UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

UNITED SERVICES AUTOMOBILE ASSOCIATION,
Petitioner,

v.

AUTO TELEMATICS LTD.,
Patent Owner.

IPR2023-00770
Patent 10,192,369 B2

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

IPPOLITO, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314(a)

I. INTRODUCTION

United Services Automobile Association ("Petitioner") filed a Petition (Paper 2, "Pet.") requesting *inter partes* review of claims 1–27 of U.S. Patent No. 10,192,369 B2 (Ex. 1001, "the '369 patent"). Petitioner also filed a paper ranking three Petitions filed against the '369 patent—ranking the Petitions 1 to 3 for, respectively, IPR2023-00768, 00769, and 00770 (this IPR). Paper 3. Auto Telematics Ltd. ("Patent Owner") filed a Preliminary Response. Paper 6 ("Prelim. Resp.").

Under 35 U.S.C. § 314(a), an *inter partes* review may not be instituted unless the information presented in the Petition and any response thereto shows "there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." Considering the arguments presented, we conclude that there is not a reasonable likelihood that Petitioner would prevail in challenging at least one of claims 1–27 of the '369 patent as unpatentable under the grounds presented in the Petition. Pursuant to § 314, we hereby do not institute an *inter partes* review as to these claims of the '369 patent.

A. Related Matters

According to the parties, the '369 patent is the subject of a civil action in *Auto Telematics Ltd. v. United Services Automobile Association*, 6:22-cv-00474-ADA-DTG (W.D. Tex.), filed May 11, 2022. Pet. 95; Paper 5. Patent Owner also identifies the above-noted IPR2023-00768 and -00769. Paper 5.

B. The '369 Patent (Ex. 1001)

The '369 patent relates generally to "a mobile device adapted for installation to a vehicle and configured to log . . . driving information, for example, video footage associated with how the vehicle is driven." Ex. 1001, 1:24–27. This information may be utilized "to determine the cause of an event such as an accident, to modify driver behaviour and/or to determine insurance premiums." *Id.* at 1:27–30.

The '369 patent describes that "data logging devices exist for road vehicles," and can be used "to determine the cause of traffic accidents or other vehicle-related events, whether these stem from a vehicle malfunction or driver negligence." *Id.* at 1:41–46. However, these devices are often "integrated with the car data network," and "difficult and costly to install." *Id.* at 1:49–53.

The '369 patent thus proposes a "mobile telecommunications device adapted for installation to a vehicle and configured to log driving information associated with the vehicle when driven." *Id.* at 1:64–67. According to the '369 patent, "the use of a mobile telecommunication device enables a data logging device to be conveniently and inexpensively retrofitted to a vehicle." *Id.* at 2:15–17.

To log the data, the adapted device operates by "registering the start of the driving period during which the mobile device is installed to the vehicle and the vehicle is being driven by the driver." *Id.* at 3:21–23. This prevents logging information needlessly. *Id.* at 3:24–25. Preferably, the registration is "in response to an initialisation input," such as user input, or automatic, "in response to the mobile device being installed to the vehicle and/or the vehicle being driven." *Id.* at 3:32–39. "For example, if the sensor data reflects a detected speed above a predetermined threshold—for example, 20 kilometers per hour—then this can be used to trigger the start of the driving period." *Id.* at 3:42–45.

Figure 2, reproduced below, shows a schematic presentation of an automobile with a mobile device installed for logging. *Id.* at 12:57–59.

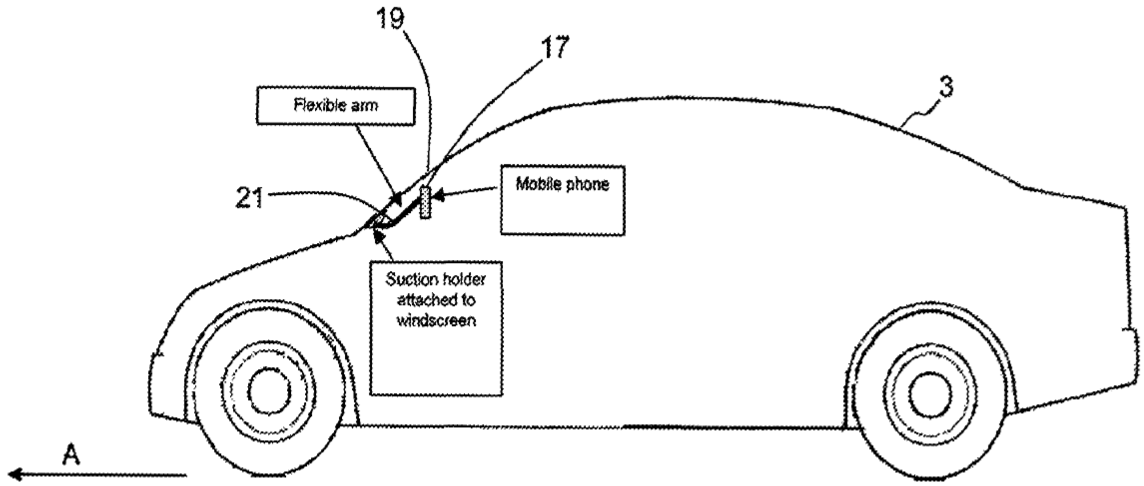

Figure 2, reproduced above, shows a preferred arrangement of the mobile telecommunications device 17 within the automobile 3. *Id.* at 15:1–4.

Figure 3, reproduced below, shows a schematic illustration of the functional components of the mobile device of Figure 2. Ex. 1001, 12:60–61.

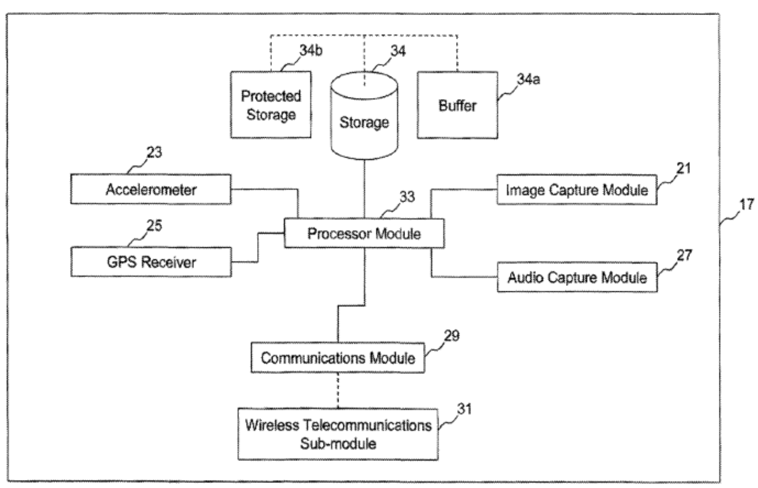

Fig .3

Figure 3, reproduced above, shows modular components of mobile telecommunication device 17 of Figure 2. Ex. 1001, 15:41–42. The '369 patent discloses that sampled sensor data is stored in storage 34. *Id.* at 16:66–67. Referring to the flow chart in Figure 4a, the ’369 patent further discloses that

> [o]nce the driving period has been initiated, sensor data is sampled and recorded in storage 34, at step 44. Additionally, the sampled sensor data is used to generate driving information by the processor module 33. The sampled sensor data and the driving information is continuously analysed by the processor module 33, at step 46.
>
> The processor module 33 determines if a driving incident has been detected, at step 48. This is determined on the basis of the analysis carried out at step 46. If a driving incident has been detected, all the sensor data and driving information associated with the data file period, is stored in a data file in protected storage 34b, at step 50.

Ex. 1001, 19:16–28. According to the ’369 patent, the sampled data is preferably stored in the storage buffer 34a, “unless a driving incident has been identified, in which case the associated sensor data and driving information is stored in the *permanent storage component 34b to avoid undesirable overwriting*.” Ex. 1001, 17:8–14 (emphasis added). The ’369 patent adds that

> [i]n preferred embodiments, the FIFO storage buffer 34a is provided with a finite amount of storage space. Nonetheless, said storage space may be predefined by the user as will be described below. In any case, once this storage space has been exhausted, the oldest recorded data is overwritten by newly sampled data, and this cycle of overwriting older data with newly sampled data is continuously carried out during operation of the telecommunications device 17, *unless a driving incident has been detected, in which case, and as mentioned previously, all data related to the driving incident is stored in a long term protected storage 34b to safeguard it from being overwritten by newer data*.

Ex. 1001, 17:15–26 (emphasis added).

C. Challenged Claims

Petitioner challenges claims 1–27. Pet. 1. Claims 1, 26, and 27 are the independent claims. Claim 1 is reproduced below with Petitioner's identifiers in brackets (Pet. 1–2):

> [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;
> [1.6/1.7/1.8] the mobile telecommunications device being configured to:
>
> > [1.6] 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;
>
> [1.9/1.10] wherein
>
> > [1.9] the driving information is derived without data from the vehicle sensors, and
> > [1.10] the memory comprises: a long term memory for persistently storing driving information and a short term memory for transiently storing driving information, wherein the short term memory receives driving information at a higher update rate than the long term memory,
>
> [1.12/1/13] the mobile telecommunications device being further configured to:

> [1.12] write driving information to the short term memory at a predetermined update rate during the driving period in a predetermined sequence; and,
> [1.13] overwrite the driving information previously written to the short term memory in accordance with the predetermined sequence.

Ex. 1001, 31:42–32:10 (minor reformatting added).

D. Alleged Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability:

Claim(s) Challenged	35 U.S.C. §	References
1–4, 10–12, 16, 17, 19–24, 26	103(a)	Forstall,[1] Rabu,[2] Langle,[3] Katayama[4]
5	103(a)	Forstall, Rabu, Langle, Katayama, Tamir[5]
7, 8, 15	103(a)	Forstall, Rabu, Langle, Katayama, Balachandran[6]

[1] U.S. Patent Application Publication No. 2009/0005975 A1, published January 1, 2009 (Ex. 1028) ("Forstall").
[2] U.S. Patent No. 8,682,399 B2, issued March 25, 2014 (Ex. 1013) ("Rabu").
[3] Langle et al., *Are You a Safe Driver*, 2009 International Conference on Computational Science and Engineering, Vol. 2, IEEE, 2009 (Ex. 1029) ("Langle").
[4] European Patent Application Publication No. 1,914,691 A1, published April 23, 2008 (Ex. 1024) ("Katayama").
[5] U.S. Patent No. 7,821,421 B2, issued October 26, 2010 (Ex. 1006) ("Tamir").
[6] U.S. Patent No. 6,073,004, issued June 6, 2000 (Ex. 1007) ("Balachandran").

13, 14	103(a)	Forstall, Rabu, Langle, Katayama, Thompson[7]
6, 9, 18	103(a)	Forstall, Rabu, Langle, Katayama, Warren[8]
25	103(a)	Forstall, Rabu, Langle, Katayama, Willis[9]
27	103(a)	Forstall, Rabu, Langle, Katayama, Berkobin[10]

Pet. 9–10. In addition to the references listed above, Petitioner relies on the Declaration of Dr. William R. Michalson (Ex. 1003). *See, e.g.*, Pet. 9.

II. ANALYSIS

A. Claim Construction

For petitions such as this one, filed after November 13, 2018, we apply the same claim construction standard "used in the federal courts, in other words, the claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. [§] 282(b)," which is articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). 83 Fed. Reg. 51,340, 51,358 (Oct. 11, 2018) (amending 37 C.F.R. § 42.100(b) effective November 13, 2018) (now codified at 37 C.F.R.

[7] Thompson et. al, *Using Smartphones to Detect Car Accidents and Provide Situational Awareness to Emergency Responders*, Mobileware 2010, LNICST 48, pp. 29–42, 2010 (Ex. 1008) ("Thompson").
[8] U.S. Patent Application Publication No. 2006/0053038 A1, published March 9, 2006 (Ex. 1030) ("Warren").
[9] International Patent Application Publication No. 2007/114716 A1, published October 11, 2007 (Ex. 1009) ("Willis").
[10] U.S. Patent Application Publication No. 2008/0255888 A1, published October 16, 2008 (Ex. 1010) ("Berkobin").

§ 42.100(b) (2019)). Under the *Phillips* standard, the "words of a claim are generally given their ordinary and customary meaning," which 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, i.e., as of the effective filing date of the patent application." *Phillips*, 415 F.3d at 1312–13.

According to Petitioner, "no express constructions are required in this proceeding." Pet. 11. However, as to the term "driving period," Petitioner contends that "the claim leaves open the possibility of the driving period corresponding to the beginning, middle or end of, a vehicle's operation." *Id.* Petitioner further contends:

> Thus, this claim term establishes two distinct "driving period" attributes: (1) "the mobile device is removably attached to the vehicle" and (2) "the vehicle is in use." USAA-1003, ¶96. These attributes may be satisfied by a start of a data collection period, whether at the onset of vehicle driving, before, or thereafter. *Id.*

Pet. 12.

According to Patent Owner, Petitioner's proposed construction of "driving period" is "flawed because it introduces unsupported limitations for the driving period not included in the claims." Prelim. Resp. 24. Patent Owner contends:

> Specifically, Petitioner's characterization of the start of a driving period as a "monitoring period" that starts at any time with respect to the onset of driving, *id.*, is simply an inaccurate generalization of "driving period" that has no basis in the specification or claims. Nowhere in the '369 specification or claims is Petitioner's constructed term "monitoring period" used or defined. *See generally* USAA-1001. For example, the claims do not state that the mobile device must be removably attached "to satisfy a start of a monitoring period," as suggested by Petitioner. *See* Pet. at 4. Instead, the claims require that the mobile device be removably attached *during* the driving period:

> "determine, based on 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," as recited by Claim 1 of the '369 patent (emphasis added). The claim language itself accurately captures the scope of the invention, and there is no need for a different construction incorporating Petitioner's manufactured limitations for the driving period.

Id.

We do not need to construe any terms expressly to reach our decision. *See Realtime Data LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) ("The Board is required to construe 'only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.'" (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

B. Alleged Obviousness

In *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966), the Supreme Court set out a framework for assessing obviousness under § 103 that requires consideration of four factors: (1) the "level of ordinary skill in the pertinent art," (2) the "scope and content of the prior art," (3) the "differences between the prior art and the claims at issue," and (4)"secondary considerations" of non-obviousness such as "commercial success, long-felt but unsolved needs, failure of others, etc." *Id.* at 17–18. "While the sequence of these questions might be reordered in any particular case," *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 407 (2007), the Federal Circuit has "repeatedly emphasized that an obviousness inquiry requires examination of all four *Graham* factors and that an obviousness determination can be made only after consideration of each factor." *Nike, Inc. v. Adidas AG*, 812 F.3d 1326, 1335 (Fed. Cir. 2016).

We note that, with respect to the fourth *Graham* factor, the record in this proceeding does not include any argument or evidence directed to secondary considerations of nonobviousness. The analysis below addresses the first three *Graham* factors.

C. Level of Ordinary Skill in the Art

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

Petitioner references Dr. Michalson's Declaration, by footnote, to propose a level of ordinary skill in the art. Pet. 28 n.4 (noting "USAA-1003, ¶¶14–15 (defining a POSITA)"). In the cited paragraphs of the Declaration, Petitioner's expert proposes that

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

Ex. 1003 ¶ 15. Dr. Michalson further proposes "greater amount of 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." *Id.*

Patent Owner does not dispute this proposed level of skill.

Prelim. Resp. 22.

For purposes of this Decision, we adopt the proposal of Petitioner's expert, which comports with the teachings of the '369 patent and the asserted prior art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

D. Prior Art References

1. Forstall (Ex. 1028)

Forstall describes mobile device aided navigation, and the use of dead reckoning to estimate the location of a mobile device. Ex. 1028, code (57). For example, Forstall describes navigation based on device position, received sensor data, and an interpretation of the received sensor data as corresponding to movement along a pathway defined by map data. *Id.* ¶ 6. Specifically, "[s]ensor data from accelerometers, a compass, gyroscopes, and impact sensors can be used alone or in combination to, for example, measure the movement of the device 100 from a point of origin or known location (a 'fix') to determine the device's location relative to the fix." *Id.* ¶ 62. The "mobile device 100 can be, for example . . . a cellular telephone, . . . a smart phone," or any of several possible other devices. *Id.* ¶ 24. The mobile device may include different types of sensors, such as a proximity sensor 168, ambient light sensor 170, accelerometer 172, compass 173, and gyroscope 175. *Id.* ¶¶ 35–36.

2. Rabu (Ex. 1013)

Rabu is directed to "[m]ethods for operating a portable media device" ("PMD") where "the portable media player can determine a motion status and select a mode of operation based on the motion status." Ex. 1013, code

(57). Figure 6, reproduced below, shows a flow diagram of Rabu's method. *Id.* at 2:33–35.

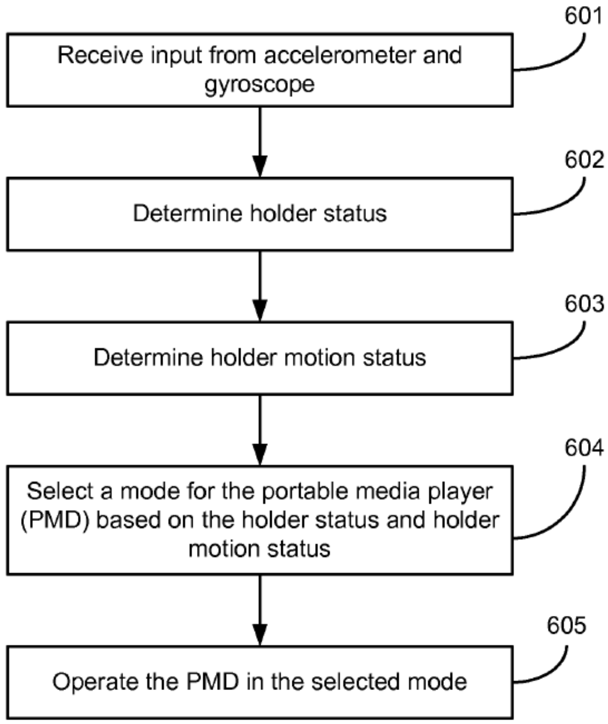

Figure 6, reproduced above, shows the main steps of the invention's operation. *Id.* As shown above, at block 601, the PMD can receive input from one or more motion sensors, e.g., an accelerometer and a gyroscope. Ex. 1013, 7:11–13. "[T]he input can indicate orientation angle and motion information of the PMD." *Id.* at 7:14–15. 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 by a stationary person. *Id.* at 7:15–16, 7:22–26.

3. *Langle (Ex. 1029)*

Langle is a technical conference publication ("2009 International Conference on Computational Science and Engineering") titled "Are You a Safe Driver." Ex. 1029, 1. Langle relates "to aid in safe driving practices and detection of emergencies" via a cell phone's accelerometers and compass. *Id*.

Langle describes that "[m]obile phones which have embedded accelerometers may be used for risk level detection while riding in a vehicle." *Id.* According to Langle, "[p]rogramming with accelerometers on the Android platform is straightforward and supports three axes." *Id.* Langle describes using accelerometers to assess safe and unsafe braking, acceleration, and lane changes. *Id.* at 1–4.

4. *Katayama (Ex. 1024)*

Katayama describes a driving monitor that records driver behavior and "a surrounding situation" during a period before and after an accident. Ex. 1024 ¶ 1. Figure 5 of Katayama, reproduced below, is a functional block diagram of the invention.

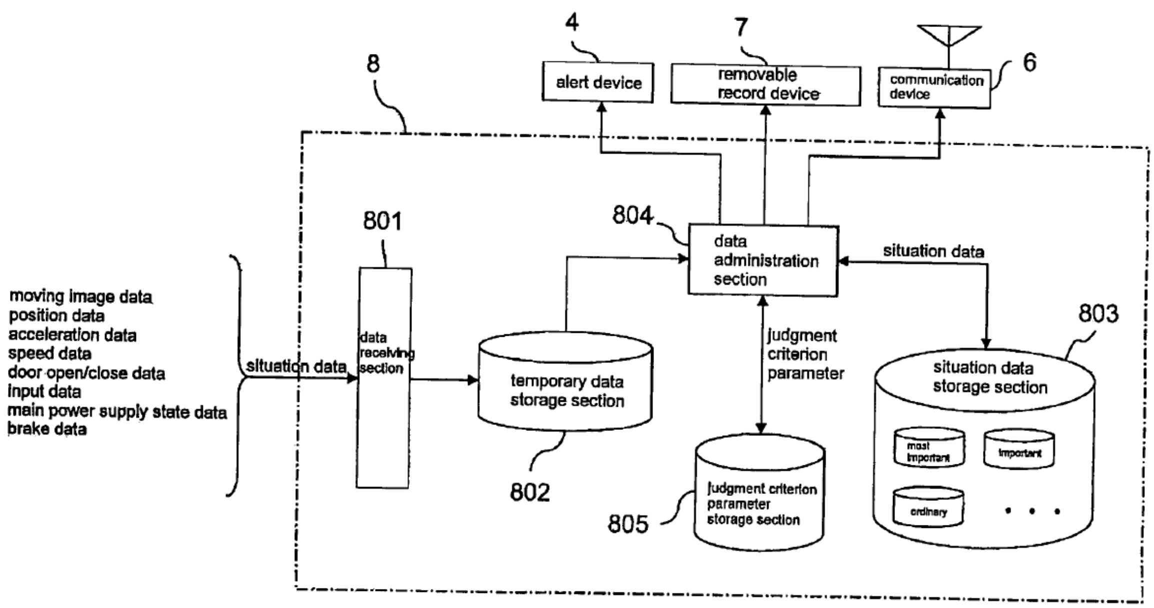

Figure 5 shows information processing device 8, which includes data receiving section 801, temporary data storage section 802, situation data recording section 803, and data administration section 804. *Id.* ¶¶ 31, 44.

Katayama discloses that "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.

5. *Tamir (Ex. 1006)*

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.

6. *Balachandran (Ex. 1007)*

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 1:27–29. 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.

7. Thompson (Ex. 1008)

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. Thompson relates to "contributions to the study of using smartphone-based accident detection systems" and provides: "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 "architecture of [a] prototype smartphone-based accident detection system[,] . . . its ability to resist false positives[, and] . . . its capabilities for accident reconstruction." *Id*.

Thompson states 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." *Id.* at 2. Thompson further states: "In contrast, 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's solution is as follows:

> **Solution approach → Use onboard sensors and physical context information to detect car accidents.** This paper shows 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. The solution includes the following "client/server" architecture and "WreckWatch" application:

> We also present an architecture for detecting car accidents based on WreckWatch, which is a mobile client/server application we developed to automatically detect car accidents . . . . [S]ensors built into a smartphone detect a major acceleration event indicative of an accident and utilize the built-in 3G data connection to transmit that information to a central server. That server then processes the information and notifies the authorities as well as any emergency contacts.

Id. "To address th[e] challenge [of false positives], WreckWatch employs the following sensor-based and context filters: . . . WreckWatch is only enabled when plugged in[;] . . . . [a s]peed filter determines whether users are in vehicles," e.g., "begins recording accelerometer information . . . above 15mph[;] . . . . [an a]cceleration filter prevents drops and sudden stops from triggering accident notifications," e.g., "ignores any acceleration events below 4G's." *Id.* at 8 (emphases omitted).

8. Warren (Ex. 1030)

Warren is directed to the collection of "driver characteristic data" and the generation of a "driver score based on the collected driver characteristic data," where the "driver score can then be applied in the calculation of insurance premiums or risk analysis." Ex. 1030 ¶ 4.

Warren proposes that "a vehicle monitor is installed or coupled to a vehicle to be monitored," where the "vehicle monitor collects data from various sensors to identify vehicle operation data," and "[b]ased at least in part on the vehicle operation data, a driver score is calculated." *Id.* ¶ 12.

9. Willis (Ex. 1009)

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." 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.

10. Berkobin (Ex. 1010)

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. In Berkobin, "an embedded GPS and cellular transceiver . . . support real-time, remote driver and vehicle performance metrics." *Id.* ¶ 21.

As an example, Berkobin's apparatus 101 includes vehicle mounted transceivers, e.g., for a PCS/Cell Modem 102. *Id.* ¶ 25. "Apparatus 101 can interface and monitor various vehicle systems and sensors to determine vehicle conditions." *Id.* ¶ 38. "[S]ubsystems can include a BlueTooth transceiver 115 . . . to interface with devices such as phones" and "user inputs[] such as emergency button 117 . . . . 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.* Further, apparatus 101 "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.

Additionally, Berkobin's central monitoring station 302 may comprise "one or more central monitoring station servers . . . as the 'back-bone' (i.e., system processing) of the present driver behavior determination system 300." *Id.* ¶ 51. The central monitoring station server may include software for data interpretations, statistics processing, data preparation and compression for output to apparatus 101, behavior determination, and driving report generation for output to users 303. *Id.*

E. Obviousness Based on Forstall, Rabu, Langle, and Katayama

Petitioner asserts that each of claims 1–4, 10–12, 16, 17, 19–24, and 26 of the '369 patent would have been obvious over Forstall, Rabu, Langle, and Katayama. Pet. 14–69.

For the reasons discussed below, we are not persuaded that Petitioner has demonstrated a reasonable likelihood of prevailing on this challenge.

1. Claim 1

Independent claim 1 is generally directed to a mobile telecommunications device configured to log driving information associated with a vehicle, the mobile telecommunications device [1.1] includes "a sensor set" [1.2], "a user interface" [1.3], "a processor" [1.4], and "memory" [1.5]. Ex. 1001, 31:42–50. The sensor set comprises "an image sensor, an audio sensor, an accelerometer or a positioning module, or a combination thereof." *Id.* at 31:45–47.

Additionally, claim 1 requires that the mobile telecommunications device is 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 [1.6]; [and]
>
> process the sensor data from the sensor set during the driving period to derive driving information associated with how the vehicle is driven [1.7]

Ex. 1001, 31:51–60.

a. Petitioner's Contentions

With regard to these limitations, Petitioner contends Forstall teaches a cellular telephone or smartphone (e.g., mobile telecommunication device [1.1]) that provides adaptive mobile device navigation where the device's position is stored in memory. Pet. 38–39 (citing Ex. 1028 ¶ 24, Fig. 1; Ex. 1003 ¶ 132). Petitioner asserts that Forstall's device runs a navigation application that provides map display 500 as a user interface (e.g., user interface [1.3]). *Id.* at 41 (citing Ex. 1028 ¶¶ 27, 72; Ex. 1003 ¶ 136).

Petitioner further asserts for limitation [1.2] that Forstall teaches sensor data is received from sensors (e.g., accelerometer 172, compass 173 and/or gyroscope 175) that measure the movement of the device. Pet. 39 (citing Ex. 1028 ¶¶ 6, 61, 65–71; Ex. 1003 ¶¶ 133–134).

For limitation [1.4], Petitioner contends that Forstall discloses one or more processors for interpreting sensor data received from the accelerometer 172, compass 173, and/or gyroscope 175. Pet. 42 (citing Ex. 1028 ¶ 74). According to Petitioner, Forstall includes "one or more processors [that] '[u]se an on board clock' to 'interpret the sensor data as movement of the device 100[,]' and 'determine velocity, and position[]' and/or a direction of travel." *Id.* at 41 (citing Ex. 1028 ¶ 74; Ex. 1003 ¶ 137) (second to fourth alterations in original).

Additionally, Petitioner contends that Forstall teaches memory 350 (e.g., memory [1.5]) may be implemented as different types of storage and that, separately, Katayama teaches partitioned memory 82. Pet. 43 (citing Ex. 1028 ¶ 55; Ex. 1024 ¶¶ 44–46; Ex. 1003 ¶ 40), 42 (stating the combined device "is configured according to Katayama's memory 82 and thereby is partitioned into several sections, including a temporary section and a storage section.").

With regard to limitation [1.6], Petitioner contends that Forstall's navigation application determines the start of a navigation period (i.e., start of a driving period) based on a user's interaction with map display 500 (i.e., inputs received by the user interface) such as a desired destination for the map display to provide directions from a point of origin to a destination. Pet. 44 (citing Ex. 1028 ¶¶ 4, 42, 72; Ex. 1003 ¶ 145). Petitioner relies on Rabu's disclosure of multiple operation modes as teaching that the mobile telecommunication device is "removably attached to the vehicle." *Id.* at 48 (citing Ex. 1013, 3:11–45, 4:21–33, 8:13–10:42, Figs. 1, 2, 4, 5, 7, 8; Ex. 1028 ¶¶ 64, 65, 68, 70, 71; Ex. 1003 ¶ 148).

For limitation [1.7], Petitioner contends that "the Forstall-Rabu-[Langle]-Katayama device collects sensor data related to device movement from integrated sensors ('sensor data from the sensor set') while a navigation application monitors vehicle movement ('during the driving period')." Pet. 48 (citing Ex. 1028 ¶¶ 36, 45, 61). Then, relying on Langle, Petitioner contends that "a POSITA would have found obvious that . . . driving safety data is derived from sensor data since [Langle] describes analyzing information specified by the sensor data (e.g., acceleration values, lane change indicators) to 'classify safe versus unsafe driving.'" *Id.* at 38–49 (citing Ex. 1029, Abstract; Ex. 1003 ¶ 149). Petitioner further contends that Katayama also describes situation data that includes sensor data and information derived from that data. *Id.* at 49 (citing Ex. 1024 ¶¶ 1, 11, 13, 58; Ex. 1003 ¶ 150).

Petitioner further proposes that "[m]obile-based navigation systems were known to increase the risk of accidents since they typically involve mounting a mobile device to a vehicle dashboard so that a user may view navigation information while driving." Pet. 30 (citing Ex. 1003 ¶ 115). Petitioner contends this "safety risk would have motivated a POSITA to venture beyond Forstall's disclosure to well-known vehicle monitoring systems specifically concerned with safety." *Id.* (citing Ex. 1003 ¶ 115; Ex. 1032, 323; Ex. 1024 ¶¶ 4–8). Petitioner further argues that "a POSITA would have reasonably succeeded in incorporating [Langle's] safety techniques into Forstall's mobile device since [Langle] recognizes that '[p]rogramming with accelerometers . . . is straightforward and supports three axes.'" *Id.* at 31 (citing Ex. 1003 ¶ 116; Ex. 1032, 323–24; Ex. 1031 ¶¶ 14–18; Ex. 1077, 3–12) (third and fourth alterations in original).

For limitation [1.7], Petitioner further argues that

> Katayama similarly describes "situation data" relevant to driving behavior 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 . . . ." USAA-1024, [0001], [0011], [0058]. The situation data includes both sensor data and information derived therefrom. *Id.*, [0013]; USAA-1003, ¶150.

Pet. 49 (alterations in original).

b. Patent Owner's Contentions

Patent Owner provides several arguments, including that Petitioner's rationale to combine Forstall with Langle and Katayama is generic and conclusory, and that Dr. Michalson's testimony parrots the same conclusory statements. *See* Prelim. Resp. 50–55.

c. Discussion

A petition seeking *inter partes* review must identify "with particularity, each claim challenged, the grounds on which the challenge to each claim is based, and the evidence that supports the grounds for the challenge to each claim." 35 U.S.C. § 312(a)(3); *see also* 37 C.F.R. § 42.104(b) (specifying necessary elements of a petition). Here, we determine that the Petition lacks sufficient explanation detailing with particularity how Petitioner seeks to modify Forstall with both Langle and Katayama.

While Langle discloses mathematical modeling of driving behavior using mobile device sensor data, it is not clear what specific teachings in Langle that Petitioner contends would be "straightforward" to program into

Forstall to improve safety during navigation. *See* Pet. 31. Generally, Langle is directed to the potential use of mobile phone sensors in aiding "safe driving practices and detection of emergencies." Ex. 1029, 1. Langle teaches that "[i]n this paper, we used the multiple sensors in a Google phone to classify safe versus unsafe driving." *Id.* This classification was done by the authors by collecting sensor measurements and modeling driving behavior. To do so, Langle provides detailed mathematical calculations, performed by the authors, to model several different driving behaviors. *Id.* at 1–5. For example, Langle teaches that

> *we calculated the displacement in the axis perpendicular to the trajectory of vehicle and used it to classify safe and unsafe lane changes*. The direction of the phone with respect to the motion of the vehicle is important during calibration of the above measurements, so *we used 2D and 3D rotation matrices for transforming device orientation*. Future work includes *calibration of braking distance, lane changes, and reliable transformation of phone orientation with respect to trajectory of the vehicle*.

Id. at 1 (emphases added).

Even assuming that programming with accelerometers is "straightforward," it is unclear what specific "safety technique(s)" in Langle that Petitioner contends would have applied to Forstall. As discussed, Langle discloses detailed calculations and graphed data curves produced by the authors of the paper using data collected from mobile device sensors. In some instances, Langle observes that the modeling shows "safe" versus "unsafe" driving behavior such as safe or unsafe deceleration. In other instances, Langle cautions that the methods discussed in the paper were preliminary and that "[g]eneral classification is possible given [a mobile phone's] GPS speed sensor and triple-axis accelerometer, but the hardware may not be accurate enough to perform other measurements such as braking distance and lane change width reliably." Ex. 1029, 5. For example, Langle acknowledges that "[s]ensor data collection with the mobile phone requires some extra considerations regarding device placement." *Id.* at 4. As another example, Langle discloses that

> [a]s we see in . . . [Figure 2], safe acceleration and deceleration never reaches more than 0.3 g in either the positive or negative direction. The unsafe acceleration depicted in Figure 2 shows the same overall shape of safe acceleration but a slightly higher G-force of 0.43 g on this incline. Apparently the car used (2007 Pontiac G6 Sport) does not have enough power to significantly amplify the acceleration chart . . . *Using this data it is easy to see the difference between safe and unsafe deceleration, yet the distinction is not so clear for accelerations*.

Ex. 1029, 2 (emphases added). In this way, we understand Langle reports varied methods and results for the modeling performed. Yet, the Petition does not set forth with particularity what aspects of Langle that Petitioner argues a POSITA would have *incorporated* into Forstall's navigation application that would have predicted accident-related risks. *See* Pet. 30 (Langle "described a technique to predict accident related risks.").

Even assuming that a POSITA may have been able to discern what aspects of Langle to apply to Forstall, Petitioner's asserted combination does not explain how the techniques described in Langle improve safety in combination with Forstall's navigation system. Petitioner argues that "[m]obile-based navigation systems were known to increase the risk of accidents since they typically involve mounting a mobile device to a vehicle dashboard so that a user may view navigation information while driving." Pet. 30 (citing Ex. 1003 ¶ 115; Ex. 1031 ¶ 2). As discussed, Langle describes the classification of data into "safe" and "unsafe" driving. Ex. 1029, 1. Langle teaches that

> [g]eneral classification is possible given [a mobile phone's] GPS speed sensor and triple-axis accelerometer, but the hardware may not be accurate enough to perform other measurements such as braking distance and lane change width reliably. In order to be useful as a measurement tool and phone, the coordinate space must be periodically measured and corresponding accelerometer measurements adjusted for.

Id. at 5. Petitioner, however, has not explained how the classification of GPS speed sensor and accelerometer data into "safe" or "unsafe" driving categories, by itself alone, would improve navigation driving safety in Forstall's navigation system.

Additionally, Petitioner cites to Katayama in combination with Forstall and Langle. More specifically for limitation [1.7], Petitioner argues that

> Katayama similarly describes "situation data" relevant to driving behavior 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 . . . ." USAA-1024, [0001], [0011], [0058]. The situation data includes both sensor data and information derived therefrom. *Id.*, [0013]; USAA-1003, ¶150.

Pet. 49 (alterations in original). Petitioner further asserts that a POSITA would have found it obvious to *implement* Katayama's teachings on "data handling, including both the comparison at the time of recording of digitalized sensor data against judgment criteria representative of specific driving behaviors, and storage in appropriate sections of memory of digitalized data with metadata identifiers indicating determinations made through those comparisons." *Id.* at 31 (citing Ex. 1024 ¶¶ 12, 15, 48, 49; Ex. 1003 ¶ 117).

It is unclear, however, how or why Petitioner proposes a POSITA would implement Katayama's data handling with Langle's disclosed mathematical modeling/graphing, and Forstall's navigation application. *See* Pet. 31–38. Katayama discloses that "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." Ex. 1024 ¶ 46. Katayama teaches that whether situation data "meets the predetermined condition is judged based on results of the digitalized values on which a logical operation such as an AND/OR operation is performed." *Id.* ¶ 49. Katayama further discloses that some situation data "may be judged by combining a content of the situation data with a content of other situation data depending on the variety or the content of the situation," while some other situation data "may be judged based on a content of a single situation data." *Id.*

On its face, Katayama already teaches methods to determine whether situation data (e.g., driving information) meets predetermined conditions (e.g., safe versus unsafe) for specific data handling. For example, Katayama teaches that quick stops without brakes and "acceleration exceeding a certain level that continues for more than a certain period" are criteria for marking data as important situation data. Ex. 1024 ¶ 15. Langle, according to Petitioner, teaches other methods of evaluating sensor data to predict accident-related risks. *See* Pet. 30–31. If so, this raises the question of what specific combination Petitioner proposes a POSITA would have implemented with Katayama, Langle, and Forstall. To be sure, Petitioner does assert that

> [t]o avoid erasure of situation data that might be useful in determining the cause of an accident or risk incident, *or in otherwise analyzing driving behavior as taught by [Langle],* the POSITA would have further configured the Forstall-Rabu-[Langle] device to "digitalize" temporarily stored situation data for purposes of determining, at the "time of recording," whether that digitalized situation data meets one or more predetermined criteria for long term storage (for example, whether a value of temporarily stored digitalized accelerometer data exceeds a predetermined threshold).

Pet. 34 (citing Ex. 1024 ¶¶ 1–2, 11–16, 27, 46–50, 54, 83; Ex. 1003 ¶ 126) (emphasis added). Nonetheless, the statement that "otherwise analyzing driving behavior as taught by [Langle]" does not itself direct us to the particular disclosure relied upon in Langle for, in Petitioner's words, "incorporating" into the asserted combination with Forstall and Katayama. *See* Pet. 31 ("POSITA would have reasonably succeeded in incorporating [Langle's] safety techniques into Forstall's mobile device[.]").

Dr. Michalson's testimony does not clarify Petitioner's case in this regard. Dr. Michalson testifies that "[a] POSITA would have found obvious that the driving safety data is derived from sensor data since [Langle] describes analyzing information specified by the sensor data (e.g., acceleration values, lane change indicators) to 'classify safe versus unsafe driving.'" Ex. 1003 ¶ 149 (citing Ex. 1029, Abstract). Dr. Michaelson adds that

> [l]ike Forstall, [Langle's] technique utilizes embedded sensors of mobile phones, including accelerometer data and position data. [Langle] teaches "mobile phones may be used to aid in safe

> driving practices and detection of emergencies[,]" and thus, *the sensors used for improving safety are already present in Forstall's device. A POSITA would have had a reasonable expectation of success in incorporating [Langle's] safety techniques into Forstall's mobile device since [Langle] recognizes that "[p]rogramming with accelerometers . . . is straightforward and supports three axes*."

Ex. 1003 ¶ 116 (citing Ex. 1029, 1; Ex. 1032, 323–324; Ex. 1031 ¶¶ 14–18; Ex. 1077, 3–12) (emphases added) (fourth, seventh, and eighth alterations in original).

With regard to Katayama, Dr. Michalson testifies that

> [a] POSITA would have understood that Katayama's techniques of detecting accidents or risk incidents advances [Langle's] overall motivation to "enhance and strengthen its emergency services" such that "mobile phones may be used to aid in safe driving practices and detection of emergencies." USAA-1029, Abstract. *The combination further enables association of a detected unsafe driving behavior (as described in [Langle]) and a detected risk incident (as described in Katayama)*, thereby enabling confirmation of correlations between certain driving behaviors (unsafe accelerations, unsafe lane changing) and occurrence of risk accidents.

Ex. 1003 ¶ 120 (emphasis added).

Yet, Dr. Michalson does not explain how this combination of Forstall, Langle, and Katayama would do so, especially where Katayama already employs its own techniques for collecting, evaluating, and managing sensor data. Ex. 1024 ¶¶ 15, 45–54. As discussed above, Langle evaluates sensor data with varied success on whether the collected sensor data sufficiently shows safe or unsafe driving behaviors. *See* Ex. 1029, 2. Because Dr. Michalson's testimony is general and conclusory, we are left with broad statements without sufficient explanation. *See, e.g.*, Ex. 1003 ¶ 126 (Dr. Michalson's testimony mirrors statements in the Petition).

Dr. Michalson further relies on Exhibits 1031, 1032, and 1077 in his declaration. *See* Exhibit 1003 ¶¶ 115–116. Exhibit 1031 is U.S. Patent Application Publication No. 2007/0027585 A1, issued to Wulff, titled System and Method for Monitoring a Mobile Computing Product/Arrangement. Ex. 1031, codes (10), (54). Exhibit 1032 is a paper titled *Nericell: Rich Monitoring of Road and Traffic Conditions using Mobile Smartphones*. Ex. 1032, 1. Exhibit 1077 shows a printout of the Waze website archived by the Wayback Machine. Ex. 1077, 2. The printout is the "User Manual" for Waze. *Id.* at 2–12. Even assuming that the disclosure in Exhibits 1031, 1032, and 1077 indicate that mobile phones may aid in safe driving practices (*see* Ex. 1003 ¶ 116), the fact remains that neither Dr. Michalson nor the Petition sufficiently explains how specific disclosures in Langle, Katayama, and Forstall would be incorporated or implemented in the combination asserted by Petitioner. *See* Ex. 1003 ¶¶ 116, 120.

Accordingly, we conclude that Petitioner fails to demonstrate a reasonable likelihood of prevailing at trial in showing that claim 1 would have been obvious over the asserted combination of Forstall, Rabu, Langle, and Katayama.

2. *Claims 2–4, 10–12, 16, 17, 19–24, and 26*

For independent claim 26, Petitioner relies on the same or similar arguments and evidence discussed above for the combination of Forstall, Rabu, Langle, and Katayama. *See* Pet. 58 ("This claim is obvious in the same manner as explained above for the corresponding claim 1 limitations.") (citing Ex. 1003 ¶ 201).

Claims 2–4, 10–12, 16, 17, 19–24 depend from independent claim 1. We have also reviewed Petitioner's contentions for the challenges to these claims. *See* Pet. 59–69.

Petitioner's arguments and evidence provided for these claims suffer from the same deficiency discussed with respect to independent claim 1. For the same reasons, Petitioner fails to demonstrate a reasonable likelihood of prevailing at trial in showing these claims would have been obvious over the asserted combination of Forstall, Rabu, Langle, and Katayama.

F. Obviousness Based on Forstall, Rabu, Langle, Katayama, and Tamir

Petitioner asserts that claim 5 of the '369 patent would have been obvious over Forstall, Rabu, Langle, Katayama, and Tamir. Pet. 69.

Petitioner's challenge of claim 5, which depends from claim 1, fails for the reasons discussed above in connection with claim 1. For the reasons discussed above, we are not persuaded that Petitioner has demonstrated a reasonable likelihood of prevailing on this challenge.

G. Obviousness Based on Forstall, Rabu, Langle, Katayama, and Balachandran

Petitioner asserts that each of claim 7, 8, and 15 of the '369 patent would have been obvious over Forstall, Rabu, Langle, Katayama, and Balachandran. Pet. 71.

Petitioner's challenge of claims 7, 8, and 15, which all depend from claim 1, fails for the reasons discussed above in connection with claim 1. For the reasons discussed above, we are not persuaded that Petitioner has demonstrated a reasonable likelihood of prevailing on this challenge.

H. Obviousness Based on Forstall, Rabu, Langle, Katayama, and Thompson

Petitioner asserts that each of claims 13 and 14 of the ’369 patent would have been obvious over Forstall, Rabu, Langle, Katayama, and Thompson. Pet. 77.

Petitioner’s challenge of claims 13 and 14, which both depend from claim 1, fails for the reasons discussed above in connection with claim 1. For the reasons discussed above, we are not persuaded that Petitioner has demonstrated a reasonable likelihood of prevailing on this challenge.

I. Obviousness Based on Forstall, Rabu, Langle, Katayama, and Warren

Petitioner asserts that each of claims 6, 9, and 18 of the ’369 patent would have been obvious over Forstall, Rabu, Langle, Katayama, and Warren. Pet. 82.

Petitioner’s challenge of claims 6, 9, and 18, which all depend from claim 1, fails for the reasons discussed above in connection with claim 1. For the reasons discussed above, we are not persuaded that Petitioner has demonstrated a reasonable likelihood of prevailing on this challenge.

J. Obviousness Based on Forstall, Rabu, Langle, Katayama, and Willis

Petitioner asserts that claim 25 of the ’369 patent would have been obvious over Forstall, Rabu, Langle, Katayama, and Willis. Pet. 86.

Petitioner’s challenge of claim 25, which depends from claim 1, fails for the reasons discussed above in connection with claim 1. For the reasons discussed above, we are not persuaded that Petitioner has demonstrated a reasonable likelihood of prevailing on this challenge.

K. Obviousness Based on Forstall, Rabu, Langle, Katayama, and Berkobin

Petitioner asserts that independent claim 27 of the ’369 patent would have been obvious over Forstall, Rabu, Langle, Katayama, and Berkobin. Pet. 88. Petitioner relies on Berkobin’s disclosure of artificial intelligence, neural networks, and iterative learning in combination with Forstall, Rabu, Langle, and Katayama. *Id.* at 90–91. Petitioner does not rely on Berkobin’s disclosure to correct the deficiencies discussed above with regard to the combination of Forstall, Rabu, Langle, and Katayama.

For the reasons discussed above, we are not persuaded that Petitioner has demonstrated a reasonable likelihood of prevailing on this challenge. Petitioner’s challenge of claim 27 fails for the reasons discussed above in connection with claim 1.

III. CONCLUSION

For the foregoing reasons, we deny institution of *inter partes* review of the ’369 patent.

IV. ORDER

Upon consideration of the record before us, it is:

ORDERED that the Petition is denied as to all challenged claims of the ’369 patent, and no *inter partes* review is instituted.

FOR PETITIONER:

W. Karl Renner
Andrew B. Patrick
Michael Zoppo
Ryan Chowdhury
Thomas Rozylowicz
FISH & RICHARDSON P.C.
axf-ptab@fr.com
patrick@fr.com
zoppo@fr.com
rchowdhury@fr.com
tar@fr.com

FOR PATENT OWNER:

Steven E. Tiller
Gregory Stone
Whiteford, Taylor & Preston, L.L.P.
stiller@whitefordlaw.com
gstone@whitefordlaw.com