

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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MOBILEYE GLOBAL, INC.,  
Petitioner,

v.

FACET TECHNOLOGY CORP.,  
Patent Owner.

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IPR2024-01111  
Patent 9,671,328 B2

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Before KEVIN F. TURNER, ROBERT J. SILVERMAN, and  
SEAN P. O'HANLON, *Administrative Patent Judges*.

O'HANLON, *Administrative Patent Judge*.

DECISION  
Granting Institution of *Inter Partes* Review  
35 U.S.C. § 314

## I. INTRODUCTION

### A. Background

Mobileye Global, Inc. (“Petitioner”) filed a Petition for *inter partes* review of claims 1–22 of U.S. Patent No. 9,671,328 B2 (Ex. 1001, “the ’328 patent”). Paper 1 (“Pet.”), 1. Facet Technology Corp (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”). With our authorization (*see* Paper 9; Ex. 3001), Petitioner filed a Preliminary Reply (Paper 7, “Prelim. Reply”) and a Second Preliminary Reply (Paper 10, “2nd Prelim. Reply”) and Patent Owner filed a Preliminary Sur-reply (Paper 8, “Prelim. Sur-reply”) and a Second Preliminary Sur-reply (Paper 13, “2nd Prelim. Sur-reply”).

Institution of an *inter partes* review is authorized by statute only when “the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). A decision to institute may not institute on fewer than all claims challenged in the petition. *SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1354, 1359–60 (2018). If the Board institutes a trial, the Board will institute on all challenges raised in the petition. *See* 37 C.F.R. § 42.108(a) (“When instituting . . . review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.”).

We have authority, acting on the designation of the Director, to determine whether to institute an *inter partes* review under 35 U.S.C. § 314 and 37 C.F.R. § 42.4(a). For the reasons set forth below, upon considering the parties’ briefs and evidence of record, we conclude that the information

presented shows that there is a reasonable likelihood that Petitioner would prevail in establishing the unpatentability of at least one of the challenged claims. Thus, we institute *inter partes* review of all challenged claims available for review based on all asserted grounds.

#### B. Real Parties in Interest

Petitioner identifies itself as the sole real party in interest. Pet. 74.

Patent Owner identifies itself and Mandli Communications, Inc. as the real parties in interest. Paper 5, 3.

The parties are reminded of their continuing obligation to update their mandatory notice information “within 21 days of a change of the information.” 37 C.F.R. § 42.8(a)(3).

#### C. Related Matters

The parties indicate that the ’328 patent is the subject of the following district court proceedings:

*Facet Technology Corp. v. General Motors LLC*, No. 2:24-cv-00035 (E.D. Tex. filed January 22, 2024),

*Facet Technology Corp. v. Mobileye Global, Inc.*, No. 2:24-cv-00058 (E.D. Tex. filed January 26, 2024) (“the Texas Litigation”),

*Facet Technology Corp. v. HERE Global B.V.*, No. 2:24-cv-00269 (E.D. Tex. filed April 22, 2024),

*Facet Technology Corp. v. TomTom International B.V.*, No. 1:24-cv-00111 (D.N.H. filed April 23, 2024), and

*Mobileye Vision Technologies Ltd. v. Facet Technology Corp.*, No. 0:24-cv-04149 (D. Minn. filed November 7, 2024).

Pet. 75; Paper 5, 3–4.

The parties note that the '328 patent is the subject of *ex parte* reexamination 90/019,546. Pet. 75; Paper 5, 4.

Petitioner notes another petition for *inter partes* review it filed challenging a related patent owned by Patent Owner, namely IPR2024-01110 challenging U.S. Patent No. 9,335,255 B2. Pet. 75.

#### D. The Challenged Patent

The '328 patent discloses “classifying different types of sheeting materials of road signs depicted in a videostream.” Ex. 1001, 1:33–35. The '328 patent recognizes that “[t]he goal of using an automated image identification system to recognize road signs and traffic signs is well known.” *Id.* at 1:39–41. Although there are “existing techniques for determining retroreflectivity,” these techniques “require an operator to target individual signs from a known distance.” *Id.* at 4:18–20.

The '328 patent purports to provide an improved “system for classifying different types of sheeting materials of road signs depicted in a videostream” that allows the user to “determine retroreflectivity without targeting individual signs” and to “automatically determine sheeting classification.” Ex. 1001, 3:51–53, 4:18–23. The system “employs several enhancements that are designed to improve the accuracy of evaluating intensity measurements made over a view where the reflective surfaces are not individually targeted” and “neither the distance to the reflective surface or the normal vector to the reflective surface are known.” *Id.* at 4:23–30. Figure 4 illustrates a typical configuration of a sensor suite within a capture vehicle and is reproduced below. *Id.* at 4:39–43, 10:7–10.

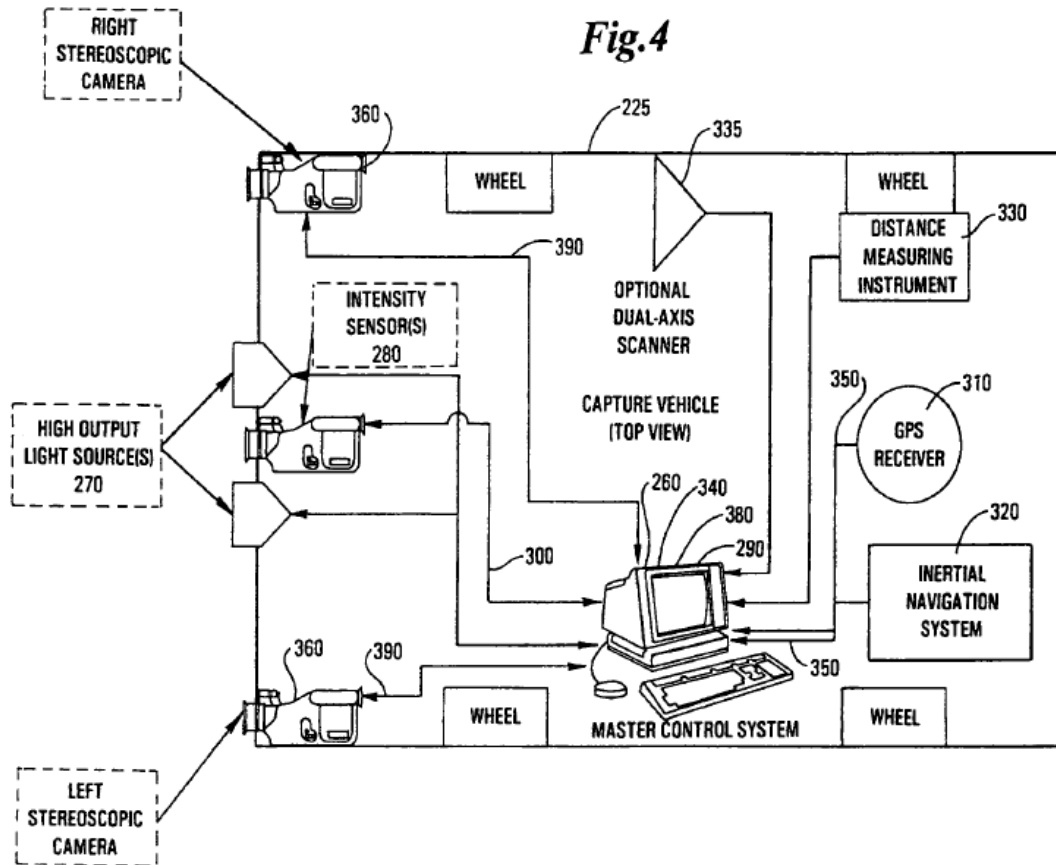


Figure 4 illustrates a preferred configuration of a sensor suite for use with a capture vehicle and the interconnections and couplings between the physical subcomponents of the system. *Id.* at 4:46–50. The system includes distance measuring instrument 330, GPS receiver 310, and inertial navigation system 320, which constitute the vehicle positioning subsystem. *Id.* at 10:21–24. The system includes high output light sources 270 and light intensity sensors 280, which constitute the light intensity measurement subsystem. *Id.* at 10:28–30. This subsystem “make[s] it possible to gather on-the-fly information for a desired highway 150 to allow the computation of object of interest retroreflectivity.” *Id.* at 10:30–34. Figure 4 also illustrates stereoscopic cameras 360 and digital imagery system 390 “that

allows for the creation of objects of interest 460 and their associated attributes 465 during post-processing.” *Id.* at 10:35–38.

In use, “[a] plurality of intensity measurements 300 are generated by the intensity measurement system 230 in response to the repeated strobing of the high output light source 270.” Ex. 1001, 8:6–9. “A computer processor 450 identifies an object of interest 460 in a portion of the intensity frame 420 and determines the object of interest attributes 465 associated with that object of interest.” *Id.* at 8:31–34. The processor uses “an intensity algorithm 490, a light intensity sensor characterization 275 and a look-up-table 475” to determine luminance values for the background and foreground of each object of interest. *Id.* at 8:46–49. The system compares the measured luminance values with the background and foreground colors and, based on a characterization of the light source wavelength, characterizes background retroreflectivity and foreground retroreflectivity. *Id.* at 8:50–56.

#### E. Disclaimer of Claims 17–22

A “patent owner may file a statutory disclaimer under 35 U.S.C. [§] 253(a) in compliance with § 1.321(a) of this chapter, disclaiming one or more claims in the patent. No *inter partes* review will be instituted based on disclaimed claims.” 37 C.F.R. § 42.107(e). A disclaimer under 35 U.S.C. § 253(a) is “considered as part of the original patent” as of the date on which it is “recorded” in the U.S. Patent and Trademark Office (“Office”). 35 U.S.C. § 253(a). For a disclaimer to be “recorded” in the Office, the document filed by the patent owner must:

- (1) Be signed by the patentee, or an attorney or agent of record;

(2) Identify the patent and complete claim or claims, or term being disclaimed. A disclaimer which is not a disclaimer of a complete claim or claims, or term will be refused recordation;

(3) State the present extent of patentee's ownership interest in the patent; and

(4) Be accompanied by the fee set forth in [37 C.F.R.] § 1.20(d).

37 C.F.R. § 1.321(a); *see also Vectra Fitness, Inc. v. TNWK Corp.*, 162 F.3d 1379, 1382 (Fed. Cir. 1998) (holding that a § 253 disclaimer is “recorded” on the date that the Office receives a disclaimer meeting the requirements of 37 C.F.R. § 1.321(a), and that no further action is required in the Office for a disclaimer to be “recorded”).

Here, Patent Owner filed a statutory disclaimer of claims 17–22. Prelim. Resp. 1; Ex. 2002. Based on our review of Exhibit 2002, we determine that a disclaimer of claims 17–22 of the '328 patent under 35 U.S.C. § 253(a) has been filed with the Office as of December 9, 2024. Based on the information in the public record, we find that the disclaimer complies with the above-listed requirements of 37 C.F.R. § 1.321(a).

Because claims 17–22 have been disclaimed under 35 U.S.C. § 253(a), in compliance with 37 C.F.R. § 1.321(a), we do not reach challenges to claims 17–22. As a result, the remaining challenged claims are claims 1–16 (“the challenged claims”).

#### F. The Challenged Claims

Petitioner challenges claims 1–16 of the '328 patent. Claims 1 and 9 are independent. Claim 9 is illustrative of the challenged claims and is reproduced below.

9. An automated system for assessing reflective surfaces disposed along a roadway comprising:
- an active light sensor that is traversed along a roadway that includes at least one reflective surface on a road marker, the road marker having a reflective characteristic, the active light sensor including:
    - a light source to illuminate an area that includes the at least one reflective surface; and
    - a light sensor that measures a plurality of light intensity values within a field of view which includes at least a portion of the area illuminated by the light source; and
    - a computer processing system operably connected to the active light sensor and configured to detect objects of interest within the field of view and for each object of interest:
      - determine whether the object of interest includes at least one light intensity value associated with a reflective surface of a road marker in the field of view; and
      - analyze the at least one light intensity value to determine an assessment of a discrete location of the road marker within the field of view.

Ex. 1001, 18:22–44.

#### G. Asserted Grounds of Unpatentability

The Petition relies on the following prior art references:

| Name      | Reference                                  | Exhibit |
|-----------|--------------------------------------------|---------|
| Gallagher | US 2002/0063638 A1, published May 30, 2002 | 1005    |
| Schofield | US 5,796,094, issued August 18, 1998       | 1006    |
| Frank     | US 5,202,742, issued April 13, 1993        | 1007    |

| Name     | Reference                                                                                                                                                                                                                                                   | Exhibit |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| ASTM     | <i>American Society for Testing and Materials, 1997 Annual Book of ASTM Standards, Vol. 04.03: Road and Paving Materials; Vehicle-Pavement Systems, Designation D 4383–96: Standard Specification for Plowable, Raised Retroreflective Pavement Markers</i> | 1008    |
| Leonard  | US 5,313,262, issued May 17, 1994                                                                                                                                                                                                                           | 1009    |
| Popovich | WO 96/17258, published June 6, 1996                                                                                                                                                                                                                         | 1010    |

Petitioner asserts the following grounds of unpatentability, based on an evaluation of the claims that may be challenged in this proceeding:

| Claim(s) Challenged | 35 U.S.C. §         | Reference(s)/Basis                      |
|---------------------|---------------------|-----------------------------------------|
| 1–4, 8–13           | 103(a) <sup>1</sup> | Gallagher, Schofield                    |
| 15, 16              | 103(a)              | Gallagher, Schofield, Frank             |
| 14                  | 103(a)              | Gallagher, Schofield, Frank, ASTM       |
| 5–7                 | 103(a)              | Gallagher, Schofield, Leonard, Popovich |

Pet. 2. Petitioner submits a declaration of Charles E. Thorpe, Ph.D. (Ex. 1003, “Thorpe Declaration”) in support of its contentions. Patent Owner does not submit any witness testimony with its Preliminary Response.

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<sup>1</sup> The application resulting in the ’328 patent claims priority to a date prior to the date when the Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112–29, 125 Stat. 284 (2011), took effect. Thus, we refer to the pre-AIA version of section 103.

## II. DISCRETIONARY DENIAL

Patent Owner argues that we should exercise discretion under 35 U.S.C. § 314(a) to deny institution in light of the Texas Litigation. Prelim. Resp. 22–24. For the reasons set forth below, we decline to do so.

### A. Legal Framework

Under 35 U.S.C. § 314(a), the Director has discretion to deny institution. In determining whether to exercise that discretion on behalf of the Director, we are guided by the Board’s precedential decision in *NHK Spring Co., Ltd. v. Intri-Plex Technologies, Inc.*, IPR2018-00752, Paper 8 (PTAB Sept. 12, 2018) (precedential).

In *NHK*, the Board found that the “advanced state of the district court proceeding” was a “factor that weighs in favor of denying” the petition under § 314(a). *NHK*, Paper 8 at 20. The Board determined that “[i]nstitution of an *inter partes* review under these circumstances would not be consistent with ‘an objective of the AIA . . . to provide an effective and efficient alternative to district court litigation.’” *Id.* (citing *Gen. Plastic Indus. Co., Ltd. v. Canon Kabushiki Kaisha*, IPR2016-01357, Paper 19 at 16–17 (precedential in relevant part)).

“[T]he Board’s cases addressing earlier trial dates as a basis for denial under *NHK* have sought to balance considerations such as system efficiency, fairness, and patent quality.” *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 5 (PTAB Mar. 20, 2020) (precedential). *Fintiv* sets forth six non-exclusive factors for determining “whether efficiency, fairness, and the merits support the exercise of authority to deny institution in view of an

earlier trial date in the parallel proceeding.” *Id.* at 6. These factors are reproduced below:

1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
2. proximity of the court’s trial date to the Board's projected statutory deadline for a final written decision;
3. investment in the parallel proceeding by the court and the parties;
4. overlap between issues raised in the petition and in the parallel proceeding;
5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
6. other circumstances that impact the Board’s exercise of discretion, including the merits.

We discuss the parties’ arguments in the context of considering the above factors. In evaluating the factors, we take a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review. *Fintiv*, Paper 11 at 6.

## B. Analysis

### *1. Likelihood of a Stay*

The existence of a district court stay pending Board resolution of an *inter partes* review has weighed strongly against discretionary denial, while a denial of such a stay request sometimes weighs in favor of discretionary denial. *Fintiv*, Paper 11 at 6–8.

The parties agree that no motion for a stay of the Texas Litigation has been filed. 2nd Prelim. Reply 2; Prelim. Resp. 23.

On this record, it is unclear how the District Court Judge would proceed, and we decline to speculate regarding whether the district court will grant a stay if this proceeding is instituted. Accordingly, the facts underlying this factor are neutral.

*2. Proximity of Trial Date to Projected Statutory Deadline*

When a district court's trial date will occur before the projected statutory deadline for the final written decision, the Board generally weighs this factor in favor of exercising discretion to deny institution. *Fintiv*, Paper 11 at 9. "If the court's trial date is at or around the same time as the projected statutory deadline or even significantly after the projected statutory deadline, the decision whether to institute will likely implicate other factors discussed herein, such as the resources that have been invested in the parallel proceeding." *Id.*

Patent Owner asserts that trial in the Texas Litigation is set to begin on February 17, 2026. Prelim. Resp. 22 (citing Ex. 2004, 1).

Petitioner argues that it is unlikely that trial will occur prior to the latest due date for a final written decision in this proceeding because the Texas Court authorized additional discovery as to whether venue is proper. 2nd Prelim. Reply 3 (citing Ex. 1025).

We agree that the Texas court's consideration of venue may delay the trial date in the Texas Litigation. Nonetheless, even considering Patent Owner's asserted trial date of February 17, 2026, that date is less than three weeks before the latest date on which a final decision can be issued in this proceeding.

Accordingly, the facts underlying this factor are neutral.

### *3. Investment in the Parallel Proceeding*

If, at the time of the institution decision, the district court has issued substantive orders related to the challenged patent, such as a claim construction order, this fact weighs in favor of denial. *See Fintiv*, Paper 11 at 9–10. On the other hand, if the district court has not issued such orders, this fact weighs against discretionary denial. *Id.* at 10. However, we also consider Petitioner’s diligence in filing the Petition in weighing this factor. *Fintiv*, Paper 11 at 11 (“If the evidence shows that the petitioner filed the petition expeditiously, such as promptly after becoming aware of the claims being asserted, this fact has weighed against exercising the authority to deny institution under *NHK*.”).

Petitioner argues that the Texas court has not issued any substantive orders, claim construction has not begun, and the only discovery that has occurred is in regards to venue. 2nd Prelim. Reply 4.

Patent Owner argues that discovery has begun and the parties have exchanged infringement and invalidity contentions. Prelim. Resp. 23.

The parties’ arguments indicate that some work has been done in the Texas litigation, but significant work still remains to be done. *See Ex. 2004*. Moreover, we agree that Petitioner filed the Petition expeditiously. *See* 2nd Prelim. Reply 4.

Accordingly, the facts underlying this factor weigh strongly against exercising our discretion to deny institution.

### *4. Overlap of Issues*

“[I]f the petition includes the same or substantially the same claims, grounds, arguments, and evidence as presented in the parallel proceeding,

this fact has favored denial.” *Fintiv*, Paper 11 at 12. “Conversely, if the petition includes materially different grounds, arguments, and/or evidence than those presented in the district court, this fact has tended to weigh against exercising discretion to deny institution under *NHK*.” *Id.* at 12–13.

Petitioner argues that it has filed a stipulation, so there will be no overlap of issues between this proceeding and the Texas Litigation. 2nd Prelim. Reply 4.

Patent Owner argues that “Petitioner’s stipulation is facially inadequate” because “it only purports to bind Petitioner itself” and “ignores the relevant related parties that may attempt to assert—in the same court—the invalidity grounds that were raised or could have been raised in this IPR.” Prelim. Sur-reply 4. Patent Owner notes that it moved to add two parties as defendants in the Texas Litigation, that those two parties filed a declaratory judgment complaint against Patent Owner in a different district court, and that Patent Owner filed another complaint against an unrelated third party in the same district court as the Texas litigation. *Id.* at 4–5 (citing Ex. 2015, 1, 5; Ex. 2016, 2–4, 7; Ex. 2017 ¶¶ 17–18, 21, 24; Ex 2018 ¶¶ 2, 26, 37–40, 75–76; Ex. 2019). Patent Owner asserts that these three parties are real parties in interest in this proceeding. *Id.* at 5.

Petitioner notes that the two parties Patent Owner seeks to add to the Texas Litigation “have made the same stipulation as Petitioner.” 2nd Prelim. Reply 2 (citing Ex. 1024).

Patent Owner has not advanced persuasive evidence to put into dispute Petitioner’s identification of itself as the sole real party in interest. Patent Owner asserts that the two third parties it seeks to add as defendants in the Texas Litigation produce products that incorporate components

manufactured by Petitioner and that Patent Owner has asserted that these Petitioner products infringe the '328 patent in the Texas Litigation. Prelim. Sur-reply 4–5. Patent Owner also asserts that these two third parties asserted an obligation to defend Petitioner and the other third party against Patent Owner's infringement assertions. *Id.* at 5. However, Patent Owner does not assert or provide any evidence that *Petitioner* must indemnify any of the three third parties or that any of the third parties controls any aspect of this *inter partes* review proceeding. *See id.*

Moreover, Petitioner stipulates that, if we institute *inter partes* review in this proceeding, it will not pursue in the Texas Litigation “any ground that [Petitioner] raised or reasonably could have raised’ during this proceeding.” Prelim. Reply 4 (alteration in original) (citing *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 at 18–19 (PTAB Dec. 1, 2020) (precedential in relevant part)). Furthermore, to the extent that the two parties Patent Owner seeks to add as defendants in the Texas Litigation should be named as real parties in interest in this proceeding, those parties have also filed a stipulation here (*see* Ex. 1024), alleviating any concerns of conflict with district court litigation.

Accordingly, the facts underlying this factor weigh strongly against exercising our discretion to deny institution.

#### *5. Identity of Parties*

“If a petitioner is unrelated to a defendant in an earlier court proceeding,” this fact has weighed against exercising discretion to deny institution. *Fintiv*, Paper 11 at 13–14.

There is no dispute that the parties in this proceeding are identical to the parties in the Texas litigation. Thus, the facts underlying this factor are neutral.

*6. Other Considerations, Including the Merits*

As discussed in more detail below, we find the evidence and arguments presented by Petitioner persuasive on this preliminary record and sufficient to meet our standard for instituting *inter partes* review.

Accordingly, the facts underlying this factor weigh against exercising our discretion to deny institution.

*7. Holistic Assessment of the Fintiv Factors*

On this record, after weighing all of the factors and taking a holistic view, we determine that the facts in this case that weigh against exercising discretion outweigh the facts that favor exercising discretion. Accordingly, we determine that the circumstances presented weigh against exercising our discretion under 35 U.S.C. § 314(a) to deny institution of *inter partes* review based on the Texas litigation.

### III. PATENTABILITY ANALYSIS

#### A. Principles of Law

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying

factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) when in evidence, any objective evidence of nonobviousness.<sup>2</sup> *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

#### B. Level of Ordinary Skill in the Art

The level of ordinary skill in the art is “a prism or lens” through which we view the prior art and the claimed invention. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). The person of ordinary skill in the art is a hypothetical person presumed to have known the relevant art at the time of the invention. *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). In determining the level of ordinary skill in the art, we may consider certain factors, including: “(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field.” *Best Med. Int’l, Inc. v. Elekta Inc.*, 46 F.4th 1346, 1353 (Fed. Cir. 2022) (quoting *Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007)). “The patent’s purpose can also be informative.” *Id.*

Petitioner contends that a person having ordinary skill in the art at the time of the invention would have had “at least a bachelor’s degree in mechanical engineering, electrical engineering, computer science, physics, or related discipline, and four years of experience in research, design, or

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<sup>2</sup> At this stage of the proceeding, the parties have not directed us to any such objective evidence.

development in computer vision systems.” Pet. 6 (citing Ex. 1003 ¶ 31). Petitioner contends that “[h]igher levels of education may offset less experience and extensive experience can substitute for formal education.” *Id.* (citing Ex. 1003 ¶ 31).

Patent Owner does not contest Petitioner’s proposed definition or proffer a definition of its own. Prelim. Resp. 4.

Based on the arguments presented and the cited references, we find Petitioner’s definition of the level of ordinary skill reasonable and for purposes of this Decision, adopt it as our own.

### C. Claim Construction

In an *inter partes* review, claims are construed using the same claim construction standard that would be used to construe the claims in a civil action under 35 U.S.C. § 282(b), including construing the claims in accordance with the ordinary and customary meaning of such claims 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). “[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention” and “after reading the entire patent.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313, 1321 (Fed. Cir. 2005) (en banc). In addition to the specification and prosecution history, we also consider use of the terms in other claims and extrinsic evidence including expert and inventor testimony, dictionaries, and learned treatises, although extrinsic evidence is less significant than the intrinsic record. *Id.* at 1312–17. Usually, the

specification is dispositive, and it is the single best guide to the meaning of a disputed term. *Id.* at 1315.

“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’” *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (alteration in original) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

Neither party proposes a definition for any claim term. *See* Pet. 6; Prelim. Resp. 4–5.

For purposes of this Decision, and based on the record before us, we determine that no construction of any term is necessary. We note that this determination does not preclude the parties from arguing their proposed constructions of the claims during trial. Indeed, the parties are hereby given notice that claim construction, in general, is an issue to be addressed at trial. A final determination as to claim construction will be made at the close of the proceeding, after any hearing, based on all the evidence of record. The parties are expected to assert all of their claim construction arguments and evidence during the trial as permitted by our rules.

#### D. Overview of the Asserted Prior Art

##### *1. Gallagher*

Gallagher discloses “a method and apparatus for assessing the integrity of road markers and markings.” Ex. 1005 ¶ 1. Figure 1 illustrates the reflectivity measuring apparatus and is reproduced below.

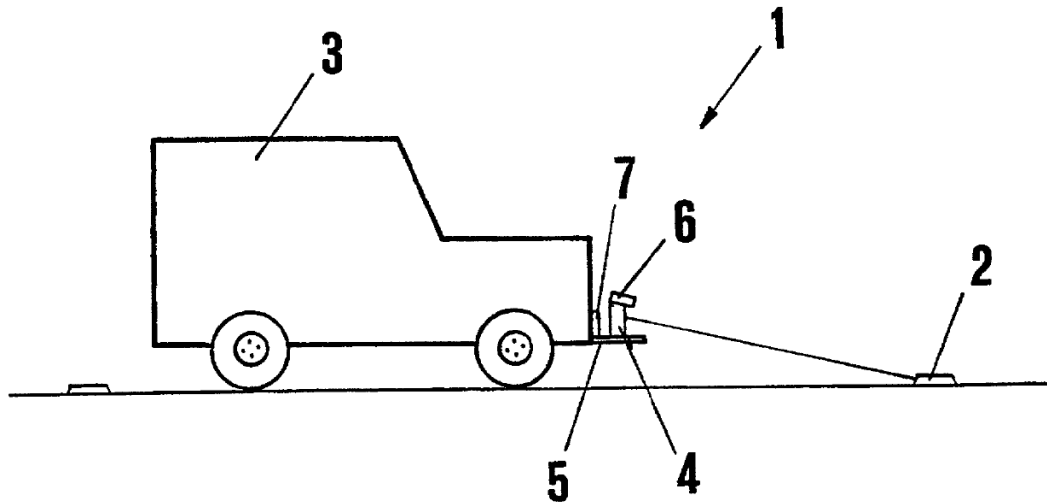


**Figure 1**

Figure 1 illustrates a side view of reflectivity measuring apparatus 1. *Id.* ¶¶ 26, 31. The apparatus is mounted on vehicle 3 and is designed to measure the reflectivity of road markings 2 when travelling at speeds of up to about 100 kph. *Id.* ¶ 32. The apparatus includes light source 4 mounted on platform 5, light sensor 6 (which may be provided as an array of sensors in module 6a), and computer 8. *Id.* ¶¶ 35, 38, 45–46; *see also id.* Fig. 3 (illustrating a block diagram of the apparatus components). The apparatus can be used to assess a variety of road marking types, such as raised pavement markers. *Id.* ¶¶ 2, 33.

In operation, an operator in the vehicle 3 initiates the measurement process by sending a signal via the computer 8 to activate the light control relay 10. . . . The relay 10 switches power from the power supply 12 to the light source 4. The light source 4 subsequently illuminates a reflective surface of a marker 2 and the reflected light is detected by one or a number of the light sensors 6 in the module 6a which has been aligned to detect light from a particular area of road.

*Id.* ¶ 46. The computer determines the reflectance level of each road marker and determines whether it meets a predetermined minimum acceptable reflectance level. *Id.* ¶¶ 67–68. Any road marker that does not meet this level is tagged to identify it for replacement. *Id.* ¶ 68.

## 2. Schofield

Schofield discloses a vehicle control system that controls the vehicle's headlamps in response to sensing the headlights of oncoming vehicles and taillights of leading vehicles. Ex. 1006, 1:12–17. Figure 3 is a block diagram of the system and is reproduced below.

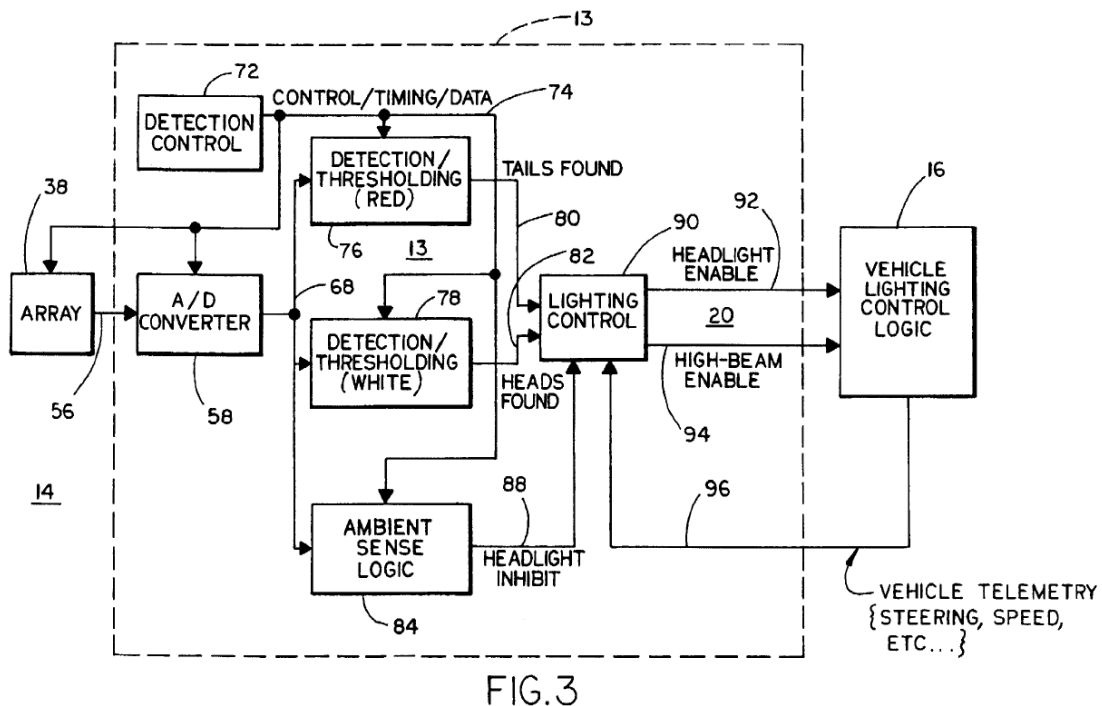


Figure 3 illustrates a block diagram of control system 13. *Id.* at 3:15. An image sensing module (*see id.* at Fig. 2) includes an optical device, such as a lens, an array of light sensors, and a spectral separation device between the optical device and the light-sensing array. *Id.* at 4:16–21. The optical

device senses light from a scene forward of the vehicle, which light is filtered by the spectral separation device to expose adjacent pixels of the light-sensing array to one of the red, green, or blue bands of light. *Id.* at 3:39–40, 5:50–56. Output from the array is received by analog-to-digital converter 58, which converts the analog pixels to digital values. *Id.* at 4:47–49. The digital output is supplied to taillight detection circuit 76, headlight detection circuit 78, and ambient sense logic circuit 84. *Id.* at 4:49–52.

The taillight detection circuit compares red band values to neighboring green and blue band values and, if the red intensity value is a predetermined number of times greater than the green and blue intensity values, the system determines that the light source is red. Ex. 1006, 4:62–5:1. If the red intensity is above a threshold value, the light source is determined to be taillights. *Id.* at 5:1–3. The headlight detection circuit compares adjacent red, green, and blue values and, if the intensities of each color are all above threshold values and within a predetermined range, the system determines that the light is white and the source is headlights. *Id.* at 5:4–12. The ambient detection circuit samples a subset of photosensor elements over a long period of time. *Id.* at 5:15–18. Outputs from these three circuits are fed to lighting control circuit 90, which determines whether the vehicle headlights should be turned on and whether the headlights should be switched into or out of high-beam mode. *Id.* at 5:33–39.

#### E. Asserted Obviousness Based on Gallaher and Schofield

Petitioner argues that claims 1–4 and 8–13 would have been obvious in view of Gallaher and Schofield. Pet. 7–44. In support of its showing,

Petitioner relies upon the Thorpe Declaration. *Id.* (citing Ex. 1003). We have reviewed Petitioner’s assertions and supporting evidence. For the reasons discussed below, and based on the record before us, we determine that Petitioner demonstrates a reasonable likelihood of prevailing in showing that at least one challenged claim would have been obvious in view of the combination of Gallaher and Schofield. We focus on independent claims 1 and 9 for purposes of this Decision.

*1. Independent Claim 9*

Petitioner relies on Gallagher to disclose a system substantially as recited, and relies on Schofield to teach determining a light source’s location. Pet. 14–26.

a. The Preamble

Claim 9 recites “[a]n automated system for assessing reflective surfaces disposed along a roadway.” Ex. 1001, 18:22–23. Petitioner maps Gallagher’s apparatus 1 to the recited automated system and argues that the apparatus includes a light source, light sensors, and a computer that automatically measure reflectivity in real time. Pet. 14–15 (citing Ex. 1005 ¶¶ 33–35, 46, 55–66, 71; Ex. 1003 ¶ 62).

Patent Owner does not contest this aspect of the Petition. *See generally* Prelim. Resp.

Gallagher discloses apparatus 1 that is mounted on vehicle 3 and is designed to measure the reflectivity of road markings 2 when travelling at speeds of up to about 100 kph. Ex. 1005 ¶ 32. The apparatus includes light source 4 mounted on platform 5, light sensor 6 (which may be provided as an array of sensors in module 6a), and computer 8. *Id.* ¶¶ 35, 38, 45–46; *see*

*also id.* Fig. 3 (illustrating a block diagram of the apparatus components).

The apparatus can be used to assess a variety of road marking types. *Id.*

¶ 33. The apparatus determines the reflectance level of the road markings and presents the results to the user in real time. *Id.* ¶¶ 67, 71.

Accordingly, for the foregoing reasons and on this preliminary record, to the extent the preamble is limiting, Gallagher supports Petitioner’s contentions.

#### b. The Active Light Sensor Recitation

Claim 9 recites “an active light sensor that is traversed along a roadway that includes at least one reflective surface on a road marker, the road marker having a reflective characteristic.” Ex. 1001, 18:24–27. Petitioner maps the combination of Gallagher’s light source 4, light sensors 6, and module 6a to the recited active light sensor. Pet. 15–16 (citing Ex. 1005 ¶¶ 35–39, Fig. 3; Ex. 1003 ¶ 64). Petitioner notes that these components are mounted on a vehicle and are operable to measure reflectivity of road markers having two reflective surfaces when traveling along a road at speeds up to about 100 kph. *Id.* at 16–17 (citing Ex. 1005 ¶¶ 5, 31–33, 34, 66–68, Fig. 2; Ex. 1003 ¶ 65).

Patent Owner does not contest this aspect of the Petition. *See generally* Prelim. Resp.

For the reasons stated above regarding the Preamble and on this preliminary record, Gallagher supports Petitioner’s contentions.

#### c. The Light Source Recitation

Claim 9 recites that the active light sensor includes “a light source to illuminate an area that includes the at least one reflective surface.”

Ex. 1001, 18:28–29. Petitioner maps Gallagher’s light source 4 to the recited light sensor and argues that it illuminates test area A in which a road marker is located. Pet. 17–18 (citing Ex. 1005 ¶¶ 35–37, 43, 46, Fig. 2; Ex. 1003 ¶ 66).

Patent Owner does not contest this aspect of the Petition. *See generally* Prelim. Resp.

Gallagher discloses that its apparatus includes light source 4 that projects a beam to cover a 3 meter by 0.5 meter test area A in front of the vehicle and in which a road marker is located. Ex. 1005 ¶ 35, Fig. 2.

Accordingly, for the foregoing reasons and on this preliminary record, Gallagher supports Petitioner’s contentions.

#### d. The Light Sensor Recitation

Claim 9 recites that the active light sensor includes “a light sensor that measures a plurality of light intensity values within a field of view which includes at least a portion of the area illuminated by the light source.”

Ex. 1001, 18:30–32. Petitioner maps Gallagher’s array of light sensors 6 in module 6a to the recited light sensor and argues that the light sensors are directed at sections of test area A and arranged to detect reflected light from the road marker. Pet. 18–19 (citing Ex. 1005 ¶¶ 38, 40–41, 46, Figs. 2–3; Ex. 1003 ¶ 67). Petitioner argues that each of the sensors in the array measures a luminous intensity value and the computer determines which of the intensity values indicates light reflected from the road marker. *Id.* at 19–20 (citing Ex. 1005 ¶¶ 55–56, 66–67; Ex. 1003 ¶¶ 68–69).

Patent Owner does not contest this aspect of the Petition. *See generally* Prelim. Resp.

Gallagher discloses that its apparatus includes an array of light sensors that detect reflected light from road markers. Ex. 1005 ¶ 38. “Each sensor is arranged to detect reflected light from a relatively small viewing angle,” covering respective sections of test area A *Id.* ¶¶ 40, 60.

Accordingly, for the foregoing reasons and on this preliminary record, Gallagher supports Petitioner’s contentions.

e. The Computer Processing System Recitation

Claim 9 recites “a computer processing system operably connected to the active light sensor and configured to detect objects of interest within the field of view.” Ex. 1001, 18:34–36. Petitioner maps Gallagher’s computer 8 to the recited computer processing system and argues that it receives data from, and is therefore operably connected to, light sensors 6. Pet. 20–21 (citing Ex. 1005 ¶¶ 33, 45, 47, 55–66, Fig. 3; Ex. 1003 ¶ 71). Petitioner argues that the computer determines which of the measured reflectance levels indicates the presence of road markers. *Id.* at 21–22 (citing Ex. 1005 ¶¶ 33, 60–64, 66; Ex. 1003 ¶ 72).

Patent Owner does not contest this aspect of the Petition. *See generally* Prelim. Resp.

Gallagher discloses that its computer receives measured reflectance data from the light sensors and determines which reflectance levels across test area A indicate the presence of road markers. Ex. 1005 ¶¶ 46–47, 56, 60.

Accordingly, for the foregoing reasons and on this preliminary record, Gallagher supports Petitioner’s contentions.

f. The Determine Recitation

Claim 9 recites that, for each object of interest, the computer processing system is configured to “determine whether the object of interest includes at least one light intensity value associated with a reflective surface of a road marker in the field of view.” Ex. 1001, 18:38–41. Petitioner argues that Gallagher’s computer selects which of the measured reflectance levels indicates the presence of road markers. Pet. 22–23 (citing Ex. 1005 ¶¶ 23, 33, 55–56, 65–66; Ex. 1003 ¶ 74).

Patent Owner argues that the claim 9 requires an ordered process whereby the computer processing system first detects objects of interest and then determines whether the previously detected objects of interest include at least one light intensity value associated with a reflective surface of a road marker. Prelim. Resp. 5–7 (citing Ex. 1001, 8:31–56, 18:22–44 (claim 9)). Patent Owner argues that the portions of Gallagher cited in the Petition do not disclose such an ordered process. *Id.* at 7–12. Regarding step d of Gallagher’s process, Patent Owner argues that the system merely informs the driver which sensor is receiving the highest reflectance reading, but does not detect any objects of interest. *Id.* at 8 (citing Ex. 1005 ¶¶ 60–62). Continuing, Patent Owner argues that “Gallagher’s ‘step g’ reflects a single step approach” in which “road markers are identified as being road markers simply on the presence of peak responses in the collected light sensor data, without any prior detection of objects of interest.” *Id.* at 10 (citing Ex. 1005 ¶ 66).

Petitioner replies that “claimed steps do not ordinarily imply a particular order unless the claim expressly recites an order.” Prelim. Reply 1 (citing *Interactive Gift Express, Inc. v. CompuServe Inc.*, 256 F.3d 1323,

1342 (Fed. Cir. 2001)). Petitioner argues that there is no language in claim 9 that “excludes the computer processing system performing the determining step *concurrently* with the . . . detecting step[.]” *Id.* at 2 (citing *Cybersettle, Inc. v. Nat’l Arb. F., Inc.*, 243 F. App’x 603, 609 (Fed. Cir. 2007)).

According to Petitioner, “[w]hile the claims recite respective determining steps occurring for each detected object of interest, that does not mean the computer processing system must *complete* the step of detecting objects of interest *before* beginning the determining step”; rather, “[t]he computer processing system can begin the determining step as it continues to detect objects.” *Id.* at 3. Petitioner argues that the ’328 patent discloses such concurrent operations. *Id.* (citing Ex. 1001, 5:41–45, 5:52–57).

Patent Owner replies that claim 1 requires “that the determination be performed on an already detected object of interest” because the recited “‘detect objects of interest . . . and for each object of interest’ provides the antecedent basis for the ‘object of interest’ upon which ‘determine whether *the object of interest* includes . . . a reflective surface’ is performed.” Prelim. Sur-reply 1–2 (alterations in original). Patent Owner argues that the “concurrent” language of the ’328 patent noted by Petitioner discloses that the “detection and determination steps for *different signs* can occur concurrently.” *Id.* at 4 (citing Ex. 1001, 10:1–5, 10:30–34, 17:57–59 (claim 3), 18:48–50 (claim 11)).

“As a general rule, unless the steps of a method claim actually recite an order, the steps are not ordinarily construed to require one.” *Mformation Techs., Inc. v. Rsch. in Motion Ltd.*, 764 F.3d 1392, 1398 (Fed. Cir. 2014) (cleaned up). “However, a claim requires an ordering of steps when the claim language, as a matter of logic or grammar, requires that the steps be

performed in the order written, or the specification directly or implicitly requires an order of steps.” *Id.* (cleaned up). We agree with Patent Owner to the extent that logic requires that the step of determining whether an object of interest includes at least one light intensity value associated with a reflective surface of a road marker cannot occur before the object of interest is detected.

However, “ordinarily in process claims steps taken concurrently are the equivalent of steps taken successively.” *In re White*, 39 F.2d 974, 975 (CCPA 1930); *see also Cybersettle*, 243 F. App’x. at 609 (finding “the step of calculating the differences between demands and offers can occur concurrently with the [next enumerated step of] receipt of multiple demands and offers”). This is especially true here, given that the recitations at issue are functional language in an apparatus (system) claim. We agree with Petitioner that, on this preliminary record, it appears that Gallagher’s system simultaneously performs the steps of detecting objects of interest and determining whether the objects of interest include at least one light intensity value associated with a reflective surface of a road marker. *See* Ex. 1005 ¶¶ 65–66 (discussing the computer processing the measured reflectance data and determining which reflectance levels across test area A indicate the presence of road markers). We further agree with Petitioner that the ’328 patent discloses such concurrent performance of these steps:

Either *concurrent with* or subsequent to the identification of road signs 30 and generation of asset management database 24, the computer processor 22 evaluates that portion 32 of each video frame or image that depicts a road sign 30 to determine a set of color values 40, 42 for each of a plurality of colors on the road sign 32. A retroreflectivity value is generated for each color portion 34, 36 on each frame of the

tagged videostream 20 containing the road sign 30 that represents a different color value 40, 42.

Ex. 1001, 5:52–60. Contrary to Patent Owner’s assertion (*see* Prelim. Sur-reply 4), we see no language in the quoted text indicating that the concurrent detection and determination steps are performed on data for different signs.

Accordingly, for the foregoing reasons and on this preliminary record, Gallagher supports Petitioner’s contentions.

g. The Analyze Recitation

Claim 9 recites that, for each object of interest, the computer processing system is configured to “analyze the at least one light intensity value to determine an assessment of a discrete location of the road marker within the field of view.” Ex. 1001, 18:42–44. Petitioner argues that Schofield teaches dividing a light sensor’s field of view into spatially separated regions and identifying light sources, at least in part, according to their spatial distribution. Pet. 23 (citing Ex. 1006, 2:36–41, 9:26–32; Ex. 1003 ¶ 76). Petitioner argues that it would have been obvious to an ordinarily skilled artisan “to implement Schofield’s determination of a light source’s location within a field of view to distinguish between different types of road markers.” *Id.* Petitioner argues that this modification would have improved Gallagher’s system by allowing more specificity through spatial filtering and pattern recognition, allowing the system to improve identification of road markers arranged side by side on either side of the road centerline. *Id.* at 23–25 (citing Ex. 1005 ¶¶ 40, 43, 68; Ex. 1006, 10:51–11:12; Ex. 1003 ¶¶ 77–78).

Patent Owner does not contest this aspect of the Petition. *See generally* Prelim. Resp.

Schofield discloses a vehicle control system that detects the headlights of oncoming vehicles and taillights of leading vehicles. Ex. 1006, 1:12–17. The determination that the monitored area in front of the controlled vehicle contains headlights or taillights is based in part of the determination of the color of light (*id.* at 4:62–5:12) and the relative location of the light source (*id.* at 9:26–35). Schofield discloses that its system “may be utilized to identify particular traffic signs by their spectral signature as well as their geometric organization.” *Id.* at 12:1–3. Accordingly, for the foregoing reasons and on this preliminary record, Schofield supports Petitioner’s contentions.

Additionally, we determine, on this preliminary record, that Petitioner sets forth reasoning with rational underpinning to support its contentions that it would have been obvious to combine the teachings of Gallagher and Schofield. For example, Petitioner argues that implementing Schofield’s teaching of determining a lights source’s location in Gallagher’s system would beneficially “allow[] more specificity in indicating which road markers (e.g., left or right at a particular location) were ‘determined as measuring a reflectivity less than the predetermined minimum acceptable reflectance level.’” Pet. 24 (quoting Ex. 1005 ¶ 68) (citing Ex. 1003 ¶ 77); *see also* Ex. 1005 ¶ 40 (discussing the use of Gallagher’s system with “markers [that] are arranged side by side on either side of a [centerline]”). Petitioner’s assertions are supported by the declaration testimony of its witness, Dr. Thorpe. *See, e.g.*, Ex. 1003 ¶ 77.

h. Conclusion

Accordingly, at this stage of the proceeding, we determine that Petitioner has established a reasonable likelihood of prevailing on its assertion that claim 9 would have been obvious in view of the combination of Gallaher and Schofield.

*2. Independent Claim 1*

Petitioner relies on Gallagher to disclose a system substantially as recited, and relies on Schofield to teach an image capture system. Pet. 33–41.

a. The Preamble

Claim 1 recites “[a]n automated system that detects and determines reflective surfaces of interest in a scene of non-retroreflective surfaces along a roadway that is being traversed by a vehicle.” Ex. 1001, 17:32–35. Petitioner relies on substantially the same arguments it advanced for the Preamble of claim 9. Pet. 33–34 (citing Ex. 1005 ¶¶ 32–35, 46, 55–60; Ex. 1003 ¶ 100).

Patent Owner does not contest this aspect of the Petition. *See generally* Prelim. Resp.

For the reasons set forth in § III.E.1.a above regarding the Preamble of claim 9 and on this preliminary record, to the extent the preamble is limiting, Gallagher supports Petitioner’s contentions.

b. The Image Capture System Recitation

Claim 1 recites “an image capture system that captures images within a field of view along the roadway.” Ex. 1001, 17:36–37. Petitioner maps

Schofield’s imaging sensor module 14 to the recited image capture system and argues that the module captures frames forward of the vehicle.

Pet. 34–35 (citing Ex. 1006, 3:29–30, 3:36–44, 3:64–66, 4:16–21, 8:38–40, 11:8–12, 11:44–47, 12:8–11, Fig. 11a; Ex. 1003 ¶ 102). Petitioner argues that it would have been obvious to an ordinarily skilled artisan “to incorporate Schofield’s imaging sensor module 14 into Gallagher’s apparatus to improve the apparatus’[s] ability to identify objects of interest along the roadway.” *Id.* at 35 (citing Ex. 1006, 9:24–26, 10:18–11:12, 11:58–12:46; Ex. 1003 ¶ 103). Petitioner argues that it would have been obvious to an ordinarily skilled artisan “to incorporate the data from Schofield’s imaging sensor module into the processing performed by Gallagher’s ‘powerful’ computer to improve road-marker identification.” *Id.* at 36 (citing Ex. 1005 ¶¶ 50–72; Ex. 1003 ¶ 103).

Patent Owner does not contest this aspect of the Petition. *See generally* Prelim. Resp.

As noted in § III.E.1.g above regarding the Analyze Recitation of claim 9, Schofield discloses a vehicle control system that monitors an area in front of a vehicle to determine the presence and location of lights, and may be used to identify traffic signs. Ex. 1006, 1:12–17, 4:62–5:3, 5:4–12, 9:26–35, 12:1–3. Imaging sensor module 14 senses light from a scene forward of the vehicle via an array of light sensors. *Id.* at 3:36–44, 4:16–21. Accordingly, for the foregoing reasons and on this preliminary record, Schofield supports Petitioner’s contentions.

Additionally, we determine, on this preliminary record, that Petitioner sets forth reasoning with rational underpinning to support its contentions that it would have been obvious to combine the teachings of Gallagher and

Schofield. For example, Petitioner argues that implementing Schofield’s imaging sensor module in Gallagher’s system would beneficially “enable[] the identification of objects through things like their shape and spectral characteristics . . . to improve object identification.” Pet. 35 (citing Ex. 1005 ¶¶ 55–67; Ex. 1006, 9:24–26, 10:18–11:12, 11:58–12:46; Ex. 1003 ¶ 103); *see also* Ex. 1006, 10:66–11:12, 12:1–11 (discussing pattern recognition, spectral signature, and the use of Schofield’s system with traffic signs). Petitioner’s assertions are supported by the declaration testimony of Dr. Thorpe. *See, e.g.*, Ex. 1003 ¶ 103.

#### c. The Active Light Sensor Recitation

Claim 1 recites “an active light sensor including: a light source that illuminates an area along the roadway; and a light sensor that measures light intensity values within at least a portion of the area illuminated by the light source.” Ex. 1001, 17:38–43. Petitioner relies on its arguments advanced for the Active Light Sensor, Light Source, and Light Sensor Recitations of claim 9. Pet. 38.

Patent Owner does not contest this aspect of the Petition. *See generally* Prelim. Resp.

For the reasons set forth in §§ III.E.1.b, III.E.1.c, and III.E.1.d above regarding the cited recitations of claim 9 and on this preliminary record, Gallagher supports Petitioner’s contentions.

#### d. The Computer Processing System Recitation

Claim 1 recites “a computer processing system operably connected to the image capture system, and the active light sensor and configured to detect objects of interest within the field of view.” Ex. 1001, 17:44–47.

Petitioner relies on its arguments advanced for the Computer Processing System Recitation of claim 9 and argues that it would have been obvious to an ordinarily skilled artisan to connect Schofield's imaging sensor module to Gallagher's computer system. Pet. 39 (citing Ex. 1005 ¶¶ 33, 50; Ex. 1003 ¶ 110).

Patent Owner does not contest this aspect of the Petition. *See generally* Prelim. Resp.

For the reasons set forth in § III.E.1.e above regarding the Computer Processing System Recitation of claim 9, Gallagher supports Petitioner's contentions. For the reasons set forth in § III.E.2.b above regarding the Image Capture System Recitation of claim 1, we determine, on this preliminary record, that Petitioner sets forth reasoning with rational underpinning to support its contentions that it would have been obvious to combine the teachings of Gallagher and Schofield.

e. The Determine Recitation

Claim 1 recites that, for each object of interest, the computer processing system is configured to “determine whether the object of interest includes a reflective surface based on the light intensity values.” Ex. 1001, 17:48–49. Petitioner relies on substantially the same arguments it advanced for the Determine Recitation of claim 9. Pet. 40 (citing Ex. 1005 ¶¶ 23, 33–34, 55–56, 65–66; Ex. 1003 ¶ 113).

Patent Owner argues that claim 1 requires a three-step approach whereby the computer processing system first “detects objects of interest,” then “determines whether the detected objects of interest include a reflective surface,” and then “determines whether such determined reflective surface is

a road marker.” Prelim. Resp. 14; *see also id.* at 17–18 (presenting substantially similar arguments). Patent Owner argues that the Petition fails to show this order of steps for the same reasons it advances for claim 9. *Id.* at 15. Patent owner argues that Petitioner’s reliance on Schofield also fails to show this order of steps. *Id.* at 16.

For the reasons set forth in § III.E.1.f above regarding the Determine Recitation of claim 9, we find Patent Owner’s arguments unavailing and that, on this preliminary record, Gallagher supports Petitioner’s contentions.

f. The Road Marker Recitation

Claim 1 recites that, for each object of interest, the computer processing system is configured to “determine whether the reflective surface is a road marker based on an assessment of the reflective surface.” Ex. 1001, 17:50–52. Petitioner argues that Gallagher’s computer determines the presence of a road marker based on peak responses in the measured reflectance data. Pet. 40–41 (citing Ex. 1005 ¶ 66; Ex. 1003 ¶ 115).

Patent Owner does not contest this aspect of the Petition apart from its arguments discussed above regarding the Determine Recitation. *See generally* Prelim. Resp.

Gallagher discloses that its computer receives measured reflectance data from the light sensors and determines which reflectance levels across test area A indicate the presence of highly reflective surfaces of road markers. Ex. 1005 ¶¶ 56, 66.

Accordingly, for the foregoing reasons and on this preliminary record, Gallagher supports Petitioner’s contentions.

g. The Location Recitation

Claim 1 recites that, for each object of interest, the computer processing system is configured to “determine a location of the road marker.” Ex. 1001, 17:53. Petitioner argues that Gallagher’s uses data from its GPS interface or gearbox revolution sensor to determine the location of road markers. Pet. 41 (citing Ex. 1005 ¶¶ 8, 12, 20, 22, 48; Ex. 1003 ¶ 117).

Patent Owner does not contest this aspect of the Petition. *See generally* Prelim. Resp.

Gallagher discloses that its apparatus includes location means, such as gearbox revolution sensor 14 and GPS interface 15, that determines the location of each marker being tested. Ex. 1005 ¶ 48.

Accordingly, for the foregoing reasons and on this preliminary record, Gallagher supports Petitioner’s contentions.

h. Conclusion

Accordingly, at this stage of the proceeding, we determine that Petitioner has established a reasonable likelihood of prevailing on its assertion that claim 1 would have been obvious in view of the combination of Gallaher and Schofield.

#### IV. CONCLUSION

For the foregoing reasons, we determine that the information presented establishes a reasonable likelihood that Petitioner would prevail in showing that at least one of the challenged claims is unpatentable. At this preliminary stage, we have not made a final determination with respect to the patentability of the challenged claims or any underlying factual and legal

issues. *See TriVascular, Inc. v. Samuels*, 812 F.3d 1056, 1068 (Fed. Cir. 2016) (noting that “there is a significant difference between a petitioner’s burden to establish a ‘reasonable likelihood of success’ at institution, and actually proving invalidity by a preponderance of the evidence at trial”).

Accordingly, *inter partes* review is instituted as to all challenged claims and all proposed grounds of unpatentability. *See* 37 C.F.R. § 42.108(a).

#### V. ORDER

Accordingly, it is:

ORDERED that pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–16 of the ’328 patent is instituted with respect to all grounds set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial, which commences on the entry date of this decision.

IPR2024-01111  
Patent 9,671,328 B2

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