

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,

Petitioner,

v.

PERCEPTIVE AUTOMATA LLC,

Patent Owner.

Case No. IPR2025-01577

Patent No. 11,520,346

PATENT OWNER'S PRELIMINARY RESPONSE

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I. INTRODUCTION

Pursuant to 35 U.S.C. § 313 and 37 C.F.R. § 42.107, Patent Owner Perceptive Automata LLC (“Perceptive”) submits this Preliminary Response to the Petition for *Inter Partes* Review (“Petition”) filed by Tesla, Inc. (“Petitioner”) and challenging claims 1-23 of U.S. Patent No. 11,520,346 (the “’346 patent”) (Ex. 1001). The Board should not institute *inter partes* review because Petitioner has not met its burden of showing a reasonable likelihood of prevailing on any of its proposed grounds of unpatentability, each based on obviousness under 35 U.S.C. § 103(a).

The Petition suffers from fundamental flaws, each of which warrants denial of institution. The Petition’s allegations are deficient because the references of the proposed grounds do not teach all limitations of the challenged claims. Further, Petitioner’s allegations lack the requisite specificity, and Petitioner fails to address the Graham factors.

Additionally, Petitioner’s grounds are redundant and Petitioner failed to adequately explain whether and why one ground is preferred over another. Specifically, Ground 1 is a single-reference obviousness assertion based on Djuric, Ground 2 is a combination of Djuric and Cox, Ground 3 is combination of Djuric and Zhu, Ground 4 is a combination of Djuric, Zhu, and Cox, Ground 5 is a combination of Djuric and Ross, Ground 6 is a combination of Djuric, Cox, and Ross, Ground 7 is a combination of Djuric, Zhu, and Ross, and Ground 8 is a

combination Djuric, Cox, Zhu, and Ross. *See* Pet. at 12. Despite the redundancy of the eight grounds, none of the permutations disclose or render obvious the independent claims of the '346 patent. Indeed, Petitioner's reliance on so many different combinations highlights not only the deficiencies of Djuric but also the secondary references.

To justify the institution of an *inter partes* review, Petitioner must establish 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). For at least the reasons discussed in this Preliminary Response, Petitioner has not shown a reasonable likelihood of prevailing on any of the challenged claims.

II. THE '346 PATENT AND THE CHALLENGED CLAIMS

A. Overview of the '346 Patent

The inventions disclosed and claimed in the '346 patent generally relate to systems, computer-implemented methods, and computer readable media associated with controlling autonomous vehicles based on a hidden context that includes factors that affect the behavior of other traffic entities. *See, e.g.*, Ex. 1001 at 2:1-30. The '346 patent discloses that "for each traffic entity, motion parameters describing movement of the traffic entity are determined," and a "region of the point cloud where the traffic entity is expected to reach within a threshold time interval is determined." *Id.* at 3:19-35. The '346 patent further discloses that the "region is

modified based on the hidden context,” and the “autonomous vehicle is navigated so that the autonomous vehicle stays at least a threshold distance away from the modified region of each traffic entity.” *Id.* In one embodiment, the ’346 patent discloses that “[i]f a determination is made that the hidden context indicates that the user represented by the traffic entity is likely to move in a direction having a component opposite to direction of the motion vector, the size of the region is decreased along the direction of the motion vector.” *Id.* at 3:36-47.

B. Claim Overview

Independent claims 1, 10, and 19 are reproduced below:

Claim 1	Limitations
1[pre]	A method comprising:
1[a]	receiving, by an autonomous vehicle, sensor data from sensors mounted on the autonomous vehicle, the sensor data comprising one or more images;
1[b]	generating a point cloud representation of the surroundings of the autonomous vehicle based on the sensor data;
1[c]	identifying, one or more traffic entities based on the sensor data, the traffic entities representing non-stationary objects in traffic in which the autonomous vehicle is driving;
1[d-i]	for each of the one or more traffic entities: determining one or more motion parameters describing movement of the traffic entity;
1[d-ii]	[for each of the one or more traffic entities:] providing an image of the one or more images, the image showing the traffic entity as input

	to a machine learning model configured to receive an input image showing an input traffic entity and output summary statistics of expected human responses describing a hidden context of the input traffic entity shown in the input image;
1[d-iii]	[for each of the one or more traffic entities:] determining the hidden context of the traffic entity based on the output of the machine learning based model;
1[d-iv]	[for each of the one or more traffic entities:] determining a region of the point cloud where the traffic entity is expected to reach within a threshold time interval; and
1[d-v]	[for each of the one or more traffic entities:] modifying the region based on the hidden context of the traffic entity; and
1[e]	navigating the autonomous vehicle so that the autonomous vehicle stays at least a threshold distance away from the modified region of each of the one or more traffic entities.
Claim 10	Limitations
10[pre]	A non-transitory computer readable storage medium storing instructions, that when executed by a processor, cause the processor to perform steps comprising:
10[a]	receiving, by an autonomous vehicle, sensor data from sensors mounted on the autonomous vehicle, the sensor data comprising one or more images;
10[b]	generating a point cloud representation of the surroundings of the autonomous vehicle based on the sensor data;
10[c]	identifying, one or more traffic entities based on the sensor data, the traffic entities representing non-stationary objects in traffic in which the autonomous vehicle is driving;
10[d-i]	for each of the one or more traffic entities: determining one or more motion parameters describing movement of the traffic entity;

10[d-ii]	[for each of the one or more traffic entities:] providing an image of the one or more images, the image showing the traffic entity as input to a machine learning model configured to receive an input image showing an input traffic entity and output summary statistics of expected human responses describing a hidden context of the input traffic entity shown in the input image;
10[d-iii]	[for each of the one or more traffic entities:] determining the hidden context of the traffic entity based on the output of the machine learning based model;
10[d-iv]	[for each of the one or more traffic entities:] determining a region of the point cloud where the traffic entity is expected to reach within a threshold time interval; and
10[d-v]	[for each of the one or more traffic entities:] modifying the region based on the hidden context of the traffic entity; and
10[e]	navigating the autonomous vehicle so that the autonomous vehicle stays at least a threshold distance away from the modified region of each of the one or more traffic entities.
Claim 19	Limitations
19[pre]	A computer system comprising: a processor; and a non-transitory computer readable storage medium storing instructions that when executed by the processor, cause the processor to perform steps comprising:
19[a]	receiving, by an autonomous vehicle, sensor data from sensors mounted on the autonomous vehicle, the sensor data comprising one or more images;
19[b]	generating a point cloud representation of the surroundings of the autonomous vehicle based on the sensor data;
19[c]	identifying, one or more traffic entities based on the sensor data, the traffic entities representing non-stationary objects in traffic in which the autonomous vehicle is driving;

19[d-i]	for each of the one or more traffic entities: determining one or more motion parameters describing movement of the traffic entity;
19[d-ii]	[for each of the one or more traffic entities:] providing an image of the one or more images, the image showing the traffic entity as input to a machine learning model configured to receive an input image showing an input traffic entity and output summary statistics of expected human responses describing a hidden context of the input traffic entity shown in the input image;
19[d-iii]	[for each of the one or more traffic entities:] determining the hidden context of the traffic entity based on the output of the machine learning based model;
19[d-iv]	[for each of the one or more traffic entities:] determining a region of the point cloud where the traffic entity is expected to reach within a threshold time interval; and
19[d-v]	[for each of the one or more traffic entities:] modifying the region based on the hidden context of the traffic entity; and
19[e]	navigating the autonomous vehicle so that the autonomous vehicle stays at least a threshold distance away from the modified region of each of the one or more traffic entities.

III. LEVEL OF ORDINARY SKILL

For the limited purpose of this Preliminary Response, Patent Owner does not contest Petitioner’s definition of a person of ordinary skill in the art, but reserves the right to do so if trial is instituted.

IV. CLAIM CONSTRUCTION

Patent Owner submits that the Board need not construe any claim terms in a particular manner to arrive at the conclusion that the Petition is deficient. *See*

Wellman, Inc. v. Eastman Chem. Co., 642 F.3d 1355, 1361 (Fed. Cir. 2011) (claims “need only be construed ‘to the extent necessary to resolve the controversy’”). Should the Board determine to institute trial in this proceeding, Patent Owner reserves the right to argue for construction of certain claim terms.

V. APPLICABLE LEGAL STANDARDS

The Board may only grant a petition for *inter partes* review where “the information presented in the petition . . . 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); 37 C.F.R. § 42.108(c). Petitioner bears the burden of showing that this statutory threshold has been met. *See Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (“[T]he Petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.”); *Liberty Mut. Ins. Co. v. Progressive Cas. Ins. Co.*, No. CBM2012-00003, Paper 8 at 14-15 (P.T.A.B. Oct. 25, 2012) (representative) (“[I]t is the responsibility of the Petitioner to clearly articulate [the proposed combination].”); 37 C.F.R. §§ 42.22(a)(2), 42.104(b)(4); *see also* USPTO, OFFICE PATENT TRIAL PRACTICE GUIDE, Statutory Requirements (Dec. 12, 2025) (“The Board . . . may institute a trial where the petitioner establishes that the standards for instituting the requested trial are met Conversely, the Board may not authorize a trial where

the information presented in the petition, taking into account any patent owner preliminary response, fails to meet the requisite standard for instituting the trial.”).

Each of Petitioner’s Grounds relies on obviousness. Section 103 of the Patent Act provides that “[a] patent may not be obtained . . . if the differences between the subject matter sought to be patented 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 said subject matter pertains.” 35 U.S.C. § 103(a). The obviousness analysis requires several threshold inquiries identified below.

A. Claims cannot be found obvious if an element is missing and expert testimony cannot supply the missing claim element

If a single element of the claim is absent from the prior art, the claim cannot be considered obvious. *See CFMT, Inc. v. YieldUp Int’l Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (“[O]bviousness requires a suggestion of all limitations in a claim.”) (citing *In re Royka*, 490 F.2d 981, 985 (C.C.P.A. 1974)); *In re Rijckaert*, 9 F.3d 1531, 1534 (Fed. Cir. 1993) (reversing obviousness rejection where prior art did not teach or suggest all claim limitations); *Garmin Int’l, Inc. v. Patent of Cuozzo Speed Techs. LLC*, No. IPR2012-00001, Paper 15 at 15 (P.T.A.B. Jan. 9, 2013) (refusing to institute an IPR under 35 U.S.C. § 103 where prior art did not disclose all claim limitations). Further,

Because an *inter partes* review may only be requested “on the basis of prior art consisting of patents or printed publications,” 35 U.S.C. § 311(b), expert testimony cannot take the place of disclosure from patents or printed publications. In other words, expert testimony may explain “patents and printed publications,” but is not a substitute for disclosure in a prior art reference itself.

See OFFICE PATENT TRIAL PRACTICE GUIDE at § I.G.

B. A petition must address the *Graham* factors

Obviousness is resolved on a number of factual determinations including: (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, and (3) the level of ordinary skill in the art. See *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). These factors provide the threshold “background” for the obviousness determination, and without undertaking an analysis of the *Graham* factors, a proper obviousness determination cannot be made. *Id.* at 18 (“Under § 103, the scope and content of the prior art are to be determined; *differences between the prior art and the claims at issue are to be ascertained*; and the level of ordinary skill in the pertinent art resolved. *Against this background, the obviousness or nonobviousness of the subject matter is determined.*”) (emphasis added).

In view of this clear Supreme Court precedent, it is not surprising that Petitions for IPR “must address the *Graham* factors.” *Eizo Corp. v. Barco N.V.*, No.

IPR2014-00358, Paper 11 at 29-30 (P.T.A.B. July 23, 2014) (citing *Graham*, 383 U.S. at 17-18). For example, the Board faulted the petitioner in *Eizo* for failing to identify the differences between the claimed subject matter and the prior art. *Id.* at 29-30. In particular, the Board found insufficient the petitioner’s “conclusory assertion” that “[t]o the extent [the first reference] may not explicitly teach” the limitation, the second reference “explicitly teaches this limitation.” *Id.* at 30. The Board explained that “such an assertion *fails* to resolve the exact differences sought to be derived from” the second reference. *Id.* (finding that petitioner had not shown a reasonable likelihood of prevailing on that ground) (emphasis added). Other Board decisions have reached the same result. *See, e.g., Moses Lake Indus., Inc. v. Enthone, Inc.*, No. IPR2014-00246, Paper 6 at 17 (P.T.A.B. June 18, 2014); *eBay, Inc. v. Paid, Inc.*, No. CBM2014-00125, Paper 15 at 21 (P.T.A.B. Sept. 30, 2014).

VI. THE PETITION DOES NOT DEMONSTRATE THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE UNDER GROUND 1

For Ground 1, Petitioner contends that Djuric renders claims 1-23 obvious. Djuric fails to disclose a number of limitations in independent claims 1, 10, and 19, and Petitioner provides no meaningful explanation about how it would have been obvious to modify or supplement Djuric to add those missing limitations. Additionally, Petitioner does not address the *Graham* factors, including the requirement that Petitioner identify the differences between the challenged claims

and Djuric, and it does not clearly state how Petitioner proposes to overcome these differences. Petitioner has thus failed to meet its burden as to Ground 1.

A. 1[d-v], 10[d-v], 19[d-v] – Petitioner failed to demonstrate that Djuric discloses or renders obvious “modifying the region based on the hidden context of the traffic entity” of the independent claims

Limitation 1[d-iv] recites “*determining a region* of the point cloud where the traffic entity is expected to reach within a threshold time interval.”¹ Limitation 1[d-v] recites “modifying *the region* based on the hidden context of the traffic entity.” Plainly, the “region” determined in limitation 1[d-iv] is modified based on the hidden context is limitation 1[d-v].

Petitioner alleges that Djuric teaches limitation 1[d-v]. *See* Pet. at 33-34. Petitioner does not allege that Djuric renders this limitation obvious. *Id.* As such, Petitioner must identify with particularity where limitation 1[d-v] is disclosed in Djuric. However, Petitioner does not identify any disclosure in Djuric describing a *modification* of a previously determined region based on hidden context. *Id.* Instead, Petitioner merely refers back to the same disclosures it relies upon for limitation 1[d-

¹ Patent Owner addresses independent claim 1 as to all Grounds because claim 1 is the independent claim that Petitioner focuses on for all Grounds. *See, e.g.*, Pet. at 21-36, 47-51. Patent Owner’s arguments with respect to claim 1 apply to all challenged claims, including independent claims 10 and 19.

iv], which recites “determining a region of the cloud where the traffic entity is expected to reach within a threshold time interval.” *Id.* In other words, Petitioner relies on the same alleged “regions” in Djuric to satisfy both limitations, despite limitation 1[d-v] requiring more. *Id.*

The disclosures relied on by Petitioner already account for what Petitioner characterizes as the “hidden context.” *See* Pet. at 30-33; *see also* Ex. 1004 at ¶ [0071] (“The model 136 can be configured to determine a predicted trajectory of an object based at least in part on the state of the object relative to the features of the surrounding environment (e.g., of the geographic area 204).”). Because the alleged hidden context is already incorporated into the *initial region determination*, Petitioner fails to explain how Djuric teaches any subsequent *modification* of that region based on hidden context, as required by limitation 1[d-v]. *See* Pet. at 33-34.

For example, Petitioner alleges that “[s]electing a one ‘winner’ trajectory out of the initial plurality involves eliminating some locations that the object was predicted to reach on other trajectories, thereby *modifying the region* that the object is predicted to reach.” *Id.* at 34 (emphasis in original). But Petitioner does not allege or explain where Djuric discloses that this purported modification is based on hidden context, particularly where the region was already determined in limitation 1[d-iv]. *Id.*

Next, Petitioner alleges that “the plurality of predicted trajectories for the object and associated trajectory confidence levels correspond to the *hidden context* of the object.” *Id.* (emphasis in original). Yet Petitioner does not cite, with any particularity, where Djuric allegedly discloses this concept. *Id.* Rather, Petitioner refers back to its analysis of previous claim limitations, none of which address “modifying the region based on the hidden context of the traffic entity,” as expressly required by limitation 1[d-v]. *Id.*

In short, the Petition fails to address limitation 1[d-v] in any meaningful way, and its allegations lack the requisite particularity. As the Federal Circuit has made clear, “the Petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic*, 815 F.3d at 1363. Consistent with this principle, the Board resolves vagueness and ambiguity in the Petitioner’s arguments against the Petitioner. *Liberty Mut. Ins.*, No. CBM2012-00003, Paper 8 at 14-15 (representative).

Given that Petitioner does not allege or show with particularity that Djuric discloses or renders obvious “modifying the region based on the hidden context of the traffic entity,” Petitioner has failed to meet its burden, and the challenged claims cannot be found obvious. *See* Pet. at 33-34.

Petitioner also repeatedly cites to its expert declaration in support of its arguments, but that declaration fares no better than the Petition itself. Rather than providing any further explanation, Petitioner’s expert merely parrots the language and citations from the Petition. *Compare* Ex. 1003, ¶ 99 *with* Pet. at 33-34. As a result, the cited declaration testimony is conclusory and unsupported by any underlying facts or data. It adds nothing of substance to the assertions for which it is offered to support and is therefore entitled to little weight. *See* 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”); *Upjohn Co. v. Mova Pharm. Corp.*, 225 F.3d 1306, 1311 (Fed. Cir. 2000) (“Lack of factual support for expert opinion to factual determinations, however, may render the testimony of little probative value in a validity determination.”) (quoting *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 294 (Fed. Cir. 1985)); *Carella v. Starlight Archery & Pro Line Co.*, 804 F.2d 135, 138 (Fed. Cir. 1986) (“Although in some circumstances unsupported oral testimony can be sufficient to provide prior knowledge or use, it must be regarded with suspicion and subjected to close scrutiny.”).

Furthermore, the Trial Practice Guide makes clear that “expert testimony cannot take the place of disclosure from patents or printed publications” and “is not

a substitute for disclosure in a prior art reference itself.” *See* OFFICE PATENT TRIAL PRACTICE GUIDE at § I.G. Accordingly, Petitioner’s reliance on its expert declaration cannot remedy the Petition’s failure to identify where the prior art discloses the challenged limitations.

Claim limitations 10[d-v] and 19[d-v] of independent claims 10 and 19 also require “modifying the region based on the hidden context of the traffic entity.” For the same reasons discussed above with respect to claim limitation 1[d-v], Petitioner has not met its burden as to claim limitations 10[d-v] and 19[d-v].

In sum, Petitioner has not met its burden as to Ground 1. For the reasons discussed above, Djuric fails to teach, suggest, disclose, or render obvious claim limitations 1[d-v], 10[d-v], or 19[d-v].

Further, Petitioner has wholly failed to provide any type of meaningful analysis as to these claim limitations. This failure is dispositive. As the Federal Circuit has explained, “the Petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic*, 815 F.3d at 1363. IPR proceedings are party-directed and adversarial; the Board is not tasked with supplying missing arguments or evidence. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1355 (2018) (“rather than create (another) agency-led, inquisitorial process for reconsidering patents, Congress opted for a party-directed, adversarial process”).

Consistent with these principles, the regulations and statute require a petition to include a detailed explanation of the evidence, material facts, and governing law, and to specify where each claim element is found in the prior art. 37 C.F.R. § 42.22(a)(2) (“Each petition . . . must include . . . a detailed explanation of the significance of the evidence including material facts, and the governing law, rules, and precedent.”); 37 C.F.R. § 42.104(b)(4) (“The petition must specify where each element of the claim is found in the prior art patents or printed publications relied upon.”); 35 U.S.C. § 312(a)(3) (Petitioner bears the burden of identifying “in writing and with particularity . . . the evidence that supports the grounds for the challenge to each claim”). As the Board has repeatedly held, “[i]t is Petitioner’s responsibility to cite specific evidence to support its arguments, not the Board’s”—nor Patent Owner’s—“responsibility to piece together evidence or speculate as to Petitioner’s position.” *TCL Communication Technology Holdings Ltd. v. Dataquill Limited*, No. IPR2020-00746, Paper 21 at 22 (Sept. 18, 2020); *see also Whole Space Industries Ltd. v. Zipshade Industrial (B.V.I.) Corp.*, No. IPR2015-00488, Paper 14 at 18 (P.T.A.B. July 24, 2015) (citations omitted).

Indeed, as emphasized by the Federal Circuit, “[i]t is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify ‘with particularity’ the ‘evidence that supports the grounds for the

challenge to each claim.”” *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016). Because Petitioner has failed to satisfy its burden as to Ground 1, institution on the ground should be rejected.

B. The Petition does not address the *Graham* factors

As set forth in Section V.B, the Petition’s Ground 1 obviousness assertion must address the *Graham* factors, which include a requirement to explain the differences between the challenged claims and the prior art. As Ground 1 is a single-reference obviousness assertion (as opposed to an anticipation theory), Petitioner presumably proposes to modify Djuric to arrive at the challenged claims. *See, e.g., Arendi*, 832 F.3d at 1361 (“Though less common, in appropriate circumstances, a patent can be obvious in light of a single prior art reference if it would have been obvious to modify that reference to arrive at the patented invention.”). But the Petition is not clear on this point. Focusing on the claim as a whole, Petitioner fails to articulate differences between the challenged claims and Djuric, and it does not specify a manner in which it proposes to modify Djuric to invalidate the challenged claims. *See, e.g., Pet.* at 19 (Petitioner alleges that “Djuric discloses all the same concepts claimed in the ’346 Patent.”). Without identifying these differences, a proper obviousness determination cannot be made. *Graham*, 383 U.S. at 17-18.

To the extent Petitioner’s Ground 1 obviousness allegations attempt to supplement an alleged missing element in Djuric with expert testimony, the Petition

is equally deficient. Again, the Petition does not specify the element(s) of the challenged claims that is not disclosed by Djuric, much less articulate how it proposes to supplement Djuric with the knowledge of a person of ordinary skill to plug such hole. This is not a trivial oversight, as it is improper to supply a missing element with expert testimony. *See* OFFICE PATENT TRIAL PRACTICE GUIDE at § I.G. (“because an *inter partes* review may only be requested ‘on the basis of prior art consisting of patents or printed publications,’ 35 U.S.C. § 311(b), expert testimony cannot take the place of disclosure from patents or printed publications. In other words, expert testimony may explain ‘patents and printed publications,’ but is not a substitute for disclosure in a prior art reference itself.”).

Notably, it is not Patent Owner’s job to read between the lines of the Petition. *See Liberty Mut. Ins.*, No. CBM2012-00003, Paper 8 at 14-15 (representative) (“[W]e address only the basis, rationale, and reasoning put forth by the Petitioner and resolve all vagueness and ambiguity in Petitioner’s arguments against the Petitioner.”). Petitioner has not met its burden to clearly articulate its Ground 1 obviousness case. Because the Petition does not address the *Graham* factors, including a discussion of the shortcomings of Djuric and how it proposes to address them, the Board should reject Ground 1.

VII. THE PETITION DOES NOT DEMONSTRATE THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE UNDER GROUND 2

For Ground 2, Petitioner contends that Djuric in view of Cox renders claims 1-23 obvious. As set forth above, for Ground 1, Petitioner has not shown that Djuric discloses limitations 1[d-v], 10[d-v], or 19[d-v]. *See* Section VI.A. For Ground 2, Petitioner does not make any allegations with respect to these limitations. Furthermore, the Petition does not address the *Graham* factors, including the requirement that Petitioner identify the differences between the challenged claims and Djuric. Thus, Petitioner has not met its burden as to Ground 2.

A. 1[d-v], 10[d-v], 19[d-v] – Petitioner failed to demonstrate that Djuric or Cox disclose or render obvious “modifying the region based on the hidden context of the traffic entity” of the independent claims

Limitations 1[d-v], 10[d-v], and 19[d-v] each recite “modifying the region based on the hidden context of the traffic entity.” As set forth above, for Ground 1, Petitioner has not shown that Djuric discloses these limitations. *See* Section VI.A. For Ground 2, Petitioner does not make any allegations with respect to these limitations. *See* Pet. at 51-59. Thus, for all the same reasons discussed in Section VI.A as to Ground 1, Petitioner has failed to meet its burden as to Ground 2. Petitioner has failed to provide any type of meaningful analysis in the Petition as to the claim limitations recited in 1[d-v], 10[d-v], or 19[d-v] for Ground 2.

B. The Petition does not address the *Graham* factors

Even though petitions for IPR “must address the *Graham* factors,” Petitioner’s Ground 2 allegations fail to do so. *See Eizo Corp. v. Barco N.V.*, Case No. IPR2014-00358, Paper 11 at 29–30 (P.T.A.B. July 23, 2014) (citing *Graham*, 383 U.S. at 17–18). Here, Petitioner alleges that “to the extent Djuric alone does not teach [certain concepts of element 1[d-ii]], the claimed operations are also disclosed by Cox.” Pet. at 51. However, this type of conclusory analysis fails to identify the differences between the claimed subject matter and the prior art and is insufficient. For example, the Board faulted the petitioner in *Eizo Corp.* for failing to identify the differences between the claimed subject matter and the prior art. *Id.* at 29–30. In particular, the Board found insufficient the petitioner’s “conclusory assertion” that “[t]o the extent [the first reference] may not explicitly teach” the limitation, the second reference “explicitly teaches this limitation.” *Id.* at 30. The Board explained that “such an assertion fails to resolve the exact differences sought to be derived from” the second reference. *Id.* (finding that petitioner had not shown a reasonable likelihood of prevailing on that ground). Other Board decisions have reached the same result. *See, e.g., Moses Lake Indus., Inc. v. Enthone, Inc.*, Case No. IPR2014-00243, Paper 6 at 18 (P.T.A.B. June 18, 2014); *eBay, Inc. v. Paid, Inc.*, Case No. CBM2014-00125, Paper 15 at 21 (P.T.A.B. Sept. 30, 2014). This is not a trivial defect. The Supreme Court has explicitly stated that the *Graham* factors, including the “differences

between the prior and the claims at issue,” provide the necessary “background” against which the “the obviousness or nonobviousness of the subject matter is determined.” *Graham*, 383 U.S. at 17-18. Petitioner’s wholly incomplete analysis in this regard is akin to the faulty analysis in *Eizo*. For at least these additional reasons, Petitioner has not shown a reasonable likelihood of prevailing on Ground 2.

VIII. THE PETITION DOES NOT DEMONSTRATE THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE UNDER GROUND 3 OR GROUND 4

For Grounds 3 and 4, Petitioner improperly conflates its allegations into a single section by contending that Djuric in view of Zhu (Ground 3) or Djuric in view of Zhu and Cox (Ground 4) renders claims 1-23 obvious. As set forth above, for Ground 1, Petitioner has not shown that Djuric discloses limitations 1[d-v], 10[d-v], or 19[d-v]. *See* Section VI.A. For Grounds 3 and 4, Petitioner does not make any allegations with respect to these limitations. Furthermore, the Petition does not address the *Graham* factors, including the requirement that Petitioner identify the differences between the challenged claims and Djuric. Thus, Petitioner has not met its burden as to Grounds 3 and 4.

- A. 1[d-v], 10[d-v], 19[d-v] – Petitioner failed to demonstrate that Djuric-Zhu combination of Ground 3 or the Djuric-Zhu-Cox combination of Ground 4 disclose or render obvious “modifying the region based on the hidden context of the traffic entity” of the**

independent claims

Limitations 1[d-v], 10[d-v], and 19[d-v] each recite “modifying the region based on the hidden context of the traffic entity.” As set forth above, for Ground 1, Petitioner has not shown that Djuric discloses these limitations. *See* Section VI.A. For Ground 3 and 4, Petitioner does not make any allegations with respect to these limitations. *See* Pet. at 63-67 (Petitioner’s allegations of limitations 1[b] and 1[d-iv]). Thus, for all the same reasons discussed in Section VI.A as to Ground 1, Petitioner has failed to meet its burden as to Grounds 3 and 4. Petitioner has failed to provide any type of meaningful analysis in the Petition as to the claim limitations recited in 1[d-v], 10[d-v], or 19[d-v] for Grounds 3 and 4.

B. The Petition does not address the *Graham* factors

Even though petitions for IPR “must address the *Graham* factors,” Petitioner’s allegations for Grounds 3 and 4 fail to do so. *See Eizo Corp. v. Barco N.V.*, Case No. IPR2014-00358, Paper 11 at 29–30 (P.T.A.B. July 23, 2014) (citing *Graham*, 383 U.S. at 17–18). Here, Petitioner alleges that “[t]o the extent Djuric alone (or the combination of Djuric and Cox) does not disclose or render obvious [certain concepts], such operations are also disclosed by Zhu.” Pet. at 60. However, this type of conclusory analysis fails to identify the differences between the claimed subject matter and the prior art and is insufficient. For example, the Board faulted the petitioner in *Eizo Corp.* for failing to identify the differences between the claimed

subject matter and the prior art. *Id.* at 29–30. In particular, the Board found insufficient the petitioner’s “conclusory assertion” that “[t]o the extent [the first reference] may not explicitly teach” the limitation, the second reference “explicitly teaches this limitation.” *Id.* at 30. The Board explained that “such an assertion fails to resolve the exact differences sought to be derived from” the second reference. *Id.* (finding that petitioner had not shown a reasonable likelihood of prevailing on that ground). Other Board decisions have reached the same result. *See, e.g., Moses Lake Indus., Inc. v. Enthone, Inc.*, Case No. IPR2014-00243, Paper 6 at 18 (P.T.A.B. June 18, 2014); *eBay, Inc. v. Paid, Inc.*, Case No. CBM2014-00125, Paper 15 at 21 (P.T.A.B. Sept. 30, 2014).

This is not a trivial defect. The Supreme Court has explicitly stated that the *Graham* factors, including the “differences between the prior and the claims at issue,” provide the necessary “background” against which the “the obviousness or nonobviousness of the subject matter is determined.” *Graham*, 383 U.S. at 17-18. Petitioner’s wholly incomplete analysis in this regard is akin to the faulty analysis in *Eizo*. For at least these additional reasons, Petitioner has not shown a reasonable likelihood of prevailing on Grounds 3 or 4.

IX. THE PETITION DOES NOT DEMONSTRATE THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE UNDER GROUNDS 5, 6, 7, OR 8

For Grounds 5, 6, 7, and 8, Petitioner improperly conflates its allegations into a single section by contending that “[t]o the extent Djuric alone (or any of the Djuric-Cox, Djuric-Zhu, or Djuric-Cox-Zhu combinations) does not render obvious dependent claims 4, 6, 13, 15, 22, and 23, further combination with Ross renders these dependent claims obvious.” Pet. at 68. As set forth above, for Ground 1, Petitioner has not shown that Djuric discloses limitations 1[d-v], 10[d-v], or 19[d-v]. *See* Section VI.A. For Grounds 5-8, Petitioner does not make any allegations with respect to these limitations. Furthermore, the Petition does not address the *Graham* factors, including the requirement that Petitioner identify the differences between the challenged claims and Djuric. Thus, Petitioner has not met its burden as to Grounds 5-8.

A. 1[d-v], 10[d-v], 19[d-v] – Petitioner failed to demonstrate that Djuric-Ross combination of Ground 5, the Djuric-Cox-Ross combination of Ground 6, the Djuric-Zhu-Ross combination of Ground 7, or the Djuric-Cox-Zhu-Ross combination of Ground 8 disclose or render obvious “modifying the region based on the hidden context of the traffic entity” of the independent claims

Limitations 1[d-v], 10[d-v], and 19[d-v] each recite “modifying the region based on the hidden context of the traffic entity.” As set forth above, for Ground 1, Petitioner has not shown that Djuric discloses these limitations. *See* Section VI.A. For Ground 5-8, Petitioner does not make any allegations with respect to these

limitations. *See* Pet. at 68-74. Thus, for all the same reasons discussed in Section VI.A as to Ground 1, Petitioner has failed to meet its burden as to Grounds 5-8. Petitioner has failed to provide any type of meaningful analysis in the Petition as to the claim limitations recited in 1[d-v], 10[d-v], or 19[d-v] for Grounds 5-8.

B. The Petition does not address the *Graham* factors

Even though petitions for IPR “must address the *Graham* factors,” Petitioner’s allegations for Grounds 3 and 4 fail to do so. *See Eizo Corp. v. Barco N.V.*, Case No. IPR2014-00358, Paper 11 at 29–30 (P.T.A.B. July 23, 2014) (citing *Graham*, 383 U.S. at 17–18). Here, Petitioner alleges that “[t]o the extent Djuric alone (or any of the Djuric-Cox, Djuric-Zhu, or Djuric-Cox-Zhu combinations) does not render obvious dependent claims 4, 6, 13, 15, 22, and 23, further combination with Ross renders these dependent claims obvious.” Pet. at 68. However, this type of conclusory analysis fails to identify the differences between the claimed subject matter and the prior art and is insufficient. For example, the Board faulted the petitioner in *Eizo Corp.* for failing to identify the differences between the claimed subject matter and the prior art. *Id.* at 29–30. In particular, the Board found insufficient the petitioner’s “conclusory assertion” that “[t]o the extent [the first reference] may not explicitly teach” the limitation, the second reference “explicitly teaches this limitation.” *Id.* at 30. The Board explained that “such an assertion fails to resolve the exact differences sought to be derived from” the second reference. *Id.*

(finding that petitioner had not shown a reasonable likelihood of prevailing on that ground). Other Board decisions have reached the same result. *See, e.g., Moses Lake Indus., Inc. v. Enthone, Inc.*, Case No. IPR2014-00243, Paper 6 at 18 (P.T.A.B. June 18, 2014); *eBay, Inc. v. Paid, Inc.*, Case No. CBM2014-00125, Paper 15 at 21 (P.T.A.B. Sept. 30, 2014).

This is not a trivial defect. The Supreme Court has explicitly stated that the *Graham* factors, including the “differences between the prior and the claims at issue,” provide the necessary “background” against which the “the obviousness or nonobviousness of the subject matter is determined.” *Graham*, 383 U.S. at 17-18. Petitioner’s wholly incomplete analysis in this regard to four different combinations is even more egregious than the faulty analysis in *Eizo*. For at least these additional reasons, Petitioner has not shown a reasonable likelihood of prevailing on Grounds 5-8.

X. THE CHALLENGED CLAIMS ARE ENTITLED TO PATENTABLE WEIGHT

The determination of whether a claim limitation is entitled to patentable weight under the printed matter doctrine comprises a two-part analysis as set forth in *In re DiStefano*, 808 F.3d 845, 848-851 (Fed. Cir. 2015). To be considered printed matter, the claim limitation in question “must be matter claimed for what it communicates.” *Id.* at 849. Furthermore, the claim limitation is printed matter “only if it claims the content of information.” *Id.* at 848. “Only if the limitation in question

is determined to be printed matter does one turn to the question of whether the printed matter nevertheless should be given patentable weight.” *Id.* at 850.

Printed matter is given patentable weight if the “claimed informational content has a functional or structural relationship to the substrate.” *Id.* A limitation deemed to be printed matter is entitled to patentable weight if it is “interrelated with the rest of the claim.” *Praxair Distrib., Inc. v. Mallinckrodt Hosp. Prods. IP Ltd.*, 890 F.3d 1024, 1033 (Fed. Cir. 2018) (“By interrelating the claimed information regarding correlations between nitric oxide, LVD, and pulmonary edema with the concrete step of discontinuing treatment of the information . . . the printed matter . . . has a functional relationship to the rest of the claim[,] giving the printed matter patentable weight.”). The Federal Circuit has also stated that it “consider[s] whether the printed matter merely informs people of the claimed information, or whether it instead interacts with the other elements of the claim to create a new functionality in a claimed device or to cause a specific action in a claimed process.” *C R Bard Inc. v. Angiodynamics, Inc.*, 979 F.3d 1372, 1381 (Fed. Cir. 2020).

As an initial matter, Petitioner improperly attempts to shift the burden to Patent Owner by stating that “[p]rinted matter is *only* entitled to patentable weight if it is functionally related to the substrate on which the information is present.” Pet. at 77 (emphasis added). Petitioner relies on and misinterprets *In re Marco Guldenaar*

Holding B.V., which actually holds that “claim limitations directed to the content of information and lacking a requisite functional relationship are not entitled to patentable weight.” Pet. at 77 (citing to *In re Marco Guldenaar Holding B.V.*, 911 F.3d 1157, 1161 (Fed. Cir. 2018) (quoting *Praxair*, 890 F.3d at 1032)). However, it is Petitioner’s burden to establish that the claim limitations in question are not entitled to patentable weight. See *FanDuel, Inc. v. Interactive Games LLC*, 966 F.3d 1334, 1341 (Fed. Cir. 2020) (“In an inter partes review, the burden of persuasion is on the petitioner to prove ‘unpatentability by a preponderance of the evidence,’ 35 U.S.C. § 316(e), and that burden never shifts to the patentee.”); *In re Lowry*, 32 F.3d 1579, 1584 (Fed. Cir. 1994) (“Even assuming, arguendo, that data objects and data structures are analogous to printed matter . . . the burden of establishing the absence of a novel, nonobvious functional relationship rests with the PTO.”)

Like Petitioner’s obviousness assertions, Petitioner’s allegations regarding printed matter are conclusory and lack any meaningful analysis as to the independent claims.² Indeed, Petitioner has failed to meet its burden because Petitioner’s allegations lack a showing with any particularity that any limitation of the challenged

² For purposes of Patent Owner’s Preliminary Response, Patent Owner only addresses the limitations of the independent claims.

claims is printed matter as a threshold issue. *See* Pet. at 75-76 (“Because the above limitations are defined by the information content, they are patent ineligible printed matter.”). For example, Petitioner does not allege which particular claim element is “matter claimed for what it communicates,” much less what is being communicated and to whom. *Id.*; *see In re DiStefano*, 808 F.3d at 848-49.

Additionally, Petitioner does not cite to any case law in which claim limitations similar to those at issue here were found to be printed matter. Petitioner relies on *C R Bard* as standing for the proposition that a patent cannot cover certain limitations of the challenged claims. Pet. at 76. But the limitations discussed in *C R Bard* are directed to humans that perform a medical procedure involving physical implants with identifiers physically printed on the physical object, not to claim limitations performed by a machine or a computer, or anything close to the substance of the challenged limitations at issue here. 979 F.3d at 1376-77, 1381-82. Nor would such a discussion be relevant in *C R Bard*, because there, unlike here, “the parties agree[d] that the asserted claims include printed matter,” a fact which Petitioner sweeps under the rug. *Id.* at 1381. The other cases Petitioner cites are similarly directed to limitations performed by humans that involve information actually printed on a physical object that convey information to a human. *See Praxair*, 890 F.3d at 1028-29 (claims are performed by humans and “generally require supplying

a medical provider with a cylinder of nitric oxide gas and providing the medical provider with certain prescribing information relating to the harmful effects of nitric oxide for certain patients”); *In re Marco Guldenaar Holding B.V.*, 911 F.3d at 1161 (claims directed to humans playing a dice game, where markings on dice convey information to a human).

The claim limitations at issue here are not printed matter and do not comprise matter claimed for what it communicates that merely conveys information. For example, the claims require at least one computer and/or an autonomous vehicle to perform or be configured to perform the steps of “receiving, by an autonomous vehicle, sensor data from sensors mounted on the autonomous vehicle, the sensor data comprising one or more images,” “generating a point cloud representation of the surroundings of the autonomous vehicle based on the sensor data,” “identifying, one or more traffic entities based on the sensor data, the traffic entities representing non-stationary objects in traffic in which the autonomous vehicle is driving,” “determining one or more motion parameters describing movement of the traffic entity,” “providing an image of the one or more images, the image showing the traffic entity as input to a machine learning model configured to receive an input image showing an input traffic entity and output summary statistics of expected human responses describing a hidden context of the input traffic entity shown in the

input image,” “determining the hidden context of the traffic entity based on the output of the machine learning based model,” “determining a region of the point cloud where the traffic entity is expected to reach within a threshold time interval,” “modifying the region based on the hidden context of the traffic entity,” and “navigating the autonomous vehicle so that the autonomous vehicle stays at least a threshold distance away from the modified region of each of the one or more traffic entities.” Patent Owner could not find any cases that discuss or analyze claim limitations like those at issue here in the printed matter context. If the claim limitations at issue here were printed matter, one would expect a plethora of court decisions discussing this issue.

Assuming *arguendo* that the claim limitations are deemed to be printed matter, Petitioner fails to meet its burden that the limitations are not owed any patentable weight. Pet. at 77. Again, Petitioner only relies on cases directed to steps performed by a human involving matter actually printed on a physical substrate (e.g., markings on dice and instructions for a health care worker). *Id.* Petitioner then relies on these cases to allege that limitations of the challenged claims “merely inform[] people of the claimed information” without further analysis or explanation as to how this allegation is related to the challenged claims. *Id.* This is insufficient and, in any case, not true with respect to the challenged claims.

Indeed, the Federal Circuit has found a functional relationship where the claim requires a human taking a specific medical action based on printed matter comprising instructions related to the medical action because the interrelated claim information creates a functional relationship with a concrete step of discontinuing treatment because of that information. *See Praxair*, 890 F.3d at 1035. Similarly, the claims of the '346 patent interrelate information with concrete steps based on the alleged printed matter information. For example, traffic entities are identified based on the received sensor data, the region of the point cloud where the traffic entity is expected to reach within a threshold time interval is determined, the region based on the hidden context of the traffic entity is modified, and the autonomous vehicle is navigated so that the autonomous vehicle stays at least a threshold distance away from the modified region of the traffic entity. *See Ex. 1001*, claims 1, 10, and 19. Concrete steps such as “modifying the region based on the hidden context of the traffic entity” and “navigating the autonomous vehicle so that the autonomous vehicle stays at least a threshold distance away from the modified region . . .” are analogous to the concrete step of “discontinuing treatment.” *See Praxair*, 890 F.3d at 1035; *see also Ex. 1001*, claims 1, 10, and 19. The concrete steps of each challenged claim are interrelated with the alleged printed matter limitations, and the concrete steps are taken based on the alleged printed matter limitations.

Petitioner conclusorily alleges that limitations of the challenged claims “merely inform[] people of the claimed information,” without further analysis or explanation. Pet. at 77. For example, what “people” are merely being informed, when the independent claims recite steps performed by computers and/or autonomous vehicles. The Federal Circuit has provided that it “consider[s] whether the printed matter merely informs people of the claimed information, or whether it instead interacts with the other elements of the claim to create a new functionality in a claimed device or to cause a specific action in a claimed process.” *C R Bard*, 979 F.3d at 1381. The challenged claims do not “merely inform” people of the claimed information. Instead, while the challenged claims refer to certain types of data, they recite numerous limitations that interact to cause specific actions in a claimed process, as previously discussed. For example, claim 1 of the ’346 patent recites:

receiving, by an autonomous vehicle, sensor data from sensors mounted on the autonomous vehicle, the sensor data comprising one or more images;

generating a point cloud representation of the surroundings of the autonomous vehicle based on the sensor data;

identifying, one or more traffic entities based on the sensor data, the traffic entities representing non-stationary objects in traffic in which the autonomous vehicle is driving;

for each of the one or more traffic entities:

determining one or more motion parameters describing movement of the traffic entity;

providing an image of the one or more images, the image showing the traffic entity as input to a machine learning model configured to receive an input image showing an input traffic entity and output summary statistics of expected human responses describing a hidden context of the input traffic entity shown in the input image;

determining the hidden context of the traffic entity based on the output of the machine learning based model;

determining a region of the point cloud where the traffic entity is expected to reach within a threshold time interval; and

modifying the region based on the hidden context of the traffic entity; and

navigating the autonomous vehicle so that the autonomous vehicle stays at least a threshold distance away from the modified region of each of the one or more traffic entities.

Ex. 1001, claim 1. The limitations also “create a new functionality in a claimed device” regarding the claimed “autonomous vehicle” that can now “navigate[] ... so that the autonomous vehicles stays at least a threshold distance away from the modified region of the one or more traffic entities [based on the hidden context]” based on the recited limitations. *C R Bard*, 979 F.3d at 1381.

Although Petitioner claims the alleged “printed matter limitations do not have any such functional relationship with the ‘substrate,’ which in this case is computer

memory” (Pet. at 77), there is no basis for Petitioner’s conclusion that the substrate is simply “computer memory.” Rather, “substrate . . . encompasses the structural elements of the claimed invention.” *C R Bard*, 979 F.3d at 1381. The structural elements of the claimed inventions include elements such as autonomous vehicles, computers, memory comprising software instructions, processors, etc. As previously discussed, each of the challenged limitations has a functional relationship with such structural elements. For example, a functional relationship to a substrate has been found when software causes information to be displayed on a computer screen. *See Hafeman v. LG Elecs., Inc.*, Civil Action No. 6:21-cv-00696-ADA-DTG, 2023 U.S. Dist. LEXIS 66459, at *23 (W.D. Tex. Apr. 17, 2023). This is analogous to the claims at issue here, in which software causes, for example, a computer processor to perform one or more of the challenged limitations that ultimately lead to navigating the autonomous vehicle so that it stays at least a threshold distance away from the modified region of a traffic entity based on the hidden context.

In sum, the challenged claim limitations do not comprise printed matter. Even if they did, the printed matter is still owed patentable weight. Petitioner has failed to meet its burden to hold otherwise.

XI. PATENT OWNER’S FINAL COMMENTS

Patent Owner does not concede the legitimacy of any arguments in the Petition that are not specifically addressed herein and expressly reserves the right to rebut

any such arguments in its Patent Owner Response if *inter partes* review is instituted. Similarly, Patent Owner also does not concede any underlying contentions in the Petition and reserves the right to rebut them later. Additionally, Patent Owner is not limited to the arguments presented here in this Preliminary Response, but expressly reserves the right to raise further arguments, including claim construction arguments, not presented in this Preliminary Response.

XII. CONCLUSION

For the foregoing reasons, Patent Owner respectfully requests that the Board decline to institute *inter partes* review of the '346 patent.

Dated: January 16, 2026

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CERTIFICATE OF COMPLIANCE WITH WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), I certify that this Preliminary Response complies with the type-volume limits of 37 C.F.R. § 42.24(b)(1) because it contains 8,486 words, excluding the parts of this Patent Owner's Preliminary Response that are exempted by 37 C.F.R. § 42.24(a), according to the word processing system used to prepare this Patent Owner's Preliminary Response.

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CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing Patent Owner's Preliminary Response was served on January 16, 2026, to Lead and Back-up Counsel for Petitioner at the service address provided in Petitioner's Mandatory Notices:

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