

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

UNITED SERVICES AUTOMOBILE ASSOCIATION,
Petitioner,

v.

AUTO TELEMATICS LTD.,
Patent Owner.

IPR2023-00911
Patent 9,311,271 B2

Before GEORGE R. HOSKINS, FRANCES L. IPPOLITO, and
SEAN P. O'HANLON, *Administrative Patent Judges*.

HOSKINS, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

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I. INTRODUCTION

United Services Automobile Association (“Petitioner”) filed a Petition (Paper 3, “Pet.”) pursuant to 35 U.S.C. §§ 311–319 to institute an *inter partes* review of U.S. Patent No. 9,311,271 B2 (Ex. 1001, “the ’271 patent”), claims 1, 3, 4, 6, and 7. We issued an Institution Decision (Paper 10, “Inst. Dec.”) instituting the petitioned review.

Auto Telematics Ltd. (“Patent Owner”) then filed a Patent Owner Response (Paper 15, “PO Resp.”) to the Petition. Petitioner filed a Reply (Paper 18, “Pet. Reply”) to the Patent Owner Response. Patent Owner filed a Sur-reply (Paper 22, “PO Sur-reply”) to the Reply.

An oral hearing was held on August 29, 2024. A transcript of the hearing is in the record (Paper 27, “Tr.”).

We have jurisdiction under 35 U.S.C. § 6(b)(4) and § 318(a). This Decision is a final written decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73 as to the patentability of claims 1, 3, 4, 6, and 7 of the ’271 patent. We determine Petitioner has shown those claims are unpatentable.

II. BACKGROUND

A. *Real Parties-in-Interest and Related Proceedings*

Petitioner identifies itself (i.e., United Services Automobile Association) and Noblr Reciprocal Exchange as real parties-in-interest. *See* Pet. 84; Paper 6 (Petitioner’s Updated Mandatory Notices). Patent Owner identifies itself (i.e., Auto Telematics Ltd.) as a real party-in-interest. *See* Paper 5 (Patent Owner’s Mandatory Notices).

The parties identify one district court litigation involving the ’271 patent: *Auto Telematics Ltd. v. United Services Automobile Association*

and Noblr Reciprocal Exchange, Case No. 6:22-cv-00474 (W.D. Tex.) (“the Co-Pending Litigation”). *See* Pet. 84; Paper 5; Paper 6.

Petitioner filed one other IPR petition to challenge the ’271 patent, where we denied institution (IPR2023-00912). Petitioner also began other IPR proceedings to challenge other patents related to the ’271 patent, including: U.S. Patent No. 9,633,487 (IPR2023-00518 and IPR2023-00519); U.S. Patent No. 10,192,369 (IPR2023-00768, IPR2023-00769, and IPR2023-00770); U.S. Patent No. 10,198,879 (IPR2023-00857, IPR2023-00858, and IPR2023-00859); and U.S. Patent No. 10,198,878 (IPR2024-00779). *See, e.g.*, Pet. 85; Paper 5.

B. The ’271 Patent Specification

The ’271 patent “relates to methods and systems for logging driving information associated with vehicle behaviour,” and particularly provides “a mobile device adapted for installation to a vehicle and configured to log such driving information.” Ex. 1001, 1:17–22. This information may be utilized “to determine the cause of an event such as an accident, to modify driver behaviour and/or to determine insurance premiums.” *Id.* at 1:22–25.

The ’271 patent indicates that prior art “data logging devices exist for road vehicles,” but these devices often were “integrated with the car data network” and were “difficult and costly to install.” *Id.* at 1:36–48. The ’271 patent thus proposes “a mobile telecommunications device adapted for installation to a vehicle and configured to log driving information associated with the vehicle when driven.” *Id.* at 1:57–62. According to the ’271 patent, “the use of a mobile telecommunication device enables a data

logging device to be conveniently and inexpensively retrofitted to a vehicle.”
Id. at 2:10–12.

To log the data, the mobile device operates “by registering the start of the driving period during which the mobile device is installed to the vehicle and the vehicle is being driven by the driver.” *Id.* at 3:14–16. This prevents logging information needlessly. *Id.* at 3:16–21. Preferably, the registration is “in response to an initialisation input,” such as user input, or automatic, “in response to the mobile device being installed to the vehicle and/or the vehicle being driven.” *Id.* at 3:25–32. “For example, if the sensor data reflects a detected speed above a predetermined threshold — for example, 20 kilometers per hour — then this can be used to trigger the start of the driving period.” *Id.* at 3:34–38.

Figure 2, reproduced below, illustrates an automobile with a mobile telecommunications device installed for logging. *Id.* at 12:38–40, 14:45–47.

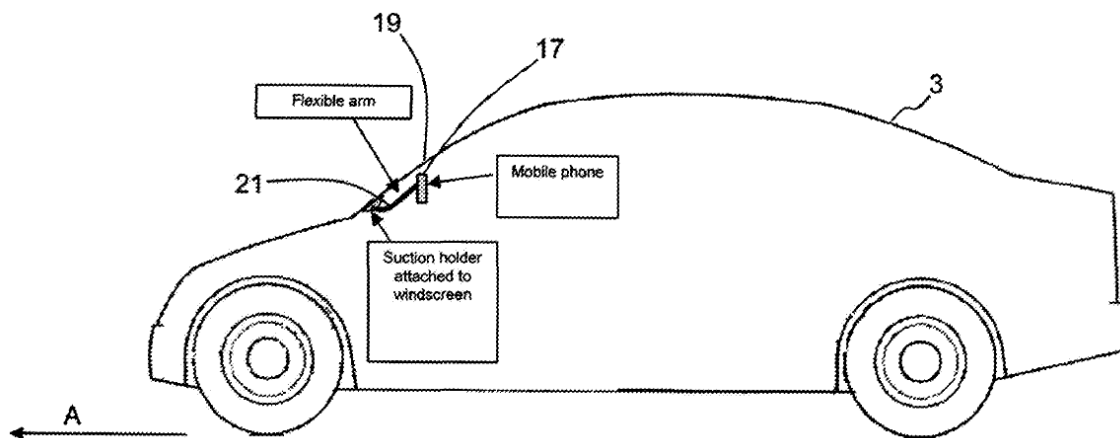


Figure 2 of the '271 Patent.

Figure 2, reproduced above, shows a preferred arrangement of mobile phone 17 within automobile 3. *See id.* at Fig. 2, 14:45–50.

C. The '271 Patent Claims

The '271 patent includes seven claims, of which claims 1, 3, 4, 6, and 7 are challenged here. *See* Ex. 1001, 31:28–34:21; Pet. 1.

Claim 1 recites:

1. A mobile telecommunications device configured to log driving information associated with a vehicle, the mobile device comprising:
 - a sensor set comprising an image sensor, an audio sensor, an accelerometer, or a positioning module, or a combination thereof;
 - a user interface;
 - a processor; and
 - a memory;the mobile device configured to:
 - determine, based on inputs received by the user interface and sensor data from the sensor set, a start of a driving period during which the mobile device is removably attached to the vehicle and the vehicle is in use;
 - process the sensor data from the sensor set during the driving period to derive driving information associated with how the vehicle is driven;
 - store a selection of the driving information to the memory, wherein the driving information is derived without data from vehicle sensors; and,
 - wherein the mobile communications device is controlled by a downloaded application to control the mobile device to register the start of the driving period in response to an initialization input generated automatically in response to the sensor data having predetermined values, wherein the initialization input is generated in response to sensor data reflecting a detected speed above a predetermined threshold.

Ex. 1001, 31:29–56. Claim 3 depends from claim 1. *See id.* at 31:62–67.

Claim 4 is an independent claim that is identical to claim 1, except for the final limitation which in claim 4 is:

wherein the mobile communications device is controlled by a downloaded application to control the mobile device to process the sensor data from the sensor set during a plurality of driving periods to derive driving information associated with how the vehicle is driven during the driving periods, the sensor data being processed during a first set of driving periods defining a benchmark against which sensor data is compared during subsequent sets of driving periods.

Id. at 32:1–29.

Claim 6 recites:

6. A data-logging system for logging driving information received from a remote mobile telecommunications device, the data-logging system comprising a processor and memory, the data logging system comprising:

a database for storing a plurality of accounts, each account having a unique identifier and the database being arranged to store driving information associated with at least one of a vehicle and a driver;

a communications interface arranged to communicate with the remote mobile telecommunications device, and receive therefrom:

a unique identifier for association of the remote mobile telecommunications device with a corresponding one of the plurality of accounts;

driving information to be logged to that corresponding account, the driving information derived based on inputs received by a user interface of the remote mobile telecommunications device and sensor data from a sensor set of the remote mobile telecommunications device, the driving information derived without data from vehicle sensors; and,

wherein the driving information comprises at least one of a driving score and sensor data captured and processed by the remote mobile telecommunications device during a driving period during which the remote mobile telecommunications device is removably attached to the vehicle being driven by the driver, the data logging system being further arranged to process the driving information logged to a corresponding account to generate a driving score used to determine a risk profile for at least one of the vehicle and driver.

Id. at 32:40–33:4.

Claim 7 is an independent claim that is identical to claim 6, except claim 7 contains an additional limitation at the end which is:

wherein the driving score is used to define an insurance premium associated with the account and the data logging system is further arranged to communicate to the remote mobile telecommunication device an insurance offer generated in response to the driving information received from the remote mobile telecommunications device.

Id. at 33:5–34:21.

D. Asserted Prior Art

Petitioner's challenges rely on the following six references, listed in chronological order by either filing date (Tamir and Rabu) or publication date (Katayama, McClellan, Curry, and Callopy). *See* Pet. 1–2.

Name	Reference	Date	Exhibit No.
Tamir	US 7,821,421 B2	July 21, 2006 ¹	1006
Katayama	EP 1 914 691 A1	Apr. 23, 2008	1024
McClellan	US 2009/0024419 A1	Jan. 22, 2009	1083
Rabu	US 8,682,399 B2	Dec. 15, 2009	1013
Curry	WO 2010/042545 A2	Apr. 15, 2010	1005
Callopy	WO 2010/062899 A1	June 3, 2010 ²	1045

See Ex. 1005, code (43); Ex. 1006, code (86); Ex. 1013, code (22); Ex. 1024, code (43); Ex. 1045, code (43); Ex. 1083, code (43).

Petitioner asserts these references are each prior art to the '271 patent by virtue of having a filing or publication date preceding the '271 patent's earliest possible priority date of December 15, 2010. *See* Pet. 2; Ex. 1001, codes (22), (30), and (86). Patent Owner does not dispute that assertion.

E. Asserted Grounds

Petitioner asserts the following five grounds of unpatentability. *See* Pet. 1–2.

¹ Petitioner asserts Tamir's filing date is February 1, 2007. *See* Pet. 2. However, Tamir was filed on July 21, 2006, as the national stage entry of a PCT application, and was later published as a U.S. application on February 1, 2007. *See* Ex. 1006, codes (65) and (86).

² Petitioner asserts Callopy's publication date is March 6, 2010. *See* Pet. 2. However, Callopy was published on June 3, 2010. *See* Ex. 1045, code (43).

Ground	Claim(s) Challenged	35 U.S.C. § ³	References
1A	1	103(a)	Curry, Rabu
1B	1	103(a)	Curry, Rabu, Katayama
1C	3	103(a)	Curry, Rabu, Tamir
1D	4	103(a)	Curry, Rabu, McClellan
2	6, 7	103(a)	Callopy, Curry

F. Testimonial Evidence

Petitioner relies on the proffered expert witness testimony of William R. Michalson, Ph.D. (Exhibit 1003). Patent Owner relies on the proffered expert witness testimony of Mr. Christopher Wilson (Exhibits 1088, 1089, and 2001).

III. PETITIONER’S GROUNDS OF UNPATENTABILITY

A. Statement of Law

1. Petitioner’s Burden of Proof

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the

³ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), amended § 103. These amendments do not affect the outcome of the present Decision. Therefore, we cite to the pre-AIA version. We would reach the same result even if the post-AIA version applies.

grounds for the challenge to each claim’’)). This burden of persuasion never shifts to the patent owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). The petitioner must prove unpatentability by a preponderance of the evidence. *See* 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

2. *Law of Obviousness*

A patent 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 said 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 ordinary skill in the art; and (4) objective evidence of nonobviousness, if made available in the record, which has not happened here. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. *Level of Ordinary Skill in the Art*

In determining the level of ordinary skill in the art, we consider the type of problems encountered in the art, the prior art solutions to those problems, the rapidity with which innovations are made, the sophistication of the technology, and the educational level of active workers in the field. *See Custom Accessories, Inc. v. Jeffrey-Allan Indus. Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986); *Orthopedic Equip. Co. v. U.S.*, 702 F.2d 1005, 1011 (Fed. Cir. 1983).

Petitioner refers, by footnote, to the testimony of its expert Dr. Michalson to propose a level of ordinary skill in the art. *See* Pet. 11 n.5. Dr. Michalson correspondingly testifies that a person of ordinary skill:

would have had at least a Bachelor of Science Degree (or equivalent) in an academic area emphasizing electrical engineering, computer engineering, computer science, or a related technical field, and about 2–3 years of experience in the field of telematics systems (e.g., familiarity with control and diagnostic systems, navigation systems and wireless communication technology).

Ex. 1003 ¶¶ 14–15. Further: “More education, e.g., a doctorate in an academic area emphasizing electrical engineering, computer engineering, computer science, or a related technical field, would compensate for fewer years of work experience.” *Id.* ¶ 15.

Patent Owner “does not dispute” Dr. Michalson’s formulation of ordinary skill. PO Resp. 4. However, Patent Owner goes on to refer to the testimony of its expert Mr. Wilson that a person of ordinary skill “would *also* include individuals with a Bachelor of Science degree (B.S.) in other fields, including physics” as well as “3–5 years of experience in the field of telematics systems,” and “educational experience becomes less relevant as the individual’s experience in the telematics field increases.” *Id.* (citing Ex. 2001 ¶¶ 10–11).

We observe that the level of ordinary skill in the art is not in dispute, nor is it dispositive of issues in this Decision. Nevertheless, we adopt the proposal of Petitioner’s expert, which comports with the teachings of the ’271 patent and the asserted prior art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). We note that we would reach the same

conclusions under Patent Owner’s proposed addition to Petitioner’s definition.

C. Claim Construction

We interpret the ’271 patent claims “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b).” 37 C.F.R. § 42.100(b). This “includ[es] construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” *Id.*

We address claim construction of various claim terms below. We consider the term “driving period” (claims 1, 4, 6, and 7) in Section III.D.3(v)(a). We consider the term “driving information” (claims 1, 4, 6, and 7) in Section III.D.3(vi)(a). We consider the term “selection” of driving information (claims 1 and 4) in Section III.D.3(vii)(a). We consider which system component(s) generate the “driving score” (claims 6 and 7) in Section III.H.1(i).

Apart from the foregoing limitations, we determine no explicit construction of any claim term is needed to resolve the parties’ controversy. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only 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)).

D. Ground 1A — Obviousness over Curry and Rabu

In Ground 1A, Petitioner asserts claim 1 of the '271 patent is unpatentable as having been obvious over Curry and Rabu. *See* Pet. 1, 6–41. Patent Owner disagrees. *See* PO Resp. 1–53. We conclude a preponderance of the evidence supports Petitioner's assertions. We begin with short summaries of Curry and Rabu, then we consider the parties' disputes on a limitation-by-limitation basis.

1. Summary of Curry

Curry describes “monitoring and controlling the use of a mobile computing device.” Ex. 1005, code (57). Curry's system “includes a data server containing a model of a road network specifying traffic routes at a selected location,” and a “mobile wireless computing device . . . configured [to] wirelessly communicate with the data server.” *Id.* at 3:3–5.⁴ Curry's system stores information from a GPS receiver and an accelerometer sensor in the mobile device, such as location, speed, and acceleration, and uses the information to calculate a driver safety statistic, based on when and where the mobile device was used and the motion of the device. *See id.* at 3:6–30.

Figure 1, reproduced below, illustrates Curry's system. *See id.* at 5:1–3.

⁴ Our citations to Curry refer to the page numbers added by Petitioner at the bottom center of every page in the exhibit.

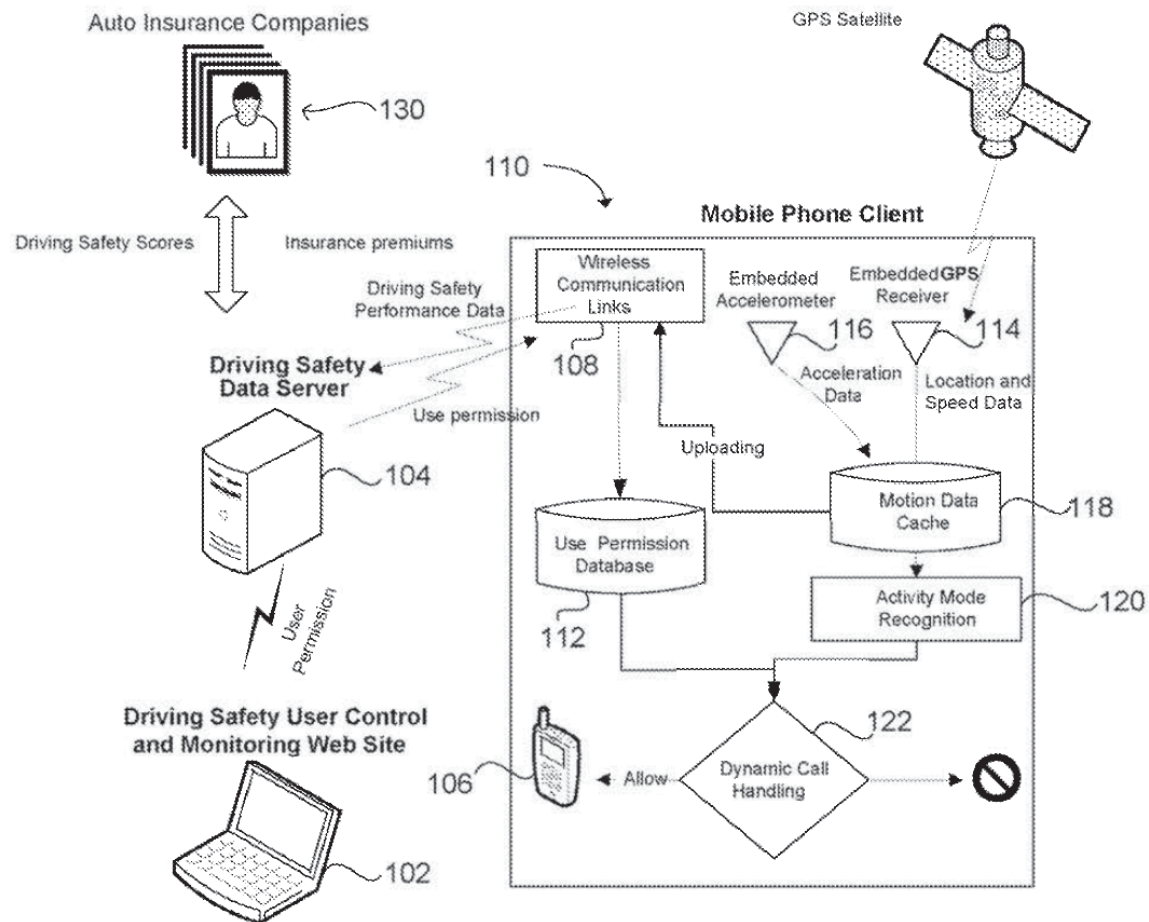


FIG. 1
 Figure 1 of Curry.

Figure 1 shows user control web site 102, driving safety data server 104, and mobile phone 106 equipped with GPS sensor 114 and accelerometer sensor 116. *See id.* at 7:30–8:2. Mobile phone 106 additionally has client unit 110 with wireless connection 108 for communicating with data server 104. *See id.* at 8:20–27.

2. Summary of Rabu

Rabu “relates generally to portable media devices and in particular to determining a docking status of a portable media device using data from one

or more motion sensors.” Ex. 1013, 1:7–10. Rabu’s portable media device (“PMD”) can receive input from one or more motion sensors, such as an accelerometer and a gyroscope. *Id.* at 7:9–13. “[T]he input can indicate orientation angle and motion information of the PMD.” *Id.* at 7:13–15. The PMD can determine a holder status and can determine whether the PMD is in a moving vehicle, in a stationary vehicle, being handled by a moving person, or being handled by a stationary person. *Id.* at 7:15–16, 7:22–26. “[T]he PMD can select a mode of operation based on the holder status and the holder motion status.” *Id.* at 3:1–3.

3. Claim 1

(i) *“A mobile telecommunications device configured to log driving information associated with a vehicle, the mobile device comprising:”*

Petitioner argues that, assuming the preamble of claim 1 is limiting, Curry discloses a mobile telecommunications device (i.e., mobile phone 106) configured to log driving information associated with a vehicle. *See* Pet. 18–19 (citing Ex. 1005, code (57), Fig. 1, 2:1–27, 3:1–4:28, 7:5–29, 8:21–27, 10:15–12:18); Ex. 1003 ¶¶ 118–119.⁵ Petitioner asserts Curry’s mobile phone 106 includes client unit 110 that “enables determination of

⁵ As noted in the Institution Decision, many pages in Curry bear two page numbers: Curry’s original pagination at the bottom center of each page, and Petitioner’s added pagination underneath Curry’s original pagination. *See* Inst. Dec. 15. Also, citations to Curry in the Petition and Dr. Michalson’s Declaration refer in some instances to Curry’s original pagination, and in other instances to Petitioner’s added pagination. *See id.* at 15–16. We endeavor to cite consistently and only to the page numbers added by Petitioner to the bottom center of each page, even when referring to the Petition’s citations, as what we understand Petitioner meant to cite based on the respective contexts of the Petition and Curry’s disclosure. *See id.* at 16.

whether an associated vehicle is being driven” and enables mobile phone 106 “to derive driving information associated with a user’s driving behavior . . . and to use the derived information to generate a ‘driving safety score’ for the user.” Pet. 20 (citing Ex. 1005, code (57), Fig. 1, 7:5–8:2, 8:20–10:26, 13:27–33); Ex. 1003 ¶¶ 119–121.

Patent Owner argues Petitioner fails to establish Curry’s mobile phone 106 is “configured to *log driving information*,” as recited in the claim preamble (emphasis added). See PO Resp. 28–32; Ex. 2001 ¶¶ 108–121. We consider this argument below in Section III.D.3(vi), with the limitation in the body of claim 1 reciting that the mobile device is “configured to . . . *derive driving information* associated with how the vehicle is driven” (emphasis added). As discussed below, we find Curry’s mobile phone 106 both derives and logs driving information.

Patent Owner does not otherwise oppose Petitioner’s reliance on Curry as disclosing the preamble of claim 1. See PO Resp. 28–32. We conclude Petitioner’s contentions are supported by a preponderance of the evidence. In particular, we find Curry’s mobile phone 106 is a mobile telecommunications device because it communicates wirelessly with data server 104 and it allows the user to make and receive telephone calls and text messages. See Ex. 1005, code (57), Fig. 1, 2:1–27, 3:4–5, 3:24–27, 7:5–8, 7:23–24, 7:30–8:2, 8:21–23.

(ii) *Mobile Device Comprising “a sensor set comprising an image sensor, an audio sensor, an accelerometer, or a positioning module, or a combination thereof”*

Petitioner argues Curry’s mobile phone 106 “features embedded sensors, including accelerometer 116 and GPS receiver 114,” and data from

these sensors is used to “monitor driving safety performance,” “prevent unsafe driving behaviors,” and “generate driving score[s],” thereby satisfying the sensor set limitation of claim 1. Pet. 20–21 (citing Ex. 1005, Fig. 1, 2:23–27, 3:2–15, 7:5–8:2, 8:30–9:3, 10:16–26, 11:15–25); Ex. 1003 ¶¶ 122–123.

We conclude this contention, which Patent Owner does not oppose, is supported by a preponderance of the evidence. In particular, we find Curry’s Figure 1 (reproduced above in Section III.D.1) illustrates Curry’s mobile phone 106 is “equipped with GPS 114 and/or accelerometer 116 sensors.” Ex. 1005, Fig. 1, 7:30–8:2. Curry’s mobile phone 106 stores information from GPS receiver 114 and accelerometer 116, such as location, speed, and acceleration, and Curry’s system uses this information to calculate a driver safety statistic, based on when and where mobile phone 106 was used and the motion of mobile phone 106. *See id.* at 3:6–30.

(iii) Mobile Device Comprising “a user interface”

Petitioner argues Curry’s mobile phone 106 “features a ‘graphical ***user interface***’” to display data and to enable user interactions, thereby satisfying the user interface limitation of claim 1. Pet. 21–22 (citing Ex. 1005, 7:5–27, 8:5–27, 9:5–26, 10:15–26, 13:20–26, 16:7–22, 20:15–17, 21:23–25); Ex. 1003 ¶¶ 124–126.

Patent Owner opposes Petitioner’s contention that Curry discloses the mobile device user interface limitation. *See* PO Resp. 32; Ex. 2001 ¶ 122. Patent Owner concedes “the Curry phone obviously includes a user interface,” but then asserts “Petitioner’s citations to a Curry user interface” refer to the user interfaces of Curry’s user control web site 102 and data

server 104, *not* Curry's mobile phone 106. PO Resp. 32 (citing Pet. 21; Ex. 1005, Fig. 1, 8:5–18, 9:23–28, 10:2–5, 21:23–25); Ex. 2001 ¶ 122.

We conclude Petitioner's contentions as to the user interface limitation are supported by a preponderance of the evidence. In particular, we agree with Petitioner's contention that Curry's mobile phone 106 features a graphical user interface to display data and enable user actions, such as receiving phone calls and manually switching activity modes. *See* Pet. 21–22. This is reflected by the Curry disclosures cited by Petitioner. *See id.*

As a first example, the cited disclosures indicate mobile phone 106 provides “talking” and “texting” functionality, and “can include any type of electronic mobile computing device that may be used while traveling in a vehicle.” Ex. 1005, 7:5–8, 7:23–26, 8:10–11, 9:7–20. As a second example, the cited disclosures indicate a “user can download the required software from the server 104 to the mobile phone 106 to set up the client unit on the phone” by generating “a request from the client unit [110] on the mobile phone [106].” *Id.* at 8:20–27. As a third example, the cited disclosures indicate “the user of the phone [106]” may activate “a driving safety monitoring program on a mobile phone client [110].” *Id.* at 13:20–26. In each of these ways, Curry indicates mobile phone 106 includes a user interface.

Thus, Dr. Michalson testifies (with quotes from Curry) that:

A [person of ordinary skill in the art] would have understood and found obvious that the Curry-Rabu phone includes a user interface. USAA-1005, 8:5–18. For example, Curry notes that a “graphical *user interface*” can be installed on a “smart phone,” indicates that the “graphical user interface” can be “configured to display the driver motion data cache, the

user permission data, and the driver safety statistic to . . . selected individuals,” and additionally describes various examples of user interactions with a phone that a [person of ordinary skill in the art] would have understood to be enabled through a user interface. USAA-1005, 8:5–27 (“A user can download the required software from the server 104 to the mobile phone 106 to set up the client unit on the phone”), 21:23–25, 9:5–11 (“the mobile phone . . . may be used while driving, walking or remaining still”), 9:13–20 (“[t]he phone can . . . signal to the driver . . . so that the driver can decide whether to . . . take [a] call or call back later”), 10:15–26 (“[i]f the status of the mobile phone user is recognized as driving, the mobile phone can automatically switch to the GPS navigation mode”).

Ex. 1003 ¶¶ 124, 126. We acknowledge a portion of the Curry disclosures cited by Dr. Michalson for the “user interface” limitation state “[a] graphical user interface can be installed on a data input device 102,” and refer to user interactions via “an interactive user control website” at data server 104, as opposed to mobile phone 106. Ex. 1005, 8:5–6, 9:23–28. Nonetheless, we conclude other disclosures in Curry, summarized above, reflect that Curry’s mobile phone 106 also has a user interface.

(iv) Mobile Device Comprising “a processor” and “a memory”

Petitioner argues the functionality of Curry’s mobile phone 106 “may be ‘implemented in software for execution by various types of processors,’” including downloading software and recording sensor data in a local motion data cache for further processing, thereby satisfying the processor limitation of claim 1. Pet. 22 (citing Ex. 1005, Fig. 1, 2:22–27, 3:24–26, 6:3–10, 8:20–27); Ex. 1003 ¶¶ 127–128. Petitioner further argues Curry’s mobile phone 106 includes “‘memory devices’ that store sensor data . . . and ‘executable code,’” thereby satisfying the memory limitation of claim 1.

Id. at 22–24 (citing Ex. 1005, Fig. 3, 2:22–27, 3:24–26, 6:3–20, 7:5–22, 8:20–9:28, 13:20–16:6); Ex. 1003 ¶¶ 129–132.

Patent Owner does not oppose Petitioner’s contentions as to the processor and memory limitations. We conclude these contentions are supported by a preponderance of the evidence. In particular, we find Curry discloses mobile phone 106 downloads a “mobile device control module” or client unit 110 to be operated on mobile phone 106, using “various types of processors.” Ex. 1005, Fig. 1, 3:13–14, 6:3–4, 7:8–13, 8:20–27. In addition, Curry describes how this processor “stores” executable computer code and data “in different locations” such as a “cache,” which demonstrates a memory in mobile phone 106. *Id.* at 3:24–26, 6:3–20, 8:26–9:3.

(v) *Mobile Device Configured to “determine, based on inputs received by the user interface and sensor data from the sensor set, a start of a driving period during which the mobile device is removably attached to the vehicle and the vehicle is in use”*

We refer to the limitation above as the “Determination Limitation.”

(a) *Claim Construction*

Petitioner argues: “Based on plain meaning, the recited ‘driving period’ references a time period ‘during which [a] mobile device is removably attached to the vehicle and the vehicle is in use.’” Pet. 3. Petitioner asserts claim 1 “establishes just two ‘driving period’ attributes: (1) ‘the mobile device is removably attached to the vehicle’ and (2) ‘the vehicle is in use.’” *Id.* at 4; Ex. 1003 ¶¶ 71, 135. Petitioner argues those two “attributes may be satisfied by a start of a monitoring period, whether at the onset of vehicle driving or whether instead before or thereafter,” so claim 1 “leaves open the possibility of the driving period corresponding to

the beginning, middle, or end of a vehicle’s operation.” Pet. 3–4; Ex. 1003 ¶¶ 70, 133. Petitioner contends the ’271 patent “specification is similarly unbounded, as it expressly recognizes several driving period options that are untethered from, e.g., the beginning of the user driving the vehicle.” Pet. 3–4 (citing Ex. 1001, 3:25–54); Ex. 1003 ¶¶ 70, 134.

Patent Owner responds that “Petitioner’s characterization of the start of a driving period as a ‘monitoring period’ that starts at any time with respect to the onset of driving” is inaccurate. PO Resp. 4–5 (citing Pet. 3–4). Patent Owner asserts the ’271 patent never uses Petitioner’s “monitoring period” term, and instead claim 1 recites that the mobile device determines “a start of a driving period *during which* the mobile device is removably attached to the vehicle and the vehicle is in use.” *Id.* at 5 (adding emphasis to Ex. 1001, 31:39–42); *see also id.* at 7–8 (emphasizing claim 1 recites determining “*a start of a driving period*”). Patent Owner maintains we should apply the plain and ordinary meaning of that claim limitation, because “there is no need for a different construction incorporating Petitioner’s manufactured limitations for ‘driving period,’” which “starts at any point . . . untethered from the vehicle actually being driven.” *Id.* at 5–6; Ex. 2001 ¶ 55.

Patent Owner further asserts “a plain reading” of the Determination Limitation indicates it “does not itself define a ‘driving period,’” so “[a] ‘driving period’ is the period in which the vehicle is being driven.” PO Resp. 6; Ex. 2001 ¶¶ 49–55. According to Patent Owner, the purpose of the ’271 patent’s invention was “to determine insurance premiums, modify driving behavior, or determine a cause of an event,” so we should construe the term “driving period” to mean “the whole period in which the vehicle is

being driven (absent short periods related to getting up to speed, backing out of driveway, leaving a particular geo-fence, etc.).” PO Resp. 6 (citing Ex. 1001, 1:22–25); *see also id.* at 1–2 (describing the problem addressed by the ’271 patent as providing “mobile data logging devices” that “perform event detection and analysis during *entire driving periods*” (emphasis added)); Ex. 2001 ¶¶ 38, 54. Otherwise, Patent Owner urges, “[t]he purpose of the invention would not be met” because “[a]ccidents and poor driving could be missed.” PO Resp. 6; Ex. 2001 ¶ 55; *see also* PO Resp. 8–9, 13 (“Critically, the mobile device determines the start of a driving period to initialize its logging functionality on the mobile device.”) (citing Ex. 1001, 18:30–42). Thus, Patent Owner concludes “*a start of a driving period*” as recited in claim 1 (emphasis added) must correspond to “the start of the [entire] period in which the vehicle is being driven.” PO Resp. 34 (citing Ex. 1001, 2:3–5, 3:12–18); *id.* at 35 (citing Ex. 1001, Fig. 4a, 19:54–20:15); Ex. 2001 ¶ 129.

Petitioner replies that the ’271 patent specification “contemplates embodiments in which a *start* of a *driving period* occurs at time points *after* a user has already started to drive,” so “the *driving period* [of claim 1] is not limited to the entire time period of a vehicle being driven.” Pet. Reply 3–4 (citing Ex. 1001, 3:34–38). Petitioner also asserts Patent Owner’s expert Mr. Wilson agrees with this conclusion. *Id.* at 4 (citing Ex. 1088, 91:7–16, 99:7–10, 103:16–104:7, 104:12–106:16, 111:24–114:21).

Patent Owner asserts Petitioner “misinterprets ‘driving period’ in terms of ‘snapshots,’ *e.g.*, instances at which data is recorded when a user interfaces with a phone, or in terms of an arbitrary pre-set number of minutes of recording data.” PO Sur-reply 2 (citing Pet. 25–28; Pet. Reply

6–7). Patent Owner contends Petitioner’s claim construction is inconsistent with the intrinsic evidence, which discusses *continuously* monitoring vehicle data during *an entire driving period* to determine whether a driving incident has occurred. *See id.* at 1–3, 4 (citing Ex. 1001, code (57), 1:29–2:21, 3:12–18, 13:15–30, 17:3–7, 17:22–27, 18:49–20:15, 31:39–45; Ex. 2001 ¶¶ 50–52, 54–56, 61, 66, 69–70, 128–129). “For example, the [’271 patent] specification discloses ‘enforc[ing] the correct and consistent use of the Witness application . . . to guarantee that the application is enabled whenever a . . . vehicle is being driven’ over ‘the total travelled distance of the vehicle’ for ‘monitoring all vehicle journeys.’” *Id.* at 3 (paraphrasing Ex. 1001, 29:54–30:9).

Patent Owner also argues its claim construction position “that a driving period is the period that the vehicle is driven” “is not defeated by the registration process or other technical mechanism (*e.g.*, a speed threshold) by which the mobile device determines the start of that driving period.” *Id.* at 4–5 (citing Ex. 1001, 3:12–44, 18:30–48, 31:51–56; Ex. 1089, 263:15–18, 268:9–22, 269:13–25; Ex. 2001 ¶¶ 50–52, 54, 61).⁶

We agree with Patent Owner to the extent that “driving period” refers to a time during which the vehicle is being driven, but we disagree with Patent Owner’s assertion that the recited driving period “must be the whole period in which the vehicle is being driven” or the “entire driving period.” *E.g.*, PO Resp. 6, 9. Initially, claim 1 does not recite “whole” or “entire.”

⁶ Patent Owner’s citation to Exhibit 1089 here is confusing. Exhibit 1089 is a transcript of day two of Mr. Wilson’s deposition testimony, spanning pages 1–96. Exhibit 1088 is a transcript of day one of Mr. Wilson’s deposition testimony, spanning pages 1–229. Thus, we are not certain what testimony is being cited by Patent Owner here.

Additionally, according to the '271 patent specification, the determination of the start of the driving period may be based on an input received from the user interface. *See* Ex. 1001, 3:12–30 (“To this end [of preserving the finite storage capacity of the mobile device], it is preferred that when the application is executed, it controls the mobile device to register the start of a driving period in response to an initialisation input, which “may comprise a user input — for example, *the user manually executing the application on the mobile device.*” (emphasis added)), 18:32–34. The '271 patent thus contemplates the driver initiating the recited start of a driving period in which the mobile device collects and processes sensor data, and does not impart any requirement for the user to initiate the start of the driving period at any particular time. The '271 patent alternatively discloses automatically determining the start of the driving period when sensor data reaches predetermined values, such as “once a velocity greater than 20 kilometers per hour is detected.” *Id.* at 3:32–38, 18:34–39. The '271 patent thus contemplates the vehicle being driven for some amount of time before the start of the driving period. Therefore, contrary to Patent Owner’s assertions, the '271 patent does not require the recited driving period to be the whole or entire period during which the vehicle is being driven.

The testimony of Patent Owner’s expert Mr. Wilson is consistent with our understanding of this term in light of the claim language and specification. For example, one exchange between Mr. Wilson and Petitioner’s counsel is provided below:

Q: So what I’m trying to understand is Let’s put it this way: You have — you start driving at Time A. You get up to speed at Time B, and you drive at Time C. Is the driving period

A to C, and then the system then excludes A through B? Or is the driving period B to C?

A: The driving period of Wright would be B to C.

Q: Okay. And there's no discussion in your — sorry, there's no discussion in the asserted patents of how to exclude backing out of a driveway. Correct?

A: Again, the . . . I don't recall any discussion of backing out of a driveway in the patents.

Q: And just going back to that A to B to C hypothetical — so it's B to C, because of the threshold that's set. Right?

A: B is the trigger — or the threshold is the trigger that starts the driving period or an example of a trigger that starts the driving period, according to Wright.

Ex. 1089, 32:3–33:1. As shown above, Mr. Wilson's testimony also supports the notion that an ordinarily skilled artisan would understand the recited “driving period” may start after the vehicle is in operation, rather than being the whole or entire driving time.

Patent Owner's contentions that such an interpretation of “driving period” to include less than the entire time in which the vehicle is being driven is somehow “untethered from the vehicle actually being driven” or “would at least miss logging, processing, and scoring driving information during a significant portion of the driving period” (PO Resp. 6; PO Sur-reply 3) are unavailing. The recited driving period is a time during which the vehicle is in use (Ex. 1001, 31:39–42), so Patent Owner's contention that the interpretation is “untethered” to driving is confusing and indisputably incorrect. Additionally, claim 1 does not recite logging, processing, or scoring driving information “during a significant portion” of the driving period. And, moreover, per Petitioner's interpretation, such logging,

processing, and scoring would occur during the entirety of the driving period.

Accordingly, we agree with Petitioner's contention that the claim language "leaves open the possibility of the driving period corresponding to the beginning, middle or end of, a vehicle's operation." Pet. 3.

(b) Combination of Curry and Rabu

(1) Petitioner's Contentions

Petitioner relies on Curry to disclose a mobile phone substantially as recited in claim 1, and relies on Rabu to teach using *accelerometer data* to *determine whether a phone is docked*. See, e.g., Pet. 11–18, 24–25.

In particular, Petitioner argues Curry's mobile phone 106 "determine[s], based on user inputs (e.g., accepting phone call, manually changing activity modes) and sensor data (e.g., 'location, speed, and acceleration data') whether an associated vehicle is being driven." Pet. 25–26 (citing Ex. 1005, Fig. 1, 6:5–22, 7:30–8:33, 16:7–22). Petitioner asserts Curry's mobile phone 106 also "determines a start of a driving period during which the phone is located within a moving vehicle, based on user inputs received through the phone's user interface and motion sensor data generated by a phone's embedded accelerometer." *Id.*

Petitioner argues a person of ordinary skill in the art would have been motivated to integrate "Rabu's dock status sensing and associated mode-shifting capabilities into Curry's phone, thereby enhancing the Curry phone's ability to promote safe driving." *Id.* at 11; Ex. 1003 ¶ 101. Further according to Petitioner, "the result is a device with added functionality ('Curry-Rabu phone'), capable of defining and determining different types

of driving periods based on user inputs and sensor data,” including one driving period during which “the phone is docked within a moving vehicle” and another driving period during which “the phone is undocked within a moving vehicle,” in order to restrict phone use and/or to adjust user driving scores depending on the determined type of driving period. Pet. 11–12; Ex. 1003 ¶ 101.

Petitioner argues “the Curry-Rabu phone would leverage accelerometer orientation and motion data to determine both vehicle motion and phone docking status” (i.e., per claim 1, determine the start of a driving period during which the mobile device is removably attached to the vehicle and the vehicle is in use) “upon a user accepting a phone call while driving, or manually switching activity modes through interactions with the phone’s user interface” (i.e., per claim 1, based on user input). Pet. 12, 24–25 (citing Ex. 1005, code (57), Figs. 1, 3, 4, and 6, 2:3–3:28, 10:15–11:14, 13:20–16:33, 17:30–18:7; Ex. 1013, Figs. 1, 4, 5, 7, and 8, 3:1–10, 4:21–33, 8:13–10:42, 15:7–22); Ex. 1003 ¶¶ 102, 136. The beneficial result of this combination, according to Petitioner, is that “the Curry-Rabu phone would appropriately restrict phone interactions depending on the determined status (e.g., preventing the user from texting while the phone is handheld).” Pet. 12 (citing Ex. 1005, Figs. 3 and 6, 15:28–16:6; Ex. 1013, Fig. 5, 8:13–10:42); Ex. 1003 ¶ 102.

Petitioner asserts Curry’s client unit 110 correspondingly determines an operating mode of mobile phone 106, including “two modes: (1) a ‘communication’ operating mode that allows for normal phone usage and (2) ‘a GPS monitoring/navigation’ mode that restricts calling, texting, and/or software capability on phone 106 to promote driving safety.” Pet. 12–13

(citing Ex. 1005, code (57), Figs. 1, 3, 4, and 6, 3:1–4:6, 7:5–22, 8:29–12:18, 13:20–16:22, 17:1–18:4); Ex. 1003 ¶¶ 102–103. Petitioner contends Curry’s mobile phone 106 “switches between these operating modes, for instance, based on an ‘activity mode’ (e.g., ‘remaining substantially still’ or ‘driving’) that can be activated by the phone’s user and/or in response to sensor data” (i.e., per claim 1, based on user input and sensor data). Pet. 13 (citing Ex. 1005, Fig. 3, 13:20–14:4, 16:7–22); Ex. 1003 ¶ 103. Then, according to Petitioner, Curry’s mobile phone 106 restricts user access to calling, texting, or other applications based on the activity mode (such as “stop” or “driving”) to enhance driver safety. *See* Pet. 13–14, 26–27 (citing Ex. 1005, code (57), Figs. 3 and 6, 1:3–2:28, 13:20–14:26, 15:8–16:33, 17:30–18:7); Ex. 1003 ¶¶ 103–105, 139.

Petitioner then turns to Rabu, as teaching the use of an *accelerometer* in a PMD akin to Curry’s mobile phone 106, “*to determine a phone’s orientation angle and motion status*, for purposes of discerning phone usage context, and changing the phone’s operating mode to appropriately account for that context.” Pet. 14 (emphasis added) (citing Ex. 1013, Figs. 1 and 4, 3:1–10, 4:21–33); Ex. 1003 ¶ 106. For example, according to Petitioner, “Rabu describes switching operating modes based on determining that the phone is ‘docked in a moving vehicle’ (as opposed to being ‘handheld while located in a moving vehicle’).” Pet. 14–15 (citing Ex. 1013, Figs. 5, 7, and 8, 8:13–10:42); Ex. 1003 ¶ 106. Petitioner adds that Rabu uses these determinations to apply appropriate levels of phone use restrictions, to promote driver safety, similarly to Curry’s use of determining activity modes to apply operating mode restrictions as discussed above. Pet. 15 (citing

Ex. 1013, Figs. 1, 4, and 5, 1:36–2:14, 3:1–10, 4:21–33, 5:53–7:6, 12:26–43); Ex. 1003 ¶¶ 107–108.

Petitioner asserts a person of ordinary skill in the art would have been motivated by the teachings in Curry and Rabu “to supplement Curry’s teachings of determining the start of a driving period based on user inputs and sensor data to include, e.g., using accelerometer motion and orientation data to differentiate between defined driving periods in which phone 106 is hand-held and those in which phone 106 is instead docked.” Pet. 15–16, 28 (citing Ex. 1005, 15:14–17; Ex. 1013, Figs. 3, 4, 5, and 8, 1:36–52, 5:61–6:21, 6:39–43, 6:49–7:6, 8:1–4); Ex. 1003 ¶¶ 108–109, 141. Petitioner provides several specific reasons why it would have been obvious to enhance Curry’s system based on Rabu’s teachings:

1. increased user tolerance for Curry’s monitoring mode, based on more user-friendly levels of restrictions enabled upon a determination that Curry’s phone is docked within a vehicle, relative to those present when Curry’s phone is undocked;
2. increased likelihood of user participation in Curry’s monitoring mode, with correspondingly improved safety for the user, passengers, and others;
3. enhanced reliability of motion detection and related determinations of user driving behaviors based on data obtained from sensors within a docked phone relative to an undocked phone;
4. generation of more nuanced user driving scores taking into account whether the user violated phone use permissions; and
5. enhanced utility for third parties in leveraging those more nuanced driving scores.

Pet. 16–17, 28–29 (citing *inter alia* Ex. 1003 ¶¶ 110–115, 141).

Petitioner further asserts that “configuring Curry’s systems to leverage Rabu’s teachings would have required only routine programming knowledge that was well within the skill of a [person of ordinary skill in the art],” thereby indicating a reasonable expectation of success. *Id.* at 17–18 (citing Ex. 1003 ¶¶ 116–117).

(2) *Whether Curry and Rabu Disclose, Teach, or Suggest Determining the Start of a Driving Period*

Patent Owner argues the combination of Curry and Rabu does not disclose, teach, or suggest determining the *start of a driving period* per claim 1. *See* PO Resp. 33. According to Patent Owner: “The sole input on which Curry [sic ‘Petitioner’] relies to meet [the Determination Limitation] is the receipt (or attempted placement) of a call or text message that initiates GPS data recording.” *Id.* (citing Pet. 12–13); Ex. 2001 ¶ 123. In particular, Patent Owner’s view is that “when the vehicle is being driven” in Curry, “the start of an outgoing or incoming phone call starts the recording of raw data from the mobile device’s sensors, which is recorded for some pre-set (‘X minutes’) duration.” PO Resp. 33–34 (citing Ex. 1005, Fig. 4, 16:7–13); *see also id.* at 20–21 (further citing Ex. 1005, 8:30–32); Ex. 2001 ¶¶ 80–83. Then, “[b]ased on this raw data, Curry’s phone estimates its activity status as ‘driving, walking, remaining still, or unknown . . . ’ to operate the phone” in either: (1) a GPS navigation or monitoring mode (if driving) that restricts calling and texting; or (2) a communication mode (if not driving) that allows for normal phone usage. PO Resp. 33–34 (citing Ex. 1005, 7:5–8, 10:16–26); *see also id.* at 20–21 (further citing Ex. 1005, 9:1–11, 9:13–20); Ex. 2001 ¶¶ 80–83.

Patent Owner’s position is that “because the data recording period is initiated by the start of an outgoing/incoming phone call/text message, Curry does not determine the ‘start of a driving period’” per claim 1, “because the triggering event (the call or text) does not occur at the start of the period in which the vehicle is being driven.” *Id.* at 34–35 (citing Ex. 1005, Figs. 2 and 4, 7:5–15, 11:3–7, 16:7–18); Ex. 2001 ¶¶ 125–127. Moreover, according to Patent Owner, “Curry’s recording period is a finite time period with no association to a driving period,” so “Curry does not disclose the recording of sensor data during the entirety of a driving period” per Patent Owner’s claim construction of the Determination Limitation. PO Resp. 35 (citing Ex. 1005, Fig. 4, 16:10–13); Ex. 2001 ¶ 128.

Finally, Patent Owner argues “Rabu fails to resolve these deficiencies” in Curry, because “Rabu has nothing to do with the determination of the start of a driving period.” PO Resp. 35–36 (citing Ex. 1013, Figs. 5, 8, and 9, 7:31–60); Ex. 2001 ¶ 130.

Petitioner replies that Patent Owner “attempts to distinguish the *start* of a *driving period* by narrowly characterizing a start of a recording on Curry’s phone as being limited to phone calls.” Pet. Reply 5. According to Petitioner, Curry’s mobile phone determines a start of a driving period “in ‘multiple ways’ through ‘multiple embodiments’ of recording where a phone ‘is located within a moving vehicle.’” *Id.* at 6 (citing Pet. 24–28; Ex. 1003 ¶¶ 130, 136–137, 139–140; Ex. 1005, Fig. 3 (13:20–14:26), Fig. 4 (16:7–22)). Petitioner faults Patent Owner’s opposition as: focusing only on Figure 4 of Curry; “improperly narrow[ing]” the scope of Curry’s disclosure; and misconstruing the Petition’s mapping of claim 1 to Curry. *Id.* at 6–7 (citing PO Resp. 21). Petitioner further asserts Patent Owner’s

position “that starting the recording of sensor data upon receipt of a phone call in Curry is not ‘a start of a driving period’” was rejected in the Institution Decision, as reinforced by Patent Owner’s expert Mr. Wilson during cross-examination. *Id.* at 7 (citing PO Resp. 35; Inst. Dec. 33; Ex. 1088, 211:3–5).

Patent Owner replies that the various Curry disclosures cited by Petitioner “show[] the start of a phone call and/or recording period occurring at the time Curry’s phone determines the phone’s activity mode,” but they do not show “determin[ing] the claimed *start of a driving period* that initializes the mobile device’s claimed logging functionality.” PO Sur-reply 8–10 (discussing Ex. 1005, Fig. 3 (13:20–14:26), Fig. 4 (16:7–22)). Figure 3 of Curry, according to Patent Owner, “discloses taking a snapshot of activity after a call triggers a recording period and handling the call based on the snapshot and predetermined user permissions,” which “is not the claimed ‘start of a driving period.’” *Id.* at 9 (citing Ex. 2001 ¶¶ 149–152, 157–158). In Figure 4 of Curry, according to Patent Owner, “Curry’s phone caches raw sensor data over a limited time period (*e.g.*, 6 minutes) and *post-processes* the data merely to determine activity mode . . . for a call that was put through.” *Id.* at 9–10 (citing Ex. 2001 ¶¶ 82, 124–125, 128, 149, 152).

We firstly conclude that much of Patent Owner’s opposition regarding Curry is premised on its incorrect interpretation of the “driving period” in the Determination Limitation and, thus, is unavailing.

We secondly conclude that Patent Owner’s arguments against Rabu as failing to disclose determining a start of a driving period are unavailing because, as noted above, the Petition relies on Curry, not Rabu, as disclosing

this determination. *See, e.g.*, Pet. 25 (arguing “Curry describes multiple embodiments in which a phone determines a start of a driving period during which the phone is located within a moving vehicle” and “Rabu would have motivated a [person of ordinary skill in the art] to enhance Curry’s phone by configuring it to leverage orientation data from [Curry’s] accelerometer to determine whether the phone is removably attached to the vehicle”).

Next, we disagree with Patent Owner’s characterization that Curry’s mobile phone 106 only collects raw data and only when detecting an outgoing or incoming call. *See, e.g.*, PO Resp. 33–35; PO Sur-reply 8–9. Notably, Curry discloses using motion data — including data captured “other than when phone calls are answered or made” — to determine unsafe driving behavior such as speeding, abnormal accelerations, abnormal decelerations, and sharp turns. Ex. 1005, 3:32–4:6, 9:23–28. Curry also discloses that its modules, including the driving safety evaluation module, can be located on mobile phone 106. *See id.* at 12:6–18.

Furthermore, as discussed above, Curry’s system includes client unit 110 on GPS-enabled mobile phone 106, with GPS sensor 114 and accelerometer sensor 116, and wireless connection 108. *See id.* at 7:30–8:23. Curry teaches that, “[b]y utilizing GPS and accelerometer sensors embedded in mobile phones to monitor driving safety performance, an integrated and economical solution can be created to detect and prevent unsafe driving behavior.” *Id.* at 7:5–8. Curry further discloses that a “monitoring mode” may be activated by the user, such as by receiving or making a call. *Id.* at 13:20–26. During this monitoring period, Curry’s “GPS receiver 314 can collect location and speed data of the mobile device” and “accelerometer 316 can collect acceleration/deceleration data in

different axes.” *Id.* at 13:27–29. Curry adds that “[e]ach motion measurement from the GPS sensor and accelerometer can be associated with a timestamp, and stored in a local motion data cache 304 for each pre-specified sampling interval.” *Id.* at 13:29–31. In addition, referring to Figure 4, Curry teaches,

Right after an *incoming phone or text message is received or an outgoing phone call is made, the GPS sensor and accelerometer can start to record a motion time series.*

Regardless if the phone communication process (i.e. phone call or text message) is complete or not, the sensors can continue to collect the data for an extended time period, e.g. 6 minutes, to determine the type of the current activity.

Id. at 16:7–13 (emphasis added).

Based on at least this disclosure, we agree with Petitioner that taking an incoming phone call, texting a message, or placing an outgoing phone call, as Curry describes, teaches or suggests “inputs received by the user interface” as recited in claim 1. *See* Pet. 25 (“Curry describes multiple embodiments in which a phone determines a start of a driving period during which the phone is located within a moving vehicle, based on user inputs received through the phone’s user interface and motion sensor data generated by a phone’s embedded accelerometer[.]”). Moreover, we agree that Curry’s monitoring mode may be activated by one of these user actions *and* the “sensor data from the sensor set” (as recited in claim 1) that is in the form of GPS and accelerometer data. *See* Ex. 1005, 16:7–13.

Thus, we conclude a preponderance of the evidence supports Petitioner’s contention that Curry discloses its mobile phone 106 determines, based on inputs received by the user interface and sensor data from the

sensor set, a start of a driving period during which the vehicle is in use, as recited in the Determination Limitation.

(3) Whether Petitioner Has Established a Sufficient Motivation for Combining Curry and Rabu With a Reasonable Expectation of Success

As discussed above in Section III.D.3(v)(b)(1) (“Petitioner’s Contentions”), Petitioner relies on Rabu for the asserted obviousness of modifying Curry’s mobile phone 106 to determine the start of a driving period during which *the mobile device is removably attached to the vehicle*, as recited in the Determination Limitation, by determining whether mobile phone 106 is docked within the vehicle.

Patent Owner argues Petitioner’s asserted motivations for combining Curry and Rabu are based entirely on impermissible hindsight, using claim 1 as a roadmap. *See* PO Resp. 51–52. Patent Owner acknowledges “Petitioner proffers certain rationale to combine Curry and Rabu,” but maintains “the rationale does not support such combination with any regard to the aims of each reference or the success of the combination.” *Id.* at 53. “For example, even if Curry might benefit from the more nuanced mode determinations and ‘mode-shifting’ of Rabu, Curry is still only directed to preventing phone calls during one mode — driving, and Curry’s phone does not pay heed to the characteristics of . . . *how* a vehicle is driving.” *Id.* (citing Pet. 11–15); Ex. 2001 ¶¶ 168–169.

Patent Owner further argues “Petitioner’s proposed combination of Curry and Rabu ignores what any [person of ordinary skill in the art] would have recognized as fundamental flaws in Rabu that would have made its use impracticable, if not impossible.” PO Resp. 47–48; Ex. 2001 ¶ 160. Patent Owner asserts Petitioner’s proposal to “integrat[e] Rabu’s dock status

sensing and associated mode-shifting capabilities into Curry’s phone” (Pet. 11) “would have been time consuming, required significant resources with a low probability of success, and created significant technical hurdles” that are not solved by Curry or Rabu. PO Resp. 48; Ex. 2001 ¶ 161. In particular, according to Patent Owner, Rabu’s frequency spectra analysis would not have been able to identify accurately whether the user of Curry’s mobile device 106 is walking, running, driving, or stationary, as Curry’s method requires. *See* PO Resp. 48–51 (citing Ex. 1005, 10:32–11:2, 17:1–23; Ex. 1013, Figs. 8–10, 7:26–28, 7:32–37, 7:54–60; Ex. 2002); Ex. 2001 ¶¶ 162–166. Patent Owner concludes a person of ordinary skill in the art “would never have picked up Rabu to use frequency spectra for determining Curry’s mode of operation, because it would simply be too unreliable and have little return on investment.” PO Resp. 53.

Mr. Wilson testifies on behalf of Patent Owner that, for a person of ordinary skill in the art to have achieved success in Petitioner’s combination of Curry and Rabu, “the characterization of the ‘driving spectra’ would have been required to be precisely quantified and evaluated across many factors, including location, mounting type, vehicle type, vehicle maintenance status, vehicle load, road surface, and others.” PO Resp. 50; Ex. 2001 ¶¶ 164–165. Further according to Mr. Wilson: “Each of these factors (and ideally all combinations) would have needed to be considered to successfully implement Rabu’s system” which “would, at best, have taken a great deal of experimentation and . . . would have been very difficult to accommodate, requiring further modifications to Curry.” PO Resp. 50; Ex. 2001 ¶ 166.

Petitioner replies that its asserted motivations to combine Curry and Rabu are based on the teachings of those references, and avoid

impermissible hindsight. *See* Pet. Reply 22–24 (citing Ex. 1003 ¶¶ 72–74, 100–169; Ex. 1005, 2:3–8, 7:5–22, 8:5–18, 11:3–14; Ex. 1013, 1:36–2:14, 3:1–10). For example, Petitioner asserts “Curry’s disclosure of ‘accounting for the context of phone usage when generating a driving score’ would have motivated a [person of ordinary skill in the art] to seek practical solutions for implementing ‘a nuanced approach to phone restrictions and to driver scoring that takes into account phone usage context,’” leading to Rabu’s determination of “‘an orientation angle and motion status of the smart phone’ for discerning phone usage context.” *Id.* at 23–24 (citing Ex. 1003 ¶¶ 104–106; Ex. 1013, 3:1–10).

Petitioner also argues Rabu’s disclosure confirms its combinability with Curry, “enabling Curry’s phone to ‘make . . . adjustments to phone 106’s operating modes, determinations of user driving behaviors, and generation of user driving scores.’” Pet. Reply 18 (quoting Pet. 16–17; citing Ex. 1003 ¶¶ 110–115). Petitioner asserts Patent Owner’s opposition misconstrues the combination of Curry and Rabu as set forth in the Petition. *See id.* at 18–19. In particular, according to Petitioner, the Petition posits that “the Curry-Rabu phone would leverage accelerometer orientation and motion data to determine both vehicle motion and phone docking status” using Curry’s existing accelerometer 116, “to enhance the same functions for activity mode recognition by *additionally enabling docking status detection*.” *Id.* (italicized emphasis added) (citing Pet. 12, 18; Ex. 1003 ¶ 102; Ex. 1089, 57:20–58:20).

Petitioner further argues Patent Owner’s opposition presumes the bodily incorporation of Rabu’s motion detection techniques, particularly including the determination of an activity mode based on Rabu’s frequency

spectra analysis, into Curry's mobile phone 106 which is not required for obviousness. *See id.* at 20–21 (citing PO Resp. 49–50; *In re Keller*, 642 F.2d 413, 425 (CCPA 1981)). Moreover, according to Petitioner, Patent Owner's argument "blatantly mischaracterizes Rabu's disclosure, which . . . describes a determination regarding holder status 'can be made based on determining a frequency spectrum associated with the holder motion,'" not that the frequency spectrum analysis is required. *Id.* (quoting Ex. 1013, 7:15–30). Indeed, Petitioner asserts Rabu "claims techniques involving detecting holder motion *without* use of frequency spectrum data." *Id.* at 21 (citing Ex. 1013, claims 10, 15, and 20). Thus, Petitioner asserts "it would have been obvious to configure the Curry-Rabu phone to 'leverage orientation and motion data' from its accelerometer to 'determine both vehicle motion and phone docking status upon a user accepting a phone call while driving,'" without utilizing Rabu's frequency spectra analysis. *Id.* at 21–22 (citing Pet. 11–17; Ex. 1003 ¶¶ 101–117, 136; Ex. 1005, 16:7–22; Ex. 1013, Figs. 1 and 4, 3:1–10, 4:21–33).

During the oral hearing, Petitioner reiterated that the Petition relies on Rabu's use of accelerometer data, not Rabu's frequency spectra analysis. *E.g.*, Tr. 16:12–15 (in IPR2023-00857, Petitioner's counsel arguing "the Curry-Rabu combination . . . as proposed in the [P]etition[] did not specifically rely on the use of frequency spectra to determine motion status"), 57:7–11 (in IPR2023-00911, Petitioner's counsel arguing "where the claims overlap with [IPR2023-00857], I'd refer Your Honors to my colleagues' earlier discussion of those claim elements . . . because the arguments are the same.")).

Patent Owner responds that “Petitioner walks back its original obviousness position, which relied on Rabu’s frequency analysis, to avoid Curry-Rabu’s unreliability.” PO Sur-reply 23–24 (citing Pet. 11–18, 25, 29; Pet. Reply 18–22; Ex. 1013, Figs. 5, 7 and 8, 3:1–10, 8:13–10:42); *id.* at 26 n.2 (citing Ex. 1003 ¶¶ 102–117; Ex. 1013, Fig. 5, 2:2–11, 5:53–6:17, 8:1–4). Patent Owner argues the Petitioner Reply also “continues to rely on Rabu’s frequency analysis by touting Curry-Rabu’s ‘multiple additional advantages’ including “‘adjustments to phone 106’s operating modes . . . and generation of user driving scores” based on capabilities incorporated from Rabu.”” *Id.* at 24 (citing Pet. Reply 18). Patent Owner also argues the Institution Decision similarly “relied on . . . ‘Rabu’s use of frequency data”” to institute review. *Id.* at 23–24 n.1 (citing Inst. Dec. 34–36, 39–40; Ex. 1013, 1:66–2:8). Patent Owner concludes Petitioner “cannot now throw out the basis for its motivation to combine — Rabu’s holder motion status determination” based on frequency spectra analysis. *Id.* at 24.

We firstly conclude Patent Owner’s arguments that an ordinarily skilled artisan would not consider Rabu because of Rabu’s frequency spectrum analysis are unavailing. As a threshold matter, we disagree with Patent Owner’s contention that Petitioner’s proposed combination requires an ordinarily skilled artisan to incorporate or consider Rabu’s frequency spectra analysis with the teachings of Curry. *See* PO Sur-reply 23 (“Petitioner walks back its original obviousness position, to avoid [Rabu’s] unreliability,” and “[s]ince its Petition, Petitioner has relied on Rabu’s frequency analysis[.]”). We observe that, in the Petition, Petitioner explicitly argues “a [person of ordinary skill in the art] would have configured the Curry-Rabu phone to determine, based on user inputs and

orientation and motion data from accelerometer 116, a start of a driving period during which phone 106 is removably attached to the vehicle via a docking station and the vehicle is in use.” Pet. 24 (emphasis added) (citing Ex. 1005, code (57), Figs. 1, 3, 4, and 6, 2:3–3:28, 10:15–11:14, 13:20–16:33, 17:30–18:7; Ex. 1013, Figs. 1, 4, 5, 7, and 8, 3:1–10, 4:21–33, 8:13–10:42; Ex. 1003 ¶ 136). Petitioner adds that the Determination Limitation is met “by a configuration of the Curry-Rabu phone in which the phone *uses accelerometer data to determine both vehicle motion and phone docking status* upon, e.g., a user accepting a phone call while driving (i.e., concurrent use of orientation data and user input data).” *Id.* at 24–25 (emphasis added). In addition, Petitioner contends “the Curry-Rabu phone would leverage *accelerometer orientation and motion data* to determine both vehicle motion and phone docking status.” *Id.* at 12 (emphasis added). As such, we agree with Petitioner that the arguments in the Petition are consistent with Petitioner’s position that the combination of Curry and Rabu does not rely on Rabu’s frequency spectra analysis teachings, but rather focuses on the use of accelerometers.

Our Institution Decision refers to Rabu’s frequency spectra analysis in response to the arguments presented by Patent Owner in the Preliminary Response (Paper 7, “Prelim. Resp.”). *See* Inst. Dec. 34–36, 39–40. For example, in the Institution Decision, we observed:

Patent Owner further argues that “Rabu regards using frequency data to determine small movements for docking status and, to arrive at the claims, would not make technical sense in combination with Curry that judges when to disallow a phone call based on driving status.” Prelim. Resp. 55–56 (citing Ex. 1005, 3:2–4:28, 14:28–33; Ex. 1013, 2:65–3:1, 4:29–33). Patent Owner here appears to be suggesting some

sort of incompatibility between Rabu's use of frequency data to determine when a PMD is docked within a holder, and Curry's use of GPS and accelerometer data to determine when mobile phone 106 is within a moving vehicle. Patent Owner has offered little evidence on this point beyond attorney argument. *See id.*

Id. at 39. To the extent Patent Owner contends the Institution Decision incorporates Rabu's frequency spectrum analysis into the Petition, we disagree. *See* PO Sur-reply 23–24 n.1. Rather, it is the Petition, not the Board, that defines the metes and bounds of an *inter partes* review. *See Koninklijke Philips N.V. v. Google LLC*, 948 F.3d 1330, 1336 (Fed. Cir. 2020). Moreover, the institution of an *inter partes* review is based on a preliminary record, which addressed Rabu's frequency spectra analysis in response to Patent Owner's arguments in the Preliminary Response. The parties' positions and evidence have developed further after institution. As such, the post-institution briefs (including the Patent Owner Sur-reply) allowed both parties to supplement the record and clarify points of dispute, including any misunderstanding regarding the grounds presented in the Petition.

With this in mind, we next turn to Rabu's teachings relied upon by the Petitioner. Rabu's Figure 4, reproduced below, shows a block diagram of functional components of a PMD. *See* Ex. 1013, 2:25–27.

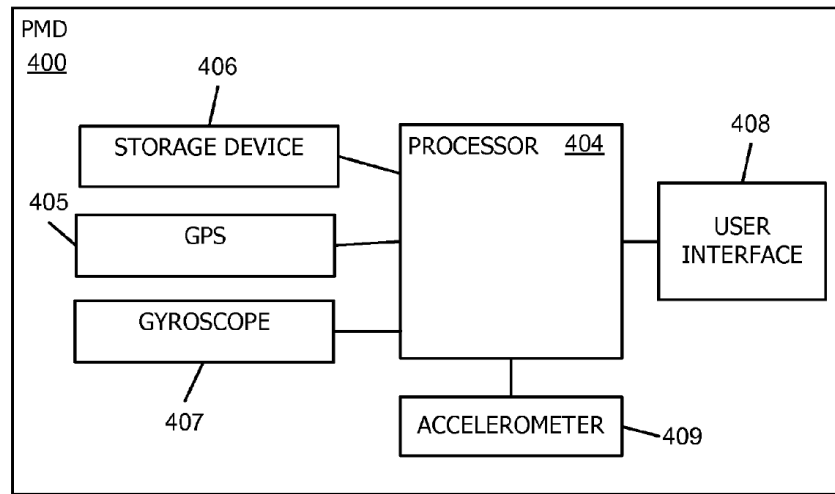


FIG. 4
Figure 4 of Rabu.

Figure 4 shows PMD 400 including accelerometer 409 and several other components. *Id.* at 4:15–20. Rabu teaches:

Accelerometer 409, which can be of generally conventional design, may be a single axis accelerometer or a multi-axis accelerometer. In some embodiments, accelerometer 409 can be implemented as a micro electromechanical system (MEMS) device embedded in PMD 400. Accelerometer 409 can measure acceleration due to gravity. Based on that measurement, processor 404 can determine the angle it is tilted at with respect to vertical, horizontal, or any other reference plane.

Id. at 4:21–29 (emphases added).

Rabu further teaches that the angle of the PMD can be used to determine whether the PMD is docked or held. *Id.* at 7:16–20. For example, Figure 6 of Rabu is reproduced below, and shows a flow diagram of Rabu's process for operating a PMD. *See id.* at 2:31–33.

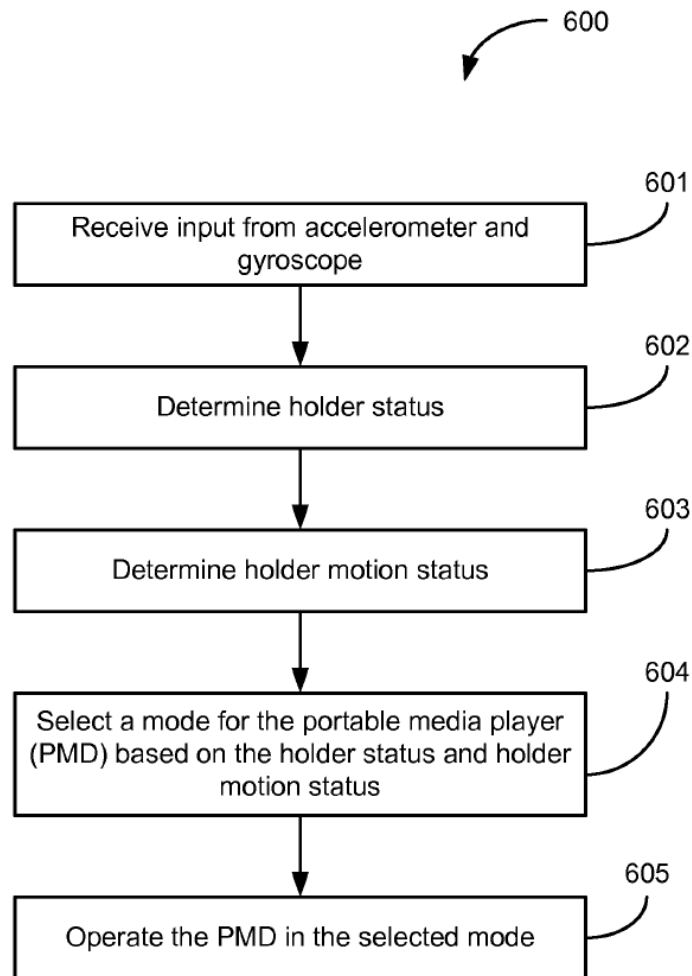


FIG. 6
Figure 6 of Rabu.

Figure 6 shows process 600 for determining the motion status of a PMD, including steps 601–605. *See id.* at 7:7–11. At step 601, the PMD receives input from one or more motion sensors, e.g., an accelerometer and a gyroscope. *See id.* at 7:11–13. “[T]he input can indicate orientation angle and motion information of the PMD.” *Id.* at 7:13–15. At step 602, the PMD determines a holder status. *See id.* at 7:15–16. Rabu teaches an example that “if the orientation angle is 15° with the vertical, the PMD is held in a dock, if orientation angle is 90° to vertical the PMD is resting on surface,

and if the orientation angle is varying then the PMD is being handled by a person.” *Id.* at 7:16–20. At step 603, the PMD determines a holder motion status, such as whether the PMD is in a moving vehicle, in a stationary vehicle, being handled by a moving person, or being handled by a stationary person. *See id.* at 7:22–26. At step 604, the PMD selects a mode of operation based on the determined holder status and holder motion status. *See id.* at 8:1–3. At step 605, the PMD starts operating in the selected mode. *See id.* at 8:3–4.

We further note that Dr. Michalson testifies for Petitioner that a person of ordinary skill in the art “would have readily found relevant solutions within Rabu, and would have expected success in incorporating Rabu’s solutions within Curry.” Ex. 1003 ¶ 106. Dr. Michalson explains this is because Rabu teaches that “a smart phone processor leveraging a ‘generally conventional’ accelerometer such as that found in Curry’s phone can be used to determine both an orientation angle and motion status of the smart phone,” and further teaches “switching operating modes based on determining that the phone is ‘docked in a moving vehicle’ (as opposed to being ‘handheld while located in a moving vehicle’).” *Id.* We credit Dr. Michalson’s testimony in this respect because it is consistent with and supported by the disclosures of Curry and Rabu cited and discussed therein.

Moreover, these disclosures are consistent with and support Petitioner’s reasoning for the combination that “Rabu would have motivated a [person of ordinary skill in the art] to *enhance Curry’s phone* by configuring it to leverage orientation data from the *same accelerometer* to determine whether the phone is removably attached to the vehicle.” Pet. 25 (emphases added) (citing Ex. 1003 ¶ 137). This is because Curry’s mobile

phone 106 already includes accelerometer(s) 114. *See, e.g.*, Ex. 1005, Fig. 1, 7:30–8:2. Petitioner explains that “[c]onsistent with both Curry and Rabu, the Curry-Rabu phone would appropriately restrict phone interactions depending on the determined status.” Pet. 12 (citing Ex. 1003 ¶ 102).

In addition, Dr. Michalson explains that:

To further promote safe driving, Curry suggests correlating different activity modes (e.g., stop, driving) with different operating modes (e.g., different levels of restrictions on phone use), and accounting for the context of phone usage when generating a driving score for a particular driver. USAA-1005, 3:3–4:28, 16:7–17:33. For example, in one embodiment, Curry contemplates an all-or-nothing approach to restrictions on phone activity when phone 106 is placed in a monitoring operating mode, [and] it elsewhere recognizes that such an approach is not always appropriate, and that it can be better to correlate different driving contexts with different phone restrictions. USAA-1005, 3:3–4:28, 15:8–16:33.

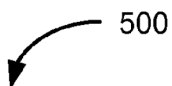
Ex. 1003 ¶ 104. Dr. Michalson further testifies that an ordinarily skilled artisan would have looked to Rabu for a more nuanced approach because “Rabu’s defined modes of operation include appropriate levels of restrictions on phone use.” *Id.* ¶ 108. According to Dr. Michalson, if Rabu’s phone “is being held by the driver,” then it can “prevent the driver from sending or receiving text messages while driving.” *Id.* (citing Ex. 1013, 12:38–43). “Conversely, [if] the phone is held within a dock located within the vehicle, [an ordinarily skilled artisan] would have found it obvious to decide to change the phone’s mode of operation to one involving relatively fewer restrictions to phone use.” *Id.* (citing Ex. 1013, Figs. 1 and 4, 3:1–10, 4:21–33, 6:39–43). Dr. Michalson further explains that:

The Curry-Rabu combination would have increased user tolerance for Curry’s monitoring techniques. USAA-1005,

7:5–22, 8:5–18, 11:3–14; USAA-1013, 1:36–2:14. For example, Rabu's docking status enabled a determination of when a phone is docked within a moving vehicle, which can then be inferred to mean that a user is not presently using the phone for texting when the vehicle is being driven. Rabu's docking status would have also improved Curry's use of an estimated context of mobile phone use in identifying unsafe driving behaviors. For example, knowing the docking status would have enabled differentiation between (i) a user holding and using the phone while driving and (ii) using the phone while docked and while driving. The second scenario in this example is less likely to distract the user and less likely to be determined to represent an unsafe driving behavior.

Id. ¶ 111.

Consistent with Dr. Michalson's testimony, we observe that Curry contemplates switching between communication mode and GPS mode depending on the complexity of the driving conditions. Ex. 1005, 15:18–21. For example, Curry discloses that commercial fleet drivers may need to communicate with dispatchers or other drivers using a cell phone while driving. *Id.* at 15:8–10. Rabu in turn specifically addresses the need for a multi-modal approach for PMDs. For example, Rabu's Figure 5 is reproduced below:



PMD Modes	Description
A	PMD handheld while located in a moving vehicle.
B	PMD resting in a moving vehicle
C	PMD handheld while person is in motion.
D	PMD docked in a moving vehicle
E	PMD docked in a desktop dock and stationary
F	PMD resting on a stationary surface
G	PMD docked in a stationary vehicle

FIG. 5
Figure 5 of Rabu.

Figure 5 is a table listing various modes of operation of Rabu's PMD. Ex. 1013, 2:28–30. Thus, on the whole, Petitioner has sufficiently articulated a rationale for the combination of Curry's and Rabu's teachings as discussed.

In addition, Petitioner has provided citations to the references along with corroborating testimony from Dr. Michalson that support its arguments for why and how an ordinarily skilled artisan would have combined the prior art disclosures with a reasonable expectation of success. *See* Ex. 1003

¶¶ 101–117. For example, Dr. Michalson explains that

configuring Curry's systems to leverage Rabu's teachings would have required only routine programming knowledge, which was well within the skill of a [person of ordinary skill in the art] prior to the Critical Date. For example, Rabu and Curry both use the same type of hand-held phone and contain the same types of internal sensors (GPS, accelerometers). Indeed, the change would have amounted to nothing more than the use of a known technique to improve similar devices — in each instance a smart phone equipped with a generic accelerometer — in a similar way, and combining prior art elements according to known methods to yield the predictable results described above.

Id. ¶ 116 (emphases added).

Patent Owner contends that introducing more modes into Curry would have created more opportunities for failure. PO Resp. 48–49 (citing Ex. 2001 ¶ 162). Patent Owner argues that an ordinarily skilled artisan would have understood Curry teaches that selecting the wrong activity mode “can result in incorrect disruption of cell phone service which can lead to unpleasant user experiences and further limit system deployment.” *Id.* (citing Ex. 1005, 10:32–11:2).

Still, neither Patent Owner nor Mr. Wilson explains sufficiently how having more modes would create more opportunities for failure. Instead, these unsupported conclusory statements presume that additional modes must increase the likelihood of choosing the incorrect activity mode when there is, in fact, no persuasive support for this conclusion.

Moreover, trade-offs regarding features, costs, manufacturability, or the like, do not necessarily prevent the combination. *See Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006) (“[A] given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine.”); *Winner Int’l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n.8 (Fed. Cir. 2000) (“The fact that the motivating benefit comes at the expense of another benefit, however, should not nullify its use as a basis to modify the disclosure of one reference with the teachings of another. Instead, the benefits, both lost and gained, should be weighed against one another.”). Here, Petitioner has explained the benefits of modifying Curry’s phone to use its accelerometer data to determine whether the phone is docked within a moving vehicle. *See, e.g.*, Pet. 15–17. We weigh those advantages over Patent Owner’s proposed disadvantages because Petitioner’s arguments are supported sufficiently by the record (*see id.*), whereas Patent Owner’s and Mr. Wilson’s conclusory statements are not.

Patent Owner’s arguments based on the use of Rabu’s frequency spectra analysis with Curry are also unavailing. *See* PO Resp. 47–51. As discussed in detail above, Petitioner’s arguments in the Petition rely upon Rabu’s use of accelerometer data to determine whether the PMD is in a holder or handheld. *See, e.g.*, Pet. 11–12. Patent Owner’s arguments

regarding the “experimentation” and disadvantages of incorporating Rabu’s frequency spectra analysis into Curry do not address Petitioner’s arguments regarding the use of an accelerometer.

Additionally, as noted above, the Petition relies on Curry, not Rabu, to disclose determining activity modes. *See* Pet. 24–29. The Petition relies on Rabu to teach determining whether the phone is attached (docked) to the vehicle and, if so, modifying the operating status of Curry’s phone, for example to relax Curry’s communications restrictions in the GPS navigation mode; that is, to teach a more nuanced approach rather than Curry’s two, mutually exclusive operating modes. *See id.* Rabu discloses that this determination of whether the phone is docked is made based on the phone’s orientation angle, measured by the phone’s internal gyroscope and GPS, and not by frequency analysis. *See* Ex. 1013, 3:46–4:3; *see also* Pet. 8–9 (citing same).

Finally, we note Patent Owner mischaracterizes Rabu’s disclosure. Patent Owner states “Rabu *requires* that the ‘determination [of the activity mode be] made based on determining a frequency spectrum associated with the holder motion and comparing that to frequency spectra of known motions.’” PO Resp. 50 (citing Ex. 1013, 7:26–28) (emphasis added). This is not an accurate representation of Rabu’s disclosure. For context, we note the paragraph Patent Owner quotes discusses “[e]xamples of techniques for determining the motion status.” Ex. 1013, 7:7–8 (emphasis added). The unaltered sentence quoted and modified by Patent Owner, along with the preceding sentence, read:

For example, in one embodiment, the PMD can determine whether it is in a moving vehicle, in a stationary vehicle, being handled by a moving person, or being handled [by] a stationary

person. This determination can be made based on determining a frequency spectrum associated with the holder motion and comparing that to frequency spectra of known motions.

Id. at 7:23–28. Notably, Patent Owner removes “can” and inserts “requires.” *See* PO Resp. 50. Contrary to Patent Owner’s characterization, Rabu does not require using frequency spectra analysis to determine how the PMD is being transported; rather, Rabu discloses frequency spectra analysis as an example method used in one embodiment.

For the foregoing reasons, we conclude Petitioner has sufficiently explained how the asserted combination of Curry and Rabu teaches or suggests the Determination Limitation with a reasonable expectation of success.

(c) Conclusion

We conclude Petitioner’s combination of Curry and Rabu teaches the Determination Limitation of claim 1, is supported by sufficiently articulated motivations to avoid the taint of impermissible hindsight, and demonstrates a reasonable expectation of success in the asserted combination.

(vi) Mobile Device Configured to “process the sensor data from the sensor set during the driving period to derive driving information associated with how the vehicle is driven”

(a) Claim Construction

Patent Owner emphasizes that the claimed “driving information” must be “associated with **how** the vehicle is driven,” and argues the driving information “is distinct from raw sensor data because it is derived from raw sensor data.” PO Resp. 9 (citing Ex. 1001, 18:49–54, 19:54–60, 31:43–45); Ex. 2001 ¶¶ 51–52, 56. According to Patent Owner, the ’271 patent

provides a mobile device that captures “location, speed, and acceleration sensor data” and then *derives driving information* from that sensor data, “such as variation in velocity, speed of impact, pitch, yaw, roll, G-force, bearing/heading, and time elapsed.” PO Resp. 2–3, 12, 28–29 (citing Ex. 1001, 2:10–21, 10:28–35, 13:65–14:2, 15:40–45, 16:20–27, 16:34–36, 18:57–60, 19:9–13, 20:60–21:5, 25:31–35); Ex. 2001 ¶¶ 39, 63–65, 108–110.

Patent Owner also relies on the prosecution history of U.S. Patent No. 9,633,487 (“the ’487 patent” filed as a continuation of the ’271 patent) as allowing claims in part because “all that Plante^[7] does is to record data from the sensors,” which “is not processed driving information that is derived from sensor data.” PO Resp. 14–16 (citing Ex. 2007, 8–15, 32–34).

Petitioner in reply argues Patent Owner’s examples of “driving information” include “**speed**” and “**acceleration**” “associated with how the vehicle is driven.” Pet. Reply 4 (citing PO Resp. 28–29). Petitioner then asserts “[t]his is consistent with the Petition’s identification of ‘driving behavior’ information in Curry, such as . . . **speeding**.” *Id.* (citing Pet. 29).

Patent Owner responds that “[t]he claimed ‘derived driving information’ includes more than raw sensor data, specifically, information regarding ‘how the vehicle is driven.’” PO Sur-reply 5–6 (citing Ex. 1001, 31:43–45); *id.* at 11 (citing Ex. 1001, 2:10–21, 5:3–23, 7:12–15, 10:28–35, 13:65–14:2, 15:40–45, 16:20–27, 17:22–24, 18:50–19:28, 20:60–21:5, 25:31–35).

⁷ The Plante reference (US 2007/0135979 A1) has not been entered into the record of this proceeding.

We agree with Patent Owner’s claim construction. The plain language of claim 1 recites that the mobile device processes the sensor data to derive driving information associated with how the vehicle is driven, thereby differentiating the sensor data from the driving information. *See* Ex. 1001, 31:43–45. We need not decide, however, whether *speed* and *acceleration* represent sensor data or driving information derived from sensor data. That is because, for reasons provided below in Section III.D.3(vi)(b), we conclude Curry’s mobile phone 106 derives a driver safety statistic, which is driving information per claim 1 separate and apart from any speed and acceleration determinations made by the phone.

(b) Combination of Curry and Rabu

(1) Petitioner’s Contentions

Petitioner argues “the Curry-Rabu phone processes sensor data recorded by its embedded sensors (e.g., accelerometer 116) (*‘sensor data’*) during the driving period to derive ‘driving behavior’ information, e.g., ‘talking . . . or texting . . . while driving’ and ‘speeding’ (*‘driving information associated with how the vehicle is driven’*).” Pet. 29 (citing Ex. 1005, 7:13–29, 8:21–27, 8:30–9:33, 10:15–26, 11:3–17); Ex. 1003 ¶¶ 143–145. In support, Petitioner asserts “Curry explains that ‘[e]ach motion measurement’ is associated ‘with a timestamp’ and stored ‘in a local motion data cache 304 for each pre-specified sampling interval.’” Pet. 29–30 (citing Ex. 1005, Fig. 3, 13:27–31); Ex. 1003 ¶ 146. Petitioner further asserts Curry’s “‘activity mode recognition module 306’ uses the ‘recorded time stamped data to estimate the type of activity’ (e.g., ‘driving, walking, running or remaining substantially still’) *‘in real-time,’* both ‘to

allow or disallow users to receive or make a call, text . . . or use . . . software programs,’ and to derive driving information that is stored in local memory.” Pet. 30–31 (citing Ex. 1005, Fig. 3, 13:20–14:26); Ex. 1003 ¶ 146.

For example, according to Petitioner, Curry’s client 110 “processes ‘raw data’ from a driving period to derive driving behavior information, including whether the phone is unsafely used during the driving period, and whether the user engages in other unsafe behaviors such as speeding.” Pet. 25 (citing Ex. 1005, 6:5–22, 8:5–11, 7:30–8:33, 15:7–22); Ex. 1003 ¶ 138. Petitioner further asserts: “Raw data and resolved driving behavior information are stored in the phone (e.g., ‘motion data cache 118,’ ‘driving safety performance database 324’) and processed to . . . generate a user ‘driving safety score.’” Pet. 7 (citing Ex. 1005, code (57), Figs. 1, 3, and 6, 3:1–4:6, 8:29–12:18, 13:27–14:26, 17:1–18:4); Ex. 1003 ¶ 74.

(2) *The Patent Owner Response*

Patent Owner responds that Curry’s *mobile phone* 106 is *not* configured to process sensor data to *derive driving information* associated with how the vehicle is driven, per claim 1. *See* PO Resp. 16–22, 28–32, 36–37; Ex. 2001 ¶¶ 74–88, 108–121, 131–134. Patent Owner asserts Curry’s mobile phone 106 instead “transfer[s] recorded data to a server for processing,” like the Plante reference at issue during the ’487 patent prosecution. *Id.* at 16, 22 (quoting Ex. 2007, 33); Ex. 2001 ¶¶ 86–87.

In particular, according to Patent Owner, it is Curry’s user control web site 102 and data server 104, not Curry’s mobile phone 106, that are “used to select timing and location information in which use of the [mobile] device is permitted or restricted.” PO Resp. 16 (citing Ex. 1005, code (54),

Fig. 1, 3:16–18, 8:30–9:20); Ex. 2001 ¶ 74. Patent Owner argues Curry’s mobile phone 106 merely “determine[s] from raw sensor data 114, 116 that a user is driving at a moment in time,” and then uses “externally provided” “use permission data” from web site 102 and server 104 to “perform[] ‘dynamic call handling’ based on estimated activity mode (e.g., standing, walking, or driving) at the time of” a phone call “to permit or restrict use of the mobile phone 106 . . . for calling or texting.” PO Resp. 16–18 (citing Ex. 1005, Figs. 1–3, 4:16–24, 7:8–10, 9:1–11, 9:31–33, 11:15–18, 13:1–2, 14:19–21); *id.* at 36–37 (further citing Ex. 1005, 3:2–4:5); Ex. 2001 ¶¶ 75–76, 132–133.

Patent Owner concludes Curry’s mobile phone 106 “does not perform further processing, evaluation, statistical analysis, or scoring, especially as concerns how the vehicle is driven, or for detecting a driving incident.” PO Resp. 17, 19–20; Ex. 2001 ¶¶ 75–76, 79. Patent Owner argues Curry’s Figure 2 and its associated written description “make clear that any processing, evaluation, statistical analysis, or scoring is performed at Curry’s remote, centrally-managed server [104].” PO Resp. 18–19, 34–35 (citing Ex. 1005, Figs. 2 and 4, 3:24–4:6, 7:8–17, 8:5–18, 9:23–10:5, 11:3–18, 13:1–19, 14:17–26, 16:7–22, 17:24–18:3); Ex. 2001 ¶¶ 77, 125–127. Patent Owner’s view is that “Curry’s mobile device merely stores raw sensor data and estimates a context or activity mode of mobile phone use, e.g., *whether a phone associated with a user is driving*, walking, or standing still (not *how* a vehicle is driving), and whether a user is permitted to operate the mobile phone in that context.” PO Resp. 20–22 (emphases modified) (citing Ex. 1005, 8:30–32, 9:1–20); *id.* at 36; Ex. 2001 ¶¶ 80–85, 88, 131.

Patent Owner’s arguments against Curry disclosing the preamble of claim 1, which recites a mobile device “configured to log driving information associated with a vehicle” (Ex. 1001, 31:29–31), are materially the same as Patent Owner’s arguments summarized above in the context of the claim body’s “process the sensor data . . . to derive driving information” limitation (*id.* at 31:38, 31:43–45). *See* PO Resp. 28–32; Ex. 2001 ¶¶ 108–121.

Finally, Patent Owner argues “[c]ombining Curry with Rabu fails to solve these problems,” because “Rabu merely determines the phone’s holder status and a holder motion status . . . and from those statuses, the mode of the device.” PO Resp. 37 (citing Ex. 1013, Fig. 5, 7:31–60); Ex. 2001 ¶ 134.

(3) *The Petitioner Reply*

Petitioner replies that Patent Owner mischaracterizes the Petition. *See* Pet. Reply 8–9. Petitioner argues the Petition asserts “[t]he Curry-Rabu phone satisfies [the ‘driving information’ limitation] by processing sensor data (e.g., motion and orientation data) to derive ‘driving behavior’ information, e.g., ‘talking . . . or texting . . . while driving’ and ‘speeding’” as well as “acceleration.” *Id.* at 8 (citing Pet. 29), 9 (citing Pet. 6, 13, 22). Petitioner also argues the Curry-Rabu phone processes data to calculate a driver safety statistic and driving safety performance data, which it reports to the server. *Id.* at 8–11 (citing Ex. 1005, Fig. 1, 3:24–4:11, 7:5–22, 11:15–25, 21:4–6; Ex. 1003 ¶¶ 121–124, 144, 150–151).

(4) *The Patent Owner Sur-reply*

Patent Owner disputes Petitioner’s contention that Curry’s mobile phone 106 “determines “driving behavior” information . . . such as . . .

speeding.” PO Sur-reply 14 (citing Pet. Reply 4, 8). Patent Owner asserts “nothing in Curry evidences Curry’s *phone* determining anything abnormal in its raw sensor data, including speeding.” *Id.* (citing Ex. 1005, 7:13–29, 8:21–27, 8:30–9:33, 10:15–26, 11:3–17; Ex. 2001 ¶¶ 75–76, 78–80, 84–85). Patent Owner maintains Curry’s mobile phone 106 determines a speed of travel as being stationary, low, medium, or high, but “Curry does not qualify these determinations as abnormal,” and “any behavior of the vehicle, including any abnormalities, is determined by Curry’s server.” *Id.* (citing Ex. 1005, Fig. 5, 16:27–17:14; Ex. 2001 ¶¶ 75–76, 80, 83–85, 113–114, 116). Further according to Patent Owner, “Petitioner inaccurately maps ‘talking . . . or texting . . . while driving’ to [claim 1]: what a *user* is doing on the phone instead of what the *vehicle* is doing.” *Id.* at 13–14 (citing Pet. Reply 4; Ex. 2001 ¶¶ 75–76, 83, 85, 113–114).

Patent Owner further argues Curry’s “‘safety statistic’ is determined by Curry’s server [104], is reported to Curry’s server by Curry’s Auto Insurance Companies 130 as ‘Driving Safety Scores,’ or is shared as Driving Safety Score Data 214 between Curry’s Driver Safety User Control and Monitoring Website and third parties via a Data Sharing Interface 216.” PO Sur-reply 16 (citing Ex. 1005, Figs. 1 and 2, 3:26–32, 4:1–6, 10:3–5, 13:15–17). Patent Owner asserts Curry’s mobile phone 106 merely “reports to Curry’s server ‘driving safety performance data,’ **which Curry defines as raw sensor data from motion data cache.**” *Id.* at 16–22 (citing Ex. 1005, Figs. 1–3, 3:24–4:6, 7:5–17, 8:29–9:3, 9:22–10:12, 11:7–10, 11:15–18, 11:26–30, 13:1–19, 14:17–23, 16:13–18, 18:1–3, 21:4–6; Ex. 2001 ¶¶ 76–77, 82, 116, 154, 157, 192, 199–201).

(5) *Discussion and Conclusion*

We conclude a preponderance of the evidence supports Petitioner’s contention that Curry’s mobile phone 106 (and, therefore, the Curry-Rabu phone) processes sensor data during the driving period to derive driving information associated with how the vehicle is driven.

As noted above, Curry discloses using motion data — including data captured “other than when phone calls are answered or made” — to determine unsafe driving behavior such as speeding, abnormal accelerations, abnormal decelerations, and sharp turns. Ex. 1005, 3:32–4:5, 9:23–28. Curry uses this captured data to calculate a driver safety statistic, which can be reported to the data server. *Id.* at 3:24–4:6. This calculation is performed by the driving safety evaluation module, which can be located on the phone. *Id.* at 7:13–15, 12:6–18. Curry also discloses activity mode recognition program 120 of mobile phone client 110 processing raw sensor data to determine the context of the mobile phone use, such as whether the phone is being used while driving, walking, or remaining still. *Id.* at 8:30–9:11.

Furthermore, Curry discloses that, “[i]n the post-processing stage, the activity mode recognition module can be used to determine the context of a phone call to a selected user based on previously collected motion data, and adjust the related safety score for the user if a violation is identified.” Ex. 1005, 11:7–10. The activity mode recognition module is a component of Curry’s mobile phone 106. *Id.* at Fig. 3; *see also* Ex. 2001 ¶ 154 (Patent Owner’s expert Mr. Wilson acknowledging that “the activity mode recognition module [is] on the phone”). Patent Owner’s arguments that the server, rather than the activity mode recognition module, performs this

adjustment of the safety score (*see* PO Sur-reply 13) are inconsistent with the express language of Curry and are unavailing.

Patent Owner’s arguments that auto insurance company 130 mentioned in Curry reports the driving safety score to the server is also unavailing, as Patent Owner fails to explain, and we do not readily perceive, the relevance of Patent Owner’s citations alleged to support its assertion. *See* PO Sur-reply 16 (citing Ex. 1005, Figs. 1 and 2, 3:26–32, 4:1–6, 10:3–5, 13:15–17). To the extent Patent Owner relies on the bi-directional arrow between auto insurance company 130 and server 104 depicted in Curry’s Figure 1 for this alleged disclosure (*see id.* at 18 (annotating Curry’s Figure 1)), it appears to us that this figure illustrates “Driving Safety Scores” being transmitted from the server to the company and “Insurance premiums” being transmitted from the company to the server. *See id.* Notably, Patent Owner omits the “Insurance premiums” disclosure from its annotations highlighting the language presented in Figure 1. *See id.*

Accordingly, for the foregoing reasons and on this record, Curry supports Petitioner’s contentions in relation to the Curry-Rabu phone processing sensor data during the driving period to derive driving information associated with how the vehicle is driven.

(vii) Mobile Device Configured to “store a selection of the driving information to the memory, wherein the driving information is derived without data from vehicle sensors”

(a) Claim Construction

Petitioner argues “the plain meaning of a ‘selection of the driving information’ is *not limited to a selection of a subset of*” driving information,

“but instead is broad enough to encompass selection of . . . *all* of” the driving information. Pet. 31–32 & n.6 (emphases added); Pet. Reply 4–5.

Patent Owner responds that Petitioner’s claim construction “fails to read [claim 1] in light of the specification,” which “clearly explains why determining and storing a selection of the driving information is important and describes how a selection of driving information is selected for storage and subsequent transmission to third parties.” PO Resp. 39, 40–41 (citing Ex. 1001, 4:43–5:17, 13:43–14:4, 16:34–17:46, 17:59–67, 18:49–60); Ex. 2001 ¶ 141. In particular, according to Patent Owner, one problem addressed by the ’271 patent was providing a mobile device that can log driving information “while managing data storage,” which was solved by “limit[ing] the storage of data on the mobile device to a selection of important data.” PO Resp. 1–4, 12 (citing Ex. 1001, code (57), 2:5–9, 3:12–27, 4:42–5:12, 7:64–8:16, 10:54–11:3, 17:40–46); PO Sur-reply 6–8 (further citations omitted); Ex. 2001 ¶¶ 38–42, 60–62.

We need not resolve this claim construction dispute. *See Realtime Data*, 912 F.3d at 1375 (“The Board is required to construe [claim terms] only to the extent necessary to resolve the controversy.”). That is because, for reasons provided below in Section III.D.3(vii)(b), we conclude Curry suggests configuring its mobile phone 106 to store a selection of driving information, even applying Patent Owner’s claim construction.

(b) *Combination of Curry and Rabu*

(1) *Petitioner’s Contentions*

Petitioner argues the “Curry-Rabu phone stores information derived from processed sensor data (*‘selection of driving information’*) to memory

(e.g., motion data cache 118, local memory) (*‘memory’*) prior to transmission (e.g., to driving safety data server 104).” Pet. 31 (citing Ex. 1005, Figs. 1 and 3, 7:5–22, 8:29–10:12, 13:20–16:6); Ex. 1003 ¶ 149. Petitioner asserts this information is “driving information” as claimed because it is “derived from timestamped motion data associated with pre-specified sampling intervals” in order “to mark activity estimation results for a given interval for further processing at later times.” Pet. 32–33 (citing Ex. 1005, code (57), Figs. 1 and 3, 2:1–27, 3:24–4:11, 7:5–22, 8:29–10:12, 11:3–14, 13:20–16:6); Ex. 1003 ¶ 151. Petitioner then proffers two alternative theories of obviousness, depending on how the claimed “*selection* of the driving information” (emphasis added) might be construed. See Pet. 31–33.

First, if the “selection” term is construed broadly to encompass selecting *all* the information, Petitioner asserts “[f]rom Curry, a [person of ordinary skill in the art] would have found it obvious to store all . . . of the derived driving information in the memory of the Curry-Rabu phone.” Pet. 31–32; Ex. 1003 ¶ 149.

Second, if the “selection” term is construed narrowly to require selecting a *subset* of the information, Petitioner asserts “[f]rom Curry, a [person of ordinary skill in the art] would have found it obvious to store . . . a subset of the derived driving information in the memory of the Curry-Rabu phone.” Pet. 31–32; Ex. 1003 ¶ 149. In particular, according to Petitioner, a person of ordinary skill in the art would have been motivated to do this because “Curry explains that . . . specific aspects of recorded sensor data are more useful for storage and transmission to safety data server 104” than other aspects of the recorded data, such as “motion data indicating possible

use violations, unsafe driving behavior.” Pet. 32 (citing Ex. 1005, Fig. 1, 3:24–4:6, 4:8–11, 7:5–22, 8:29–10:12, 13:20–16:6); Ex. 1003 ¶¶ 149–150.

Concerning the claim requirement that “the driving information is derived without data from vehicle sensors,” Petitioner argues Curry “describes ‘a driving safety monitoring program on a mobile phone client’ including an ‘activity mode recognition module 306’ that processes ‘recorded time stamped’ data from the mobile phone’s sensor set during a determined driving period to derive driving information.” Pet. 33 (citing Ex. 1005, 13:20–14:26); Ex. 1003 ¶ 153. Petitioner asserts a person of ordinary skill in the art “would have found it obvious to configure a Curry-Rabu phone to derive driving information based on its recorded sensor data alone when considering Curry’s disclosures of data obtained by embedded sensors (e.g., accelerometer 116) being used to derive the driving information” which “never once describes or suggests leveraging the vehicle’s sensors.” Pet. 33–34 (citing Ex. 1005, code (57), Figs. 1 and 3, 2:1–27, 3:24–4:11, 7:5–22, 8:29–10:12, 11:15–25, 13:20–16:6); Ex. 1003 ¶¶ 154–155.

(2) *The Patent Owner Response*

Patent Owner argues “Curry does not disclose storage of a selection of driving information to the memory of” mobile phone 106 because “Curry’s phone stores *all* recorded sensor data, not a selection.” PO Resp. 38; Ex. 2001 ¶ 137. In support, Patent Owner asserts “Curry describes post-processing by the remote server.” PO Resp. 38–39 (citing Ex. 1005, 7:8–10, 8:30–9:1, 9:23–33, 11:15–18, 13:1–5, 14:19–26, 16:7–18, 17:32–18:3); Ex. 2001 ¶¶ 138–140.

Concerning Petitioner’s asserted obviousness of “stor[ing] in the Curry-Rabu phone a subset of (i.e., selection of) the recorded sensor data,” Patent Owner asserts “Petitioner continues to mischaracterize the features of Curry’s phone.” PO Resp. 39 (citing Pet. 32). According to Patent Owner, “Curry’s phone considers *all* raw sensor data in the motion data cache at the time of a phone call to ‘precisely’ determine activity mode” for user permission authorizations. *Id.* at 39–40 (citing Ex. 1005, Figs. 3 and 5, 13:27–14:16, 14:19–26, 17:1–14); Ex. 2001 ¶¶ 142–145.

Finally, concerning the claim limitation reciting that the driving information is derived without data from vehicle sensors, Patent Owner asserts Petitioner’s argument “ignores that ‘driving information,’ if derived at all by Curry, is derived by Curry’s server, not by Curry’s phone.” PO Resp. 41–42 (citing Pet. 33–34).

(3) *The Petitioner Reply*

Petitioner replies that Patent Owner mischaracterizes Curry’s mobile phone 106 as considering “*all* raw sensor data” to determine an activity mode. Pet. Reply 13 (citing PO Resp. 40; Ex. 1005, Figs. 3 and 5, 13:27–14:4, 17:1–14). Petitioner asserts a person of ordinary skill in the art “would have understood and found obvious that although more data can be leveraged when desirable to provide more precise determinations, Curry routinely provides ‘high confidence’ determinations based on less than ‘all’ data stored in the cache.” *Id.* at 13–14 (citing Ex. 1005, 13:33–14:4; Ex. 1003 ¶ 144).

(4) *The Patent Owner Sur-reply*

Patent Owner responds that “Curry discloses no functionality or storage configuration for storing and sending only a selection of what it stores in motion data cache to the server and no way to discern what that selection might be.” PO Sur-reply 14 (citing Ex. 2001 ¶ 141). Patent Owner asserts “Petitioner manufactures features that Curry does not disclose” in attempting to establish Curry discloses a “**selection**” of driving information. *Id.* at 14–16 (discussing Ex. 1005, Figs. 1 and 3–6, 3:24–4:6, 4:8–11, 7:5–22, 8:29–10:12, 13:20–16:6) (citing Pet. Reply 5; Ex. 2001 ¶¶ 75–85, 141–142, 145).

(5) *Discussion and Conclusion*

We conclude a preponderance of the evidence supports Petitioner’s contention that Curry suggests storing a selection of driving information to memory in mobile phone 106. For example, Curry states “the mobile phone client 110 can record location, speed and acceleration data from sensors embedded in [mobile phone 106], such as a GPS sensor 114 and accelerometer 116,” in “local motion data cache 118” of mobile phone 106. Ex. 1005, Fig. 1, 8:29–9:3. Based on the entire record, we agree with Petitioner’s position that an ordinarily skilled artisan would have been motivated in some instances to configure Curry’s mobile phone 106 to store *less than all* of the driving information data recorded by the mobile phone’s sensors, such as only the data that indicates possible use violations or unsafe driving behavior. *See* Pet. 32. This contention is supported by Curry’s discussions concerning the relative importance of some driving information over other driving information. *See* Ex. 1005, 3:24–4:11, 7:5–9, 13:31–14:4,

15:8–16:6. This includes, as Dr. Michalson testifies, storing: (1) only data that reflects “possible violations of use” or “unsafe driving behavior,” or (2) only data that a particular person, such as the driver’s parents or insurance company, is interested in receiving. Ex. 1003 ¶¶ 149–151.

Furthermore, based on the complete record, we find Curry teaches expressly that “[a]n embedded accelerometer and a GPS receiver are included in the wireless device.” Ex. 1005, 3:6–7. Curry further teaches that, “[w]hen a call is made or received using a mobile phone 106, the mobile phone client 110 can record location, speed and acceleration data from sensors *embedded* in the wireless device, such as a GPS sensor 114 and accelerometer 116.” *Id.* at 8:30–33 (emphasis added). The data from the embedded device sensors are recorded in the motion data cache 118 and used by user activity mode recognition program 120 to determine the “context of the mobile phone use.” *Id.* at 9:6–7. Based on the express disclosure, Dr. Michalson testifies that Curry focuses “on leveraging motion data obtained from sensors embedded in the mobile phone (e.g., accelerometer 116, GPS receiver 114) to derive the driver safety information.” Ex. 1003 ¶ 155 (citing Ex. 1005, code (57), Figs. 1 and 3, 2:1–27, 3:24–4:11, 7:5–22, 8:29–10:12, 13:20–16:6). As such, Dr. Michalson asserts a person of ordinary skill in the art “would have understood there to be no need to use data from vehicle sensors to derive Curry’s driving information because its phone includes all of the necessary sensors, processing, and memory to derive the driving information.” *Id.*

Accordingly, for the foregoing reasons and on this record, Curry supports Petitioner’s contentions in relation to the Curry-Rabu phone storing

a selection of driving information to memory, derived without data from vehicle sensors.

(viii) Mobile Device “is controlled by a downloaded application to control the mobile device to register the start of the driving period in response to an initialization input generated automatically in response to the sensor data having predetermined values, wherein the initialization input is generated in response to sensor data reflecting a detected speed above a predetermined threshold”

We refer to the limitation above as the “Initialization Limitation.”

(a) Petitioner’s Contentions

In addressing the Initialization Limitation, Petitioner relies on its analysis for the Determination Limitation as discussed in Section III.D.3(v) above. *See* Pet. 34 (“As explained at [1.6]”).

Petitioner further equates Curry’s client unit 110 to the claimed “downloaded application.” *See* Pet. 34–35 (citing Ex. 1005, Fig. 1, 7:5–22, 8:30–9:33, 16:7–22); Ex. 1003 ¶ 157. Petitioner asserts client unit 110 “record[s] location, speed and acceleration data from sensors embedded in the [phone] . . . to a local motion data cache 118,” and processes that data with a “user activity mode recognition program 120” before transmitting “activity mode estimation results” to server 104. Pet. 35–36 (citing Ex. 1005, Figs. 1 and 3, 3:24–26, 7:5–22, 8:20–9:28, 13:20–16:6); Ex. 1003 ¶¶ 158–159.

Petitioner further argues the Curry-Rabu phone “timestamp[s]” data from GPS sensor 114 “to determine a ‘speed measure’ that is calculated ‘as traveled distance divided by time interval,’ and that can be compared against a predetermined speed threshold to determine whether a vehicle within which the phone is located is traveling within ‘a high-speed range.’”

Pet. 39–40 (citing Ex. 1005, Fig. 5, 17:1–22); Ex. 1003 ¶ 167. Petitioner asserts a person of ordinary skill in the art would have been motivated to configure Curry’s client unit 110 to generate automatically “an initialization input for registering the start of the already-determined driving period in response to GPS sensor data having predetermined values reflecting a detected speed above a predetermined threshold,” because this “would advantageously enable the Curry-Rabu phone to retain, for later transmission [to server 104] both the sensor data and related derived driving information pertaining to ‘unsafe driving behavior[s]’ that occurred within that driving period, ‘such as speeding.’” Pet. 40–41 (citing Ex. 1005, Fig. 5, 9:23–28, 11:3–14, 13:3–19, 17:1–22); Ex. 1003 ¶¶ 168–169.

Petitioner and Dr. Michalson also cite Katayama in this regard, without explanation. *See* Pet. 41 (citing Ex. 1024); Ex. 1003 ¶ 169 (same).

Petitioner moreover discusses why a person of ordinary skill in the art would have been motivated to employ *multiple memory modules* in the Curry-Rabu phone — particularly a long term module and a short term module — for various reasons. *See* Pet. 36–39. This discussion at times cites Katayama in support, without explanation. *See id.* at 37, 38, 39 (each citing Ex. 1024); Ex. 1003 ¶¶ 163–166 (same).

(b) The Patent Owner Response

Patent Owner repeats its opposition to Petitioner’s contentions concerning the Determination Limitation, as discussed above in Section III.D.3(v). *See* PO Resp. 42–43; Ex. 2001 ¶¶ 146–147.

Patent Owner then disputes our preliminary determination in the Institution Decision that Curry’s mobile phone 106 performs the

Initialization Limitation. *See* Inst. Dec. 51 (citing Ex. 1005, 3:24–36, 8:29–33, 9:5–20, 13:20–14:16, 14:23–26, 15:18–31, 16:27, 17:1–32; Inst. Dec. 22–40); PO Resp. 43.⁸ Patent Owner concedes Curry’s client unit 110 records the location, speed, and acceleration of mobile phone 106 each time a phone call is transmitted from or received by the phone, and client unit 110 also “uses this recorded speed information to determine *whether* the user is driving a vehicle, and also to apply preset permission policies to phone operations.” PO Resp. 43 (quoting and adding emphasis to Inst. Dec. 51); Ex. 2001 ¶ 148. Patent Owner disputes our preliminary determination that “this speed data is part of what automatically determines and registers the start of a driving period” in Curry, which is “all that the Initialization Limitation requires the mobile device to perform.” PO Resp. 44 (quoting Inst. Dec. 51); Ex. 2001 ¶ 149. As with the Determination Limitation discussed above in Section III.D.3(v), Patent Owner argues “Curry’s phone features are untethered from a driving period” because “[d]etermining ‘*whether* the user is driving’ at a snapshot in time (when a phone call is received or made and possibly sometime thereafter) says nothing about when the driving period started or ended.” PO Resp. 44.

Further according to Patent Owner, when Curry’s mobile phone 106 receives a phone call, the phone “does not yet know the activity mode” so it “must . . . determine an activity mode (e.g., driving, low-speed driving, running, walking, stationary)” by “evaluat[ing] the raw sensor data.” *Id.*

⁸ Patent Owner asserts the Institution Decision reached this determination “*without citation to the Petition or Curry.*” PO Resp. 43. However, this assertion ignores the Decision’s analysis directly following the sentence quoted in the Patent Owner Response. *See* Inst. Dec. 51.

(citing Ex. 1005, Figs. 3–5); Ex. 2001 ¶ 149. Patent Owner concludes that “while Curry starts *something* with the received phone call, that something is, at best, a recording period, not a driving period.” PO Resp. 44 (emphasis added); Ex. 2001 ¶ 149. Thus, Patent Owner argues Curry’s mobile phone 106 can only “estimate *whether* a phone is in a driving vehicle and block a call that occurs immediately before the time of that estimation,” yet “[w]hether a vehicle is *driving at a point in time* does not define a *driving period* of the vehicle.” PO Resp. 44–45. Patent Owner asserts we recognized this in the Institution Decision “as ‘identify[ing] a driving *mode*,’ not a driving *period*,” but then we “improperly conflate[d] a driving mode determination with determination of a start of a driving period.” *Id.* at 45 (in part quoting and adding emphasis to Inst. Dec. 51) (citing Ex. 1001, code (57), 31:29–56); Ex. 2001 ¶ 150.

Patent Owner moreover argues “Petitioner fails to particularly point out where [Curry] discloses ‘an initialization input generated automatically’ according to” claim 1. PO Resp. 45 (citing Pet. 34–39). Patent Owner asserts the portions of Curry cited in the Petition’s discussion of the Initialization Limitation “describe activity mode recognition and/or call handling, but none disclose an initialization input.” *Id.* at 45–46 (citing Pet. 38–39; Ex. 1005, Figs. 1 and 5, 7:5–22, 8:30–9:33, 16:7–22, 17:1–22). Further according to Patent Owner, “the initialization input, as a distinct element of the claim, cannot be a phone call, as Petitioner has already mapped a phone call to the ‘start of a driving period.’” *Id.* at 46 (citing Pet. 25, 34; Ex. 1005, Figs. 3–4, 8:30–33, 13:25–26).

Patent Owner thus concludes Curry does not disclose “an initialization input generated by the mobile phone upon a detected speed from sensor data

found to be above a predetermined threshold, where the initialization input controls a mobile device to register the start of a driving period.” *Id.* at 46–47 (discussing Ex. 1005, Figs. 3–5); Ex. 2001 ¶¶ 151–153.

Patent Owner further objects to Petitioner’s reliance on Katayama in Ground 1A as lacking sufficient explanation in the Petition. *See* PO Resp. 47 n.7 (citing Pet. 36–39; Inst. Dec. 52).

(c) *The Petitioner Reply*

Petitioner replies that the Curry-Rabu phone satisfies the Initialization Limitation. *See* Pet. Reply 14–17. Petitioner asserts a person of ordinary skill in the art would have been motivated to configure Curry’s client unit 110 to *register* an already-determined start of a driving period *in response to detecting a speed above a predetermined threshold* via GPS sensor 114, in order to avoid erasing driving behavior information indicating unsafe behaviors such as speeding. *Id.* at 14–15 (citing Pet. 38–41; Ex. 1005, 2:3–3:28, 6:5–22, 8:22–28, 13:20–16:33, 17:30–18:7; Ex. 1003 ¶¶ 166–169). Petitioner particularly cites Curry’s Figure 5 as comparing speed data from GPS sensor 114 “against a predetermined speed threshold, ‘e.g., greater than 15 miles/hour,’ to determine whether a vehicle within which the phone is located is traveling within ‘a high-speed range.’” *Id.* at 15–16 (citing Ex. 1005, Fig. 5, 16:1–22). According to Petitioner, Curry then “appl[ies] pre-set permission policies to phone operations” as a result of detecting the “high” speed. *Id.* at 17 (citing Ex. 1005, 9:5–20, 14:5–16, 14:23–26, 15:18–31, 16:27, 17:1–32). Petitioner adds that the Institution Decision “agree[d]” with this position. *Id.* at 16 (citing Inst. Dec. 51).

Petitioner further asserts a person of ordinary skill in the art “would have found obvious that,” in order to retain driving information indicating unsafe speeding behaviors, “such important information is moved from the short term module to the long term module of the Curry-Rabu phone’s local memory.” *Id.* at 16–17 (citing Pet. 36–41; Ex. 1003 ¶¶ 161–169).

Finally, concerning the pertinence of Katayama to Ground 1A, Petitioner contends “[c]itations to Katayama in Ground 1A of the Petition were used as corroboration.” *Id.* at 18 n.2 (citing Pet. 37, 38, 39, 41).

(d) The Patent Owner Sur-reply

The Patent Owner Sur-reply does not discuss Petitioner’s reliance on Curry in relation to the Initialization Limitation in Ground 1A, apart from arguments we have addressed above in connection with other limitations in claim 1. *See* PO Sur-reply 8–22 (Patent Owner’s opposition to Ground 1A).

(e) Discussion and Conclusion

We agree with Petitioner’s position that a person of ordinary skill in the art would have been motivated to configure Curry’s client unit 110 to register the start of a driving period in response to detecting a high speed, in order to ensure mobile phone 106 retains unsafe speeding driving behaviors for reporting to driving safety data server 104. *See* Ex. 1005, Fig. 1, 7:30–8:2, 8:21–24.

First, as discussed above in Section III.D.3(v) concerning the Determination Limitation, Curry’s client unit 110 determines a start of a driving period during which mobile phone 106 is removably attached to the vehicle and the vehicle is in use. To the extent Patent Owner’s arguments concerning the Initialization Limitation incorporate arguments concerning

the Determination Limitation, those arguments are unavailing for reasons provided above.

Second, Curry's client unit 110 "record[s] the location, *speed*, and acceleration of" mobile phone 106 "each time a phone call is transmitted from or received by" the phone. *Id.* at 3:24–26 (emphasis added), 8:29–33, 13:20–14:4. Client unit 110 uses this recorded speed information to determine whether the user is driving a vehicle, and also to apply pre-set permission policies to phone operations based on determining the user is driving a vehicle. *See id.* at 9:5–20 (e.g., "the user mode is recognized as driving"), 14:5–16, 14:23–26, 15:18–31, 16:27–28 (stating "it is easy to identify driving mode when the speed is high (e.g. greater than 15 miles/hour)"), 17:1–32 ("If the space-mean speed is in a high-speed range, then the user is likely to be in driving mode 506" in Figure 5). As discussed above in Section III.D.3(v), this speed data is part of what automatically determines the start of a driving period.

Third, as discussed above in Section III.D.3(vii) concerning mobile phone 106 storing a *selection* of driving information to memory, an ordinarily skilled artisan would have been motivated in some instances to configure Curry's mobile phone 106 to store *less than all* of the driving information derived by mobile phone 106, such as only the data that indicates possible use violations or unsafe driving behavior. We further conclude here that one instance of such unsafe driving behavior is when the vehicle is traveling at an unsafe speed, as Dr. Michaelson testifies with regard to the Initialization Limitation. *See* Ex. 1003 ¶¶ 157–159, 166–169. We agree with Dr. Michaelson's conclusion that this specific scenario corresponds to *automatically registering* the start of the driving period in

response to data from GPS sensor 114 reflecting *a detected speed above a predetermined threshold*, as recited in the Initialization Limitation, in order to ensure that the information is retained for transmission to server 104.

See id.

Fourth, we maintain our preliminary conclusion from the Institution Decision that the Petition does not explain sufficiently how Katayama supports Ground 1A. *See* Inst. Dec. 52 (discussing Pet. 36–39); PO Resp. 47 n.7. Petitioner’s terse argument in its Reply that “[c]itations to Katayama in Ground 1A of the Petition were used as corroboration” (Pet. Reply 18 n.2), without further explanation, merely reinforces our preliminary conclusion. Therefore, we do not rely on Katayama as supporting the unpatentability of claim 1 in Ground 1A in our present Decision.

Fifth, we also do not rely on Petitioner’s contentions as to the obviousness of utilizing a long term memory module and a short term memory module in the Curry-Rabu phone of Ground 1A. *See* Pet. 36–39. As we noted in the Institution Decision, claim 1 does not require separate memory structures. *See* Inst. Dec. 56 (citing Ex. 1001, 31:37 (“a memory”), 31:46 (“store a selection of the driving information to the memory”)). Therefore, establishing the obviousness of utilizing a long term memory module and a short term memory module in the Curry-Rabu phone is not needed to prove unpatentability of claim 1 in Ground 1A.

Accordingly, for the foregoing reasons and on this record, a preponderance of the evidence supports Petitioner’s contentions in relation to the Initialization Limitation.

(ix) *Conclusion as to Claim 1*

For the foregoing reasons, we determine Petitioner has shown by a preponderance of the evidence that claim 1 would have been obvious over the combination of Curry and Rabu.

E. Ground 1B — Obviousness over Curry, Rabu, and Katayama

1. Petitioner’s Contentions

In Ground 1B, Petitioner asserts claim 1 of the ’271 patent is unpatentable as having been obvious over Curry, Rabu, and Katayama. *See* Pet. 1, 41–51. Petitioner relies on its Ground 1A arguments combining Curry and Rabu to address the subject matter of claim 1 up to the Initialization Limitation. *See id.* at 48 (addressing limitations “[1.1]–[1.9]”); Ex. 1003 ¶ 181.

Then, addressing the Initialization Limitation, Petitioner argues a person of ordinary skill in the art would have been motivated to partition the Curry-Rabu phone’s “local memory into several sections (including sections for temporary and long term storage)” in order to avoid inadvertent erasure of “important information” by storing it in the long term memory. Pet. 44–45; *see also id.* at 44–51 (supporting analysis); Ex. 1003 ¶¶ 170–187. Petitioner relies on Katayama as disclosing related data storage techniques in a vehicle data recorder to support this argument. *See* Pet. 41–51 (discussing Katayama in relation to Ground 1B); Ex. 1003 ¶¶ 80–89, 170–187. Petitioner asserts a person of ordinary skill in the art would have appreciated that Curry’s recordation of unsafe driving speeds during a driving period per the Initialization Limitation (*see supra* Section III.D.3(viii) per Ground 1A) is the type of important information that would have been stored in long term

memory for safekeeping. *See* Pet. 46, 49–50; Ex. 1003 ¶¶ 175–177, 183–186.

2. *The Patent Owner Response*

Patent Owner argues Ground 1B lacks a sufficient motivation for the asserted combination of Katayama with Curry and Rabu. *See* PO Resp. 54. Patent Owner asserts “Katayama is prohibitively different from the ’271 patent” so as to nullify Petitioner’s combination, because:

(1) Katayama provides a vehicle-mounted black box recorder rather than a mobile device; and (2) Katayama’s recorder relies on the vehicle’s sensors rather than a mobile device’s sensors. *See id.* at 54–55 (citing Ex. 1024, code (57), Figs. 4–6, ¶¶ 9, 38, 39, 42–44); *id.* at 55–56 (“A [person of ordinary skill in the art] simply would not have been motivated to jump through hoops of combining the vehicle black box configuration of Katayama with the smart phone configuration of Curry and Rabu.”); *see also id.* at 25 (summarizing Katayama’s disclosure); Ex. 2001 ¶¶ 177–179.

In particular, according to Patent Owner, a person of ordinary skill in the art “would not have been motivated to look to Katayama for *additional data storage details* for Curry and/or Rabu” because Curry and Rabu “do not make mention of additional storage needs of the type disclosed in Katayama.” *Id.* at 55 (emphasis added). Patent Owner further asserts Petitioner’s reliance on Katayama as motivating an ordinarily skilled artisan “to partition the Curry-Rabu phone’s existing memory into a temporary storage portion and a long term storage portion . . . has nothing to do with the ‘Initialization Limitation’” of claim 1, which “does not claim utilization of long-term memory.” *Id.* (citing Inst. Dec. 56).

Finally, Patent Owner argues that “most concerning is the Board’s statement” in the Institution Decision that “configuring Curry’s mobile phone 106 to employ temporary and long term memories *to achieve the beneficial results described in Katayama* would lead to the phone satisfying the Initialization Limitation’s requirement.” PO Resp. 56 (quoting Inst. Dec. 56 with emphasis by Patent Owner). Patent Owner believes “[t]his is incorrect under § 103” because “[i]n an obviousness analysis to combine tertiary reference C (in this case, Katayama) with primary and secondary references A and B (in this case, Curry and Rabu, respectively), *one cannot look to reference C (the tertiary reference) for motivation to combine.*” *Id.* at 56–57 (emphasis added) (citing *KSR*, 550 U.S. at 421; *Graham*, 383 U.S. at 36).

3. *The Petitioner Reply*

Petitioner replies that Patent Owner’s opposition “does not address the Panel’s observation [in the Institution Decision] of how a configuration of temporary and long term memories in the Curry-Rabu-Katayama phone provides the ‘**register**’ requirement of the Initialization Limitation” and further misconstrues the Institution Decision’s discussion of short term and long term memories. Pet. Reply 25–26 (citing Inst. Dec. 55–56).

Petitioner also argues there is sufficient motivation for combining Katayama with the Curry-Rabu phone, as set forth in the Petition, because “Curry and Katayama each contemplate scenarios that benefit from persistent and temporary storage of recorded data.” *Id.* at 26 (citing Pet. 44–51; Inst. Dec. 56). According to Petitioner, Patent Owner’s opposition misconstrues the Petition’s combination of Katayama with Curry and Rabu in

various fashions. *See id.* at 27–28. Petitioner asserts the Petition’s combination “enhances the Curry-Rabu phone by incorporating Katayama’s teachings on ‘partitioning local memory into several sections (including sections for temporary and long term storage)’ and ‘data handling,’” in order to make effective use of limited memory resources in the Curry-Rabu phone to retain important situation data. *Id.* at 28 (citing Pet. 44–45, 47; Ex. 1003 ¶¶ 170, 174).

Petitioner further argues Katayama is analogous art to the ’271 patent because “Katayama is at least in the same field of endeavor as the invention claimed in the ’271 patent (e.g., ‘methods and systems for logging driving information associated with a vehicle when driven’).” Pet. Reply 27 (citing PO Resp. 1). Petitioner also argues “Katayama describes a recorder that detects accidents and/or risk incidents based on ‘situation data’ including ‘acceleration data indicating acceleration applied to a vehicle, [and] position data indicating a position of the vehicle.’” *Id.* (citing Pet. 41–42, Ex. 1024 ¶¶ 1, 11, 13, 58; Ex. 1003 ¶ 83).

4. *The Patent Owner Sur-reply*

Patent Owner responds that “Petitioner misapprehends” the Initialization Limitation, “which relates to registering the start of a driving period, not use of different storage (e.g., short term versus long term) upon detection of a driving incident.” PO Sur-reply 28 (citing Pet. Reply 25–26; Inst. Dec. 56). According to Patent Owner, “*register[ing] the start of a driving period in response to an initialization input* facilitates the start of processing and storing sensor data . . . in *short-term*, not long-term memory.” *Id.* at 28–29 (citing Ex. 1001, Fig. 4a, 7:51–8:6, 16:34–64,

18:30–39, 18:49–60, 31:51–56). Patent Owner asserts “[t]he Board recognized Petitioner’s confusion” in the Institution Decision. *Id.* at 29 (citing Inst. Dec. 56).

The Patent Owner Sur-reply does not address whether Katayama is analogous art to the ’271 patent. *See id.* at 28–29; *see also* Tr. 80:24–82:1 (Patent Owner’s counsel’s response when asked about whether Patent Owner is making a non-analogous art argument in this proceeding).

5. *Discussion and Conclusion*

As to whether Katayama is analogous art, a reference qualifies as prior art for a determination under § 103 when it is analogous to the claimed invention. *See In re Clay*, 966 F.2d 656, 658 (Fed. Cir. 1992).

Two separate tests define the scope of analogous prior art: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor’s endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved.

In re Bigio, 381 F.3d 1320, 1325 (Fed. Cir. 2004) (citing *In re Deminski*, 796 F.2d 436, 442 (Fed. Cir. 1986)).

The field of endeavor is determined “by reference to explanations of the invention’s subject matter in the patent application, including the embodiments, function, and structure of the claimed invention.” *Id.*; *see also Deminski*, 796 F.2d at 442 (finding that if a prior art reference discloses essentially the same structure and function as the invention, it is likely in the same field of endeavor). Katayama describes a driving monitor that records driver behavior and “a surrounding situation” during a period before and after an accident. Ex. 1024 ¶ 1; *see* Pet. Reply 27. Similarly, the

'271 patent discloses a mobile device adapted for installation to a vehicle and configured to log driving information associated with how the vehicle is driven. *See* Ex. 1001, 1:15–25; Pet. Reply 27. Thus, we agree with Petitioner that Katayama is analogous art because it is in the same field of endeavor as the '271 patent. *See* Pet. Reply 27. Patent Owner's focus on the fact that Katayama uses vehicle sensors, rather than sensors in a mobile device as in the '271 patent, does not materially alter that conclusion. *See* PO Resp. 54–55; Tr. 80:24–82:1.

As to Petitioner's motivations for combining Katayama with the Curry-Rabu phone, we determine Curry's mobile phone 106 is a mobile device adapted for installation to a vehicle and configured to log driving information associated with how the vehicle is driven, as discussed in detail above in Section III.D in relation to Ground 1A. This similarity between Curry's mobile phone 106 and Katayama's driving monitor supports Petitioner's contention that they would have been combined by a person of ordinary skill in the art, as set forth in the Petition, despite that Katayama's device uses vehicle sensors rather than a mobile device's sensors. In particular, we agree with Dr. Michalson's testimony that an ordinarily skilled artisan would have known Curry's mobile phone 160 would benefit from partitioning its memory into a temporary storage section and a long term storage section, like Katayama does, in order to avoid inadvertent erasure of important driving information by storing it in long term memory. *See* Ex. 1003 ¶¶ 170–179.

We reject Patent Owner's contention that our foregoing reliance on Katayama's disclosure as demonstrating the beneficial results of Petitioner's combination mis-applies 35 U.S.C. § 103. *See* PO Resp. 56–57. The *KSR*

decision rejected a “rigid approach” to obviousness that would require a teaching, suggestions, or motivation in the prior art to demonstrate unpatentability, in favor of “an expansive and flexible approach.” *KSR*, 550 U.S. at 415–19. The Court did not hold that one cannot look to the prior art for reasons to combine, as Patent Owner would have it, and instead instructed that we “must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.” *Id.*; *see also* Tr. 82:2–26 (Patent Owner’s counsel discussing the impact of *KSR* here). In this case, the answer is “no” as discussed above.

Finally, as noted above in Section III.D.3(viii) in relation to the Initialization Limitation in Ground 1A, claim 1 does not require separate memory structures. *See* Ex. 1001, 31:37, 31:46. Therefore, establishing the obviousness of utilizing a long term memory section and a short term memory section in the Curry-Rabu phone is not needed *per se* to prove unpatentability of claim 1. Nonetheless, we understand Petitioner’s case for obviousness in Ground 1B to posit that configuring the Curry-Rabu phone to employ temporary and long term memories to achieve the beneficial results described in Katayama would lead to the phone satisfying the Initialization Limitation’s requirement of registering the start of a driving period in response to an automatically-generated initialization input, by moving data from temporary to long term memory when a minimum vehicle speed has been exceeded. *See* Pet. 49–51; Tr. 61:7–63:2 (Petitioner’s counsel discussing the pertinence of Katayama’s use of short term and long term memory to claim 1 in Ground 1B).

We conclude Katayama is analogous art to the ’271 patent. Further, Petitioner’s combination of Curry, Rabu, and Katayama teaches the

Initialization Limitation of claim 1 and is supported by sufficiently articulated motivations to avoid the taint of impermissible hindsight.

F. Ground 1C — Obviousness over Curry, Rabu, and Tamir

In Ground 1C, Petitioner asserts claim 3 of the '271 patent, which depends directly from claim 1, is unpatentable as having been obvious over Curry, Rabu, and Tamir. *See* Pet. 1, 51–53. Petitioner provides arguments and evidence in support, contending Tamir discloses a system that evaluates driver behavior in a vehicle by sampling sensor data at “a dynamically adjusted rate . . . according to the location of the driving” or “the driving behavior of the vehicle,” which it would have been obvious to do in the Curry-Rabu phone to allow for lower power consumption and less wear and tear on the phone. *See id.* at 51–53 (citing Ex. 1005, 13:27–33; Ex. 1006, code (57), 9:10–20, 20:52–21:11; Ex. 1003 ¶¶ 90, 188–190).

Patent Owner’s sole opposition to Ground 1C is that Curry and Rabu are deficient as to the subject matter of claim 1 based on arguments discussed above in Ground 1A (*see supra* Section III.D), and “Tamir does not cure these shortcomings.” PO Resp. 57. For reasons provided above in Section III.D, we conclude Patent Owner’s arguments are unavailing.

We further adopt Petitioner’s additional analysis for claim 3 as our own in this Decision, and we accordingly conclude Petitioner has shown by a preponderance of the evidence that claim 3 would have been obvious over the combination of Curry, Rabu, and Tamir.

G. Ground 1D — Obviousness over Curry, Rabu, and McClellan

In Ground 1D, Petitioner asserts claim 4 of the '271 patent, which is independent, is unpatentable as having been obvious over Curry, Rabu, and

McClellan. *See* Pet. 1, 53–59. As noted above in Section II.C, claim 4 is identical to claim 1 except for the respective final limitation of each claim.

Patent Owner firstly argues Curry and Rabu are deficient as to the subject matter of claim 4 which overlaps with claim 1 based on arguments discussed above in Ground 1A (*see supra* Section III.D), and “McClellan is not cited to cure these shortcomings of Curry and Rabu.” PO Resp. 57. For reasons provided above in Section III.D, we conclude these arguments are unavailing.

Patent Owner secondly argues claim 4 requires “a mobile telecommunications device” to perform its final limitation, and Petitioner errs in relying on Curry’s mobile phone 106 as performing the final limitation because it is instead Curry’s server 104 that performs various actions. *See* PO Resp. 57–58 (citing Ex. 1001, 32:1, 32:21–29; Pet. 54–55; Ex. 1005, Fig. 2, 7:15–17, 10:3–12, 13:3–19); Ex. 2001 ¶ 192. Patent Owner then asserts “Petitioner never explains why it would have been obvious to move Curry’s server functionality onto Curry’s phone before combining Curry with Rabu or McClellan.” PO Resp. 58–59.

In reply, Petitioner argues Patent Owner’s opposition to Ground 1D merely “recycl[es] essentially the same arguments” made against Ground 1A, “without addressing either [the final limitation of claim 4] or providing any particular argument against prior art McClellan.” Pet. Reply 5.

The Patent Owner Sur-reply does not argue Ground 1D separately from Ground 1A.

We agree with Patent Owner’s position that claim 4 requires a mobile device (specifically) to process sensor data during a plurality of driving periods to derive driving information during the driving periods, including

processing the data during a first set of driving periods to define a benchmark against which sensor data is compared during subsequent sets of driving periods. *See* Ex. 1001, 32:21–29. However, for reasons discussed above in Section III.D.3(vi) in connection with Ground 1A and claim 1, we find Curry’s mobile phone 106 (not only Curry’s server 104, as Patent Owner would have it) processes sensor data during the driving period to derive driving information associated with how the vehicle is driven, including a driver safety statistic. In light of that finding, we are persuaded by Petitioner’s further contention that it would have been obvious to configure Curry’s mobile phone 106 to process sensor data during a plurality of driving periods, including during a first set of driving periods to define a benchmark against which sensor data is compared during subsequent sets of driving periods, in light of Curry’s and McClellan’s combined teachings cited by Petitioner and in order to adjust the driver’s insurance coverage premium. *See* Pet. 53–57 (citing Ex. 1005, 7:15–17, 10:3–12, 11:3–14, 11:24–12:2, 13:3–19; Ex. 1083, code (57), Fig. 2, ¶¶ 43–48; Ex. 1003 ¶¶ 91, 191–197). In particular, Petitioner proposes to do this utilizing Curry’s driving safety score evaluation module, which in some embodiments of Curry is located on the phone. *See id.* at 54; Ex. 1003 ¶ 191; Ex. 1005, 4:5–6, 7:13–15, 12:6–18.

Thus, we conclude Petitioner has shown by a preponderance of the evidence that claim 4 would have been obvious over the combination of Curry, Rabu, and McClellan.

H. Ground 2 — Obviousness over Callopy and Curry

In Ground 2, Petitioner asserts claims 6 and 7 of the '271 patent, which are both independent, are unpatentable as having been obvious over Callopy and Curry. *See* Pet. 1, 59–80. Patent Owner disagrees. *See* PO Resp. 59–66. We conclude a preponderance of the evidence supports Petitioner's assertions for the following reasons.

1. Claim 6

(i) Claim Construction

Claim 6 is directed to a “data-logging system for logging driving information received from a remote mobile telecommunications device.” Ex. 1001, 32:40–43. The system particularly receives “driving information compris[ing] at least one of a driving score and sensor data captured and processed by the remote mobile telecommunications device.” *Id.* at 32:48–50, 32:61–64. The system is “further arranged to process the driving information . . . to generate a driving score used to determine a risk profile for at least one of the vehicle and driver.” *Id.* at 32:67–33:4.

In the Institution Decision, we disagreed with Patent Owner's position that claim 6 requires *the mobile device* (specifically) to generate a driving score, and we preliminarily determined claim 6 “is satisfied if the system receive[s] sensor data, but not a driving score, from the mobile device.” Inst. Dec. 58–59.

Patent Owner continues to maintain claim 6 requires the mobile device to generate the driving score. *See* PO Resp. 59–61. Patent Owner asserts “[a] plain reading of [the] claim language makes clear that driving information is derived by the mobile device, which captures and processes

sensor data *along with a driving score* as part of the driving information for the rest of the data-logging system.” *Id.* at 59–60 (emphasis added) (citing Ex. 1001, 32:40–41, 32:55–66); Ex. 2001 ¶¶ 194–195. Patent Owner asserts the Institution Decision “discounts these elements by not first acknowledging that the derived information from sensor data and a driving score can both be, and is, encapsulated in the driving information.” PO Resp. 60; Ex. 2001 ¶ 195.

Patent Owner further argues the claim’s requirement “that the *data-logging system* is arranged to generate a driving score . . . does not negate that the mobile device of the data-logging system generates a driving score.” PO Resp. 60 (emphasis added); Ex. 2001 ¶ 196. In support, Patent Owner asserts the ’271 patent specification indicates various components of the data-logging system can generate a driving score, including the mobile device. *See* PO Resp. 3, 14, 60–61 (citing Ex. 1001, 6:1–27, 10:12–16, 11:65–12:9); Ex. 2001 ¶¶ 20–21, 23, 45, 72, 196. Patent Owner concludes a person of ordinary skill in the art “would have understood [from the ’271 patent specification] that there can be a driving score generated separately by each of the mobile device and the data-logging system.” PO Resp. 61; Ex. 2001 ¶ 196.

The Petitioner Reply and the Patent Owner Sur-reply do not address this claim construction issue. *See* Pet. Reply 29 (argument addressing Ground 2); PO Sur-reply 29–30 (same).

We now continue to maintain our conclusion from the Institution Decision that claim 6 does not require the mobile device to generate the driving score. *See* Inst. Dec. 58–59. In particular, claim 6 pertinently specifies only that the data-logging system receives “*at least one of* a driving

score *and* sensor data captured and processed by the remote mobile telecommunications device.” Ex. 1001, 32:48–50, 32:61–66 (emphasis added). That limitation is satisfied if the system receives sensor data, but not a driving score, from the mobile device. Indeed, a later limitation in claim 6 expressly requires that the *data-logging system* is arranged to generate a driving score. *See id.* at 32:67–33:4.

Patent Owner correctly observes that claim 6 requires the data-logging system to receive from the mobile device “*driving information* derived” by the mobile device. Ex. 1001, 32:48–50, 32:54–60 (emphasis added). However, that portion of claim 6 does not require the driving information to include a driving score. *See id.* at 32:54–60. It is only the next limitation (*see id.* at 32:61–66) that identifies what the “driving information” received from the mobile device must include, and for the reasons provided above, it does not require the mobile device to generate the driving score.

We have reviewed the ’271 patent disclosures cited by Patent Owner, and they do not support Patent Owner’s construction that the mobile device must generate the driving score. *See* Ex. 1001, 6:1–27, 10:12–16, 11:65–12:9. At best for Patent Owner, these disclosures state the mobile device “[p]referably . . . may be arranged to” process sensor data to define a benchmark for each driver to be compared with later-recorded sensor data (*id.* at 6:1–27), and the mobile device “[p]referably . . . is controlled by the executed application to process the driving information to generate a driving score” (*id.* at 10:14–16, 11:65–12:9). These disclosures do not overcome the plain and ordinary meaning of the “at least one of” term in claim 6 (*id.* at 32:61–66), which permits only one of the two recited alternatives being received by the data-logging system from the mobile device.

For the foregoing reasons, we conclude claim 6 does not require the mobile device to generate the driving score, and is satisfied if the data-logging system generates the driving score.

(ii) *Combination of Callopy and Curry*

(a) *Whether Callopy Discloses a Mobile Device that Derives Driving Information During a Driving Period*

Claim 6 recites that the data-logging system receives “driving information” from the mobile device, wherein the driving information is derived from data captured and processed by the mobile device “during a driving period.” Ex. 1001, 32:48–50, 32:54, 32:61–66.

Petitioner relies on Callopy’s mobile device 4005 as the claimed “remote mobile telecommunications device” that captures and processes data during a driving period to derive driving information, and transmits the driving information to insurance provider system 4035 as the claimed “data-logging system.” See Pet. 59–60, 67, 72 (citing Ex. 1045, Figs. 40–42, ¶¶ 85, 307–308, 320–324, 329); Ex. 1003 ¶¶ 92–97, 221, 231; see also Pet. 73–75 (discussing how Callopy’s mobile device 4005 captures and processes data during a driving period to derive driving information).

Patent Owner, in a footnote, asserts Callopy and Curry do not disclose “determination of a ‘driving period’” during which driving information is captured and processed by a mobile device, “[f]or the reasons set forth above” in relation to claim 1. PO Resp. 63 n.9. This argument is unavailing, for at least two reasons.

First, unlike claim 1 (discussed above), claim 6 does not require the mobile device to *determine a start* of a driving period. See Ex. 1001, 32:40–33:4 (claim 6). Claim 6 merely recites that the sensor data is

captured and processed during a driving period, without requiring any sort of *determination* akin to claim 1. *See id.* at 32:61–66. Thus, Patent Owner’s opposition relies on unclaimed subject matter in claim 6.

Second, we agree with Petitioner’s contention that Callopy’s mobile device 4005 captures and processes data during a driving period to derive driving information. Figure 40, reproduced below, illustrates Callopy’s system for real-time monitoring of a driver to facilitate determination of insurances rates. *See Ex. 1045 ¶¶ 85, 307.*

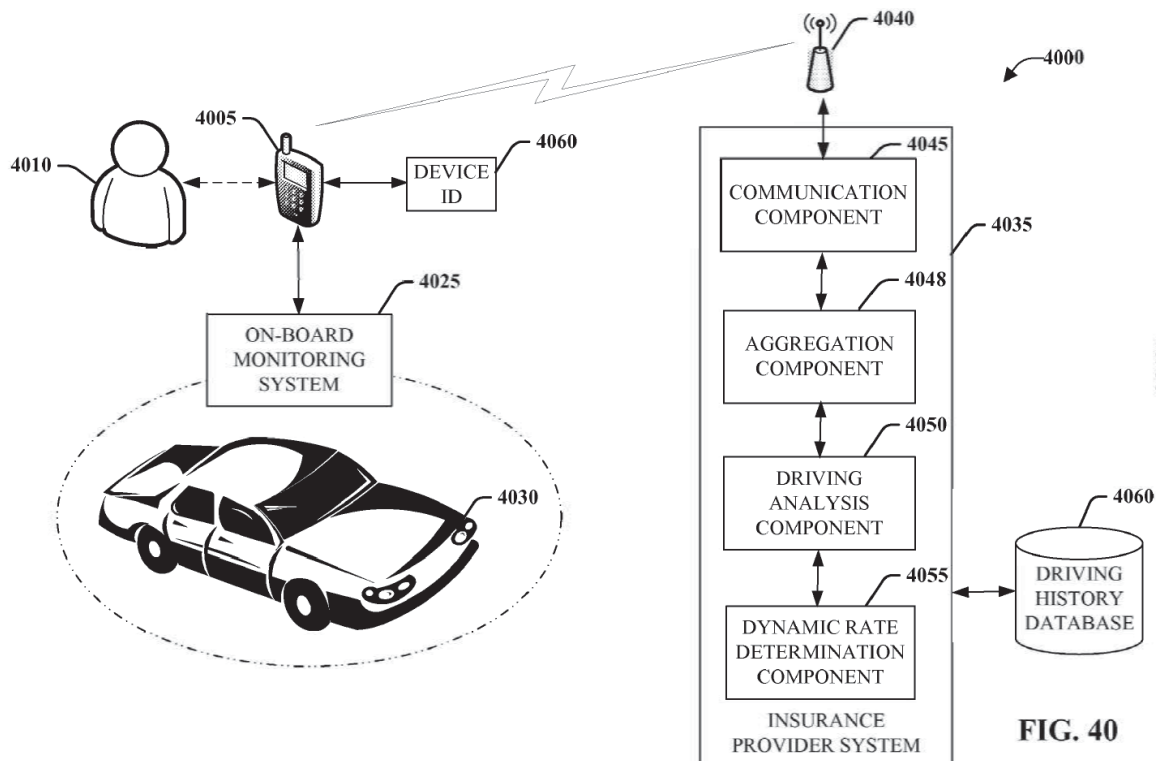


Figure 40 of Callopy.

Figure 40 shows system 4000 including insurance policy holder 4010 utilizing mobile device 4005 associated with on-board monitoring system 4025 of vehicle 4030, and in wireless communication with insurance provider system 4035. *See id.* ¶ 307. “As vehicle 4030 is being driven by operator 4010 the driver’s driving habits, skills, route of travel, activity, etc.,

can be monitored by the on-board monitoring system 4025 in conjunction with the mobile device 4005,” and this information is forwarded to insurance provider system 4035. *Id.* Also, “while the on-board monitoring system 4025 is shown as a separate system” in Figure 40, it “could be incorporated into the mobile device 4005, for example, as a plug-in module.” *Id.* ¶¶ 320–321. In particular, as shown in Figure 41, GPS 4110, accelerometer 4120, and other sensors “provide information regarding how a vehicle is being driven and the current condition of the vehicle,” and they “can be located in the mobile device 4005.” *Id.* ¶¶ 322–324. Also as shown in Figure 41, “mobile device 4005 can include one or more local applications 4180 to facilitate monitoring, processing, and generation of data for insurance purposes,” wherein “local applications 4180 can process the data as it is gathered thereby allowing the processed data to be stored as opposed to the raw data, where it is envisioned that the processed data occupies less memory than the raw data.” *Id.* ¶ 330 (cited at Pet. 74).

Accordingly, for the foregoing reasons and on this record, a preponderance of the evidence supports Petitioner’s contention that Callopy’s mobile device 4005 captures and processes data during a driving period to derive driving information.

(b) Whether Curry Teaches the “Driving Score” Requirements of Claim 6

Petitioner relies at least in part on Curry as teaching the “driving score” requirements of claim 6. *See, e.g.,* Pet. 61 (“To the extent that Callopy does not explicitly teach calculating scores to use for determining insurance premiums, doing so would have been obvious” because “[t]he use of a score was well-known by the critical date, as evidenced by Curry.”).

Petitioner explains “Curry describes setting an initial driving score and adjusting that score in subsequent driving periods, e.g., in response to speeding . . . and sharing the score with an insurance company to determine insurance premiums.” *Id.* at 62 (citing Ex. 1005, 7:13–17, 10:2–12, 13:3–14, 13:27–31).

Petitioner contends a person of ordinary skill in the art “would have further found obvious *either determining the driving score at the mobile device or at the insurance provider system*, depending on ‘a tradeoff between the complexity of the mobile device and the amount of information communicated on the mobile device’s network.’” *Id.* at 62–63 (emphasis added) (citing Ex. 1005, 12:3–18); Ex. 1003 ¶¶ 213, 215. Petitioner adds that “it would have been obvious to a [person of ordinary skill in the art] to either determine the score at the mobile device and provide it to a third party, as Curry teaches, or perform such analysis at the third party (insurance provider location), as taught by Callopy.” Pet. 64–65 (emphases added) (citing Ex. 1005, 12:10–13; Ex. 1045 ¶¶ 122, 314, 321); Ex. 1003 ¶ 216.

Patent Owner responds that “[s]howing ‘use of a score’ [in Curry] is not . . . sufficient for reading on the particular elements of [claim 6], because ‘use of a score’ is not the same as *deriving* ‘driving information comprising at least one of a driving score’” as recited in claim 6. PO Resp. 61 (citing Pet. 61). Patent Owner also argues “Petitioner does not show that Curry teaches calculating scores by the mobile phone” and “the only derivation of any driving information, including driving scores, disclosed in Curry is performed at the server.” *Id.* at 61–63 (citing Ex. 1005, Figs. 1–2, 7:13–17,

10:2–12, 11:7–14, 13:1–19); *id.* at 31 (“Fourth”) (also citing Ex. 1005, 9:23–33, 14:19–23, 16:13–18); Ex. 2001 ¶¶ 117, 198–201.

Petitioner replies that Patent Owner’s foregoing arguments opposing Ground 2 “largely repeat” Patent Owner’s arguments in Ground 1A that Curry’s mobile phone 106 does not process sensor data to derive driving information associated with how the vehicle is driven. *See* Pet. Reply 29. Petitioner then incorporates its arguments from Ground 1A as applying to Ground 2, asserting they further establish Curry’s mobile phone 106 derives a “driving score” (specifically) as recited in claim 6. *See id.* (citing Pet. 76–78; Ex. 1003 ¶¶ 149–151). In particular, according to Petitioner, “Curry describes the activity mode recognition module (part of client unit 110) can ‘**adjust**’ the related safety score for the user if a violation is identified,” and “‘adjust[ing]’ indicates calculation of a new value for the ‘safety score’ on the phone.” *Id.* (citing Ex. 1005, 11:7–10).

In response, Patent Owner reiterates that Curry’s mobile phone 106 does not generate driving scores, so Petitioner’s combination fails to establish the unpatentability of claim 6. *See* PO Sur-reply 29–30. According to Patent Owner, “Curry’s reference to ‘adjust the related safety score’ does not align with Petitioner’s assertions.” *Id.* at 21, 29–30 (citing Ex. 1005, 11:7–10, 16:13–18).

We agree with Petitioner’s position that Curry teaches the “driving score” requirements of claim 6, for at least two reasons. First, for reasons discussed above in Section III.D.3(vi) in connection with Ground 1A and claim 1, we find Curry’s mobile phone 106 (not only Curry’s server 104, as Patent Owner would have it) processes sensor data during the driving period to derive driving information associated with how the vehicle is driven,

including a driver safety statistic. We further agree with Petitioner's position in support of Ground 2 that Curry's driver safety statistic corresponds to a "driving score" as recited in claim 6. *See* Pet. 61–62; Pet. Reply 29; Ex. 1005, 4:3–6 ("The driver safety statistic can also be decreased based on driving behavior, such as speeding, abnormal acceleration, abnormal deceleration, and taking sharp turns."), 7:13–15 ("A driving safety evaluation module can be used to perform a statistical analysis on collected raw driving data" and "calculate corresponding safety scores."), 11:7–19 (referring to "adjust[ing] the related safety score for the user if a violation is identified"), Fig. 1 (showing "Driving Safety Scores" being transmitted from Driving Safety Data Server 104 to Auto Insurance Company 130).

Second, as discussed above in Section III.H.1(i), claim 6 does not require the mobile device to generate a driving score. As a result, Petitioner does not need to establish Curry's mobile phone 106 generates the driving score to demonstrate unpatentability. As to claim 6, it is sufficient for a server (e.g., Curry's server 104) to generate the driving score. *See supra* Section III.H.1(i). Thus, even if Patent Owner is correct that "the only derivation of any driving information, including driving scores, disclosed in Curry is performed at the server" (PO Resp. 62), that is not sufficient to distinguish Petitioner's combination of Callopy and Curry from claim 6.

(c) Whether Petitioner Has Established a Sufficient Motivation for Combining Callopy and Curry

Patent Owner argues "Petitioner impermissibly bases its own inferences on hindsight by patching together pieces of the cited art to fit the claims," because Petitioner's motivations ignore "that Curry's mobile phone

does not calculate driving scores,” as discussed above in Section III.H.1(b). PO Resp. 64–66 (citing Pet. 62–63; Ex. 1005, Fig. 1–2, 7:15–17, 13:1–19; Ex. 1003 ¶ 217); Ex. 2001 ¶¶ 202–206. This argument is unavailing for reasons provided above in Section III.H.1(b).

(iii) Conclusion as to Claim 6

Having resolved all of the disputed issues concerning claim 6 in favor of Petitioner, we further adopt Petitioner’s additional and unopposed analysis for claim 6 as our own in this Decision. *See* Pet. 59–79. Accordingly, we conclude Petitioner has shown by a preponderance of the evidence that claim 6 would have been obvious over the combination of Callopy and Curry.

2. Claim 7

Patent Owner does not address claim 7 apart from arguments we have already considered above in connection with claim 6. *See* PO Resp. 59–66. We adopt Petitioner’s additional and unopposed analysis for claim 7 as our own in this Decision. *See* Pet. 79–80. Accordingly, we conclude Petitioner has shown by a preponderance of the evidence that claim 7 would have been obvious over the combination of Callopy and Curry.

IV. SUMMARY OF CONCLUSIONS

In summary, we determine a preponderance of the evidence establishes claims 1, 3, 4, 6, and 7 of the '271 patent are unpatentable as shown in the following table:⁹

Claim(s)	35 U.S.C. §	Reference(s)/ Basis	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
1	103(a)	Curry, Rabu	1	
1	103(a)	Curry, Rabu, Katayama	1	
3	103(a)	Curry, Rabu, Tamir	3	
4	103(a)	Curry, Rabu, McClellan	4	
6, 7	103(a)	Callopy, Curry	6, 7	
Overall Outcome			1, 3, 4, 6, 7	

⁹ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1, 3, 4, 6, and 7 of the '271 patent have been proven by a preponderance of the evidence to be unpatentable; and

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

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Patent 9,311,271 B2

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