’l Co.*, 550 U.S. at 418 (explaining reason to combine may come from “interrelated teachings of multiple patents”). Based on the evidence presented, Petitioner establishes by a preponderance of the evidence that a person having ordinary skill in the art would have had reason to combine the teachings of Derbanne and Voss with a reasonable expectation of success.

b. *Claims 1 and 11*

Petitioner accounts for the recitations of claims 1 and 11 as being taught by Voss or Derbanne or being obvious in view of the combined teachings of Voss and Derbanne. Pet. 58–75. A preponderance of the evidence including the disclosures of Voss (Ex. 1007), Derbanne (Ex. 1008), and the declaration of Dr. Katsaggelos (Ex. 1002) support Petitioner’s arguments. Except as we discuss below, Patent Owner does not dispute Petitioner’s arguments in this regard.

Patent Owner disputes recitation 1[d][ii]. PO Resp. 57. This recitation states: “the viewing window defining extents of the visual content to be included within horizon-leveled visual content as the function of progress

through the progress length.” Ex. 1001, 28:48–58. (Claim 11 includes a similar recitation. *Id.* at 30:1–4.) Petitioner argues that Voss teaches inset rectangle 225 which is transformed to compensate for rotation. Pet. 67–68. Petitioner argues the inset rectangle is a viewing window determined based on rotational information. *Id.* at 68. Petitioner argues that Voss discloses that the processed image data may be played back with processed frames defined by viewing windows thus disclosing that the viewing window is determined for the visual content as a function of progress through the progress length. *Id.* at 68–69.

Petitioner further argues that Derbanne discloses “video content may define visual content viewable as a function of progress through a progress length of the video content.” *Id.* at 69 (quoting Ex. 1008, 13:49–51) (emphasis omitted). Petitioner argues that the Voss-Derbanne combination would process the video content in Derbanne’s format to determine viewing windows for different frames in the video content. *Id.* Petitioner argues that Voss discloses horizon-leveling during post-processing or in real time and that Voss thus discloses capturing a video stream and then determining the overlay to generate horizon-leveled visual content. *Id.* at 69–70. Petitioner also explains why a person of ordinary skill in the art would have combined the teachings of Voss and Derbanne as we discuss above. *Id.* at 61–62. Petitioner’s argument is supported by a preponderance of the evidence. Ex. 1007, 3:6–9, 7:1–3, 9:15–19, 10:5–7, 12:10–12, 14:2–5, 15:23–16:6, Fig. 6; Ex. 1008, 13:49–51; Ex. 1002 ¶¶ 194–199.

Patent Owner argues that inset rectangle 225 of Voss cannot be the “viewing window” of claim 1 “because it does not define the extents of

horizon leveled content that the system punches out to effectuate horizon leveling of the visual content.” PO Resp. 57.

This argument does not persuasively undermine Petitioner’s position. Claim 1 recites “the horizon-leveled visual content including a punchout of the extents of the visual content defined by the viewing window.” Ex. 1001, 28:59–61; *see also id.* at 30:12–15 (claim 11 reciting the same). Based on this language, we agree with Petitioner that the “viewing window” does not need to “equate” to the horizon-leveled visual content. Pet. Reply 1–2. The preponderance of the evidence establishes that Voss teaches that its visual content includes what becomes a horizon-leveled punchout. *Id.* at 27 (citing, e.g., Ex. 1007, 10:17–21; Ex. 1019 ¶ 91).

Patent Owner does not dispute this cropping. PO Sur-Reply 17–18. Instead, Patent Owner argues that, because of this cropping, Voss’s inset rectangle cannot “defin[e] extents of the visual content to be included within horizon-leveled visual content” as claim 1 recites. We disagree with Patent Owner’s interpretation of claim 1. The inset rectangle’s visual content defines the entire area of content (the extent) that the final horizon-leveled visual content is drawn from (after cropping).

Patent Owner also argues that Voss oscillates between optical filling and pillar-boxing. PO Sur-Reply. 19. This argument also does not undermine Petitioner’s position. Claim 1 requires a processor configured with instructions to “generate . . . visual content [the] content including a punchout of the extents of the visual content defined by the viewing window.” Ex. 1001, 28:27–65. Voss suggests a processor that includes such instructions; these instructions only being executed in a certain mode does not affect whether or not the instructions meet the claim recitation.

We thus determine that Petitioner has shown by a preponderance of evidence that the combination of Voss and Derbanne teaches or suggests all elements of claims 1 and 11 and that Petitioner shows by a preponderance of the evidence a person of ordinary skill in the art would have had reason to combine the references' teachings with rational underpinning and reasonable expectation of success. Based on the above and based on objective indicia of non-obviousness as we discuss below, we determine Petitioner has established claims 1 and 11 are unpatentable over the combination of Voss and Derbanne.

c. Claims 7 and 17

Claim 7 recites: "The system of claim 1, wherein the determination of the viewing window further includes determination of a size of the viewing window as a function of progress through the progress length based on the rotational positions of the image capture device as the function of progress through the capture duration." Ex. 1001, 29:19–24. Claim 17 is similar but depends from claim 11.

Petitioner argues that Voss determines a size of the viewing window based on rotational data by citing Figure 2 of Voss. Pet. 75–76 (citing Ex. 1007, Fig. 2; Ex. 1002 ¶¶ 213–214. Petitioner, in Reply, emphasizes that Voss teaches that its inner rectangle 225 is "*inscribed optimally* inside the maximum available bounds of the overall sensor minus the padding." Pet. Reply 29 (citing Ex. 1007, 10:7–9) (Petitioner's emphasis). Petitioner also argues that the inset rectangle can change aspect ratio. *Id.* (citing Ex. 1007 10:9–11).

Patent Owner argues that, similar to Patent Owner's ground one argument, Petitioner does not demonstrate that Voss determines a viewing

window as claimed and does not demonstrate that Voss determines the size of this viewing window as claimed. PO Resp. 61–62. Patent Owner argues that Petitioner relies on Voss Figure 2 as showing that the inset rectangle changes size, but Figure 2 does not show this or, is at most, “vague and contradictory as the World Patent Office found.” *Id.* at 62 (citing Ex. 2021 ¶ 150). In Sur-Reply, Patent Owner again emphasizes that Voss’s figure is vague, and Patent Owner argues that Petitioner cannot properly rely on other text of Voss for the first time in Reply.

We first address Patent Owner’s procedural argument. Petitioner properly raises other text of Voss in the Sur-Reply to rebut Patent Owner’s position that Voss Figure 2 is vague. The text properly identifies additional context supporting Petitioner’s understanding of Voss Figure 2.

With regard to the merits, a preponderance of the evidence supports that Voss teaches or suggests the recited viewing window. In particular, Voss teaches cropping by “inscribing optimally” based upon rotation. Ex. 1007, Fig. 2, 10:7–9. Voss also teaches changing aspect ratio. *Id.* at 10:9–11. Voss Figure 2 illustrates how this happens as a function of time. *See* Pet. 55 (“Voss discloses a system that ‘dynamically maintain[s] a horizontal framing of a video.’” (quoting Ex. 1007, code (57))).

We thus determine that Petitioner has shown by a preponderance of evidence that the combination of Voss and Derbanne teaches or suggests all elements of claims 7 and 17 and that Petitioner shows by a preponderance of the evidence a person of ordinary skill in the art would have had reason to combine the references’ teachings with rational underpinning and reasonable expectation of success. Thus, based on the above and based on objective indicia of non-obviousness as we discuss below, we determine Petitioner has

established claims 7 and 17 are unpatentable over the combination of Voss and Derbanne.

d. *Claims 8 and 18*

Claim 8 recites: “The system of claim 7, wherein the size of the viewing window changes as the function of progress through the progress length to simulate changes in zoom for the visual content.” Ex. 1001, 29:25–28. Claim 18 is similar but depends from claim 17.

Petitioner argues that Voss teaches this recitation as follows:

[T]he framing of the image inside the output box is maintained regardless of aspect ratio. Thus, no matter how the device is orientated, scene is zoomed in or out to keep consistent framing.

Pet. 76 (quoting Ex. 1007, 13:10–12). Petitioner further argues that Voss discloses “where maximum resolution is desired, the zooming in and out may change the size of the object of interest.” *Id.* at 76–77 (quoting Ex. 1007, 13:14–15); *see also* Ex. 1002 ¶ 216.

Patent Owner argues that Voss’s changes in size to the inset rectangle does not simulate changes to zoom. PO Resp. 64. Patent Owner argues, as it did with respect to the Thomason and Pacurariu combination, that simulating change in zoom requires more than changing size of the viewing window. *Id.* at 65.

Patent Owner’s arguments fail for the reasons we explain above when we address Patent Owner’s claim 8 arguments against the Thomason and Pacurariu combination. Voss teaches cropping via use of inset rectangle 225 and then changing the size of the content (simulating a zoom) within that inset rectangle to fill a screen. Pet. 72–73; Ex. 1007, Fig. 2, 10:2–4, 13:10–15; Ex. 1002 ¶¶ 204, 214–216.

Thus, a preponderance of the evidence supports that Voss and Derbanne teaches the recitation of claims 8 and 18. Pet. 76; Ex. 1002 ¶ 216; Ex. 1007, Fig. 2, 13:10–15. Based on the above and based on objective indicia of non-obviousness as we discuss below, we determine Petitioner has established claims 8 and 18 are unpatentable over the combination of Voss and Derbanne.

e. Claims 10 and 20

Claim 10 recites:

The system of claim 1, wherein the determination of the placement of the viewing window within the field of view of the visual content includes determination of a location of the viewing window within the field of view of the visual content, the location of the viewing window within the field of view of the visual content determining framing of the visual content.

Ex. 1001, 29:34–40. Claim 20 is similar in relevant respects but depends from claim 11. *Id.* at 30:54–60.

Petitioner argues that Figure 2 of Voss discloses this recitation. Pet. 77–78.

Patent Owner argues, as it did with the Thomason and Pacurariu combination, that claim 10 requires more. PO Resp. 65–67.

Petitioner replies by arguing that the viewing window of the Voss-Derbanne system will not always be centered. Pet. Reply 30. Petitioner argues that Figure 4 of Voss and Figure 6B of Derbanne provide examples. *Id.*; *see also* Ex. 1018 (Dr. Katsaggelos declaration providing testimony regarding the same).

Patent Owner argues that the Figure 4 embodiment and reliance on Derbanne are improper new arguments. PO Sur-Reply 23–24. Patent Owner also argues that Voss Figure 4 “illustrates a single alleged viewing window

from a different device than that in Figure 2” and that, as to Derbanne, “the Petition does not articulate *how* or *why* a POSITA would modify Voss to arrive at these claims.” *Id.*

Our claim construction analysis here is the same as our analysis of claim 10 presented in the context of Thomason and Pacurariu.

With regard to Voss Figure 2, the cited figure of Voss illustrates rotation and cropping of the original image, but the Petition does not persuasively explain, with a preponderance of the evidence, how Voss (or Derbanne) goes beyond this by also determining location of a viewing window where the location determines framing of visual content.

We also address Petitioner’s additional arguments in the Reply because those arguments fairly respond to a claim construction issue raised by Patent Owner (i.e., what “location” means in the context of claims 10 and 20). *Axonics, Inc. v. Medtronic, Inc.*, 75 F.4th 1374, 1384 (Fed. Cir. 2023) (“[W]here a patent owner in an IPR first proposes a claim construction in a patent owner response, a petitioner must be given the opportunity in its reply to argue and present evidence of anticipation or obviousness under the new construction, at least where it relies on the same embodiments for each invalidity ground as were relied on in the petition.”). We also note that the devices of Voss Figures 2 and 4 are not distinct embodiments; rather, they illustrate different capabilities of Voss’s overall optimization system. Voss is generally directed to resolving problems when shooting video on a mobile device that result when a user films video that is not orientated properly. Ex. 1007, 1:10–3:2; *see also* Pet. 54–56. Figures 2 and 4 both show “an exemplary mobile device,” but Figure 2 illustrates “an active display” while Figure 4 illustrates “capture initialization 400.” Ex. 1007, 5:11–12, 5:15–16.

Voss teaches that these features may be used in conjunction. *Id.* at 18:1–19:2.

Voss explains that “[a]n inscribed rectangle 440, as described previously, may also be overlaid on the image to indicate an aspect ratio of the image or video to be captured.” Ex. 1007, 14:2–5. Dr. Katsaggelos credibly testifies that, “[e]ven if the claim is construed to require that a ‘point’ of a viewing window not always be ‘centered’ as GoPro alleges, Voss provides an example of uncentered ‘inscribed rectangle 440’ in [Figure] 4.” Ex. 1019 ¶ 102. Thus, Figure 4 illustrates determination of a location of the viewing window within the field of view of the visual content, the location of the viewing window within the field of view of the visual content determining framing of the visual content.

Petitioner also adequately explains why a person would have had reason to modify Voss in view of Derbanne to arrive at the Voss-Derbanne system with reasonable expectation of success. We address this issue in Section III(E)(3)(a), *supra*. We again emphasize that the Voss technique of Figure 4 is best understood as part of Voss’s overall system rather than being a separate technique that would have to be accounted for separately.

Thus, a preponderance of the evidence supports that Voss and Derbanne teaches the recitation of claims 10 and 20. Based on the above and based on objective indicia of non-obviousness as we discuss below, we determine Petitioner has established claims 10 and 20 are unpatentable over the combination of Voss and Derbanne.

f. Remaining Claims 2, 9, 12, and 19

Each of claims 2, 9, 12, and 19 depends from one of independent claims 1 and 11. Ex. 1001, 28:6–30:60. Petitioner accounts for the

limitations of dependent claims 2 and 9 directly (*id.* at 75, 77) and accounts for claims 12 and 19 (depending from claim 11) by asserting that the claims respectively “mirrors” the limitations of claims 2 and 9 (*id.* at 80–81). Patent Owner does not, aside reason to combine as addressed above, argue against Petitioner’s position as to claims 2, 9, 12, and 19.

Petitioner shows by a preponderance of the evidence that each element of claims 2, 9, 12, and 19 is taught or suggested by the combined teachings of Voss and Derbanne and that there is a reason to combine the references’ teachings with rational underpinning and reasonable expectation of success. Thus, we determine that Petitioner has established that claims 2, 9, 12, and 19 would have been obvious in view of Voss and Derbanne.

4. *Unpatentability over Voss, Derbanne, and Watanabe (Ground 4)*

Petitioner asserts that claims 3–6 and 13–16 are unpatentable under 35 U.S.C. § 103 as obvious over Voss, Derbanne, and Watanabe. Pet. 81–84. Petitioner relies on Watanabe (and not Voss or Derbanne) as teaching the recitation of claim 3. *Id.* at 81. Patent Owner argues that Petitioner’s arguments fail for the same reasons Petitioner’s arguments fail with regard to the Thomason, Pacurariu, and Watanabe combination. PO Resp. 55.

For the reasons we explain in Section III(E)(2), *supra*, Petitioner’s argument that claims 3 and 13 are obvious over Voss, Derbanne, and Watanabe is also not supported by the preponderance of the evidence before us. Like Thomasson, Voss also does not teach images where barrel-distortion is removed and then added back in. We, thus, do not determine that claims 3 and 13 are obvious over Voss, Derbanne, and Watanabe. We also do not determine that any of claims 4–6 or 14–16 are unpatentable over

Voss, Derbanne, and Watanabe because those claims depend from claim 3 or claim 13.

IV. ANALYSIS OF PATENT OWNER’S ASSERTED EVIDENCE OF NON-OBVIOUSNESS¹³

Patent Owner argues that objective indicia further demonstrate the ’832 patent would not have been obvious. PO Resp. 69–78.

A. *Legal Standard*

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

¹³ The parties have designated most of the documents related to evidence of non-obvious confidential and have filed those documents under seal. In this opinion, we address this confidential information in a manner that does not disclose confidential information.

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).

B. Patent Owner’s Practice of the Patent

Patent Owner argues that GoPro’s Horizon Leveling functionality when used on a GoPro camera practices claims 1, 3, 7, and 8 of the ’832 patent. PO Resp. 70 (citing Ex. 2021 ¶¶ 75, 165–169; Ex. 2008, 4–8; Ex. 2028; Ex. 2029).

Petitioner argues that Patent Owner fails to explain how its product meets “the distortion of the visual content reducing impact of an off-axis horizon” recitation of claims 3 and 4 and argues that Petitioner does not explain how its product “simulate[s] changes in zoom” for claims 7 and 8. We note that claim 7 does not require simulating change in zoom, so we understand Petitioner’s argument as being directed to claim 8.

With respect to claims 3 and 8, Dr. Foroosh’s declaration provides some evidence supporting Patent Owner’s position. Ex. 2021 ¶¶ 168, 169.

That evidence is un rebutted. Thus, based on a preponderance of the evidence, we determine that GoPro’s Horizon Leveling functionality used on a GoPro camera practices claims 1, 3, 7, and 8 of the ’832 patent. We note that Patent Owner does not establish that a product is coextensive with claims 1, 3, 7, or 8.¹⁴ Thus, when addressing each of Patent Owner’s objective indicia arguments, we consider whether the evidence is the “direct result of the unique characteristics of the claimed invention.” *Fox Factory*, 944 F.3d at 1374.

C. Copying

Patent Owner presents argument regarding copying. PO Resp. 75–78. Petitioner argues that Petitioner independently developed horizon leveling and that Patent Owner’s evidence are only benchmarking. Pet. Reply 35. Petitioner emphasizes that the International Trade Commission found no copying and found that Insta360’s horizon leveling technology invalidated the ’832 patent. *Id.*

Our ultimate conclusion as to copying is the same as in the ITC. Ex. 1027, 151–152. The documents before us show benchmarking. Ex. 2031; Ex. 2032, 2; Ex. 2032, 2; Ex. 2034. The ’444 Chinese application indicates inclusion of similar technology. Ex. 2004. But Patent Owner does not establish that Petitioner was unaware of the claimed horizon leveling concept prior to analysis of GoPro’s products. Further, the prior art before

¹⁴ We do not rely on a presumption of nexus because we do not agree that the Horizon Leveling feature can properly be considered a “product” in this context and within the ambit of *Fox Factory*. For example, there is no allegation that any consumer has ever purchased Horizon Leveling by itself (without being embodied in a camera having other features). The product is the GoPro camera, and the camera is not coextensive with the claims here.

has several patents related to horizon leveling. *See generally* Ex. 1004, code (57) (rotating display to “true horizontal”); Ex. 1005, code (57) (similar); Ex. 1007, code (57) (similar).

Thus, Patent Owner’s allegations of copying do not weigh in favor of non-obviousness.

D. Commercial Success

Patent Owner provides evidence that GoPro’s HERO line of cameras are commercially successful and that Horizon Leveling contributed to this demand. PO Resp. 78. Petitioner argues that purported commercial success is attributed to many unrelated factors. Pet. Reply 34.

The preponderance of the evidence supports Patent Owner’s position that its products are commercially successful and that Horizon Leveling is a meaningful factor in that success (although there are also other key factors). Ex. 2024 ¶¶ 9, 14–20; Ex. 2040, 10–14; Ex. 2019, 14; Ex. 2018, 23; Ex. 2021 ¶¶ 176–179; *see also Cont’l Can Co. USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1273 (Fed. Cir. 1991) (“It is not necessary ... that the patented invention be solely responsible for the commercial success, in order for this factor to be given weight appropriate to the evidence, along with other pertinent factors.”).

We, thus, consider the commercial success of Horizon Leveling when considering obviousness. However, we also balance this against the state of the prior art, which is well familiar with the general concept of horizon leveling. *See generally* Exs. 1004, 1005, 1007; *see also In re Kao*, 639 F.3d 1057, 1069 (Fed. Cir. 2011) (persuasive examples of objective indicia are generally drawn “to some aspect of the claim not already in the prior art”). Thus, while there is some credible evidence of commercial success, it is one

feature among many in the HERO feature set, and a feature that is largely within the prior art. We make our obviousness determinations based on the totality of the record while evaluating the prior art and this commercial success at the same time. Upon evaluation of Petitioner's obviousness case in light of the evidence, including evidence of objective indicia of non-obviousness, we conclude that Petitioner has established the unpatentability of these claims.

V. RESOLUTION OF MOTIONS TO STRIKE

Patent Owner moves to strike Petitioner's argument that Thomason and Pacurariu alone (even without Watanabe) render claims 3–5 and 13–15 obvious. Patent Owner's Motion to Strike, Paper 37, 1–3 ("PO Mot. to Strike"). We deny Patent Owner's motion as moot because Petitioner's argument regarding Thomason and Pacurariu alone, even if considered, fails on the merits for the reasons we explain above. *See* Section III(E)(2), *supra*.

Patent Owner also moves to strike Petitioner's "obvious to try theory" for combining Voss and Derbanne. PO Mot. to Strike, 1, 3–5. We deny Patent Owner's motion as moot because Petitioner presents adequate reason for a person of ordinary skill in the art to combine the teachings of Voss and Derbanne even if an "obvious to try theory" is not considered.

Petitioner moves to strike Patent Owner's "new claim construction on the term 'configured.'" Petitioner's Motion to Strike, Paper 45, 1–3 ("Pet. Mot. to Strike"). We deny Petitioner's motion as moot because we decide this issue in Petitioner's favor as explained in Section III(E)(1)(b), *supra*.

Petitioner moves to strike Patent Owner's "new reliance on [Exhibit] 2004." Pet. Mot. to Strike, 1, 4. We deny Petitioner's motion as moot because, even if we consider Exhibit 2004 in the context of claim 7, it does

not affect the outcome of our obviousness determination. Exhibit 2004 has little persuasive weight. Petitioner’s mention of “existing technical solutions” in a patent application does not serve as an admission that the prior art at large presents no other technical solutions.

Petitioner moves to strike Patent Owner’s “new position on ‘location of the viewing window.’” Pet. Mot. to Strike, 1, 4–5. We deny Petitioner’s motion as moot because, even if Patent Owner’s arguments are considered, it does not affect our position regarding this claim recitation. *See* Section III(E)(1)(e), *supra*.

Petitioner moves to strike Patent Owner’s “new ‘presumption of nexus’ and ‘unmet need’ arguments concerning secondary considerations.” Pet. Mot. to Strike 1, 5. With respect to presumption of nexus, we deny this motion as moot. Even if we consider Patent Owner’s argument, Patent Owner has not adequately established Horizon Leveling is coextensive with any “product” within the framework of *Fox Factory*.

With respect to “unmet need,” we grant Petitioner’s motion. Patent Owner did not raise “unmet need” as a relevant objective indicia in its Patent Owner Response. Patent Owner argues that Petitioner invited elaboration by arguing, in its Reply that there is “no long-felt but unmet need.” Patent Owner Opposition to Motion to Strike, Paper 47, 5. We disagree. Petitioner merely argued that Patent Owner did not argue “unmet need” in its Patent Owner Response. Pet. Reply 35. Petitioner’s identification of an issue that Patent Owner did not argue does not open the door to Patent Owner to then argue the issue in Sur-Reply.

VI. CONCLUSION¹⁵

For the reasons above, we determine that Petitioner has proven, by a preponderance of the evidence, that claims 1, 2, 7–12, and 17–20 of the '832 patent are unpatentable. We determine that Petitioner has *not* demonstrated that claims 3–6 and 13–16 of the '832 patent are unpatentable. The following table provides a summary:

¹⁵ 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).

Claim(s)	35 U.S.C. §	Reference(s)/ Basis	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
1, 2, 7– 12, 17–20	103(a)	Thomason, Pacurariu	1, 2, 7–9, 11, 12, 17–19	10, 20
3–6, 13– 16	103(a)	Thomason, Pacurariu, Watanabe		3–6, 13–16
1, 2, 7– 12, 17–20	103(a)	Voss, Derbanne	1, 2, 7–12, 17– 20	
3–6, 13– 16	103(a)	Voss, Derbanne, Watanabe		3–6, 13–16
Overall Outcome			1, 2, 7–12, 17– 20	3–6, 13–16

VII. ORDER

For the foregoing reasons, it is

ORDERED that Petitioner has demonstrated by a preponderance of the evidence that claims 1, 2, 7–12, and 17–20 of the '832 patent are unpatentable;

ORDERED that Petitioner has *not* demonstrated by a preponderance of the evidence that claims 3–6 and 13–16 of the '832 patent are unpatentable;

ORDERED that Petitioner's motion to strike Patent Owner's "unmet need" argument raised in its Sur-Reply is granted;

ORDERED that all other relief requested in Petitioner and Patent Owner's motions to strike is denied; and

FURTHER ORDERED that, because this is a Final Written Decision, 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.

IPR2024-01052
Patent 11,336,832 B1

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE OFFICE OF THE UNDER SECRETARY OF COMMERCE
FOR INTELLECTUAL PROPERTY AND DIRECTOR OF THE
UNITED STATES PATENT AND TRADEMARK OFFICE

ARASHI VISION (U.S.) LLC (D/B/A INSTA360),
Petitioner,

v.

GOPRO, INC.,
Patent Owner.

IPR2024-01052
Patent 11,336,832 B1

Before JOHN A. SQUIRES, *Under Secretary of Commerce for Intellectual
Property and Director of the United States Patent and Trademark Office.*

ORDER

The Office received a request for Director Review of the Final Written Decision in the above-captioned case and an authorized response to the request. *See* Papers 61, 62.

Having reviewed the request and response, it is:

ORDERED that the request for Director Review is denied.

IPR2024-01052
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