

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

138 EAST LCD ADVANCEMENTS LIMITED,
Patent Owner.

IPR2024-00958
Patent 8,482,638 B2

Before KRISTEN L. DROESCH, GEORGE R. HOSKINS, and
KEVIN C. TROCK, *Administrative Patent Judges*.

TROCK, *Administrative Patent Judge*.

PRELIMINARY GUIDANCE
PATENT OWNER'S MOTION TO AMEND

37 C.F.R. § 42.121(e)

I. INTRODUCTION

On December 30, 2024, we instituted trial as to claims 1, 2, and 4–6 of U.S. Patent No. 8,482,638 B2 (“the ’638 patent,” Ex. 1001). Paper 6 (Inst. Dec.). After institution, Patent Owner filed a Non-Contingent Motion to Amend. Paper 9 (“Mot.” or “Motion”). In the Motion, Patent Owner “requests the Board . . . cancel [original] claims 1–6, and substitute claims 7–12.” Mot. 1–2, App. A (Substitute Claims Listing). Petitioner filed an Opposition to the Motion on June 16, 2025. Paper 19 (“Opp.”).

In the Motion, Patent Owner requested that we provide preliminary guidance concerning the Motion in accordance with 37 C.F.R. § 42.121(a)(1)(ii). Mot. 2, 25; *see* 37 C.F.R. § 42.121(e)(1); *see also Rules Governing Motion to Amend Practice and Procedures in Trial Proceedings under the America Invents Act before the Patent Trial and Appeal Board*, 89 Fed. Reg. 76,421 (Sept. 18, 2024) (“Final Rule”). We have considered Patent Owner’s Motion and Petitioner’s Opposition.

In this Preliminary Guidance, we provide information indicating our initial, preliminary, non-binding views on whether Patent Owner has shown a reasonable likelihood that it has satisfied the statutory and regulatory requirements associated with filing a motion to amend in an *inter partes* review and whether Petitioner establishes a reasonable likelihood that the substitute claims are unpatentable. 37 C.F.R. § 42.121(e)(1), (2); *see also* 35 U.S.C. § 316(d) (statutory requirements for a motion to amend); 37 C.F.R. § 42.121(a)(2), (a)(3), (b) (regulatory requirements and burdens for a motion to amend); *Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper 15 (PTAB Feb. 25, 2019) (precedential) (providing information and guidance regarding motions to amend). The reasonable likelihood standard this Preliminary Guidance applies is different than the preponderance of the evidence standard applied when ultimately deciding the Motion. *Compare* 37

C.F.R. § 42.121(e)(1) *with* § 42.121(d). Finally, this preliminary guidance is not a “decision” for purposes of rehearing under 37 C.F.R. § 42.71(d). 37 C.F.R. § 42.121(e)(2).

For purposes of this Preliminary Guidance, we focus on the proposed substitute claims, and specifically on the amendments proposed in the Motion. *See* 37 C.F.R. § 42.121(e)(1); Final Rule, 89 Fed. Reg. at 76,425. Because Patent Owner has requested cancellation of original claims 1–6, we do not address the patentability of those claims. Mot. 2. In formulating our preliminary views on the Motion and Opposition, we have not considered the parties’ other substantive papers on the underlying merits of Petitioner’s challenges. We emphasize that the views expressed in this Preliminary Guidance are subject to change upon consideration of the complete record, including any revision to the Motion filed by Patent Owner. Thus, this Preliminary Guidance is not binding on the Board when rendering a final written decision or any other subsequent decision in this proceeding. 37 C.F.R. § 42.121(e)(2); *see Medytox, Inc. v. Galderma S.A.*, 71 F.4th 990, 1000 (Fed. Cir. 2023).

We also do not consider amendments to claims that are not challenged in this proceeding. *See* 35 U.S.C. § 316(d)(1) (“[T]he patent owner may file 1 motion to amend the patent in 1 or more of the following ways: (A) Cancel *any challenged patent claim*. (B) *For each challenged claim*, propose a reasonable number of substitute claims.” (emphasis added)); *Lectrosonics*, Paper 15 at 5 (“All proposed claims should be traceable to an original challenged claim as a proposed substitute claim for that challenged claim.”) (precedential). Thus, we do not consider Patent Owner’s proposed substitute claim 9, which seeks to amend original claim 3 that is not challenged in this proceeding. *See* Mot. 3, App. A (Claim Listing); Inst. Dec. 2, 8 (setting forth Petitioner’s challenges to the ’638 patent claims). We note that original claim 3 depends on the original claim 1 that is challenged in the Petition

(and proposed to be replaced in the Motion). *See* Ex. 1001, 14:11–27; Inst. Dec. 2, 8. However, even with original claim 1 being canceled from the '638 patent per 35 U.S.C. § 316(d), original claim 3 (including the limitations of original claim 1) will still remain in the '638 patent.

We therefore analyze only Patent Owner's proposed substitute claims 7, 8, and 10–12 below.

II. PRELIMINARY GUIDANCE

A. Statutory and Regulatory Requirements

Patent Owner bears the ultimate burden to show that its motion to amend complies with the requirements of 35 U.S.C. § 316(d)(1), (3) and 37 C.F.R. § 42.121(a)(2), (a)(3), (b)(1), and (b)(2). 37 C.F.R. § 42.121(d)(1). For the reasons discussed below, at this stage of the proceeding, and based on the current record, it appears that Patent Owner has shown a reasonable likelihood that it has satisfied the statutory and regulatory requirements associated with filing a motion to amend with respect to proposed substitute claims 7, 8, and 10–12. *See* 37 C.F.R. § 42.121(e)(1).

1. Reasonable Number of Substitute Claims

A motion to amend must propose a reasonable number of substitute claims. 35 U.S.C. § 316(d)(1)(B); 37 C.F.R. § 42.121(a)(3). Patent Owner has shown that it proposes a reasonable number of substitute claims. In particular, Patent Owner proposes no more than 1 substitute claim for each of challenged claims 1, 2, and 4–6. *See* Mot. 5–10, App. A (Claim Listing). Petitioner does not argue otherwise. *See generally* Opp.

2. Respond to Ground of Unpatentability

A motion to amend must respond to a ground of unpatentability involved in the proceeding. 37 C.F.R. § 42.121(a)(2)(i). Patent Owner has responded to the

grounds of unpatentability involved in this proceeding. *See* Mot. 11–25. Upon review of Patent Owner’s arguments, we agree that proposed substitute claims 7, 8, and 10–12 recite new limitations, and new combinations of limitations, that directly respond to the grounds of unpatentability involved in the trial. *See* Mot. 11–25, App. A (Claim Listing). Petitioner does not argue otherwise. *See generally* Opp.

3. Scope of Amended Claims

A motion to amend may not enlarge the scope of the claims of the patent. 35 U.S.C. § 316(d)(3); 37 C.F.R. § 42.121(a)(2)(ii).

On the current record, it appears that proposed substitute independent claim 7 includes narrowing limitations as compared to its corresponding original independent claim 1. *See* Mot. 3–4, App. A (Claim Listing). Proposed substitute dependent claims 8 and 10–12 depend on narrowed claim 7.

Thus, Patent Owner’s Motion has not enlarged the scope of the claims of the ’638 patent. Petitioner does not argue otherwise. *See generally* Opp.

4. New Matter

A motion to amend may not introduce new subject matter. 35 U.S.C. § 316(d)(3); 37 C.F.R. § 42.121(a)(2)(ii). On this record, Patent Owner appears to have identified adequate written description support for proposed substitute claims 7, 8, and 10–12. *See* Mot. 5–10. Petitioner does not argue otherwise. *See generally* Opp.

Thus, at this stage of the proceeding, on the record before us, Patent Owner has shown a reasonable likelihood that there is adequate written description support in the original disclosure of the ’638 patent for proposed substitute claims 7, 8, and 10–12.

B. Unpatentability Arguments by Petitioner

Petitioner bears the ultimate burden to show that any proposed substitute claims are unpatentable. 37 C.F.R. § 42.121(d)(2). For the reasons discussed below, at this stage of the proceeding, and based on the current record, it appears that Petitioner has shown a reasonable likelihood that proposed substitute claims 7, 8, and 10–12 are unpatentable. *See* 37 C.F.R. § 42.121(e)(1).

1. Obviousness

Petitioner has asserted the following obviousness challenges against the following substitute claims:

- Ground asserting Parulski (Ex. 1005) and Safonov (Ex. 1006, Ex. 1007¹) against proposed substitute claims 7, 8, and 10–12 (Petitioner’s designated Ground 1);
- Ground asserting Parulski and newly cited Johnson (Ex. 1018)² against proposed substitute claims 7, 8, and 10–12 (Petitioner’s designated Ground 2);
- Ground asserting Parulski, Safonov, and Johnson against proposed substitute claims 7, 8, and 10–12 (Petitioner’s designated Ground 3); and
- Ground asserting Parulski and newly cited Hoshino (Ex. 1021)³ against proposed substitute claims 7, 8, and 10–12 (Petitioner’s designated Ground 4).

Opp. 1–24.

On this record, it appears that Petitioner (or the record) has shown a reasonable likelihood that:

¹ Petitioner cites to Ex. 1007, which is the certified translation of K.R. Patent Publication No. 10-2007-0046010 A (Safonov, Ex. 1006).

² US 7,659,923 B1, filed June 20, 2006, issued February 9, 2010.

³ US 2010/0238325 A1, filed March 19, 2010, published September 23, 2010.

- proposed substitute claims 7, 8, and 10–12 are unpatentable as obvious over the combination of Parulski and Safonov;
- proposed substitute claims 7, 8, and 10–12 are unpatentable as obvious over the combination of Parulski and Johnson;
- proposed substitute claims 7, 8, and 10–12 are unpatentable as obvious over the combination of Parulski, Safonov, and Johnson; and
- proposed substitute claims 7, 8, and 10–12 are unpatentable as obvious over the combination of Parulski and Hoshino.

Below, we analyze each of Petitioner’s proposed grounds against the proposed substitute claims.

Parulski-Safonov Ground

Proposed substitute independent claim 7 replaces original independent claim 1 and adds new limitations. *See* Mot. App. A (Claim Listing). In particular, proposed substitute claim 7 amends original claim 1 to further recite

a composite image generating unit configured to determine a cutout region in the sub-image, cut out a partial image from the cutout region, magnify at the level of magnification at least one of the main image and the sub-image, and generate a composite image by superimposing the partial image on the main image,

wherein the generation of the composite image occurs after at least one of the main image and the sub-image is magnified at the level of magnification.

See Mot. App. A.

Petitioner contends Parulski discloses or at least suggests the added limitations in claim 7. *See* Opp. 3–7. Alternatively, Petitioner contends that Parulski and Safonov, in combination, render obvious these limitations. *Id.* at 7–10.

In particular, Petitioner references Parulski’s disclosure of combining primary and secondary images (i.e., images captured by multiple zoom lenses and

image sensors of a camera, *see* Ex. 1005 ¶ 72) to obtain a modified image with “little or no motion blur” and “relatively low noise and good sharpness.” *See* Opp. 3–5 (citing Ex. 1005 ¶¶ 31, 140, 145, claims 11, 40). In these paragraphs, Parulski describes how primary and secondary images may be combined by *replacing* portions therebetween:

The secondary output image may be used . . . *to replace portions of the primary image* (areas of lower noise but with some motion blur) *with corresponding portions of the secondary image* (areas of higher noise but little or no motion blur) *to obtain a modified image with relatively low noise and good sharpness.*

....

In a[] type of augmentation or modification according to the present invention, the image could be examined by the image processor 50 for its dynamic range. When the dynamic range exceeds a predetermined threshold, the scene analysis capture unit is used to produce a secondary image with different dynamic range than the primary image. For example, the primary image could be captured at a normal exposure, while the secondary image could be captured at more of an extreme exposure, i.e., either under- or over-exposed. Then, if for example, highlights are blown out in the primary exposure, the secondary exposure could be underexposed to capture detail in the highlights. Alternatively, if shadows are darkened in the primary exposure, the secondary exposure could be overexposed to capture detail in the shadows. Then, *a modified image is created with a broadened dynamic range by replacing portions of the primary image with portions of the secondary image.*

....

[T]he primary capture stage and secondary capture stage are set for different exposure times so that different levels of noise and motion blur are present in the respective images. For example: the primary capture stage is set for a relatively long exposure so that the digital noise in the image is low, but any motion present either from movement of the camera or from movement of objects in the scene results in motion blur. Simultaneously, the secondary capture stage is set for a relatively fast exposure so that digital noise in the image is higher, but the motion blur is less. *The primary image and the secondary image are then compared to one another to identify motion blur.* The gain of the secondary image is increased so the average pixel values in the

secondary image match those of the primary image. *A modified image is then created by replacing portions of the primary image with portions of the secondary image. In effect, portions of the primary image (areas of lower noise but with some motion blur) are replaced with corresponding portions of the secondary image (areas of higher noise but little or no motion blur) to obtain a modified image with relatively low noise and good sharpness.*

Ex. 1005 ¶¶ 31, 140, 145 (emphases added). With respect to the claimed “cut out” operations recited in claim 7, Petitioner reasons that a skilled artisan “would have understood that Parulski’s use of ‘corresponding portions of the secondary image’ *to replace portions of the primary image corresponds to cutting out a partial image selected from a determined cutout region.*” Opp. 5 (citing Ex. 1022 ¶ 73) (emphasis added); *see also* Opp. 6 (“Parulski thus contemplates using conventional software and image-processing techniques *to identify and extract (select and cut out)* the secondary image used to replace the ‘corresponding portions’ of the primary image.” (emphasis added)).

With respect to the claimed “superimposing” limitation recited in claim 7, Petitioner asserts that Parulski’s “replacement” discussed *supra* is similar to the claimed “superimposing.” *See* Opp. 7. Alternatively, Petitioner submits that “Safonov discloses and renders obvious generating a composite image by superimposing the partial image on the main image . . . because [Safonov] teaches using alpha blending[] when combining two images to obtain a single, higher-quality composite image.” *Id.* at 7–8 (citing Ex. 1007, 7, Abstr.; Ex. 1003 ¶¶ 166–179; Ex. 1022 ¶¶ 74–87). Petitioner submits that a skilled artisan “would have found it obvious to combine, by superimposition, Parulski’s primary image (main image) and corresponding replacement secondary image portions (cutout region of the sub-image) using alpha blending, as taught by Safonov.” Opp. 10 (citing Ex. 1022 ¶¶ 74–87).

Patent Owner argues that Parulski and Safonov, alone or in combination, do

not teach or suggest the added limitations in claim 7. Mot. 12–25. Patent Owner provides several lines of argument, which we discuss below.

Patent Owner argues that “Parulski does not disclose superimposing a partial image on a main image, nor does Parulski disclose *how* Parulski’s image capture device ‘replaces’ portions of a primary image with portions of a secondary image.” Mot. 13. According to Patent Owner,

Parulski’s disclosure of “replacing” is not the same as “superimposing,” as recited in the proposed substitute claims. At the very least, Parulski’s disclosure of “*replacing*” *would involve a portion of one image completely taking the place of a corresponding portion of another picture*. In other words, under Parulski’s disclosure, a portion of the main image would need to be removed before that portion could be “replaced” by the corresponding portion of the secondary image. *Superimposing two images together, however, is different than replacing one image with another. Specifically, the resultant image of two superimposed images is based on characteristics of both images while the resultant image resulting from replacing one image with another is only the characteristics of the replaced image*. For example, as provided in embodiments in the ’638 patent, “synthesis processing” is used to superimpose the partial image on the main image. ’638 patent at 3:63–65. Synthesis processing superimposes two images together using “so-called α blending whereby a coefficient α indicating the transparency of the image to be superimposed on top of the bottom image is used to mix the pixel values of the bottom image with the pixel values of the top image to generate pixel values of a composite image.” *Id.* at 4:1–7. Thus, Parulski’s “replacing” disclosure does not disclose “superimposing” a partial image on a main image as recited in the proposed substitute claims.

Mot. 14–15 (emphases added).

We do not agree with this argument presented by Patent Owner because claim 7 does not specifically recite how “superimposing” is performed (e.g., whether by a specific α blending operation or by other means) and—even if the claimed superimposing would require α blending—superimposing *by α blending* includes an operation of *replacing*. That is because a *replacing* operation (by

which pixels in a portion of a first image completely take the place of pixels of a corresponding portion of a second image) may be achieved by α blending with (i) the transparency coefficient α *set to 1* for the pixels that are to *fully replace other pixels* (i.e., the replacement pixels are fully opaque and visible) while (ii) coefficient α is *set to 0 (zero)* for those pixels that are to be *fully replaced* (i.e., those pixels become fully transparent such that they are invisible in the composite image). “Superimposing” as recited in claim 7 does not preclude the use of α blending in which the transparency coefficient α may be 0 or 1. Said another way, claim 1’s “superimposing” does not require α blending with *only non-zero transparency coefficients*.

Moreover, Patent Owner’s contention—that “under Parulski’s disclosure, a portion of the main image would need to be *removed before* that portion could be ‘replaced’ by the corresponding portion of the secondary image” (*see* Mot. 14 (emphasis added))—is not explicitly supported by the text in Parulski. Parulski’s *replacing* operations described in paragraphs 31, 140, and 145 do not specifically require that a portion of the main image be “*removed before*” that portion could be replaced (as argued by Patent Owner, *see id.*).

Patent Owner also argues that Parulski’s *replacing* operations described in paragraphs 31, 140, and 145 cannot teach or suggest the claimed “cut out” operation in claim 7 because Parulski’s description is “generic” and “does not state how to do so [(e.g., does not specify a mechanism for replacing)],” merely providing a “description of the ‘replacement’ [that] is entirely result-oriented.” *See* Mot. 13–15 (citing Ex. 1005 ¶¶ 31, 140, 145).

We do not agree with this argument because Parulski’s description is not as generic (or minimal) as Patent Owner asserts. In particular, Parulski explains that the primary image and the secondary image are compared to one another to identify motion blur. *See* Ex. 1005 ¶ 145. Parulski then explains that identification

of motion blur areas allows an operation by which secondary image portions with higher noise and little or no motion blur replace corresponding primary image portions with lower noise and some motion blur. *See id.* ¶¶ 31, 140, 145. The resulting modified image is better in that it has “relatively low noise and good sharpness.” *Id.* ¶¶ 31, 145. Based on this description in Parulski, we agree with Petitioner’s assessment that Parulski describes “image-processing techniques to identify and extract (select and cut out) the secondary image used to replace the ‘corresponding portions’ of the primary image,” and that a skilled artisan “would have understood that Parulski’s use of ‘corresponding portions of the secondary image’ to replace portions of the primary image corresponds to cutting out a partial image selected from a determined cutout region.” *See* Opp. 5–6 (citing Ex. 1022 ¶ 73).

Patent Owner also argues that “Parulski provides no discussion” pertaining to the claimed “magnifying one of the primary image and the secondary image.” Mot. 14. At this stage, however, we are persuaded by Petitioner’s arguments that

Parulski discloses the magnification element by, for example, making the magnification of the images the same size (e.g., by upsampling) based on their respective focal lengths. Pet. 20–27; Stevenson ¶¶ 89–103. Because Parulski’s upsampled sub-image is upsampled to the same size as the main image, it has been magnified at the level of magnification. *E.g.*, Pet. 19, 23 (citing Parulski, [0066], [0093], [0097], [0101], [0104], FIGS. 3, 4, 6, 9, 11; Stevenson ¶¶ 86–87, 92).

Opp. 6. Petitioner also cites Parulski’s reference to “corresponding portions” of the secondary image that replace portions of the primary image, as evidence that Parulski’s replacing algorithm operates on images of the same size to obtain the modified image. *See* Opp. 6 (citing Ex. 1005 ¶¶ 31, 140, 145).

We are persuaded, at this stage, by Petitioner’s arguments because Parulski notes that it is desirable “to compensate for the differences in magnification” caused by lenses of different focal lengths that provide images; and also provides

that “[t]he primary image and the secondary image are . . . compared to one another to identify motion blur” and “[a] modified image is then created by replacing . . . portions of the primary image (areas of lower noise but with some motion blur) . . . with corresponding portions of the secondary image (areas of higher noise but little or no motion blur) to obtain a modified image with relatively low noise and good sharpness”—thereby suggesting that the images to be combined are substitutable, e.g., having the same magnification or scale. *See* Ex. 1005 ¶¶ 66, 145.

Patent Owner additionally argues that Safonov is distinct from the limitations recited in claim 7 because “[n]othing in Safonov relates to the combining images at all, let alone doing so with a composite image generating unit configured to perform the operations recited in the proposed substitute claims.” *See* Mot. 24. With respect to Patent Owner’s assertion that “[n]othing in Safonov relates to the combining images at all” (*see id.*), we note that Safonov actually states that “[i]t is . . . possible to increase the local contrast and luminance of the source image I using the following alpha blending formula of I and D_s ” and also that “it is possible to increase the local contrast of the source image I and also reduce luminance using the following alpha blending formula of I and D_h .” *See* Ex. 1007, 7; Opp. 9 (discussing this disclosure of Safonov). Safonov explains that “ I ” is an actual image, while D_s and D_h are “digital images” generated to specifically have “high local contrast in shadows [(D_s)]” and “high local contrast in the highlight area [(D_h)].” *See* Ex. 1007, 7–8. Thus, although D_s and D_h are not actual images (e.g., images produced by a camera), they are nonetheless “digital images” (*see* Ex. 1007, 7–8) that are alpha blended with another image (I). Thus, we do not agree with Patent Owner’s argument that “[n]othing in Safonov relates to [] combining images at all.” *See* Mot. 24.

We respect to Patent Owner’s argument that Safonov does not disclose “a

composite image generating unit configured to perform the operations recited in the proposed substitute claims” (Mot. 24), we observe that Petitioner’s proposed ground is using Safonov in combination with Parulski, with Safonov showing how two images may be superimposed using alpha blending to obtain a higher-quality composite image. *See* Opp. 8 (citing Ex. 1007, 7, Abstr.) Petitioner asserts that a skilled artisan “would have found it obvious to combine, by superimposition, Parulski’s primary image (main image) and corresponding replacement secondary image portions (cutout region of the sub-image) using alpha blending, as taught by Safonov.” Opp. 10 (citing Ex. 1022 ¶¶ 74–87). Petitioner submits that a skilled artisan would have been motivated to combine the teachings of Parulski and Safonov in this way because the skilled artisan

would have understood that Parulski’s combined image should be created in a way that minimizes or hides the edges where the main image and the sub-image (identified, extracted, and replaced image, e.g., with less blur or improved dynamic range) meet, and would have recognized that blending the images would have smoothed the transition between the replaced portion of the main image (cutout sub-image portion) and the main image. Pet. 23–24; Stevenson ¶168. A POSITA would have found it obvious to use alpha blending on some (e.g., edges) or all of the replacement sub-image portion to blend away any differences in resolution, sharpness, color variation, or gain settings, thereby cohesively integrating the sub-image into the main image *Id.*

Opp. 8 (citing Ex. 1022 ¶¶ 74–87; Ex. 1003 ¶¶ 166–179). We are persuaded by Petitioner’s arguments, which appear reasonable in view of Parulski’s disclosure (of generating “a modified image with relatively low noise and good sharpness” by replacing corresponding image portions having motion blur) and Safonov’s disclosure (of improving image quality by alpha blending). *See* Ex. 1005 ¶¶ 31, 140, 145; Ex. 1007, 7–8.

Thus, based on the current record, at this stage of the proceeding, it appears that Petitioner has shown a reasonable likelihood that the subject matter of

proposed substitute independent claim 7 would have been obvious over Parulski and Safonov.

We acknowledge that Patent Owner has not yet had the opportunity to address Petitioner’s specific discussion in the Opposition of the combination of Parulski and Safonov asserted against claim 7. Patent Owner will have the opportunity to do so in a reply to the Opposition (or in a revised motion to amend).

Parulski-Johnson Ground, and
Parulski-Safonov-Johnson Ground

As noted above, proposed substitute claim 7 replaces original independent claim 1 and adds new limitations directed to

a composite image generating unit configured to determine a cutout region in the sub-image, cut out a partial image from the cutout region, magnify at the level of magnification at least one of the main image and the sub-image, and generate a composite image by superimposing the partial image on the main image,

wherein the generation of the composite image occurs after at least one of the main image and the sub-image is magnified at the level of magnification.

See Mot. App. A. Petitioner contends the added limitations in claim 7 are taught or suggested by the newly cited reference of Johnson. Opp. 10–17.

In particular, Petitioner contends that Johnson describes a “‘digital camera’ including an ‘image processing unit’ (e.g., composite image generating unit) for ‘identif[y]ing regions of difference between . . . two images’” by, e.g., “‘identif[y]ing regions of significant difference between the first image 24 and the second image 36’ based on a ‘correlation’ operation (e.g., ‘face and/or eye recognition processing’) to determine that a person/subject 32’s eyes are open in the first image 24, but closed in the second image 36.” Opp. 11–13 (citing Ex. 1018, 1:51–53, 3:26–34, 3:46–50, 4:19–22, Figs. 3–4). With respect to the claimed “cutout” limitations, Petitioner notes that Johnson discloses that

open eyes are preferable to closed eyes, [such that] Johnson’s algorithm

“chooses the first image as the source for the two . . . regions (two eyes of Subject C 32)” to be incorporated in the second image (“base image”). Johnson, 3:37–45, FIGS. 3–4. That is, Johnson’s algorithm determines a cutout region in [a] “preferred image” (sub-image) and cuts out a partial image (e.g., subject 32’s eyes) from the image cutout region to incorporate and]” the partial image into the “base image” (main image). Johnson, 3:37–45.

Opp. 13; *see also id.* at 12 (“Johnson’s . . . ‘algorithm’ . . . determine[s] a ‘preferred region[]’ (cutout region) in a ‘source’ image (sub-image), such as [] first image 24, and cuts out a partial image from the cutout region that is then ‘blended into’ another image to create a single, composite image”) (citing Ex. 1018, 3:15–18, 3:26–50).

With respect to the claimed “superimposing” limitations, Petitioner submits that “Johnson’s algorithm . . . generates a composite image by superimposing because it ‘blend[s]’ the selected region ‘into the base image to create the blended [composite] final image’” as shown in Fig. 4 which particularly illustrates “‘blend[ing]’ (superimposing) an eye region (partial image) of ‘image 1’ (sub-image) with the corresponding eye region in ‘image 2’ (main image) to generate a ‘final image [86]’ (composite image) having ‘elements of both images’ (characteristics of both images).” Opp. 13–14 (citing Ex. 1018, 1:59–61, 3:40–50).

We have reviewed the disclosure of Johnson, and observe that the disclosure appears to support Petitioner’s assertions. For example, Johnson explains that two images (24 and 36, *see* Figs. 2 and 4) are taken by a digital camera in quick succession and are thereafter correlated (e.g., aligned). *See* Ex. 1018, 2:17–20, 2:29–36, 2:42–47. Upon identifying “regions of significant difference between the first image 24 and the second image 36” such as regions of the eyes of subject C which are open in image 24 but closed in image 36, these “regions are selected” as the “preferred rendition” meaning that “first image [24] [is chosen] as the source for the . . . two regions (two eyes of Subject C 32),” and “the second image is used

as the base image.” *Id.* at 2:59–62, 3:27–41, Figs 2, 4. Thereafter, “the preferred regions of the first image (the two eyes of subject C 32) are blended into the base image to create the blended final image”; more particularly, “[t]he region of each eye from Subject C 32 is blended [] into the content of the second image 36, which effectively replaces the closed eyes of Subject C 42 [in image 36], creating a single final image 86 where all subjects have open eyes.” *Id.* at 3:41–50, Fig. 4.

In view of this disclosure in Johnson, at this stage of the proceeding we are persuaded by Petitioner’s contentions that Johnson’s *preferred region* of first image 24 (the image portion 32 of subject C’s open eyes, *see* Fig. 4) teaches “a cutout region in the sub-image [(Johnson’s image 24)]” (as recited in claim 7), the *open eyes of subject C* in image 24 teach the claimed “partial image [cut out] from the cutout region,” and *blending the open eyes of subject C from image 24 into image 36* (“main image”) to replace subject C’s closed eyes and create a final image with all subjects’ eyes open, teaches the claimed “superimposing the partial image on the main image.” *See* Opp. 12–14; Ex. 1018, 3:46–50 (“The region of each eye from Subject C 32 is blended 84 into the content of the second image 36, which effectively replaces the closed eyes of Subject C 42, creating a single final image 86 where all subjects have open eyes.”).

Petitioner also asserts that an ordinarily skilled artisan would have been motivated to “include the portion correlation, cutting, and blending processes of Johnson into Parulski’s portion extraction and replacement” as “modifying Parulski to implement Johnson’s cutout and blending processes would have furthered Parulski’s to obtain an enhanced image to provide an ‘optimal result’” as described by Johnson. Opp. 14–15 (citing Ex. 1018, 3:46–53, 5:27–57; Ex. 1005 ¶¶ 31, 71, 107–109, 140, 145; Ex. 1022 ¶¶ 156–159). Petitioner reasons that combining the teachings of Johnson with those of Parulski “would have required using only known techniques to improve a similar device (digital camera having a

composite image generating unit) to yield predictable results (generating a composite image by superimposition)” especially as “Johnson’s solution to blend a preferred cutout portion of a sub-image into a correlated portion of the main image aligns with Parulski’s goal of replacing the non-preferred blurred or washed out/obscured portions of a main image with the preferred sharp image or detail-visible portions of a sub-image.” *Id.* at 15 (citing Ex. 1018, 3:46–53, 5:27–57; Ex. 1005 ¶¶ 31, 71, 107–109, 140, 145; Ex. 1022 ¶¶ 156–159).

Petitioner also notes similarities between Johnson’s and Parulski’s processing of multiple images, reasoning that a skilled artisan would have “had a reasonable expectation of success in configuring Parulski’s digital camera to execute Johnson’s cutting and blending (superimposing) processes” and “would have found combining Parulski and Johnson to generate a composite image by superimposing a selected cutout region from a sub-image onto a main image to be a straightforward application of known, conventional software operations used according to their known functions to yield predictable results.” *Id.* at 15–16 (citing Ex. 1018, 1:13–15, 1:51–61, 3:14–34, Abstr., Figs. 3–4; Ex. 1005 ¶¶ 31, 63, 140, 145, claims 11, 40; Ex. 1022 ¶¶ 160–162).

On this record, we are persuaded by Petitioner’s arguments, especially as both Johnson and Parulski seek to combine images that are *similar* to each other. For example, (i) Johnson notes that it is imperative for the first and second images to be substantially aligned and correlated as to be “nearly identical” before blending, and (ii) Parulski provides that the “primary image and the secondary image are . . . compared to one another to identify motion blur” and a “modified image is then created by replacing portions of the primary image with portions of the secondary image. . . . to obtain a modified image with relatively low noise and good sharpness” (thereby suggesting that images to be combined are substitutable), further noting that it is desirable “to compensate for the differences in

magnification” caused by lenses of different focal lengths that provide images. *See* Ex. 1018, 1:45–46, 2:42–52, 3:62–64, 4:4–8, 4:35–40; Ex. 1005 ¶¶ 66, 145.

We acknowledge that Patent Owner has not yet had the opportunity to address Johnson (which Petitioner first made of record in this proceeding in support of its Opposition) and respond to Petitioner’s asserted ground against claims 7, 8, and 10–12 based on Parulski and Johnson. Patent Owner will have the opportunity to do so in a reply to the Opposition (or in a revised motion to amend).

Thus, based on the current record, at this stage of the proceeding, it appears that Petitioner has shown a reasonable likelihood that the subject matter of proposed substitute independent claim 7 would have been obvious over the combination of Parulski and Johnson. For the same reasons as those discussed *supra*, it appears that Petitioner has shown a reasonable likelihood that the subject matter of proposed substitute independent claim 7 would have been obvious over the combination of Parulski, Johnson, and Safonov (which Petitioner put forth as a particular example of image superimposition by alpha blending). *See* Opp. 17–19.

Parulski-Hoshino Ground

As noted, proposed substitute claim 7 replaces original independent claim 1 and adds new limitations directed to

a composite image generating unit configured to determine a cutout region in the sub-image, cut out a partial image from the cutout region, magnify at the level of magnification at least one of the main image and the sub-image, and generate a composite image by superimposing the partial image on the main image,

wherein the generation of the composite image occurs after at least one of the main image and the sub-image is magnified at the level of magnification.

See Mot. App. A. Petitioner contends the added limitations in claim 7 are taught or suggested by the newly cited reference to Hoshino. Opp. 21–24.

In particular, Petitioner contends that Hoshino’s *background image P1* (*see* Fig. 7A) teaches a “main image” as recited in claim 7, Hoshino’s *subject image D*

(e.g., image of a dog) extracted from subject-background picture E1 (*see* Figs. 6A, 7C) teaches a cutout “partial image” as claimed, and that Hoshino’s *generation of combined image P3 or P4* (Figs. 8A, 8B) teaches the claimed “superimposing the partial image on the main image” because image P3 (or P4) is obtained “by ‘superimpos[ing]’ the extracted subject image D (cutout partial image) on a ‘background image P1’ (main image).” *See* Opp. 21–23 (citing Ex. 1021 ¶¶ 16–17, 21, 35, 37–40, 115–118, Figs 2, 4, 6A, 7A–8B). Petitioner submits that Hoshino performs the claimed “cut out” operation in Fig. 2 which shows a “‘process for extracting’ (‘cutting out a subject image from a subject-background image’) (determining a cutout region in the sub-image) . . . by ‘generat[ing] difference information between each pair of corresponding pixels of the coordinated subject-background image E1 and background-only image E2’” to extract “subject image D (cutout partial image).” *Id.* at 22 (citing Ex. 1021 ¶¶ 11, 26–27, 37, 61, 68–76, Figs. 2, 6A, 7C). With respect to the claimed “superimposing,” Petitioner submits that Hoshino describes “alpha blending subject image D with the background to create either of combined images P3 and P4.” *Id.* at 22–23 (citing Ex. 1021 ¶¶ 38, 48–52, 86–104, 115–118, Figs. 4, 7A–8B).

We have reviewed the disclosure of Hoshino, and observe that the disclosure appears to support Petitioner’s assertions. For example, Hoshino explains that in “combined image P4 . . . the subject image D is superimposed on the background image P1” where (i) background image P1 is an image captured by “lens unit 1, the electronic image capture unit 2 and the image capture control unit 3,” and (ii) “subject image D [is extracted (or ‘cut’⁴)] from the subject-background image

⁴ Hoshino’s paragraph 11 uses the term “cut” (“FIG. 2 is a flowchart indicative of a process for cutting out a subject image from a subject-background image which includes an image of a subject and its background by the camera device of FIG. 1”) while paragraph 73 uses the term “extract” (“subject image area extractor of the

E1” (with image E1 also captured by “lens unit 1, the electronic image capture unit 2 and the image capture control unit 3”). Ex. 1021 ¶¶ 11, 26, 73, 116, 118, Figs. 6A, 7A, 8B. Thus, Hoshino fairly teaches that a composite image (combined image P4) is generated “by superimposing [a] partial image [(image D, cut from a sub-image (Hoshino’s subject-background image E1))] on [a] main image [(Hoshino’s background image P1)]” as required by claim 7.⁵ With respect to the claimed cut out “partial image,” we observe that Hoshino’s subject image D is “cut[] out . . . from a subject-background image [E1]” by “generat[ing] difference information between each pair of corresponding pixels of the coordinated subject-background image E1 and background-only image E2 [also captured by the camera]” and then “extract[ing] the subject image D from the subject-background picture E1 based on the difference information.” *Id.* ¶¶ 11, 27, 37, 66–73, Figs. 6A, 6B. Thus, Hoshino fairly teaches or at least suggests that subject-background image E1 (claimed “sub-image”) includes a cutout region from which “partial image” D is cut out, as required by claim 7.⁶ *See id.*

subject image generator 8a extracts the subject image D from the subject-background image E1 (step S7 [in Fig. 2]).

⁵ We recognize that Hoshino obtains composite image P4 via multiple steps that involve manipulation of additional intermediary images (e.g., image E2 and non-display area-subject image P2 (which is algorithmically generated)). *See* Ex. 1021 ¶¶ 31–37, 40, 48–51, 77, Figs. 6B, 7C. Claim 7 does not preclude the composite image generating unit from employing intermediary images (e.g., in addition to the main image and the sub-image) when generating the composite image by superimposing the partial and main images.

⁶ We recognize that Hoshino states that subject image D is *cut out from image E1 itself* (*see* Ex. 1021 ¶¶ 11, 37), while claim 7 recites “determine a *cutout region* in the sub-image, cut out a partial image *from the cutout region*” (emphasis added). Claim 7, however, does not specify (or limit) the extent of the claimed “cutout region in the sub-image”; thus, claim 7 does not appear to preclude a designation of the “cutout region” that spans the *full* sub-image. As such, the claimed “determine a cutout region in the sub-image, [and] cut out a partial image from the cutout region” appears to read on Hoshino’s “cutting out a subject image [D] from

Petitioner then asserts that an ordinarily skilled artisan would have been motivated “to use Hoshino’s correlation, cutting, and superimposition (e.g., alpha-blending) processes as part of Parulski’s replacing a portion of the main image with the extracted sub-image portion for the same reasons articulated in Grounds 2 and 3, and to produce a more natural-looking combined image.” Opp. 23–24 (citing Ex. 1021 ¶¶ 5–6, 103–104, Figs. 2, 4; Ex. 1022 ¶ 177). Petitioner notes similarities between Hoshino’s and Parulski’s processing of multiple images, reasoning that a skilled artisan would have “had a reasonable expectation of success in executing Hoshino’s correlation, cutting, and superimposition in Parulski because Hoshino, like Parulski, is directed to generating composite images using elements of a primary and secondary image.” *Id.* at 24 (citing Ex. 1021 ¶¶ 5–8, Fig. 4; Ex. 1005 ¶ 63; Ex. 1022 ¶ 178).

We are persuaded by Petitioner’s arguments, especially as both Hoshino and Parulski seek to combine images that are *similar* in scale. For example, (i) Hoshino notes that “an unnatural image” may result when elements from two images are combined, and provides an algorithm to combine a subject image and a background image to “produc[e] a combined image with little sense of discomfort,” and (ii) Parulski provides that the “primary image and the secondary image are . . . compared to one another to identify motion blur” and a “modified image is then created by replacing portions of the primary image with portions of the secondary image. . . . to obtain a modified image with relatively low noise and good sharpness” (thereby suggesting that images to be combined are substitutable), further noting that it is desirable “to compensate for the differences in magnification” caused by lenses of different focal lengths that provide images.

a subject-background image [E1]” (*see* Ex. 1021 ¶¶ 11, 37). Claim 7 also does not preclude the composite image generating unit from employing intermediary or additional images (such as background-only image E2) when the “partial image” is “cut out . . . from the cutout region [in the sub-image].”

Ex. 1021 ¶¶ 5–6, 103, 104; Ex. 1005 ¶¶ 66, 145.

We acknowledge that Patent Owner has not yet had the opportunity to address Hoshino (which Petitioner first made of record in this proceeding in support of its Opposition) and respond to Petitioner’s asserted ground against claims 7, 8, and 10–12 based on Parulski and Hoshino. Patent Owner will have the opportunity to do so in a reply to the Opposition (or in a revised motion to amend).

Thus, based on the current record, at this stage of the proceeding, it appears that Petitioner has shown a reasonable likelihood that the subject matter of proposed substitute independent claim 7 would have been obvious over the combination of Parulski and Hoshino.

III.CONCLUSION

This concludes our Preliminary Guidance. Patent Owner has the option to reply to this Preliminary Guidance *or* to file a revised MTA by DUE DATE 3. 37 C.F.R. § 42.121(e)(3), (f); Paper 7 (Scheduling Order). Patent Owner’s reply or revised MTA may only respond to this Preliminary Guidance or Petitioner’s Opposition and may be accompanied by new evidence (including declarations). 37 C.F.R. § 42.121(e)(3). Petitioner has the option to file a sur-reply responsive to this Preliminary Guidance, Patent Owner’s reply, or Patent Owner’s revised MTA but may not present new evidence in any case. 37 C.F.R. § 42.121(e)(3). Petitioner may also file a reply to the preliminary guidance in the case Patent Owner does not file a reply or revised MTA. 37 C.F.R. § 42.121(e)(4).

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