

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of: Andrew William Wright
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Title: METHOD AND SYSTEM FOR LOGGING VEHICLE BEHAV-
IOR

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PETITION FOR *INTER PARTES* REVIEW OF
UNITED STATES PATENT NO. 9,633,487

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EXHIBITS

USAA-1001	U.S. Patent No. 9,633,487 to Wright (“the ‘487 Patent”)
USAA-1002	Excerpts from the Prosecution History of the ‘487 Patent (“the Prosecution History”)
USAA-1003	Declaration and Curriculum Vitae of Dr. William Michalson
USAA-1004	Original Complaint for Patent Infringement in <i>Auto Telematics Ltd. v. United Services Automobile Association</i> , 6:22-cv-00474 (W.D. Tex. May 11, 2022)
USAA-1005	US Pat. Appl. Pub. No. 2011/0307188 (“Peng”)
USAA-1006	U.S. Pat. Appl. Pub. No. 2010/0131691 (“Chatterjee”)
USAA-1007	U.S. Patent No. 6,073,004 to Balachandran (“Balachandran”)
USAA-1008	Thompson et. al, “Using Smartphones to Detect Car Accidents and Provide Situational Awareness to Emergency Responders,” Mobilware 2010, LNICST 48, pp. 29–42, 2010 (“Thompson2010”)
USAA-1009	International Publication No. WO 2007/114716 (“Willis”)
USAA-1010	U.S. Patent Application Publication No. 2008/0255888 (“Berkobin”)
USAA-1011	Cheng et. al, “An Android System Design and Implementation for Telematics Services,” 2010 IEEE International Conference on Intelligent Computing and Intelligent Systems. Vol. 2. IEEE, 2010 (“Cheng2010”)
USAA-1012	U.S. Patent No. 7,821,421 to Tamir et. al (“Tamir”)
USAA-1013	U.S. Pat. No. 8,682,399 to Rabu (“Rabu”)

USAA-1014	U.S. Pat. App. Pub. No. 2010/0208070 to Haynes (“Haynes”)
USAA-1015	U.S. Pat. App. Pub. No. 2002/0105423 to Rast (“Rast”)
USAA-1016	U.S. Pat. App. Pub. No. 2009/0192705 to Golding (“Golding”)
USAA-1017	U.S. Pat. No. 7,765,058 to Doering (“Doering”)
USAA-1018	European Pat. Pub. No. EP1614585A1 to Christian (“Christian”)
USAA-1019	U.S. Pat. No. 5,906,393 to Mazur (“Mazur”)
USAA-1020	Richard C. Hunt, “Emerging Communication Technologies in Emergency Medical Services,” Prehospital Emergency Care, 2002; 6:1, 131-136 (“Hunt2002”)
USAA-1021	Kanianthra, Joseph, Arthur Carter, and Gerard Preziotti. “Enhancing post-crash vehicle safety through an automatic collision notification system,” No. 2001-06-0085. SAE Technical Paper, 2001 (“Kanianthra2001”)
USAA-1022	Megalingam R.K. et al., “Wireless vehicular accident detection and reporting system.” 2010 International Conference on Mechanical and Electrical Technology (ICMET 2010) (“Megalingam2010”)
USAA-1023	Farris, P. et al., “General Motors OnStar.” Darden Case No. UVA-M-0659 (2002) (“Farris2002”)
USAA-1024	European Pat. App. Pub. No. EP 1,914,691 to Katayama et al. (“Katayama”)
USAA-1025	U.S. Pat. App. Pub. No. 2012/0074770 to Lee (“Lee”)
USAA-1026	International Publication No. WO 2010/042545 to Curry et. al (“Curry”)

USAA-1027	Linda Null and Julia Lobur, Excerpts from The Essentials of Computer Organization and Architecture (2d ed. 2003) (“Null”)
USAA-1028	U.S. Pat. Publication No. 2009/0005975 to Forstall et al. (“Forstall”)
USAA-1029	Langle, Lonnie, and Ram Dantu, “Are you a safe driver?” 2009 International Conference on Computational Science and Engineering. Vol. 2. IEEE, 2009 (“Langle”)
USAA-1030	U.S. Pat. Publication No. 2006/0053038 to Warren et al. (“Warren”)
USAA-1031	U.S. Pat. Publication No. 2007/0027585 to Wulff (“Wulff”)
USAA-1032	Mohan, Prashanth et al., “Nericell: rich monitoring of road and traffic conditions using mobile smartphones,” Proceedings of the 6th ACM conference on Embedded network sensor systems, 2008 (“Mohan”)
USAA-1033	U.S. Pat. No. 5,274,560 to LaRue (“LaRue”)
USAA-1034	Declaration of Nathaniel E. Frank-White re Exhibits USAA-1077 (Ex. A) and USAA-1078 (Ex. B)
USAA-1035	RESERVED
USAA-1036	Declaration of Nathaniel E. Frank-White re Exhibits USAA-1079 (Ex. A), USAA-1080 (Ex. B), and USAA-1081 (Ex. C)
USAA-1037-1040	RESERVED
USAA-1041	Zhao, Yilin, “Telematics: safe and fun driving,” IEEE Intelligent systems 17.1 (2002): 10-14 (“Zhao2002A”)
USAA-1042	Del Rosso, Christian, “The method, the tools and rationales for assessing dynamic memory efficiency in embedded real-time systems in practice,” 2006 International Conference on

Software Engineering Advances (ICSEA'06), IEEE, 2006
("Christian")

- USAA-1043 Wakiyara, Masataka, "Recent developments in lithium ion batteries," Materials Science and Engineering: R: Reports 33.4 (2001): 109-134 ("Wakiyara")
- USAA-1044 Toledo, Tomer, et. al, "In-vehicle data recorders for monitoring and feedback on drivers' behavior," Transportation Research Part C: Emerging Technologies 16.3 (2008): 320-331 ("Toledo")
- USAA-1045 International Publication No. WO 2010/062899 ("Callopy")
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- USAA-1047 Conover, Gerald D. "ITS Technology in Automotive—Who's on First?" SAE International (2006): 1-11 ("Conover2006")
- USAA-1048 Skog, Isaac, et. al, "A versatile PC-based platform for inertial navigation," Proceedings of the 7th Nordic Signal Processing Symposium-NORSIG 2006. IEEE, 2006 ("Skog2006")
- USAA-1049 Work, D. B. & Bayen, A.M., "Impacts of the mobile internet on transportation cyberphysical systems: traffic monitoring using smartphones," National Workshop for Research on High-Confidence Transportation Cyber-Physical Systems: Automotive, Aviation, & Rail, 2008 ("Work2008")
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- USAA-1051 LeBlanc, David J., "Road departure crash warning system field operational test: methodology and results," Vol. 1: Technical Report, University of Michigan, Ann Arbor, Transportation

Research Institute, 2006 (“LeBlanc2006”).

- USAA-1052 Reddy, Sasank et al., “Determining transportation mode on mobile phones,” 2008 12th IEEE international symposium on wearable computers. IEEE, 2008 (“Reddy2008”).
- USAA-1053 Zhao, Yilin, “Standardization of mobile phone positioning for 3G systems,” IEEE Communications magazine 40.7 (2002): 108-116 (“Zhao2002B”)
- USAA-1054 Strömmer, Esko et al., “Ultra-low power sensors with near field communication for mobile applications,” Wireless Sensor and Actor Networks: IFIP WG 6.8 First International Conference on Wireless Sensor and Actor Networks, WSAAN’07, Albacete, Spain, September 24–26, 2007. Springer US, 2007 (“Strömmer2007”)
- USAA-1055 Schott, Christian, et al., “CMOS single-chip electronic compass with microcontroller,” IEEE Journal of Solid-State Circuits 42.12 (2007): 2923-2933 (“Schott2007”)
- USAA-1056 Liutkauskas, V. et al., “Location based services,” Elektronika ir elektrotechnika 52.3 (2004) (“Liutkauskas2004”)
- USAA-1057 Ealey, Lance & Luis Troyano-Bermúdez, “Are automobiles the next commodity?” The McKinsey Quarterly 4 (1996): 62 (“Ealey1996”)
- USAA-1058 Zhao, Yilin, “Efficient and reliable data transmission for cellular-and-GPS-based mayday systems,” Proceedings of Conference on Intelligent Transportation Systems, IEEE, 1998 (“Zhao1998B”)
- USAA-1059 Young, Richard A., “Association between embedded cellular phone calls and vehicle crashes involving airbag deployment,” Proceedings of the First International Driving Symposium on Human Factors in Driver Assessment, Training and Vehicle Design , Vol. 1. No. 2001, University of Iowa, 2001 (“Young2001”)

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USAA-1061	Schäfer, Ralf-Peter, et al., “A traffic information system by means of real-time floating-car data” (2002) (“Schäfer2002”)
USAA-1062	Kerner, B. S., et al., “Traffic state detection with floating car data in road networks,” Proceedings of the 8th International IEEE Conference on Intelligent Transportation Systems, 2005, (“Kerner2005”)
USAA-1063	Leduc, Guillaume, “Road traffic data: Collection methods and applications,” Working Papers on Energy, Transport and Climate Change 1.55 (2008): 1-55 (“Leduc2008”)
USAA-1064	Troncoso, Carmela, et al, “Pripayd: privacy friendly pay-as-you-drive insurance,” IEEE Transactions on Dependable and Secure Computing, Vol. 8, No. 5, October 2011 (“Troncoso2011”)
USAA-1065	Memorandum, Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation (USPTO June 21, 2022) (“Director’s Guidance”)
USAA-1066	Order Granting Motion for Entry of Scheduling Order in <i>Auto Telematics Ltd. v. United Services Automobile Association</i> , 6:22-cv-00474 (W.D. Tex. September 16, 2022)
USAA-1067	U.S. District Court Statistics (June 30, 2022), <i>available at</i> https://www.uscourts.gov/sites/default/files/fcms_na_distprofile_0630.2022_0.pdf
USAA-1068	USAA’s Opening Claim Construction Brief in <i>Auto Telematics Ltd. v. United Services Automobile Association</i> , 6:22-cv-00474 (W.D. Tex. December 19, 2022)
USAA-1069	Plaintiff’s Claim Construction Response Brief in <i>Auto</i>

Telematics Ltd. v. United Services Automobile Association,
6:22-cv-00474 (W.D. Tex. January 12, 2023)

- USAA-1070 USAA’s Reply Claim Construction Brief in *Auto Telematics Ltd. v. United Services Automobile Association*, 6:22-cv-00474 (W.D. Tex. January 25, 2023)
- USAA-1071 Plaintiff’s Claim Construction Sur-Reply Brief in *Auto Telematics Ltd. v. United Services Automobile Association*, 6:22-cv-00474 (W.D. Tex. February 6, 2023)
- USAA-1072 Joint Claim Construction Statement in *Auto Telematics Ltd. v. United Services Automobile Association*, 6:22-cv-00474 (W.D. Tex. February 7, 2023)
- USAA-1073 Preliminary Claim Construction Order in *Auto Telematics Ltd. v. United Services Automobile Association*, 6:22-cv-00474 (W.D. Tex. February 16, 2023)
- USAA-1074 Stipulation by USAA
- USAA-1075 Plaintiff Auto Telematics Ltd.’s Preliminary Infringement Contentions and Identification of Document Production Accompanying Disclosure in *Auto Telematics Ltd. v. United Services Automobile Association*, 6:22-cv-00474 (W.D. Tex. August 26, 2022)
- USAA-1076 United Services Automobile Association’s Preliminary Invalidity Contentions in *Auto Telematics Ltd. v. United Services Automobile Association*, 6:22-cv-00474 (W.D. Tex. October 21, 2022)
- USAA-1077 Internet Archive of Waze User Manual
- USAA-1078 Internet Archive of iPhone User Guide
- USAA-1079 Internet Archive of iPhone 3G Technical Specification

USAA-1080	Internet Archive of iPhone User Guide for iPhone and iPhone 3G
USAA-1081	Internet Archive of Instruction Sheet for iPhone 3G
USAA-1082-1499 RESERVED	
USAA-1500	International Publication No. WO 2012/036809 (“Bourque”)
USAA-1501	U.S. Pat. Appl. Pub. No. 2012/0071151 (“Abramson et al.”)
USAA-1502	U.S. Pat. Appl. Pub. No. 2006/0145039 (“Shawver”)
USAA-1503	Priority Document GB 1021292.6 filed Dec. 15, 2010 (“P1”)
USAA-1504	Priority Document GB 1101259.8 filed Jan. 25, 2011 (“P2”)
USAA-1505	Priority Document GB 1109759.9 filed 10 Jun. 10, 2011 (“P3”)
USAA-1506	Priority Document GB 1118777.0 filed Oct. 31, 2011 (“P4”)
USAA-1507	Balasubramanian, et al. "Energy consumption in mobile phones: a measurement study and implications for network applications." Proceedings of the 9th ACM SIGCOMM Conference on Internet Measurement. 2009. (“Balasubramanian”)
USAA-1508	Carroll, et al. "An analysis of power consumption in a smartphone." USENIX annual technical conference. Vol. 14. 2010 (“Carroll”)
USAA-1509	Miyaji, et al. "Analysis of driver behavior based on traffic incidents for driver monitor systems." 2008 IEEE Intelligent Vehicles Symposium. IEEE (“Miyaji”)
USAA-1510	U.S. Patent No. 7,505,784 to Barbera (“Barbera”)

- USAA-1511 Mitrovic, “Reliable method for driving events recognition.” IEEE transactions on intelligent transportation systems 6.2 (2005): 198-205 (“Mitrovic”)
- USAA-1512 Boonmee, et al., “Portable reckless driving detection system.” 2009 6th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology. Vol. 1. IEEE, 2009 (“Boonmee”)
- USAA-1513 Singleton, et al., “Automobile event data recorder forensics,” Advances in Digital Forensics IV 4. Springer US, 2008 (“Singleton”)
- USAA-1514 Correia, et al, “Utilizing data from automotive event data recorders,” Proceedings of the Canadian Multidisciplinary Road Safety Conference XII, London Ontario, 2001 (“Correia”)
- USAA-1515 Flowers, et al, “Prediction of Accident Likelihood Using Poisson Regression,” Traffic Accident Research and Evaluation Program, Texas Transportation Institute, The Texas A&M University System, 1980 (“Flowers”)
- USAA-1516 U.S. Pat. Appl. Pub. No. 2014/0114696 (“Amigo”)

LISTING OF CHALLENGED CLAIMS

Claim	Identifier	Claim Language
1	[1.1]	A mobile telecommunications device configured to log driving information associated with a vehicle,
	[1.2]	the mobile telecommunications device comprising: 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 configured to: determine, based on 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;
	[1.8]	store a selection of the driving information to the memory;
	[1.9]	wherein the driving information is derived without data from vehicle sensors, and
	[1.10]	the mobile telecommunications device is controlled by a downloaded application to control the mobile device to detect occurrence of a predetermined event and in response take at least one predetermined action.
2	[2]	The mobile telecommunication device according to claim 1, wherein the predetermined action is storing driving information associated with that event to the memory.
3	[3.1]	The mobile telecommunications device according to

Claim	Identifier	Claim Language
		claim 1, wherein the predetermined action comprises providing feedback to a user to indicate that an event has been detected,
	[3.2]	the mobile telecommunications device being configured to receive a user interaction to confirm or deny whether the detected event has actually occurred following said feedback.
4	[4.1]	The mobile telecommunications device according to claim 3, wherein the feedback comprises notifying a user that a further action has been scheduled, and will be taken within a predetermined period,
	[4.2]	the mobile telecommunications device being further configured to receive a user interaction to confirm or deny whether the further scheduled action should be taken within a predetermined period.
5	[5.1]	A mobile telecommunications device according to claim 1, wherein the predetermined action comprises communicating to a remote system that an event has been detected,
	[5.2]	the mobile telecommunications device being further configured to receive from the remote system a request to transmit to the remote system selected portions of the driving information associated with the detected event.
6	[6.1]	The mobile telecommunications device according to claim 1, wherein the memory comprises: a long term memory for persistently storing driving information and a short term memory for transiently storing driving information,
	[6.2]	wherein the short term memory receives driving information at a higher update rate than the long term memory,
	[6.3]	the mobile telecommunications device being further configured to: write driving information to the short term memory at a predetermined update rate during the driving period in a predetermined sequence; and,

Claim	Identifier	Claim Language
	[6.4]	overwrite the driving information previously written to the short term memory in accordance with the predetermined sequence.
7	[7.1]	The mobile telecommunications device according to claim 6, wherein the mobile communications device is controlled by the downloaded application to control the mobile device to detect an occurrence of a predetermined event and
	[7.2]	in response transfer data from the short term memory to the long term memory.
8	[8]	The mobile telecommunications device according to claim 1, further configured to: interface with an external device, the external device having access to external driving information associated with a condition of the vehicle; and, to receive at least a portion of the external driving information from the external device.
9	[9]	The mobile telecommunications device according to claim 1, wherein the mobile communications device is controlled by the downloaded application to control the mobile device to process the driving information to generate a driving score associated with a particular driver.
10	[10]	The mobile telecommunication device according to claim 1, wherein the predetermined action is storing driving information captured at a higher sampling rate than when an event is not detected.
11	[11]	The mobile telecommunication device according to claim 1, wherein the predetermined action is transmitting driving information via a wireless telecommunication module of the mobile telecommunication device to a remote system.
12	[12]	The mobile telecommunication device according to claim 11, wherein the mobile telecommunications device utilizes its own power supply.
13	[13]	The mobile telecommunication device according to

Claim	Identifier	Claim Language
		claim 11, wherein the mobile telecommunications device is a smartphone.

United Services Automobile Association (“Petitioner” or “USAA”) petitions for *Inter Partes* Review (“IPR”) of claims 1-13 (“the Challenged Claims”) of U.S. Patent No. 9,633,487 (“the ’487 Patent”).

I. REQUIREMENTS FOR IPR

A. Grounds for Standing

USAA certifies that the ’487 Patent is available for IPR. USAA is not barred or estopped from requesting this review challenging the Challenged Claims on the below-identified grounds. USAA was served with a complaint of infringement of the ’487 Patent less than one year ago. USAA-1004.

B. Challenge and Relief Requested

Petitioner requests an IPR of the Challenged Claims on the grounds noted below. A declaration from Dr. William Michalson¹ (USAA-1003) is provided herewith. USAA-1003, ¶¶1-237.

Ground	Claim(s)	35 U.S.C. § 102/103
1A	1, 2, 5, 8, 9, 11-13	§103: Peng, Chatterjee
1B	3, 6, 7	§103: Peng, Chatterjee, Katayama

¹ Dr. Michalson is a professor in Robotics Engineering at the Worcester Polytechnic Institute.

Ground	Claim(s)	35 U.S.C. § 102/103
1C	4	§103: Peng, Chatterjee, Katayama, Balachandran
1D	10	§103: Peng, Chatterjee, Tamir

The '487 Patent was filed on March 4, 2016, which is the “Critical Date” for the reasons provided herein (*see* §II.C, *infra*). As will be explained, although the '487 Patent claims priority to a non-provisional application and multiple foreign priority documents,² the Challenged Claims are not entitled to the earlier claimed priority dates. USAA-1003, ¶¶18, 66-100. Accordingly, the applied references are prior art:

Reference	Date	Basis
Peng	6/29/2011	§102(e)
Chatterjee	5/27/2010	§102(b)
Tamir	2/1/2007	§102(b)
Balachandran	6/6/2000	§102(b)
Katayama	4/23/2008	§102(b)

² In its Infringement Complaint, Auto Telematics stated “[t]he '487 Patent...claims priority to PCT Application No. to PCT Application No. PCT/GB2011/052492, filed on December 15, 2011.” USAA-1004, 9.

C. Claim Construction

Because the Challenged Claims are obvious under any reasonable interpretation, no express constructions are required in this proceeding. *See Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011); USAA-1068-1073.

As discussed in §III.A.2, *infra*, claim 1 recites:

the mobile telecommunications device configured to: determine, based on 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;

Based on plain meaning, the recited “driving period” references a time period “during which [a] mobile device is removably attached to the vehicle and the vehicle is in use.” Though the namesake of the “driving period” suggests driving, because the two claim parameters defining the “driving period” are “removably attached...*and* the vehicle is in use,” the claim leaves open the possibility of the driving period corresponding to the beginning, middle or end of, a vehicle’s operation. USAA-1003, ¶¶101-102. The ’487 patent specification is similarly unbounded, as it expressly recognizes several driving period options that are untethered from, e.g., the beginning of the user driving the vehicle: “the mobile device [] register[s] the start of a driving period in response to an initialisation input,” which may be “the user manually executing the application on the mobile device[,]” and “the mobile device being installed to the vehicle and/or the vehicle being

driven.” USAA-1001, 3:31-61; USAA-1003, ¶102.

Thus, this claim term establishes just two “driving period” attributes: (1) “the mobile device is removably attached to the vehicle” and (2) “the vehicle is in use.” USAA-1003, ¶103. These attributes may be satisfied by a start of a data collection period, whether at the onset of vehicle driving or whether instead before or thereafter. *Id.*

D. Level of Ordinary Skill in the Art

A person of ordinary skill in the art at the time of the ’487 Patent (a “POSITA”) 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. USAA-1003, ¶¶14-15. More education, e.g., a doctorate in an academic area emphasizing electrical engineering, computer engineering, computer science, or a related technical field, would compensate for fewer years of work experience. *Id.*

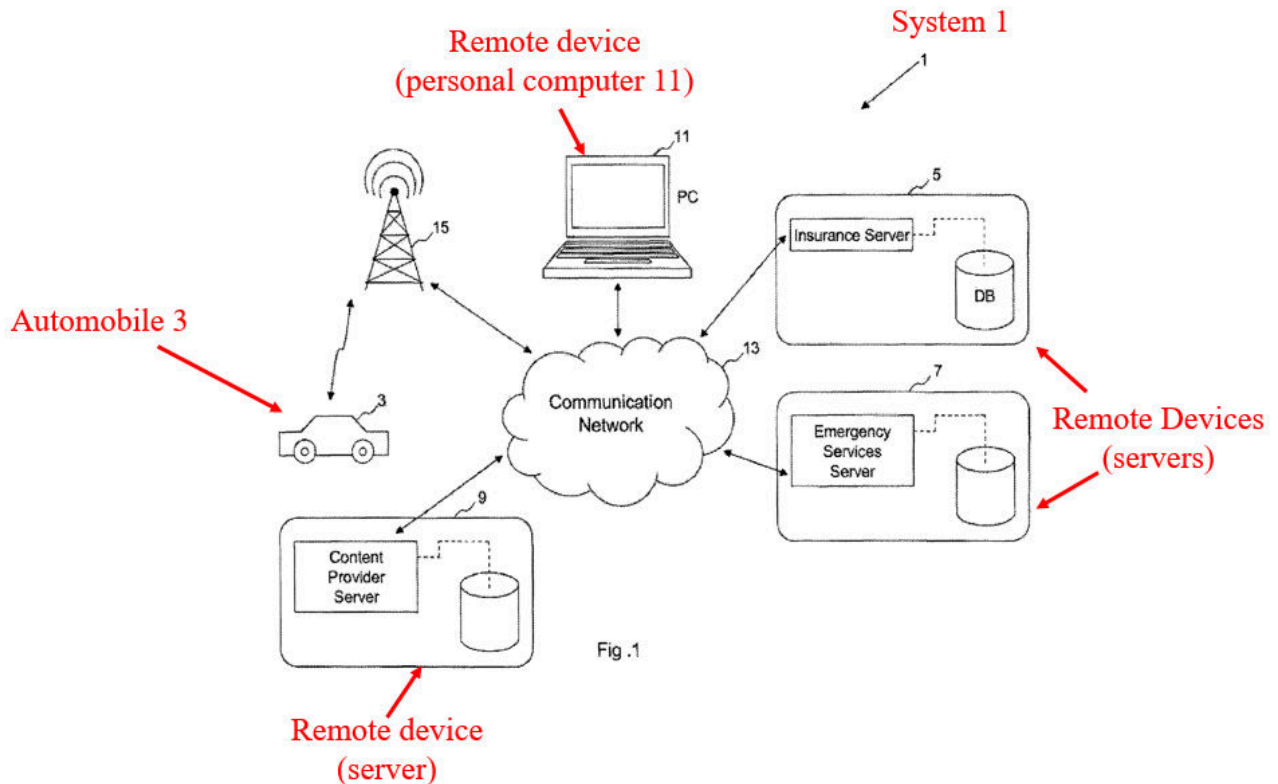
II. THE ‘487 PATENT

A. Brief Description

The ’487 Patent is directed to “methods and systems for logging driving information associated with a vehicle when driven[.]” USAA-1001, Abstract; USAA-1003, ¶¶55-59. A mobile device is “adapted for installation to a vehicle”

and logs driving information to “determine the cause of an accident,” “modify driver behaviour” or “determine insurance premiums.” *Id.*, 1:19-27.

Figure 1 shows a system 1 placed in automobile 3:



USAA-1001, Fig. 1 (annotated)

System 1 includes “a mobile telecommunications device” configured to “monitor and process sensor data” to “derive driving information associated with the moving automobile 3.” USAA-1001, 13:15-32, 13:33-53. The “driving information” can be used to “determine if a driving incident or event has occurred[.]”

Id.

B. Prosecution History

During prosecution, the Examiner rejected the claims over U.S. Pub. Nos. 2007/0135979 (“Plante”), 2005/0046584 (“Breed”), and 2008/0255722 (“McClellan”). *See* USAA-1002, 40-50. Features to which arguments were directed in distinguishing this art (and all other record prior art) during prosecution are addressed in a fresh way by combinations proposed in this petition that leverage Peng, Chatterjee, Balachandran, Katayama, and Tamir, none of which were cited in prosecution. USAA-1003, ¶¶60-65.

C. The ‘487 Patent’s Priority Claim

1. Peng is Prior Art to the ‘487 Patent

The ‘487 Patent claims priority to three foreign priority documents, P1-P3.³ However, none of these priority documents provide written description support for the claims of the ‘487 Patent. USAA-1003, ¶¶66-68. Furthermore, each of these priority documents fails to provide support for at least two elements of independent claim 1 of the ‘487 Patent. *Id.* First, P1-P3 fail to provide support for a mobile telecommunications device that “determine[s], **based on the inputs received by the user interface and sensor data** from the device’s sensor set, **a start of a driving**

³ The ‘487 patent claims the benefit of and priority to P1-P4 (USAA-1503-6). P4 was not considered in this analysis because its filing date occurs after Peng’s (USAA-1005) filing date.

period during which the mobile device is removably attached to the vehicle and the vehicle is in use”⁴ (element “[1.6]”). *Id.* Second, P1-P3 fail to provide support “to derive driving information... **wherein the driving information is derived without data from vehicle sensors**” (element “[1.9]”). *Id.* By requiring the driving information to be derived without data from vehicle sensors, the Patent Owner (“PO”) structured this clause as a negative limitation.

Negative limitations require explicit support in the specification – mere silence is insufficient under 35 U.S.C. §112. *Novartis v. Accord Healthcare*, Docket No. 2021-1070 (June 21, 2022). There is no support for this negative limitation in any of P1-P3 nor is there support for this limitation in the ’487 specification itself and its parent, U.S. Application No. 13/994,455. USAA-1003, ¶¶74-100. As such, Petitioner is entitled to rely upon Peng as prior art with its priority date of Jun. 29, 2011. USAA-1003, ¶¶74-90.

a) Overview of Case Law on Written Description Support and Negative Limitations

To satisfy the written description requirement, a patent’s specification must “reasonably convey[] to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.” *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (*en banc*); USAA-1003, ¶¶69-73. Such

⁴ Unless otherwise indicated, all emphasis has been added in the Petition.

possession must be “shown in the disclosure.” *Id.* It is not enough that a claimed invention is “an obvious variant of that which is disclosed in the specification.” *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997).

The *Novartis* decision is the most recent case to require explicit support for a negative limitation. *Novartis*, No. 21-1070. The Federal Circuit held there was no implicit or inherent support for a negative limitation in a specification that only described daily dosing regimens. *Id.* at 10. The court, however, noted that there may be adequate written description for a negative limitation when “the specification describes a reason to exclude the relevant [element].” *Id.* 5-7 (citing *Santarus, Inc. v. Par Pharm., Inc.*, 694 F.3d 1344, 1351 (Fed. Cir. 2012); *Inphi Corp. v. Netlist, Inc.*, 805 F.3d 1350, 1355 (Fed. Cir. 2015) (same)). A reason to exclude an element could be found in “statements in the specification expressly listing the disadvantages of using” that element. *Santarus*, 694 F.3d at 1351. Another reason could be that the specification “distinguishes among” the element and alternatives to it. *Inphi*, 805 [*1017] F.3d at 1357; *see also In re Johnson*, 558 F.2d 1008, 1017-19 (C.C.P.A. 1977).

The failure or omission of reference to a claimed object does not constitute disclosure of the negative limitation. *See Seabed Geosolutions (US) Inc. v. Magseis FF LLC*, 8 F.4th 1285, 1288 (Fed. Cir. 2021); MPEP § 2173.05(i) (9th ed. Rev. 10.2019, June 2020).

b) The Challenged Claims of the ‘487 Patent are Not Entitled to Claim Priority to the Priority Documents Antedating Peng.

Each of P1-P3 are silent as to whether the driving information is derived without data from vehicle sensors. USAA-1003, ¶¶74-90. Indeed, Dr. Michalson explains that a POSITA would not have understood from these disclosures that the invention requires determining, **based on 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. USAA-1003, ¶74. Nor would the POSITA have understood that these disclosures exclude the use of vehicle sensors when deriving driving information. *Id.* Accordingly, P1-P3 cannot be relied upon for an earlier priority date.⁵

i. P1

P1 is directed to the use of video loops in the “Witness” application. USAA-1503, 5; USAA-1003, ¶¶75-76. Nowhere does P1 disclose the limitations of [1.6]. *Id.* Instead, the Witness video application is launched *without user inputs* when the

⁵ Patent Owner alleges in their Infringement Contentions that claims 1-3, 6, 9, 11-13 are entitled to a priority date of January 25th, 2011, and that claim 10 is entitled to a priority claim of December 15th, 2011. USAA-1075, 8-9; USAA-1076, 38.

mobile device senses power from the vehicle, or, alternatively, *without sensor input* when the driver starts the application. *Id.* Neither scenario requires *both* the inputs received by the user interface and the sensor data as required by [1.6]. *Id.* Further, P1 lacks disclosure of element [1.9]. *Id.*

ii. P2

P2 similarly lacks disclosure of elements [1.6] and [1.9]. USAA-1504, *passim*; USAA-1003, ¶¶77-80.

First, there is no discussion that the mobile device's sensor data is used to determine the start of a driving period to satisfy [1.6]. USAA-1504, 5-8, 13; USAA-1003, ¶77-79.

Moreover, nowhere does the P2 provide support for the negative limitation of [1.9]. USAA-1504, 5-8; USAA-1003, ¶80. P2 describes the use of sensors located on a mobile device, but nowhere does it teach excluding the use of other sensor information. *Id.* Nor does P2 expressly list disadvantages of using other sensor information, which *Santarus* requires. *Id.* And, per *Novartis*, this limitation is not inherently met by any disclosure because silence is not sufficient absent some showing of inherency. *Id.*

iii. P3

P3 also lacks disclosure of both elements [1.6] and [1.9]. USAA-1505, *passim*; USAA-1003, ¶¶81-90. None of the sections in P3 provide support for either limitation. USAA-1505, 5, 10, 16.

With regard to element [1.6], P3 appears to disclose that the mobile device determines a start of a driving period without inputs received by the user interface. USAA-1505, 19-20; USAA-1003, ¶¶83-85. For example, P3 describes that the user should not be allowed to selectively activate the application because “it would not be beneficial from the perspective of the insurance company if the user could choose when to enable the application” and that “if a user could choose to disable the application when speeding then the effectiveness of the application would be reduced.” USAA-1505, 19. **“Accordingly, the application may include measures to guarantee that the application is enabled whenever a given insured vehicle is being driven.”** *Id.*, 19-20.

P3 also fails to describe how sensor data from the device’s sensor set is used to determine a start of a driving period during vehicle usage. USAA-1003, ¶¶81-85, 89. Although P3 describes tracking distances from the Witness application and the vehicle odometer, it lacks detail as to how the distance is calculated, let alone determination of the start of a driving period based on sensor data from the mobile device itself. USAA-1505, 20; USAA-1003, ¶¶84-85, 89. Furthermore, although

P3 provides added disclosure directed to the use of a smart-holster, it fails to describe features of [1.6] – that is, the determination of a driving period based on inputs received by the user interface and sensor data are from the sensor set *of the mobile device. Id.*

With regard to element [1.9], P3 describes the use of sensors located on a mobile device; but nowhere does P3 exclude the use of other sensor information or provide reasoning for why one would exclude such use. USAA-1505, 20; USAA-1003, ¶¶86-87, 89. To the contrary, P3’s detailed description makes clear that PO intended the mobile device to work with other sensors. For example, P3’s disclosure details show a distance comparison is made in association with the odometer, a vehicle sensor—and not “without data from vehicle sensors.” *Id.*

Furthermore, P3 describes that its mobile device includes a NFC interface to interface with a “smartholster.” USAA-1505, 20. And through this NFC smartholster, it would have been understood that the mobile device interfaces with the *engine management system of the vehicle* because the “smart-holster can...be **interfaced with the engine management system of the vehicle** so that the vehicle may be activated and **driven only when the mobile device is in place** within the smart-holster.” USAA-1003, ¶87. In this way, P3 not only excludes “statements in the specification expressly listing the disadvantages of using” per *Santarus*, but it expressly discloses the *advantages* of connecting the mobile device to a smart-holster

system in order to connect the mobile device to the engine management system for the purposes of limiting activation of the vehicle to those circumstances to when the mobile device is connected to the engine management system. USAA-1003, ¶¶88, 90.

Thus, P3 fails to provide support for elements [1.6] and [1.9] and cannot be relied on to establish a priority date, thus qualifying Peng as prior art. *Id.*

c) The '487 Specification and its U.S. Priority Document also fail to provide support for the negative limitation.

Not only is there no support for the negative limitation found in P1-P3, but one would find similar deficiencies in the '487 specification itself and its parent, U.S. Application No. 13/994,455 (“the ‘455 application”). USAA-1003, ¶¶91-100. Even these documents carry the same theme found in the priority documents—they simply provide no support for element [1.9]. Furthermore, their respective file histories show that the negative limitation was introduced during prosecution. USAA-1002, 28.

The embodiments in the Summary section of the '487 and '455 specifications make clear that PO intended the mobile telecommunications device to receive data from vehicle sensors in each embodiment related to mobile telecommunications device. USAA-1003, ¶¶92-97; USAA-1001, 1:61, 12:13-15, 9:57-10:14, 10:52-53, 22:62-23-15, 11:19-25, 11:29-31. The pervasive nature of the reference to external sensor sets makes clear that PO intended to integrate the

mobile telecommunications device with external sensors in each of the first four embodiments directed to mobile devices. *Id.* The fifth embodiment is silent as to the negative limitation and the sixth embodiment is directed to server systems.

USAA-1003, ¶97; 11:57-12:12.

III. THE CHALLENGED CLAIMS ARE UNPATENTABLE

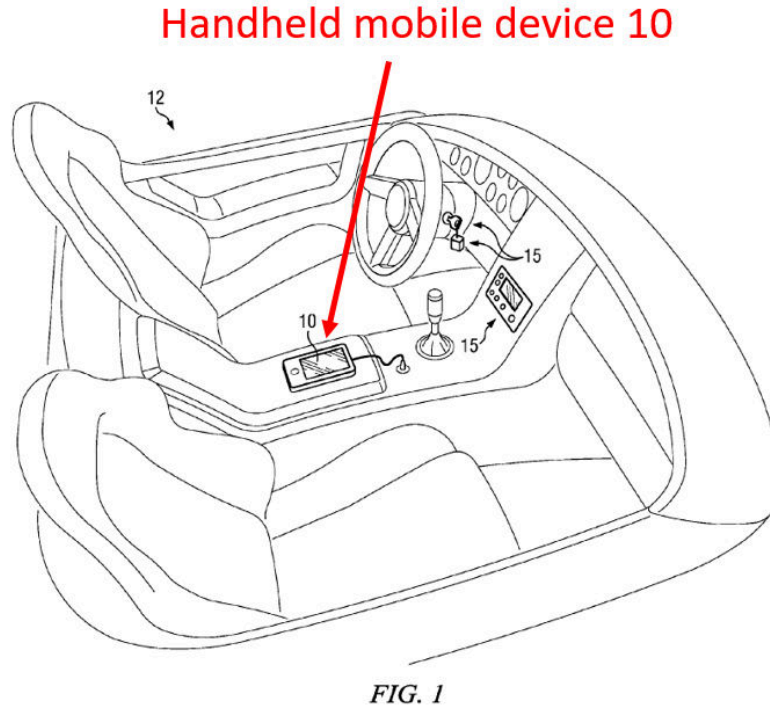
A. [GROUND 1A]

1. Analysis

a) Peng

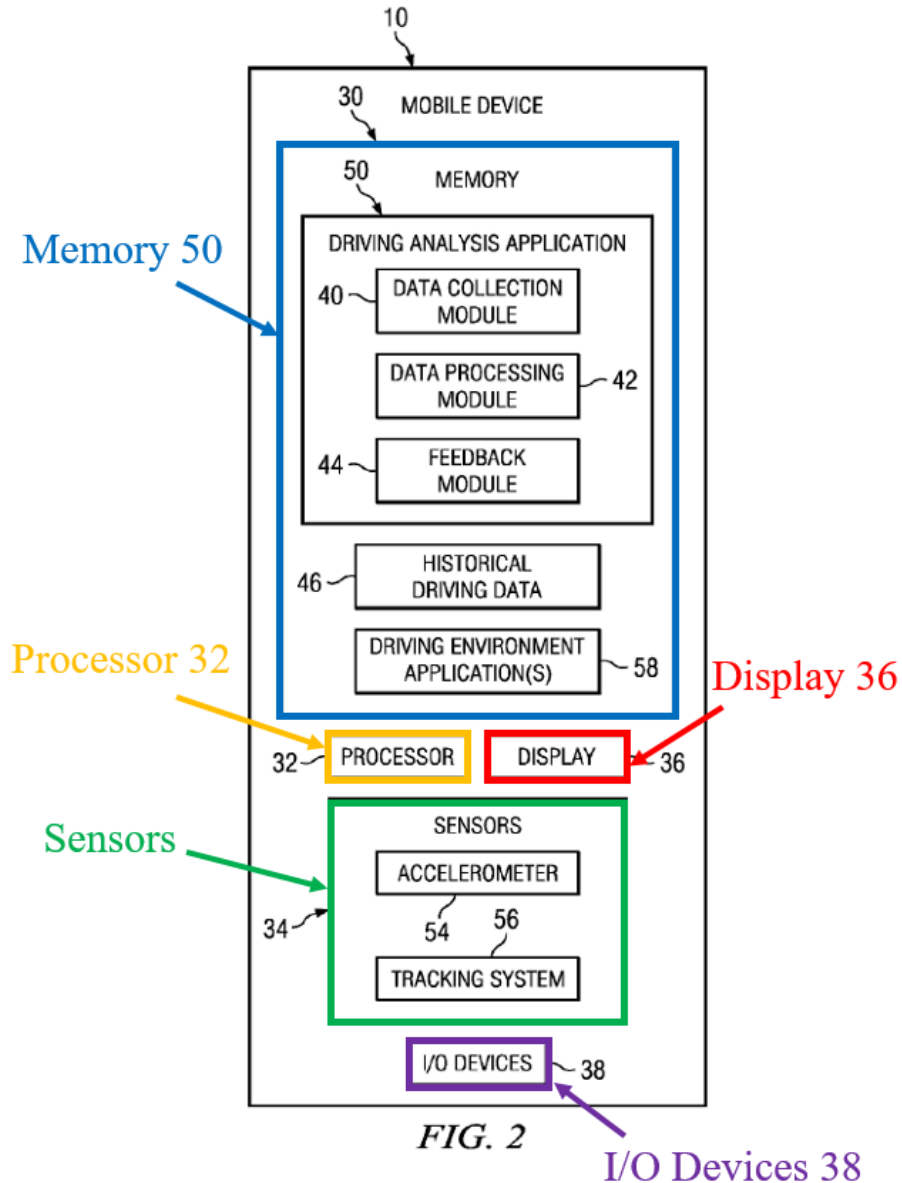
Peng is directed to “collecting and evaluating driving behavior data and/or driving environment data, and providing feedback based on such evaluated data” using “a handheld mobile device, e.g., a smart phone” for “a variety of applications.” USAA-1005, [0001], [0019], [0165]; *see also id.*, Abstract, [0002]-[0004]; USAA-1003, ¶¶104-109.

Fig. 1 (reproduced below) illustrates an exemplary “handheld mobile device 10” that can include “one or more sensors, a driving analysis application, and a display,” as well as “a touch screen” and/or “input/output devices 38,” enabling generation of sensor data and receipt of user input. *Id.*, [0010], [0019], [0020], [0030]-[0031], Fig. 1. The handheld mobile device 10 can provide a “collection of driving data,” “processing of collected driving data,” and/or “feedback based on the processed driving data,” such that driving information is derived without data from vehicle sensors. *Id.*



USAA-1005, Fig. 1 (annotated)

As shown in Fig. 2 (reproduced below), Peng’s “handheld mobile device 10 may include a memory 30, processor 32, one or more sensors 34, a display 36, and input/output devices 38.” *Id.*, [0025]. Sensors 34, such as a “built-in accelerometer 54” and “a location tracking system 56,” “collect...data regarding driving behavior and/or the driving environment” that is distinct of data from vehicle sensors. *Id.*, [0021], [0077], [0029], [0034].



USAA-1005, Fig. 2 (annotated)

Fig. 4 (reproduced below) shows various steps performed by handheld mobile device 10 to provide driver feedback. USAA-1005, [0075]-[0077], [0152]-[0153], [0057]-[0065], Figs. 4, 6A; USAA-1003, ¶¶119-122. Among them, device 10 first ensures proper orientation (step 102) when determining whether it is ready

to collect driving data (step 104). *Id.* In doing so, based on sensor data and leveraging user input, handheld mobile device 10 “interact[s] with the user to adjust the handheld mobile device 10 such that the orientation...is suitable for collecting driving data.” USAA-1005, [0076], Fig. 4.

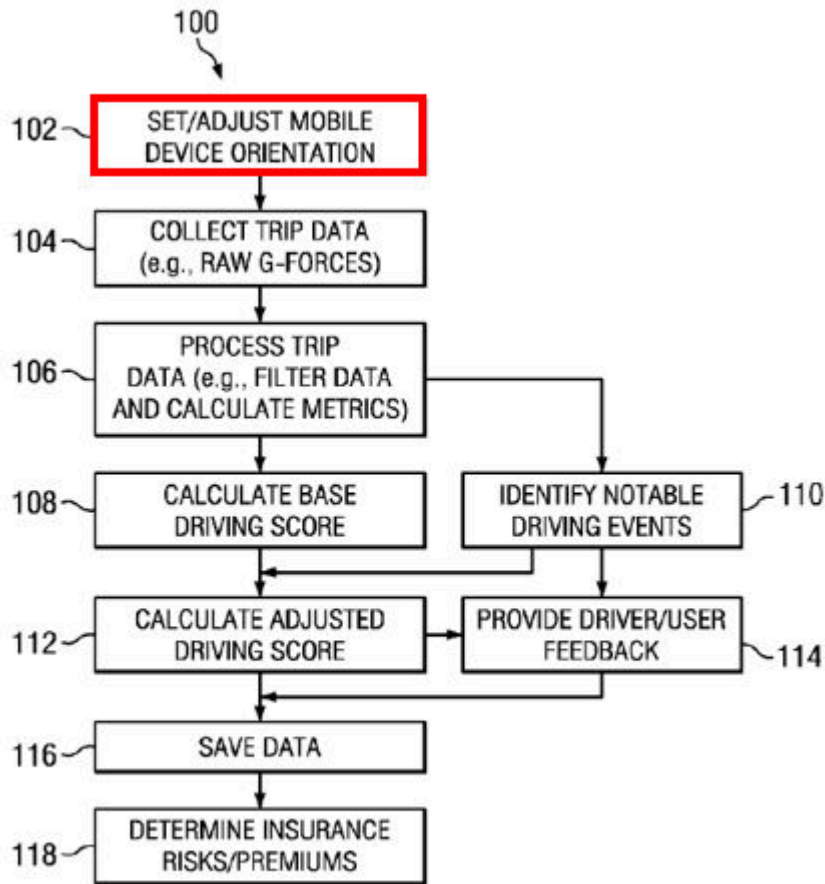


FIG. 4

USAA-1005, Fig. 4 (annotated)

As shown in Fig. 6A (reproduced below), a POSITA understand that user may be prompted for user input through its display by “a screen 200 of a device orientation feature” to position the device, e.g., “place [the] device...in a cup

holder,” to ensure proper orientation suitable for collecting driving data, which starts only upon a determination of proper orientation. USAA-1005, [0151], [0077], [0036], Fig. 6A; USAA-1003, ¶122.

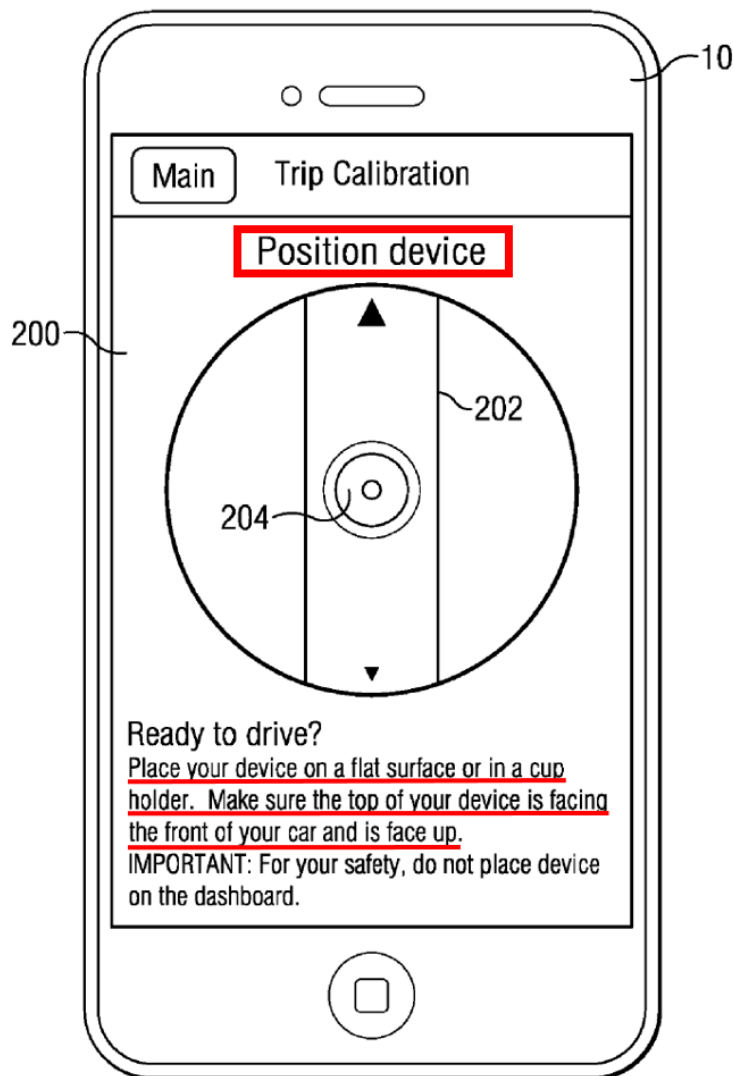


FIG. 6A

USAA-1005, Fig. 6A (annotated)

Handheld mobile device 10 can also determine if it is “being properly oriented” based on the mobile device’s sensor data using, e.g., “GPS and position

information.” USAA-1005, [0037], [0152], [0040], [0067], [0036], [0029], [0077], Fig. 6A. Using its sensors, the device 10 also “continue[s] to monitor the orientation of handheld mobile device 10 relative to the vehicle” during driving. USAA-1005, [0037]. In certain circumstances, interruptions can occur if device sensors detect that the device is not properly oriented during data collection. USAA-1005, [0036]-[0037], [0040]-[0041], [0152]-[0153]; USAA-1003, ¶¶123-124.

“[H]andheld mobile device 10 may include...a driving analysis application” to “process any or all of [the] driving data collected by handheld mobile device 10...to calculate one or more driving behavior metrics and/or scores based on such collected driving data,” while the vehicle is in use, e.g., “acceleration, braking, and cornering metrics,” and “identify ‘notable driving events.’” USAA-1005, [0020], [0022], [0026], [0068], [0044]-[0045], [0053], [0069], [0155]-[0156]. As Peng does not require input or consideration of vehicle sensor data, a POSITA would understand from Peng that these driving behavior metrics and/or scores can be derived without data from vehicle sensors. USAA-1003, ¶106. The driving analysis application may share such data with others, e.g., “an insurance company.” USAA-1005, [0024]; *see also id.*, [0004], [0074], [0143], [0165]. Furthermore, “raw or filtered data” and/or “data calculated” can be stored in short-term memory or long-term memory of handheld mobile device 10.” *Id.*, [0058].

b) Chatterjee

Similarly, Chatterjee describes a system that includes “a mobile computing device (also referred to as an MCD),” which can be a “cellular phone or mobile device,” such as a “smart phone.” USAA-1006, [0090]-[0091]. Chatterjee also describes integration of an accessory device, such as “a dock or docking station,” which can “signal...power or data to [MCD].” USAA-1006, [0064], [0057], Abstract, [0270], [0047], FIGS. 1A-1B, 16A-20, 25, 29-34C; USAA-1003, ¶¶110-112.

In FIG. 1A (reproduced below), Chatterjee’s MCD 110 is retained by a dock 120. USAA-1006, [0065]; *see also id.*, [0107], Figs. 25, 5-6, 1B, 5-6, 16A-20, 25, 29-34C. Chatterjee’s “docking station includes a housing with surface 125 to “receive and retain the [MCD 110].” USAA-1006, Abstract, [0057]. “[D]ock 120 utilizes physical support structures...to retain the MCD 110 in a docked or mated position,” “such as “magnetic clasps,” or “mechanical retention features.” USAA-1006, [0066], [0201]-[0214].

Chatterjee explains that its MCD and/or dock can detect when the MCD is docked. USAA-1006, [0151]-[0152], [0182]. The MCD can “include[] one or more detectors 560 (or sensors) for detecting orientation or position of the

MCD 500 when the device is docked,” and that orientation can “configuring operations or behavior of one or both devices.” USAA-1006 (Chatterjee), [0065], [0092], [0097]-[0098], [0104], [0106], [0174]-[0177], [0182]-[0200].

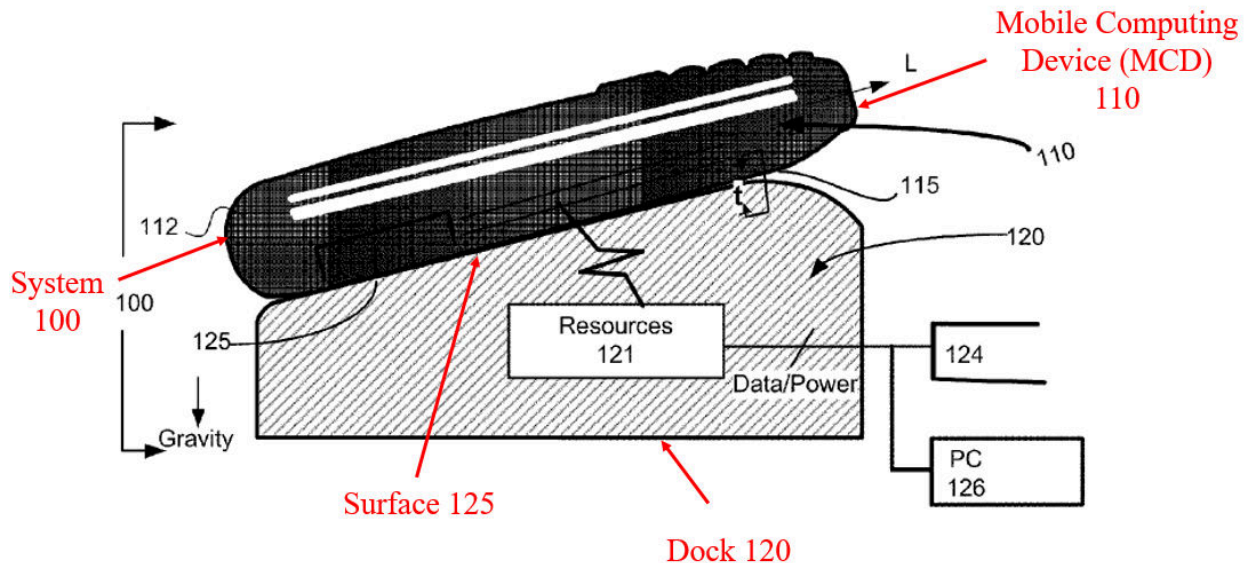


FIG. 1A

USAA-1006, Fig. 1A (annotated)

c) Peng-Chatterjee Combination

As explained above (§III.A.1(a), *supra*), Peng’s handheld device 10 determines a start of a driving period, e.g., determines whether during vehicle usage data collection can begin, by determining whether the device 10 has been properly oriented by using sensor data (e.g., GPS and position information). USAA-1005, [0075]-[0077], [0152]-[0153], [0057]-[0065], Figs. 4, 6A; USAA-1003, ¶¶120. Once properly oriented, e.g., through user input in response to a notification of improper orientation, Peng’s handheld mobile device 10 is configured to “collect[]

and evaluat[e] driving behavior data and/or driving environment data, and provid[e] feedback,” including calculating and providing “driving behavior metrics and/or scores.” USAA-1005, [0001], [0068], [0021]; *see also id.*, Abstract, [0019], [0022], [0044], [0165]; USAA-1003, ¶¶120-122. Data collection can be interrupted if device 10 becomes improperly oriented during its collection process. USAA-1005, [0036]-[0037], [0040]-[0041], [0152]-[0153]; USAA-1003, ¶¶123-124. Yet despite this, Peng describes positioning the device in a manner, e.g., on a flat surface of a console (*see* Fig. 1) or in a cup holder (Fig. 6A), that might leave the device vulnerable to orientation changes caused by vehicular movements. USAA-1003, ¶122.

For at least this reason, it would have been obvious for a POSITA to have improved Peng’s system as well as to have applied the user interface inputs and sensor detection in Peng’s handheld mobile device for the purposes of *preventing* improper orientation of the device from occurring in the first place. USAA-1003, ¶125; USAA-1005, [0036]-[0037], [0067], [0152]-[0153]. As Dr. Michalson explains, a POSITA would have readily understood that an unsecured phone, e.g., one placed on an open flat surface or in a cup holder, is unstably positioned and therefore vulnerable to changes in orientation, such as sliding, tipping and/or falling, caused by vehicle motion. USAA-1003, ¶123; USAA-1005, Figs. 1, 6A. Furthermore, a POSITA would have also sought practical solutions to ensure

reliable modes of charging of the mobile device in an improved system. USAA-1003, ¶126 (citing USAA-1507, 291; USAA-1508, 1).

Hence, a POSITA would have found obvious that Peng's system would be improved by leveraging a dock, as taught by Chatterjee, to securely hold the mobile device during vehicle use, and a POSITA would be particularly inclined toward a dock configured as suggested by Chatterjee to modify and/or detect orientation and the docked/undocked status given Peng's disclosure of orientation detection. USAA-1003, ¶¶127, 138-147; USAA-1006, Abstract, [0066], [0003]. In the combination, Chatterjee's dock would be positioned within a vehicle in a suitable location to releasably attach the mobile device to the vehicle when in use. *Id.* As Dr. Michalson explains, since mobile phones were often used in moving vehicles, it would have been obvious to a POSITA that the dock could advantageously secure the device in a secure manner and to a convenient location in a vehicle, e.g., vehicle's console or windshield. USAA-1003, ¶127; USAA-1502, [0003], [0016], [0006], [0014]; USAA-1006, [0270]; USAA-1516, [0036].

Chatterjee's dock is configured to "receive and retain the mobile computing device" in a mechanical, electrical, and/or logical manner. USAA-1006, Abstract, [0066], [0003], [0056]-[0057], [0060], [0064], [0069]-[0070]; USAA-1003, ¶128. For example, the dock can "utilize[] physical support structures," e.g., "magnetic clasps," "to retain the MCD 110 in a docked or mated position." USAA-1006,

[0066], [0074]. The dock can also “recharge or supply power to the mobile computing device.” USAA-1006, [0003]. Also consistent with Peng’s teachings, Chatterjee explains that the “orientation of the MCD on the dock may be changed by the user for purpose of configuring operations or behavior of one or both devices.” USAA-1005, [0036]-[0037], [0067], [0076], [0151]; USAA-1006, [0065].

A POSITA would have been motivated to obtain “proper alignment or orientation of handheld mobile device 10 within the automobile or vehicle” by removably attaching Peng’s mobile device 10 to the vehicle via Chatterjee’s dock, to prevent misalignment as well as potential disruptions to data collection caused by sliding, tipping, falling, etc. USAA-1003, ¶129; USAA-1005, [0036]-[0037], [0151], FIGS. 1, 6A; USAA-1006, [0002]-[0003], [0006], FIGS. 1-7. It would have been obvious to a POSITA to have removably attached the mobile device to the vehicle because a person typically takes the device along when leaving a vehicle. *Id.* Furthermore, a POSITA would have leveraged the teachings found in Chatterjee of using a system in which the mobile device and/or the dock can logically (e.g., inductively) couple and communicate with each other, e.g., detect whether the mobile device is docked and in its proper orientation/position. USAA-1003, ¶129; USAA-1006, [0092], [0097]-[0098], [0104], [0200]-[0232]. Thus, in the combination, the handheld mobile device would have prompted a user to dock and verified its proper positioning based on its docking status and orientation (e.g.,

landscape vs. portrait) prior to collecting driving data. *Id.*

In this way, it would have been obvious to a POSITA to have extended Peng's teachings to incorporate the dock in the determination of a start of a driving period based on whether the mobile device in the combination was properly docked during vehicle usage, as taught by Chatterjee. USAA-1003, ¶130. In the combination, it would have been obvious to configure the mobile device to "trigger[] the start and stop...of driving data collection" based on whether the device is removably attached (e.g., docked) to the dock when determining whether it is properly oriented. USAA-1003, ¶130; USAA-1005, [0036].

As illustrated below, a POSITA would have found it further obvious to have configured Peng-Chatterjee to prompt user inputs by requesting that the user place mobile device 10 in a proper orientation on the dock as a way to releasably, yet securely affix the mobile device to the vehicle and maintain the proper orientation when the vehicle is moving. USAA-1005, Fig. 6A; USAA-1006, [0066], [0205]; USAA-1003, ¶¶131. Accordingly, it would have been obvious that the device in the combination determines a start of a driving period based on user inputs (e.g., inputs to user interface prompts shown by the display) for properly orienting the device and/or adjusting the device's orientation when releasably attaching (e.g., docking) the mobile device to the dock. USAA-1003, ¶¶131-133; USAA-1006, [0174]-[0176], Fig. 15.

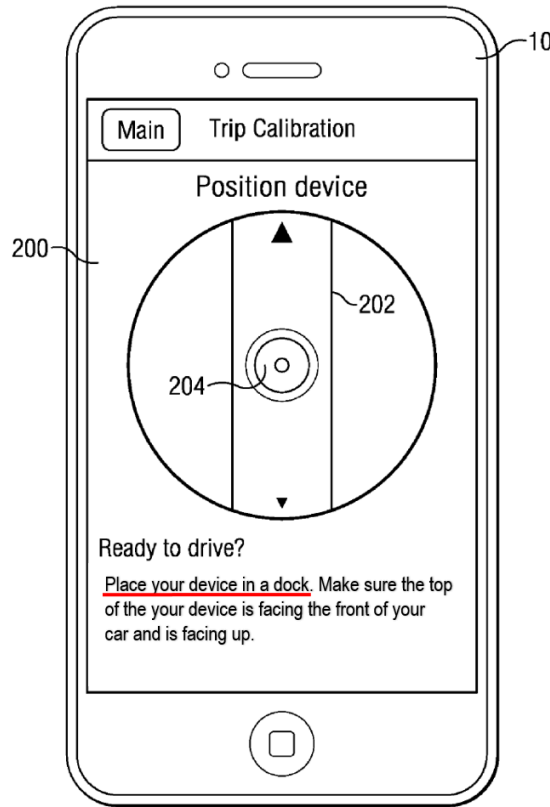


FIG. 6A

USAA-1005, Fig. 6A (modified to illustrate an exemplary implementation that integrates Chatterjee's dock)

Additionally, the combination would have been obviously configured to include one or more sensors (e.g., accelerometer and/or GPS sensors described by Peng) to determine the orientation angle and relative position status of the mobile device with respect to the vehicle; it would have been obvious to a POSITA to have leveraged those same sensors to determine a start of a driving period, e.g., when the device is releasably attached (e.g., docked) during vehicle usage in at

least two ways. USAA-1003, ¶¶134-137; USAA-1005, [0036]-[0038], [0151]-[0152], [0040], [0067], Fig. 6A; *see also* USAA-1006, [0092].

First, it would have obvious for a POSITA to have applied Peng's teachings of using the handheld mobile device's positional (e.g., GPS) sensor data in the combination to determine a start of a driving period when the mobile device is properly docked during vehicle usage. USAA-1003, ¶¶135-136 (citing USAA-1032, 323-330); *see also* USAA-1005, [0037]; USAA-1006, [0092], [0097]-[0098]. Indeed, Dr. Michalson explains, "[t]he use of GPS technology was well-known by the Critical Date and would have provided a readily viable means for determining that a mobile device has been properly docked within a vehicle based on its location." *Id.*

Second, it would have obvious for a POSITA to have similarly applied Peng's teaching for using the combination handheld mobile device's accelerometer to determine a start of a driving period based on proper docking of the mobile device during vehicle usage. USAA-1003, ¶137; USAA-1005, [0151]; Fig. 6A. Indeed, it was well-known in the prior art that a processor of a mobile device may leverage an accelerometer, as taught by Peng, to determine both an orientation angle and motion status of the device, and that such sensor data can in turn be leveraged to determine whether the device is docked with the desired orientation within a moving vehicle. USAA-1006, [0070]; *see also id.*, [0092], [0097]-[0098],

[0104], [0106]; [0182]-[0191], [0198]; USAA-1013, 3:1-10, 4:21-33, Figs. 1, 4; USAA-1003, ¶¶135-137. Thus, a POSITA would have found it obvious to determine the driving period when the combination device was releasably attached (e.g., properly docked) in the dock within the moving vehicle using sensor data measured by the device's one or more sensors. *Id.*

The POSITA would have found obvious that enhancing Peng's system to use a dock, as taught by Chatterjee, to determine a start of the driving period while the device is removably attached to a vehicle via a dock and while the vehicle is in use, would introduce multiple advantages, including:

1. increased reliability of securely holding the handheld mobile device and maintaining its initially set orientation while the vehicle is in motion, with correspondingly fewer interruptions requiring the re-starting of driving data collection (USAA-1003, ¶¶138-139; USAA-1006, [0066], [0070]; USAA-1005, [0036], [0040]);
2. enhanced utility is conveniently "recharg[ing] or supply[ing] power to the mobile computing device" while the device is also being securely attached to the vehicle (USAA-1003, ¶140; USAA-1006, [0003], [0060], [0067]; USAA-1005, Fig. 1; USAA-1502, [0003]);
3. enhanced utility in logically (e.g., inductively) linking the mobile device to the dock so that the "dock and/or MCD may exchange or

transmit data signals to the other device when the MCD is retained

against the dock” “through one or more connector-less connection”

(USAA-1003, ¶141; USAA-1006, [0060], [0064], [0003], [0047];

USAA-1005, [0021], [0014], Fig. 5; USAA-1502, [0003]);

4. increased safety because, in the combination, when the mobile device 10 is being used by the driver of a moving vehicle, the dock can allow the device to be rigidly mounted on the vehicle's dashboard or console, rather than in a location (e.g., flat surface, a cup holder) that may not secure the device to a particular orientation and location while the vehicle is in motion, and subsequently cause a distraction to the driver, e.g., trying to reach a moved or dropped device (USAA-1003, ¶142; USAA-1005, Figs. 1, 6A; USAA-1006, [0066]; USAA-1502, [0003]; USAA-1516, Abstract, [0004]-[0005]);
5. increased convenience for a user to operate single handedly the device while it is rigidly mounted to the vehicle's dashboard or console, as compared to when the device is not secured or conveniently positioned (USAA-1003, ¶143; USAA-1005, Figs. 1, 6A; USAA-1006, [0192]; USAA-1502, [0007], [0013], [0003]); and
6. reduced noise and error in the collected data and reduced complexity in processing the data by eliminating/minimizing movement

associated with the mobile device itself (USAA-1003, ¶144; USAA-1005, [0037]-[0038]; USAA-1516 (Amigo), [0036], [0038]).

These, among other advantages, would have motivated a POSITA to combine the teachings of Chatterjee and Peng in a manner enabling the combination device to determine a start of the driving period while the device is removably attached to a vehicle via a dock, as taught by Chatterjee, while the vehicle is in use. USAA-1003, ¶¶138-145; USAA-1005, [0036]-[0037], Fig. 1, 5, 6A; USAA-1006, [0003], [0005], [0007], [0011], [0013]-[0014].

Configuring the proposed combination to leverage the teachings of Chatterjee and other related art for using and applying a dock in a vehicle was well within the skill of a POSITA prior to the Critical Date. USAA-1003, ¶¶146. Indeed, the change would have amounted to nothing more than the use of a known technique of attaching a dock to a vehicle and combining prior art elements according to known methods to yield the predictable results described above. *KSR v. Teleflex*, 550 U.S. 398, 417 (2007); USAA-1003, ¶143.

Furthermore, the elements of the resulting combination would each generally perform functions they had been known to perform prior to the combination—the handheld mobile device 10 would perform the same functions, as described in Peng, to check for proper device orientation as well as collect and process driving

information, but would also leverage the techniques provided by Chatterjee's disclosure when the docked mobile device performs those functions. USAA-1003, ¶147. Accordingly, a POSITA would have naturally expected success when incorporating Chatterjee's teachings into the proposed combination. *Id.*

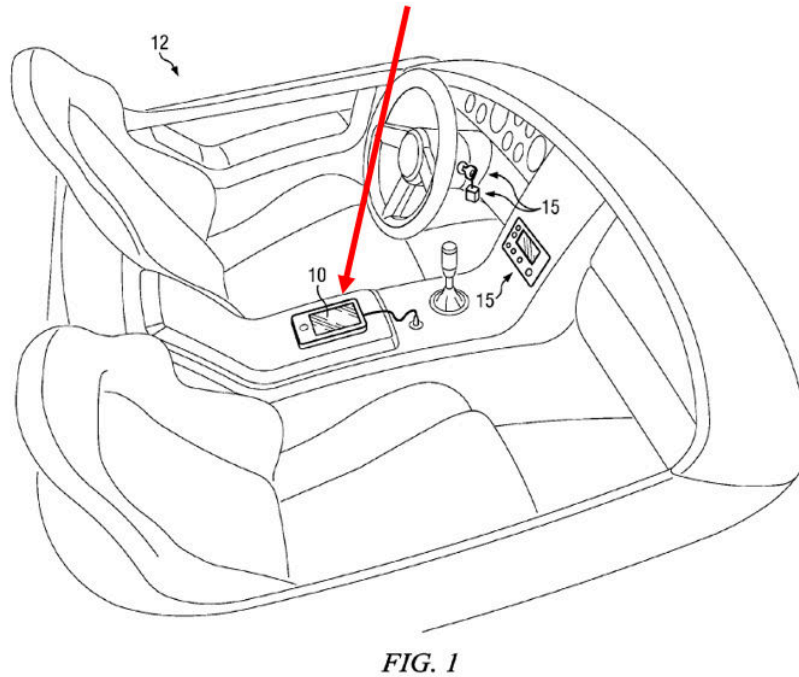
2. Claims 1, 2, 5, 8, 9, and 11-13

a) Claim 1

[1.1]

To the extent that the preamble is limiting, Peng-Chatterjee renders it obvious. USAA-1003, ¶¶148-151. As shown below, Peng's handheld mobile device 10 ("***mobile telecommunications device***") includes "any type of portable or **mobile electronics device**, such as...a mobile telephone," for example, "a smart phone, such as an iPhone." USAA-1003, ¶¶148-151; USAA-1005, [0019], [0033], Fig. 1.

Handheld mobile device 10
("Mobile telecommunications device")



USAA-1005, Fig. 1 (annotated)

From this and related description, a POSITA would have found it obvious that Peng-Chatterjee includes a mobile telecommunications device. USAA-1003, ¶149; USAA-1005, [0019], [0033], Figs. 1, 5, 6A-6G; *see also* USAA-1036, 1-4, 6-8, 10-12; USAA-1016, ¶¶[0046]-[0063], FIG. 3; USAA-1034, 37-63; USAA-1036, 6-7, 32-51, 103-108; USAA-1036, 36, 103-108, 54, 106.

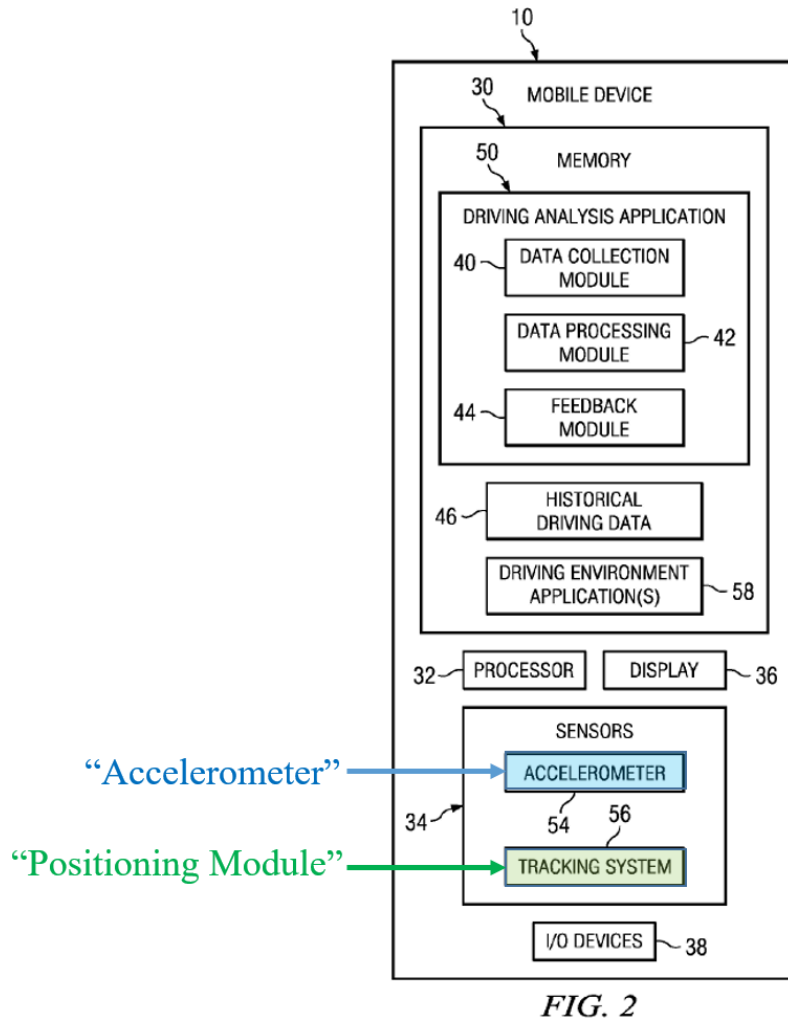
As discussed (§III.A.1, *supra*), a POSITA would have found obvious based on Peng's disclosure to have configured the Peng-Chatterjee combination to "provide one or more features of a driving analysis system, such as (a) **collection of driving data** (e.g., data regarding driving behavior and/or the respective driving

environment)” (“*configured to log driving information associated with a vehicle*”). USAA-1005, [0020]; USAA-1003, ¶150. Furthermore, Peng-Chatterjee would have been obviously configured to include a driving analysis application 50 that “manage[s] the collection of driving data,” such as “collect[ing] such data from any number and types of data sources, including (a) data sources provided by handheld mobile device 10..., (b) data sources in vehicle 12 but external to handheld mobile device 10...and/or (c) data sources external to vehicle 12[.]” USAA-1003, ¶150; USAA-1005, [0032]-[0033], [0042]; *see also id.*, [0020]-[0022], Figs. 2, 6A-6G.

Thus, Peng-Chatterjee renders obvious, among other things, logging driving information associated with a vehicle. USAA-1003, ¶151; USAA-1005, [0019]-[0022], [0032]-[0033]; *see also id.*, Figs. 1-2, 6A-6G.

[1.2]

As shown in Figure 2, a POSITA would have found obvious based on Peng’s disclosure to have configured Peng-Chatterjee combination to include one or more sensors 34 (“*a sensor set*”), including a built-in accelerometer 54 (“*accelerometer*”), a location tracking system 56, e.g., a GPS tracking system (“*positioning module*”), a camera (“*image sensor*”), and voice activated interfaces (“*audio sensor*”). USAA-1003, ¶¶152-153; USAA-1005, [0021], [0023], [0029], [0031], Fig. 2; USAA-1036, 6-7, 103, 104, 124.



Peng, Fig. 2 (annotated)

In the combination, data from the one or more sensors, e.g., “driving related data,” and “driving behavior metrics and/or scores,” would have been obviously configured for applications, such as “improv[ing] driving safety” and “determining...cost of an insurance policy.” USAA-1005, Abstract, [0022], [0002]-[0003], [0024]; USAA-1003, ¶153.

[1.3]

Based on Peng’s disclosure, Peng-Chatterjee renders obvious providing a

user interface. USAA-1003, ¶¶154-156. Peng discloses using “input/output devices 38 (e.g., **a touchscreen display 36, keys, buttons, and/or other user interfaces**).” USAA-1005, [0062], [0063], FIGS. 6A-6G.

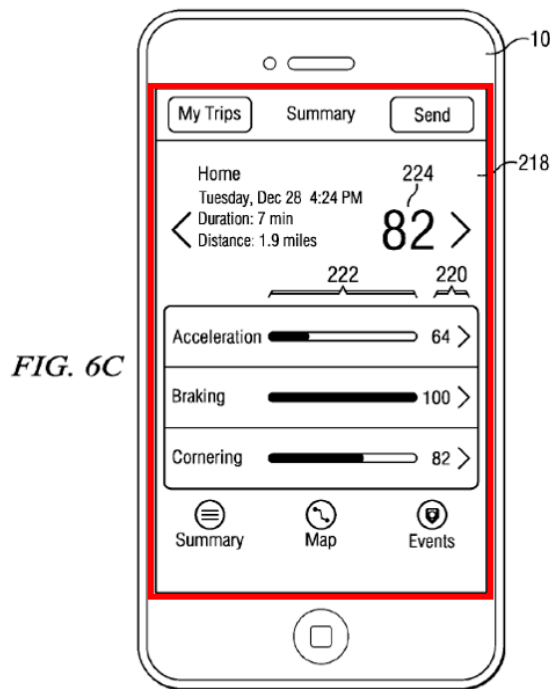


FIG. 6C

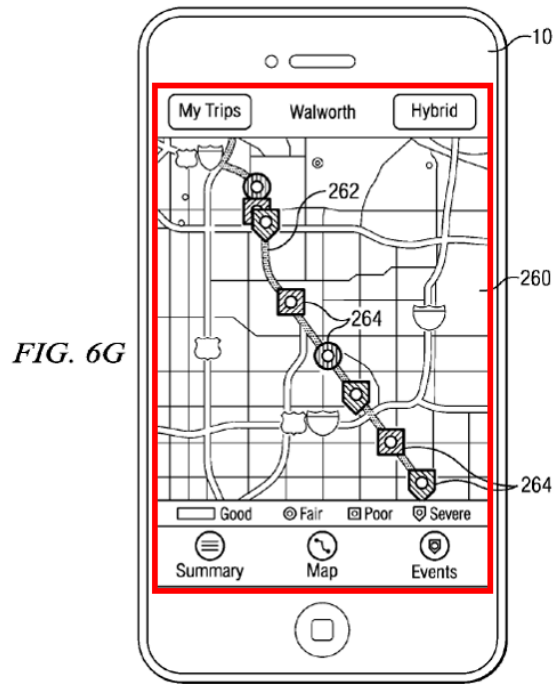


FIG. 6G

USAA-1005, Fig. 6C (annotated, left), Fig. 6G (annotated, right)

In the combination, it would have been obvious to include “[i]nput/output devices” having “**any suitable interfaces allowing a user to interact** with handheld mobile device 10, and in particular, with driving analysis application 50.” USAA-1005, [0031]; *see also id.*, [0163], [0019] (“iPhone”), [0023], [0059], FIG. 6G; USAA-1003, ¶155.

Peng-Chatterjee renders obvious a mobile device that uses a touchscreen and various graphical user interfaces to interact with a driving application. USAA-

1003, ¶¶156-157; USAA-1005, [0030]-[0031], [0034], [0039], [0062], [0066], [0070].

[1.4]

As shown below, Peng-Chatterjee renders obvious a handheld mobile device that includes one or more processors (“*processor*”) to execute driving analysis application 50” and “calculate...metrics related to the driver's driving behavior . USAA-1003, ¶¶158-159; USAA-1005, [0006], Figs. 2-3; *see also* Abstract, [0006]-[0008], [0025], [0028]-[0029], claims 1-14, 27.

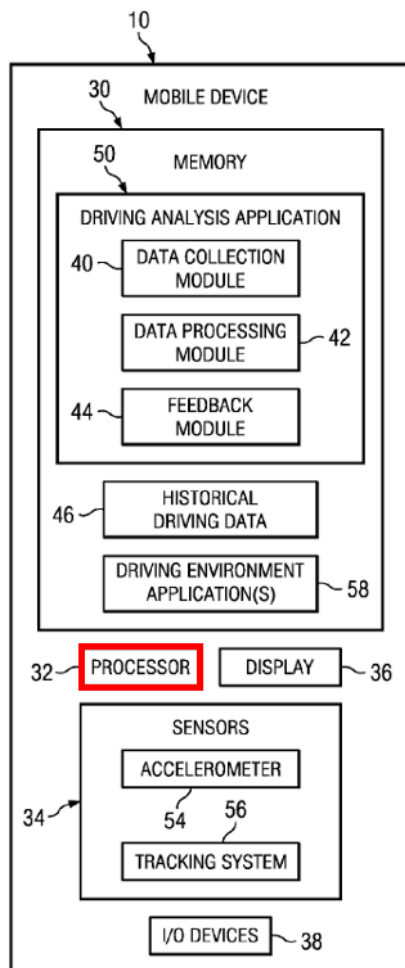


FIG. 2

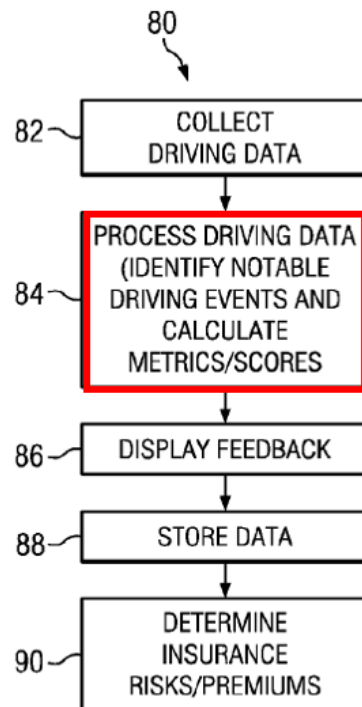


FIG. 3

USAA-1005, Fig. 2 (annotated, left), Fig. 3 (annotated, right)

[1.5]

Based on Peng's disclosure, Peng-Chatterjee renders obvious a handheld mobile device that includes a memory ("memory") for storing computer readable instructions and data associated with its driving analysis application 50. USAA-1003, ¶¶160-161; USAA-1005, [0025]-[0026], [0006]-[0008], [0028]-[0029], [0073], Abstract, [0032], [0058], [0071], [0142], Claims 1-13, Figs. 2-4.

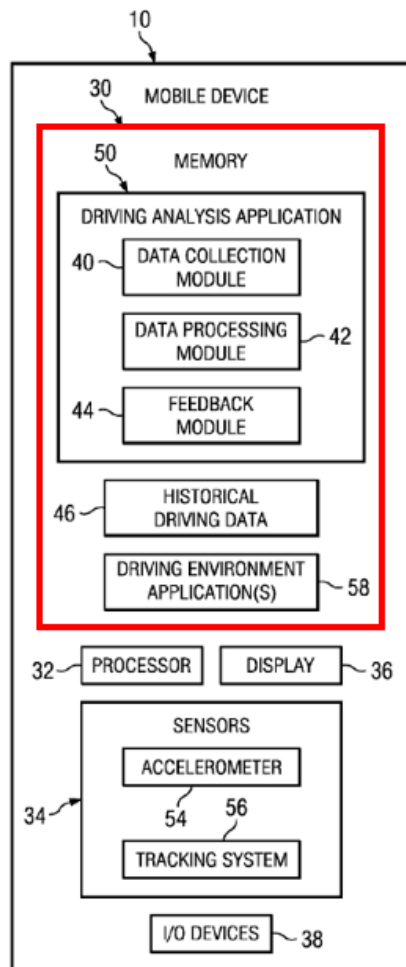


FIG. 2

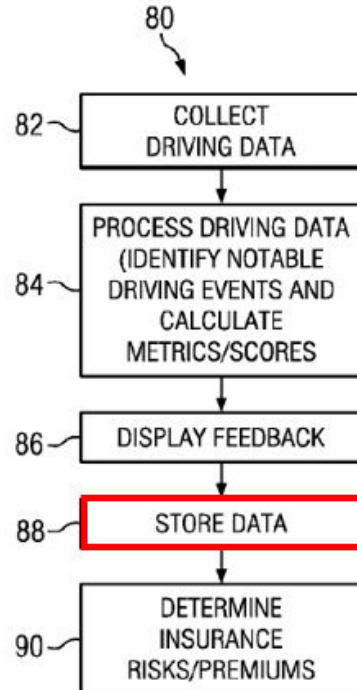


FIG. 3

USAA-1005, Fig. 2 (annotated, left), Fig. 3 (annotated, right)

[1.6]

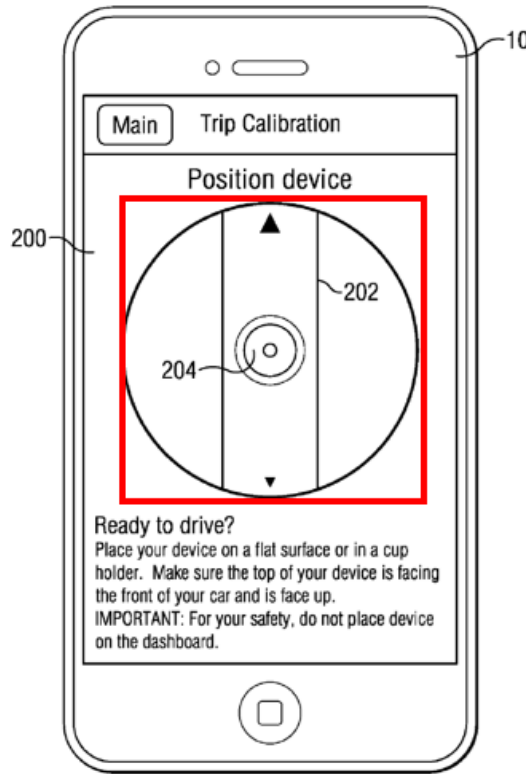
As discussed (§III.A.1, *supra*) and for reasons further discussed below, Peng-Chatterjee renders obvious determining, based on the inputs received by the user interface and sensor data from the device's sensor set, a start of a driving period during which the mobile device is removably attached to the vehicle and the vehicle is in use. USAA-1003, ¶¶162-169; USAA-1005, [0001], [0014], [0019], [0021]-[0022], [0029], [0036]-[0037], [0040], [0067], [0076]-[0077], [0151]-[0153], [0165], Fig. 1, 4-6A; USAA-1006, Abstract, [0002]-[0003], [0005]-[0007], [0011], [0013]-[0014], [0016], [0047], [0060], [0064]-[0067], [0070], [0092], [0097]-[0098], [0104], [0175]-[0176], [0192], [0200]-[0232], Figs. 1-7, 15. Indeed, based on disclosure by Peng and Chatterjee, a POSITA would find it obvious to configure the Peng-Chatterjee handheld mobile device to communicate with the dock and to use inputs received by the user interface and its sensors (e.g., accelerometer and GPS, as disclosed by Peng) to determine a start of a driving period is based on whether it is properly docked during vehicle usage. *Id*; see also USAA-1003, ¶¶120-147.

Regarding inputs received by the user interface, based on Peng, when “starting [] data recording (i.e., starting a data collection session), a screen or image for starting data recording may appear upon the handheld mobile device 10 being

properly oriented.” USAA-1005, [0152]. Using this screen, user inputs are received in the form of “manual instruction” (“*inputs received by the user interface*”), e.g., “a user pressing a ‘Start Recording’ button that is displayed” on handheld mobile device 10 can “start (or re-start) collection of driving data.” *Id.*, [0152], [0066], [0154]. A POSITA would have been motivated to use the manual instruction in the combination device to start data recording for efficient recording, e.g., conserve the battery life of Peng-Chatterjee’s device during data collection or to confirm that proper orientation has been obtained. USAA-1003, ¶166. Additionally, it would have been obvious to a POSITA to have configured the combination to interact with and receive user input via a user interface to confirm a readiness to collect driving data when determining proper orientation to prevent the premature/unintended collection of driving data. USAA-1003, ¶165; USAA-1005, [0037], [0030], [0076], Fig. 4.

Furthermore, with respect to determining a start of a driving period during vehicle usage based on sensor data, a POSITA would find it obvious, based on Peng’s disclosure, e.g., to further configure the Peng-Chatterjee device to “start and/or stop collection of driving data in response to determining that the handheld mobile device 10 is likely travelling in an automobile, e.g., **based on a real time analysis of data received from accelerometer 54, location tracking system 56, or other sensors 34** provided by handheld mobile device[.]” USAA-1003, ¶167;

USAA-1005, [0035], [0077], [0029]. Additionally, a POSITA would find it obvious based on Peng (*see* §III.A.1, *supra*) to additionally configure the combination device to “determine the orientation of handheld mobile device 10” using sensor data as part of its assessment of whether the mobile device is ready to start data recording (“*a start of a driving period*”). USAA-1005, [0153], [0034]; USAA-1003, ¶163. Furthermore, it would have been obvious that Peng-Chatterjee “determine[s] the orientation of handheld mobile device 10 within the vehicle” using device 10’s sensor data (e.g., angular orientation, GPS, and position information) (“*sensor data from the device’s sensor set*”) since, as discussed above, the combination device’s sensor set integrates sensor functionality, as taught by Chatterjee, to enable detection of docking and orientation on the dock. USAA-1005, [0037], [0151], USAA-1006, [0092]; USAA-1003, ¶¶135, 165. Suitable “physical orientation (e.g., angular orientation) of the Peng-Chatterjee combination relative to the automobile orientation” can be graphically shown to the user by indicators, e.g., “alignment image 202.” USAA-1005, [0151], [0037].



USAA-1005, Fig. 6A (annotated)

Thus, from these disclosures, a POSITA would have found obvious to configure the Peng-Chatterjee's handheld mobile to determine a start of a driving period, e.g., starting a data collection session on the device, during vehicle usage, based on a combination of the above-noted inputs received by the user interface and the above-noted sensor data from device's sensor set. USAA-1003, ¶168; USAA-1005, [0035], [0037], [0076]-[0077], [0029], [0151]-[0153], [0066], [0154], Fig. 6A.

Furthermore, as discussed (§III.A.1.(c), *supra*), it would have been obvious

to a POSITA to configure the combination device to determine the start of the driving period during which the device was removably attached to the vehicle and the vehicle was being used based on both Peng and Chatterjee's teachings. USAA-1003, ¶169; USAA-1005, [0001], [0014], [0019], [0021]-[0022], [0029], [0036]-[0037], [0040], [0067], [0076]-[0077], [0151]-[0153], [0165], Fig. 1, 4-6A; USAA-1006, Abstract, [0002]-[0003], [0005]-[0007], [0011], [0013]-[0014], [0016], [0047], [0060], [0064]-[0067], [0070], [0092], [0097]-[0098], [0104], [0175]-[0176], [0192], [0200]-[0232], Figs. 1-7, 15. As discussed, the Peng-Chatterjee device can use its sensors (e.g., accelerometer and GPS) and communicate with the dock to ensure proper docking/orientation within a moving vehicle as a basis for resolving/determining a start of a driving period during vehicle usage. *Id.* Furthermore, Peng-Chatterjee would have rendered obvious a driving period during which the handheld mobile device 10 is removably attached to the vehicle via a dock and the vehicle is moving (or otherwise in use) for multiple reasons, e.g., minimizing driving data collection interruptions and securely attaching the device 10 within the vehicle in a safe and convenient manner. *Id.*

Accordingly, Peng-Chatterjee renders obvious [1.6]. *Id.*

[1.7]

Peng-Chatterjee combination renders obvious that the driving analysis application 50, which can be "downloaded via the Internet," is configured to enable the

mobile device to obtain, based on sensor data (e.g., acceleration) from the sensors set (e.g., “a built-in accelerometer”), “data regarding driving behavior and/or the driving environment.” USAA-1003, ¶¶170-173; USAA-1005, [0021]-[0022], [0029], [0069], [0039], Fig. 4. Application 50 would be configured to “process any or all of this driving data” during the driving period (“*process the sensor data from the sensor set during the driving period*”) to derive and store “calculate[d] filtered or averaged driving behavior metrics,” such as “acceleration, braking, cornering, etc.,” associated with the “collected driving data” (“*derive driving information associated with how the vehicle is driven*”) of a user (e.g., “the driver”). USAA-1003, ¶¶168-169; USAA-1005, [0021]-[0022], [0069], FIG. 4, [0039]; *see also* USAA-1005, [0022], [0064], [0165].

As shown in Fig. 4 (reproduced below), a POSITA would have found it obvious that application 50 enables Peng-Chatterjee to “calculate[] driving behavior metrics” (“*derive driving information*”), which are then used to generate “driving scores.” USAA-1003, ¶¶171-172; USAA-1005, [0074], [0044], FIG. 4.

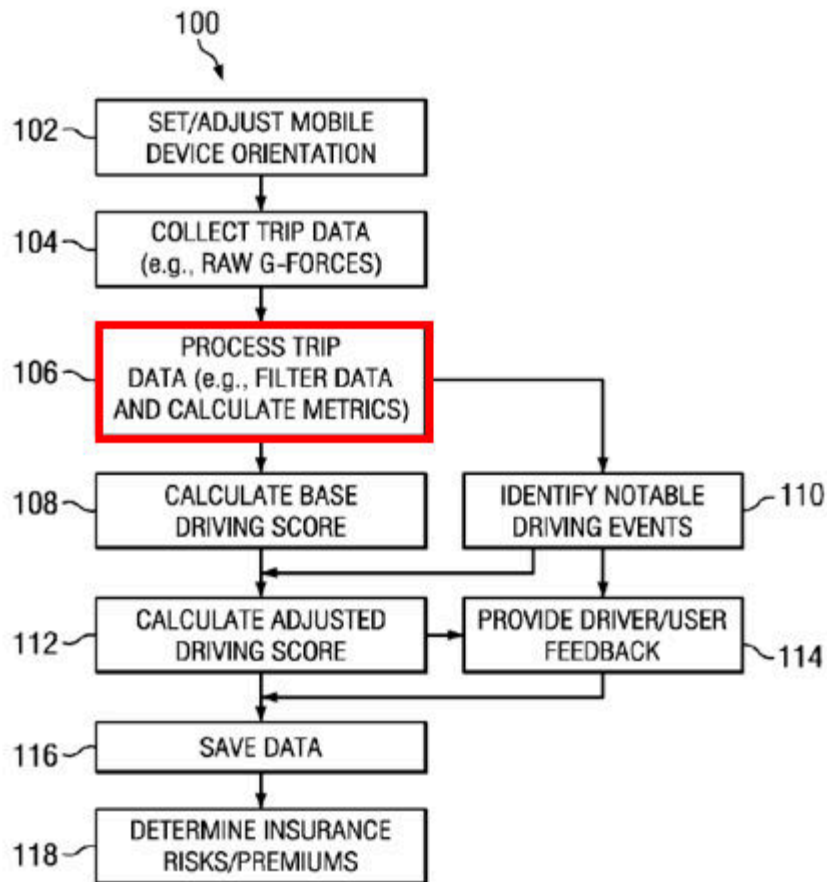


FIG. 4

USAA-1005, Fig. 4 (annotated)

It would have been obvious that Peng-Chatterjee, via driving analysis application 50, also “identif[ies] ‘notable driving events,’ such as instances of notable acceleration, braking, and/or cornering”” and associated severity based on Peng’s disclosure. USAA-1005, [0022]-[0023]; USAA-1003, ¶172.

From at least these descriptions, a POSITA would have found obvious that driving analysis application 50 causes Peng-Chatterjee’s handheld mobile device to

process sensor data from the sensor set during the determined driving period to derive the “calculated driving behavior metrics” (“*driving information associated with how the vehicle is driven*”), and to store a selection of that driving information to memory. USAA-1003, ¶¶170-173; USAA-1005, [0044], [0071], [0073].

[1.8]⁶

A POSITA would have found it obvious to configure driving analysis application 50 to cause the Peng-Chatterjee device to process sensor data from its sensor set during the determined driving period to, in turn, derive “calculated driving behavior metrics” (“*the driving information*”) and stores a selection of that driving information to memory (e.g., “local volatile memory for display, in local non-volatile memory as historical driving data 46, and/or in remote memory as historical driving data 152”). USAA-1003, ¶¶174-176; USAA-1005, [0044], [0058], [0071].

Specifically, it would have been obvious that Peng-Chatterjee would be configured to “manage the storage of **any** of the data collected by data collection module 40 at step 104 (e.g., raw data or filtered raw data),” in which the device “may

⁶ The “selection” of driving information is improper inferential claiming, and therefore non-limiting, since such selection is not one of the operations recited to be performed by the “mobile telecommunications device.” *Ex Parte Sullivan*, Appeal No. 2002-1924 (PTAB June 20, 2016).

manage short-term storage of **certain** data... and may further manage long-term storage of **certain** data[.]” USAA-1005, [0071], [0073], [0058], [0042]. For example, Peng discloses that data can be stored in a “local volatile memory for display, in local non-volatile memory as historical driving data 46, and/or in remote memory as historical driving data 152.” USAA-1005, [0071], [0073]; USAA-1003, ¶175.

From this and related description, a POSITA would have understood that data stored in the device’s memory includes “a selection of the driving information.” USAA-1003, ¶¶174-176; USAA-1005, [0071], [0073].

[1.9]

As discussed ([1.8], *supra*), it would have been obvious to have configured Peng-Chatterjee’s handheld mobile device, via the driving analysis application 50, to process sensor data from device’s sensor set during a determined driving period to derive “driving behavior metrics and/or scores” for various applications. USAA-1003, ¶¶177-170; USAA-1005, [0022], [0064], [0165].

The Peng-Chatterjee device would have been obviously configured to “collect [driving behavior] data from sources, including (a) data sources provided by handheld mobile device **10**...(b) data sources in vehicle **12** but external

to handheld mobile device **10...and/or** (c) data sources external to vehicle **12.**”⁷ *Id.*, [0033], [0034], [0029]; USAA-1003, ¶178.

In one example, a POSITA would have found it obvious that Peng-Chatterjee mobile device would be configured to use “real time analysis of data received from accelerometer 54, location tracking system 56, or other sensors 34 provided by handheld mobile device....” USAA-1005, [0035]; USAA-1003, ¶179. Specifically, in the combination, the device can collecting “the current acceleration of handheld mobile device 10 from accelerometer 54,” “the current location of handheld mobile device 10 from location tracking system 56 (e.g., whether handheld mobile device 10 is located on/near a roadway),” and “the velocity of handheld mobile device 10 from location tracking system 56.” USAA-1005, [0035], claim 27; *see also id.*, claims 1, 5, 14, 18), Fig. 2. Furthermore, the device in the combination would be “operable to process or analyze any of the driving data...collected by handheld mobile device 10 itself” and “based on such collected

⁷ It is sufficient for the prior art to show that an element is optional to satisfy a negative limitation. *WAG Acquisition, LLC v. WebPower, Inc.*, No. 2018-1617 at 12 (Fed. Cir. 2019) (“While [prior art] does not specify that [an element] is not used, nothing in the record suggests that [the element] *must* be used.”)(emphasis in original).

driving data, calculate one or more driving behavior metrics and/or scores.” *Id.*, [0044].

A POSITA would have found obvious that, based on the above examples, the combination device derives driving information without data from the vehicle sensors, at least because some of those examples focus only on leveraging motion data obtained from one or more sensors provided by the mobile phone (e.g., sensors 34) to derive filtered data and/or driving behavior metrics (“***driving information***”). USAA-1003, ¶¶179-181; USAA-1005, [0044], [0035].

Further, from Peng’s teaching, a POSITA would have understood there to be no need to use data from vehicle sensors to derive driving information, and would have found obvious that derivation of that driving information without data from the vehicle’s sensors provides an elegant and cost-effective means of obtaining driving information, without the complexities and costs that might potentially be involved in obtaining and integrating data from a vehicle’s sensor set. USAA-1003, ¶181; USAA-1026, 11:15-25.

[1.10]

As discussed ([1.7], *supra*), Peng-Chatterjee’s “handheld mobile device [] may include...a driving analysis application,” (an “***application***”) that can “process...driving data collected by handheld mobile device...to calculate one or more driving behavior metrics and/or scores[.]” USAA-1003, ¶¶182-184; USAA-

1005, [0022], [0074], [0143]. As explained by Dr. Michalson, it would have been readily understood by a POSITA reading Peng's disclosure that the mobile device 10 is controlled by the driving analysis application 50 because Peng explains that the application is embodied in the software, firmware, and/or computer-readable instructions and controls the mobile device via multiple modules. USAA-1003, ¶182; USAA-1005, [0026], [0032], Fig. 2. For example, the application 50 can **"control the start and stop of driving data collection"** and **"identify 'notable driving events' (NDEs), such as instances of notable acceleration, braking, and cornering"** ("*detect occurrence of a predetermined event*"). USAA-1005, [0034], [0022], [0045]-[0053].

Furthermore, in response to identifying the NDEs, the application 50 takes at least one predetermined action, such as: (1) determining the severity of, (2) storing (either locally and/or remotely), (3) displaying, and/or (4) reporting the NDEs to the driver and/or third parties" ("*in response take at least one predetermined action*"). USAA-1005, [0034], [0055], [0064], [0074], [0142], [0163]; Figs. 2-4. As Dr. Michalson explains, it would have been obvious to a POSITA that the determining of the NDE severity and the storing, displaying, and/or reporting of NDEs would need to occur in response to the detection of the NDE in order to, e.g., "provide the driver real time feedback regarding notable driving events" that distinguishes "different types of notable driving events." USAA-1003, ¶183; USAA-

1005, [0061], [0073], Fig. 4.

Lastly, it would have been obvious that Peng-Chattejee's application 50 would be configured as a downloaded application since "[a]pplication 50 and/or any related, required, or useful applications, plug-ins, readers, viewers, updates, patches, or other code for executing application 50 may be **downloaded via the Internet...**on handheld mobile device 10" ("*a downloaded application to control the mobile device*"). USAA-1003, ¶184; USAA-1005, [0027].

For at least the reasons above, Peng-Chatterjee renders obvious [1.10].
USAA-1003, ¶¶182-184.

b) Claim 2

[2]

Peng discloses that "**collected data** may be **processed**, displayed, [and] **stored...in non-volatile memory**" ("*storing driving information associated with that event to the memory*"). ; USAA-1005, [0073], USAA-1003, ¶¶185-187.

Peng also generally describes processing collected data to provide driving information (e.g., "driving behavior metrics) and using the driving information (e.g., processed sensor data) to identify NDEs. USAA-1005, [0068].

As shown in Peng's Fig. 4 (reproduced below), the methods performed by the driving analysis application 50 in the combination would have been configured

to include identifying notable driving events (step 110) (“*occurrence of a predetermined event*”) that is followed by predetermined actions, including a step to “save data” (step 116) (“*storing driving information associated with that event to the memory*”). USAA-1003, ¶186; USAA-1005, [0013], [0075], [0136], [0071], [0146], Figs. 2, 4.

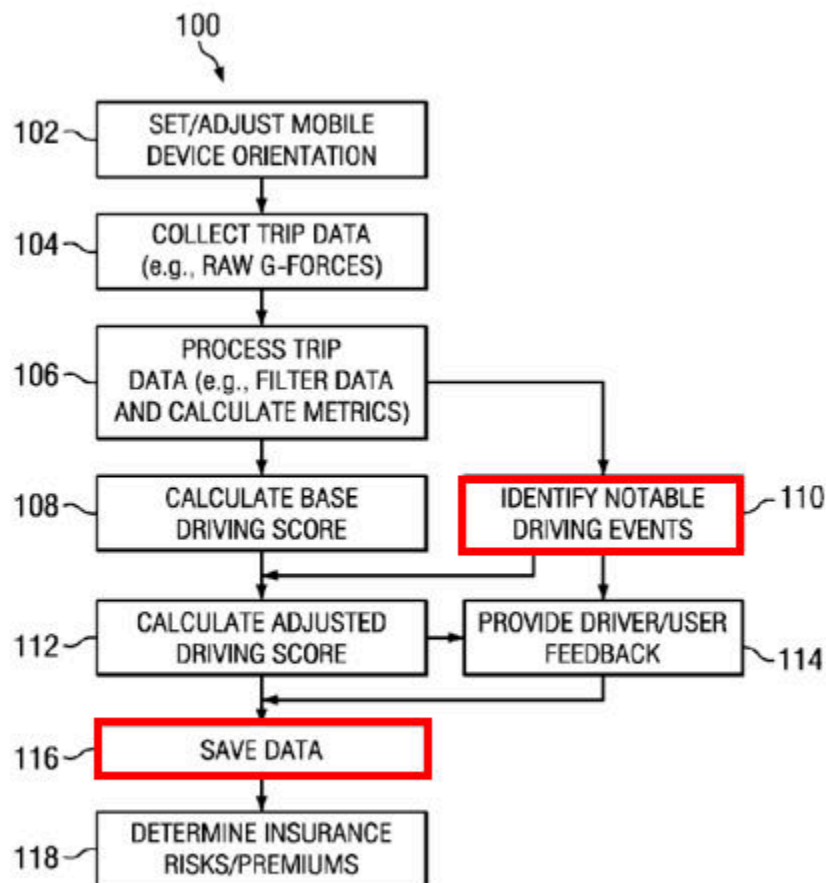


FIG. 4

USAA-1005, Fig. 4 (annotated)

From this and related description, a POSITA would have understood and/or

found obvious that examples of a predetermined action would have included storing and/or reporting the identified notable driving events (NDEs) to the memory (e.g., non-volatile memory) of the Peng-Chatterjee device. USAA-1003, ¶¶185-187; USAA-1005, [0068], [0099]; *see also id.*, [0034], [0064], [0073], [0074], [0142]; Figs. 2, 4. It would have been obvious to a POSITA that the storing of NDEs would need to occur in response to the detection of the NDE in order to, e.g., “provide the driver real time feedback” and “display...the locations of notable driving events (NDEs).” USAA-1003, ¶187; USAA-1005, [0061], [0163], [0073]. Thus, Peng-Chatterjee renders obvious [2]. USAA-1003, ¶¶183-185.

c) Claim 5

[5.1]

As discussed (*e.g.*, §III.A.1, [1.10], [2], *supra*), a POSITA would have understood and/or found obvious from Peng’s disclosure that the Peng-Chatterjee handheld mobile device identifies notable driving events (NDE) (“***an event has been detected***”) from the driving information (e.g., collected/processed sensor data) and, in response, the combination device can store in memory and report the events to “remote entities” (“***predetermined action comprises communicating to a remote system***”). USAA-1003, ¶188; USAA-1005, [0068], [0099], [0034], [0064], [0073], [0074], [0142], Figs. 2, 4.

[5.2]

A POSITA would have found obvious based on Peng’s disclosure that Peng-

Chatterjee's mobile device is configured to receive from a remote system a request to transmit to the remote system selected portions of the driving information associated with the detected event. USAA-1003, ¶188. For example, Peng describes that the mobile device 10, via the data processing module 42, can identify 'notable driving events' (NDEs)'' and "process the collected data" "**in response to a request**" ("*configured to receive from the remote system a request to transmit to*") by remote entities, e.g., "a user of handheld mobile device 10, a user at remote computer 150, or other user." USAA-1005, [0068]. Furthermore, Peng's device 10 may "communicate **some** or all data collected by data collection module 40" ("*selected portions of*"), including "**partially processed data**" ("*the driving information associated with the detected event*"), to "a remote processing computer 150" ("*remote system*"). USAA-1005, [0146]. Thus, it would have been obvious to a POSITA that Peng-Chatterjee's mobile device may be configured to receive a request from a remote system (e.g., a request from a user at a remote computer 150) to process select portions of the driving information (e.g., some of the partially processed collected driving data) associated with a detected event (e.g., NDE). USAA-1003, ¶187.

Thus, Peng-Chatterjee renders obvious [5]. *Id.*

d) Claim 8

[8]

A POSITA would have found obvious based on Peng's disclosure that Peng-Chatterjee's handheld mobile device would be configured to "shar[e] driving data" with "other external devices" ("***configured to [] interface with an external device***") and "collect **certain** driving data" ("***to receive at least a portion of the external driving information from [an] external device***") from **sensors and/or devices external** to the handheld mobile device (e.g., **speed sensors...**[and] GPS device, etc.)" ("***external device having access to external driving information associated with a condition of the vehicle***"). USAA-1005, [0014], [0021], Fig. 5. Thus, Peng-Chatterjee renders obvious [8]. USAA-1003, ¶190.

e) Claim 9

[9]

As discussed (e.g., §III.A.1, [1.7], [1.10] *supra*), it would have been understood by a POSITA that Peng-Chatterjee's mobile device would be configured to be controlled by application 50, which "may be downloaded via the Internet," ("***mobile communications device is controlled by the downloaded application***") to "process...[the] driving data collected by handheld mobile device," and "calculate scores based on [] calculated metrics" of the driver ("***generate a driving score associated with a particular driver***"). USAA-1003, ¶191; USAA-1005, Abstract, [0022], [0024], [0027], [0032], [0044], [0074], Fig. 2. Thus, Peng-Chatterjee renders obvious [9]. *Id.*

f) Claim 11

[11]

As discussed (*e.g.*, §III.A.1, [1.10], [2], [5], *supra*), it would have been obvious to configure Peng-Chatterjee’s device to identify notable driving events (NDE) (“*an event has been detected*”) from the collected/processed sensor data (“*driving information*”) and, in response, store in memory and report the events to “remote entities” (“*predetermined action is transmitting driving information...to a remote system*”). USAA-1003, ¶192; USAA-1005, [0068], [0099], [0034], [0064], [0073]-[0074], [0142], [0061], [0163], Figs. 2, 4. Additionally, based on Peng’s disclosure, Peng-Chatterjee would have been obviously configured to “communicate **data associated with application 50** via a network or other communication link(s) to one or more **other** computer devices,” in which communication of data can be transmitted “via any one or more...**wireless** communication links” (“*transmitting driving information via a wireless telecommunication module of the mobile telecommunication device to a remote system*”). USAA-1003, ¶192; USAA-1005, [0058], [0149]; *see also id.*, [0033], [0035], [0057], Fig. 5. Thus, Peng-Chatterjee renders obvious [11]. USAA-1003, ¶192.

g) Claim 12

[12]

A POSITA would have understood and/or found obvious that Peng-Chatterjee’s mobile device includes its own device battery (“*power supply*”) given Peng’s

non-limiting disclosure of handheld mobile device 10 encompassing “any type of portable or mobile electronics device, such as for example a mobile telephone....”

USAA-1005, [0019]; USAA-1003, ¶193. Furthermore, since “handheld mobile device 10 may be a smart phone, such as an iPhone by Apple Inc.,” a POSITA would have understood that a mobile phone has its own battery as a power supply.

USAA-1005, [0019]; USAA-1003, ¶191; USAA-1500, [0002].

h) Claim 13

[13]

A POSITA would have found obvious that Peng-Chatterjee’s handheld mobile device (“*mobile telecommunications device*”) “may be a smart phone, such as an iPhone.” USAA-1005, [0019], Figs. 1, 5, 6A-6E; USAA-1003, ¶194.

B. [GROUND 1B]

1. Analysis

a) Katayama

Katayama relates to “a vehicle-mounted driving recorder” “that records behavior, a surrounding situation...of a motor vehicle during a certain period before and after a time of an accident[.]” USAA-1024, Abstract, [0001]-[0002]; USAA-1003, ¶¶114-118.

Figure 1 shows the driving recorder 1 is mounted on a vehicle.

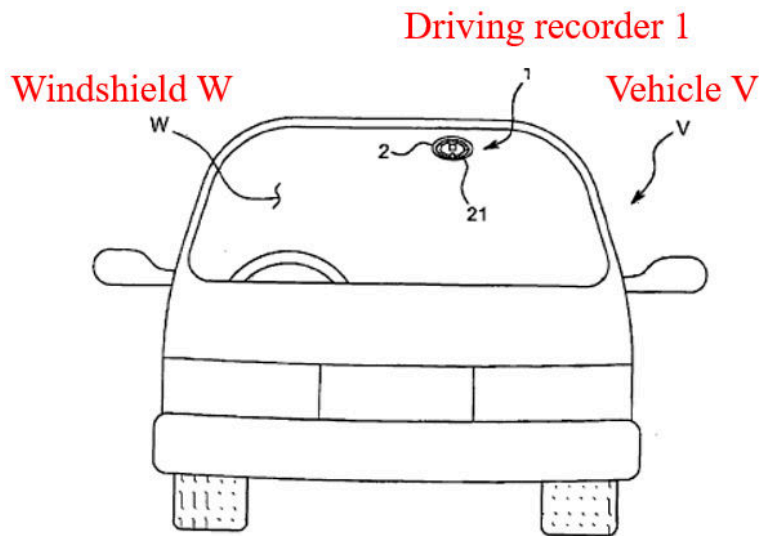


Fig.1

USAA-1024 (Katayama), Fig. 1

Katayama's recorder 1 detects an accident or "a hiyari hatto (risk incident)" by using "situation data," i.e., sensor data (e.g., "acceleration data," "position data," and "moving image data"), to "sense[] the behavior, the surrounding situation, [and] the operating condition...of [a] motor vehicle V[.]" USAA-1024, [0013], [0019], [0021], [0034], Fig. 4. Recorder 1 has an "information processing device 8" for managing and storing situation data. USAA-1024, [0044], [0046], Fig. 5; USAA-1003, ¶115. Katayama further discloses actions that can be taken in response to the detected risk incident or accident. *Id.*, [0046], [0050], [0063]; USAA-1003, ¶114.

b) Peng-Chatterjee-Katayama Combination

i. Accident Detection/Verification

As previously discussed (III.A.2, *supra*), Peng-Chatterjee's handheld mobile device can identify notable driving events (NDEs)." USAA-1005, [0022], [0055] [0059], [0061], [0068], [0073], [0126], [0136], [0146], [0155], [0163]; USAA-1003, ¶¶195-199. Such identification of NDEs can be useful in various applications, e.g., insurance quotes. USAA-1005, [0004], [0074], [0165]; USAA-1003, ¶195. A POSITA would have understood that accidents are commonly associated with NDEs (e.g., notable acceleration) and that the accident occurrence information would be relevant to predicting accident rates because "drivers with high accident...rates will be more likely to be involved in future accidents." USAA-1005, [0022], [0024]; USAA-1003, ¶195 (citing USAA-1515, 29). Hence, a POSITA would have naturally sought to supplement Peng-Chatterjee's capabilities using known accident detection and verification techniques to advance Peng's motivations to provide pertinent driving information. USAA-1005, [0024], [0074], [0143], [0165]; USAA-1003, ¶195 (citing USAA-1008).

Dr. Michalson explains, "several vehicle monitoring systems by the Critical Date were similarly capable of detecting accidents." USAA-1003, ¶¶196, 199; USAA-1007, Abstract, 1:40-42, Fig. 3; USAA-1509; USAA-1510; USAA-1511; USAA-1512. For example, as discussed (§III.B.1(a), *supra*), Katayama describes

using a “vehicle-mounted driving recorder” to detect an event, e.g., an accident or a risk incident (i.e., *hiyari hatto*) based on sensor data. USAA-1024, Abstract, [0012]. Like Peng, Katayama similarly detects notable driving events (e.g., *hiyari hatto* and driving abnormalities), but further includes the detection and verification of accidents in its detection methods. USAA-1024, [0002], [0004], [0013], [0020], [0035]-[0038]. Like Peng, Katayama uses its recorder’s sensor data, e.g., acceleration data, to detect the accident, e.g., by detecting “acceleration...[that] exceeds a predetermined criterion.” USAA-1024, [0013], [0035]-[0037], [0040], [0048]-[0049]. And once an accident has been detected, Katayama teaches alerting and enabling the driver to verify, via user inputted data, whether an accident actually occurred. USAA-1024, [0050], [0007], [0012]-[0013].

A POSITA would have been motivated to include accident detection/verification, as taught by Katayama, in the proposed combination to supplement NDE detection with accident detection because accident occurrences are relevant to vehicle driving and because it advantageously promotes accurate collection of vehicle driving information. USAA-1005, [0002]-[0004]; USAA-1024, Abstract, [0050], [0007], [0012]-[0013]; USAA-1003, ¶¶197-198. Also, based on the structural and functional similarities between Katayama’s recorder and Peng’s handheld mobile device 10, it would have been obvious to a POSITA to have implemented in the combination device the added functionalities of Katayama’s recorder.

USAA-1024, Figs. 3-4; USAA-1005, [0001], [0165]; USAA-1003, ¶¶197-198.

A POSITA would have had a reasonable expectation of success because the proposed combination merely involved implementing a known technique (e.g., Katayama’s detection and verification of an accident based on collected driving data) into a known system (Peng’s system). USAA-1003, ¶199. Furthermore, the elements of the resulting combination would each generally perform functions they had been known to perform prior to the combination—the device in the combination would perform the functions, as described in Peng, to collect driving data using sensor data, but would further leverage techniques to identify and verify accidents, as taught by Katayama, when processing the collected data already described by Peng. USAA-1003, ¶199; USAA-1005, [0006], [0029], [0033]; USAA-1024, [0040], [0048]-[0050].

ii. Data Storage Management

Peng describes that handheld mobile device 10’s memory 30 includes volatile memory for short-term storage and non-volatile memory for long-term storage of certain data. USAA-1005, [0026], [0058], [0073]. Peng also describes that device 10 “filter[s] or truncate[s]” by “eras[ing] data collected” data depending on the length of the data collection session, e.g., “the first and last 60 seconds of the data collection session.” USAA-1005, [0077], [0058], [0073]. A POSITA would have recognized Peng’s memory storage limitations and that erasing data based on

time-based factors alone does not take in account the data's potential importance.

USAA-1003, ¶200 (citing USAA-1024, [0004], [0085]). Furthermore, a POSITA would have known that the advantages of identifying and storing driving information based on its relative importance were well recognized and disclosed by the prior art (e.g., Katayama) before the Critical Date. *Id.* Hence, a POSITA would have perceived a need to supplement the proposed combination's capabilities with well-known data handling techniques to address the device's limited storage capacities to advantageously ensure that data is stored based on potential importance. USAA-1003, ¶200 (citing USAA-1513; USAA-1514; USAA-1024, [0004]-[0009]).

Katayama (*see* §III.B.1(a)) describes a storage device with multiple storage sections (sections 802, 803) and offers solutions to store data based its importance. USAA-1024, [0044]-[0046]. Katayama teaches uses different types of storage depending on the data's potential usefulness, and transfers potentially useful driving data to advantageously save important data. USAA-1003, ¶¶201-202. For example, data may be stored/transferred to Katayama's situation data recording section 803 only in response to detecting a *hiyari hatto* or an accident that meets a predetermined condition. *Id.*, [0044]-[0051], [0063]. These event-triggered storage techniques can save storage space and help "eliminat[e] accumulation of useless data." USAA-1024, [0053].

In the combination, memory 30 is configured to include: (1) volatile memory configured to store raw and processed data (e.g., “filtered data,” “metrics” and “scores”) irrespective of its contents for short-term storage in a similar manner that Katayama’s temporary data storage section 802 is used for data storage irrespective of its contents; and (2) non-volatile memory configured to store at least select processed data for long-term storage in a similar manner that Katayama’s situation data recording section 803 is used to store “data whose importance is higher.” USAA-1005, [0026], [0058], [0073]; USAA-1024, [0016], [0051], [0044], [0046], [0057]; USAA-1003, ¶203. A POSITA would have been motivated to configure the combination’s memory to generally apply Katayama’s techniques of storing data (i.e., raw and processed data) to “enable[] effective use of the memory without erasing important situation data” and “eliminat[e] accumulation of useless data” by ensuring storage of potentially important data (e.g., data for NDEs) in combination’s “non-volatile memory as historical driving data 46.” USAA-1005, [0071], [0142], [0163], [0026], [0058], [0073]; USAA-1024, [0016], [0053], [0044], [0046]; USAA-1003, ¶¶202-204.

A POSITA would have found the proposed combination obvious because of structural and functional similarities between Katayama’s vehicle-mounted driving recorder and the handheld mobile device described by Peng, and would have therefore had a reasonable expectation of success in this combination. USAA-

1024, Figs. 3-4; USAA-1005, [0001], [0165]; USAA-1003, ¶204. Dr. Michalson explains that “[a] POSITA would have had a reasonable expectation of success in implementing this configuration since memory allocation configurations were employed and well-known in dynamic monitoring systems by the Critical Date.” USAA-1003, ¶204 (citing USAA-1042, 1). Furthermore, the elements of the resulting combination would each generally perform functions they performed prior to the combination—the device in the combination would, as described in Peng, store its raw and processed data in short-term memory, but further leverage identifying and storing the data based on its relative importance, as taught by Katayama, when storing data in the long-term memory. USAA-1003, ¶204; USAA-1005, [0058]; USAA-1024, [0015]-[0016], [0027].

2. Claims 3, 6-7

a) Claim 3

[3.1]

The combination device renders obvious to identifying notable driving events (“*detect occurrence of a predetermined event*”). USAA-1005, [0022]. Upon detecting the notable driving event, the combination device would be obviously configured, based on Peng and Katayama’s disclosures, to “provide the driver real time feedback regarding notable driving events, via any suitable form of feedback,” e.g., “audible feedback...or visual feedback via display 36” (“*providing feedback to a use to indicate that an event has occurred*”). USAA-1005, [0061];

see also id., [0001], [0057], [0059]; USAA-1024, [0050]; USAA-1003, ¶¶205-206.

Thus, the combination render obvious [3.1]. USAA-1003, ¶¶203-204.

[3.2]

Katayama teaches providing feedback to the driver when an accident has been detected and prompts the driver to verify the detected accident by providing input data on the recorder (“*receive a user interaction to confirm or deny whether the detected event has actually occurred following said feedback*”) USAA-1024, [0050]; USAA-1003, ¶207.

As discussed (*see e.g.*, §III.B.1(b)), it would have been obvious to a POSITA to supplement Peng’s method of detecting NDEs, to further detect an accident, and, upon detecting the accident, apply Katayama’s response technique of verifying the accident by prompting driver’s input to accurately process and communicate data. USAA-1024, [0050]; USAA-1003, ¶¶207-208. A POSITA would have understood and/or found it obvious to configure the combination’s input/output devices 38 (e.g., “a touchscreen display 36, keys, **buttons**”) to allow a user to verify an accident based on Katayama’s teaching of using “button switch 5” as an input device for receiving input data to verify the event/accident. USAA-1005, [0062], [0063]; USAA-1024, [0041], [0050]; USAA-1003, ¶208. Thus, in the combination (*see* §III.B.1(b)), a POSITA would have configured the handheld mobile device in the combination to receive a user’s **input data** via input/output devices to

verify whether the accident actually occurred after receiving feedback from device 10 (“*confirm or deny whether the detected event has actually occurred following said feedback*”). USAA-1003, ¶208.

b) Claim 6

[6.1]

In the combination, memory 30 comprises different types of memory such as volatile memory (“*a short term memory for transiently storing driving information*”) and non-volatile memory (“*a long term memory for persistently storing driving information*”). USAA-1005, [0026], [0058], [0142] [0026], [0058], [0142]; USAA-1003, ¶¶209-211. Specifically, the combination would leverage Peng’s disclosure that other processed data (“*driving information*”) including “filtered data” and “any of the metrics, scores, or other data calculated or [processed] by data processing module 42 can be stored.” USAA-1005, [0058]. For example, “feedback module 44 may manage **short-term storage of certain data (e.g., in volatile memory of handheld mobile device 10), and may further manage long-term storage of certain data** as historical driving data 46 (**e.g., in non-volatile memory of handheld mobile device 10**).” USAA-1005, [0058], [0073].

Additionally or alternatively, the combination would leverage Katayama’s disclosure to apply an information processing device 8 (“*memory*”) that includes situation data recording section 803 (“*a long term memory for persistently storing*

driving information”) and temporary data storage section 802 (“*short term memory for transiently storing driving information*”). USAA-1024, [0044]-[0046], [0053], Fig. 5. A POSITA would have recognized and/or found obvious that **temporary data storage** section 802 may serve as short-term memory for the proposed combination. USAA-1003, ¶¶210-211.

Thus, the *Peng-Chatterjee* combination renders obvious this limitation. *Id.* [6.2]

As discussed (§III.B.1), a POSITA would have been motivated to combine Katayama with the *Peng-Chatterjee* combination, which renders obvious this limitation. USAA-1003, ¶212; USAA-1005, [0026], [0058], [0142]; USAA-1024, [0044]-[0046], [0053].

A POSITA would have understood and/or found it obvious that, in some scenarios, Katayama’s temporary data storage section 802 (“*short term memory*”) obtains situation data more frequently (“*receives...at a higher update rate*”) than situation data recording section 803 (“*a long term memory*”). USAA-1024, [0044]-[0046], Fig. 5; USAA-1003, ¶212. Katayama teaches that “temporary data storage section 802 temporarily stores the situation data irrespective of the contents of the situation data,” but that the data is transferred to situation data storage section 803 “[o]nly in a case that the content meets the predetermined condition.” *Id.*,

[0045]-[0046], [0051]. Thus, a POSITA would have understood that since temporary data storage section 802 steadily stores information and the transfer of data to situation data storage section 803 is periodic, temporary data storage section 802 would receive data more frequently (“*at a higher update rate*”). USAA-1003, ¶212.

[6.3]

Based on Katayama’s teaching, the combination device includes temporary data storage section 802 to record situation data (“*write driving information to the short term memory*”) at a constant sampling rate (“*at a predetermined update rate*”) and while a vehicle is monitored according to a chronological order (“*in a predetermined sequence*”). USAA-1003, ¶213; USAA-1024, [0044]-[0046], Fig. 5. Specifically, the combination would leverage Katayama’s disclosure of “re-
ceiv[ing] the situation data...at a constant sampling time one after another in a chronological order and writes the received situation data one after another in the temporary data storage section 802...” *Id.*

[6.4]

Based on Katayama’s teaching, the combination overwrites previously collected situation data stored in temporary data storage section 802 (“*overwrite the driving information previously written to the short term memory*”) with new situation data sequentially (“*in accordance with the predetermined sequence*”).

USAA-1003, ¶214; USAA-1024, [0044]-[0046], Fig. 5. Specifically, the combination would leverage Katayama's teaching that "[i]f a capacity of the temporary data storage section 802 runs out, old data is sequentially erased and new situation data is written in the temporary data storage section 802." *Id.*, [0045]. A POSITA would have understood that, by being "**sequentially** erased," the old data is erased according to the chronological order that it is written into the temporary data storage section 802, which is First in, First Out (FIFO), a typical replacement policy commonly used to overwrite old data in a memory when the memory is full. USAA-1003, ¶214 (citing USAA-1027, 70-71). Accordingly, *Peng-Chatterjee-Katayama* combination renders obvious [6]. USAA-1003, ¶¶207-213.

c) Claim 7

[7.1]

As discussed (e.g., [1.10], [2], *supra*), the combination is controlled by application 50 to control the device to detect NDEs ("***detect an occurrence of a predetermined event***"), such as "notable acceleration" and "the severity of such events" based on "compar[ing] acceleration data...to one or more predefined thresholds." USAA-1005, [0022], [0053], [0055]; USAA-1003, ¶215.

Katayama discloses detecting "hiyari hatto (risk incident) or an accident occurs)," for example, based on determining "the predetermined condition is satis-

fied” when “both the acceleration data exceeds the predetermined judgment criterion and the acceleration data continues over a certain period.” USAA-1024, [0046]-[0051]. Katayama specifies accidents can be “a crash accident or the like.” USAA-1024, [0039], [0075].

As discussed (e.g., §III.B.1(b) *supra*), a POSITA would have been motivated to combine Peng-Chatterjee and Katayama and would have had reasonable success in the combination because an obvious implementation of the combination would include accidents such as a type of NDE, and configure the combination to detect such accident-type NDEs according to the techniques taught by Katayama (“*detect the occurrence of a predetermined event*”) based on the acceleration data. USAA-1005, [0022], [0053], [0055]; USAA-1024, [0046]-[0051]; USAA-1003, ¶¶215-217.

[7.2]

Katayama describes transferring situation data (“*data*”) from temporary data storage section 802 (“*short term memory*”) to situation data recording section 803 (“*long term memory*”) in response to satisfaction of predetermined conditions associated with accident detection. USAA-1024, [0046]. The conditions can relate to acceleration data, such as “whether or not the acceleration...exceeds a predetermined judgement criterion,” or “continues for more than or equal to a certain pe-

riod...” *Id.*, [0048]. A POSITA would have therefore understood that in circumstances where an accident is detected based on acceleration data that also satisfies a predetermined condition for transfer, in the *Peng-Chatterjee-Katayama* combination, the device is configured to transfer the data from temporary data storage section 802 to situation data recording section 803 “*in response to*” the accident being detected. USAA-1003, ¶218.

C. [GROUND 1C]

1. Analysis

a) Balachandran

Balachandran describes an emergency response technique focused on “enabling emergency call initiations in response to the detection of a vehicle accident.” USAA-1007, Abstract, 1:34-47, 2:46-63; USAA-1003, ¶113.

b) Peng-Chatterjee-Katayama-Balachandran Combination

As discussed (*see e.g.*, §III.B.1(b)), in the *Peng-Chatterjee-Katayama* combination, device 10 would have been obviously configured to detect vehicle events, e.g., NDEs and/or accidents, by applying the detection techniques and the response techniques of prompting the driver to respond to the detected event, as taught by Katayama. USAA-1024, [0050]; USAA-1003, ¶¶219-223. Given the likelihood that NDEs and/or accidents can often involve an emergency situation in which a driver may not be able to respond, a POSITA would have naturally looked

to supplement the response technique of the *Peng-Chatterjee-Katayama* combination to further include emergency response techniques that were well-known by the Critical Date. USAA-1007, 1:11-30; USAA-1003, ¶¶219-224.

As discussed in §III.C.1(a), Balachandran discloses initiating an emergency call using a cellphone in response to the cellphone's detection of the vehicle accident. USAA-1007, Abstract. Specifically, Balachandran describes activating a cellular telephone's timer with an audio/visual notification and a "time delay before initiating an outgoing emergency call in response to detection of a vehicle accident." USAA-1007, 2:52-63, 4:18-21.

A POSITA would have been motivated to supplement the handheld mobile device's functionality in the *Peng-Chatterjee-Katayama* combination to perform Balachandran's emergency response techniques, following detection of an accident, and thereby enable device 10 to provide beneficial emergency responses, e.g., calling an emergency operator and preventing injuries/casualties. USAA-1007, Abstract, 1:6-30; USAA-1003, ¶¶225-227. A POSITA would have performed this modification since Balachandran's emergency response technique would have naturally extended the techniques for verifying accidents already existing in the proposed combination (III.B.1, *supra*) to further account for circumstances involving an unresponsive driver in distress. *Id.*

In the combination, the mobile device, upon having detected an accident as

taught by Katayama, would activate a timer within the device, provide notification of timer activation, and delay initiating an emergency call unless aborted by the driver, as taught by Balachandran. USAA-1007, Abstract, 2:52-63, 4:18-21; USAA-1003, ¶226. Because the combination is capable of making calls, a POSITA would have perceived configuring the device to incorporate the emergency response techniques described Balachandran as an obvious implementation detail. USAA-1005, [0148]-[0149], [0024], [0074], Fig. 5; USAA-1003, ¶226.

A POSITA would have had a reasonable chance of success in combining Peng, Chatterjee, Katayama, and Balachandran since Dr. Michalson explains that “several vehicle monitoring systems by the Critical Date were similarly capable of providing emergency response techniques.” USAA-1003, ¶227 (citing USAA-1021, USAA-1022, USAA-1023). Furthermore, the elements of the resulting combination would each generally perform functions they had been known to perform prior to the combination—the combination device would perform the same functions, as described in Peng, to collect driving data while leveraging general techniques to identify and verify accidents, as taught by Katayama, and, in response to identified accidents, further leverage automatically initiating an emergency response taught by Balachandran. USAA-1003, ¶227; USAA-1005, [0006], [0029], [0033]; USAA-1024, [0040], [0048]-[0050]; USAA-1007, 2:52-63, 4:18-21.

2. Claim 4

[4.1]

As discussed (*see* [3.1], III.C.1, *supra*), in the combination, the handheld mobile device can “provide the driver real time feedback regarding notable driving events,” such as accidents. USAA-1005, [0061], [0001], [0059]; USAA-1024, [0050]; USAA-1003, ¶228. In particular, the combination would leverage Peng’s disclosure of providing feedback, e.g., “displaying data on display device 36 of handheld mobile device,” and “providing audible feedback via a speaker of handheld mobile device [.]” USAA-1005, [0057].

As discussed (III.C.1(b), *supra*), it would have been obvious for a POSITA to supplement the handheld mobile device’s functionality in the *Peng-Chatterjee-Katayama* combination to perform Balachandran’s emergency response techniques and thereby enable the combination to provide beneficial emergency responses, e.g., calling an emergency operator. USAA-1007, Abstract; USAA-1003, ¶229. In particular, Balachandran teaches that the emergency response includes the cell-phone providing feedback, e.g., “[a]n audio or visual indication [that] notifies the passengers of activation of timer 35” (“***feedback comprising notifying a user***”) that “provides a preselected time delay before initiating an outgoing emergency call in response to detection of a vehicle accident.” USAA-1007, 2:53-60. Thus, in the combination, a POSITA would have configured the mobile device to pro-

vide feedback to notify a user that an emergency call has been scheduled (“*a further action has been scheduled*”) after a time period specified by a timer (“*further action...will be taken with a predetermined period*”). USAA-1003, ¶229.

[4.2]

Balachandran teaches offering the driver an option to abort the emergency call “at any point by a user abort command,” or “cancel initiation of an emergency call if no emergency assistance is required. If the individual discontinues the emergency call through the user interface 45, the timer 35 resets.” USAA-1007, Abstract, 3:1-5. Thus, a POSITA would have obviously configured the combination to receive a user interaction through the user interface 45, such as a user abort command to cancel an emergency call. USAA-1007, 2:64-3:6, 4:22-31; USAA-1003, ¶230. Thus, the combination would have been obviously configured to receive a user abort command (“*user interaction*”) to cancel the scheduled emergency call to be initiated after a time period specified by a timer (“*to deny whether the further scheduled action should be taken within a predetermined period*”).

Id.

D. [GROUND 1D]

1. Analysis

a) Tamir

Tamir describes a traffic information system that evaluates driver behavior in a vehicle. USAA-1012, Abstract. Tamir discloses a data collection technique

that uses “a dynamically adjusted rate” based on “the time of day, date, and/or external conditions, such as weather conditions,” and “the driving behavior of the vehicle.” *Id.*, 9:10-20, 20:52-21:11; USAA-1003, ¶118.

b) Peng-Chatterjee-Tamir Combination

Based on the Peng’s teaching, “data...may be **time stamped (e.g., time and date)**” and that combination “may calculate the number of each type of notable driving events...for a **particular time period.**” USAA-1005, [0042], [0077]. As Dr. Michalson explains, dynamic sampling rates were known to provide several advantages to data processing in vehicle monitoring systems, e.g., maintaining measurement precision, high adaptation to different driving conditions, and increased responsiveness. USAA-1003, ¶¶231-232 (citing USAA-1017, 5:61-6:9, 9:3-7; USAA-1018, [0019]; USAA-1019, 5:1-3). Thus, a POSITA implementing Peng’s data collection and processing method would have looked to well-known temporal sampling techniques applicable for data similar to those being collected by Peng’s device 10 (e.g., accelerometer and position data). USAA-1003, ¶¶231-232.

As discussed (§III.D.1(a), *supra*), Tamir ‘s sampling rate can be adjusted based on conditions associated with data collection (e.g., driving behavior). USAA-1012, 9:10-20, 20:52-21:11. A POSITA would have implemented Tamir’s data collection technique to improve the combination by providing “lower power

consumption and less wear and tear.” USAA-1003, ¶232; USAA-1012, 20:52-21:2.

2. Claim 10

[10]

As discussed (§III.A.1, [1.10], [2], *supra*), the combination renders obvious that the predetermined action is storing driving information associated with that event to the memory. USAA-1003, ¶233; USAA-1005, [0061], [0163], [0073].

As discussed (e.g., §III.D.1, *supra*), a POSITA would have configured the combination to use Tamir’s data collection technique to improve Peng’s motion recording process by using variable sampling rates. USAA-1012, 9:10-20, 20:52-21:11; USAA-1003, ¶233. Tamir’s “sampling rate is adjusted according to the driving

pattern of vehicle 15.” For example, “when...the driver is driving relatively dangerously” or “when an accident is possible,” “a higher sampling rate is used.” *Id.*, 20:52-21:2. A POSITA would have therefore found obvious that when the combination device detects a notable driving event (“*an event*”), a higher sampling rate is used (“*driving information captured at a higher sampling rate than when an event is not detected*”). USAA-1003, ¶233.

As discussed (§III.A.1, [1.10], [2], *supra*), the combination renders obvious that the predetermined action is storing driving information associated with that event to the memory. USAA-1003, ¶233; USAA-1005, [0061], [0163], [0073]. As discussed (e.g., §III.D.1, *supra*), a POSITA would have configured the combination to use Tamir’s data collection technique to improve Peng’s motion recording process by using variable sampling rates. USAA-1012, 9:10-20, 20:52-21:11; USAA-1003, ¶233. Tamir’s “sampling rate is adjusted according to the driving pattern of vehicle 15.” For example, “when...the driver is driving relatively dangerously” or “when an accident is possible,” “a higher sampling rate is used.” *Id.*, 20:52-21:2. A POSITA would have therefore found obvious that when the combination device detects a notable driving event (“*an event*”), a higher sampling rate is used (“*driving information captured at a higher sampling rate than when an event is not detected*”). USAA-1003, ¶233.

In doing so, a POSITA would have appreciated the benefits of preserving more information related to an event of interest (e.g., NDEs) to derive better metrics and/scores to reflect the event of interest, compared to other collection period

without any event of interest. USAA-1003, ¶234 (citing USAA-1024, [0016], [0027], [0057]-[0058]. Moreover, a POSITA would have understood that the adapted sampling rate can increase efficient use of storage resources. USAA-1005, [0071]; USAA-1003, ¶234.

IV. PTAB DISCRETION SHOULD NOT PRECLUDE INSTITUTION

Consistent with Congressional intent, the goals of *Fintiv*, and the interim guidance issued by Director Vidal on June 21, 2022, USAA asks the Board to consider the challenges raised in this Petition. IPR2020-00019, Pap. 11, 6 (PTAB Mar. 20, 2020) (precedential)(“*Fintiv*”). First, a holistic analysis of the *Fintiv* framework favors institution.⁸

Even were that not the case, the Petition presents compelling challenges and, for at least that additional reason, “the PTAB should not discretionarily deny institution under *Fintiv*.” USAA-1065, 3-5; IPR2022-01242 Pap. 23 at 3, 5-6 (Feb. 27, 2023)(precedential)(“*Commscope*”).

1. Factor 1: Neither Party has yet Requested a Stay

⁸ Apart from Petitioner’s showing that the *Fintiv* factors favor institution, the *Fintiv* framework should not be followed because the framework (1) exceeds the Director’s authority, (2) is arbitrary and capricious, and (3) was adopted without notice-and-comment rulemaking.

Factor 1 is at worst neutral, as neither party has yet requested a stay, and the Board “will not attempt to predict” how a district court might adjudicate a future motion to stay. *Fintiv*, 12; IPR2019-01393, Pap. 24, 7 (June 16, 2020)(“*Sand Revolution*”)(informative); IPR2020-01019, Pap. 12, 14 (Dec. 1, 2020)(“*Sotera*”)(precedential).

2. Factor 2: The Relative Timing of Proceedings Favors Institution

USAA has been diligent. Telematics filed its complaint on 5/11/2022, and this Petition is being filed two months prior to the statutory bar date. IPR2020-00156, Pap. 10, 9 & n.8 (June 15, 2020) (“*Seven*”); USAA-1004.

Although the District Court—one of the busiest patent courts—has set an estimated March 2024 trial date, “scheduled trial dates are unreliable and often change.” USAA-1065, 8; USAA-1066, 5. Thus, “the proximity to trial should not alone outweigh” other relevant factors. *Id.*, 8.

Based on the 5/11/2022 filing date of the complaint and a median time-to-trial of about 28.3 months (USAA-1067, 37), jury trial can currently be expected to occur in late September 2024. Based on the 18-month IPR schedule and a typical delay in issuance of notice of filing date accorded of less than 1 month, the Board will likely issue its Final Written Decision (“FWD”) in late September or early October 2024 (i.e., around the same time as the median-expected trial). USAA-1065, 9.

For at least these reasons, Factor 2 favors institution. *See* USAA-1065, 8-9.

3. Factor 3: Petitioner’s Diligence and Investment in IPR Favors Institution

By any objective standard, this petition is being filed at an early stage of the litigation, which “has weighed against exercising the authority to deny institution[.]” *Seven*, 11-12 (quoting *Fintiv*, 11). Indeed, the District Court have yet to expend significant resources on invalidity. *Seven*, 10-13; *Sotera*, 16-17; IPR2020-00820, Pap. 15, 11-13 (Oct. 21, 2020)(“*Snap*”)(precedential).

4. Factor 4: The Petition’s Grounds are Materially Different from Any that Might be Raised in Litigation

Though Telematics presently alleges infringement of the ’487 patent’s claims 1, 2, 3, 6, 9, 10, 11, 12, and 13, its contentions are preliminary, and thus, USAA it unable to identify the full complement of claims for which Telematicas will ultimately allege infringement. USAA-1075, 6. This Petition, however, challenges all claims of the ’487 patent. Accordingly, a material number of the Challenged Claims are likely be left unaddressed in the Litigation. *Seven*, 21.

Furthermore, to eliminate any doubt as to the absence of meaningful overlap between the Litigation and IPR, USAA stipulates that upon institution of this Petition, USAA will not seek resolution in the District Court of any ground of invalidity utilizing any of Peng, Chatterjee, Tamir, Balachandran, or Katayama. USAA-

1074. By this stipulation, Factor 4 weighs heavily against denial of institution because, upon institution, there would be *zero overlap* between the prior art in this IPR and the prior art in District Court. *See* IPR2021-00972 Pap. 10, 13-16 (Dec. 8 2021)(“*AliveCor*”); IPR2021-00033, Pap. 13, 14 (April 30, 2021).

5. Factor 5: The Parties are the Same

The Litigation involves the same parties. However, with respect to Factor 5, the *Fintiv* decision “says nothing about situations in which the petitioner is the same as, or is related to, the district court defendant.” IPR2020-00122, Pap. 15, 10 (Crumbley, dissenting); *Fintiv*, 13-14. Factor 5 is, at worst, be neutral. *Snap*, 16.

6. Factor 6: The Merits of this Petition Compel Institution

Director Vidal has explained that “the PTAB will not deny institution...under *Fintiv*...when a petition presents compelling evidence of unpatentability[.]” USAA-1065 (*Director’s Guidance*), 3-5, 9; *Fintiv*, 14-15.

The merits of this Petition are compelling. Institution would result in a finding of unpatentability and, even assuming that the District Court Litigation is thought relevant (it is not) the strength of the merits alone is enough to outweigh any inefficiencies born of parallel litigation. USAA-1065, 3-5, 9; *Fintiv*, 14-15. Further, Institution would *promote* the AIA’s objectives of providing an effective and efficient alternative to district court litigation. Sen. Rep. No. 110-259 (2008); H.R. Rep. No. 112-98, pt. 1, 39-40; *Snap*, 16-19; *Commscope*, 4.

V. CONCLUSION AND FEES

The Challenged Claims are unpatentable. USAA-1003, ¶¶13, 117-232.

USAA authorizes charge of fees to Deposit Account 06-1050.

VI. MANDATORY NOTICES UNDER 37 C.F.R § 42.8(a)(1)

A. Real Party-In-Interest Under 37 C.F.R. § 42.8(b)(1)

United Services Automobile Association (“USAA”) is the real party-in-interest.

B. Related Matters Under 37 C.F.R. § 42.8(b)(2)

The ’487 Patent is the subject of a civil action, *Auto Telematics Ltd. v. United Services Automobile Association*, 6:22-cv-00474-ADA-DTG, W.D. Tex., filed May 11, 2022. USAA-1004. USAA is not aware of any other disclaimers, reexamination certificates, or IPR petitions addressing the ’487 Patent. USAA is concurrently filing a second petition challenging claims of the ’487 patent in IPR2023-00518.

C. Lead And Back-Up Counsel Under 37 C.F.R. § 42.8(b)(3)

USAA provides the following designation of counsel.

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D. Service Information

Please address all correspondence and service to the address listed above.

Petitioner consents to electronic service by email at IPR36137-0025IP2@fr.com

(referencing No. 36137-0025IP2 and cc'ing PTABInbound@fr.com, axf-ptab@fr.com, tar@fr.com, patrick@fr.com, gkim@fr.com, and zoppo@fr.com).

Respectfully submitted,

Dated 3/17/2023

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CERTIFICATION UNDER 37 CFR § 42.24

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petition for *Inter Partes* Review totals 13,956 words, which is less than the 14,000 allowed under 37 CFR § 42.24.

Dated 3/17/2023

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(4)(i) *et seq.* and 42.105(b), the undersigned certifies that on March 17, 2023, a complete and entire copy of this Petition for *In-ter Partes* Review and all supporting exhibits were provided via Federal Express, to the Patent Owner, by serving the correspondence address of record as follows:

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