UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.

Petitioner,

v.

INTELLECTUAL VENTURES II LLC

Patent Owner.

Case No. IPR2025-00339
U.S. Patent No. 7,916,180

BRIEF IN SUPPORT OF PATENT OWNER'S REQUEST FOR DISCRETIONARY DENIAL

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PATENT OWNER'S EXHIBIT LIST

Ex. 2001	Petitioner's Answer to Complaint and Counterclaim, dated June 20, 2024, in *Intellectual Ventures II LLC v. Tesla, Inc*., C.A. 1:24-cv-00884-ADA (W.D. Tex.)
Ex. 2002	Docket from District Court Litigation, *Intellectual Ventures II LLC v. Tesla, Inc*., C.A. 1:24-cv-00884-ADA (W.D. Tex.)
Ex. 2003	Scheduling Order from District Court Litigation, *Intellectual Ventures II LLC v. Tesla, Inc*., C.A. 1:24-cv-00884-ADA (W.D. Tex.)
Ex. 2004	Defendant's Second Supplemental Preliminary Invalidity Contentions, dated January 9, 2025, in District Court Litigation, *Intellectual Ventures II LLC v. Tesla, Inc*., C.A. 1:24-cv-00884-ADA (W.D. Tex.)
Ex. 2005	U.S. Patent No. 6,455,831 for "CMOS Foveal Image Sensor Chip"
Ex. 2006	U.S. Patent No. 8,068,140 (Avago)
Ex. 2007	U.S. Patent No. 7,804,536 for "Variable Pixel Clock Electronic Shutter Control"
Ex. 2008	Specifications for Cypress CMOS Image Sensor (2007)
Ex. 2009	EP 1 896 891 for "Adaptive Optical Plane With Rolling Shutter"
Ex. 2010	U.S. Patent No. 7,777,796 for "Solid-State Image Pickup Apparatus Including A Global Shutter Function And Control Method Therefor"
Ex. 2011	Cambridge Dictionary, definition of "during"
Ex. 2012	Uyttendaele, Matthew, Ashley Eden, and Richard Skeliski. "Eliminating ghosting and exposure artifacts in image mosaics." *Proceedings of the 2001 IEEE Computer Society Conference on Computer Vision and Pattern Recognition. CVPR 2001*. Vol. 2. IEEE, 2001.

I. INTRODUCTION

Pursuant to the Memorandum by the Acting Director dated March 26, 2025, setting forth "Interim Processes for PTAB Workload Management" (the Memorandum), Patent Owner hereby sets forth the applicable bases for discretionary denial of institution. This filing is being made within two months of the date on which the PTAB entered a Notice of Filing Date Accorded Petition, which occurred on January 30, 2025 (Paper #5), and is also timely under the Notice Extending Deadline for Discretionary Briefing (Paper #6). As explained more fully below, all of the *Fintiv* factors, as well as several additional factors set forth in the Memorandum, favor the discretionary denial of institution in this case.

With respect to the *Fintiv* factors, Petitioner filed a Counterclaim on June 20, 2024 challenging the validity of U.S. Patent No. 7,916,180 (" '180 Patent," Ex. 1001) in *Intellectual Ventures II LLC v. Tesla, Inc*., C.A. 6:24-cv-00188 (W.D. Tex.) (the "Parallel Litigation.") Ex. 2001, at 86. As discussed in detail below, the Parallel Litigation has already progressed significantly, including completion of Preliminary Infringement and Invalidity Contentions, and the filing of all claim construction briefing. The Court is scheduled to hold the Markman Hearing in a few days (on April 10, 2025). By the anticipated date of the institution decision in this matter (July 30, 2025), the parties will be well into fact discovery, service of Final Infringement and Invalidity Contentions will be complete, and the Court will in all likelihood have

issued its claim construction ruling. Ex. 2003, 2-3. The Trial is scheduled for May 14, 2026, about *2 months before the statutory deadline for issuing a Final Written Decision* in this matter on July 30, 2026. Ex. 2003, 4.[1]

With respect to other factors identified in the Memorandum, the strength of the unpatentability challenge is weak, and the Petition relies heavily on expert testimony that largely parrots *verbatim* the wording of the Petition. In addition, the claims of the '180 Patent have been in force for over 14 years.

For all of these reasons, and as explained more fully below, the Director should exercise her discretion to deny institution.

II. THE FINTIV FACTORS FAVOR DISCRETIONARY DENIAL

The precedential order in *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB March 20, 2020) ("*Fintiv*") identifies six factors for the Board to consider in deciding whether to exercise discretion to deny institution based on parallel proceedings involving the same patent. Application of the present facts to these factors demonstrates that there are strong reasons for exercising discretion to deny institution here.

[1] The Petition (at 95, note 5) incorrectly asserts that "[t]he district court has not entered an order scheduling a trial date." As shown on the last page of the Court's Scheduling Order, a jury trial is scheduled for May 14, 2026. Ex. 2003, 4.

A. Factor 1 Weighs Against Institution Because A Stay Has Not Been Granted In The Parallel Litigation And There Is No Evidence That A Stay Would Be Granted If This IPR Was Instituted

No stay has even been requested in the Parallel Litigation. Pet., 80. In addition, even if this IPR was instituted (which would not occur until on or around July 9, 2025) it is unlikely that the Court (Judge Albright) would grant a stay. *See, generally*, *Continental Intermodal Grp. v. Sand Revolution LLC*, No. 7:18-cv-00147 (W.D. Tex. July 22, 2020) (Judge Albright) *Multimedia Content Mgmt. LLC v. Dish Network*, No. 6:18-CV-00207-ADA, 2019 U.S. Dist. LEXIS (W.D. Tex. May 30, 2018) (Judge Albright) (denying stay).

Thus, the first factor weighs against institution.

B. Factor 2 Weighs Against Institution Because The Parallel Litigation Has A Trial Date Scheduled Before The Projected Statutory Deadline For The Board's Final Written Decision

The Trial in the Parallel Litigation is scheduled for May 14, 2026, over 2 months before the statutory deadline for issuing a Final Written Decision in this matter on July 30, 2026. Rather than looking at the actual date trial is scheduled, the Petition relies on the median time from filing to case disposition in the Western District of Texas. However, on February 28, 2025, the Office *rescinded* former Director Vidal's 2022 memorandum on discretionary denials which had directed that such statistics be considered. The announcement rescinding former Director Vidal's 2022 memorandum went on to state that decisions relying on the 2022 memo will

be "*neither binding or persuasive on the PTAB*." In view of the above, Petitioner's arguments based on the time to trial statistics cannot be considered persuasive and must be rejected.

Given that the actual trial date is *before* the due date for the Final Written Decision, the second factor favors discretionary denial.

C. Factor 3 weighs against institution because the parties will have invested significant effort in the Parallel Litigation by the time the Board's institution decision is due

Factor 3 relates to investment in the Parallel Litigation by the District Court and the parties. *Fintiv*, Paper 11 at 9. This factor is judged from the date of the institution decision, which is expected to be no later than July 30, 2025. *Id.* By the time the Board's institution decision is due, the following will have been completed in the Parallel Litigation:

- PO's Preliminary Infringement Contentions (served August 1, 2024);
- Petitioner's Preliminary Invalidity Contentions (served October 24, 2024);
- Parties exchanged claim terms for construction (November 14, 2024);
- Parties exchanged proposed claim constructions (December 5, 2024);
- Parties disclosed extrinsic evidence for claim construction (December 12, 2024);
- Petitioner's Opening Claim Construction Brief (January 9, 2025);
- PO's Responsive Claim Construction Brief (February 10, 2025);

- Petitioner's Reply Claim Construction Brief (March 3, 2025);
- PO's Sur-Reply Claim Construction Brief (March 24, 2025);
- Parties technical tutorials submitted to Court (March 31, 2025);
- Markman Hearing (scheduled for April 10, 2025);
- Fact discovery (opens April 11, 2025); and
- Final Infringement and Invalidity Contentions (due May 22, 2025).

Ex. 2003, 1-2. Clearly, the parties and the Court will have made a substantial investment in the Parallel Litigation by the expected date of the institution decision on July 9, 2025.

The Petition was filed on December 30, 2024. At that time, Petitioner asserted that "[t]he investment in the co-pending litigation has been minimal." Pet., at 96. Patent Owner disagrees that the investment in the co-pending litigation was minimal as of December 30, 2024. However, even if Petitioner's assertion about the state of affairs on December 20, 2024 was accurate, it is irrelevant. As explained in *Fintiv*, the investment in the Parallel Litigation by the District Court and the parties is judged from *the date of the anticipated institution decision*, which is expected to be about *July 30, 2025* -- rather than *December 30, 2024*. *Fintiv*, Paper 11 at 9. There can be no argument that by July 30, 2025 the District Court and the parties will have made a substantial investment in the Parallel Litigation.

Thus, the third factor weighs against institution.

D. Factor 4 weighs against institution because there is substantial overlap between the Parallel Litigation and this IPR

As mentioned above Petitioner filed a Counterclaim in the Parallel Litigation challenging the validity of '180 Patent *as a whole*. Ex. 2001, at 86. The Counterclaim is not limited to an particular claim(s) of the '180 Patent, and therefore cover all claims of the '180 Patent -- including the claims challenged in this IPR.

On January 9, 2025 -- a few days after filing this IPR -- Petitioner filed its Second Supplemental Preliminary Invalidity Contentions in the District Court. As explained below, there is almost complete overlap between the prior art references advanced by the Petitioner in this IPR and those advanced by the Petitioner in the Parallel Litigation. Set forth below is a summary of the grounds raised in the Petition, and the prior art asserted in each ground:

Ground	Claim	Pre-AIA § 103 Basis
#1	1-3, 10-12, 22, 24-25, 28, 30, 32-33	Matsushima and Yu
#2	28, 30	Matsushima, Yu, and Weldy
#3	22-23, 28, 30, 33	Choi, Labaziewicz, and Yu

Pet., 10. With the exception of a secondary reference (Weldy) applied in Ground 2, there is complete overlap between the references advanced by the Petitioner in this IPR and those advanced by the Petitioner in the Parallel Litigation. Set forth below is an excerpt from Petitioner's Second Supplemental Preliminary Invalidity

Contentions in the Parallel Litigation showing the prior art relied on there by Petitioner:

1. Prior Art Patents and Patent Publications

Ex. No.	Patent/ Publication	Referenced As	Publication / Priority Date
D1	JP Pub. No. 2003-319231	Matsushima	November 3, 2003
D4	U.S. Pat. App. Pub. No. 2005/0,128,323	Choi	June 16, 2005
D5	U.S. Pat. No. 7,206,136	Labaziewicz	February 18, 2005
D6	U.S. Pat. No. 6,611,289	Yu	August 26, 2003

Ex. 2004, 14-15; *see also*, 91-104.

Thus, in both this IPR Petitioner and the Parallel Litigation, Petitioner's invalidity challenges are based on Matsushima (Ex. 1007), Yu (Ex. 1005), Choi (Ex. 1008) and Labaziewicz (Ex. 1010). The only difference between the art relied on in the two proceedings involves which secondary reference is used to challenge dependent claims 28 and 30. While in this proceeding Petitioner relies on Weldy (Ex. 1014) for the "third FOV" and the "fourth FOV" recited in dependent claims 28 and 30, in the District Court Petitioner relies on another reference asserted in this IPR, namely Labaziewicz (Ex. 1010). See, Ex. 2004, at 91 (chart designating Labaziewicz as "The Third and Fourth FOV References") and at 101-102.

At the time the Petition was filed on December 30, 2024, Petitioner argued that "[t]he extent of overlap is ... speculative at this point in time." Pet., at 97. Just 10 days later on January 9, 2025, Petitioner filed its Second Supplemental

Preliminary Invalidity Contentions in the Parallel Litigation setting forth in detail Petitioner's invalidity contentions for the '180 Patent in the Parallel Litigation, which rely on essentially the same references as asserted in this IPR. At this point in time, the Board the high degree of overlap between the proceedings is far from "speculative."

Because there will be significant overlap between this IPR and the Parallel Litigation, there are particularly strong "concerns of inefficiency and the possibility of conflicting decision" if this IPR is instituted. *Fintiv*, Paper 11 at 12.

Thus, the fourth factor weighs against institution.

E. Factor 5 weighs against institution because the patent owner is the same and the Petitioner are the same parties as in the Parallel Litigation

Patent Owner and Petitioner are the same parties as in the Parallel Litigation.

Thus, the fifth factor weighs against institution.

F. Factor 6 weighs against institution because the merits of Petitioner's challenge is weak

As explained in Section IV, *infra*, the challenges set forth in the Petition are seriously flawed. In addition, the Petition takes a spaghetti-on-the-wall approach to several of the claim limitations, in one case citing to almost a dozen aspects of the relied on references in a deficient attempt to map one of the claim elements to the prior art. *See*, Section IV(F), *infra*. Institution would require the Board and Patent Owner to spend time and resources addressing these statutorily deficient arguments.

Invue Sec. Prods., Inc., v. Mobile Tech., Inc., IPR2019-00078, Paper 7 at 18 (PTAB May 1, 2019)) ("[F]ollowing the all-or-nothing institution approach [of *SAS*], we would be required to institute on all challenges in the petition, not merely those that did not lack particularity or were not voluminous and excessive"). It would be inefficient for the Board to wade through Petitioner's numerous weak arguments even if there were one with merit (and there is not). *See, e.g., EnergySource Minerals, LLC v. TerraLithium LLC,* IPR2019-01605, Paper 7 at 31 (PTAB April 6, 2020) ("On this record, instituting a trial with respect to the voluminous number of asserted grounds on all claims based on evidence and arguments directed to one challenged claim and six grounds is not an efficient use of the Board's time and resources.").

Thus, the sixth factor weighs against institution.

In summary, all of the *Fintiv* factors weigh against institution of the IPR, and one of the factors is neutral. Under §314(a) and, based on the totality of the *Fintiv* factors, institution should be denied.

III. ADDITIONAL FACTORS SET FORTH IN THE MEMORANDUM SUPPORT DISCRETIONARY DENIAL

A. The Petition Relies Extensively on Expert Testimony

A relevant consideration identified in the Memorandum was "[t]he extent of the petition's reliance on expert testimony." Memorandum, at 1. Here, the Petition

extensively relies on a 124-page expert declaration that largely parrots *verbatim* the wording of the Petition. Ex. 1003. For example, the following paragraphs of the expert declaration essentially parrot the Petition word-for-word: Ex. 1003, ¶¶56, 59-66, 68-76, 81-119 and 122-248.[2] For that reason, the declaration of relied on by the Petition is entitled to little if any weight. *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9 at 15-17 (PTAB August 24, 2022) (designated precedential) (according "little weight" to declaration testimony that contains a verbatim restatement of a petition's conclusory assertions without additional supporting evidence or reasoning). The Petition's extensive reliance on expert testimony that is a mostly a verbatim restatement of the Petition is a further factor that favors discretionary denial. *See also*, *Facebook* v. *Windy City Innovations, LLC*, 973 F.3d 1321, 1340-41 (Fed. Cir. 2020) (affirming the Board's holding that claim was not unpatentable when "the Board considered Facebook's expert's testimony but determined that it did not add materially to Petitioner's unpersuasive attorney argument," because it merely repeated Petitioner's argument, nearly verbatim, without citation to the basis for his testimony.")

[2] The portions of the expert declaration that do not parrot the Petition include information such as the expert's background, the materials he considered, and boilerplate describing application legal standards. Ex. 1003, ¶¶1-16 and 20-23.

B. The ‘180 Patent Has Been In Force Since 2011

A further relevant consideration identified in the Memorandum was “[s]ettled expectations of the parties, such as the length of time the claims have been in force.” Memorandum, at 1. In this case, the claims of the ‘180 Patent have been in force for over 14 years. The length of time that the claims have been in force is a further factor that favors discretionary denial.

IV. THE MERITS OF THE PETITION ARE WEAK

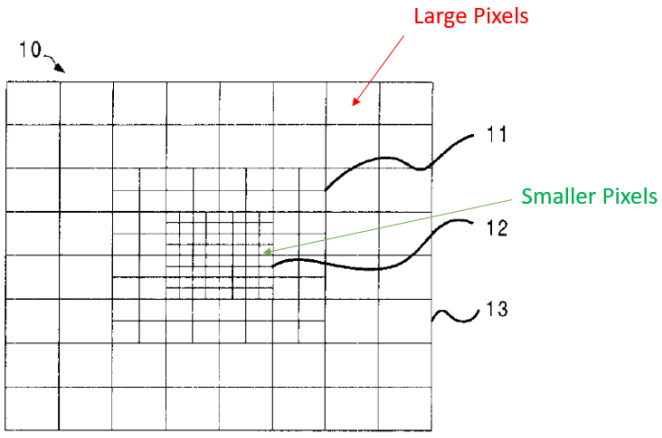
As explained in *Fintiv*, the Board considers a balanced assessment of all the relevant circumstances in the case, including the merits when exercising its discretion under 35 U.S.C. § 314(a). The Board has found that “if the merits of a ground raised in the petition seem particularly strong on the preliminary record, this fact has favored institution.” Conversely, *Fintiv* instructs that “if the merits of the grounds raised in the petition are a closer call, then that fact has favored denying institution when other factors favoring denial are present.” Importantly, the Board cautioned that a full merits analysis is not necessary to evaluate this factor. As discussed below, however, the Petitioner’s arguments are neither particularly strong nor persuasive, and therefore do not weigh in favor of institution.

For example, the Petition challenges independent claims 1 and 22 of the ‘180 Patent in Ground 1, and independent claim 22 in Ground 2. As described below, all of the challenges to the independent claims are seriously flawed. Moreover, the

challenges to the dependent claims fails because they are all predicated on the flawed challenges to the independent claims.

A. Background of the ‘180 Patent

The Background of the ‘180 Patent discussed several challenges associated with implementing a “zoom” feature in digital cameras. Ex. 1001, 1:46-55. Digital cameras provided a feature which the ‘180 Patent described as “electronic zoom,” which resulted in a pronounced loss of resolution. *Id*., 1:56-66. Another known alternative discussed in the ‘180 Patent was a foveal image sensor. In a foveal imaging sensor, “the pixels in the central fovea area have a smaller size than the pixels arranged ... about the central region.” Ex. 2005, at 1 (Abstract). An exemplary foveal imaging sensor is illustrated below:



Ex. 2005, at 2 (Figure 1.) In a foveal image sensor, the small pixels in the center (or fovea) provide a higher resolution in the relatively narrow field of view of the fovea, and pixels around the fovea provide a lower resolution in the area surrounding the

fovea. The '180 Patent *disparaged* foveal image sensors as deficient, because they had *high resolution only in the narrow field of view* associated with the fovea. Ex. 1001, 2:10-16. In contrast to foveal image sensors that achieved *high resolution only in the narrow field of view* of the fovea, the '180 Patent identified the need for a camera that *simultaneously* acquired *high resolution images* associated with *multiple fields of view*. *Id*., 2:21-24.

B. Overview of the '180 Patent

In contrast to the foveal imaging systems (described in the Background) that achieved *high resolution only in the narrow field of view* of the fovea, the '180 Patent was directed a system in which *multiple high resolution images with different fields of view are acquired simultaneously*. *Id*., 3:21-36.

Figure 3 (reproduced below with annotations) illustrates "a digital camera 200 configured for simultaneous acquisition of multiple fields of view." *Id*., 5:45-46. The digital camera subsystem includes four camera channels 260A-260D (red boxes). *Id*., 5:56-58. As shown in Figure 4 (also reproduced below with annotations), each of the independently controlled camera channels 260A-260D includes an optics component 290A-290D (orange circles), respectively, and a sensor component 292A-292D (green boxes), respectively. *Id*., 6:19-22.

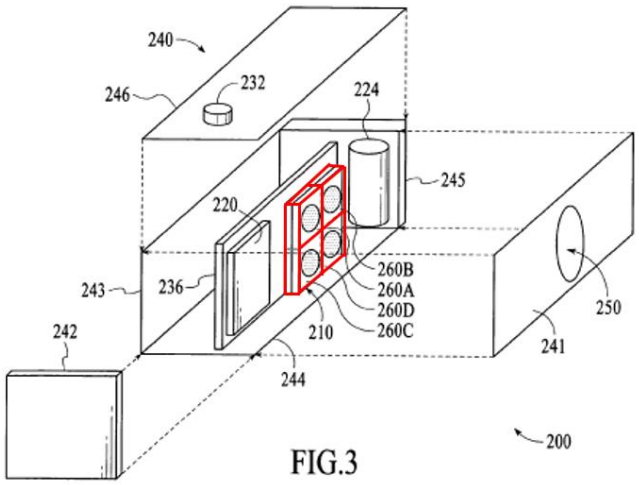
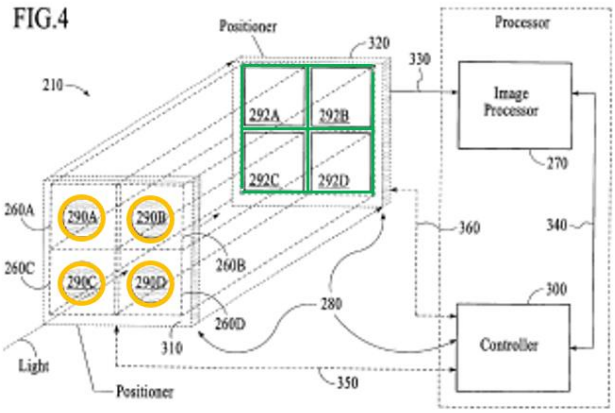


FIG.3



The system disclosed in the '180 Patent further includes an "image processor ... configured to generate a combined image or data based at least in part on the images from the first and second camera channels (and additional camera channels when present)." *Id*., 9:3-5; *see also*, 9:53-57.

The '180 Patent described the "electrical operation of each camera channel" as being "independent of the other camera channels" (*id*., 3:49-54), and identified two electrical parameters to be independently controlled "for each camera channel," namely, "imager *frame rate* and *integration time*." *Id*., 3:58-60 (emphasis added). Later in the specification, the '180 Patent reiterated multiple time its disclosure of independent control of *frame rate* and *integration time* for each channel or field of view. *Id*., 4:9-15, 5:63-66 and 7:23-27.

The '180 Patent explained that the integration time control for each sensor can accomplished using a technique that was known as *rolling mode*. *Id*., 20:48-50.

Operation of an image sensor in a "rolling mode" involves control *during a frame* of the start and stop times of the integration period for individual rows of pixels in the sensor. See, e.g., Ex. 2006, Figure 4, 5:64-6:5; Ex. 2007, Figure 2A, 1:37-45. In embodiments of the '180 Patent that use the rolling mode, integration control *during the frame* can occur *independently* for the sensor in *each camera channel / field of view*. Ex. 1001, 4:9-15, 5:63-66, 7:23-27 and 20:48-50. Such embodiments are the subject of claim 22 of the '180 Patent, which recites "independently controlling simultaneous data acquisition with each of the first and second channels *during a frame*." Ex. 1001, 25:31-33 (emphasis added).[3]

[3] It bears noting that the '180 Patent discloses other embodiments (which are *not* the subject of claim 22) in which independent control of the simultaneous data acquisition of each of the channels does *not* occur *during the frame*. For example, in connection with Figure 4, the '180 Patent discloses the use of "positioners 310 and 320" to "position each of the one or more optics portions (e.g., optics portions 290A-290D) of a camera channel" relative to one of "respective sensor portions 292A-292D." *Id*., 8:16-38. Here, control of the position of the optics portions (i.e., moving each optics portion into its proper position) would necessarily need to occur *before the frame* during which data was acquired with the channels.

In another example where the simultaneous data acquisition of each of the channels does *not* occur *during the frame*, the '180 Patent discloses that the image sensors can be operated in a "snap-shot" mode (also referred to as a "global shutter.") *Id*., 20:51 and Ex. 2008, at 1 (Specifications for Cypress CMOS Image Sensor)(referring to a "snapshot (or global) shutter). When a snapshot (or global) shutter is used, there is a *common exposure period* for each of the plurality of rows of pixels which "begins at a common exposure start time ... and ends at a common exposure stop time." Ex. 2010, 19:4-18. In contrast to an image sensor operating in the rolling shutter mode where the *start and stop times* of the integration interval of individual rows of pixels are *controlled during the frame* -- in the snapshot (or global) shutter mode, common control signals are applied only at the *confines* of the

C. Challenged Claims Of The '180 Patent

Independent claim 1 recites:

> 1. A digital camera comprising:
>
> a plurality of channels, wherein each channel includes an optics component and an array of photo-detectors integrated on a semiconductor substrate, the plurality of channels including *a first channel having a first field of view (FOV) comprising a first angular width* of a scene imaged by the camera and *a second channel having a second FOV comprising a second angular width* of the scene imaged by the camera, wherein the first and second angular widths are different; and
>
> a processing component coupled to the plurality of channels, the processing component configured to independently control *simultaneous data acquisition with each of the plurality of channels*, the processing component configured *to combine data of a frame* from at least one of the plurality of channels *to provide an image having a relatively high resolution*.

Claim 1 recites independently controlling simultaneous data acquisition with first and second optical channels, each of which has a field of view with a different angular width. Claim 1 also covers *combining* data acquired *from the first and second channels*[4] "to provide *an image having a relatively high resolution*."

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frame exposure rather than during the frame, i.e., rather than at some point *between the beginning and the end* of the exposure interval during which an image sensor captures an image.

[4] The limitation in claim 1 that requires *combining* data of a frame from "*at least one* of the plurality of channels" clearly covers combining data of a frame from *the first and second channels* to provide an image having a relatively high resolution. In this regard, it bears noting that the Petition asserts that this limitation from claim 1 is met by *combining images 62A and 62B* in Matsushima. Petition, 57. To the extent there was a question whether this limitation from claim 1 could be met by combining data

Independent claim 22 recites:

> 22. A method comprising:
> configuring a first optics component relative to a first image sensor to form a first channel having a first field of view (FOV) that comprises a first angular width of a scene;
> configuring a second optics component relative to a second image sensor to form a second channel having a second FOV that comprises a second angular width of the scene, wherein the first and second angular widths are different;
> *independently controlling simultaneous data acquisition with each of the first and second channels during a frame*; and
> combining data received during the frame from one or more of the first and second channels to provide an image.

Claim 22 recites independently controlling simultaneous data acquisition with first and second optical channels *during a frame*, where each channel has a field of view with a different angular width.

D. Claim Construction

The claim limitations at issue must be construed under *Phillips v. AWH Corp*., 415 F.3d 1303 (Fed. Cir. 2005).

1. "combine data of a frame ... to provide an image having a relatively high resolution" (claim 1)

In claim 1, the "image having a relatively high resolution" formed by "combin[ing] data of a frame" corresponds to an image formed from *multiple high*

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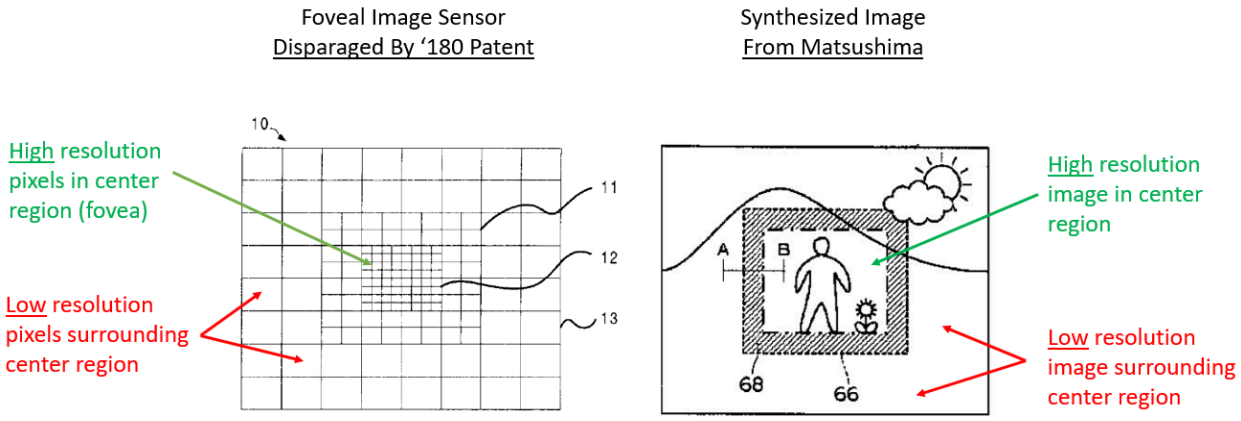
from only one (rather than both) of the recited first and second channels (no such question was raised by the Petition), there would no need for the Board to resolve that question given that the Petition maps the subject limitation to the combination of images 62A and 62B from Matsushima's "first and second channels."

resolution images with *different fields of view* acquired *simultaneously*. Petitioner chose not to propose a formal construction of "combin[ing] data of a frame ... to provide an image having a relatively high resolution" as recited in claim 1. However, in its mappings to Matsushima,[5] Petitioner argues that this limitation is met by combining a *single high resolution image* from one field of view with a *low resolution image* from another field of view. Petitioner's implicit construction of this limitation must be rejected, as the intrinsic evidence demonstrates that an "image having a relatively high resolution" formed by "combin[ing] data of a frame" (as recited in claim 1) must be an image formed by combining *multiple high resolution images* with different fields of view acquired simultaneously.

Petitioner's implicit construction corresponds to the output of the prior art foveal image sensor disparaged in the specification of the '180 Patent. As explained above, the specification disparaged the prior art foveal image sensor (below left) because it resulted in an image having a *high resolution only in the narrow field of view* corresponding to the center of the image. Ex. 1001, 2:10-16. Just like the image produced by the foveal image sensor, Matsushima's synthesized image (right side)

[5] As noted above, the limitation in claim 1 that requires *combining* data of a frame from "*at least one* of the plurality of channels" clearly covers combining data of a frame from *the first and second channels* to provide *an image having a relatively high resolution*, and that the Petition asserts that this limitation from claim 1 is met by *combining images 62A and 62B* in Matsushima. *See*, note 3, *supra*.

corresponds to an image having a *high resolution only in the narrow field of view* corresponding to the center of the image.



In connection with addressing the shortcomings of foveal image sensors that achieved *high resolution only in the narrow field of view* of the fovea, the Background of the '180 Patent identified the need for a camera that *simultaneously* acquired *high resolution images* associated with *multiple fields of view*. Ex. 1001, 2:21-24. The Detailed Description that followed then described a "digital camera system" that uses separate channels to capture "*multiple high resolution images in which different fields of view are acquired simultaneously*," together with an "image processor ... configured to *generate a combined image or data based at least in part on the images from the first and second camera channels* (and additional camera channels when present)." *Id.*, 3:21-36 and 9:3-5 (emphasis added).

The law is clear and well-settled that claims should not be read so broadly as to encompass prior art distinguished in the specification. *SciMed Life Sys. v.*

Advanced Cardiovascular Sys., 242 F.3d 1337 (Fed. Cir. 2001), citing, *Tronzo v. Biomet, Inc.*, 156 F.3d 1154, 1159 (Fed. Cir. 1998) (specification distinguished prior art as inferior and touted advantages of a conical shaped cup for use in an artificial hip device; "such statements make clear that the '589 patent discloses only conical shaped cups and nothing further"); *Ekchian v. Home Depot, Inc.*, 104 F.3d 1299, 1304 (Fed. Cir. 1997) ("Since, by distinguishing the claimed invention over the prior art, an applicant is indicating what the claims do not cover, he is by implication surrendering such protection.") Even where the language of the claims, read without reference to the specification, might be considered broad enough to encompass a feature, that feature is deemed to be outside the reach of the claims where the specification makes clear that the invention does not include the particular feature. *Chi. Bd. Options Exch., Inc. v. Int'l Sec. Exch., LLC*, 677 F.3d 1361 (Fed. Cir. 2012).

Similarly, in the present case, the claims must be read in light of the specification, which disparaged images having *high resolution only in a narrow field of view* surrounded by low resolution data, in favor of a system that uses separate channels to simultaneously capture *multiple high resolution images in different fields of view* and then generates a *combined image* with a *relatively high resolution* based on the images from the separate channels. Ex. 1001, 3:21-36 and 9:3-5.

As noted above, in its mappings to Matsushima, Petitioner implicitly argues that "combin[ing] data of a frame ... to provide an image having a relatively high

resolution" (as recited in independent claim 1) is met by combining a *single high resolution image* from one field of view with a *low resolution image* from another field of view. Petitioner's implicit construction must be rejected, as it is divorced from the specification which demonstrates that an "image having a relatively high resolution" formed by "combin[ing] data of a frame" (as recited in claim 1) must be an image formed from *multiple high resolution images* with different fields of view acquired simultaneously.

2. "independently controlling ... data acquisition ... *during a frame*" (claim 22)

Claim 22 recites "independently controlling ... data acquisition ... *during a frame*." In this context, a "*frame*" is digital data corresponding to a *single image*. *See*, e.g., Ex. 1001, 20:19-21 (referring to "one frame of digital camera data.") The phrase "*during a frame*" corresponds to *the exposure interval during which an image sensor captures a single image*." *See*, e.g., Ex. 2009, 11:49-51 ("A single frame period is the continuous exposure time over which any of the entire array of pixels ... is exposed.")[6] Consistent with Patent Owner's proposed construction, the '180 Patent repeatedly speaks of controlling the "*frame rate*," which is typically expressed as *the number of single images* captured by the sensor *per second*. Ex.

[6] See also, Ex. 2006, 6:5-19 (describing the "*frame exposure period*" in a rolling mode shutter as extending from the start of the exposure interval of the first row (or scanline) to the stop time of the exposure interval for the last row or scanline.)

1001, 4:57-60 ("imager frame rate"); 4:9-15 ("independent frame rate), 5:63-66 ("frame rate"); and 7:23-27 ("frame rate.")

Petitioner appears to agree with Patent Owner's interpretation equating "during a frame" to *the exposure interval during which an image sensor captures a single image*." For example, the Petition states that "[a] POSITA would have understood that "during a frame*"* refers to during *a period of time that data for an image frame is acquired*." Pet., 7-8 (emphasis added). However, in its proposed construction of "during a frame," the Petition *omits* the connection to the period of time *that data for an image is acquired*. Instead, the Petition proposes to construe "during a frame" as simply "during a period of time" (namely, *any* period of time) -- which effectively reads the limitation out of the claim. Pet., 6. Petitioner needed to take this tact because none of the references relied on in the Petition show application of the required independent control occurring *during the period of time that data is acquired by an image sensor*. *See*, Section IV(F)(2), *infra*.

When used as a preposition as in the case of claim 22, the term "during" imparts a temporal requirement[7] and means "at some time between the beginning

[7] Unlike independent claim 22 which recites "independently controlling simultaneous data acquisition with each of the first and second channels *during a frame*," independent claim 1 has no corresponding temporal requirement. More specifically, claim 1 does not recite the temporal requirement that the independent control occur "during a frame." Ex. 1001, 24:12-15. Under the doctrine of claim

and the end of a period." Cambridge Dictionary, Ex. 2011, 1. Thus, "during a frame" as used in claim 22 means "at some point between the beginning and the end of the exposure interval during which an image sensor captures a single image."

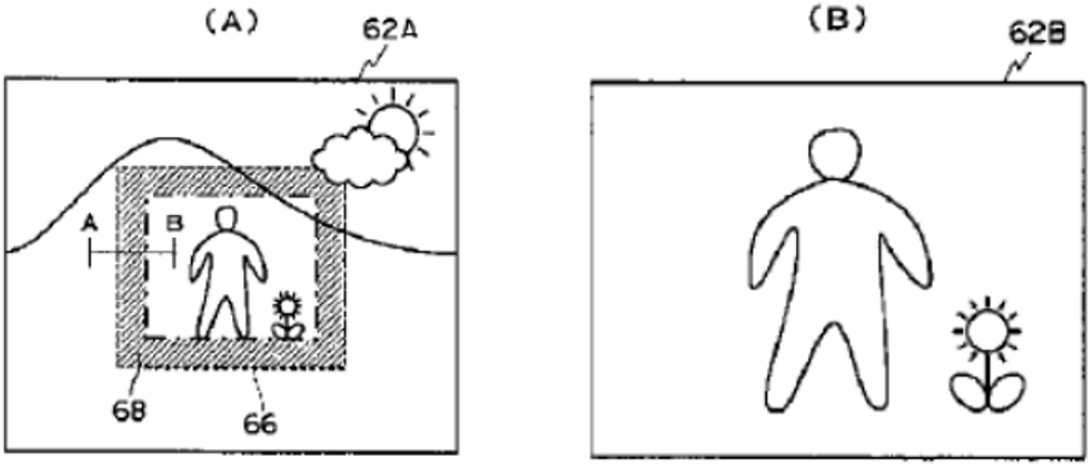
E. GROUND 1 FAILS TO RENDER CLAIMS 1, 2-3 AND 10-12 UNPATENTABLE BECAUSE MATSUSHIMA-YU FAILS TO COMBINE MULTIPLE HIGH RESOLUTION IMAGES WITH DIFFERENT FIELDS OF VIEW

Ground 1 challenges independent claim 1 as obvious over Matsushima and Yu ("Matsushima-Yu"). However, with respect to limitation in claim 1 reciting "the processing component configured to combine data of frame ... to provide an image having a relatively high resolution," Ground 1 relies solely on Matsushima. Pet., 57-59. Matsushima fails to meet this limitation because the reference fails to combine data from *multiple high resolution images* with different fields of view acquired simultaneously. Rather, just like the images from the foveal sensor disparaged in the Background of the '180 Patent, Matsushima's synthesized images have a *high resolution only in a single narrow field of view* surrounded by low resolution data. Ex. 1001, 3:21-36 and 9:3-5.

differentiation, this distinction between independent claims 1 and 22 highlights the importance of imparting meaning to the phrase "during a frame" in claim 22.

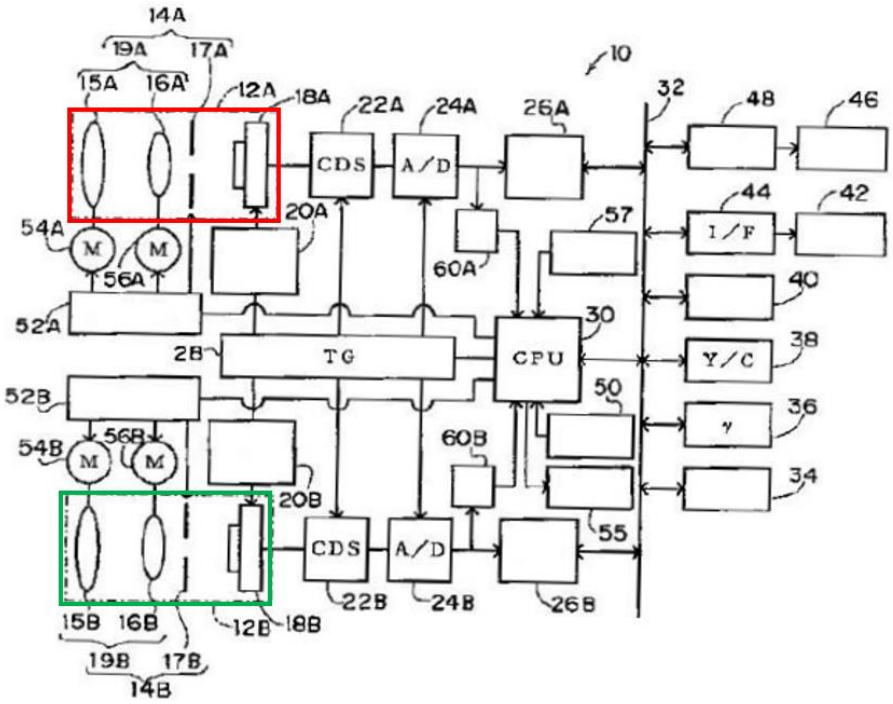
1. Overview of Matsushima

Matsushima discloses "a digital camera having a wide-angle first imaging system and a telephoto second imaging system." Ex. 1007, 1. The first imaging system captures a first image 62A (left side) with a wide angle lens, and the second imaging system captures a second image 62B (right side) using a telephoto lens with a longer focal length than the lens used in the first imaging system. *Id.*, 1, 3.



Id., 1. Image 62B (captured by the second imaging system using the telephoto lens) is then "scaled down to the same magnification" as "captured image 62A taken using the first imaging system" and "synthesized with the captured image 62A taken using the first imaging system." *Id.*, 1 and [0011].

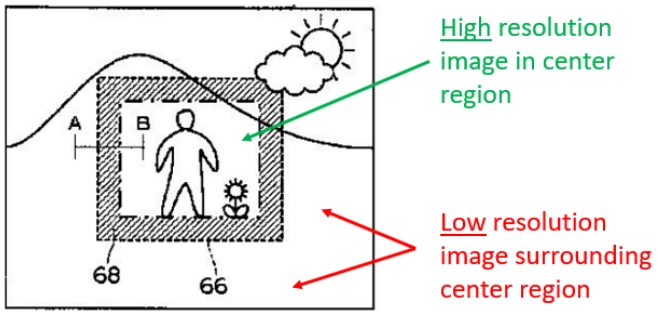
Figure 1 of Matsushita (reproduced below) discloses a first imaging system 12A (red box) and a second imaging system 12B (green box).



First imaging system 12A (red box) includes "[i]maging optics 14A" which "are composed of a first lens group 19A with an imaging lens 15A and a focus lens 16A, and an aperture 17A." *Id.*, [0019]. Similarly, the second imaging system 12B (green box) includes "imaging optics 14B" which "are composed of a second lens group 19B with an imaging lens 15B and a focus lens 16B, and an aperture 17B." *Id.* "Lens group 19A is a wide-angle single focal length lens whose shooting angle α is wider than the shooting angle β of lens group 19B." *Id.*, [0020]. The first imaging system 12A includes CCD 18A, and the second imaging system includes CCD 18B. *Id.*, [0021].

2. Matsushima Fails To Combine Multiple High Resolution Images With Different Fields Of View

The limitation in claim 1 reciting an "image having a relatively high resolution" formed by "combin[ing] data of a frame" (as recited in claim 1) is an image formed from *multiple high resolution images* with different fields of view acquired simultaneously. *See*, Section II(F)(5)(a), *supra*. The Petition (at 57) asserts that this limitation from claim 1 is met by *combining images 62A and 62B* in Matsushima. Pet., 57. However, *only one* of the images (i.e., image 62A) used to form the synthesized image in Matsushima corresponds to a *high* resolution image. The other image (i.e., image 62B) corresponds to a *low* resolution image. As shown in the annotated version of Figure 4 of Matsushima below, Matsushima's synthesized image includes a high resolution image only in the narrow field of view in the center of the image, while the surrounding areas correspond to a low resolution image.



Just like the image produced by the foveal image sensor and disparaged in the '180 Patent, Matsushima's synthesized image corresponds to an image having a *high resolution only in the narrow field of view* corresponding to the center of the image. Thus, Matsushima fails to disclose an "image having a relatively high resolution" formed by combining data from *multiple high resolution images* with different fields of view acquired simultaneously, as required by claim 1. Since the Petitioner has failed to demonstrate that Matsushima-Yu expressly or inherently discloses all of the limitations of claim 1, Ground 1 of the Petition has failed to demonstrate a reasonable likelihood of success with respect to claim 1.

The mappings for dependent claims 2-3 and 10-12 in Ground 1 rely on the same flawed mapping of independent claim 1 discussed above. Thus, Ground 1 has similarly failed to demonstrate a reasonable likelihood of success with respect to dependent claims 2-3 and 10-12.

F. GROUND 1 FAILS TO RENDER CLAIMS 22-25, 28, 30 AND 32 UNPATENTABLE BECAUSE MATSUSHIMA AND YU FAIL TO DISCLOSE INDEPENDENTLY CONTROLLING THE ACQUISITION OF DATA WITH DIFFERENT CHANNELS *DURING A FRAME*

Claim 22 recites "*independently* controlling simultaneous data acquisition with each of the first and second channels *during a frame*." This claim limitation requires the combination of: (i) *independent control* of simultaneous data acquisition with the first and second channels, and (ii) that such independent control take place

during a frame. Both aspects must be present for the limitation to be satisfied. The Petition identifies a laundry list of aspects of Matsushima and/or Yu as purporting to meet this limitation; however, not one of these aspects maps to "*independently* controlling simultaneous data acquisition with each of the first and second channels *during a frame*."

As explained in Section IV(D)(2), *supra*, the limitation in claim 22 requiring application of independent control "*during a frame*" requires independently controlling data acquisition *at some point between the beginning and the end of the exposure interval during which an image sensor captures a single image*. As explained above, operation of an image sensor in a "rolling mode" (illustrated again below) as disclosed in the '180 Patent is an example of controlling data acquisition ... *during a frame*. Ex. 1001, 20:48-50.

In Ground 1, Petitioner's mapping of the limitation in claim 22 reciting "independently controlling simultaneous data acquisition ... *during a frame*" appears to skip over the temporal aspect of this control requirement, namely that it occur "during a frame." There is no evidence that any of the control applied by Matsushima or Yu occurs "*during* a frame" -- as opposed, e.g., *before* the frame. Set forth below is analysis of each of the disclosures from Matsushima and Yu relied on in the Petition for the limitation in question.

1. Control Of Matsushima's Lenses And Apertures Does Not Occur "During A Frame"

The Petition maps each of (i) calculations performed by Matsushima's CPU that control "the driving circuits 52A and 52B of the imaging lenses 15A and 15B, the focus lenses 16A and 16B, and the apertures 17A and 17B" and (ii) the operation of Matsushima's automatic focus (AF) function, to the limitation requiring application of independent control "during a frame." Pet., 21 and 26. However, there is no evidence that any of this control occurs "during a frame," i.e., at a point *between the beginning and the end of the exposure interval* during which the image sensor captures an image. On the contrary, a POSITA would have expected any adjustments to Matsushima's lens (e.g., autofocusing) and apertures to occur *before* the exposure interval during which the image sensor captures a single image.

2. Matsushima's Timing Signals Do Not Control Data Acquisition "During A Frame"

The Petition also maps Matsushima's "timing signals" to the limitation requiring application of independent control "during a frame." Pet., 24, referring to Ex. 1007, [0027]. This aspect of Matsushima fails to disclose independent control of *data acquisition* "*during a frame*." First, Matsushima discloses that these timing signals are used to control the timing of the *retrieval* of information from the CCDs, rather than the *acquisition of data* by each CCD. See Ex. 1007, [0023]. Second, the Petition provides no evidence that these timing signals apply control "during a

frame," i.e., at a point *between the beginning and the end of the exposure interval* during which the image sensor captures an image. On the contrary, a POSITA would have understood that Matsushima's timing signals for retrieving data from the CCDs to occur after the exposure interval during which the image sensor captures a single image.

3. Pressing Matsushima's "Release Button" Does Not Independently Control Data Acquisition With First And Second Channels "During A Frame"

The Petition also maps the pressing of Matsushima's "release button" to the limitation requiring application of independent control "during a frame." Pet., 24-25. Pressing of the release button in Matsushima does not equate to the application of *independently controlling* data acquisition with *each of the first and second channels* "*during a frame*." First, there is no evidence that depression of the release button *independently* controls the first and second channels. Rather, to the extent actuation of the release button corresponds to application of "control," the release button corresponds to *common* control -- rather than *independent* control -- with respect to the first and second channels. Second, actuation of the release button does not occur "during a frame," i.e., at a point *between the beginning and the end of the exposure interval* during which the image sensor captures a single image. On the contrary, a POSITA would have understood that actuation of the release button

would necessarily need to occur *before* the exposure interval during which the image sensor captures an image.

4. Matsushima's Correlated Double Sampling Circuit, A/D Converters And Integration Circuits Do Not Independently Control Data Acquisition With First And Second Channels "During A Frame"

The Petition also maps Matsushima's "correlated double sampling circuits 22A and 22B, and analog-to-digital (A/D) converters 24A and 24B" and "integration circuits 60A and 60B" to the limitation requiring application of independent control of data acquisition with each channel "during a frame." Pet., 25 and 28. This mapping fails because the correlated double sampling circuits 22A and 22B, analog-to-digital (A/D) converters 24A and 24B, and integration circuits 60A and 60B are *downstream* of the CCDs 18A and 18B that acquire the images. The Petition provides no evidence that the correlated double sampling circuits 22A and 22B, analog-to-digital (A/D) converters 24A and 24B, and integration circuits apply control "during a frame," i.e., at a point *between the beginning and the end of the exposure interval* during which the image sensor captures an image.

5. Matsushima Fails To Teach Independent Control Of Integration Time Or Exposure Time For Its Imaging Systems "During A Frame"

Petitioner has failed to demonstrate that Matsushima discloses, either expressly or inherently, the claim limitation of "independently controlling" the integration time or exposure time for the "simultaneous data acquisition with each

of the first and second channels ... during a frame." as recited in claim 22. The plain language of Matsushima describes a unified exposure control system that applies a single subject luminance value to derive a common aperture and shutter speed, which in turn results in a shared integration time for both CCD sensors. Petitioner's expert attempts to manufacture independent exposure control by mischaracterizing the reference, relying on language that simply does not appear in the cited portions of Matsushima. These expert assertions are directly contradicted by the text of Matsushima.

Further, Petitioner's interpretation is at odds with the teachings of the prior art, which recognized the difficulty of blending images with different exposures without producing unnatural seams—an issue Matsushima expressly seeks to avoid. There is also no support in Matsushima for the proposition that integration time is controlled "during a frame," as required by the claims. Matsushima does not disclose a rolling shutter or any mechanism by which integration time is modified within the exposure interval of a single frame.

Accordingly, Petitioner's reliance on Matsushima fails to meet the limitations of claim 22, and the Board should decline to institute review on this ground.

a) The Text Of Matsushima Describes A Common Integration Time Or Exposure Time For Both Imaging Systems

While Matsushima describes a dual-imaging system with separate CCD sensors, its exposure control mechanism applies a single charge accumulation time to both CCDs, indicating that integration time is not independently managed for each sensor. Matsushima's automatic exposure (AE) control relies on a single luminance value to determine a common aperture setting and shutter speed, which are then applied uniformly to both imaging systems. The *common* integration time control for both imaging systems in Matsushima fails to meet the limitation in claim 22 requiring "*independently* controlling simultaneous data acquisition with each of the first and second channels."

In Matsushima, "CPU 30 performs various calculations such as focus evaluation calculations and AE [automatic exposure] calculations." Ex. 1007, [0031]. However, Matsushima makes clear that a *single* charge accumulation time is used for controlling *both* CCD 18A and 18B in Matsushita's two imaging systems. From Matsushima:

> For AE control, *the* subject luminance (*imaging EV value*) is determined based on integration of the R, G, and B signals in a single frame by the integration circuits 60A and 60B, and *the* aperture value and shutter speed are determined based on this *imaging EV value*. The apertures 17A and 17B are driven via the drive circuits 52A and 52B, and *the CCD 18A and CCD 18B charge accumulation time* is controlled using an electronic shutter to reach *the determined shutter speed*. ...

> During imaging and recording, the AF operation is performed when the release button is "half-pressed," and the metering operation is repeated several times to obtain the exact imaging EV. The final *aperture value* and *shutter speed* for imaging is then determined based on the imaging EV. The *apertures 17A and 17B* are then driven to *the final aperture value* when the release button is "fully press", and *the charge accumulation time* is controlled by the electronic shutters at *the determined shutter speed*. *Id*., [0034]-[0035] (emphasis added).

The fact that Matsushima refers to "*the* charge accumulation *time*" (in the *singular*) of both "the CCD 18A and CCD 18B" indicates that the *same* charge accumulation time is used to drive both devices. Matsushima's references to "*the* subject luminance" (singular), one EV *value* (singular), "*the* final aperture *value*" (singular) used to drive for *both* apertures 17A and 17B, and "*the* determined shutter *speed* (singular), likewise indicate that *one* luminance (EV value) is determined for *the subject*, and a *common* aperture value as well as a *common* shutter speed are used in both imaging systems. Matsushima's use of a *common* accumulation time for both of its CCDs fails to disclose "*independently* controlling simultaneous data acquisition with each of the first and second channels," as recited in claim 22.

b) The Testimony Of Petitioner's Expert Alleging That Matsushima Uses Different Integration Times Is Unsupported By The Reference

Petitioner's expert asserts that Matsushima discloses images with different integration times, but this assertion is unsupported by the actual disclosure of Matsushima. As explained below, the cited passages relied on in the expert

declaration do not reference independent integration time control or variation between the two imaging systems. Instead, Matsushima consistently refers to *the* subject luminance and *the* charge accumulation time in the *singular*, indicating that a single exposure control is applied to both CCDs.

In his Declaration, Petitioner's expert[8] stated:

> 99. Matsushima performs independent control of aperture and charge accumulation time for each channel to achieve "optimal exposure adjustment" for image acquisition, because the AE control is based on independently determined imaging EV values of the channels with different FOVs, e.g., *different EV values for each channel*, where the corresponding portions of the FOVs of the same scene have different brightness. Ex.1007, [0017]. The AE control is performed by independently controlling charge accumulation times for the channels, based on the independent determination of *the first subject luminance* for the first FOV and the second subject luminance for the second FOV. Ex.1007, [0034]. Matsushima describes that the first subject luminance of shooting angle α and *the second subject luminance* of shooting angel β are determined independently (by circuit 60A for first channel, and 60B for second channel independently). Ex.1007, [0034] (AE control is based on the subject luminance (imaging EV value) according to the scene of the respective FOV).

Ex. 1003, ¶99 (emphasis added). The assertions that Matsushima has "different EV values for each channel" and that in Matsushima there is "a first subject luminance"

[8] As explained above, the expert's testimony should also be given little or no weight because it essentially parrots the Petition. *See also*, *Facebook* v. *Windy City Innovations, LLC*, 973 F.3d 1321, 1340-41 (Fed. Cir. 2020) (affirming the Board's holding that claim was not unpatentable when the Board considered Facebook's expert's testimony but determined that it did not add materially to Petitioner's unpersuasive attorney argument, because it merely repeated Petitioner's argument, nearly verbatim, without citation to the basis for his testimony.)

and "a second subject luminance" are not supported (either expressly or inherently) in Matsushima. The citations (paragraphs [0017] and [0034] of Matsushima) that Petitioner's expert cited for this assertion are set forth below:

> [0017] FIG. 1 is a block diagram showing the configuration of a digital camera. This digital camera 10 has two independent imaging systems (a first imaging system 12A and a second imaging system 12B), and subject images are formed on the light-receiving surfaces of CCD 18A and 18B via imaging optics 14A and 14B, respectively.
>
> * * *
>
> [0034] For AE control, *the* subject luminance (imaging EV value) is determined based on integration of the R, G, and B signals in a single frame by the integration circuits 60A and 60B, and the aperture value and shutter speed are determined based on *this* imaging EV *value*. The apertures 17A and 17B are driven via the drive circuits 52A and 52B, and *the* CCD 18A and CCD 18B *charge accumulation time* is controlled using an electronic shutter to reach the determined shutter speed. ... (emphasis added).

The portions of Matsushima (above) relied on by Petitioner's expert do not disclose "*different* EV values for each channel" -- the actual text discloses "*this* EV value" (*singular*). Nor does the text of Matsushima describe "a first subject luminance" and "a second subject luminance" -- instead, the actual text of Matsushima refers to "*the* subject luminance" (singular).

Later, Petitioner's expert alleges:

> 102. In Matsushima, the charge accumulation time/integration times of the two channels would have independent values, because the first and second channels are controlled independently based on captured images of *different subject luminance* with different FOVs. Ex.1007, [0034]. For example, the first sensor imaging the larger FOV (see 62A including the sun, the sky and other background objects) has

> *a different subject illuminance* (e.g., a higher subject illuminance) from the second sensor imaging the smaller FOV (see 62B including a person and a flower), thereby *a different integration time* (e.g., a shorter integration time) is determined for the first channel. (Emphasis added).

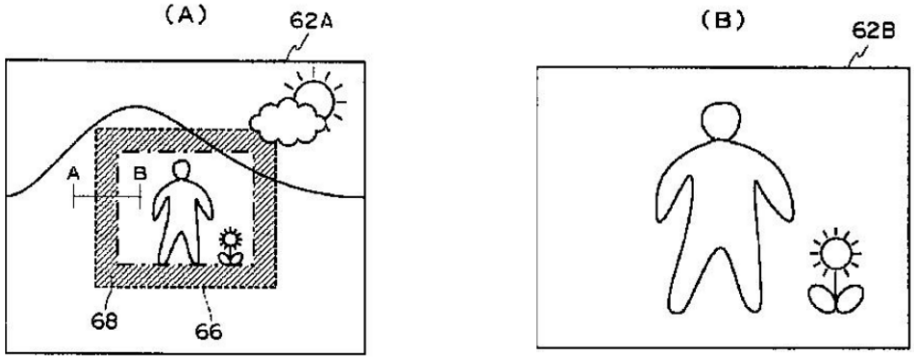
The text of Matsushima (e.g., at [0034]-[0035]) says the opposite of what Petitioner's expert alleges. Specifically, those portions of Matsushima describe "*the* subject luminance" (singular) and "*the* charge accumulation time" (singular) -- rather than different subject luminances or different integration times. In making this analysis, Petitioner's expert has strayed far and wide from what a POSITA would have understood from the *actual words* of Matsushita.

c) Given The Known Obstacles To Synthesizing Digital Images With Different Exposures, Interpreting Matsushima As Disclosing Different Integration Times Would Be Inconsistent With The Prior Art As A Whole

Petitioner's argument that Matsushima's images 62A and 62B have different exposure times—and that this equates to different integration times—is both inconsistent with Matsushima's disclosure and contrary to the understanding of the prior art. Matsushima explicitly describes a synthesis process aimed at achieving a *natural boundary* between combined images, a goal that the prior art recognized as particularly challenging *when merging images with different exposures*. More specifically, prior research, including studies on image mosaics, highlighted the difficulty of blending images with differing exposures without producing unnatural seams. Thus, Petitioner's argument that images 62A and 62B in Matsushima have

different exposure times (which the Petition equates with different integration times) is inconsistent with the teachings of the prior art as a whole, which recognized the *challenge* of achieving a *natural boundary* (as called for Matsushima) when synthesizing images with *different exposures*.

As shown in Figures 4A and 4B of Matsushima (reproduced below), Matsushima disclosed that "a scaled down image 66 is generated from a captured image 62B" by scaling down image 62B "to the same magnification (shooting angle) as the captured image 62A," and then "both images are synthesized by replacing the image in the center of the captured image 62A corresponding to the scaled down image 66, with the scaled down image 66." Ex. 1007, [0049].



Matsushima recognized that "simply replacing the image in the center of the captured image 62A with the scaled down image 66 may result in an *unnatural boundary* between the two images," and stated that "correction data is generated to correct the image in the peripheral regions 68 based on the image data in the

peripheral region 68 (shaded region) of the scaled down image 66 and the image data in the peripheral region 68 of the captured image 62A." Ex. 1007, [0050]-[0051] (emphasis added). The "correction data" is used so that "the ***boundary*** between the captured image 62A and the scaled down image 66 ***can be kept from becoming unnatural***." *Id*., [0057]. Matsushima's "correction data" is represented by the "correction curve" illustrated in Figure 5 of the reference, which functions to "blend" the areas of overlap.

Matsushima does not state that its techniques were useful for synthesizing images with ***different exposures***. This is not surprising, because synthesizing images with different exposures in a manner that resulted in a ***natural*** boundary was a ***known problem***. As explained in one paper from the time (authored by researchers at Harvard and Microsoft):

> When capturing images to create mosaics, automatic cameras often ***change their exposure settings***. ***Even if the images are blended*** in the areas of overlap, if the exposure difference between images is too high, it will give the panorama a ***creased look*** around the edges of the overlap. Feathering [10] the effect of the ***blend into the rest of the image will help*** remove creases, but the ***exposure change will still be too abrupt to appear natural***. (Figure 7) Ex. 2012, 4 (emphasis added).

The unnatural boundary after synthesis of the images with different exposures is illustrated in Figure 7(A) of the paper (reproduced below):



(A)

Id., 6. Figure 7(A) (above) shows a two image mosaic where two images with different exposures have been blended and feathered. *Id*., 4, 6. The boundary between the two images is a highly noticeable and far from "natural" boundary between images 62A and 66 called for in Matsushima. *Id*., 6 (referring to "the sharp transition between images in the center of the mosaic.")

The paper discussed two methods for potentially ameliorating the unnatural boundary shown in Figure 7(A), neither of which resulted in a natural boundary. One method, referred to as a "block based exposure adjustment," resulted in the image shown in Figure 7(B) of the paper (reproduced below):



(B)

After “block based exposure adjustment,” the boundary between the two images is still highly noticeable and far from “natural” boundary between images 62A and 66 called for in Matsushima.

The other method for potentially ameliorating the unnatural boundary method involved the application of an “exposure compensation algorithm” and resulted in the image shown in Figure 7(C) of the paper (reproduced below):



(C)

While somewhat improved, the boundary between the two images is still noticeable and far from "natural" boundary between images called for in Matsushima.

When viewed in light of the prior art as a whole -- which recognized the challenge of synthesizing images with different exposures in a manner that resulted in the natural boundary called for by Matsushima -- the actual wording of Matsushima makes sense. More specifically, Matsushima's description of a ***common*** charge accumulation for ***both*** CCD 18A and CCD 18B would have resulted in images having the ***same exposure***. While Matsushima's blending of images with the ***same*** exposure may indeed have resulted in the ***natural*** boundary called for by the reference, there is no description in Matsushima or in the Petition itself of any techniques at the time that could have synthesized images with ***different*** exposures in a way that would have resulted in the ***natural*** boundary called for by Matsushima. Thus, in addition to deviating from the actual text of Matsushima, Petitioner's reading of the Matsushima is inconsistent with the state of the art, which recognized that achieving a natural boundary[9] between images with different exposures was

[9] Avoiding an unnatural boundary between image seams was central to Matsushima, which, like Yu, was directed to images like those captured with film that would be pleasing to the eye. By contrast, the '180 Patent was directed to "visual imaging tasks including search, detection, recognition and tracking" associated with "active vision systems of autonomous or semi-autonomous host systems" ranging from "robots, unmanned vehicles, self-navigating cars, automatic assembly and product inspection systems ... smart weapons and missile defense systems." *Id*., 3:32-34 and 3:64-4:9.

problematic. For this additional reason, the Petitioner has failed to demonstrate that Matsushima expressly or inherently discloses *independent control of the integration time* of channel.

d) There Is No Evidence That Matsushima's Integration Time Or Exposure Time Control Is Applied "During A Frame"

Finally, even if Matsushima independently controlled the integration time of each sensor (it does not), there is no evidence that such integration time control is applied "during the frame," i.e., at a point *between the beginning and the end of the exposure interval* during which the image sensor captures an image. Matsushima does not disclose that its integration control operates in a "rolling mode" (or using a "rolling shutter") where the *start and stop time* of the integration interval of individual rows (or scanlines) of pixels is *controlled during the frame*. Nor is such an implementation inherent that Matsushima. For example, a sensor can be operated in a "snap-shot" mode (also referred to as a "global shutter") where common control signals are applied only at the *confines* of the frame exposure rather than during the frame, i.e., at some point *between the beginning and the end* of the exposure interval during which the image sensor captures a single image. Thus, Matsushima fails to

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While high resolution images are required for these machine vision applications, there is no requirement that the images be pleasing to the eye.

disclose (expressly or inherently) integration time control that is applied "during the frame."

6. The Petition Presents No Evidence That Yu Independently Controls Data Acquisition With First And Second Channels "During A Frame"

Yu is directed to "digital *photography*," and to a digital camera that takes digital photographs (still images) with colors and details that more closely replicate that of *film* cameras. Starting with its "Description of Related Art," Yu describes the capability of *film-photography* to produce high-resolution images and vivid colors, and explained the shortcomings of existing *digital photography* techniques that lacked the high-resolution and vivid colors produced by *film*. Ex. 1005, 1:12-2:16. Yu positioned his invention as having "been made in consideration of the above described problems and needs" in order to improve the image resolution and color ranges of existing digital cameras by providing "film-like true color" images "without incurring substantial costs." *Id*., 2:23-49. The Detailed Description of Yu went on to describe a digital camera that had the same look as a "regular film camera" and that could capture digital photographs that could be printed "on glossy paper." *Id*., 6:17-21 and 7:9-18.

Assuming *arguendo* that Yu independently controlled the integration time of each sensor, there is no evidence that such integration time control is applied "during the frame," i.e., at a point *between the beginning and the end of the exposure interval*

during which the image sensor captures an image. Yu does not disclose that its integration control operates in a "rolling mode" (or using a "rolling shutter") where the *start and stop time* of the integration interval of individual rows (or scanlines) of pixels is *controlled during the frame*. Nor is such an implementation inherent that Yu. Rather, Yu is directed to a digital camera that takes digital photographs (*still* images) with colors and details that more closely replicate that of *film* cameras. Thus, Yu's sensor would have been expected to operate in a "snap-shot" mode (also referred to as a "global shutter") where common control signals are applied only at the *confines* of the frame exposure rather than during the frame, i.e., at some point *between the beginning and the end* of the exposure interval during which the image sensor captures a single image. Thus, Yu fails to disclose (expressly or inherently) integration time control that is applied "during the frame."

7. It Would Not Have Been Obvious To Combine Matsushima And Yu As Proposed In The Petition

The Petition argues in the alternative that it would have been obvious to apply Yu's independent integration time control to Matsushima. However, in the combination as proposed, Matsushima's images 62A and 62B would have had different exposures, resulting in a synthesized image with an unnatural boundary. *See*, Section II(F)(7)(e)(3), *supra*. Matsushima's focus on maintaining a natural boundary in the synthesized image between images 62A and 62B would have

discouraged a POSITA from using different integration times to capture images 62A and 62B.

For all of the reasons set forth above, the combination of Matsushima and Yu fails to disclose "*independently* controlling simultaneous data acquisition with each of the first and second channels *during a frame*," as recited in independent claim 22. While the Petition identifies a laundry list of aspects of Matsushima and/or Yu in connection with this aspect of claim 22, not one of these aspects maps to "*independently* controlling simultaneous data acquisition with each of the first and second channels *during a frame*," as claimed.

Dependent claims 23-25, 28, 30 and 32-33 and are also challenged in Ground 1. The mappings in Ground 1 for these dependent claims rely on the same flawed mapping for independent claim 22 discussed above and, as a result, Ground 1 similarly fails to demonstrate a reasonable likelihood of success with respect to dependent claims 23-25, 28, 30 and 32-33.

G. GROUND 2 FAILS TO RENDER DEPENDENT CLAIMS 28 AND 30 UNPATENTABLE

Dependent claims 28 and 30 and are challenged in Ground 2. However, the mappings for these dependent claims in Ground 2 rely on the mapping for independent claim 22 from Ground 1. Since Ground 1 of the Petition fails to demonstrate that all of the limitations of claim 22 are met by Matsushima-Yu,

Ground 2 of the Petition has similarly failed to demonstrate a reasonable likelihood of success with respect to dependent claims 28 and 30.

H. GROUND 3 FAILS TO RENDER CLAIMS 22-23, 28 AND 30 UNPATENTABLE

With respect to independent claim 22, Ground 3 relies on Yu for the limitation reciting "*independently* controlling simultaneous data acquisition with each of the first and second channels *during a frame*." Pet., 84-85. As explained in Section IV(G)(6), *supra*, Yu fails to meet this limitation.

Dependent claims 23, 28 and 30 and are also challenged in Ground 3. However, the mappings for these dependent claims in Ground 3 rely on the mapping for independent claim 22 from Ground 3 which, as discussed in the paragraph immediately above, is deficient. Therefore, Ground 3 fails to demonstrate a reasonable likelihood of success with respect to dependent claims 23, 28 and 30.

I. The Petition Fails to Present a Particularly Strong Case on the Merits, Weighing Against Institution Under *Fintiv*

Under *Fintiv*, the Board may consider the strength of the merits when exercising its discretion to deny institution under 35 U.S.C. § 314(a). However, *Fintiv* makes clear that institution is favored only when "the merits of a ground raised in the petition seem particularly strong on the preliminary record." Where the merits are not particularly strong—or even present serious flaws—the Board has found that such a factor weighs against institution, particularly when other factors favor denial.

Here, the Petition fails to present particularly strong grounds. As demonstrated above, none of the challenged grounds establishes a reasonable likelihood that Petitioner would prevail with respect to the independent claims. Ground 1 fails to show that Matsushima and Yu disclose combining multiple high resolution images with different fields of view to form an image having a relatively high resolution, as required by claim 1. Instead, Matsushima merely synthesizes a high resolution image in a narrow field of view and surrounds it with low resolution data—precisely the type of image disparaged in the '180 Patent and disclaimed during prosecution.

Likewise, Grounds 1 through 3 fail to demonstrate that Matsushima or Yu discloses "independently controlling simultaneous data acquisition with each of the first and second channels during a frame," as required by claim 22. Petitioner offers no persuasive evidence that either reference discloses independent control of data acquisition that occurs during the frame, and in fact, the references contradict such a reading. Petitioner's expert testimony attempting to supply this limitation is unsupported by the cited disclosures and is inconsistent with the state of the art at the time, which cautioned against synthesizing images with differing exposures due to the resulting unnatural boundaries.

Since the Petition does not present a particularly strong case on the merits, this factor weighs against institution under *Fintiv*.

V. CONCLUSION

All of the *Fintiv* factors, as well as additional factors identified in the Memorandum, favor a discretionary denial of the Petition. The Parallel Litigation between Petitioner and Patent Owner has already progressed significantly, and will be even further advanced by the due date of the institution decision on July 30, 2025. In addition, the Petitioner is relying on essentially the same prior art in the Parallel Litigation and this IPR, and trial in the Parallel Litigation is scheduled to occur *before* the due date for the Final Written Decision. Finally, the merits of the Petition are weak, and the Petition's spaghetti-on-the-wall approach to several of the claim limitations would require the Board and Patent Owner to spend time and resources addressing numerous deficient arguments.

For all of these reasons, the Director should exercise her discretion to deny institution.

Respectfully submitted,

Dated: March 28, 2025

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CERTIFICATE OF COMPLIANCE WITH WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), I certify that this **BRIEF IN SUPPORT OF PATENT OWNER'S REQUEST FOR DISCRETIONARY DENIAL** complies with the type-volume limits set forth in the Memorandum and 37 C.F.R. § 42.24 because it contains 10,859 words, excluding the parts of the Brief that are exempted by 37 C.F.R. § 42.24(a), according to the word processing system used to prepare this Brief.

Respectfully submitted,

Dated: March 28, 2025

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CERTIFICATE OF SERVICE

The undersigned certifies that pursuant to 37 C.F.R. § 42.6(e), a copy of the foregoing **BRIEF IN SUPPORT OF PATENT OWNER'S REQUEST FOR DISCRETIONARY DENIAL** was served via email (as consented to by counsel) on March 28, 2025 to lead and backup counsel of record for Petitioner as follows:

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