

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

UNITED SERVICES AUTOMOBILE ASSOCIATION,
Petitioner,

v.

AUTO TELEMATICS LTD.,
Patent Owner.

IPR2023-00857
Patent 10,198,879 B2

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

O'HANLON, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. Background

United Services Automobile Association (“Petitioner”) filed a Petition for *inter partes* review of claims 1–55 (“the challenged claims”) of U.S. Patent No. 10,198,879 B2 (Ex. 1001, “the ’879 patent”). Paper 3 (“Pet.”), 1. Auto Telematics Ltd. (“Patent Owner”) filed a Preliminary Response. Paper 8 (“Prelim. Resp.”). On December 19, 2023, we instituted an *inter partes* review of the challenged claims on all grounds raised in the Petition. Paper 10 (“Institution Decision” or “Inst. Dec.”), 51.

Subsequent to institution, Patent Owner filed a Patent Owner Response (Paper 16, “PO Resp.”), Petitioner filed a Reply to the Patent Owner Response (Paper 19, “Pet. Reply”), and Patent Owner filed a Sur-reply to Petitioner’s Reply (Paper 23, “PO Sur-reply”). An oral hearing was held on August 29, 2024. A transcript of the hearing has been entered into the record. Paper 28 (“Tr.”).

For the reasons that follow, we conclude that Petitioner has proven by a preponderance of the evidence that claims 1–55 of the ’879 patent are unpatentable.

B. Real Parties in Interest

Petitioner identifies itself and Noblr Reciprocal Exchange as real parties in interest. Pet. 85; Paper 6, 1.

Patent Owner identifies itself as the sole real party in interest. Paper 4, 2.

C. Related Matters

The parties indicate that the '879 patent is the subject of the following district court proceeding:

Auto Telematics Ltd. v. United Services Automobile Ass'n,
No. 6-22-cv-00474 (W.D. Tex. filed May 11, 2022).

Pet. 85; Paper 4, 2. We note that the '879 patent was also the subject of the following district court proceeding:

Auto Telematics Ltd. v. United Services Automobile Ass'n,
No. 6-23-cv-00506 (W.D. Tex. filed July 17, 2023).

The parties note that Petitioner filed two additional petitions for *inter partes* review of the '879 patent in IPR2023-00858 and IPR2023-00859.

Pet. 85; Paper 4, 2. We denied institution of those proceedings.

Petitioner further notes other petitions for *inter partes* review it filed challenging related patents owned by Patent Owner. Pet. 85.

D. The Challenged Patent

The '879 patent discloses a mobile device adapted for installation to a vehicle and configured to log driving information associated with how the vehicle is driven. Ex. 1001, 1:22–27. The '879 patent acknowledges that data logging devices for road vehicles exist, but asserts that they are difficult and costly to install. *Id.* at 1:34–58. The '879 patent purports to improve upon known data logging devices by using the driver's mobile telecommunications device, such as a smart phone, loaded with an application to provide data logging functionality. *Id.* at 2:15–26.

The mobile device contains a sensor set, including an image capture module, an accelerometer, a GPS receiver, and an audio capture module, for sampling physical data. Ex. 1001, 15:47–53. The device uses data captured

by the sensors to derive driving information that is used to determine the occurrence of a driving incident, such as a collision. *Id.* at 13:36–46. For example, the accelerometer provides information regarding the pitch, yaw, and roll of the vehicle, which data may be used to determine the g-forces to which the vehicle has been subjected. *Id.* at 15:63–16:2. This data is useful in determining the severity of a collision. *Id.* at 16:2–3. The data captured by the sensors can also be used to monitor the driver’s driving performance and determine a profile for the driver, which an insurance company may use to determine the driver’s risk assessment on which insurance premiums are based. *Id.* at 13:46–49, 22:9–20.

E. The Challenged Claims

Petitioner challenges claims 1–55 of the ’879 patent. Pet. 1–2. Claims 1, 21, 46, 51, 54, and 55 are independent. Claim 1 is illustrative of the challenged claims and is reproduced below with bracketing used by Petitioner.

1. [1.1] A mobile telecommunications device configured to log driving information associated with a vehicle, the mobile telecommunications device comprising:

[1.2] a sensor set comprising an image sensor, an audio sensor, an accelerometer or a positioning module, or a combination thereof;

[1.3] a user interface;

[1.4] a processor and;

[1.5] a memory;

[1.6] the mobile telecommunications device being configured to:

determine, based on at least one of the inputs received by the user interface and sensor data from the device’s 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;

[1.7] process the sensor data from the sensor set during the driving period to derive driving information associated with how the vehicle is driven; and

[1.8] store a selection of the driving information to the memory;

[1.9] wherein the driving information is derived without data from the vehicle sensors, and [1.10] the mobile telecommunications device is controlled by a downloaded application to control the mobile device to process the driving information to generate a driving score associated with a particular driver.

Ex. 1001, 31:43–32:2; Pet. xi.

F. Instituted Grounds of Unpatentability

The Petition relies on the following prior art references:

Name	Reference	Exhibit
Curry	WO 2010/042545 A2, published April 15, 2010	1005
Tamir	US 7,821,421 B2, issued October 26, 2010	1006
Balachandran	US 6,073,004, issued June 6, 2000	1007
Thompson	Chris Thompson et al., “Using Smartphones to Detect Car Accidents and Provide Situational Awareness to Emergency Responders,” Mobilware 2010, LNICST 48, pp. 29–42, 2010	1008
Willis	WO 2007/114716 A1, published October 11, 2007	1009
Berkobin	US 2008/0255888 A1, published October 16, 2008	1010
Rabu	US 8,682,399 B2, issued March 25, 2014	1013
Katayama	EP 1 914 691 A1, published April 23, 2008	1024

We instituted trial based on all asserted claims and grounds of unpatentability as follows:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–3, 5, 6, 8, 11–13, 19–23, 25, 28–31, 39–44, 46–49, 51, 52, 54	103(a) ¹	Curry, Rabu
4, 24	103(a)	Curry, Rabu, Tamir
6, 7, 16, 26, 27, 34	103(a)	Curry, Rabu, Balachandran
9, 10, 14, 15, 17, 18, 32, 33, 35–38	103(a)	Curry, Rabu, Katayama
14, 15, 32, 33	103(a)	Curry, Rabu, Thompson
45, 50, 53	103(a)	Curry, Rabu, Willis
55	103(a)	Curry, Rabu, Berkobin

Pet. 1–2; Inst. Dec. 51. Petitioner submits a declaration of William R. Michalson, Ph.D. (Ex. 1003, “Michalson Declaration”) in support of its contentions. Patent Owner submits a declaration of Christopher K. Wilson (Ex. 2001) in support of its contentions.

¹ The application resulting in the ’879 patent claims priority to a date prior to when the Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112–29, 125 Stat. 284 (2011), took effect. Thus, we refer to the pre-AIA version of section 103.

II. ANALYSIS

A. Principles of Law

1. *Inter Partes Review*

“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 grounds for the challenge to each claim”)). Petitioner bears the burden of persuasion to prove unpatentability of each challenged claim by a preponderance of the evidence. 35 U.S.C. § 316(e). This burden never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

2. *Obviousness*

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) when in evidence, any objective

evidence of nonobviousness.² *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

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

Petitioner contends that a person having ordinary skill in the art at the time of the invention would have had “a Bachelor’s 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),” and that “[a] greater amount of

² The parties have not directed us to any such objective evidence.

education, i.e., 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.” Ex. 1003 ¶ 15; *see also* Pet. 11 n.5 (citing same).

Patent Owner “does not dispute Petitioner’s proposed definition.” PO Resp. 4. However, Patent Owner adds that a person of ordinary skill in the art “would *also* include individuals with a Bachelor of Science degree in other fields, including physics, and that the particular educational experience becomes less relevant as the individual’s experience in the telematics field increases.” *Id.*

Based on the arguments presented and the cited references, we find Petitioner’s definition of the level of ordinary skill reasonable and for purposes of this Decision, adopt it as our own. We note that we would reach the same conclusions under Patent Owner’s proposed addition to Petitioner’s definition.

C. Claim Construction

In an *inter partes* review, claims are construed using the same claim construction standard that would be used to construe the claims in a civil action under 35 U.S.C. § 282(b), including construing the claims in accordance with the ordinary and customary meaning of such claims as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. 37 C.F.R. § 42.100(b). “[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention” and “after reading the entire patent.” *Phillips v. AWH Corp.*,

415 F.3d 1303, 1313, 1321 (Fed. Cir. 2005) (en banc). In addition to the specification and prosecution history, we also consider use of the terms in other claims and extrinsic evidence including expert and inventor testimony, dictionaries, and learned treatises, although extrinsic evidence is less significant than the intrinsic record. *Id.* at 1312–17. Usually, the specification is dispositive, and it is the single best guide to the meaning of a disputed term. *Id.* at 1315. We also consider “[a]ny prior claim construction determination concerning a term of the claim in a civil action . . . that is timely made of record” in this proceeding. 37 C.F.R. § 42.100(b).

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

Petitioner asserts that “no express constructions are required,” but argues that, “[b]ased 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 (second alteration in original) (citing Ex. 1003 ¶¶ 62, 123). According to Petitioner, “[t]hese attributes may be satisfied by a start of a monitoring period, whether at the onset of vehicle driving or whether instead before or thereafter.” *Id.* at 4 (citing Ex. 1003 ¶ 125).

Patent Owner contests Petitioner’s interpretation of “driving period.” PO Resp. 4–29. Patent Owner argues that “[a] ‘driving period’ is the period in which the vehicle is being driven” and,

[g]iven the purpose of the invention (to determine insurance premiums, modify driving behavior, or determine a cause of an event such as an accident) ([Ex.] 1001, 1:28-30), the driving period must be the entire 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.)

Id. at 6 (citing Ex. 2001 ¶ 54); *see also* PO Sur-reply 1–8 (presenting similar arguments).

Petitioner replies that, “[a]t least because the ’879 patent contemplates embodiments in which a start of a driving period occurs at time points after a user has already started to drive, the driving period is not limited to the entire time period of a vehicle being driven.” Pet. Reply 4 (emphasis omitted) (citing Inst. Dec. 10–11; Ex. 1084, 91:7–16, 100:7–10,³ 103:16–104:7, 104:12–106:16, 111:24–114:21).

Patent Owner replies that interpreting “driving period” to mean something less than the entire period in which the vehicle is being driven would render the term “untethered to driving” and “would at least miss logging, processing, and scoring driving information during a significant portion of the driving period.” PO Sur-reply 3–4 (citing PO Resp. 6–7, 11–12, 14–15, 32; Ex. 1001, 31:59–61, 31:67–32:2, 19:17–20:51; Ex. 2001 ¶¶ 52, 54–55, 124–129, 149).

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 entire

³ Although Petitioner cites to page 99 (*see* Pet. Reply 4), the language quoted by Petitioner appears on page 100. Petitioner makes similar mistakes throughout the Reply when citing Mr. Wilson’s deposition transcript, which we correct in our citations herein.

period in which the vehicle is being driven.” *See, e.g.*, PO Resp. 6. Initially, the claims do not recite “entire.” Additionally, and as noted by Patent Owner, the determination of the start of the driving period may be based on an input received from the user interface. *See id.* at 11; *see also* Ex. 1001, 3:32–37 (“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. The initialisation input may comprise a user input—for example, *the user manually executing the application on the mobile device.*” (emphasis added)). The ’879 patent thus contemplates the driver initiating the recited start of a driving period in which the mobile telecommunications 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 ’879 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.” Ex. 1001, 19:1–6. The ’879 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 ’879 patent does *not* require the recited driving period to be the entire period in 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, the 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. 1085, 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 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 to driving" or "would at least miss logging, processing, and scoring driving information during a significant portion of the driving period" (PO Sur-reply 4) are unavailing. The recited driving period is a time during which the vehicle is in use, so Patent Owner's contention that the interpretation is "untethered to driving" is confusing and indisputably incorrect. Additionally, the claims do 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. 3–4.

We determine that no additional claim terms require express construction.

D. Overview of the Asserted Prior Art

1. 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 further 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.

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

2. *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 7:11–13. “[T]he input can indicate orientation angle and motion information of the PMD.” *Id.* at 7:14–15. The PMD can determine a holder status and 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. *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. *Tamir*

Tamir discloses the collection of driving information from a plurality of vehicles and the evaluation of “driving behavior of a first vehicle based on information from at least one other vehicle or to a statistical analysis of multiple other vehicles.” Ex. 1006, 2:19–23. Tamir describes that, in some embodiments, “samples are collected at a dynamically adjusted rate” and the “rate of sampling is optionally determined according to the location of the driving, for example accumulating more samples at areas where there [are] many accidents or near intersections.” *Id.* at 9:10–20. Tamir further describes that, “when it is determined that the driver is driving relatively daringly, a higher sampling rate is used.” *Id.* at 20:62–21:1.

4. *Balachandran*

Balachandran describes “enabling emergency call initiations in response to the detection of a vehicle accident.” Ex. 1007, code (57). More specifically, Balachandran relates to “the use of a cellular telephone for automatically initiating an outgoing call in response to a vehicle accident.” *Id.* at 1:6–9. Balachandran describes the importance of “automatically initiating an emergency call through a cellular telephone system in response to a vehicle accident without the need for subscriber initiation.” *Id.* at 1:27–30. Balachandran’s system “includes a plurality of sensors 10 strategically located about a vehicle to detect an accident involving the vehicle.” *Id.* at 2:19–21. In the event of an accident that warrants an emergency call, “the processor activates a timer 35 located within the cellular telephone 15,” and the “timer 35 provides a preselected time delay before initiating an outgoing emergency call in response to detection of a vehicle accident.” *Id.* at 2:50–56. An “audio or visual indication notifies the passengers of activation of the timer 35 and ceases with expiration or cutoff of the timer” to provide “the passengers in the vehicle a period of time to gather their wits after an accident.” *Id.* at 2:56–60. “After the time delay period expires the processor 30 initiates emergency call setup.” *Id.* at 2:64–66.

5. *Thompson*

Thompson is a university publication (“Institute for Software Integrated Systems, Vanderbilt University”) titled “Using Smartphones to Detect Car Accidents and Provide Situational Awareness to Emergency

Responders.” Ex. 1008, 1.⁵ Thompson purports to provide “contributions to the study of using smartphone-based accident detection systems” and “solutions to key issues associated with detecting traffic accidents, such as preventing false positives by utilizing mobile context information and polling onboard sensors to detect large accelerations” and “the architecture of [a] prototype smartphone-based accident detection system.” *Id.*

Thompson explains that “[b]uilding a smartphone-based wireless mobile sensor network for accident detection system is hard . . . because phones can be dropped (and generate false positives) and the phone is not directly connected to the vehicle.” Ex. 1008, 2. Thompson further explains that “conventional in-vehicle accident detection systems rarely incur false positives because they rely on sensors, such as accelerometers and airbag sensors, that directly detect damage to the vehicle.” *Id.* Thompson purports to provide a solution by showing “how smartphones in a wireless mobile sensor network can capture the streams of data provided by their accelerometers, compasses, and GPS sensors to provide a portable ‘black box’ that detects traffic accidents and records data related to accident events, such as the G-forces (accelerations) experienced by the driver.” *Id.*

6. *Willis*

Willis generally relates to “a method of determining the proximity of a first radio frequency device to a second radio frequency device” and “a method for the control of a switch based on the proximity to each other of a first radio frequency device and a second radio frequency device.”

⁵ Our citations herein refer to the pagination added by Petitioner to the bottom, center of each page.

Ex. 1009, 2:5–9. As an example, Willis discloses an embodiment that provides “proximity detection of the phone coming within 2 meters of the vehicle in any manner and from any direction.” *Id.* at 15:28–29.

7. Berkobin

Berkobin’s disclosure relates to “determining driver behavior [by] receiving vehicle performance data, determining a driver safety metric based on the vehicle performance data, and transmitting the safety metric to a remote host.” Ex. 1010 ¶ 2. “[A]n embedded GPS and cellular transceiver . . . support real-time, remote driver and vehicle performance metrics.” *Id.* ¶ 21. As an example, Berkobin’s apparatus includes vehicle-mounted transceivers. *Id.* ¶ 25. The apparatus “can interface and monitor various vehicle systems and sensors to determine vehicle conditions.” *Id.* ¶ 38. “[S]ubsystems can include a BlueTooth transceiver . . . to interface with devices such as phones” and “user inputs[] such as [an] emergency button . . . caus[ing a] processor 106 to initiate a voice and data connection from the vehicle to a central monitoring station . . . referred to as a remote call center.” *Id.* ¶ 44. “Data such as GPS location and occupant personal information can be transmitted to the call center.” *Id.* The apparatus “can transmit vehicle performance data upon a triggering event such as, but not limited to vehicle crash indication, acceleration above a threshold, speed above a threshold, and the like.” *Id.* ¶ 54. Berkobin discloses the use of artificial intelligence, such as neural networks, in its methods and systems. *Id.* ¶ 31.

8. Katayama

Katayama describes a driving monitor that records driver behavior and “a surrounding situation” during a period before and after an accident. Ex. 1024 ¶ 1. Katayama’s driving recorder includes an information processing device that includes a data receiving section, a temporary data storage section, a situation data recording section, and a data administration section. *Id.* ¶¶ 31, 44. The “data administration section 804 determines whether or not the content of the situation data stored in the temporary data storage section 802 meets the predetermined condition,” and if so, the situation data is “transferred from the temporary data storage section 802 to the situation data recording section 803.” *Id.* ¶ 46.

E. Asserted Obviousness Based on Curry and Rabu

Petitioner argues that claims 1–3, 5, 6, 8, 11–13, 19–23, 25, 28–31, 39–44, 46–49, 51, 52, and 54 would have been obvious in view of Curry and Rabu. Pet. 6–48. In support of its showing, Petitioner relies upon the Michalson Declaration. *Id.* (citing Ex. 1003). We have reviewed the parties’ briefs and the evidence of record and determine that, for the reasons explained below, Petitioner has shown, by a preponderance of the evidence, that claims 1–3, 5, 6, 8, 11–13, 19–23, 25, 28–31, 39–44, 46–49, 51, 52, and 54 would have been obvious in view of Curry and Rabu and that Petitioner has set forth reasoning with rational underpinning why it would have been obvious to combine the teachings of these references.

1. Independent Claim 1

Petitioner relies on Curry to disclose a mobile telecommunications device substantially as recited in claim 1, and relies on Rabu to teach using accelerometer data to determine if a phone is docked. Pet. 6–41.

a. The Preamble

Claim 1 recites “[a] mobile telecommunications device configured to log driving information associated with a vehicle.” Ex. 1001, 31:43–45. Petitioner refers to this recitation as element “1.1” and maps Curry’s mobile phone 106 to the recited mobile telecommunications device. Pet. 17–19 (citing Ex. 1005, 2:1–27, 3:1–4:28, 7:5–29, 8:21–27, 10:15–12:18, code (57), Fig. 1; Ex. 1003 ¶¶ 105–108).

Patent Owner argues that “none of [Petitioner’s] citations discuss logging driving information,” which, according to Patent Owner, “includes comprehensive data regarding how the vehicle is being driven.” PO Resp. 30–31 (citing Pet. 17–19). Patent Owner argues that, according to “a plain reading of the claims and the specification[,] . . . the mobile device must be able to log derived driving information, including detecting events,” but “Petitioner’s citations do not demonstrate this same functionality.” *Id.* at 32 (citing Ex. 1001, 13:36–46; Ex. 2001 ¶¶ 112–113; Pet. 18–19). Patent Owner also argues that “Curry’s phone does not ‘use the derived information to generate a “driving safety score.””” *Id.* at 33.

Patent Owner’s arguments are directed to the type of driving information and the driving score, which are not recited in the preamble. To the extent the arguments are applicable to other portions of claim 1, they are unavailing for the reasons set forth below.

Curry discloses that 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), 2:1–27, 3:4–5, 3:24–27, 7:5–8, 7:23–24, 7:30–8:2, 8:21–23, Fig. 1.

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

b. The Sensor Set Recitation

Claim 1 recites “a sensor set comprising an image sensor, an audio sensor, an accelerometer or a positioning module, or a combination thereof.” Ex. 1001, 31:46–48. Petitioner refers to this recitation as element “1.2” and argues that Curry’s mobile phone features embedded sensors, including accelerometer 116, which Petitioner maps to the recited accelerometer, and GPS receiver 114, which Petitioner maps to the recited positioning module. Pet. 19 (citing Ex. 1005, 3:2–15, 7:24–8:2, 8:30–9:3, 10:16–26, 11:15–25, 12:23–27, Fig. 1; Ex. 1003 ¶ 109).

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

Curry discloses that “mobile phone[] 106 [is] equipped with GPS 114 and/or accelerometer 116 sensors.” Ex. 1005, 7:30–8:1; *see also id.* at 7:5 (disclosing that the “GPS and accelerometer sensors [are] embedded in [the] mobile phone[]”). The mobile phone stores information from the GPS receiver and the accelerometer, 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. *Id.* at 3:6–13, 3:24–26.

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

c. The User Interface Recitation

Claim 1 recites “a user interface.” Ex. 1001, 31:49. Petitioner refers to this recitation as element “1.3” and argues that Curry’s mobile phone 106 includes “a ‘graphical user interface’ configured to display data and to enable user interactions . . . including receiving a phone call while driving, and manually switching activity modes.” Pet. 20 (emphasis omitted) (citing Ex. 1005, 8:5–27, 9:5–27, 10:5–26, 11:15–26, 13:20–26, 16:7–22, 21:15–17, 21:23–25, 21:23–25; Ex. 1003 ¶¶ 111–115).

Patent Owner argues that Petitioner cites to disclosure of a user interface on Curry’s server, not on Curry’s phone. PO Resp. 35 (citing Pet. 20–21; Ex. 1005, 8:5–18, 9:23–28, 10:2–5; 21:23–25, Fig. 1; Ex. 2001 ¶ 122).

Curry teaches “[t]he term ‘mobile phone’ can include any type of electronic mobile computing device that may be used while traveling in a vehicle.” Ex. 1005, 7:24–26. Petitioner notes in the Petition that Curry teaches the iPhone 3G smart phone from Apple as an example of a mobile phone. Pet. 18, 22 (citing Ex. 1005, 2:22–27). Petitioner further relies on the testimony of Dr. Michalson, who testifies that “the ‘iPhone 3G’ smart phone described by Curry included a user interface in the form of a touchscreen enabling a user to interact with a ‘Maps’ application.” Ex. 1003 ¶ 114 (citing Ex. 1005, 2:22–27; Ex. 1079, 2–3; Ex. 1080, 16–35, 87–92);

see also id. ¶ 112 (discussing Curry’s disclosure of a smart phone having a user interface). Additionally, Petitioner explains that “Curry describes multiple embodiments in which a phone determines a start of a driving period . . . based on user inputs received through the phone’s user interface (e.g., a user accepting a phone call, or manually switching between activity modes using the phone’s touch screen and GUI).” Pet. 24. In this regard, we find that Petitioner has sufficiently explained how Curry discloses a mobile telecommunications device, such as the iPhone 3G, with a “user interface” as recited.

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

d. The Processor Recitation

Claim 1 recites “a processor.” Ex. 1001, 31:50. Petitioner refers to this recitation as element “1.4” and argues that the processes of Curry’s mobile phone 106 “may be ‘implemented in software for execution by various types of processors.’” Pet. 21 (citing Ex. 1005, 6:3–10). Petitioner argues that an ordinarily skilled artisan would understand Curry’s disclosure of downloading software for mobile client 110 to the mobile phone and recording of sensor data to local motion data cache 118 “for further processing” to indicate that the mobile phone includes a processor. *Id.* (citing Ex. 1005, 2:22–27, 3:24–26, 6:3–10, 8:20–27, 8:30–9:1; Ex. 1003 ¶¶ 116–119).

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

Curry discloses that 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, 3:13–14, 6:3–4, 7:8–13, 8:21–27, Fig. 1.

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

e. The Memory Recitation

Claim 1 recites “a memory.” Ex. 1001, 31:51. Petitioner refers to this recitation as element “1.5” and argues that an ordinarily skilled artisan would understand that Curry’s mobile phone 106 includes a memory

at least because Curry explains that “the term ‘mobile phone’ can include any type of electronic mobile computing device,” and because a POSITA would have understood that “[a]t the most basic level, a computer is a device consisting of . . . [a] processor . . . [a] memory to store both data and programs . . . [and a] mechanism for transferring data”

Pet. 21–22 (alterations in original) (citing Ex. 1005, 6:3–10; Ex. 1003 ¶ 120). Petitioner argues that Curry discloses downloading software for client unit 110 and argues that an ordinarily skilled artisan “would have understood both that the downloading of a program to a phone implies the existence of internal memory within the phone to which the program is downloaded, and that the term ‘cache’ refers to local memory.” *Id.* at 22 (citing Ex. 1005, 3:24–26, 8:20–27, Fig. 1; Ex. 1003 ¶ 122).

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

Curry describes how mobile phone 106 “stores” executable computer code “in different locations” such as a “cache,” which demonstrates a memory in mobile phone 106. Ex. 1005, 3:24–26, 6:3–20, 8:26–9:3.

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

f. The Determine Recitation

Claim 1 recites,

the mobile telecommunications device being configured to:
determine, based on at least one of the inputs received by the
user interface and sensor data from the device’s 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.

Ex. 1001, 31:52–58. Petitioner refers to this recitation as element “1.6” and presents two alternative mappings. Pet. 23–27. For the first alternative, Petitioner argues that Curry’s mobile phone 106 determines the start of a driving period during which the phone is located within a moving vehicle based on user inputs received when a user accepts a phone call or manually switches between activity modes, and motion sensor data generated by the phone’s accelerometer. *Id.* at 24–25 (citing Ex. 1005, 7:5–22, 8:30–9:33, 13:20–14:26, 16:7–22, Fig. 3; Ex. 1003 ¶ 130). Petitioner argues that “Rabu would have motivated [an ordinarily skilled artisan] 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.” *Id.* (citing Ex. 1013, 3:1–10, 4:21–33, 8:13–10:42, 15:7–22, Figs. 1, 4, 5, 7, 8; Ex. 1003 ¶ 129).

For the second alternative, Petitioner argues that Curry’s mobile phone 106 determines the start of a driving period based on user input of

accepting an incoming call or text or placing an outgoing call, and sensor data generated by the GPS sensor and accelerometer upon such interaction with the phone to determine whether the user is talking or texting while driving. Pet. 25–26 (citing Ex. 1005, 16:7–22, Fig. 4; Ex. 1003 ¶ 131). Petitioner relies on Rabu to teach using accelerometer data to determine whether the phone is attached to a docking station to differentiate whether the phone is hand-held or attached to the vehicle. *Id.* at 26 (citing Ex. 1013, 1:36–52, 6:49–7:6; Ex. 1003 ¶ 132).

Petitioner argues that it would have been obvious to integrate “Rabu’s dock-status sensing and associated mode-shifting capabilities into Curry’s phone to promote safe driving.” Pet. 11 (citing Ex. 1003 ¶¶ 88–89). Petitioner argues that this modification would allow Curry’s mobile phone to determine, upon a user accepting a call or switching activity modes, the phone’s operating mode and, if appropriate, restrict phone interactions. *Id.* at 11–14 (citing Ex. 1005, 16:30–17:7, Figs. 3, 6; Ex. 1013, 1:36–2:14, 3:1–10, 4:21–33, 5:53–7:6, 8:13–10:42, 12:26–38, 15:7–22, Figs. 1, 4, 5, 7, 8; Ex. 1003 ¶¶ 88–94). Petitioner asserts additional benefits resulting from the combination. *Id.* at 15–16.

Patent Owner argues that “Curry does not determine the ‘start of a driving period,’ because the triggering event (the phone call or text) does not occur at the start of the period in which the vehicle is being driven.” PO Resp. 37 (citing Ex. 1001, 2:9–11, 3:19–21). Patent Owner argues that Rabu does not determine the start of a driving period. *Id.* at 38. Patent Owner characterizes Rabu’s use of “frequency spectrum” as “unreliable.” *Id.* at 38–39 (citing Ex. 1013, 7:31–60, Figs. 5, 8, 9; Ex. 2001 ¶ 130).

Petitioner replies that Curry is not limited to monitoring only during phone calls, as Curry discloses that its motion recording process can be activated by the user. Pet. Reply 6 (citing Pet. 12–13; Ex. 1005, 13:20–26).

Patent Owner replies that “Curry’s phone is limited to motion recording by collecting/caching raw sensor (GPS 314, accelerometer 316) data in the motion data cache 304 at the detection of an outgoing call 301 or receipt of an incoming call 303 by a motion recording activation 302 function.” PO Sur-reply 12 (citing Ex. 1005, 13:20–31; Fig. 3). Patent Owner argues that Curry’s server, not the phone, determines the driving safety score. *Id.* at 13 (citing Ex. 1005, 16:7–18).

Patent Owner’s arguments regarding Curry are premised on its incorrect interpretation of “driving period” and, thus, are unavailing. Patent Owner’s arguments regarding Rabu are unavailing because, as noted above, the Petition relies on Curry, not Rabu, to disclose determining the start of a driving period. *See* Pet. 23–27.

We also disagree with Patent Owner’s characterization that Curry only collects raw data and only when detecting an outgoing or incoming call. *See* PO Sur-reply 12. 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, 3:32–4:5, 9:23–28. Curry also discloses that its modules—to include the driving safety evaluation module—can be located on the phone. *Id.* at 12:6–18.

Furthermore, as discussed above, Curry’s system includes a mobile client unit 110 on GPS-enabled mobile phone 106, with GPS 114, accelerometer 116 sensors, and wireless connection 108. Ex. 1005,

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.” *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. 24 (“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 device’s sensor set” (as recited in claim 1) that is in the form of GPS and accelerometer data. *See* Ex. 1005, 16:7–13.

Additionally, we find unavailing Patent Owner’s arguments that an ordinarily skilled artisan would not consider Rabu because of Rabu’s frequency spectrum analysis. *See* PO Resp. 38–39. As a threshold matter, Patent Owner contends that Petitioner’s proposed combination requires that an ordinarily skilled artisan incorporate or consider Rabu’s frequency spectrum with the teachings of Curry. *See* Sur-reply 21 (“Ppetitioner walks back its original obviousness position, which relied on Rabu’s frequency analysis, to rebut [Patent Owner’s] assertion that [an ordinarily skilled artisan] would have considered a Curry-Rabu combination to be too unreliable for practical use. Since its Petition, Petitioner has relied on Rabu’s frequency analysis of ‘motion data from its accelerometer’ to combine Rabu’s ‘mode shifting capabilities’ with Curry to ‘restrict phone interactions’ and ‘promote safe driving.’”).

Petitioner disagrees with Patent Owner’s understanding of the Petition. In its Reply, Petitioner asserts that the “Petition . . . made clear that the Curry-Rabu phone would have consistently leveraged an accelerometer (present in Curry’s phone) to enhance the same functions for activity mode recognition by additionally enabling docking status detection.” Pet. Reply 15. According to Petitioner, the Curry-Rabu combination “relies on Rabu’s teachings with respect to detecting holder status based on orientation angle, but does not require exclusive reliance on specific techniques that use frequency spectra.” *Id.* at 19. At the oral hearing, Petitioner reiterated that

the Petition relies on Rabu's use of accelerometer data, not Rabu's frequency spectrum analysis. *E.g.*, Tr. 16:12–15 (“[T]he Curry-Rabu combination . . . as proposed in the [P]etition[] did not specifically rely on the use of frequency spectra to determine motion status.”).

In the Petition, we observe that Petitioner explicitly argues that “[an ordinarily skilled artisan] would have configured the Curry-Rabu phone to determine, based on user inputs and orientation and motion data *from an accelerometer*, a start of a driving period during which the phone is removably attached to the vehicle via a docking station and the vehicle is in use.” Pet. 23 (emphasis added) (citing Ex. 1005, 2:3–3:28, 10:15–11:14, 13:20–16:33, 17:30–18:7, code (57), Figs. 1, 3, 4, 6; Ex. 1013, 3:1–10, 4:21–33, 8:13–10:42, Figs. 1, 4–5, 7–8; Ex. 1003 ¶ 127). Petitioner adds that the Determine Recitation is met “by a configuration of the Curry-Rabu phone in which the phone uses orientation and motion data from *its accelerometer 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.* (emphasis added). In addition, Petitioner contends that “the Curry-Rabu phone would leverage orientation and motion data from its *accelerometer* to determine both vehicle motion and phone docking status.” *Id.* at 11–12 (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 spectrum analysis teachings, but rather focuses on the use of accelerometers.

We note that our Institution Decision refers to Rabu's frequency spectrum analysis in response to the arguments presented by Patent Owner

in the Preliminary Response. Inst. Dec. 37. For example, in the Institution Decision, we observed:

Patent Owner contends that an ordinarily skilled artisan would not have looked to Rabu for insight to arrive at the challenged claims because “the use of frequency spectrum data to determine motion and orientation of a phone would not have been necessary to arrive at the claims of the ‘879 patent.” Prelim. Resp. 57 (citing Ex. 1001, code (57)). According to Patent Owner, “the frequency spectrum technology would have been considered excessive by [an ordinarily skilled artisan] at the time of the ‘879 invention.” *Id.*

Inst. Dec. 37 (alteration in original). To the extent that Patent Owner contends the Institution Decision incorporates Rabu’s frequency spectrum analysis into the Petition, we disagree. *See* Sur-reply 22 n.1. Rather, it is the Petition, not the Board, that defines the metes and bounds of an *inter partes* review. *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 spectrum analysis in response to Patent Owner’s arguments in the Preliminary Response. The parties’ positions and evidence were further developed by both after institution. As such, the post-institution briefs (including Patent Owner’s 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 turn next 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. Ex. 1013, 2:25–26.

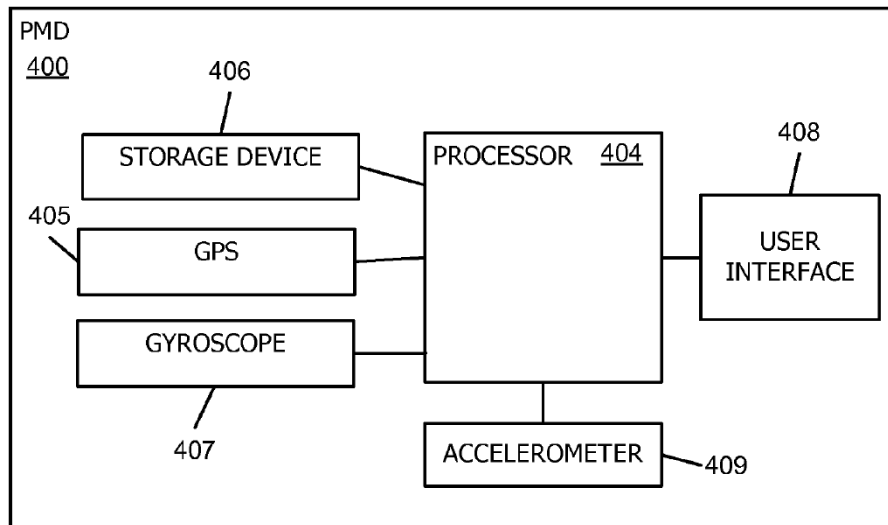


FIG. 4

Figure 4 shows PMD 400 includes accelerometer 409. *Id.* at 4:15–20. Rabu teaches that

[a]ccelerometer 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 method. *Id.* at 2:31–33.

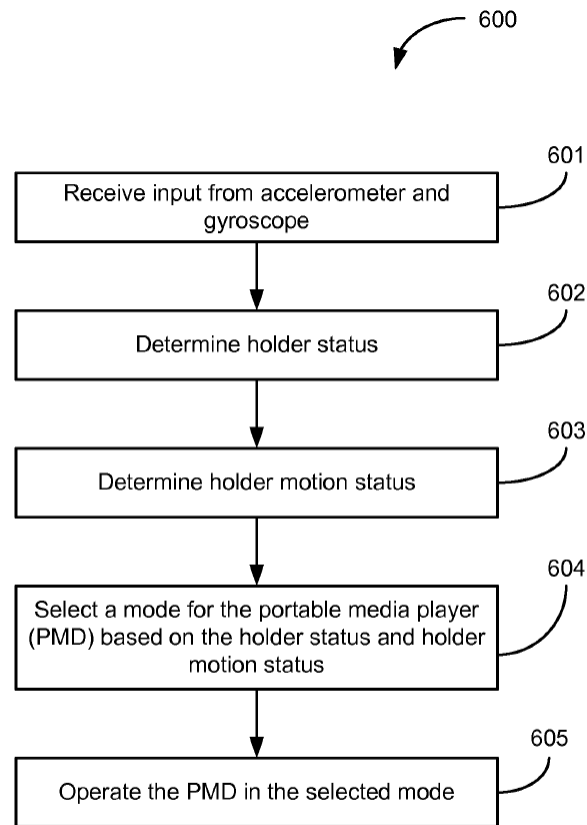


FIG. 6

Figure 6, reproduced above, shows the main steps of the invention's operation. *Id.* As shown above, “[a]t block 601, the PMD can receive input from one or more motion sensors, e.g., [an] accelerometer and [a] gyroscope.” *Id.* at 7:11–13. “[T]he input can indicate orientation angle and motion information of the PMD.” *Id.* at 7:14–15. 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 block 602, the PMD can determine a holder status and at block 603, the PMD can determine whether it is in a moving

vehicle, in a stationary vehicle, being handled by a moving person, or being handled a stationary person. *Id.* at 7:15–16, 7:22–26.

We further note that Dr. Michalson testifies, “[an ordinarily skilled artisan] would have readily found relevant solutions within Rabu, and would have expected success in incorporating Rabu’s solutions within Curry.”

Ex. 1003 ¶ 93. 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 [an ordinarily skilled artisan] 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. 24 (emphases added) (citing Ex. 1003 ¶ 129). This is because Curry’s mobile device already includes accelerometers. *See, e.g.*, Ex. 1005, Fig. 1. 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 ¶ 89).

In addition, Dr. Michalson explains that

[t]o 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, 2:3-3:28, 15:8-16:33. 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, 2:3-3:28, 15:8-16:33.

Ex. 1003 ¶ 91. 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.* ¶ 95. 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, [an ordinarily skilled artisan] would have understood and found obvious that a determination that the phone is held within a dock located within the vehicle . . . should provide a basis for changing the phone’s mode of operation to one involving relatively fewer restrictions to phone use.” *Id.* (citing Ex. 1013, 3:1–10, 4:21–33, 6:39–43, Figs. 1, 4).

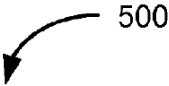
Dr. Michalson further explains that

[t]he 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 phone 106 is docked within a moving vehicle, which can then be inferred to mean that a user is not presently using phone 106 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, 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. ¶ 98.

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 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 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

¶¶ 88–104. 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 [an ordinarily skilled artisan] prior to the earliest effective filing 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. ¶ 103 (emphases added).

Patent Owner contends that introducing more modes into Curry would have created more opportunities for failure. PO Resp. 48 (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 the accelerometer data to determine whether the phone is docked within a moving vehicle. *See, e.g.*, Pet. 14–16. 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 spectrum analysis with Curry are also unavailing. 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* Pet. 11–12. Patent Owner’s arguments regarding the “experimentation” and disadvantages of incorporating Rabu’s frequency spectrum 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. Pet. 23–27. 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. *Id.*; *see also id.* at 14 (relying on Rabu to teach “chang[ing] the phone’s operating mode to one involving relatively fewer restrictions if the phone is docked within a moving vehicle” and, “upon receipt of user inputs, leverag[ing] motion and orientation data from Curry’s accelerometer to allow usage of a docked phone’s speaker mode while driving”). 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. Ex. 1013, 3:46–4:3; *see also* Pet. 9 (citing same).

Finally, we note that Patent Owner mischaracterizes Rabu’s disclosure. Patent Owner states that “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. 49 (citing Ex. 1013, 7:26–28) (alteration in original) (emphasis added). This is not an accurate representation of Rabu’s disclosure. For context, we note that 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. 49. 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, based on the complete record, Petitioner has sufficiently explained how the asserted combination of Curry and Rabu teaches or suggests the Determine Recitation.

g. The Process Recitation

Claim 1 recites “the mobile telecommunications device being 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.” Ex. 1001, 31:59–61. Petitioner refers to this recitation as element “1.7” and argues that Curry’s mobile phone 106 processes data recorded by accelerometer 116 “to derive ‘driving behavior’ information, e.g., ‘talking . . . or texting . . . while driving’ and ‘speeding, abnormal acceleration, abnormal deceleration, and taking sharp turns.’” Pet. 27 (alterations in original) (citing Ex. 1005, 7:13–29, 8:21–27, 8:30–9:33, 10:15–26, 11:3–17; Ex. 1003 ¶¶ 134–135). Petitioner argues that Curry’s mobile phone processes this data during the driving period because user activity mode recognition program 120 “estimates the context of mobile

phone use’; ‘[f]or example . . . driving, walking or remaining still.’” *Id.* at 28–29 (alterations in original) (citing Ex. 1005, 9:1–11).

Patent Owner argues that the Petition “focus[es] on [Curry’s] phone’s determination of ‘whether’ a vehicle is being driven (e.g., estimation of the type of activity as ‘driving’), not *how* the vehicle is being driven.” PO Resp. 39 (citing Pet. 18–19); *see also* PO Sur-reply 10–11 (presenting similar arguments). Patent Owner argues that Curry discloses that a remote server, rather than the mobile device, processes data. PO Resp. 39–40 (citing Ex. 1005, 3:2–4:5, 9:22–33, Figs. 1, 2; Ex. 2001 ¶¶ 132–133); *see also* PO Sur-reply 8–10 (presenting similar arguments).

Petitioner replies that Patent Owner mischaracterizes the Petition. Pet. Reply 8. Petitioner argues that the Petition maps “Curry’s ‘driving behavior’ information, including ‘speeding, abnormal acceleration, abnormal deceleration, and taking sharp turns’” to the recited driving information. *Id.* (emphases omitted) (citing Pet. 34). Petitioner argues that Curry’s phone processes data to calculate a safety statistic, which it reports to the server. *Id.* at 10–11 (citing Ex. 1005, 3:24–4:11, 21:4–6; Ex. 1003 ¶¶ 112, 143).

Patent Owner replies that Curry’s “‘safety statistic’ is determined by Curry’s server or is reported to Curry’s server by Curry’s Auto Insurance Companies 130 as ‘Driving Safety Scores.’” PO Sur-reply 14 (citing Ex. 1005, 3:26–30, 4:1–6, 10:3–5; Figs. 1, 2).

Patent Owner’s arguments regarding the “focus” of the Petition cite to pages 18–19, where Petitioner addresses the preamble, rather than to Petitioner’s mapping of the Process Recitation. *See* PO Resp. 39. These arguments, therefore, are unavailing. Patent Owner’s arguments that auto insurance company 130 mentioned in Curry reports the driving safety score

to the servers 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 14 (citing Ex. 1005, 3:26–30, 4:1–6, 10:3–5, Figs. 1–2). 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 16 (reproducing and annotating Curry 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* Ex. 1005, Fig. 1. Notably, Patent Owner omits the “Insurance premiums” disclosure from its annotations highlighting the language presented in Figure 1. *See* PO Sur-reply 16.

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, as we noted in the Institution Decision (*see* Inst. Dec. 45–46), 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 phone. *Id.* at Fig. 3; *see also* PO Resp. 45 (Patent Owner 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 19–20) are inconsistent with the express language of Curry and are unavailing. Such arguments, addressing the Institution Decision and presented for the first time in the Sur-reply, are also untimely and improper. *See* 37 C.F.R. § 42.253(b).

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

h. The Store Recitation

Claim 1 recites “the mobile telecommunications device being configured to . . . store a selection of the driving information to the memory.” Ex. 1001, 31:62–63. Petitioner refers to this recitation as element “1.8” and presents two alternative mappings. Pet. 31–33. For the first alternative, Petitioner argues that “the plain meaning of a ‘selection of the driving information’ is not limited to a selection of a subset of the same, but instead is broad enough to encompass selection of some or all of that information.” Pet. 31–32. Petitioner argues that it would have been obvious to an ordinarily skilled artisan “to store all or a subset of the derived driving information in the memory of the Curry-Rabu phone, and thus, to store a

selection of the driving information to the memory.” *Id.* at 31 (citing Ex. 1003 ¶ 142).

For the second alternative, Petitioner argues that, “to the extent that this limitation is narrowly interpreted,” it would have been obvious to an ordinarily skilled artisan “to store in the Curry-Rabu phone a subset of . . . the recorded sensor data and derived driving behavior information” because

Curry explains that “motion data cache can be compared with the user permission data to enable a driver safety statistic to be calculated,” indicating that specific aspects of recorded sensor data are more useful for storage and transmission to safety data server 104 (e.g., motion data and related derived information indicating possible use violations, and/or unsafe driving behaviors).

Pet. 32 (citing Ex. 1005, 3:24–4:6, 7:5–22, 8:29–10:12, 13:20–16:6, Fig. 1; Ex. 1003 ¶ 142).

Patent Owner argues that Curry’s phone may store raw sensor data, but it does not store driving information derived from the raw sensor data. PO Resp. 40–41 (citing Ex. 1005, 8:30–9:33, 11:15–18, Fig. 1; Ex. 2001 ¶¶ 136–137). Patent Owner argues that “Curry’s phone stores *all* of its recorded sensor data” rather than “a *selection* of driving information.” *Id.* at 42 (citing Ex. 2001 ¶¶ 139–140). According to Patent Owner, “[t]he ’879 [patent] specification clearly explains why determining and storing a selection of the driving information by the mobile device is important.” *Id.* at 41–42 (citing Ex. 1001, 12:23–29, 13:64–14:14, 16:66–17:26, 17:53–18:10, 18:26–32). Patent Owner argues that Petitioner’s contention that it would have been obvious to store only a subset of the recorded sensor data is unfounded because “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.” *Id.* at 42 (citing Ex. 1005, 13:27–14:4, 17:1–14, Figs. 3, 5).

Petitioner replies that Patent Owner mischaracterizes Curry’s disclosure. Pet. Reply 12. Petitioner argues that Curry discloses determining the type of user activity based on subsets of recorded data. *Id.* (citing Ex. 1005, 13:27–14:4; Ex. 1003 ¶ 144).

Although Patent Owner does not identify the clear explanation it asserts the ’879 patent provides for storing only a portion of the driving information (*see* PO Resp. 41–42), it appears from the cited portions of the ’879 patent that Patent Owner refers to the limited amount of available storage. *See, e.g.*, Ex. 1001, 17:15–26 (noting that “FIFO storage buffer 34a is provided with a finite amount of storage space”).

We agree with Petitioner’s position that Curry’s mobile phone 106 stores a selection of driving information to memory. For example, Curry states that “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, 8:29–9:3, Fig. 1. 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 ¶¶ 142–144. We need not and do not determine whether a “selection” of the driving information as recited in the ’879 patent is limited to mean “less than all” of the driving information because, even if “selection” is so limited, Petitioner persuasively establishes that it would have been obvious to store such a “selection” of driving information.

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

i. The Vehicle Sensors Recitation

Claim 1 recites “wherein the driving information is derived without data from the vehicle sensors.” Ex. 1001, 31:64–65. Petitioner refers to this recitation as element “1.9” and argues that an ordinarily skilled artisan “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.” Pet. 33 (citing Ex. 1005, 2:1–27, 3:24–4:11, 7:5–22, 8:29–10:12, 13:20–16:6, code (57), Figs. 1, 3; Ex. 1003 ¶ 146). Petitioner asserts that, “[i]n those disclosures, Curry never once describes or suggests leveraging the vehicle’s sensors.” *Id.*

Patent Owner contests Petitioner’s showing by relying on arguments advanced for the Determine and Process Recitations. PO Resp. 43–44. These arguments are unavailing for the reasons set forth above.

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 ¶ 147 (citing Ex. 1005, 2:1–27, 3:24–4:11, 7:5–22, 8:29–10:12, 13:20–16:6, code (57), Figs. 1, 3). As such, Dr. Michalson asserts “[an ordinarily skilled artisan] 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.

j. The Control Recitation

Claim 1 recites “wherein . . . the mobile telecommunications device is controlled by a downloaded application to control the mobile device to process the driving information to generate a driving score associated with a

particular driver.” Ex. 1001, 31:66–32:2. Petitioner refers to this recitation as element “1.10” and maps Curry’s mobile phone client 110 to the recited application. Pet. 34. Petitioner argues that the client 110 “enables the phone to process sensor data from a driving period to derive information associated with a user’s driving behavior.” *Id.* (citing Ex. 1005, 7:5–29, 8:21–9:33, Fig. 1; Ex. 1003 ¶ 149). Petitioner argues that mobile phone 106 processes this derived information “both to determine a mode within which the phone should operate, and to generate a ‘driving safety score’ for the user that can be wirelessly communicated to third parties.” *Id.* at 35 (citing Ex. 1005, code (57), 3:1–4:6, 7:5–22, 8:29–12:18, 13:3–19, 13:27–14:26, 16:13–18, 17:1–18:4, Figs. 1, 3, 4, 6; Ex. 1003 ¶ 150). Petitioner also argues that Curry “describes calculating driving safety scores based on driving behavior information derived from sensor data, including ‘unsafe behaviors of talking-while-driving and texting-while-driving,’ which are ‘associated with different point penalties.’” *Id.* at 36 (citing Ex. 1005, 13:3–19).

Patent Owner argues that “Curry’s fundamental disclosure [is] that the activity mode recognition module on the phone *only* determines whether the phone is in a moving vehicle” and “the overall disclosure in Curry [is] that all processing of driving information (including processing related to a driver score) occurs at the remote server.” PO Resp. 45 (citing Ex. 2001 ¶ 154). Patent Owner argues that Curry’s server, not the mobile phone, calculates the driving score. *Id.* at 45–47.

Petitioner replies that Curry’s “‘activity mode recognition module’ (which runs locally on a phone) is taught to ‘adjust the related safety score for the user if a violation is identified,’” and “‘adjust[ing]’ indicates calculation of a new value.” Pet. Reply 14 (alteration in original) (citing

Pet. 34–36; Ex. 1005, 2:1–3:6, 6:5–22, 7:29–11:18, 12:3–19, 12:27–13:26, 15:13–18, 16:1–17:4, code (57); Ex. 1003 ¶ 150).

We agree with Patent Owner that Curry discloses that the driving safety evaluation module, which calculates safety scores, is “located on a web server” rather than on mobile phone 106. Ex. 1005, 12:19–20, 13:3–15, Fig. 2. However, Petitioner also maps the activity mode recognition module (which is part of client unit 110) *adjusting* the driver’s safety score based on previously collected motion data to the recited “generat[ing] a driving score.” Pet. 35 (quoting Ex. 1005, 11:7–10). We understand Petitioner’s argument to be that adjusting a score (based on driving information derived from sensor data) is creating (that is, generating) a new driving score. We agree. Curry discloses that mobile phone client 110 “records the position, speed and acceleration data for a certain time period,” and activity mode recognition module 120 “determine[s] the context of a phone call to a selected user based on [the] collected motion data, and adjust[s] the related safety score for the user if a violation is identified.” Ex. 1005, 11:3–10. Furthermore, as noted above, Curry also discloses that its modules—to include the driving safety evaluation module—can be located on the phone. *Id.* at 12:6–18.

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

k. Conclusion

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

2. Independent Claim 21

Independent claim 21 recites a non-transitory computer readable medium with instructions stored thereon that, when executed, cause a mobile communications device to perform the functions recited in claim 1.

Ex. 1001, 33:39–64. Claim 21 also recites that the mobile communications device presents a user interface on a display. *Id.* at 33:51. Petitioner relies on its showing made for claim 1 regarding the similar recitations of claim 21. Pet. 37. Petitioner argues that, because Curry discloses downloading mobile phone client 110 to mobile phone 106, Curry’s mobile phone 106 includes a non-transitory computer readable medium having instructions comprising a software application stored thereon. *Id.* at 37–38 (citing Ex. 1005, 2:22–27, 6:3–20; Ex. 1003 ¶ 153). Petitioner argues that an ordinarily skilled artisan would understand Curry’s mobile phone 106 to include an interactive display through which the user interacts with mobile phone client 110. *Id.* at 38–39 (citing Ex. 1005, 8:5–27, 9:5–27, 10:5–26, 11:15–26, 13:20–29, 16:7–22, 21:15–17, 21:23–25, Fig. 1; Ex. 1003 ¶¶ 154–155).

Patent Owner does not contest Petitioner’s challenge to claim 21 apart from its arguments advanced for claim 1. PO Resp. 54–55.

We determine that Petitioner’s contentions regarding the unique recitations of claim 21 are fully supported by the record. In conjunction with the reasons set forth in § II.E.1 above regarding claim 1, we determine that Petitioner has shown, by a preponderance of the evidence, that claim 21 would have been obvious over the combination of Curry and Rabu.

3. Independent Claim 46

Independent claim 46 recites a mobile communications device as recited in claim 1, wherein the mobile communications device processes sensor data to determine vehicle acceleration events or braking events in accordance with threshold values. Ex. 1001, 35:65–36:32. Petitioner relies on its showing made for claim 1 regarding the similar recitations of claim 46. Pet. 37. Petitioner argues that an ordinarily skilled artisan would understand that Curry’s collected accelerometer data “includes a magnitude of acceleration (‘vehicle acceleration events’) and a magnitude of deceleration (‘vehicle braking events’),” which the mobile phone uses to “precisely identify” the type of activity. *Id.* at 40 (emphasis omitted) (citing Ex. 1005, 17:1–23; Ex. 1003 ¶ 156). Petitioner argues that an ordinarily skilled artisan would understand that such identification of activity types “involves one or more threshold acceleration values.” *Id.* at 40–41 (citing Ex. 1005, 3:24–4:6, 17:1–23, 22:8–12, Fig. 5; Ex. 1003 ¶ 157).

Patent Owner does not contest Petitioner’s challenge to claim 46 apart from its arguments advanced for claim 1. PO Resp. 55.

We determine that Petitioner’s contentions regarding the unique recitations of claim 46 are fully supported by the record. In conjunction with the reasons set forth in § II.E.1 above regarding claim 1, we determine that Petitioner has shown, by a preponderance of the evidence, that claim 46 would have been obvious over the combination of Curry and Rabu.

4. Independent Claim 51

Independent claim 51 recites a non-transitory computer readable medium with instructions stored thereon that, when executed, cause a mobile

communications device to perform the functions recited in claim 46. Ex. 1001, 36:56–37:20. Claim 51 also recites that the mobile communications device presents a user interface on a display (*id.* at 37:1) and that the determination of the start of the driving period is based on inputs from both the user interface and sensor data from the mobile telecommunications device sensor set (*id.* at 37:2–6). Petitioner relies on its showing made for claim 1 regarding the similar recitations of claim 51, its showing made for claim 21 regarding the non-transitory computer readable medium and user interface recitations, and its showing for claim 46 regarding vehicle acceleration events or braking events in accordance with threshold values. Pet. 37–41.

Patent Owner does not contest Petitioner’s challenge to claim 51 apart from its arguments advanced for claim 1. PO Resp. 55.

We determine that Petitioner’s contentions regarding the unique recitations of claim 51 are fully supported by the record. In conjunction with the reasons set forth in § II.E.1 above regarding claim 1, we determine that Petitioner has shown, by a preponderance of the evidence, that claim 51 would have been obvious over the combination of Curry and Rabu.

5. Independent Claim 54

Independent claim 54 recites the mobile telecommunications device of claim 1 with the only difference being that the mobile device is removably “affixed” to the vehicle rather than being removably “attached” to the vehicle. Ex. 1001, 37:34–38:14. Petitioner relies on its showing made for claim 1 regarding the similar recitations of claim 54. Pet. 37.

Patent Owner does not contest Petitioner's challenge to claim 54 apart from its arguments advanced for claim 1. PO Resp. 55.

We determine that Petitioner's contentions regarding the unique recitations of claim 54 are fully supported by the record. In conjunction with the reasons set forth in § II.E.1 above regarding claim 1, we determine that Petitioner has shown, by a preponderance of the evidence, that claim 54 would have been obvious over the combination of Curry and Rabu.

6. Dependent Claims 2, 3, 5, 6, 8, 11–13, 19, 20, 22, 23, 25, 28–31, 39–44, 47–49, and 52

Each of claims 2, 3, 5, 6, 8, 11–13, 19, 20, 22, 23, 25, 28–31, 39–44, 47–49, and 52 depends, directly or indirectly, from one of independent claims 1, 21, 46, and 51. Petitioner contends that Curry teaches or suggests the recitations of these claims and supports these contentions with declaration testimony. Pet. 41–48 (citing Ex. 1003). Patent Owner does not contest Petitioner's challenges to these claims apart from its contentions regarding claim 1. PO Resp. 54–55.

We determine that Petitioner's contentions regarding these dependent claims are fully supported by the record. Accordingly, we are persuaded that Petitioner has shown, by a preponderance of the evidence, that claims 2, 3, 5, 6, 8, 11–13, 19, 20, 22, 23, 25, 28–31, 39–44, 47–49, and 52 would have been obvious in view of the combination of Curry and Rabu. *See In re NuVasive*, 841 F.3d 966, 974 (Fed. Cir. 2016) (“The Board, having found the only disputed limitations together in one reference, was not required to address undisputed matters.”); Paper 12, 10 (emphasizing that “any arguments not raised in the response may be deemed waived”).

F. Asserted Obviousness Based on Curry, Rabu, and Katayama

Petitioner argues that dependent claims 9, 10, 14, 15, 17, 18, 32, 33, and 35–38 would have been obvious in view of Curry, Rabu, and Katayama. Pet. 58–71. In support of its showing, Petitioner relies upon the Michalson Declaration. *Id.* (citing Ex. 1003). We have reviewed the parties’ briefs and the evidence of record and determine that, for the reasons explained below, Petitioner has shown, by a preponderance of the evidence, that claims 9, 10, 14, 15, 17, 18, 32, 33, and 35–38 would have been obvious in view of Curry, Rabu, and Katayama and that Petitioner has set forth reasoning with rational underpinning why it would have been obvious to combine the teachings of these references.

Petitioner contends that the asserted references teach or suggest the recitations of these claims and supports these contentions with declaration testimony. Pet. 60–71 (citing Ex. 1003).

Patent Owner relies on its arguments advanced for claim 1. PO Resp. 56. Patent Owner also argues that “Katayama is prohibitively different from the ’879 patent” because Katayama does not disclose a mobile phone and relies on vehicle sensors. *Id.* at 57 (citing Ex. 1024 ¶¶ 9, 38, Figs. 4–6, code (57); Ex. 2001 ¶ 177).

Petitioner replies that Katayama is analogous art to the ’879 patent because “Katayama is at least in the same field of endeavor as the invention claimed in the ’879 patent (e.g., ‘methods and systems for logging driving information associated with a vehicle when driven’).” Pet. Reply 23 (citing PO Resp. 1). Petitioner argues that “Katayama describes a ‘driving recorder’ that records ‘situation data’ that indicates the ‘surrounding situation or the like of a motor vehicle during a certain period before and

after a time of an accident or . . . risk incident’ in which ‘a driver . . . is close to [being] involved in an accident” *Id.* at 23 (alterations in original) (citing Pet. 58; Ex. 1024 ¶ 1; Ex. 1003 ¶ 74).

Patent Owner replies that it did not argue that Katayama was non-analogous art. PO Sur-reply 27–28.

We agree that Patent Owner appears to argue that an ordinarily skilled artisan would not rely on the teachings of Katayama in combination with Curry and Rabu. *See* PO Resp. 57 (“Katayama is prohibitively different from the ’879 patent”), 58 (“[an ordinarily skilled artisan] simply would not have looked to . . . combine Katayama with Curry and/or Rabu”). A reference qualifies as prior art for a determination under § 103 when it is analogous to the claimed invention. *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 In re 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; Pet. Reply 23. Similarly, the '879 patent discloses a mobile device adapted for installation to a vehicle and configured to log driving information associated with how the vehicle is driven. Ex. 1001, 1:22–27; Pet. Reply 23. Thus, we agree that Katayama is analogous art because it is in the same field of endeavor as the '879 patent. *See* Pet. Reply 23.

We further determine that Curry similarly describes 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 § II.E.1 above. 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.

We determine that Petitioner's contentions regarding these challenged dependent claims are fully supported by the record. Accordingly, we are persuaded that Petitioner has shown, by a preponderance of the evidence, that claims 9, 10, 14, 15, 17, 18, 32, 33, and 35–38 would have been obvious in view of Curry, Rabu, and Katayama.

G. Asserted Obviousness Based on Curry, Rabu, and Thompson

Petitioner argues that dependent claims 14, 15, 32, and 33 would have been obvious in view of Curry, Rabu, and Thompson. Pet. 71–76. In support of its showing, Petitioner relies upon the Michalson Declaration. *Id.* (citing Ex. 1003). We have reviewed the parties' briefs and the evidence of record and determine that, for the reasons explained below, Petitioner has shown, by a preponderance of the evidence, that claims 14, 15, 32, and 33 would have been obvious in view of Curry, Rabu, and Thompson and that

Petitioner has set forth reasoning with rational underpinning why it would have been obvious to combine the teachings of these references.

Petitioner contends that the asserted references teach or suggest the recitations of these claims and supports these contentions with declaration testimony. Pet. 71–76 (citing Ex. 1003).

Patent Owner relies on its arguments advanced for claim 1. PO Resp. 58. Patent Owner also argues that “[Thompson] presents several shortcomings that would have discouraged [an ordinarily skilled artisan] from using it in the asserted combination.” *Id.* at 58 (citing Ex. 1008, 8–9; Ex. 2001 ¶ 181). According to Patent Owner, “[Thompson] is a rudimentary experimental study limited to significant crashes that filters out and/or ignores certain sensor data that the ’879 patent would depend on for event detection” and “[Thompson] does not collect data related to acceptable or unacceptable driving behaviors or patterns that do not result in an accident.” *Id.* at 59 (citing Ex. 2001 ¶¶ 182–183).

Petitioner replies that, “[e]ven if [Patent Owner’s] characterization of [Thompson] is accurate . . . , [Patent Owner] fails to explain why detection of ‘significant crashes’ is not within claim scope.” Pet. Reply 25 (citing PO Resp. 58–61). Moreover, Petitioner argues, “Thompson teaches processing capabilities to ‘detect even minor accidents.’” *Id.* at 25–26 (citing Ex. 1008, 8).

Patent Owner appears to argue that an ordinarily skilled artisan would not rely on the teachings of Thompson in combination with Curry and Rabu; in other words, that Thompson is not analogous art. *See* PO Resp. 58 (“[Thompson] presents several shortcomings that would have discouraged [an ordinarily skilled artisan] from using it in the asserted combination.”).

Again, however, Patent Owner does not address the *Bigio* framework for determining analogousness. Nonetheless, the record indicates that Thompson is from the same filed of endeavor as, and therefore is analogous to, the '879 patent, as both disclose a mobile device configured to log driving information associated with how a vehicle is driven. *See, e.g.*, Ex. 1008, 1–2; Ex. 1001, 1:22–27.

We additionally note that the Petition relies on Thompson's teachings of analyzing sensor data to detect the occurrence of an accident. *See* Pet. 73–76. We determine that Petitioner's contentions regarding these challenged dependent claims are fully supported by the record. Petitioner explains persuasively why an ordinarily skilled artisan would desire to include Thompson's determination of whether an accident has occurred into Curry's system (as modified by Rabu). *See, e.g., id.* at 72–74. Accordingly, we are persuaded that Petitioner has shown, by a preponderance of the evidence, that claims 14, 15, 32, and 33 would have been obvious in view of Curry, Rabu, and Thompson.

H. Asserted Obviousness Based on Curry, Rabu, and Berkobin

Petitioner argues that independent claim 55 would have been obvious in view of Curry, Rabu, and Berkobin. Pet. 79–81. In support of its showing, Petitioner relies upon the Michalson Declaration. *Id.* (citing Ex. 1003). We have reviewed the parties' briefs and the evidence of record and determine that, for the reasons explained below, Petitioner has shown, by a preponderance of the evidence, that claim 55 would have been obvious in view of Curry, Rabu, and Berkobin and that Petitioner has set forth

reasoning with rational underpinning why it would have been obvious to combine the teachings of these references.

Independent claim 55 recites the mobile telecommunications device of claim 54 and also recites that the processing of sensor data involves the use of a neural network on the mobile communications device. Ex. 1001, 38:15–44. Petitioner relies on its showing made for claim 54 regarding the similar recitations of claim 55. Pet. 81. Petitioner relies on Berkobin to teach using a neural network to process sensor data and evaluate driving information. *Id.* (citing Ex. 1010 ¶¶ 2, 31; Ex. 1003 ¶ 266). Petitioner argues that “[t]echniques for using artificial intelligence to evaluate driver information” and “the improvements offered by artificial intelligence” were “well-known by the Critical Date.” *Id.* at 79 (citing Ex. 1003 ¶¶ 261–262; Ex. 1010 ¶ 31; Ex. 1025 ¶ 47; Ex. 1014 ¶ 94). Petitioner argues that it would have been obvious to modify Curry’s mobile phone 106 “to employ artificial intelligence to identify unsafe driving behaviors from motion data recorded for a vehicle” to increase the accuracy of such identification. *Id.* at 80 (citing Ex. 1003 ¶¶ 262–263; Ex. 1005, 11:3–14).

Patent Owner relies on its arguments advanced for claim 1. PO Resp. 61. Patent Owner also argues that “Berkobin does not contemplate using a phone for performing the features of its apparatus.” *Id.* at 63 (citing Ex. 1010 ¶¶ 37, 44, 66, 77).

Petitioner replies “the combination [proposed in the Petition] leverages Berkobin’s disclosed use of ‘artificial intelligence’ for ‘analysis of high-dimensional and multimodal motion data,’ such as the types of data described in Curry.” Pet. Reply 26 (citing Pet. 79–80; Ex. 1003 ¶¶ 261–263).

Patent Owner’s arguments are unavailing because, as set forth above, Petitioner relies on Curry, not Berkobin, to disclose a mobile communications device. *See* Pet. 17–19, 36–37, 80–81.

Berkobin discloses an apparatus for tracking driver behavior. Ex. 1010 ¶ 20. The apparatus includes a driver behavior determination system. *Id.* ¶ 53. The apparatus “can transmit vehicle performance data upon a triggering event such as, but not limited to vehicle crash indication, acceleration above a threshold, speed above a threshold, and the like.” *Id.* ¶ 54. This vehicle performance data can include, for example, acceleration, deceleration, location, speed, weather, and telephone usage data. *Id.* ¶ 77. A driving safety metric can be determined based on the vehicle performance data. *Id.* ¶ 75. The system can use artificial intelligence, such as neural networks, in making such determinations. *Id.* ¶ 31. Dr. Michalson testifies that employing such artificial intelligence in Curry’s phone would improve the accuracy of identifying unsafe driving behavior. Ex. 1003 ¶¶ 262–263, 266.

Accordingly, for the foregoing reasons, Berkobin supports Petitioner’s contentions. We determine that Petitioner sets forth reasoning with rational underpinning as to why a person having ordinary skill in the art would have combined the teachings of Curry, Rabu, and Berkobin. *See, e.g.*, Pet. 175–76; Ex. 1003 ¶¶ 262–263, 266.

For the foregoing reasons and those set forth in § II.E.1 above regarding claim 1, we determine that Petitioner has shown, by a preponderance of the evidence, that claim 55 would have been obvious over the combination of Curry, Rabu, and Berkobin.

I. Petitioner's Other Asserted Grounds of Unpatentability

Petitioner argues that: dependent claims 4 and 24 would have been obvious in view of Curry, Rabu, and Tamir (Pet. 49–51); dependent claims 6, 7, 16, 26, 27, and 34 would have been obvious in view of Curry, Rabu, and Balachandran (*id.* at 51–57); and dependent claims 45, 50, and 53 would have been obvious in view of Curry, Rabu, and Willis (*id.* at 76–79). We have reviewed the parties' briefs and the evidence of record and determine that Petitioner has shown, by a preponderance of the evidence, that these claims would have been obvious in view of the asserted references and that Petitioner has set forth reasoning with rational underpinning why it would have been obvious to combine the teachings of the asserted references.

Each of claims 4, 6, 7, 16, 24, 26, 27, 34, 45, 50, and 53 depends, directly or indirectly, from one of independent claims 1, 21, 46, and 51. Petitioner contends that the asserted references teach or suggest the recitations of these claims and supports these contentions with declaration testimony. Pet. 49–57, 76–79 (citing Ex. 1003). Patent Owner does not contest Petitioner's challenges to these claims apart from its contentions regarding claim 1. PO Resp. 55–56, 61.

We determine that Petitioner's contentions regarding these dependent claims are fully supported by the record. Accordingly, we are persuaded that Petitioner has shown, by a preponderance of the evidence, that: claims 4 and 24 would have been obvious in view of Curry, Rabu, and Tamir; claims 6, 7, 16, 26, 27, and 34 would have been obvious in view of Curry, Rabu, and Balachandran; and claims 45, 50, and 53 would have been

obvious in view of Curry, Rabu, and Willis. *See In re NuVasive*, 841 F.3d at 974; Paper 12, 10.

III. CONCLUSION⁶

Based on the evidence presented with the Petition, the evidence introduced during the trial, and the parties' respective arguments, Petitioner has shown, by a preponderance of the evidence, that claims 1–55 of the '879 patent are unpatentable. In summary,

Claims	35 U.S.C. §	Reference(s) /Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–3, 5, 6, 8, 11–13, 19–23, 25, 28–31, 39–44, 46–49, 51, 52, 54	103(a)	Curry, Rabu	1–3, 5, 6, 8, 11–13, 19–23, 25, 28–31, 39–44, 46–49, 51, 52, 54	
4, 24	103(a)	Curry, Rabu, Tamir	4, 24	
6, 7, 16, 26, 27, 34	103(a)	Curry, Rabu, Balachandran	6, 7, 16, 26, 27, 34	
9, 10, 14, 15, 17, 18, 32, 33, 35–38	103(a)	Curry, Rabu, Katayama	9, 10, 14, 15, 17, 18, 32, 33, 35–38	

⁶ 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).

Claims	35 U.S.C. §	Reference(s) /Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
14, 15, 32, 33	103(a)	Curry, Rabu, Thompson	14, 15, 32, 33	
45, 50, 53	103(a)	Curry, Rabu, Willis	45, 50, 53	
55	103(a)	Curry, Rabu, Berkobin	55	
Overall Outcome			1–55	

IV. ORDER

Accordingly, it is:

ORDERED that claims 1–55 of the '879 patent have been shown to be unpatentable; and

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

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