

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE INC.,
Petitioner,

v.

JI-SOO LEE,
Patent Owner.

Case IPR2016-00045
Patent 6,233,518 B1

Before PATRICK R. SCANLON, RAMA G. ELLURU, and
SCOTT C. MOORE, *Administrative Patent Judges*.

MOORE, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

Google Inc. (“Petitioner”) filed a Petition (Paper 2; “Pet.”) to institute an *inter partes* review of claims 45 and 46 of U.S. Patent No. 6,532,518 B1 (Ex. 1001; “the ’518 patent”).¹ Ji-Soo Lee (“Patent Owner”) filed a Preliminary Response (Paper 6; “Prelim. Resp.”). The Board instituted a trial as to claims 45 and 46 of the ’518 patent. Paper 7 (“Dec. on Inst.”).

After institution of trial, Patent Owner filed a Patent Owner Response (“PO Resp.”) to the Petition. Paper 18. Petitioner also filed a Reply (“Reply”) to the Patent Owner Response. Paper 26. Petitioner relies on the Declaration of Dr. William Michalson (Ex. 1003) in support of its Petition, and the Second Declaration of Dr. William Michalson (Ex. 1015) in support of its Reply. Patent Owner relies on the Declaration of J. Tipton Cole (Ex. 2014) in support of its Response. An oral hearing was held on February 22, 2017, and the record contains a transcript of this hearing. Paper 27 (“Tr.”).

We have jurisdiction over this dispute under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons discussed below, Petitioner has not shown by a preponderance of the evidence that claims 45 and 46 of the ’518 patent are unpatentable under 35 U.S.C. § 103(a).

¹ Google also identifies Samsung Electronics America, Inc., LG Electronics Mobilecomm U.S.A., Inc., HTC America, Inc., and Motorola Mobility LLC as real parties in interest. Pet. 2.

II. BACKGROUND

A. *Related Proceedings*

The parties state that the '518 patent is asserted in several cases pending in the U.S. District Court for the Eastern District of Texas. Pet. 2–3; Paper 5, 1–2, Paper 12, 2; Paper 14, 2.

B. *The '518 Patent*

The '518 Patent “relates to a traffic information providing service method and system, and in particular, to a method and a system for providing an image vector-based traffic information.” Ex. 1001 at 1:7–10.

Figure 1A of the '518 Patent is reproduced below.

FIG. 1A

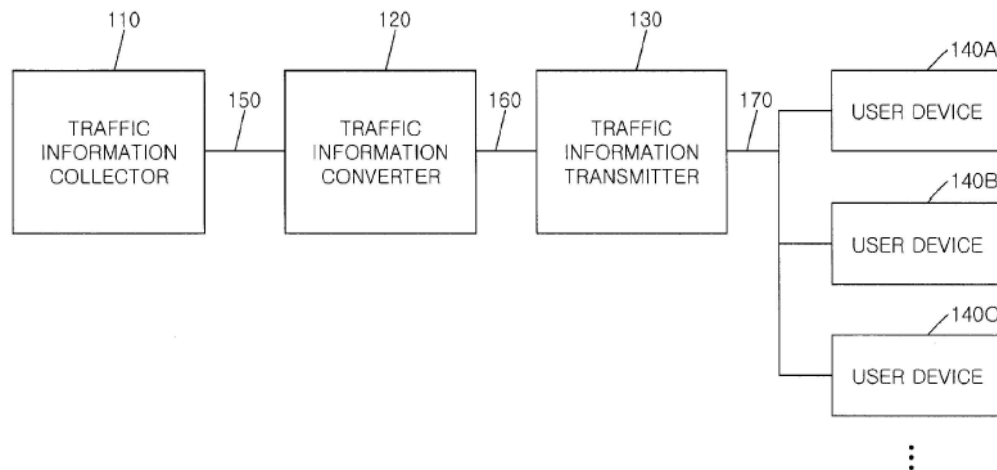


Figure 1A depicts a block diagram of a traffic information providing system. Ex. 1001, 6:42–45. The system includes traffic information collector 110, traffic information converter 120, traffic information transmitter 130, and one or more user devices 140. *Id.* at 6:46–51.

Traffic information collector 110 collects traffic information from various sources and produces text-based traffic information (“TBTI”), which

is then communicated to traffic information converter 120. Ex. 1001, 6:52–64. Traffic information converter 120 “converts the text-based traffic information TBTI into image vector-based traffic information, more specifically, into a traffic state map TSM or a traffic information map TIM.” *Id.* at 6:65–7:1. The image vector entities in a traffic state map (“TSM”) are time-variant and represent, for example, “a road, the color of which varies according to the velocity on the road.” *Id.* 7:43–47. A traffic information map (“TIM”) may be composed of a TSM and a basic map. *Id.* at 7:1–3. A basic map is a map composed of time-invariant image vector entities, each of which corresponds to a real entity, such as a mountain, a river, or a building. *Id.* at 7:4–7. A basic map may be stored in traffic information converter 120, or alternatively in user device 140. *Id.* at 7:36–38.

Traffic information transmitter 130 receives a TSM or TIM from the traffic information converter 120 and provides the TSM or TIM to user device 140. Ex. 1001, 7:50–54. User device 140 includes a communication function for receiving the TSM or TIM, and a screen for displaying an “image based traffic information.” *Id.* 7:65–8:1.

C. Challenged Claims

Challenged claims 45 and 46 are independent claims. Claim 45 is illustrative and is reproduced below.

45. A method for displaying an image-based traffic information comprising the steps of:

receiving a traffic information map which includes at least a traffic state map, said traffic state map includes a plurality of time-variant image vector entities in a specified region and each of the time-variant image vector entity

includes an attribute-designating statement, an shape-designating statement and a position-designating statement;

displaying a first image in accordance with a basic map on a screen, said basic map including a plurality of time-invariant image vector entities in the specified region; and

displaying a second image in accordance with said traffic state map such that said second image is cumulatively displayed on the first image.

D. References Relied Upon

Petitioner relies on the following references and materials in support of the instituted grounds of unpatentability:

References and Materials	Exhibit No.
U.S. Patent No. 5,313,200 (iss. May 17, 1994) (“Sone”)	1004
U.S. Patent No. 5,966,135 (iss. Oct. 12, 1999) (“Roy”)	1005

Pet. 4; Dec. on Inst. 25.

E. Grounds of Unpatentability

We instituted trial on the following grounds

Challenged Claim(s)	Statutory Basis	References
45 and 46	35 U.S.C. § 103(a)	Sone, either alone or in combination with Roy

Dec. on Inst. 25.

III. ANALYSIS

A. *Level of Ordinary Skill in the Art*

In our Decision on Institution, we treated the cited references as being representative of the level of ordinary skill in the art. Dec. on Inst. 10 n.4 (citing *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001)). The parties do not argue in the Petition or Patent Owner Response that we should adopt a specific formulation regarding the level of ordinary skill in the art. Although the Petition and Patent Owner Response are accompanied by declaration testimony that address this subject (*see, e.g.*, Ex. 1003 ¶ 14; Ex. 2014 ¶ 22), the parties did not advocate for specific formulations regarding the level of ordinary skill in the art in these briefs, and our rules do not permit parties to incorporate such arguments by reference from their declarations. 37 C.F.R. § 42.6(a)(3). Moreover, even if the parties had cited this declaration testimony in the briefs, it would not persuade us to adopt the specific formulation regarding the level of ordinary skill in the art set forth by either declarant because both declarants' testimony is conclusory in nature and does not cite any specific evidence that persuasively supports either declarant's proposed formulation. *See* Ex. 1003 ¶ 14; Ex. 2010 ¶ 22; 37 C.F.R. § 42.65(a).

Petitioner implicitly asserts in its Reply that a person of ordinary skill in the art would have had experience in navigation systems. *See* Reply 24. To the extent Petitioner was attempting to set forth an explicit formulation regarding the level of ordinary skill in the art, this argument improperly exceeds the scope of the Patent Owner Response. *See* 37 C.F.R. § 42.23(b) (setting forth the proper scope of a reply). This argument also is based on the unpersuasive declaration testimony cited above. *See* Reply 24 (citing

Ex. 1015 ¶¶ 34–35 (citing Ex. 1003 ¶ 14)). In any event, Petitioner confirmed during the oral hearing that its arguments do not depend on the Board adopting a specific formulation regarding the level of skill in the art, and that Petitioner does not object to the Board treating the references as representative of the level of ordinary skill in the art. Tr. 26:9–27:8.

On this record, we decline to adopt a specific formulation regarding the level of ordinary skill in the art, and find that the cited references are representative of the level of ordinary skill in the art. *See Okajima*, 261 F.3d at 1355 (the level of ordinary skill in the art may be evidenced by the cited references themselves).

B. Evidentiary Issues

On August 9, 2016, two weeks after filing its Response, Patent Owner filed a Supplemental Declaration of J. Tipton Cole (Ex. 2015). The Patent Owner Response does not cite to, or explain the relevance of, this Supplemental Declaration, as required by our Rules. *See* 37 C.F.R. §§ 42.120(a), 42.23(a), 42.22(a)(2). Patent Owner also did not seek leave to serve or file this Supplemental Declaration after the deadline for disclosing the evidence upon which it would rely to demonstrate patentability. *See* 37 C.F.R. § 42.51(b)(1). Moreover, we previously ordered that any patentability argument not included in the Patent Owner Response would be deemed waived. Paper 8, 3. Accordingly, we expunge Exhibit 2015, and do not consider this exhibit in reaching the findings and conclusions set forth in this Final Written Decision.

Petitioner also argues in its Reply that Patent Owner’s declarant, Mr. Cole, is not qualified by knowledge and experience to offer expert testimony

in this proceeding. See Reply 24–25. Although Petitioner does not cite to the Federal Rules of Evidence, this argument is effectively an attack on Mr. Cole’s qualifications under Federal Rule of Evidence 702, which provides that a witness “who is qualified as an expert by knowledge, skill, experience, training, or education” may offer expert testimony.

Our Rules require that any party wishing to challenge the admissibility of evidence do so by filing a Motion to Exclude. 37 C.F.R. § 42.64(a), (b)(1), (c); Office Trial Practice Guide, 77 Fed. Reg. at 48767. Petitioner did not file a Motion to Exclude Mr. Cole’s declaration (Exhibit 2014) based on Federal Rule of Evidence 702. Accordingly, we decline to exclude Exhibit 2014 from evidence. Instead, we treat Petitioner’s arguments as going to the weight, rather than the admissibility, of Mr. Cole’s testimony.

C. Claim Construction

1. Overview

We interpret claims of an unexpired patent using the broadest reasonable interpretation in light of the specification of the patent. 37 C.F.R. § 42.100(b); see *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (concluding the broadest reasonable construction “regulation represents a reasonable exercise of the rulemaking authority that Congress delegated to the Patent Office”). There is a presumption that claim terms are given their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art in the context of the specification. See *In re Translogic Tech. Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). An applicant may rebut that presumption by providing a definition of the term in

the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). An applicant also may narrow the meaning of a claim term by disclaiming or disavowing claim scope; however, such a “disclaimer or disavowal of claim scope must be clear and unmistakable, requiring ‘words or expressions of manifest exclusion or restriction’ in the intrinsic record.” *Unwired Planet, LLC v. Apple Inc.*, 829 F.3d 1353, 1358 (Fed. Cir. 2016) (quoting *Teleflex, Inc. v. Ficoso N. Am. Corp.*, 299 F.3d 1313, 1327 (Fed. Cir. 2002)). In the absence of such a definition or disclaimer, limitations are not to be read from the specification into the claims. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

2. “image vector entity”

In our Decision on Institution, we construed the claim term “image vector entity” as “a format of information representing an image to be displayed which includes a shape designating statement and a position designating statement used to draw the shape of a real entity at the specified position.” Dec. on Inst. 7 (citing Ex. 1012, 20). In so doing, we adopted the U.S. District Court for the Eastern District of Virginia’s construction of this claim term from *Porto Technology Co., Ltd. v. Cellco Partnership*, Case No. 3:13CV265-HEH. See Pet. 7–10. Although we are not bound by the District Court’s constructions, we consider its reasoned analysis. *Cf. Power Integrations, Inc. v. Lee*, 797 F.3d 1318, 1326 (Fed. Cir. 2015) (“The fact that the board is not generally bound by a previous judicial interpretation of a disputed claim term does not mean, however, that it has no obligation to acknowledge that interpretation or to assess whether it is consistent with the

broadest reasonable construction of the term.”). In this case, after an exhaustive analysis of the intrinsic and extrinsic evidence, we determined that the District Court’s construction of “image vector entity” was appropriate. *See* Dec. on Inst. 7–10.

Patent Owner argues in its Response that the claim term “image vector entity” should be construed as “a format of information representing an image to be displayed which includes a shape-designating statement, a position-designating statement, and an attribute-designating statement used to draw the shape of a real entity at the specified position.” PO Resp. 2–3. Patent Owner’s proposed construction seeks to add the text “and an attribute-designating statement” to our prior construction of this claim term, but is otherwise substantively identical to our prior construction. *See id.* Challenged claims 45 and 46 both recite a “time-variant image vector entity [that] includes an attribute-designating statement.”

Petitioner does not dispute our prior construction of “image vector entity.” *See* Reply 1–8. Petitioner also does not dispute that claims 45 and 46 both require a “time-variant image vector entity” that “includes an attribute-designating statement.” *See id.* However, Petitioner argues that we should reject Patent Owner’s attempt to further limit our construction of the claim term “image vector entity” so as to require an “attribute-designating statement.” *See id.*

In view of the undisputed fact that challenged claims 44 and 46 both recite a “time-variant image vector entity [that] includes an attribute-designating statement,” we need not resolve this dispute in order to determine the patentability of the challenged claims. Accordingly, on this record, we decline to resolve this claim construction dispute. *See Wellman*,

Inc. v. Eastman Chem. Co., 642 F.3d 1355, 1361 (Fed. Cir. 2011) (“[C]laim terms need only be construed ‘to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

a. Other claim terms

Patent Owner also asks that we modify our prior construction of “attribute designating statement.” PO Resp. 4. Petitioner does not ask that we construe any other claim terms. We decline to construe “attribute-designating statement,” or any other claim terms, because doing so is not necessary in order to resolve the issues in dispute. See *Wellman*, 642 F.3d at 1361.

D. *Instituted Grounds of Unpatentability*

1. Overview

Petitioner argues that all of the challenged claims are unpatentable under 35 U.S.C. § 103. Pet. 4. A claim is unpatentable under 35 U.S.C. § 103 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 such subject matter pertains.” 35 U.S.C. § 103(a). The question of obviousness under 35 U.S.C. § 103 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) objective evidence of nonobviousness, i.e., secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

The Supreme Court has held that “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR Int’l v. Teleflex Inc.*, 550 U.S. 398, 416 (2007). The Supreme Court also has held that “if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.” *Id.* at 417. However, the Supreme Court has cautioned that an invention “composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *Id.* at 418. Rather, “there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *Id.* (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

A petitioner cannot satisfy its burden to prove obviousness by employing “mere conclusory statements,” but “must instead articulate specific reasoning, based on evidence of record” to support an obviousness determination. *In re Magnum Oil Tools Int’l.*, 829 F.3d 1364, 1380–81 (Fed. Cir. 2016). The “factual inquiry” into the reasons for “combin[ing] references must be thorough and searching, and the need for specificity pervades.” *In re Nuvasive, Inc.*, 842 F.3d 1376, 1381–82 (Fed. Cir. 2016) (internal quotations and citations omitted). A determination of obviousness cannot be reached where the record lacks “explanation as to how or why the references would be combined to produce the claimed invention.” *Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1066 (Fed. Cir. 2016); see *Nuvasive*, 842 F.3d at 1382–85; *Magnum Oil*, 829 F.3d at 1380–81.

In addition, Petitioner’s burden of proof is higher now than it was at the institution stage of this proceeding. At the institution phase, Petitioner was only required to show a “reasonable likelihood” that it would prevail as to at least one challenged claim. 35 U.S.C. § 314(a). In order to prevail in this Final Written Decision, Petitioner must prove the unpatentability of each challenged claim by a preponderance of the evidence. 35 U.S.C. § 316(e).

2. Objective Indicia of Nonobviousness

The parties have not identified with specificity any objective evidence of nonobviousness that allegedly bears on the patentability of the challenged claims.

3. Alleged Obviousness of Claims 45 and 46 over Sone, either Alone or in Combination with Roy

a. Overview of Sone

Sone is directed to a display system mounted on a vehicle that is designed to display a road map image around the vehicle with one or more diagonal congestion marks that indicate the direction of congested traffic. Ex. 1004, Abstract. The display system of Sone may receive “congestion data sets” from beacon transmitters 1 that are part of a road system for monitoring traffic congestion. *Id.* at 1:63–68, 2:36–39. The disclosed display system also includes onboard storage unit 4 for storing map data, map image processor 5, and display unit 7. *Id.* at 2:10–15. Map image processor 5 “is designed to read the map data around the current vehicle position from [onboard storage] unit 4, and to form an image of a road map around the vehicle” as well as to “display[] one or more diagonal congestion

marks indicating the position and direction of road traffic congestion.” *Id.* at 2:17–26.

b. Overview of Roy

Roy is directed to enabling the viewing of a map picture that is generated from vector-based data. Ex. 1005, Abstract. The vector-based data used to generate the map picture may be retrieved over the Internet. *Id.* at 1:62–2:2.

c. Analysis

Claims 45 and 46 both require “*receiving* a traffic information map which includes at least a traffic state map,” wherein the traffic state map includes “a plurality of *time-variant image vector entities*.” (Emphasis added.) Petitioner argues that the “one or more congestion data sets” of Sone are “time-variant image vector entities.” Pet. 17 (emphasis omitted).

Sone discloses that these congestion data sets are received from beacon transmitters, and each include “a data item representing the position of a leading (front) end of a congested road section . . . a data item representing the direction of a congested traffic on that road section . . . and a data item representing the length of the congestion.” Ex. 1004, 1:65–2:9, 2:33–44. Sone’s vehicle-mounted display system uses this data to display directional congestion marks or arrows to indicate areas of traffic congestion. *See, e.g., id.* at 2:65–3:11. These marks or arrows may be “painted with one of different colors indicating different degrees of congestion.” *See id.* at 4:33–35.

Importantly, Sone *does not* teach or suggest that the data received from the beacon transmitters contains information that represents the shape

or appearance of the specific congestion marks or arrows that are displayed by Sone's vehicle-mounted display system. The received beacon data is used by Sone's vehicle-mounted display system to determine where to position the leading arrow or congestion mark, and to determine the length of roadway that will be designated as congested." See Ex. 1004, 3:12–21. However, the directional congestion marks or arrows that are depicted on Sone's display are generated locally, by processor 5 of Sone's vehicle-mounted display system. See *id.* at 3:12–21; see also *id.* at 4:61–67 (the processor of Sone's vehicle-mounted display system includes "a means 107 for determining the position and direction of a directional congestion mark . . . [and] a means 108 for determining the length of the directional congestion mark"). Processor 5 also determines how many arrows or congestion marks are displayed "according to the scale of the displayed road map," and also determines the color of the arrows or congestion marks. See *id.* at 3:12–21; see also *id.* at 4:61–67 (the processor of Sone's vehicle-mounted display system includes "a means 109 for determining a color of the . . . directional congestion mark").

For the above reasons, the Petition does not sufficiently persuade us that the type of congestion data sets received by Sone's display system would contain "image vector entities" (i.e., "information representing an image to be displayed which includes a shape designating statement and a position designating statement used to draw the shape of a real entity at the specified position"). Petitioner argues that Sone's congestion data sets include information identifying the location and length of congestion on a road. Pet. 16–19. Petitioner, however, does not persuasively demonstrate that these received congestion data sets include "image vector entities" that

“represent[t] an image to be displayed” (i.e., the congestion marks or arrows), and that also are “used to draw the shape of a real entity [i.e., a directional mark or arrow] at the specified position” on Sone’s display.

Petitioner, in its Reply, reiterates its prior argument that Sone at least suggests “the use of vector objects for its time-variant map entities.” Reply 16–17 (citing Pet. 22–23, 26, 27; Ex. 1003 ¶¶ 81–84, 32–34, 53–55). This argument is not persuasive because it is contrary to the teachings of Sone discussed above. See Pet. 22–23, 26, 27; Ex. 1003 ¶¶ 32–24, 53–55, 81–84. Petitioner also cites deposition testimony in which Patent Owner’s declarant, Mr. Cole, testifies that coordinate pairs disclosed in Sone are “vector information.” See Reply 17 (citing Ex. 1019, 106:23–107:2). But regardless of whether coordinate pairs may be considered “vector information” in the general sense, the congestion data sets received from Sone’s beacon transmitters are not “*image* vector entities” as recited in claims 46 and 47, for the reasons discussed above.

Pages 26 and 27 of the Petition (which are cited in Petitioner’s Reply) additionally argue that Sone’s mapping data is stored as vector-based graphics. See Pet. 26–27. However, Sone’s mapping data is not received from the beacon transmitters, but is instead stored locally in onboard storage unit 4. See, e.g., Ex. 1004, 2:10–13. Petitioner also has not offered any persuasive evidence that Sone’s map data is “time-variant.” Thus, even if Sone’s mapping data were stored as image vector entities, these vector entities would not satisfy claims 45 and 46, which require “*receiving* a traffic information map which includes at least a traffic state map,” wherein the traffic state map includes “a plurality of *time-variant* image vector entities.” (Emphasis added.) For the foregoing reasons, we are not

persuaded on this record that Sone discloses, teaches, or suggests “receiving a traffic information map which includes at least a traffic state map,” wherein the traffic state map includes “a plurality of time-variant image vector entities,” as recited in claims 45 and 46.

Petitioner argues in the alternative that Roy teaches the use of a vector-based format to represent map data, as well as “transmitting ‘vector-based map data’ to client devices, which display maps using the ‘vector-based map data.’” Pet. 23. Petitioner also argues that one of ordinary skill in the art would have had multiple reasons to combine the functionality of Roy with the teachings of Sone. *Id.* at 24; Reply 24. However, even assuming for purposes of our analysis that Roy teaches the receipt and display by a client device of a map that comprises image vector entities, we are not persuaded that Petitioner has set forth an adequate “explanation as to how or why the references would be combined to *produce the claimed invention.*” *Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1066 (Fed. Cir. 2016) (emphasis added).

As discussed above, Sone’s vehicle-mounted display system receives “congestion data sets” from remote beacon transmitters, and then displays congestion marks or arrows on a map to indicate areas of traffic congestion. Sone’s map data is stored locally, in onboard storage unit 4. *See, e.g.*, Ex. 1004, 2:10–13. Petitioner never specifically argues that Sone’s stored map data is “time-variant” in nature. Instead, Petitioner alleges that the received congestion data sets of Sone are the “time-variant” data recited by the claims. *See* Pet. 17–20, 27–29. Thus, even if a person of ordinary skill in the art would have had reason to store Sone’s locally-stored map data in image vector entity format, this would not demonstrate that it would have

been obvious to “*receiv[e]* a traffic information map which includes at least a traffic state map,” wherein the traffic state map includes “a plurality of *time-variant* image vector entities,” as recited by both challenged claims.

Petitioner sets forth five different rationales for combining Sone and Roy. Pet. 24–26. *First*, Petitioner argues that one of ordinary skill in the art would have had reason to “modify Sone’s system to transmit and use traffic information with ‘vector-based map data’” because “‘vector-based map data’ was recognized as being readily and efficiently transmitted to a client device.” Pet. 24. Petitioner, however, does not persuasively explain why one of ordinary skill would have had reason to transmit Sone’s congestion-based data sets (which are different from Sone’s locally stored map data) in the form of image vector entities. For example, Petitioner has not adequately explained why such a person would have had reason to convert Sone’s congestion data sets into image vector entities *before transmitting them to Sone’s vehicle-mounted display device*, particularly in view of the fact that Sone’s system generates the graphics that represent congestion (e.g., the congestion marks or arrows) locally, based in part on information that is known only to Sone’s vehicle-mounted display device (e.g., the scale of the map display that has been selected by the vehicle’s driver).

Second, Petitioner argues that using “vector-based map data” to display maps would allow for Sone’s system “to zoom to a particular width and scale of the map picture” and to more quickly “generate a new map picture with resolution requested using the vector-based data.” Pet. 24. This argument is not sufficiently persuasive because it does not adequately explain why one of ordinary skill in the art would have had reason to convert congestion data sets (which are different that Sone’s locally stored map data)

to image vector entities *before* they are received by Sone's vehicle-mounted display system. At best, Petitioner's second rationale demonstrates that one of ordinary skill in the art would have had reason to modify Sone's system so that the *locally generated* graphics (i.e., congestion marks or arrows), and the *locally stored* map data, were both maintained as image vector entities.

Third, Petitioner argues that one of ordinary skill in the art would have been prompted to incorporate "map viewer interface features" such as "panning, and zooming portions of a map picture," as suggested by Roy, into Sone's system. Pet. 24–25. This argument also does not adequately explain why one of ordinary skill in the art would have had reason to convert congestion data sets to image vector entities before they are received by Sone's vehicle-mounted display system. At best, this rationale demonstrates that one of ordinary skill in the art would have had reason to store Sone's locally generated congestion marks or arrows, and Sone's locally stored map data, as image vector entities.

Fourth, Petitioner argues that modifying Sone's system to include "vector-based data and the map viewer interface" would merely have been the use of a known technique to improve a similar device in the same way, and also would have constituted an obvious use of old elements according to their known functions. Pet. 25. This argument also does not persuasively explain why one of ordinary skill in the art would have had reason to convert congestion data sets to image vector entities before they are received by Sone's vehicle-mounted display system, given that all of the graphics displayed by Sone's vehicle-mounted display system are generated and stored locally, and given that Sone's congestion marks or arrows are

generated based at least in part on information that is only available locally (e.g., the scale of the map display that has been selected by the driver).

Fifth, Petitioner argues that one of ordinary skill in the art would have been prompted to use “vector-based map data” with Sone’s system because there were “a limited number of choices for representing and displaying maps.” Pet. 25–26. This argument fails for the same reason as the above arguments: It relates, if at all, to Sone’s locally-stored map data, and does not adequately explain why a skilled artisan would have had reason to convert Sone’s congestion data sets (i.e., the “time-variant” data of the claims) into image vector entities *before* this data is received by Sone’s vehicle-mounted display system.

In sum, even assuming, *arguendo*, that Roy teaches the use of a vector-based format to represent map data and the transmission of vector-based map data to client devices that display maps using this vector-based map data (see Pet. 23), we are not persuaded on this record, and viewing the evidence through the lens of the burden that applies at this stage in the proceeding, that one of ordinary skill in the art would have had reason to combine the teachings of Sone and Roy so as to “produce the claimed invention” recited in claims 45 and 46 of the ’518 patent. See *Trivascular*, 812 F.3d at 1066. On this record, and having considered all of the arguments and evidence set forth in the Petition and introduced during trial, we find that Petitioner has not made an adequate showing to demonstrate by a preponderance of the evidence that claims 45 and 46 are unpatentable as obvious over Sone, either alone or in combination with Roy.

IV. ORDER

Accordingly, it is

ORDERED that claims 45 and 46 of the '518 patent have not been shown to be unpatentable;

FURTHER ORDERED that exhibit 2015 is *expunged*; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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