Trials@uspto.gov
Tel: 571-272-7822

Paper 37
Entered: December 5, 2014

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TOYOTA MOTOR CORP.,
Petitioner,

v.

LEROY G. HAGENBUCH,
Patent Owner.

Case IPR2013-00483
Patent 8,014,917 B2

Before JAMESON LEE, MICHAEL W. KIM, and
JEREMY M. PLENZLER, *Administrative Patent Judges*.

PLENZLER, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. Background

Toyota Motor Corp. ("Petitioner") filed a Petition to institute an *inter partes* review of claims 1–3, 5–8, 18–20, and 22–25 of U.S. Patent No. 8,014,917 B2 (Ex. 1001, "the '917 patent"). Paper 1 ("Pet."). The Petition was accompanied by an expert declaration from David McNamara. Ex. 1008. Leroy G. Hagenbuch ("Patent Owner") filed a Preliminary Response. Paper 7 ("Prelim. Resp."). We granted the Petition and instituted trial on the following grounds: (1) obviousness of claims 1–3, 5–8, 18–20, and 22–25 over Aoyanagi[1] and Oishi[2]; and (2) obviousness of claims 1–3, 5–8, 18–20, and 22–25 over Aoyanagi and Vollmer[3]. Paper 9 ("Dec. on Inst.").

During trial, Patent Owner filed a Patent Owner Response (Paper 23, "PO Resp."), which was accompanied by an expert declaration from Michael Nranian (Ex. 2057). Petitioner filed a Reply to the Patent Owner Response. Paper 26 ("Pet. Reply"). An oral hearing was held on August 27, 2014. A transcript of the hearing has been entered into the record. Paper 36 ("Tr.").

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[1] Japanese Patent Publication No. H03-085412, published April 10, 1991 (Ex. 1002, "Aoyanagi"). Citations to this reference refer to its English translation (Ex. 1003).

[2] Japanese Patent Publication No. S58-16399, published January 31, 1983 (Ex. 1004, "Oishi"). Citations to this reference refer to its English translation (Ex. 1005).

[3] International Patent Publication No. WO 90/03899, published April 19, 1990 (Ex. 1006, "Vollmer"). Citations to this reference refer to its English translation (Ex. 1007).

We have jurisdiction under 35 U.S.C. § 6(c). This final written decision is issued pursuant to 35 U.S.C. § 318(a).

We determine that Petitioner has shown by a preponderance of the evidence that claims 1–3, 5–8, 18–20, and 22–25 of the '917 patent are *unpatentable*.

B. Related Proceedings

The '917 patent is involved in a district court proceeding, *Hagenbuch v. Toyota Motor Sales, U.S.A., Inc.*, No.1:13-cv-6713 (N.D. Ill. filed Sept. 18, 2013). Pet. 1; Prelim. Resp. 4. Another *inter partes* review of the '917 patent is pending between the same parties (IPR2013-00638), and is directed to claims 4, 9–17, 21, and 26–38.

C. The '917 Patent

The '917 patent relates generally to a vehicle including various sensors that monitor vital signs and production-related parameters of the vehicle. Ex. 1001, 6:23–27. The '917 patent provides a list of vital sign sensors that detect engine oil temperature, engine oil pressure, engine coolant level, engine crankcase pressure, engine fuel pressure, transmission oil temperature, transmission oil level, differential oil temperature, differential oil level, current amperes to the drive motor, drive motor temperature, a crash, and tire air pressure, and a list of production-related sensors that determine engine revolutions per minute (RPM), throttle position, engine fuel consumption, distance traveled, ground speed, incline, angle of turn, steering wheel position, brake status, vehicle direction, load, and dump status. *Id.* at 6:30–58. The '917 patent notes that each of the sensors listed above was known and commercially available at the time of the '917 patent's filing. *Id.* at 6:59–61. The '917 patent provides additional

detail on a number of the sensors, including the sensors related to vehicle braking, for example. *Id.* at 10:6–11:10.

The '917 patent describes two types of sensors related to vehicle braking: "a simple on/off status sensor" and a sensor "which senses the degree of braking." *Id.* at 10:43–49. The '917 patent explains that the illustrated embodiment includes a "degree of braking" sensor and provides various examples employing the data obtained from the "degree of braking" sensor to determine various vehicle conditions based on the timing of when the brakes were applied to diagnose a crash condition, for example. *Id.* at 10:49–62.

The '917 patent further explains that a crash event can trigger downloading data saved from the various sensors, and that data can continue to be gathered and stored after the crash event. *Id.* at 7:36–38, 7:57–60, 11:59–62, 25:10–14. A distress signal is automatically sent after the crash event to alert other personnel that aid may be required. *Id.* at 7:35–41. The crash event is described as being detected when the value of data sampled from an accelerometer exceeds a pre-programmed critical value. *Id.* at 25:8–10.

D. Illustrative Claims

Of challenged claims 1–3, 5–8, 18–20, and 22–25, claims 1 and 18 are the only independent claims, with claims 2, 3, and 5–8 depending from claim 1 and claims 19, 20, and 22–25 depending from claim 18. Claim 1 illustrates the claimed subject matter and is reproduced below:

> 1. A method for recording operation of a vehicle, the method comprising:
>
> monitoring production-related parameters of the vehicle, including a ground speed of the vehicle, a

position of a throttle for an engine of the vehicle and a degree of braking of the vehicle;

monitoring vital sign parameters of the vehicle, including information indicative of a change in the velocity of the vehicle;

detecting a collision of the vehicle in response to a sudden change in the velocity of the vehicle;

automatically sending a wireless distress signal from the vehicle in response to detecting the collision; and

capturing the production-related parameters of the vehicle before detection of the collision and the vital sign parameters after detection of the collision.

Id. at 25:44–59.

II. ANALYSIS

For the challenged claims, Petitioner must prove unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e). We begin with a claim construction analysis, and then follow with specific analysis of the prior art.

A. Claim Construction

The '917 patent expired subsequent to the institution of trial in this proceeding. *See* Paper 11, 2. We review the expired patent claims according to the standard applied by the district courts. *See In re Rambus*, 694 F.3d 42, 46 (Fed. Cir. 2012). Specifically, we apply the principles set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005). "In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence."

DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc., 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

After considering the various claim constructions presented by both Petitioner and Patent Owner, no particular term requires an express construction in order to conduct properly our analysis of the prior art. Only those terms which are in controversy need to be construed, and only to the extent necessary to resolve the controversy. *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc*., 200 F.3d 795, 803 (Fed. Cir. 1999).

B. Obviousness over Aoyanagi and Oishi

We have reviewed the Petition, the Patent Owner Response, and Petitioner's Reply, as well as the relevant evidence discussed in those papers. We are persuaded, by a preponderance of the evidence, that claims 1–3, 5–8, 18–20, and 22–25 would have been obvious over Aoyanagi and Oishi under 35 U.S.C. § 103.

1. Claim 1

Claim 1 is directed to a method including detecting a vehicle collision, transmitting a distress signal after the collision, and monitoring and capturing certain vehicle parameters before and after the collision. Petitioner contends that Aoyanagi teaches each element of claim 1, except "automatically sending a wireless distress signal from the vehicle in response to detecting the collision." Pet. 8–14. We have reviewed, and are persuaded by, Petitioner's contentions regarding the teachings of Aoyanagi. For example, Aoyanagi describes "a recording apparatus for vehicle running conditions . . . that records running data at the time when the vehicle has received shocks due to an accident or the like" (Ex. 1003, 70:2:3–8), and explains that "[t]he recording apparatus uses sensors to record data of the

running conditions of the vehicle from these sensors, and the recorded data are used to judge the circumstances of the accident" (*id.* at 71:1:6–9). Aoyanagi describes the recorded data as including vehicle speed (*id.* at 71:1:65–2:2), accelerator pedal position (*id.* at 71:2:18–27), and brake pedal position (*id.* at 71:2:28–35), which Petitioner contends correspond to the production-related parameters recited in claim 1 including "a ground speed of the vehicle, a position of a throttle for an engine of the vehicle and a degree of braking of the vehicle," respectively (Pet. 8–9, 11–12). Aoyanagi additionally describes the recorded data including vehicle acceleration and deceleration from an acceleration sensor (Ex. 1003, 71:2:3–6, 71:2:65–72:1:2), which Petitioner contends correspond to the "vital sign parameters of the vehicle, including information indicative of a change in the velocity of the vehicle" recited in claim 1 (Pet. 13).

Patent Owner does not dispute Petitioner's contentions regarding the specific production-related and vital sign parameters recited in claim 1, but argues that "the skilled artisan would not seek to design an event data recorder that monitors and captures each and every data element disclosed by Aoyanagi" due to memory requirements, and because Aoyanagi states that all of the data (parameters) described are not necessary but are just illustrative. PO Resp. 24–25. Patent Owner additionally argues that Petitioner's expert, Mr. McNamara is not qualified to opine on the selection of specific parameters from Aoyanagi, and that the specific parameters recited in the claim are only reached through hindsight. *Id.* at 2, 31–32. These arguments are not persuasive.

Aoyanagi's statement that "[t]he data described . . . are not always necessary but just illustrative" (Ex. 1003, 71:1:44–45) indicates to one with

ordinary skill that all of the parameters listed could be recorded. We see no reason why memory constraints would have prevented one with ordinary skill in the art from monitoring the entire list of parameters. Patent Owner contends that excessive storage by an event data recorder increases memory costs and increases the risk of system failure by overburdening microprocessing and memory capabilities of EDRs, but has not presented persuasive evidence that the state of the art at the time of the invention was such that one with ordinary skill in the art would not have been able to record all of the listed parameters. *See* PO Resp. 26–28.

Even if some memory limitation did exist in Aoyanagi that would not allow all listed parameters to be monitored, we are persuaded by Petitioner's contention that "one of ordinary skill in the art would have readily recognized that larger amounts of memory could be used to store more data and the resulting cost tradeoff of employing a larger memory." Pet. Reply 9. We are not persuaded by Patent Owner's allegations of hindsight or the attacks on Petitioner's expert, Mr. McNamara, relative to the specific combination of parameters cited by Petitioner, because Aoyanagi specifically lists the combination of the parameters relied on by Petitioner, as discussed above. To the extent that Patent Owner alleges that Petitioner is required to provide an express rationale for selecting the exact subset of the parameters listed in independent claim 1, Patent Owner's allegation is unpersuasive, as independent claim 1 uses the open-ended transitional terminology "comprising." Accordingly, Aoyanagi's disclosure of a myriad of parameters, including those recited in independent claim 1, is sufficient to teach the claim limitation.

As for the "detecting a collision of the vehicle in response to a sudden change in the velocity of the vehicle" recited in claim 1, Petitioner cites Aoyanagi's discussion of "the acceleration sensor detect[ing] the impact force and its direction" (Ex. 1003, 72:1:1–2) and "when a shock occurs and then the vehicle speed becomes zero in a short time, it is judged that a crash accident has occurred" (*id.* at 72:2:21–23). Pet. 13. Patent Owner responds that "Aoyanagi does not store data as a result of merely detecting a collision, in the manner specified by the claims" and, instead, "discloses a two-step process for judging if a crash has occurred: 'when a shock occurs and then the vehicle speed becomes zero in a short time, it is judged that a crash accident has occurred.'" PO Resp. 23 (quoting Ex. 1003, 72:2:21–22)).[4] Patent Owner does not explain persuasively, however, why the "shock" and "the vehicle speed becom[ing] zero in a short time" do not indicate a "sudden change in velocity" as recited in the claim.

Aoyanagi describes "shocks" as being due to "an accident or the like" (Ex. 1003, 70:2:7–8) and, as noted above, provides the example that "when a shock occurs and then the vehicle speed becomes zero in a short time, it is judged that a crash accident has occurred" (*id.* at 72:2:21–23). Based on this description in Aoyanagi, we are persuaded that one skilled in the art would have appreciated that the "shock" and "the vehicle speed becom[ing] zero in a short time" described in Aoyanagi indicate a "sudden change in velocity." We are also persuaded, therefore, that Aoyanagi's discussion of "judging that a crash accident has occurred" based on these parameters teaches "detecting a collision in response to a sudden change in velocity," as recited

[4] Patent Owner appears to mistakenly cite Exhibit 1001, rather than Exhibit 1003.

by claim 1. To the extent Patent Owner's argument additionally requires detecting a collision each and every time there is a sudden change in velocity of the vehicle (*see* Pet. 23–24), this argument finds no support in the claim. The claim simply requires "detecting a collision of the vehicle in response to a sudden change in the velocity of the vehicle," not that a collision must be detected each and every time there is a sudden change in velocity. The specification of the '917 patent also fails to specify such a requirement.

Patent Owner's argument that because Aoyanagi does not define specifically the term "shock" or the magnitude of the time or velocity for the "vehicle speed becom[ing] zero in a short time," it does not teach the claimed "sudden change in velocity" (PO Resp. 23–24) is also unpersuasive. Patent Owner fails to identify, and we do not see, anything in the claim requiring a specific magnitude for the claimed "sudden change in velocity." The specification of the '917 patent also fails to require a specific magnitude for the "sudden change in velocity." For example, the discussion at column 25 of the '917 patent simply explains that "[i]n the illustrated embodiment, the system recognizes a crash when the value of the data sampled from the accelerometer 73L exceeds a pre-programmed critical value 116." Ex. 1001, 25:7–10.

With respect to the "capturing the production-related parameters of the vehicle before detection of the collision and the vital sign parameters after detection of the collision" recited in claim 1, Petitioner cites Aoyanagi's discussion of recording vehicle data both before and after an accident occurs. Pet. 15 (citing Ex. 1003, 71:1:6–9, 71:1:50–2:65, 72:1:6–36). Patent Owner argues that "if the Board determines that Aoyanagi 'detect[s] a collision' as a result of sensing ***both*** 'shock' and the vehicle

coming to rest in a 'short time,' then Aoyanagi provides no reason to 'captur[e] . . . vital sign parameters after detection of the collision.'" PO Resp. 24 fn. 5. This argument is unpersuasive because, as Petitioner notes (Pet. 15), Aoyanagi explains expressly that "when an accident occurs, the recording apparatus can keep recording for a specific period of time after receiving shocks and the like" (Ex. 1003, 72:1:34–36).

Turning to the "automatically sending a wireless distress signal from the vehicle in response to detecting the collision" limitation from claim 1, Petitioner cites Oishi as teaching this limitation. Pet. 10, 14. We have reviewed, and are persuaded by, Petitioner's contentions regarding the teachings of Oishi. Petitioner reasons that one skilled in the art would have combined the teachings of Oishi with Aoyanagi because both references are directed to an apparatus installed on a vehicle to address collisions (*id.* at 8), and "Oishi teaches that automatically sending a distress signal upon detection of an accident facilitates the handling of the accident and the treatment of injured persons" (*id.* at 11 (citing Ex. 1005 (633:2:25–27)). Petitioner further reasons that one skilled in the art would have combined the teachings of the references based on Oishi's discussion of "significant improvements in emergency response times" and "reduc[ing] traffic jams" based on the automatically generated distress signal being included with an accident detection apparatus. *Id.* (citing Ex. 1005, 633:2:20–25, 27–29).

Patent Owner does not dispute Petitioner's contentions regarding the teachings of Oishi, which we find persuasive as noted above, but challenges Petitioner's rationale for combining Oishi's teachings with Aoyanagi. PO Resp. 32–39. Patent Owner argues that: (1) the references would not have been combined because the references detect accidents in different ways

(*id.*); (2) the references have different functions (*id.* at 35–36); (3) Oishi is not designed to preserve data (*id.* at 36); and (4) Petitioner's reason to combine the references is based solely on Oishi's distress signal functionality, without any reference to the event data monitoring or storage features of either Aoyanagi or the claims (*id.* at 36–39).

Oishi describes "an apparatus which can automatically notify an automobile accident after obtaining the impact force of the accident." Ex. 1005, 634:1:3–5. As Petitioner contends (Pet. 8, 11), and Patent Owner acknowledges (PO Resp. 35), both Aoyanagi and Oishi are directed to accident detection, with Oishi providing the additional benefit of automatic accident notification. We are persuaded that one skilled in the art would have combined the automatic distress signal from the accident detection system of Oishi with Aoyanagi's accident detection system based on the benefits cited by Petitioner, discussed above, regardless of whether the systems of Aoyanagi and Oishi detect accidents in different ways.

2. Claim 2

Claim 2 depends from claim 1 and further recites that "the production-related parameters include an RPM of the engine." Petitioner contends that Aoyanagi's discussion of engine speed calculated from engine ignition timing pulse signals corresponds to the claimed "RPM of the engine." Pet. 15. Patent Owner responds by arguing that "even if Aoyanagi did necessarily convert the ignition timing pulse rate to engine RPM . . . , there is no teaching or suggestion in any reference of record to also ***capture*** such engine RPM data in addition to the ignition timing pulse data which Aoyanagi allegedly captures." PO Resp. 21. Patent Owner further argues that "ignition timing pulse rate is not necessarily proportional to engine

RPM," citing examples including faulty ignition signals. *Id.* at 22. These arguments are unpersuasive.

Aoyanagi describes engine speed being included in the recorded data, and describes the engine speed as calculated from engine ignition timing pulse signals from an engine speed sensor. Ex. 1003, 71:2:12–14. Patent Owner does not identify a metric, other than engine revolutions per minute (RPM), which indicates engine speed. For example, when asked at oral hearing what alternate metrics indicate engine speed, Patent Owner responded "I'm not sure what other metrics may be available" and that "[i]t could be referring to storing engine ignition pulse signals itself." Tr. 51:15–17. We are not persuaded that the engine speed discussed in Aoyanagi is simply ignition pulse signals, as Aoyanagi clearly explains that "[t]he engine speed is calculated from engine ignition timing pulse signals." Ex. 1003, 71:2:13–14. Nor are we apprised of any alternate metric for engine speed, other than engine RPM, contemplated by Aoyanagi. Thus, we are persuaded that Aoyanagi teaches the additional limitations recited in claim 2.

3. Claims 3, 5, 7, and 8

Claims 3, 5, 7, and 8 depend from claim 1. Claim 3 further recites that "the production-related parameters include actions of a steering wheel." Claim 5 further recites that "the vital sign parameters include an acceleration of the vehicle." Claim 7 further recites that "the production-related parameters include a status of a seat belt." Claim 8 further recites that "the information indicative of the change in velocity is a sequence of speed measurements taken at known time intervals." Petitioner identifies portions of Aoyanagi teaching each of the limitations of these claims. Pet. 16–17 (citing Ex. 1003, 71:2:3–11, 71:2:45–50, 71:2:62–64, 72:1:9–12, 72:2:19–

23). Patent Owner does not dispute Petitioner's contentions regarding these claims. *See, e.g.,* Tr. 41:1–11. We have reviewed the cited portions of Aoyanagi and are persuaded by Petitioner's contentions.

4. Claim 6

Claim 6 depends from claim 1 and further recites that "the production-related parameters include an on/off status of a braking system of the vehicle." As noted above with respect to claim 1, Patent Owner does not dispute Petitioner's contention that Aoyanagi's determination of brake pedal position (Ex. 1003, 71:2:28–35) teaches monitoring a degree of braking as required by claim 1. Petitioner also contends that Aoyanagi's brake pedal position corresponds to the claimed "on/off status of a braking system" recited in claim 6. Pet. 16; Pet. Reply 4–5. Patent Owner offers no explanation as to why brake pedal position does not teach the claimed "on/off status." PO Resp. 14–21; Tr. 56:8–9. Instead, Patent Owner focuses on whether a brake pressure measurement provides brake on/off status (PO Resp. 15–16), whether Aoyanagi also teaches *capturing* brake on/off status (*id.* at 16–17), and the presumption of different scope for claims 1 and 6 (*id.* at 17).

Initially, we note that we are persuaded that determining the position of a brake pedal also determines whether the brake is on or off. We are also persuaded, therefore, that Aoyanagi teaches capturing brake on/off status by capturing the brake pedal position. Ex. 1003, 71:2:28–35. With respect to Patent Owner's argument regarding the presumption of different claim scope for claim 1 ("degree of braking") and claim 6 ("brake on/off status"), we note that this is only a presumption. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005) ("the presence of a dependent claim that adds a

particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim."). The claims, however, must be read in view of the specification. *Id.* "[A]ny presumption created by the doctrine of claim differentiation will be overcome by a contrary construction dictated by the written description or prosecution history." *Retractable Technologies, Inc. v. Becton, Dickinson and Co.*, 653 F.3d 1296, 1305 (Fed. Cir. 2011) (citations and internal quotation marks omitted).

Claim 6 does not require a separate sensor for monitoring brake on/off status, and the specification of the '917 patent does not discuss using *both* a sensor for degree of braking and a sensor for brake on/off status in the same system. *See* Ex. 1001, 10:43–62. Rather, the '917 patent explains that a "simple on/off status sensor" *or* a "sensor [that] senses the degree of braking" can be used, and discusses the example of "the brake sensor 67I . . . which senses the degree of braking" to determine various conditions (e.g., vehicle speed, inclination, etc.) when the brakes are applied (i.e., based on brake on/off status). *Id.* Thus, we are not persuaded that the claims require more than the degree of braking to provide an indication of brake on/off status. We are persuaded, therefore, that the brake pedal position discussed in Aoyanagi teaches the "brake on/off status" recited in claim 6.

5. Claim 18

Similar to claim 1, discussed above, claim 18 is directed to a method including detecting a vehicle collision, transmitting a distress signal after the collision, and monitoring and capturing certain vehicle parameters before and after the collision. The only difference between claim 1 and claim 18 is that claim 18 recites "monitoring . . . an on/off status of a braking system of the vehicle," while claim 1 recites "monitoring . . . a degree of braking of the

vehicle." We additionally note that claim 6, which depends from claim 1 and is discussed above, recites the same "on/off status of a braking system" recited in claim 18. Petitioner's contentions regarding claim 18 are the same as those discussed above regarding claims 1 and 6 (Pet. 17–24; Pet. Reply 1–5, 7–15), and Patent Owner's response to those contentions is the same as the response to Petitioner's contentions regarding claims 1 and 6 (PO Resp. 14–20, 22–44). We are persuaded by Petitioner's contentions for the reasons discussed above relative to claims 1 and 6.

6. Claim 19

Claim 19 depends from claim 18 and further recites that "the production-related parameters include an RPM of the engine," similar to claim 2, discussed above. Petitioner's contentions regarding claim 19 are the same as those discussed above regarding claim 2 (Pet. 24; Pet. Reply 5–7), and Patent Owner's response to those contentions is the same as the response to Petitioner's contentions regarding claim 2 (PO Resp. 21–22). We are persuaded by Petitioner's contentions for the reasons discussed above relative to claim 2.

7. Claims 20, 22, 24, and 25

Claims 20, 22, 24, and 25 depend from claim 18, and recite limitations similar to those in claims 3, 5, 7, and 8, respectively. Petitioner identifies the same portions of Aoyanagi teaching each of the limitations of these claims as noted above regarding claims 3, 5, 7, and 8. Pet. 25–26 (citing Ex. 1003, 71:2:3–11, 71:2:45–50, 71:2:62–64, 72:1:9–12, 72:2:19–23). Patent Owner also does not dispute Petitioner's contentions regarding these claims. *See, e.g.,* Tr. 41:1–11. As noted above regarding claims 3, 5, 7, and 8, we

have reviewed the cited portions of Aoyanagi and are persuaded by Petitioner's contentions.

8. Claim 23

Claim 23 depends from claim 18, and the limitations recited in claims 18 and 23 are the same as those recited in claims 1 and 6 (claims 1 and 23 recite "degree of braking" and claims 6 and 18 recite "on/off status of a braking system"). Petitioner's contentions regarding these limitations are same for claims 18 and 23 as those discussed above for claims 1 and 6 (Pet. 17–25; Pet. Reply 1–5, 7–15), and Patent Owner's response is also the same as discussed above (PO Resp. 14–20, 22–44). We are persuaded by Petitioner's contentions for the reasons discussed above relative to claims 1 and 6.

9. Commercial Success

Patent Owner presents certain evidence of commercial success to be considered along with Petitioner's evidence of obviousness. PO Resp. 39–44. Patent Owner alleges that "the commercial success of the claimed inventions is demonstrated by Toyota's own infringement of several claims of the '917 Patent." *Id.* at 40. We are not persuaded by Patent Owner's arguments.

Patent Owner simply cites to the sales price of Toyota's subscription service as commercial success. *Id.* at 42 (citing Ex. 2050). That does not establish "commercial success" as objective evidence of nonobviousness. Patent Owner does not provide information regarding sales volume or market share information as compared to providers of competing products. Even the number of units sold, without market share information, is only

weak evidence, if any, of commercial success. *See In re Applied Materials, Inc*., 692 F.3d 1289, 1299. (Fed. Cir. 2012).

Furthermore, Patent Owner has not even attempted to show a nexus between any sales and the merits of the claimed invention. Although Patent Owner references several claim limitations, there is no explanation as to how these limitations are related to the alleged commercial success of the claimed invention other than simply alleging that the limitations are present in Toyota's 12EDR device. *See* PO Resp. 40–42. For example, Patent Owner simply alleges that "vehicles equipped with Toyota's 12EDR system in combination with Safety Connect systems are *covered by* at least claims 1–3, 5–7, 18–20 and 22–24 of the '917 Patent." *Id.* at 42 (emphasis added). Patent Owner's general allegation of "a strong nexus between Toyota's sales of EDR/ACN-equipped vehicles and the claims of the '917 Patent" because "[a]bsent infringement of at least claims 18 and 24 of the '917 Patent, Toyota would be unable to equip its vehicles with both an event data recorder compliant with the EDR Regulations and the automatic collision notification functionality of its Safety Connect system" (*id.* at 43) is also unpersuasive.

Initially, we note that Petitioner disputes Patent Owner's claim that Toyota infringes claims 18 and 24 of the '917 patent. Pet. Reply 13. We further note that, in this proceeding, Patent Owner has not established the alleged infringement. Nevertheless, "[e]vidence of commercial success, or other secondary considerations, is only significant if there is a nexus between the claimed invention and the commercial success." *Ormco Corp. v. Align Tech., Inc.*, 463 F.3d 1299, 1311–12 (Fed. Cir. 2006). To show how commercial success supports nonobviousness, Patent Owner must prove that

the sales were a direct result of the unique characteristics of the invention, and not a result of economic and commercial factors unrelated to the quality of the patented subject matter. *Applied Materials*, 692 F.3d at 1299–1300. Patent Owner, however, fails to provide sufficient proof of such a relationship between any alleged sales and the unique characteristics of the invention.

As Petitioner notes, any alleged commercial success could be due to the automatic collision notification feature (Toyota's "Safety Connect" system), rather than the other limitations recited in the claims. Pet. 13. Patent Owner does not dispute that automatic collision notification systems were known in the art. *See* PO Resp. 11–13, 39–44. If the feature that created the commercial success was known in the prior art, the success is not pertinent to the issue of obviousness. *Galderma Laboratories, L.P. v. Tolmar, Inc.*, 737 F.3d 731, 740 (Fed. Cir. 2013).

10. Conclusion

We have considered the entirety of the evidence as a whole, including the evidence of obviousness and the evidence submitted by Patent Owner to show commercial success. For the reasons set forth above, Petitioner has established, based on a preponderance of the evidence, that claims 1–3, 5–8, 18–20, and 22–25 would have been obvious over the combination of Aoyanagi and Oishi.

C. Obviousness over Aoyanagi and Vollmer

We have reviewed the Petition, the Patent Owner Response, and Petitioner's Reply, as well as the relevant evidence discussed in those papers. We are persuaded, by a preponderance of the evidence, that claims

1–3, 5–8, 18–20, and 22–25 would have been obvious over Aoyanagi and Vollmer under 35 U.S.C. § 103.

The claims challenged as obvious over the combination of Aoyanagi and Vollmer are the same as those challenged as obvious over the combination of Aoyanagi and Oishi, discussed above. Petitioner's contentions regarding the teachings of Aoyanagi are the same as those discussed above with respect to the challenge based on the combination of Aoyanagi and Oishi. Pet. 28–33, 35–40; Pet. Reply 1–10. Patent Owner's response is the same as discussed above regarding these contentions. PO Resp. 14–32. We are persuaded by Petitioner's contentions regarding Aoyanagi for the reasons discussed above.

Again, Petitioner acknowledges that Aoyanagi does not teach "automatically sending a wireless distress signal in response to detecting the collision," as required in claim 1, but now cites Vollmer for this teaching. Pet. 27–28, 30, 33–35, 37; Pet. Reply 10–12. Petitioner's reasoning for the combination of Aoyanagi and Vollmer is similar to that discussed above relative to the combination of Aoyanagi and Oishi. Specifically, Petitioner reasons that one skilled in the art would have combined the teachings of Aoyanagi and Vollmer because "both Aoyanagi and Vollmer are directed to the same field of endeavor" (Pet. 27) and "Vollmer teaches that automatically sending a distress signal and relevant sensor data upon detection of an accident decreases the time before emergency services are notified relative to a manually-made emergency call" (*id.* at 27–28 (citing Ex. 1007, 1:3–9)). Petitioner further reasons that "the automatic distress signal avoids problems that a person may have in making a call manually" and "avoids a situation where emergency services receive incomplete

information from a person manually making a call to report an accident." *Id.* at 28 (citing Ex. 1007, Abstract, 1:3–2:3, 3:5–13).

Patent Owner does not dispute Petitioner's contentions regarding the teachings of Vollmer, but challenges Petitioner's rationale for combining Vollmer's teachings with Aoyanagi. PO Resp. 32–39. Patent Owner's response to Petitioner's rationale for combining Aoyanagi and Vollmer is similar to that provided in response to Petitioner's rationale for combining Aoyanagi and Oishi, discussed above.

Vollmer describes "[a]n emergency call system for vehicles [that] sends an automatic emergency call in the event of danger, accident or breakdown." Ex. 1007, Abstract. Although Patent Owner contends that "Vollmer fails to describe the specific means by which its device would detect an 'accident,'" Patent Owner acknowledges that both Aoyanagi and Vollmer are directed to accident detection, and simply contends that "one cannot conclude that both Aoyanagi and Vollmer detect accidents in similar ways." PO Resp. 35. We are persuaded that one skilled in the art would have combined the automatic distress signal from the system of Vollmer, which includes accident detection, with Aoyanagi's accident detection system based on the benefits cited by Petitioner, discussed above, regardless of whether the systems of Aoyanagi and Vollmer detect accidents in different ways.

We have considered Patent Owner's evidence of commercial success and Petitioner's evidence of obviousness, and conclude that the evidence of obviousness outweighs the evidence of nonobviousness. As explained above, Patent Owner simply cites to the sales price of Toyota's subscription service as commercial success (*id.* at 42 (citing Ex. 2050)), which is not

sufficient to establish "commercial success," and has not even attempted to show a nexus between any sales and the merits of the claimed invention. Accordingly, after considering the entirety of the evidence as a whole, including the evidence of obviousness and the evidence submitted by Patent Owner to show commercial success, we determine that Petitioner has established, based on a preponderance of the evidence, that claims 1–3, 5–8, 18–20, and 22–25 would have been obvious over Aoyanagi and Vollmer.

III. SUMMARY

Petitioner has demonstrated, by a preponderance of the evidence, that claims 1–3, 5–8, 18–20, and 22–25 are unpatentable as obvious over the combination of Aoyanagi and Oishi, and that claims 1–3, 5–8, 18–20, and 22–25 are unpatentable as obvious over the combination of Aoyanagi and Vollmer. This is a final written decision of the Board under 35 U.S.C. § 318(a).

IV. ORDER

For the reasons given, it is

ORDERED that claims 1–3, 5–8, 18–20, and 22–25 of the '917 patent are *unpatentable*.

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

PETITIONER:

Robert C. Mattson
John S. Kern
OBLON, SPIVAK, McCLELLAND,
MAIER &, NEUSTADT, L.L.P.
cpdocketmattson@oblon.com
cpdocketkern@oblon.com

PATENT OWNER:

John B. Conklin
LEYDIG, VOIT, & MAYER, LTD.
jconklin@leydig.com