

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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CANON, INC. AND CANON U.S.A., INC.,  
Petitioner

v.

WSOU INVESTMENTS, LLC D/B/A BRAZOS LICENSING AND  
DEVELOPMENT  
Patent Owner

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IPR2022-01532  
U.S. PATENT NO. 7,493,030

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**PATENT OWNER PRELIMINARY RESPONSE TO PETITION**

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### **LISTING OF EXHIBIT(S)**

<b>Exhibit</b>	<b>Description</b>
Exhibit 2001	Copy of Petitioner's Invalidity Contentions served in <i>WSOU Investments, LLC d/b/a Brazos Licensing and Development v. Canon, Inc. and Canon U.S.A., Inc.</i> , Case No. 6:22-cv-00166 (W.D. Tex.)

## **I. INTRODUCTION**

WSOU Investments, LLC d/b/a/ Brazos Licensing and Development (the “Patent Owner” or “WSOU”) submits this Preliminary Response to the Petition for *Inter Partes* Review (“Pet.” or “Petition”) of United States Patent No. 7,493,030 (“the ’030 patent” or “Ex. 1001”) filed by Canon, Inc. and Canon U.S.A., Inc., (“Petitioner”). WSOU respectfully requests that the Board decline institution of trial on the challenged claims of the ’030 Patent.

## **II. RELATED MATTER**

The ’030 patent is involved in the following proceeding: *WSOU Investments, LLC d/b/a Brazos Licensing and Development v. Canon, Inc. and Canon U.S.A., Inc.*, Case No. 6:22-cv-00166 (W.D. Tex.), filed Feb. 16, 2022.

## **III. LEVEL OF ORDINARY SKILL IN THE ART**

Petitioner asserts that a person of ordinary skill in the art at the time of the ’030 patent “would have had a bachelor’s degree in electrical engineering, physics, or computer science, or an equivalent degree, and two to three years of experience in the field of optical engineering.” Pet. 7. Denial is warranted here even if the Board were to apply Petitioner’s definition for purposes of rendering a decision.

## **IV. DENIAL IS WARRANTED UNDER 35 U.S.C. § 314(A)**

Discretionary denial is warranted under 35 U.S.C. § 314(a) because (1) the Petition fails to identify with particularity the grounds on which each claim is challenged, (2) the Petition lacks compelling, meritorious challenges, and (3) in view of inefficiencies arising from overlapping issues in parallel litigation.

The contested issue of discretionary denial under § 314(a) has now been briefed by both parties and is ripe for Board resolution. Petitioner clearly recognized the issue by purporting to address in its Petition “whether Application of the factors in *Apple Inc. v. Fintiv*, Inc., Case No. IPR2020-00019, Paper No. 11 (Mar. 20, 2020) [favors] discretionary denial of IPR institution.” Pet. 8. According to Petitioner, application of the Fintiv factors “weighs against discretionary denial.” *Id.* However, Petitioner’s cursory *Fintiv* analysis is riddled with error and omission. *Id.*, 8–9.

***1. Whether a stay exists or evidence exists that one is likely to be granted if a proceeding is instituted: favors denial***

The present circumstances favor denial under the first factor because (1) no stay exists, (2) Petitioner does not express in its Petition any intention to seek a stay, and (3) Petitioner opted to provide no evidence that the district court would likely grant a motion to stay if a proceeding is instituted. *See Fintiv*, Slip. Op. 6. Indeed, Petitioner opted to ignore this factor altogether. In the absence of a stay or any evidence that a stay is *likely* to be granted, this factor weighs in favor of denial. *Id.*

***2. Proximity of the court’s trial date to the Board’s projected statutory deadline: neutral***

The second factor is neutral under the circumstances. Petitioner opted to not enter into the record the alleged evidentiary basis for its assertion that trial in the parallel litigation will likely occur “well after a final written decision here.” Pet. 8. At most, Petitioner offered a broken hyperlink. *Id.* Petitioner also opted to not quantify the alleged proximity between the district court trial date (be it statistically derived or scheduled) and the Board’s projected statutory deadline.

***3. Investment in the parallel proceeding by the court and the parties:  
favours denial***

The third factor favors denial because of the significant investment in the parallel proceeding by the court and the parties that will have occurred by the time the Board renders a decision on institution. Petitioner applies the wrong perspective in arguing that, as of the Petition filing date of Sept. 12, 2022, “the district court proceeding *is* in its early stages.” Pet. 8 (emphasis added). Petitioner compounds its error in further arguing that as of Sept. 12, 2022, “[t]here *has been* no *Markman* hearing or fact discovery.” *Id.* (emphasis added).

*Fintiv* instructs that the third factor considers the expected cumulative investment in the parallel litigation “at the time of the institution decision,” not as of the filing date of the Petition. *Fintiv*, Slip Op. at 9–10 (emphasis added). The Board is not projected to issue a decision on institution until three months from now, or April 19, 2023. Petitioner erred in failing to consider *six months* of investment in the parallel litigation that will have occurred since the filing of the Petition.

Petitioner was no doubt was aware that the parallel proceeding would advance significantly during the period since the filing of the Petition up to the anticipated date of a decision on institution. First, the parties have already served respective contentions on infringement and invalidity, parts of which have been made of record here. *See* Ex. 1015, Ex. 2001. Second, the parties have spent months completing *Markman* briefing on claim construction issues in the parallel proceeding. Third, the *Markman* hearing is scheduled for March 20, 2023, and thus the district court is expected to review the *Markman* briefing and issue its *Markman* Order well before

the anticipated date of a decision on institution. Underscoring the significant judicial effort required to complete *Markman*, the district court has stated (in denying a motion to stay pending IPR) that it “has invested significant resources and time in construing all the contested claim terms.” *Multimedia Content Management LLC v. DISH Network LLC*, No. 6-18-cv-00207, Dkt. 73, Slip Op. 5 (W.D. Tex. May 30, 2019). Fourth, discovery opens upon completion of the *Markman* hearing and hence will be underway when the Board issues a decision on institution. When considering relevant circumstances at the proper timeframe, the third *Fintiv* factor favors denial.

***4. Overlap between issues raised in the petition and in the parallel proceeding: favors denial***

The fourth factor favors denial because of overlapping invalidity issues raised in the Petition and those raised by Petitioner in district court. Petitioner’s invalidity contentions served in co-pending litigation identify each one of the references cited in the Petition. Ex. 2001, pp. 9–10, 12, 17. In addition, Petitioner purports to broadly preserve the right to rely on the same alleged combinations, “subject to modification, amendment, and/or supplementation.” *Id.*, 4. Although Petitioner clearly recognized and anticipated the issue of discretionary denial under the *Fintiv* analysis, Petitioner opted to waive the opportunity to address the fourth *Fintiv* factor in its Petition.

***5. Whether the petitioner and the defendant in the parallel proceeding are the same party: favors denial***

As Petitioner acknowledges, the fifth factor favors denial because “the petitioner and the defendant in the parallel proceeding are the same party.” *Fintiv*, Slip. Op. 5–6, 13–14; Pet. 8.

***6. Other circumstances that impact the Board's exercise of discretion, including the merits: favors denial***

The sixth factor favors denial because the Petition lacks compelling, meritorious challenges. As explained further below, (1) the Petition repeatedly fails to meet the statutory requirement to identify with particularity the grounds on which the challenge to each claim is based, (2) the Petition is repeatedly tainted by the application of incorrect claim constructions, and (3) the Petition presents weak and excessively redundant challenges. A holistic assessment of the above factors favors exercising discretion to deny under 35 U.S.C. § 314(a).

**V. DENIAL IS ALSO WARRANTED UNDER 35 U.S.C. § 325(D)**

Discretionary denial is also warranted under § 325(d) because the Petition presents “the same or substantially the same prior art or arguments previously . . . presented to the Office” and Petitioner fails to meet its burden to show material error with respect to such art. 35 U.S.C. § 325(d); *see also Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 (PTAB Feb. 13, 2020) (precedential) (“*Advanced Bionics*”); *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017) (precedential as to Section III.C.5, first paragraph) (“*Becton*”). As Petitioner admits, Berge (Ex. 1006) was cited during original prosecution (Ex. 1012 at 41) and was considered by the examiner during prosecution. Pet. 7. Berge is also discussed directly in the '030 patent specification, together with several other identified U.S. Patents (*e.g.*, at Ex. 1001, 2:40–3:32), and Petitioner fails to explain how its proposed combinations are not cumulative with those references.



## **VI. U.S. PATENT NO. 7,493,030**

The '030 Patent issued from an application filed on June 24, 2005. The '030 patent, entitled “Adaptive Optical Plane Formation with Rolling Shutter,” relates to methods and optical devices that provide an increased depth of field. Ex. 1001, 1:6–7. Depth of field is, in general, the range of object locations which provide adequate resolution for the application at hand, such as photography.

The '030 patent teaches, in certain embodiments, “manipulating an optical relationship between an optical lens and an image sensing surface, and exposing different portions of the image sensing surface synchronous with manipulating the optical relationship.” *Id.*, 4:18–24. Certain embodiments may enable spacing “the image sensing surface . . . at different effective image distances from the lens.” *Id.* The exposure may be adaptive. For example, portions of the image sensing surface may be adaptively exposed based on certain detected conditions, such as the detected brightness or movement of multiple objects. This may improve the depth of field.

## **VII. CLAIM CONSTRUCTION**

The applicable standard for claim construction here is the “ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b) (effective November 13, 2018); 83 Fed. Reg. No. 197, 51340 (Oct. 11, 2018). This is the same standard applied by Article III courts. *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005). The proper standard primarily focuses on intrinsic evidence, such as the patent specification and prosecution history, to interpret the claim terms. *Id.* at 1317; *see also* 37 C.F.R. § 42.100(b).

The Petition identifies two terms as requiring construction. First, Petitioner asserts “within a continuous exposure frame” (recited in claim 11) should be interpreted to mean “within the period from the start of an exposure of the imaging sensing surface until the entire image sensing surface is exposed once.” Pet. 19. Second, Petitioner asserts “during an exposure frame period” (recited in claim 15) should be interpreted to mean “during the time over which the entire image sensing surface is exposed once.” *Id.*, 20.

Petitioner’s constructions should be rejected as impermissibly attempting to rewrite the claim language in a manner that would omit explicit requirements and as being plainly inconsistent with the intrinsic evidence. The Petition is tainted by its reliance on erroneous constructions. *See Fellowes, Inc. v. Treefrog Developments, Inc.*, IPR2020-00869, Paper 16 (Oct. 29, 2020) (denying institution of IPR because petitioner advanced an incorrect claim construction that would impermissibly rewrite plain words of a claim). Such legal error independently warrants denial. *Id.*

Specific error in Petitioner’s proposed constructions is further addressed below. Patent Owner also identifies additional claim terms that require construction here in view of Petitioner’s tacit misinterpretation of claim scope.

**A. “within a continuous exposure frame” (claim 11)**

The Petition misinterprets “within a continuous exposure frame” to mean “within the period from the start of an exposure of the imaging sensing surface until the entire image sensing surface is exposed once.” Pet. 19. Petitioner asserts its construction reflects alleged lexicography set forth in the specification as follows:

FIG. 8 illustrates the condition where the lens 38 moves continuously in one direction during a single frame period .... A single frame period is the continuous exposure time over which any of the entire array of pixels or plate of film is exposed.”

*Id.* (“[T]he ’030 patent defines the term.”) (citing Ex. 1001, 9:19–25). At a minimum, Petitioner fails to explain why the proper construction of this term is one which inexplicably omits the “continuous” qualifier recited in the claim language and repeated in the above description of the phrase, a “single frame period.” *Id.*

The intrinsic evidence supports affording the “continuous” qualifier meaningful effect under its plain and ordinary meaning. Indeed, the above block quotation confirms that, in the context of a lens moving continuously in one direction during a single frame period, a “continuous exposure frame” refers to “the continuous [and hence uninterrupted] exposure time.” *Id.*

The intrinsic evidence further counsels against Petitioner’s undefended attempt to replace the patentee’s word choice of “continuous” with the extraneous limitation “until the entire image sensing surface is exposed once.” The ’030 patent discloses examples of a “continuous exposure frame” in which parts of the image sensing surface are exposed more than once. *See, e.g.*, Ex. 1001, 10:18–31.

**B. “during an exposure frame period” (claim 15)**

Petitioner doubles-down on its error in purporting to advance obviousness theories under the erroneous construction that the phrase “during an exposure frame period” in claim 15 means “during the time over which the entire image sensing surface is exposed once.” As noted above, the ’030 patent discloses examples of an

“exposure frame period” in which parts of the image sensing surface are *repeatedly* exposed. At a minimum, this directly refutes Petitioner’s attempt to add an extraneous “*exposed once*” limitation. *See, e.g.*, Ex. 1001, 10:18–31.

Petitioner has not defended its improper rewrite by pointing to Patent Owner’s quotation of the ’030 patent in a document served in parallel litigation. Pet. 20–21 (citing Ex. 1015, 4, which quotes Ex. 1001, 9:23–25). Patent Owner did not characterize the quoted statement as supporting an extraneous only “exposed once” limitation. To the extent the quoted statement is relevant at all, it further supports interpreting the recited “exposure frame period” to be *continuous*. *Id.*

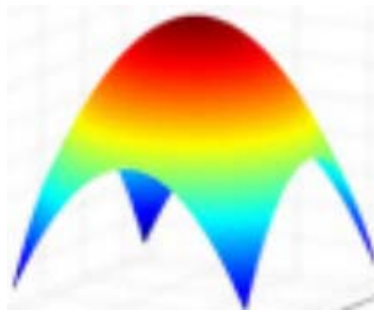
**C. “exposing different portions of the image sensing surface . . . by adaptively exposing said portions for different exposure periods based on detected movement of at least two objects” (claim 1)**

Claim 1 qualifies “exposing different portions of the image sensing surface synchronous with manipulating the optical relationship” by reciting that this step requires “adaptively exposing said portions for different exposure periods based on detected movement of at least two objects.” In other words, under a plain reading, the recited “exposing” is qualified not only in terms of “different *portions* of the image sensing surface,” but also in terms of “different *exposure periods*” applied respectively to those “different *portions*.” Consistent with plain reading of the claim language, and among other relevant disclosure, the ’030 patent describes an example that uses different durations for exposure periods that may otherwise partially overlap as follows: “exposure time may be initiated at the same time for all three sets of pixels and terminated (by readout) at different times.” Ex. 1001, 7:25–27.

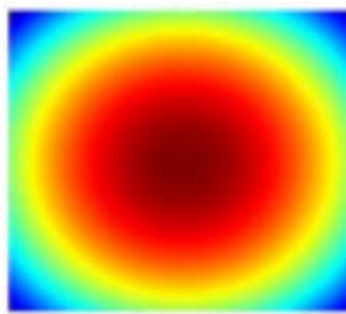
Claim 1 further qualifies the “adaptively exposing said portions for different exposure periods” in terms of being “based on detected movement of at least two objects.” Under a plain reading, at least two distinct objects must be detected so that their respective movement can be differentiated. Consistent with this straightforward understanding, and among other relevant disclosure, the ’030 patent provides examples (*e.g.*, with reference to FIGS. 10A and 10B) of how to differentiate between, and discern the respective edges of, various objects within the same scene. Further, the ’030 patent describes an example of categorizing “movement of different objects within a scene” as involving adaptively exposing “pixels corresponding to the individual objects . . . for a short or longer period depending upon relative movement of the objects themselves.” *Id.*, 11:67–12:2. As explained further below, the Petition misinterprets the phrase “based on detected movement of at least two objects” in advancing incorrect and redundant theories.

**D. “Petzval surface” (claims 9, 23)**

The ’030 patent defines “Petzval surface” as having a “circularly paraboloidal” shape. Ex. 1001, 9:64–65; *see also id.*, 3:38–41. The ’030 patent describes FIG. 5 as illustrating only part of a planar cross-section of what is referred to as the actual “Petzval surface.” *Id.* To underscore the distinction between a planar, cross-section that may form but a *part* of a Petzval surface and a “circularly paraboloidal” Petzval surface *itself*, a three-dimensional perspective view of an example “circularly paraboloidal” surface is provided below.



A top view of the same example Petzval surface is provided below to further illustrate the circular or concentric, three-dimensional nature of the Petzval surface.



**E. “at least two objects” (multiple claims)**

The Petition misinterprets the phrase “at least two objects” as somehow encompassing only a single, three-dimensional object having multiple adjoining faces. Such an erroneous and undefended interpretation cannot be squared with intrinsic evidence, as explained further below.

**VIII. DENIAL IS WARRANTED ON THE MERITS**

“Petitioner has the burden of proof to establish entitlement to relief. 37 C.F.R. § 42.108(c) (“review shall not be instituted for a ground of unpatentability unless . . . there is a reasonable likelihood that at least one of the claims challenged . . . is unpatentable”). The Petition does not meet this threshold burden.

The '030 patent issued with twenty-five claims. The Petition purports to raise redundant challenges against all twenty-five. Claims 1, 3–4, 9–11 and 15 are written in independent form. The Petition identifies six grounds collectively based on six total references, as summarized below:

Ground No.	Purported Obviousness Combinations under 35 U.S.C. § 103	Identified Claims
1	Sugitani (Ex. 1003) in view of Kubo (Ex. 1004)	1–9, 11–21, 23–24
2	Sugitani in view of Kubo and Misawa (Ex. 1005)	9, 23
3	Sugitani in view of Kubo and Berge (Ex. 1006)	10, 25
4	Shibata (Ex. 1007) in view of Kondo (Ex. 1008)	1–5, 7–9, 15–16, 18–24
5	Shibata in view of Kondo and Berge	10, 25
6	Shibata in view of Kondo and Kubo	6, 11–14, 17

Pet. 6–7.

While Petitioner summarized its Petition as containing six grounds in total (*id.*), the actual number of distinct grounds is excessively more and obfuscated. For example, the Petition does not expressly rely on a combination of *both* Sugitani *and* Kubo for all the twenty-two claims challenged under Ground 1. Because certain challenges address only the primary reference, and do not mention a secondary reference, it is unclear whether Petitioner relies on *single-reference obviousness* or on *anticipation*. The distinction is crucial because those theories invoke different legal standards. Such ambiguity is repeated throughout the Petition. The lack of particularity justifies discretionary denial of the entire Petition. *See Adaptics Ltd. v.*

*Perfect Co.*, IPR2018-01596, Paper 20 at 17 (PTAB March 6, 2019) (“Because the Board’s practice, in light of *SAS*, is to institute on all grounds asserted in a petition, the Board may consider whether a lack of particularly as to one or more of the asserted grounds justifies denial of an entire petition.”) (designated informative).

**A. Ground 1, Claim 1**

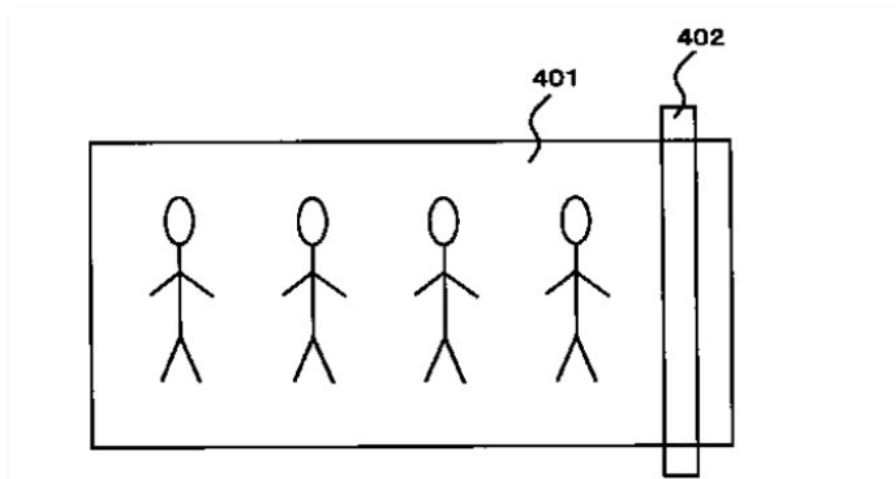
Patent Owner has addressed above the proper interpretation of the claim 1 recitation “exposing different portions of the image sensing surface synchronous with manipulating the optical relationship by adaptively exposing said portions for different exposure periods based on detected movement of at least two objects.” § VII.C, *supra*. Ground 1 of the Petition asserts a combination of Sugitani in view of Kubo. Petitioner’s deficient combination theory overlooks explicit requirements set forth in the claim language and further overlooks incompatible teachings in the cited references that would have led a person of ordinary skill in the art away from the proposed combination.

Petitioner acknowledges that Sugitani, at a minimum, does not disclose “exposing different portions of the image sensing surface synchronous with manipulating the optical relationship” in terms of “adaptively exposing said portions for different exposure periods based on detected movement of at least two objects.” Pet. 26, 40. Petitioner proposes modifying Sugitani based on alleged teachings of Kubo. According to Petitioner, “a POSITA seeking to implement Sugitani in a camera would be motivated to incorporate Kubo’s automated exposure systems to program the camera to expose each object while accounting for its movement.” *Id.*,



41. At a minimum, the Petition lacks evidentiary support and rational underpinning establishing precisely how Sugitani and Kubo could be *operatively* combined as proposed in view of their respective *incompatible* teachings, much less combined in a manner that would render obvious the claim language in question.

It remains undisputed that Sugitani relies upon a narrow, fixed-width, moveable slit 402 positioned “in front of the exposure surface” to limit light exposure to “[o]nly the area of this slit 402” at any point in time. Ex. 1003, FIG. 4 ¶ 17; *see also* Pet. 23 (citing the same). Sugitani describes its moveable slit 402 with reference to FIG. 4, copied below.



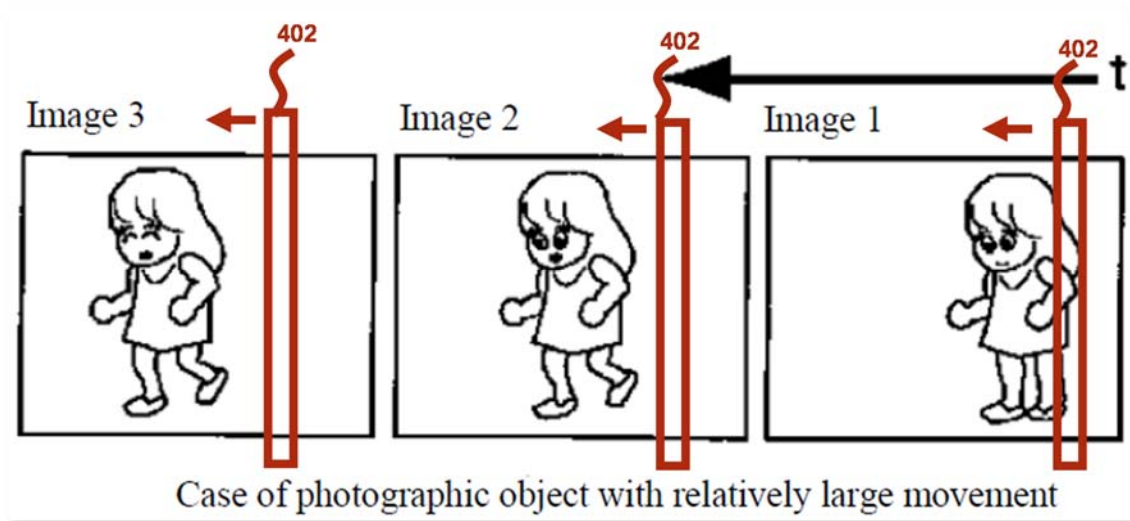
Ex. 1003, FIG. 4.

Sequential exposure of the entire surface area 401 shown in FIG. 4 “is performed by moving this slit 402 in the left-right direction.” *Id.* ¶ 17. Once slit 402 is mechanically driven from one position to another, the underlying portion of surface area 401 corresponding to the position of slit 402 is exposed but once. *Id.*

Sugitani’s slit-based design purposefully prevents exposing the entire surface area 401 all at once. *Id.* It remains uncontested that removal of Sugitani’s slit 402

would render Sugitani inoperable for its intended purpose. Petitioner concedes the point by alleging a combination that would purportedly modify Sugitani to incorporate Kubo's *software programming*, yet it would continue to rely on Sugitani's mechanical slit 402 to separately expose different parts of surface area 401 at a time. Pet. 27–28. Petitioner and its declarant overlook several flaws in the proposed combination.

Example flaws in Petitioner's proposed combination may be illustrated by overlaying Sugitani's slit 402 on top of Kubo's Figure 4, as shown below:

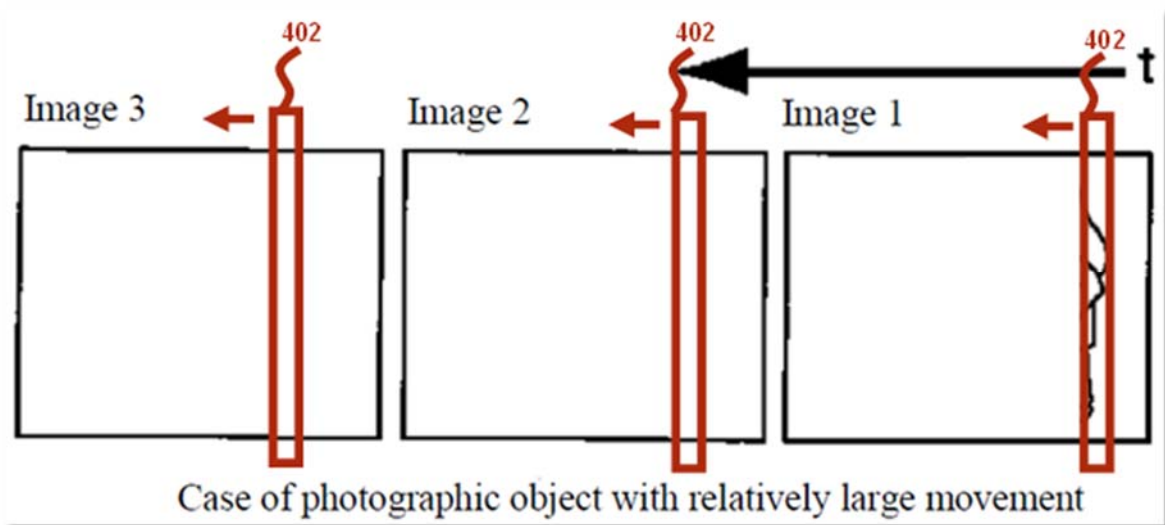


Ex. 1004, FIG. 4 (colored annotations added).

As shown above, mechanically driving Sugitani's slit 402 to a first position relative to Kubo's Image 1 might capture a portion of the illustrated moving object, though subsequently driving slit 402 to a second adjacent position relative to the very next Image 2 may not capture any portion of the same moving object. The Petition lacks any explanation for how a single exposure of a small sliver of an object

could possibly result in detecting *movement* of that object, much less enable adaptive exposure “based on detected movement of *at least two objects*.”

As shown below, the result would be the same, and hence indistinguishable, if a portion of a stationary object is exposed by slit 402 when positioned as shown at Image 1, and no portion of the same image is exposed by the next Image 2.



Ex. 1004, FIG. 4 (modified, annotations added). Petitioner and its declarant fail to explain how the proposed Sugitani-Kubo combination could possibly distinguish between the above two distinct scenarios, in which the former involves *undetected* object movement, and the latter involves only a *stationary* object.

Petitioner and its declarant also do not address, and certainly provide no basis to dispute, that the gradual movement of Sugitani’s slit 402 (*e.g.*, from left to right), independent of any object movement, may result in slit 402 never aligning with the present position of a moving object. This result is even more likely if an object is moving at the frame-to-frame speed shown in Kubo’s FIG. 4 and in a direction

contrary to the driving of Sugitani's slit 402 (*e.g.*, slit 402 moves left to right as disclosed in Sugitani and an object moves right to left). The Petition lacks any explanation of how the proposed Sugitani-Kubo combination would "adaptively expos[e] said portions for different exposure periods based on detected movement of at least two objects" where the gradual movement of Sugitani's slit 402 results in a narrow exposure area that never aligns with any object moving within area 401.

The above example deficiencies concerning adaptive exposure based on movement of even a single object are compounded when one considers the requirement that the adaptive exposure of "said portions for different exposure periods" must be "based on detected movement of *at least two* objects." Petitioner concedes Sugitani is deficient as to this "movement" requirement and further alleges that, as best, Kubo merely describes "a process for determining the degree of [a singular] object's movement and varying the [singular] exposure period [for the entire exposure surface] based on this determined movement." *Id.*, 24.

As explained above, there can be no adaptive exposure based on detected movement of even one object, let alone two, by a proposed combination that would fail to detect object movement altogether. Absent from the Petition is any evidentiary support and rational underpinning for how the proposed Sugitani-Kubo combination, which purportedly relies on Sugitani's gradual moving slit 402 for selective exposure, could discern between movement or nonmovement of even a singular object, let alone account for the independent movement of multiple objects within the frame. Neither Petitioner nor its declarant even attempt to explain, for

example, whether or how the continued use of Sugitani's slit 402 would allow for detection of movement of multiple objects within the frame.

Petitioner and its declarant also overlook certain incompatible teachings of Sugitani and Kubo. Sugitani relies on mechanically driving an external slit 402 to selectively expose but one, narrow, fixed-width portion of surface 401 at a time. Ex. 1003 ¶¶ 16–18. By contrast, Kubo's software programming expressly relies on comparing full-frame images to each other. Ex. 1004 ¶¶ 7, 30, 36. At a minimum, the Petition lacks any explanation of how Kubo's full-frame scheme, upon which its software programming is based, can possibly be combined with Sugitani's slit-based scheme, which continually relies on an ever-present mechanical slit 402 to selectively expose one small sliver of the surface area 401 at a time.

While the burden does not shift to Patent Owner to explain or prove incompatibilities Petitioner neglected to address, the cited references nevertheless speak for themselves on this point. Sugitani cannot capture a full-frame image until slit 402 is sequentially driven across the entire surface area 401. *Id.* Even if Petitioner had established the cited references are combinable as proposed, which is not the case, the record lacks any explanation as to how Kubo's full-frame comparison could be applied before Sugitani's slit 402 is fully driven across, and has already sequentially exposed, the entire surface area 401. *Id.*; *see also* ¶ 37. And once surface area 401 has already been fully exposed—*without the claimed adaptation*—it would be too late to adapt different exposure periods for different portions based on the detected movement of two objects. Neither Petitioner nor its declarant addresses the

above incompatible teachings in presenting the argument that it allegedly would have been obvious to modify Sugitani to incorporate alleged programming of Kubo.

Even if Petitioner had argued that it would have been obvious to remove Sugitani's slit 402 temporarily to effect Kubo full-frame comparison, which is not the case, the Petition does not even attempt to establish that it was known or even possible, as of Sugitani's alleged publication date, to alternatively remove and then accurately reposition slit 402, in rapid succession. Moreover, such an undefended theory would also fail to address the plausible scenario, discussed above, where the gradual mechanical movement of Sugitani's slit 402 in one direction would nevertheless result in a narrow, fixed-width exposure area that may never coincide with the position of objects moving within the frame area 401.

Further underscoring deficiencies of the Petition, Petitioner cites to disclosure in Sugitani that in fact teaches away from the proposed combination. Without citing any declarant testimony, Petitioner mischaracterizes Sugitani as teaching "that the exposure area needs to be limited every time the lens is moved." Pet. 22 (citing Ex. 1003 ¶ 16). Petitioner misunderstands the quotation and takes it out of context.

In the same paragraph, Sugitani says it would be a "problem" and "not a realistic approach" to even attempt to selectively limit the size of the exposure area based on an accurate and full recognition of objects assumed to be stationary within the frame. Ex. 1003 ¶ 16. After disparaging what Sugitani considers to be an untenable approach, Sugitani describes a different approach in which gradual exposure of surface area 401 is controlled through use of an external slit 402 *having*

*a fixed width*. A slit driving motor (SMOT) 505 moves the narrow slit 402 in one direction to sequentially expose the surface area 401. *Id.* ¶¶ 16–18. Under Sugitani’s distinguishable approach, each exposure area having a fixed width set by the current position of slit 402 is processed independently. *Id.* Sugitani’s disparagement of attempting to modify the size of the exposure area based on a recognized permitter of a *stationary object* would have led a person of ordinary skill in the art away from attempting to modify Sugitani’s system to “adaptively expos[e] said portions for different exposure periods based on detected movement of at least two objects.”

Accordingly, Petitioner has not met its threshold burden for “exposing different portions of the image sensing surface synchronous with manipulating the optical relationship by adaptively exposing said portions for different exposure periods based on detected movement of at least two objects,” as recited in claim 1.

#### **B. Ground 4, Claim 1**

Petitioner’s redundant challenge of claim 1 under Ground 4 is tainted by analogous deficiencies to those addressed above concerning Ground 1. § VIII.A. Once again, Petitioner overlooks explicit requirements set forth in the claim language and further overlooks teachings in the primary reference that would have led a person of ordinary skill in the art away from the proposed combination.

Petitioner concedes that “Shibata does not expressly disclose calibrating the exposure period based on the detected movement of two objects.” Pet. 64. Nevertheless, Petitioner argues (through its declarant) that Shibata suggests its teachings apply to multiple objects ostensibly because “Shibata uses ‘subject’ to

refer to the entire scene of the photograph without regard to how many different objects are in the scene.” Pet. 66 (citing Ex. 1002 ¶ 293. But limitations that are admittedly missing cannot be shown by conclusory conjecture as to what a reference allegedly does not necessary *preclude*. Moreover, Petitioner’s mischaracterization of Shibata is plainly inconsistent with what the reference discloses and consequently “must” be disregarded. *Ericsson Inc. v. Intellectual Ventures I LLC*, 890 F.3d 1336, 1346 (Fed. Cir. 2018) (declarant’s opinion “must” be disregarded where it “is plainly inconsistent with the record.”) (quoting *Homeland Housewares, LLC v. Whirlpool Corp.*, 865 F.3d 1372, 1378 (Fed. Cir. 2017)).

With reference to FIG. 1, Shibata clearly illustrates and describes “subject M” as a *singular* T-shaped object that does not take up the entirety of the scene. Ex. 1007, FIG. 1 ¶¶ 17, 39, 48. Notably, the word “subject” never appears in plural form anywhere in the Shibata reference, nor does the plural form of “object.” Given that Shibata never addresses multiple objects, and rather expressly directs its description to a *singular* “subject M,” it is not surprising Petitioner concedes the reference fails to address adaptive exposure *based on the detected movement of multiple objects*.

Kondo has not been shown to cure conceded deficiencies of Shibata. Without citation to any declarant testimony, Petitioner argues that Kondo discloses “objects are analyzed across frames to detect movement and calibrate the exposure duration.” Pet. 65 (citing Ex. 1008 ¶¶ 59, 64). The cited paragraphs, however, lack any disclosure directed to detecting multiple moving objects at once. Indeed, the plural form of the word “object” does not appear in Kondo.



Petitioner further asserts, again without citation to any declarant testimony, that Kondo discloses “analyz[ing] the imaging field on the basis of pixels, therefore making no distinction on the numbers of objects in the picture.” *Id.*, 66 (citing Ex. 1008 ¶ 64). Even if one were to assume, *arguendo*, that Petitioner’s conclusory attorney characterization is correct, it only further undermines the Petition. The claim language in question does not express *indifference* or allow for *no distinction* regarding the number of differentiated objects that must have detected movement. Rather, claim 1 recites that “adaptively exposing said portions for different exposure periods” must be “based on detected movement of at least two objects.” The Petition fails to provide any rational basis to conclude that the requisite (at least) *two-objects detection* is satisfied by a reference that allegedly performs a pixel-level analysis *without regard* to whether those pixels pertain to one object or multiple objects.

In addition to the above deficiencies, Petitioner and its declarant disregard teachings in the primary reference that would have “led [a person in ordinary skill in the art] in a direction divergent from” the combination proposed in the Petition. *Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, (Fed. Cir. 2018) (quoting *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004)). Consequently, Petitioner has not met its threshold burden to show sufficient motivation to combine. *Id.*

Shibata states a primary purpose of the disclosure is “to eliminate the need” to store multiple full-frame images in memory and perform processing thereon when generating a single photograph. Ex. 1007 ¶¶ 4–6, 12, Abstract. Shibata disparages the multi-frame approach, in part, as requiring additional “processing” and “very

high-capacity image memory.” *Id.* Petitioner and its declarant overlook that the proposed modification of Shibata (allegedly in view of Kondo) would require implementing a form of what Shibata expressly seeks to eliminate.

Petitioner argues it would have been obvious to modify Shibata in view of Kondo’s calculations that compare a current *frame* buffered in memory and a preceding *frame* also buffered in memory. Ex. 1008 ¶ 64; *see also* Pet. 65 (citing the same). Indeed, Petitioner and its declarant expressly acknowledge that the cited portion of Kondo requires an “analy[sis] across frames” stored in memory. Pet. 65; Ex. 1002 ¶ 27 (copying the Petition verbatim). Kondo uses the word “frame” to refer to the entirety of the buffered data of a full picture. *See, e.g., Id.* ¶¶ 55, 64, 86 (“The buffer 65 receives picture information . . . to temporarily store it in units of one frame.”). It remains undisputed, therefore, that the cited portion of Kondo requires buffering *multiple full-frame* images in memory and performing analysis thereon when generating a single photograph. Because the proposed modification would require what Shibata expressly seeks to eliminate, a person of ordinary skill in the art would be led away from the proposed modification. Far from defending the proposed combination against this self-evident point, the Petition and its attached declaration offer concessions (addressed above) that only underscore the deficiency.

Accordingly, Petitioner has not met its threshold burden for “exposing different portions of the image sensing surface synchronous with manipulating the optical relationship by adaptively exposing said portions for different exposure periods based on detected movement of at least two objects,” as recited in claim 1.

**C. Ground 1, Claim 3**

Claim 3 differs from claim 1 in that the adaptive exposure must be “based on detected *brightness*” (as opposed to detected *movement*). This requirement is set forth in the claim 3 limitation “exposing different portions of the image sensing surface synchronous with manipulating the optical relationship by adaptively exposing said portions for different exposure periods based on *detected brightness* of at least two objects.” Petitioner concedes Sugitani does not disclose “adaptively exposing said portions for different exposure periods based on detected brightness of at least two objects.” Pet. 43. According to Petitioner, it would have been obvious to directly incorporate into Sugitani what Petitioner refers to as Kubo’s “program settings for selecting shutter speed based on brightness.” Pet. 44 (citing Ex. 1004 ¶¶ 11, 36, 51–52, FIG. 8).

Petitioner’s theory is tainted by incompatibilities of the cited references analogous to those addressed above in discussing claim 1. § VIII.A, *supra*. The cited portion of Kubo states its “program settings” apply “the ratio of the non-correlated area.” *Id.* Kubo defines “the non-correlating area ratio” as the “output of area ratio of the moving photographic object portion.” Ex. 1004 ¶ 33. Kubo describes determining the area ratio by comparing the *entirety* of two full-frame images: “the current (last) frame image and the previous (before last) frame image.” *Id.* ¶ 27.

As noted above in addressing claim 1, the Petition lacks any explanation of how Kubo’s full-frame comparison, upon which the cited “program settings” are based, can possibly be combined with Sugitani’s incompatible system that relies on an ever-present mechanical slit 402 to selectively expose but one small sliver of

surface area 401 at a time. § VIII.A, *supra*. Even if Petitioner had established the cited references are combinable as proposed, which is not the case, Kubo's full-frame comparison could not be applied before Sugitani's slit 402 is fully driven across, and has already sequentially exposed, the entire surface area 401. Ex. 1004 ¶¶ 16-18, 37. And once the entire surface area 401 has already been exposed without the claimed adaptation, it would be too late to adapt different exposure periods for different portions based on the detected brightness of two objects.

Petitioner overlooks another incompatibility that would have led away from attempting to integrate Kubo's "program settings" into Sugitani's slit-based approach. Kubo describes its "program settings" as fine tuning "the degree of aperture of a diaphragm 51 interposed on the optical axis L." *Id.* ¶¶ 15, 18. Neither Petitioner nor its declarant explain how Kubo's "program settings," which expressly rely on *variable* aperture dimension interposed within the optical path, could be integrated into Sugitani's incompatible design, which relies on a *fixed-width* slit 402 interposed in the optical path.

Scrutiny of the table Petitioner copied directly into its Petition highlights even more deficiencies. Pet. 44. Notably, the table copied directly into the Petition and identified as "FIG. 8" of Kubo does not appear anywhere in the purported English translation of that Japanese reference.<sup>1</sup> Although not identical in all respects, Table 1 of Kubo appears to have similar information and is copied below.

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<sup>1</sup> The content and appearance of the "FIG. 8" copied directly into the Petition at page 44 is different from anything appearing in Kubo (Ex. 1004). It is curious that Petitioner provided a modified table in its Petition that does not precisely match

AE program used based on correlated area output

Non-correlated area ratio	Photographic object brightness conditions	Selected program characteristics		
		Depth priority program	Standard program	Speed priority program
Less than 5%	Normal brightness photographic object	○		
	Low brightness photographic object		○	
5% or greater	Normal brightness photographic object		○	
	Low brightness photographic object		○	
20% or greater	Normal brightness photographic object			○
	Low brightness photographic object		○	

Ex. 1004, Table 1. Kubo's Table 1 discloses using the "standard program" for most identified conditions, regardless of whether the "brightness" of the singular photographic object evaluated in determining the "non-correlated area ratio" is deemed "low" or "normal." This independently confirms that Kubo's "program settings" relied upon by Petitioner do not "adaptively expos[e] said portions for different exposure periods based on detected brightness of at least two objects."

The only disclosed conditions which result in deviation from the "standard program" do so based on factors other than "brightness" and, in any event, do not involve "adaptively exposing said portions for different exposure periods based on detected brightness of at least two objects," as claimed. The primary condition is set forth in the first or left-most column of Kubo's Table 1, which contains percentage ranges derived by comparing the entirety of "the current (last) frame image and the previous (before last) frame image" *Id.* ¶ 27. As addressed above, each percentage

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anything appearing in its certified translation. One can only assume Petitioner had intended to refer to Kubo's Table 1 (at page 6 of Ex. 1004). If the source of Petitioner's "FIG. 8" is a different document altogether, then Petitioner neglected to timely file such a document.

represents “the area ratio of the moving photographic object portion” relative to the *entire* image frame. *Id.* ¶ 33. This invokes the above-addressed incompatibilities between Kubo’s full-frame comparison and Sugitani’s slit-based approach.

One exception to Kubo’s “standard program” is the “depth priority program,” which merely “reduces the diaphragm aperture compared to the standard program” aperture preset. *Id.* ¶ 36, Table 1. Petitioner and its declarant do not even allege, let alone with evidentiary support and rational underpinning, that merely reducing *diaphragm aperture* based on limited motion of a singular object would have rendered obvious the plainly distinguishable claim language in question. Nor does Petitioner explain how it would have been obvious to integrate Kubo’s “program settings,” which include the “depth priority program,” into Sugitani’s incompatible slit-based approach, which, as explained above, purposefully requires use of a fixed-width slit 402 for all sub-exposures of surface area 401.

The only other exception to Kubo’s “standard program” is the so-called “speed priority program.” Kubo expressly states the conditions triggering this alternative program setting are all based on full-frame comparisons. The “speed priority program” is only triggered, if at all, if there is 20% or greater non-correlation between the current frame image and the previous frame image. *Id.* Absent this condition, the “speed priority program” is not triggered, regardless of whether the “photographic brightness” of the singular photographic object is deemed “normal” or “low.” Kubo’s single-object approach, in which the percentage of non-correlation

between full-frame images primarily controls, bears no resemblance to the claim language in question.

Accordingly, the cited teachings directed to Kubo’s “program settings” are not only incompatible with Sugitani’s slit-based approach, but also fail to cure the acknowledged deficiencies of Sugitani concerning “exposing different portions ... by adaptively exposing said portions for different exposure periods based on detected brightness of at least two objects,” as recited in claim 3.

**D. Ground 4, Claim 3**

The Petition fails to meet the statutory requirement to identify “with particularity . . . the grounds on which the challenge to [claim 3] is based.” 35 U.S.C. § 312(a)(3). The Petition repeatedly characterizes Ground 4 as challenging claim 3 based on Shibata in view of Kondo under a theory of obviousness. Pet. 6, 62. When addressing claim 3, however, the Petition fails to articulate what alleged teaching of Kondo, if any, is relied upon in combination, nor does the petition identify any alleged motivation to combine Shibata with Kondo to arrive at the specific language of claim 3, nor does the Petition clarify whether the asserted theory is single-reference obviousness or anticipation. Pet. 67–68. Compounding the ambiguity, the Petition does not even purport to address the *Graham* factors in presenting the Ground 4 challenge of claim 3, such as by identifying differences between the claimed subject matter and a cited reference. *See Adaptics*, IPR2018-01596, Paper 20 at 20 (citing failure to address certain *Graham* factors as favoring denial for insufficient particularity for obviousness grounds) (designated informative).

Patent Owner should not be required to guess at crucial particulars of Petitioner’s invalidity theory, nor should Patent Owner be expected to inefficiently address all possibilities. The lack of particularity fails to meet Petitioner’s statutory burden and favors discretionary denial.

Even if one were to set aside the ambiguity of the Petition, the challenge of claim 3 under Ground 4 tacitly relies on an incorrect and undefended interpretation of the phrase “at least two objects” (as recited in the claim 3 limitation “adaptively exposing said portions for different exposure periods based on detected brightness of *at least two objects*”). § VII.E, *supra*. According to Petitioner, Shibata describes “different faces of subject M” and “[t]hese faces . . . are different ‘objects,’ as claimed.” Pet. 67–68 (citing Ex. 1002 ¶ 304). The cited declaration testimony is pointedly more equivocal: “[w]hile Shibata’s description is directed to an example where different object faces of the physically contiguous subject M being photographed, in my opinion, a POSITA would understand that the faces of M have different focus distances and different illuminance characteristics and *could be considered* different ‘objects’.” Ex. 1002 ¶ 304 (emphasis added).

Petitioner’s declarant fails to provide any evidentiary support or rational underpinning as to why different surfaces of what is admittedly the same “physically contiguous” object is properly interpreted as satisfying “at least two objects” as claimed. Accordingly, the conclusory, unsupported opinion offered solely on *the legal issue of claim interpretation* should be afforded no weight. 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on



which the opinion is based is entitled to little or no weight.”); *see also Phillips*, 415 F.3d 1303, 1318 (Fed. Cir. 2005) (“conclusory, unsupported assertions by experts as to the definition of a claim term are not useful to a court.”).

The conclusory opinion at to claim scope also “must” be disregarded as plainly inconsistent with the intrinsic evidence. *Ericsson*, 890 F.3d at 1346. The ’030 patent provides a brief description of FIGS. 10A and 10B as follows:

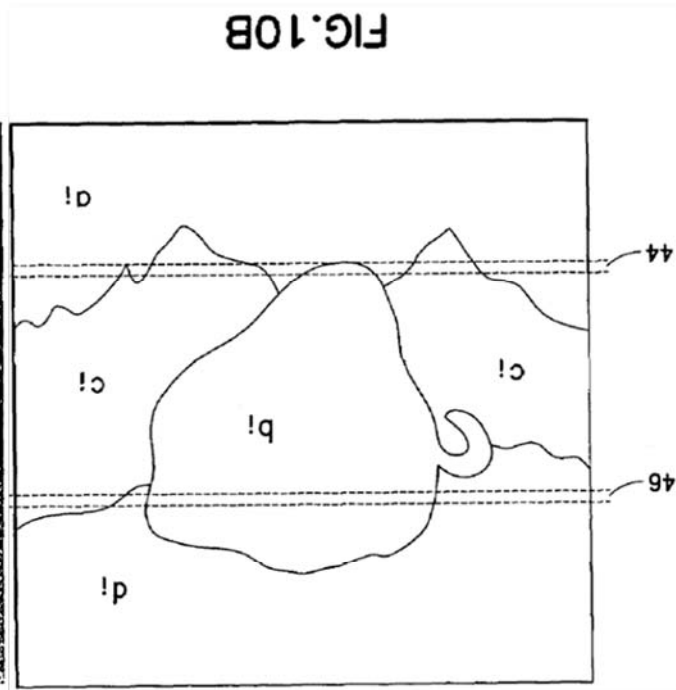
FIG.10A is a scene showing objects at four different object distances.

FIG. 10B is a sensor surface with outlines of the objects of FIG. 10A, illustrating scene adaptive pixel exposure as a focusing lens translates.

Ex. 1003, 6:5–9. FIGS. 10A and 10B are copied below for ease of reference, with FIG. 10B inverted to facilitate a side-by-side comparison.



FIG.10A



Ex. 1001, FIGS. 10A and 10B (the latter being inverted); *see also* Pet. 16. The '030 patent illustrates and describes the physically contiguous “stuffed animal” as a single object “b<sub>i</sub>” having a known “outline” (as illustrated above) determined by “distance measuring equipment.” *Id.*, 10:38–64. The “stuffed animal” object “b<sub>i</sub>” is differentiated from the other illustrated objects in the same scene. *Id.* The Petition acknowledges “stuffed animal” (referred to in the Petition as “mastodon”) is referred to as a single “object.” Pet. 16.

It is uncontested and dispositive here that the '030 patent illustrates and describes the stuffed animal object shown in FIGS. 10A and 10B as a *single* object b<sub>i</sub>, including even its right protruding tusk extending in front and left tusk protruding to the side. This intrinsic evidence plainly refutes Petitioner’s and its declarant’s contrary, undefended assertion that the faces of Shibata’s physically contiguous “subject M” are properly considered at least two different “objects” as claimed.

The Ground 4 challenge fails to identify any printed publication disclosing “adaptively exposing said portions for different exposure periods based on detected brightness of at least two objects,” which clearly requires differentiation of “at least two objects.” This deficiency likewise cannot be cured by Petitioner’s conclusory statement that “A POSITA would also readily recognize that Shibata’s method for detecting brightness and adjusting exposure times would be equally applicable to photographing multiple noncontiguous objects.” Pet. 68 (citing Ex. 1002 ¶ 305). Neither Petitioner nor its declarant explain, based on record evidence, whether and

how the four corners of Shibata provide sufficient disclosure to even detect and differentiate different objects from one another in the same scene.

**E. Ground 1, Claim 4**

The Ground 1 challenge of claim 4 fails to meet the statutory requirement to identify “with particularity . . . the grounds on which the challenge to [claim 15] is based.” 35 U.S.C. § 312(a)(3). The Petition repeatedly characterizes Ground 1 as challenging claim 4 based on Sugitani *in view of Kubo*. Pet. 6, 39. When purporting to address claim 4, however, the Petition fails to articulate what alleged teaching of Kubo, if any, is relied upon in combination with Sugitani, nor does the Petition assert any motivation to combine Sugitani with Kubo to arrive at specific claim language, nor does the Petition articulate whether its theory as to claim 4 is single-reference obviousness or anticipation, which apply different legal standards. Pet. 45.

Even if one were to assume Petitioner’s theory as to claim 4 is under single-reference obviousness, the Petition failed to address the *Graham* factors in presenting the Ground 1 challenge of claim 4, such as by identifying differences between the claimed subject matter and Sugitani. *See Adaptics*, IPR2018-01596, Paper 20 at 20 (citing failure to address certain *Graham* factors as favoring denial for insufficient particularity for obviousness grounds) (designated informative). Patent Owner should not be required to guess at crucial particulars of Petitioner’s invalidity theory, nor should Patent Owner be expected to inefficiently address all possibilities. The lack of particularity fails to meet Petitioner’s statutory burden and favors discretionary denial.

**F. Ground 4, Claim 4**

The redundant challenge of claim 4 under Ground 4 of the Petition is tainted by analogous deficiencies to those of Ground 1. Once again, Petitioner failed to meet the statutory requirement to identify “with particularity . . . the grounds on which the challenge to [claim 15] is based.” 35 U.S.C. § 312(a)(3). The Petition repeatedly characterizes Ground 4 as challenging claim 4 based on Shibata *in view of Kondo*. Pet. 6, 63. When purporting to address the specific language of claim 4, however, the Petition fails to articulate what alleged teaching of Konda, if any, is relied upon in combination with Shibata, nor does the Petition assert any motivation to combine Shibata with Kubo to arrive at the specific language of claim 4, nor does the Petition articulate whether the asserted theory is either single-reference obviousness or anticipation, which apply different legal standards. Pet. 68–69.

Even if one were to assume the Petitioner’s Ground 4 challenge of claim 4 is under single-reference obviousness, the Petition does not address the *Graham* factors in presenting the Ground 4, such as by identifying differences between the claimed subject matter and Shibata. *See Adaptics*, IPR2018-01596, Paper 20 at 20 (citing failure to address certain *Graham* factors as favoring denial for insufficient particularity for obviousness grounds) (designated informative). Patent Owner should not be required to guess at crucial particulars of Petitioner’s invalidity theory, nor should Patent Owner be expected to inefficiently address all possibilities. The lack of particularity fails to meet Petitioner’s statutory burden and further favors discretionary denial.

**G. Ground 1, Claims 9 and 23**

Without any alleged justification, the Petition presents three redundant challenges to claims 9 and 23. Yet none of the three excessive challenges meets the statutory requirement to identify “with particularity . . . the grounds on which the challenge to [claim 15] is based.” 35 U.S.C. § 312(a)(3).

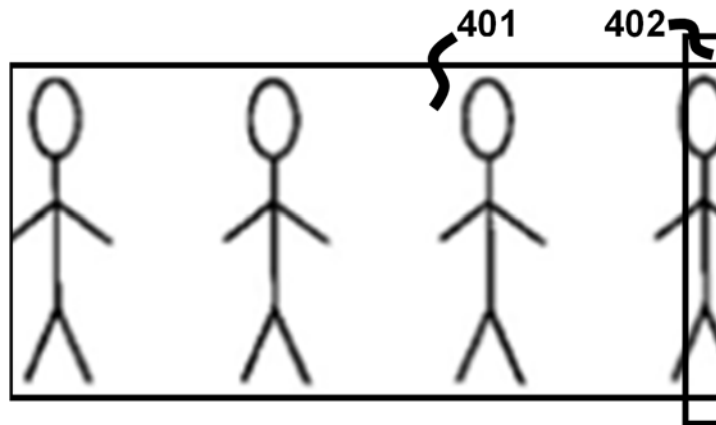
The Petition repeatedly characterizes Ground 1 as challenging claims 9 and 23 based on Sugitani in view of Kubo under a theory of obviousness. Pet. 6, 39. When purporting to address the language of claims 9 and 23 under Ground 1, however, the Petition fails to articulate what alleged teaching of Kubo, if any, is relied upon in combination for either claim, nor does the Petition assert any motivation to combine Sugitani with Kubo to arrive at the specific claim language, nor does the Petition articulate whether the asserted theory is one of single-reference obviousness or anticipation, which apply different legal standards. Pet. 50, 57.

Even if one were to assume the theory is single-reference obviousness, Petitioner fails to present any analysis under the *Graham* factors, such as by identifying differences between the claimed subject matter and a cited reference. *See Adaptics*, IPR2018-01596, Paper 20 at 20 (citing failure to address certain *Graham* factors as favoring denial for insufficient particularity for obviousness grounds) (designated informative). Patent Owner should not be required to guess at crucial particulars of Petitioner’s invalidity theory, nor should Patent Owner be expected to inefficiently address all possibilities. The repeated lack of particularity in the redundant grounds weighs even further in favor of discretionary denial.

In any event, the ambiguous Ground 1 challenge of claims 9 and 23 is woefully deficient on the merits. Claim 9 qualifies “manipulating the optical relationship synchronously with exposing” in that it must “impose an effective curvature to the sensing surface that approximates a Petzval surface.” As explained above, the ’030 patent expressly defines the claimed “Petzval surface” as having a “circularly paraboloidal” shape. § VII.D, *supra* (citing Ex. 1001, 9:64–65).

The Petition asserts that Sugitani’s slit-based scheme (as shown in Sugitani’s FIG. 4) approximates a Petzval surface ostensibly “[b]ecause Sugitani adjusts focus for each object of an image” and thus “it will achieve proper focus for objects at the edge of the scene according to their distance.” Pet. 51–52. Petitioner does not even attempt to defend, much less with sufficient supportive argument and evidence set forth in the Petition itself, its tacit and incorrect claim interpretation that a “Petzval surface” means any surface that achieves proper focus for objects at the edge of a scene, irrespective of how that surface itself is shaped.

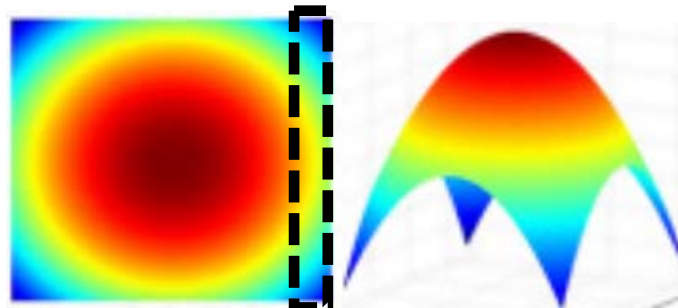
Absent from the Petition is any recognition of the explicit lexicography defining “Petzval surface” as having a “circularly paraboloidal” shape. Ex. 1001, 9:64–65. It is not surprising, therefore, that Petitioner makes no attempt to establish that Sugitani’s slit-based approach shown in FIG. 4 would operate to “impose an effective curvature to the sensing surface that approximates a Petzval surface”—i.e., a surface having a *circularly paraboloidal* shape. Sugitani’s FIG. 4 is redrawn below, with slight modification to illustrate the deficiency.



As explained above, Sugitani’s slit-based approach requires indiscriminately exposing the entire vertically-oriented area beneath slit 402 at the same time and under the same settings, including a fixed lens position. Ex. 1003 ¶¶ 16–18. This has not been shown to account for curvature of a Petzval surface as claimed.

While the evidentiary burden does not shift to Patent Owner, the ’030 patent plainly states that merely moving a lens linearly with respect to a sensing surface cannot fully correct for curvature of a Petzval surface. Ex. 1001, 9:61–64. The ’030 patent discloses, for example, “a digital camera embodiment” that overcomes this problem by selectively “reading out individual pixels . . . rather than the more common readout by rows” or entire columns. *Id.*, 10:1–37.

To further underscore the distinction, perspective views of an example Petzval surface having a circularly paraboloidal shape are reproduced below. *See* § VII.D.



Unlike Sugitani, the drawn dotted-line rectangle over the top view (as shown above on the left) illustrates clear *differentiation* (e.g., in terms of depth) along a three-dimensional area extending from and including upper right and lower right corners.

Accordingly, Sugitani's distinguishable approach has not been shown to impose "a Petzval surface" having such a *circularly paraboloidal* shape. The same deficiencies taint Petitioner's challenge of claim 23 under Ground 1, which defers exclusively to Petitioner's challenge of claim 9 under Ground 1. Pet. 57.

#### **H. Ground 2, Claims 9 and 23**

As is the case with Ground 1, the redundant Ground 2 challenge of claims 9 and 23 fails to meet the statutory requirement to identify "with particularity . . . the grounds on which the challenge to [claim 15] is based." 35 U.S.C. § 312(a)(3). The Petition repeatedly characterizes Ground 2 as challenging claims 9 and 23 based on Sugitani in view of *both* Kubo *and* Misawa. Pet. 6, 58. When purporting to address the language of claims 9 and 23 under redundant Ground 2, however, the Petition once again fails to articulate what alleged teaching of Kubo, if any, is relied upon in combination for either claim, nor does the Petition assert any motivation to combine Sugitani with *both* Kubo *and* Misawa to arrive at the specific claim language. Pet. 58–60. If Kubo is not at all relied upon for the Ground 2 challenge of Claims 9 and 23, then the challenge should have been presented as a distinct ground, not compounded as and "and/or" approach into Ground 2 in an apparent attempt to obfuscate the total (and excessive) number of grounds asserted in the Petition. Petitioner's repeated ambiguity falls far short of its statutory burden.



In any event, the redundant challenge of claims 9 and 23 under Ground 2 is woefully deficient on the merits. Without identifying any weakness of either Sugitani or Kubo that would allegedly justify adding Misawa as a third reference in a redundant combination, Petitioner alleges that Misawa discloses linearly adjusting the focus of an image based on the measured distance between the optical axis and the position of the imaging surface to be adjusted. *Id.* At a minimum, Petitioner and its declarant overlook the '030 patent teaching that merely moving a lens linearly with respect to a sensing surface cannot fully correct for curvature of a Petzval surface. Ex. 1001, 9:61–64; *see also* §§ VII.D, VIII.G, *supra*.

In addition, absent from the Petition is any recognition of the lexicography defining “Petzval surface” as having a “circularly paraboloidal” shape. *See* § VII.D (citing Ex. 1001, 9:64–65) and § VIII.G, *supra*. Petitioner makes no attempt to establish that the cited disclosure of Misawa necessarily operates to “impose an effective curvature to the sensing surface that approximates a Petzval surface”—i.e., a surface having a *circularly paraboloidal* shape. *Id.*

Accordingly, Misawa’s distinguishable approach has not been shown to impose “a Petzval surface” having such a *circularly paraboloidal* shape. The same deficiencies taint Petitioner’s challenge of claim 23 under Ground 2, which defers exclusively to Petitioner’s challenge of claim 9 under Ground 2. Pet. 60.

#### **I. Ground 4, Claims 9 and 23**

As with Grounds 1 and 2, the *third* redundant challenge of claims 9 and 23 under Ground 4 fails to meet the statutory requirement to identify “with particularity

... the grounds on which the challenge to [claim 15] is based.” 35 U.S.C. § 312(a)(3). The Petition repeatedly characterizes Ground 4 as challenging claims 9 and 23 based on Shibata in view of Kondo. Pet. 7, 63. However, Ground 4 of the Petition makes no mention of Kondo when purporting to address respective language of claims 9 and 23, nor does the Petition articulate what alleged teaching of Kondo, if any, is relied upon in combination for claims 9 and 23, nor does the petition identify any alleged motivation to combine Shibata with Kondo to arrive at the specific language of claim 9 and 23, nor does the Petition articulate whether the asserted theory is one of single-reference obviousness or anticipation. If Kondo is not at all relied upon for the Ground 4 challenge of Claims 9 and 23, then the challenge should have been presented as a distinct ground, not compounded into Ground 4 in yet another apparent attempt to obfuscate the total (and excessive) number of grounds asserted in the Petition.

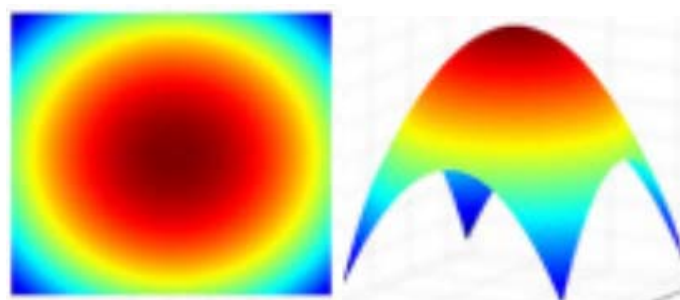
Compounding the ambiguity, the Petition does not address the *Graham* factors in challenging claims 9 and 23 under redundant Ground 4, such as by identifying differences between the claimed subject matter and a cited reference. *See Adaptics*, IPR2018-01596, Paper 20 at 20 (citing failure to address certain *Graham* factors as favoring denial for insufficient particularity for obviousness grounds) (designated informative). Petitioner’s repeated ambiguity falls far short of its statutory burden.

In any event, the *third*, excessive redundant challenge of claims 9 and 23 under Ground 4 is woefully deficient on the merits. Citing solely to multiple paragraphs of the attached declaration, and without offering *any* citation to Shibata

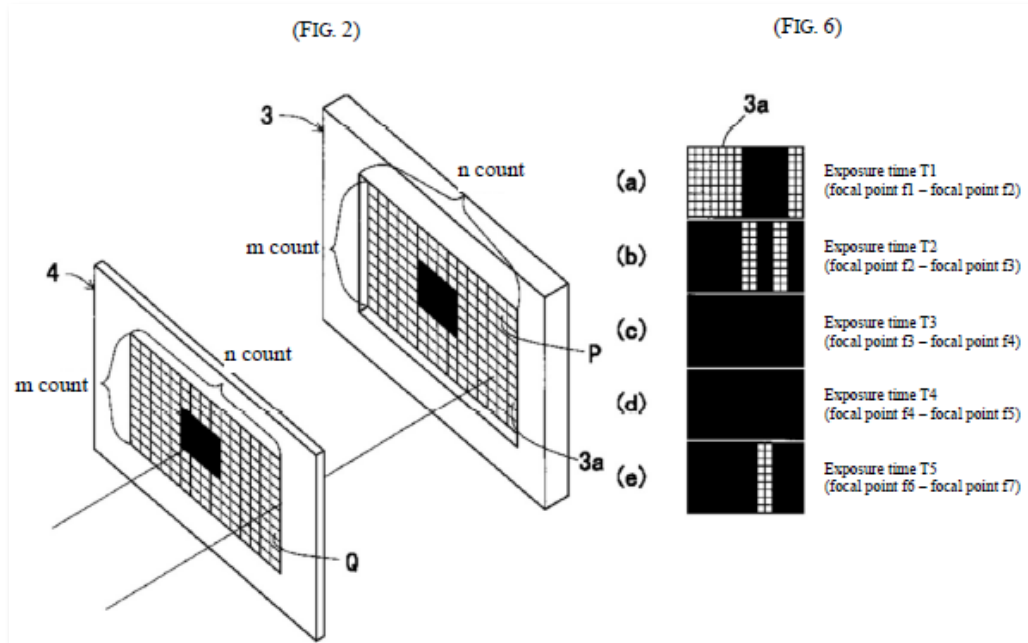
directly, Petitioner characterizes Shibata as disclosing the claimed “Petzval surface” ostensibly because “Shibata only exposes pixels when the lens is positioned such that those pixels are in focus, it will achieve proper focus for objects at the edge of the scene according to their distance and, thereby, approximate a Petzval surface.” Pet. 72–73. Once again, Petitioner impermissibly attempts to rewrite the claim language to recite “achieving proper focus for objects at the edge of the scene.” But that is not what claims 9 and 23 recite, nor does Petitioner’s rewrite reflect the lexicography of the specification defining a “Petzval surface” as claimed.

As with the other redundant challenges, absent from the Petition is any recognition of the lexicography defining “Petzval surface” as having a “circularly paraboloidal” shape. *See* § VII.D (citing Ex. 1001, 9:64–65) and § VIII.G, *supra*. Petitioner does not even allege that the cited disclosure of Shibata necessarily operates to “impose an effective curvature to the sensing surface that approximates” a surface having *circularly paraboloidal* shape—i.e., a “Petzval surface.” *Id.*

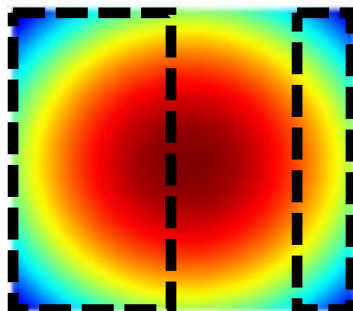
While the evidentiary burden does not shift to Patent Owner, to further underscore the deficiency, perspective views of an example Petzval surface having a circularly paraboloidal shape are reproduced below. *See* § VII.D.



Shibata discloses a distinguishable approach in which the same settings are applied across large regions of a “light-receiving plane 3a” consisting of an array of “n count” by “m-count” pixels. Ex. 1007, FIGS. 2, 6 (copied below).



*Id.* As shown above, Shibata discloses with reference to FIGS. 2 and 6(a) that approximately 70% of the entire “light-receiving plane 3a” is subject to the *same* exposure and *same* settings during “Exposure time T1.” *Id.* ¶ 19. For purposes of illustration, the approximate exposure areas corresponding to Shibata’s “Exposure time T1” shown in FIG. 6(a) are superimposed (using dotted lines) over a top view of a three-dimensional rendering of an example Petzval surface below. *See* § VII.D.



At a minimum, Petitioner fails to explain how indiscriminately subjecting such large areas of an image to the same settings would approximate a Petzval surface, which by explicit definition must have a circularly paraboloidal shape. As shown in Shibata's FIG. 6(b) and FIG. 6(e), the remainder of the "light-receiving plane 3a" is exposed during "Exposure time T2" and "Exposure time T5" using respective columns fully extending from top to bottom of "light-receiving plane 3a." This too has not been shown to approximate a Petzval surface, which by explicit definition must have a circularly paraboloidal shape. The same deficiencies taint Petitioner's challenge of claim 23 under Ground 4, which defers exclusively to Petitioner's challenge of claim 9 under Ground 4. Pet. 76.

**J. Ground 3, Claim 10**

The claims that issued speak for themselves in refuting Petitioner's untethered assertion that "the '030 patent expressly admits that lens type is not relevant to the invention." Pet. 37. Claim 10 expressly qualifies the step of "manipulating the optical relationship" by stating it must "comprise[] altering a shape of the lens." At a minimum, therefore, claim 10 requires a lens capable of performing the recited alteration in shape.

Petitioner's challenge of claim 10 under Ground 3 fails to meet the statutory requirement to identify "with particularity . . . the grounds on which the challenge to [claim 15] is based." 35 U.S.C. § 312(a)(3). The Petition repeatedly characterizes Ground 3 as challenging claim 10 based on Sugitani in view of *both* Kubo *and* Berge. Pet. 6, 61. However, the Petition fails to articulate what alleged teaching of Kubo, if

any, is relied upon in combination for claim 10 in particular. Nor does the Petition assert any motivation to combine Sugitani with *both* Kubo *and* Berge to arrive at the specific claim language. Pet. 61–62. The lack of particularity fails to meet Petitioner’s statutory burden and favors discretionary denial.

Discretionary denial is further warranted because, as Petitioner admits, Berge was cited during original prosecution (Ex. 1012 at 41) and was considered by the examiner. § V, *supra* (citing Pet. 7). The Petition lacks any explanation of how the examiner erred in allowing claim 10 over Berge. *Id.* (citing *Becton*, IPR2017-01586, Paper 8 (designated informative)). Petitioner also fails to explain how the cited references are not cumulative with the collection of patents discussed in the ’030 patent itself, including the Berge reference. *Id.* (citing Ex. 1001, 2:40–3:32).

**K. Ground 5, Claim 10**

The redundant challenge of claim 10 under Ground 5 likewise fails to meet the statutory requirement to identify “with particularity . . . the grounds on which the challenge to [claim 15] is based.” 35 U.S.C. § 312(a)(3). The Petition repeatedly characterizes Ground 5 as challenging claim 10 based on Shibata in view of *both* Kondo *and* Berge. Pet. 7, 77. However, the Petition fails to articulate what alleged teaching of Kondo, if any, is relied upon in combination for claim 10 in particular. Nor does the Petition assert any motivation to combine Shibata with *both* Kondo *and* Berge to arrive at the specific claim language. Pet. 77–78. The lack of particularity fails to meet Petitioner’s statutory burden and favors discretionary denial.

Discretionary denial is further warranted because, as Petitioner admits, Berge was cited during original prosecution (Ex. 1012 at 41) and was considered by the examiner. § V, *supra* (citing Pet. 7). The Petition lacks any explanation of how the examiner erred in allowing claim 10 over Berge. *Id.* (citing *Becton*, IPR2017-01586, Paper 8 (designated informative)). Petitioner also fails to explain how the cited references are not cumulative with the collection of patents discussed in the '030 patent itself, including the Berge reference. *Id.* (citing Ex. 1001, 2:40–3:32).

**L. Ground 6, Claim 11**

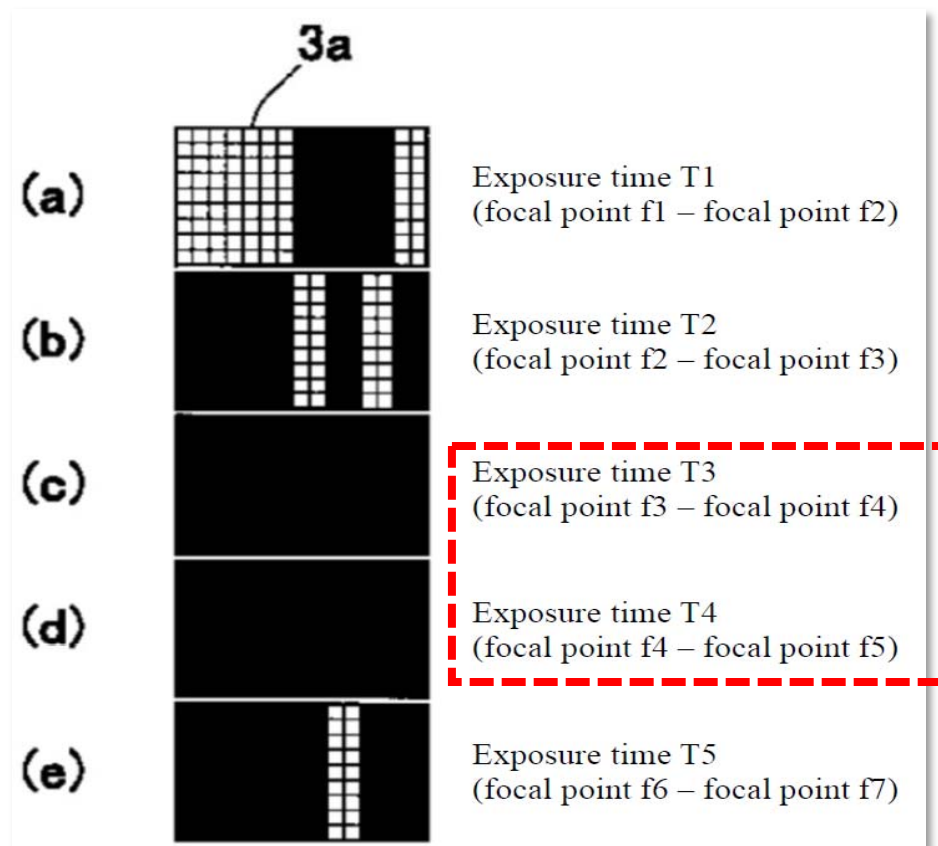
As noted above, Petitioner failed to defend its proposed construction for the term “within a continuous exposure frame,” which inexplicably omits the “continuous” qualifier. § VII.A, *supra*. Not surprisingly, the Petition does not even allege that the asserted combination of Ground 6 would have provided a “continuous” and hence uninterrupted “exposure time” as claimed. *Id.* (citing Ex. 1001, 9:19–25).<sup>2</sup> On the contrary, Petitioner admittedly advances a theory in which the alleged “exposure frame” is interrupted and hence not “continuous” as claimed.

According to Petitioner, the claimed “exposure frame” must extend from “the start of an exposure of the imaging sensing surface until the entire image sensing surface is exposed once.” Pet. 19. But Petitioner concedes the alleged “exposure frame” in the cited portion of Shibata is not continuous from the start of an exposure

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<sup>2</sup> While the temptation may be to surmise what Petitioner might have argued, within the Petition itself, had Petitioner given meaningful effect to the “continuous” qualifier, the Board is not “free to adopt arguments on behalf of petitioners that could have been, but were not, raised by the petitioner” in the Petition itself. *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016).

of the image sensing surface until the entire image sensing surface is exposed. In summarizing the cited teachings of Shibata, Petitioner recognizes that Shibata purposefully interrupts its exposure for a duration extending from “Exposure time T3” through “Exposure Time T4,” and that the interruption occurs prior to exposing the entire image sensing surface: “[w]hen the focal point position is at f3-f5, none of the scene is in focus, all shutter elements are set to ‘obstruct’ (shown in Fig. 6(c)-(d)) and *none of the sensor pixels are exposed.*” Pet. 33–34 (emphasis added).



Ex. 1007, Fig. 6 (colored annotations added).

In purporting to address “within a continuous disclosure [sic] frame,” Petitioner reaffirms it relies on “Exposure time T1” through “Exposure time T5”



shown in Shibata’s FIG. 6(a)–(e). Pet. 81–82. Keeping in mind Petitioner construes “exposure frame” to require exposure of the *entire* imaging sensing surface (§ VII.A), absent from the Petition is any evidentiary support or rational underpinning purporting to establish that Shibata discloses “a *continuous* exposure frame” extending from the start of the exposure of the image sensing surface (at the start of T1) until the entire image surface is exposed (at the end of T5). Petitioner could not do so because, as shown above, Shibata admittedly discloses the cited exposure is interrupted from “Exposure time T3” through “Exposure time T4.”

**M. Ground 1, Claim 11**

Ground 1 of the Petition is tainted by analogous deficiencies of Ground 6. Once again, the Petition does not even allege that the asserted Ground 1 combination would have provided a “continuous” and hence uninterrupted “exposure time” as claimed. *Id.* (citing Ex. 1001, 9:19–25). On the contrary, the Petition characterizes the cited passage of Sugitani as disclosing as discrete, sequential steps “[ (1) ] driving the lens to a position based on object distance in step 604 and [ (2) ] exposing the corresponding portion of exposure surface in step 605.” Pet. 53 (citing Ex. 1003 ¶ 24). Notably, Petitioner opted not to cite any declarant testimony in support of the assertion that Sugitani “teaches that the lens, distance measurement area, and slit are moved during a single exposure.” *Id.*<sup>3</sup> That Sugitani allegedly discloses the entire

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<sup>3</sup> While the temptation may be to surmise what Petitioner might have argued had Petitioner properly understood and given meaningful effect to the “continuous” qualifier, the Board is not “free to adopt arguments on behalf of petitioners that could have been, but were not, raised by the petitioner” *within the Petition itself*. *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016).

exposure service 401 is exposed only once (i.e., “a single exposure”) has not been shown to constitute “exposing a first portion of an image sensing surface while the image sensing surface is at a first effective image distance from the lens” and, within the *same* “continuous exposure frame,” doing the same for “a second portion of the image sensing surface,” as recited in claim 11.

**N. Ground 4, Claim 15**

The challenge of claim 15 under Ground 4 purports to rely exclusively on the challenge of claim 11 under Ground 6. Pet. 73–74. Petitioner makes no attempt to distinguish any of the limitations recited in the body of claim 15 from any of the limitations recited in the body of claim 11. Accordingly, the challenge of claim 15 under Ground 4 is tainted by the same deficiencies addressed above. § VIII.G, *supra*.

In addition, the Ground 4 challenge of claim 15 fails to meet the statutory requirement to identify “with particularity . . . the grounds on which the challenge to [claim 15] is based.” 35 U.S.C. § 312(a)(3). The Petition repeatedly characterizes Ground 4 as asserting Shibata in view of Kondo under a theory of obviousness. Pet. 6, 63. When addressing claim 15, however, the Petition fails to articulate what alleged teaching of Kondo, if any, is relied upon in combination, nor does the petition identify any alleged motivation to combine Shibata with Kondo to arrive at the specific language of claim 15, nor does the Petition articulate whether the asserted theory is one of obviousness or anticipation. Pet. 73–74. Compounding the ambiguity, the Petition does not address the *Graham* factors in presenting the Ground 4 challenge of claim 15, such as by identifying differences between the

claimed subject matter and a cited reference. *See Adaptics*, IPR2018-01596, Paper 20 at 20 (citing failure to address certain *Graham* factors as favoring denial for insufficient particularity for obviousness grounds) (designated informative). The repeated and thematic lack of particularity fails to meet Petitioner’s statutory burden and prejudices Patent Owner’s ability to efficiently respond.

**O. Ground 1, Claim 15**

The Petition fails to meet the statutory requirement to identify “with particularity . . . the grounds on which the challenge to [claim 15] is based.” 35 U.S.C. § 312(a)(3). The Petition repeatedly characterizes Ground 1 as challenging claim 15 based on Sugitani in view of Kubo under a theory of obviousness. Pet. 6, 39. When addressing claim 15, however, the Petition fails to articulate what alleged teaching of Kubo, if any, is relied upon in combination, nor does the petition identify any alleged motivation to combine Sugitani with Kubo to arrive at the specific language of claim 15, nor does the Petition articulate whether the asserted theory is one of obviousness or anticipation. Pet. 55. Compounding the ambiguity, the Petition does not even purport to address the *Graham* factors in presenting the Ground 1 challenge of claim 15, such as by identifying differences between the claimed subject matter and a cited reference. *See Adaptics*, IPR2018-01596, Paper 20 at 20 (citing failure to address certain *Graham* factors as favoring denial for insufficient particularity for obviousness grounds) (designated informative).

Patent Owner should not be required to guess at crucial particulars of Petitioner’s invalidity theory, nor should Patent Owner be expected to inefficiently

address all possibilities. The repeated and thematic lack of particularity fails to meet Petitioner's statutory burden and favors discretionary denial.

**P. The Petition fails to establish it is more likely than not that any challenged dependent claim is unpatentable.**

At least because Petitioner has failed to meet its burden to establish it is more likely than not that any challenged independent claim is unpatentable, Petitioner likewise has not met its threshold burden for institution with respect to any challenge dependent claim.

**IX. CONCLUSION**

For the foregoing reasons, Petitioner has failed to meet its threshold burden for institution of trial. As a threshold issue, Petitioner has repeatedly failed to meet the statutory requirement to identify “with particularity . . . the grounds on which the challenge to each claim is based.” 35 U.S.C. § 312(a)(3) (emphasis added); *see also Wasica Finance GmbH v. Continental Automotive Systems, Inc.*, 853 F.3d 1272, 1286-87 (Fed. Cir. 2017) (“It is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify with particularity the evidence that supports the grounds for the challenge to each claim.”) (quoting *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016), which quotes, in part, 35 U.S.C. § 312(a)(3)).

On the merits, while the burden rests with Petitioner, Patent Owner has nevertheless identified fatal deficiencies in the excessive and redundant challenges. As addressed herein, certain deficiencies arise, for example, from Petitioner (1) applying improper claim constructions, (2) overlooking explicit claim

requirements, (3) overlooking that its proposed combinations would require combining incompatible teachings, and (4) mischaracterizing the references in a manner that is plainly inconsistent with what they disclose.

Even if the Board were inclined to find the Petition demonstrates a reasonable likelihood of unpatentability as to at least one claim, institution of an IPR remains discretionary. *SAS Institute Inc. v. Iancu*, 138 S. Ct. 1348, 1355 (2018) (“§ 314(a) invests the Director with discretion on the question whether to institute review”). In view of the multiple circumstances weighing in favor of discretionary denial, including the *Fintiv* and *Becton* factors addressed herein, the repeated failure to satisfy the statutory requirement for particularity in the initial petition, the sheer volume of the excessive and redundant grounds, and the particularly weak merits of redundant challenges, the Petition should be denied.<sup>4</sup>

Date: January 19, 2023

Respectfully submitted,

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<sup>4</sup> Patent Owner does not concede, and specifically denies, that there is any legitimacy to any arguments in the Petition that are not specifically addressed herein.

**CERTIFICATE OF COMPLIANCE**

Pursuant to 37 C.F.R. § 42.24(d), I certify that this Preliminary Response to Petition complies with the type-volume limitation of 37 C.F.R. § 42.24(b)(1) because it contains fewer than the limit of 14,000 words, as determined by the word-processing program used to prepare the brief, excluding the parts of the brief exempted by 37 C.F.R. § 42.24(a)(1).

Date: January 19, 2023

By: / Brett Mangrum /  
Brett Mangrum (Reg. No. 64,783)  
*Counsel for Patent Owner*

**CERTIFICATE OF SERVICE**

Pursuant to 37 C.F.R. §§ 42.6(e), I certify that I caused to be served an electronic copy of the foregoing PATENT OWNER'S PRELIMINARY RESPONSE, along with any accompanying exhibits filed via the PTAB P-TACTS system, to Petitioner's counsel at the following addresses identified in the Petition's consent to electronic service:

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