

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of: Andrew William Wright
U.S. Patent No.: 10,192,369 Attorney Docket No.: 36137-0026IP3
Issue Date: January 29, 2019
Appl. Serial No.: 15/454,937
Filing Date: March 9, 2017
Title: METHOD AND SYSTEM FOR LOGGING VEHICLE
BEHAVIOR

Mail Stop Patent Board

Patent Trial and Appeal Board
U.S. Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

PETITION FOR *INTER PARTES* REVIEW OF
UNITED STATES PATENT NO. 10,192,369

TABLE OF CONTENTS

I.	REQUIREMENTS	9
A.	Grounds for Standing.....	9
B.	Challenge and Relief Requested.....	9
C.	Claim Construction	11
II.	THE '369 PATENT	12
A.	Specification	12
B.	Prosecution History.....	13
III.	THE CHALLENGED CLAIMS ARE UNPATENTABLE.....	14
A.	[GROUND 1A] – Forstall, Rabu, Langle2009, and Katayama Renders Claims 1-4, 10-12, 16, 17, 19-24 Obvious	14
1.	Proposed Combination	14
2.	Claim 1	38
3.	Elements of Claim 26	58
4.	Claims 2-4, 10-12, 16, 17, 19-24	59
B.	[GROUND 1B] – Forstall, Rabu, Langle2009, Katayama, and Tamir Renders Claim 5 Obvious	69
1.	Proposed Combination	69
2.	Claim 5	70
C.	[GROUND 1C] – Forstall, Rabu, Langle2009, Katayama, and Balachandran Renders Claims 7, 8, 15 Obvious	71
1.	Proposed Combination	71
2.	Claims 7, 8, 15.....	73
D.	[GROUND 1D] – Forstall, Rabu, Langle2009, Katayama, and Thompson2010 Renders Claims 13 and 14 Obvious	77
1.	Proposed Combination.....	77
2.	Claims 13, 14.....	80
E.	[GROUND 1E] – Forstall, Rabu, Langle2009, Katayama, and Warren Renders Claims 6, 9, 18 Obvious	82
1.	Proposed Combination	82
2.	Claims 6, 9, 18.....	84
F.	[GROUND 1F] – Forstall, Rabu, Langle2009, Katayama, and Willis Renders Claim 25 Obvious	86
1.	Proposed Combination	86
2.	Claim 25	88
G.	[GROUND 1G] – Forstall, Rabu, Langle2009, Katayama, and Berkobin Renders Claim 27 Obvious	88
1.	Proposed Combination	88

2.	Claim 27	90
IV.	PTAB DISCRETION SHOULD NOT PRECLUDE INSTITUTION.....	91
V.	CONCLUSION AND FEES	95
VI.	MANDATORY NOTICES UNDER 37 C.F.R § 42.8(a)(1).....	95
	A. Real Party-In-Interest Under 37 C.F.R. § 42.8(b)(1).....	95
	B. Related Matters Under 37 C.F.R. § 42.8(b)(2)	95
	C. Lead And Back-Up Counsel Under 37 C.F.R. § 42.8(b)(3).....	95
	D. Service Information	96

EXHIBITS

USAA-1001	U.S. Patent No. 10,192,369 to Wright (“the ’369 Patent”)
USAA-1002	Excerpts from the Prosecution History of the ’369 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	International Publication No. WO 2010/042545 to Curry et. al (“Curry”)
USAA-1006	U.S. Patent No. 7,821,421 to Tamir et. al (“Tamir”)
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 (“Cheng”)
USAA-1012	U.S. Pat. No. 8,290,480 to Abramson (“Abramson”)
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 (“Hunt”)
USAA-1021	Kanianthra, Joseph et al., “Arthur Carter, and Gerard Preziotti. Enhancing post-crash vehicle safety through an automatic collision notification system,” No. 2001-06-0085. SAE Technical Paper, 2001 (“Kanianthra”)
USAA-1022	Megalingam R.K. et al., “Wireless vehicular accident detection and reporting system.” 2010 International Conference on Mechanical and Electrical Technology. IEEE, 2010 (“Megalingam”)
USAA-1023	Farris, P. et al., “General Motors OnStar.” Darden Case No. UVA-M-0659 (“Farris”)
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	RESERVED
USAA-1027	Linda Null and Julia Lobur, 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 et al., “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	U.S. Pat. Publication No. 2012/0014659 to Hugosson (“Hugosson”)
USAA-1038	U.S. Pat. Publication No. 2011/0225284 to Savolainen (“Savolainen”)
USAA-1039	U.S. Pat. Publication No. 2010/0174449 to Kim (“Kim”)
USAA-1040	RESERVED

- USAA-1041 Zhao, Yilin, “Telematics: safe and fun driving,” IEEE Intelligent systems 17.1 (2002): 10-14 (“Zhao”)
- 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 Wakihara, Masataka, “Recent developments in lithium ion batteries,” Materials Science and Engineering: R: Reports 33.4 (2001): 109-134 (“Wakihara”)
- 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”)
- USAA-1046 Zhao, Yilin, “Vehicle Location and Navigation Systems,” Artech House, Boston (1997) (“Zhao1997”)
- 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. et al., “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”)
- USAA-1050 Flinchbaugh, B., “Smart Camera Systems Technology Roadmap,” Real-Time Vision for Human-Computer Interaction (2005), 285-297 (“Flinchbaugh2005”)

- 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, WSAW’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 et al., “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”)

- USAA-1060 De Fabritiis, Corrado et al., “Traffic estimation and prediction based on real time floating car data,” 2008 11th international IEEE conference on intelligent transportation systems, IEEE, 2008 (“DeFabritiis2008”)
- 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 *Auto Telematics Ltd. v. United Services Automobile Association*, 6:22-cv-00474 (W.D. Tex. September 16, 2022)
- USAA-1067 U.S. District Court Statistics (Dec. 31, 2022), *available at* https://www.uscourts.gov/sites/default/files/data_tables/fcms_na_distprofile1231.2022.pdf
- USAA-1068 USAA’s Opening Claim Construction Brief in *Auto Telematics Ltd. v. United Services Automobile Association*, 6:22-cv-00474

(W.D. Tex. December 19, 2022)

USAA-1069	Plaintiff's Claim Construction Response Brief in <i>Auto Telematics Ltd. v. United Services Automobile Association</i> , 6:22-cv-00474 (W.D. Tex. January 12, 2023)
USAA-1070	USAA's Reply Claim Construction Brief in <i>Auto Telematics Ltd. v. United Services Automobile Association</i> , 6:22-cv-00474 (W.D. Tex. January 25, 2023)
USAA-1071	Plaintiff's Claim Construction Sur-Reply Brief in <i>Auto Telematics Ltd. v. United Services Automobile Association</i> , 6:22-cv-00474 (W.D. Tex. February 6, 2023)
USAA-1072	Joint Claim Construction Statement in <i>Auto Telematics Ltd. v. United Services Automobile Association</i> , 6:22-cv-00474 (W.D. Tex. February 7, 2023)
USAA-1073	Claim Construction Order in <i>Auto Telematics Ltd. v. United Services Automobile Association</i> , 6:22-cv-00474 (W.D. Tex. February 17, 2023)
USAA-1074	Stipulation by USAA
USAA-1075	Plaintiff Auto Telematics Ltd.'s Preliminary Infringement Contentions and Identification of Document Production Accompanying Disclosure in <i>Auto Telematics Ltd. v. United Services Automobile Association</i> , 6:22-cv-00474 (W.D. Tex. August 26, 2022)
USAA-1076	United Services Automobile Association's Preliminary Invalidity Contentions in <i>Auto Telematics Ltd. v. United Services Automobile Association</i> , 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

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 being configured to: determine, based on at least one of the inputs received by the user interface and sensor data from the device's sensor set, a start of a driving period during which the mobile device is removably attached to the vehicle and the vehicle is in use;
	[1.7]	process the sensor data from the sensor set during the driving period to derive driving information associated with how the vehicle is driven; and
	[1.8]	store a selection of the driving information to the memory;
	[1.9]	wherein the driving information is derived without data from the vehicle sensors, and
	[1.10]	the memory comprises: a long term memory for persistently storing driving information and a short term memory for transiently storing driving information,
	[1.11]	wherein the short term memory receives driving information at a higher update rate than the long term memory,
	[1.12]	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
	[1.13]	overwrite the driving information previously written to the short term memory in accordance with the predetermined sequence.
2	[2]	A mobile telecommunications device according to claim 1, wherein 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.
3	[3.1]	A mobile telecommunications device according to claim 2, wherein the mobile telecommunications device is controlled by the downloaded application to control the mobile device to detect an occurrence of a predetermined event and
	[3.2]	in response transfer data from the short term memory to the long term memory.
4	[4]	A mobile telecommunication device according to claim 2, wherein predetermined action is storing driving information associated with that event to the memory.
5	[5]	A mobile telecommunication device according to claim 2, wherein predetermined action is storing driving information captured at a higher sampling rate than when an event is not detected.
6	[6]	A mobile telecommunication device according to claim 2, wherein predetermined action is transmitting driving information via a wireless telecommunication module of the mobile telecommunication device to a remote system.
7	[7.1]	A mobile telecommunications device according to claim 2, wherein the predetermined action comprises providing feedback to a user to indicate that an event has been detected,
	[7.2]	the mobile telecommunications device being configured to receive a user interaction to confirm or deny whether the detected event has actually occurred following said

Claim	Identifier	Claim Language
		feedback.
8	[8.1]	A mobile telecommunications device according to claim 7, wherein the feedback comprises notifying a user that a further action has been scheduled, and will be taken within a predetermined period,
	[8.2]	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.
9	[9.1]	A mobile telecommunications device according to claim 2, wherein the predetermined action comprises communicating to a remote system that an event has been detected,
	[9.2]	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.
10	[10]	A mobile telecommunications device according to claim 2, wherein the device is controlled by the downloaded application to manage voice-calls incoming to the mobile telecommunications device during a driving period.
11	[11]	A mobile telecommunications device according to claim 2, wherein the device is controlled by the downloaded application to enable a hands-free mode of operation on detection of the driving period.
12	[12]	A mobile telecommunications device according to claim 11, wherein the hands-free mode of operation comprises enabling voice-activated commands on the mobile device.
13	[13.1]	A mobile telecommunications device according to claim 2, wherein the device is controlled by the downloaded application to detect the occurrence of a predetermined event of significance, such as a crash, and

Claim	Identifier	Claim Language
	[13.2]	in response to store driving information associated with that event to the memory.
14	[14.1]	A mobile telecommunications device according to claim 2, wherein the device is controlled by the downloaded application to detect the occurrence of a predetermined event of significance, such as a crash, and
	[14.2]	in response to transmit driving information associated with that event via the wireless telecommunication module to a remote data-logging system.
15	[15]	A mobile telecommunications device according to claim 2, wherein the at least one predetermined action comprises providing the user with options to control the mobile device to take further actions.
16	[16.1]	A 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,
	[16.2]	to receive at least a portion of the external driving information from the external device.
17	[17]	A mobile telecommunications device according to claim 16, further arranged to interface with the external device wirelessly.
18	[18]	A mobile telecommunications device according to claim 1, wherein the mobile telecommunications 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.
19	[19]	A mobile telecommunications device according to claim 1, wherein the mobile telecommunications device utilizes its own power supply.
20	[20]	A mobile telecommunications device according to claim 1, wherein the mobile telecommunications device is a

Claim	Identifier	Claim Language
		smartphone.
21	[21]	A mobile telecommunications device according to claim 1, wherein the process step comprises determination of at least one of: vehicle acceleration events and vehicle braking events.
22	[22.1]	A mobile telecommunications device according to claim 21, wherein process step comprises determination of vehicle swerving events and
	[22.2]	the determination of such events occurs when data from the sensor set accords with preset parameters.
23	[23]	A mobile telecommunications device according to claim 1, wherein the process step comprises determination of both vehicle acceleration events and vehicle braking events.
24	[24.1]	A mobile telecommunications device according to claim 23, wherein process step comprises the determination of vehicle swerving events and
	[24.2]	the determination of such events occurs when data from the sensor set accords with preset parameters.
25	[25.1]	A mobile telecommunications device according to claim 1, wherein the mobile telecommunications device further comprises a proximity sensor and
	[25.2]	the instructions, upon execution by the processor, enable the mobile telecommunications device to detect the proximity of the mobile telecommunications device to the vehicle.
26	[26.1]	A mobile telecommunications device configured to log driving information associated with a vehicle,
	[26.2]	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;
	[26.3]	a user interface;

Claim	Identifier	Claim Language
	[26.4]	a processor and;
	[26.5]	a memory;
	[26.6]	the mobile telecommunications device being configured to: determine, based on at least one of the inputs received by the user interface and sensor data from the device's sensor set, a start of a driving period during which the mobile device is removably affixed to the vehicle and the vehicle is in use;
	[26.7]	process the sensor data from the sensor set during the driving period to derive driving information associated with how the vehicle is driven; and
	[26.8]	store a selection of the driving information to the memory;
	[26.9]	wherein the driving information is derived without data from the vehicle sensors, and
	[26.10]	the memory comprises: a long term memory for persistently storing driving information and a short term memory for transiently storing driving information,
	[26.11]	wherein the short term memory receives driving information at a higher update rate than the long term memory,
	[26.12]	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,
	[26.13]	overwrite the driving information previously written to the short term memory in accordance with the predetermined sequence.
27	[27.1]	A mobile telecommunications device configured to log driving information associated with a vehicle,
	[27.2]	the mobile telecommunications device comprising: a sensor set comprising an image sensor, an audio sensor, an accelerometer or a positioning module, or a

Claim	Identifier	Claim Language
		combination thereof;
	[27.3]	a user interface;
	[27.4]	a processor and;
	[27.5]	a memory;
	[27.6]	the mobile telecommunications device being configured to: determine, based on at least one of the inputs received by the user interface and sensor data from the device's sensor set, a start of a driving period during which the mobile device is removably affixed to the vehicle and the vehicle is in use;
	[27.7]	process the sensor data from the sensor set during the driving period to derive driving information associated with how the vehicle is driven;
	[27.8]	the processing involving the use of a neural network on the mobile telecommunications device to determine whether the driving information represents an acceptable or unacceptable driving pattern; and,
	[27.9]	store a selection of the driving information to the memory;
	[27.10]	wherein the driving information is derived without data from the vehicle sensors, and
	[27.11]	the memory comprises: a long term memory for persistently storing driving information and a short term memory for transiently storing driving information,
	[27.12]	wherein the short term memory receives driving information at a higher update rate than the long term memory,
	[27.13]	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,
	[27.14]	overwrite the driving information previously written to the short term memory in accordance with the

Claim	Identifier	Claim Language
		predetermined sequence.

United Services Automobile Association (“Petitioner” or “USAA”) petitions for *Inter Partes* Review (“IPR”) of claims 1-27 (“Challenged Claims”) of U.S. Patent No. 10,192,369 (“the ’369 patent”).

I. REQUIREMENTS

A. Grounds for Standing

USAA certifies that the ’369 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 ’369 patent less than one year ago. USAA-1004.

B. Challenge and Relief Requested

USAA requests IPR and cancellation of the Challenged Claims on the grounds below. In support, a declaration from Dr. William Michalson¹ (USAA-1003) is furnished herewith.

Ground	Claims	Basis
1A	1-4, 10-12, 16, 17, 19-24, 26	§103: Forstall, Rabu, Langle2009, Katayama
1B	5	§103: Forstall, Rabu, Langle2009, Katayama, Tamir
1C	7, 8, 15	§103: Forstall, Rabu, Langle2009, Katayama, Balachandran
1D	13, 14	§103: Forstall, Rabu, Langle2009,

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

Ground	Claims	Basis
		Katayama, Thompson2010
1E	6, 9, 18	§103: Forstall, Rabu, Langle2009, Katayama, Warren
1F	25	§103: Forstall, Rabu, Langle2009, Katayama, Willis
1G	27	§103: Forstall, Rabu, Langle2009, Katayama, Berkobin

The '369 patent was filed 3/9/2017, and claims indirect priority to GB Pat. App. No. 1021292.6 filed 12/15/2010 ("Critical Date"). USAA does not concede that the Challenged Claims are entitled to the claimed priority, but nevertheless applies prior art before the alleged date. USAA-1003, ¶¶13-15, 26-29.² Applied references are prior art based at least one bases below:

Reference	Date(s)	Basis
Forstall	1/1/2009	§102(a)
Rabu	12/15/2009	§102(e)
Langle	8/31/2009	§102(b)
Katayama	4/23/2008	§102(b)
Tamir	2/1/2007 10/26/2010	§102(b) §102(a)
Balachandran	6/6/2000	§102(b)
Thompson2010	July 2010	§102(a)

² In its Infringement Complaint, Telematics stated "[t]he '369 Patent...claims priority to PCT Application No. to PCT Application No. PCT/GB2011/052492, filed on December 15, 2011." USAA-1004, 9-10.

Reference	Date(s)	Basis
Warren	3/9/2006	§102(b)
Willis	11/10/2007	§102(b)
Berkobin	10/16/2008	§102(b)

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 being configured to: determine, based on at least one of the inputs received by the user interface and sensor data from the device's sensor set, a start of a driving period during which the mobile device is removably attached to the vehicle and the vehicle is in use

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, ¶151. The ’369 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[,]” “the mobile device being installed to the vehicle and/or the vehicle being driven.” USAA-1001, 3:32-62; USAA-1003, ¶152.

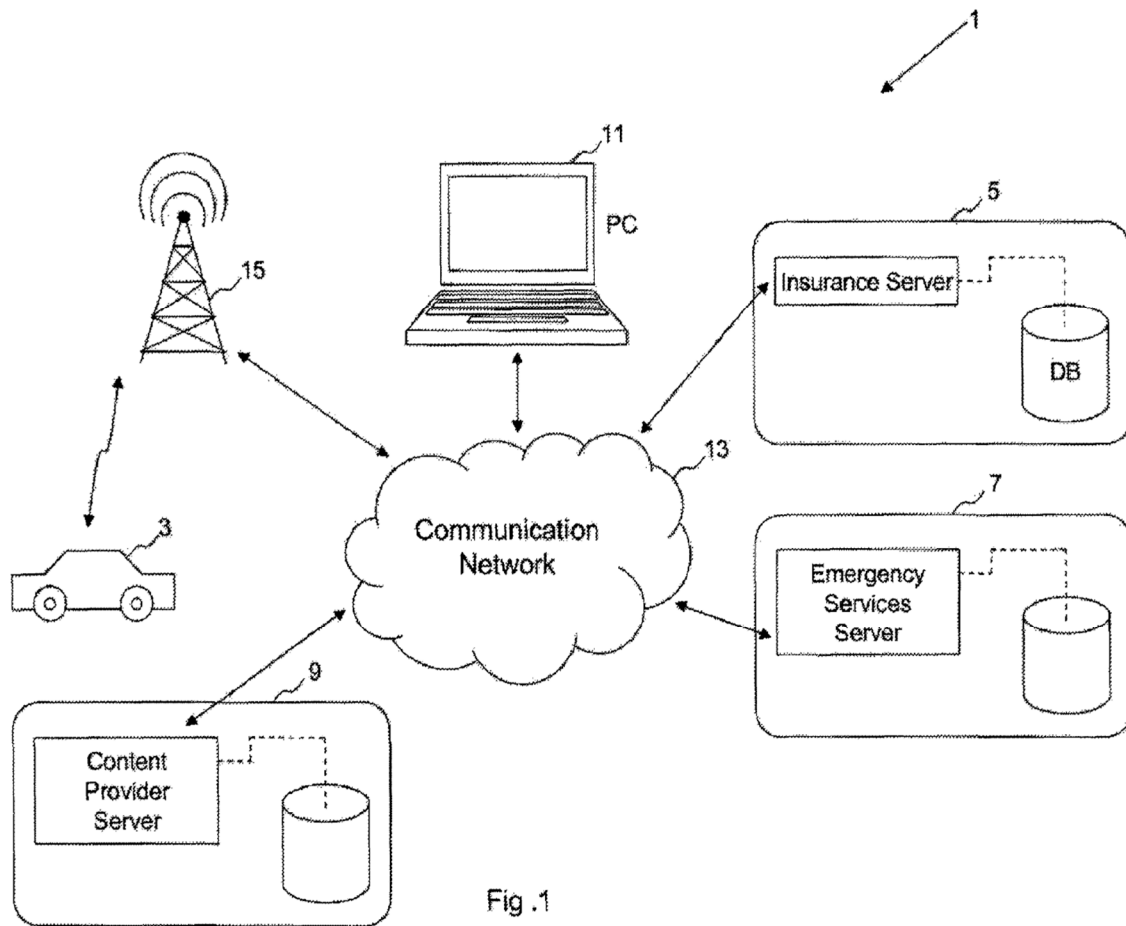
Thus, this claim term establishes two distinct “driving period” attributes: (1) “the mobile device is removably attached to the vehicle” and (2) “the vehicle is in use.” USAA-1003, ¶153. These attributes may be satisfied by a start of a monitoring period, whether at the onset of vehicle driving or whether instead before or thereafter. *Id.*

II. THE ’369 PATENT

A. Specification

The ’369 patent is directed to “logging driving information....” USAA-1001, Abstract. A mobile device installed in the vehicle logs information can “determine the cause of an accident,” “modify driver behavior,” or “determine insurance premiums.” *Id.*, 1:19-27; USAA-1003, ¶¶55-58. These techniques were conventional by the Critical Date. *See* USAA-1003, ¶¶30-54 (technology overview). Even the ’369 patent acknowledges that “data logging devices that can be retrofitted to road conditions” are “known in the art.” *Id.*, 1:46-55.

Figure 1 shows a system 1 placed in automobile 3:



USAA-1001, Fig. 1

System 1 includes a mobile device configured to “monitor and process sensor data” to “derive driving information,” for example, to monitor “a driver’s driving performance.” *Id.*, 13:33-53; 13:15-32; USAA-1003, ¶58.

B. Prosecution History

During prosecution of the '369 patent, the Examiner rejected the claims over U.S. Pub. Nos. 2010/0030540 (“Choi”), 2012/0166583 (“Koonce”), and 2011/0117878 (“Barash”). *See* USAA-1002, 100-108. This petition addresses

claim features distinguished during prosecution using new combinations of prior art, none of which were previously considered. USAA-1003, ¶¶59-60.

III. THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. [GROUND 1A] – Forstall, Rabu, Langle2009, and Katayama Renders Claims 1-4, 10-12, 16, 17, 19-24 Obvious

1. Proposed Combination

(a) Forstall

Forstall describes using a mobile device with embedded sensors for vehicle navigation. USAA-1028, [0004]. The mobile device provides “the ability to provide directions from a point of origin to a destination” and “display[s] a current position on a map as well as deliver navigation instructions based on the current position to route a user to a desired destination.” *Id.*; USAA-1003, ¶¶62-63.

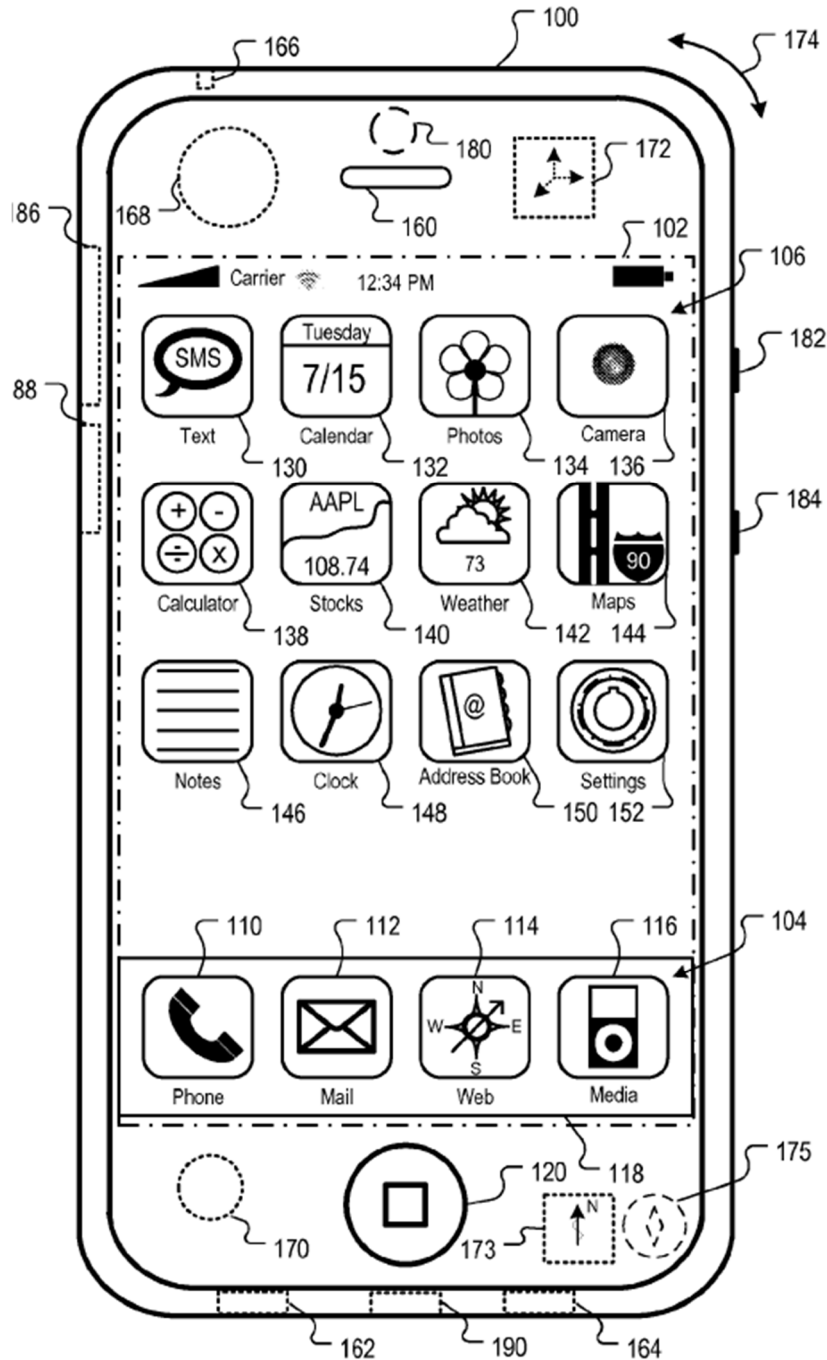


FIG. 1

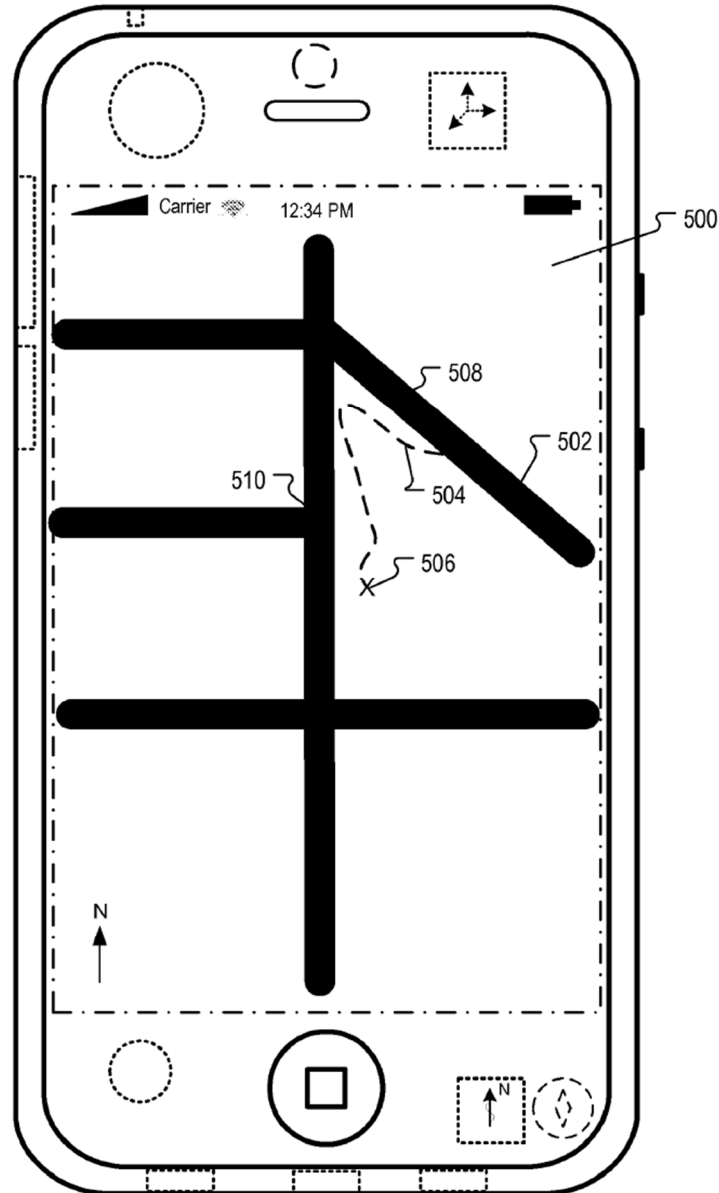
USAA-1028, Fig. 1

Device 100 can be implemented as, e.g., a “cellular telephone” or a “smartphone.” USAA-1028, [0024]. It includes embedded sensors used to “detect

motion movement,” including proximity sensor 168, ambient light sensor 170, accelerometer 172, compass 173, and gyroscope 175. *Id.*, [0036]; USAA-1003, ¶64.

Device 100 runs a navigation application that “provide[s] navigation information, e.g., map information, location information, route information, and other information.” USAA-1028, [0042]. The navigation application provides graphical interfaces relating to vehicle navigation, with which a user interacts to access the navigation application. USAA-1028, [0030]-[0033]. For example, per Figure 1, the user can “invoke a map functionality, e.g., by pressing the maps object 144[.]” *Id.*, [0042]; USAA-1003, ¶65.

Figure 5 (below) shows an exemplary map display 500 with “a number of streets and a point of origin 'O' 502[,]” and paths “measured by the device 100 from the origin 502 to a destination” (dashed line 504, solid line 508). USAA-1028, [0072]; USAA-1003, ¶¶66-67.



USAA-1028, Fig. 5

In a “dead reckoning” mode, device 100 “measure[s] the movement of device 100 from a point of origin or known location (a ‘fix’) to determine the device’s location relative to the fix.” USAA-1028, [0062]. In this mode, “an accelerometer reading” is used to “determine how the device [100] is positioned relative

to the earth's gravity," thus enabling resolution of "which direction is down relative to the positioning of the device." *Id.*, [0070]; USAA-1003, ¶68.

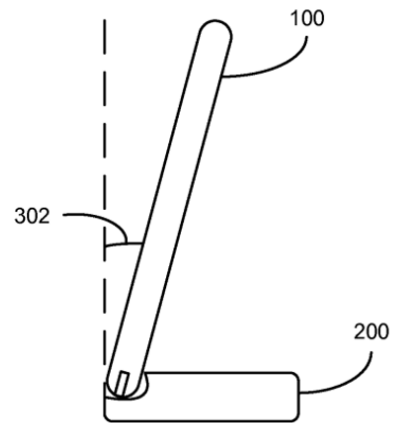
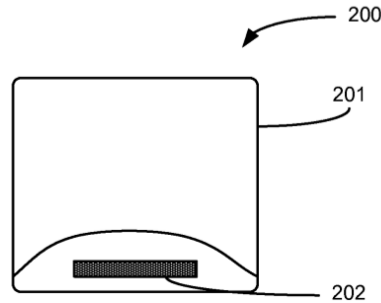
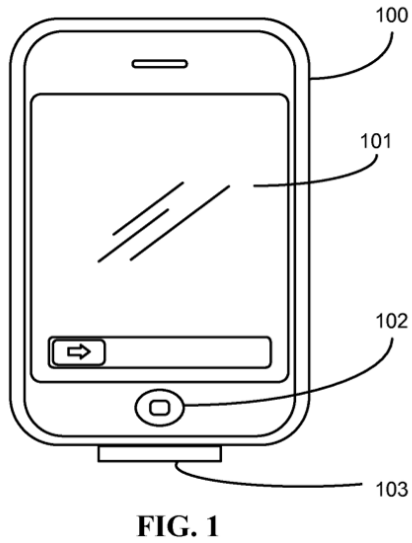
Device 100 can also be set to different modes to adjust the use of dead reckoning functions (e.g., using accelerometer measurements for location measurement). When set to a "vehicle mode," "dead reckoning functions are active" and a "default dead reckoning mode" is used where "sudden accelerations in a positive or negative direction along the axis of the earth's gravity are given a reduced importance[.]" USAA-1028, [0064]. Another mode is "walking mode," where "a walking mode of dead reckoning position measurement" is used for location measurement, e.g., using data collected by "a footwear impact sensor" and "detecting walking motions" such as "periodic accelerations indicative of steps being taken by a user." USAA-1028, [0065], [0071]; USAA-1003, ¶¶69-71.

(b) *Rabu*

Rabu likewise uses an accelerometer within a "portable media device" ("PMD") (e.g., "smart phone"). USAA-1013, Abstract, 1:1-52, 1:60-2:11, 3:11-28, 6:49-7:6, Figs. 1-8. In addition to leveraging the accelerometer for determining whether the PMD is located in a moving or stationary vehicle, Rabu leverages the accelerometer to determine whether the PMD "is in a dock, resting on a surface, or being handled by a person." *Id.* Based on those determinations, Rabu "choose[s] a

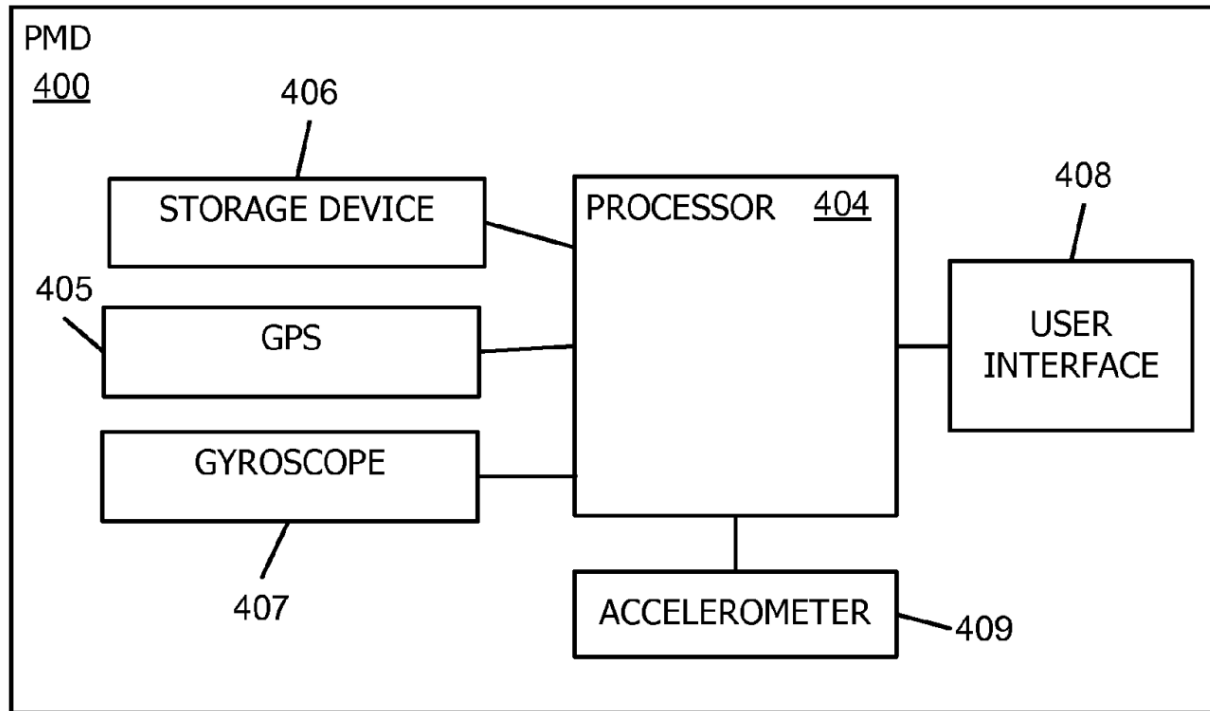
particular mode of operation” for the PMD that can promote driver safety by restricting problematic phone interactions. USAA-1013, 1:53-59, 8:13-10:42, Fig. 5; USAA-1003, ¶72. For example, as explained with respect to processing illustrated by Figs. 7 and 8 (below), if the PMD is “docked in a moving vehicle,” an operating mode with relatively few restrictions might be chosen. USAA-1013, 8:13-10:42, Figs. 5, 7, 8; USAA-1003, ¶76. Conversely, “if the PMD determines that [it] is being held” while driving, the PMD can for example “prevent the driver from sending or receiving text messages.” USAA-1013, 12:26-43; USAA-1003, ¶76.

Rabu’s PMD is mounted using an “automobile dock.” USAA-1013, 3:11-45, Figs. 1, 2. Figures 1-3 (below) show PMD 100 “coupled to dock 200” and positioned “at an angle 302...” Id., 3:46-50. This “orientation” angle is leveraged to confirm whether the PMD is coupled to dock 200, and to “switch to an associated mode of operation.” USAA-1013, 3:29-4:4, 8:13-24, Figs. 2, 7, 3:46-4:4; USAA-1003, ¶73.



USAA-1013, Fig. 1

Figure 4 (below) shows PMD 400 with processor 404, user interface 408, accelerometer 409, (GPS) device 405, and storage device 406. USAA-1013, 4:15-20. Processor 404 uses accelerometer 409 to determine the PMD's motion status and orientation angle. USAA-1013, 3:1-28, 4:21-40, Figs. 1, 4; USAA-1003, ¶¶74-75.



USAA-1013, Fig. 4

(c) *Langle2009*

Langle2009 is focused on using mobile devices to “aid in safe driving practices and detection of emergencies.” USAA-1029, 1. Langle2009 demonstrates its technique using a “Google phone” (“T-Mobile G1”) to “classify safe versus unsafe driving[.]” using sensor data collected by the phone, such as “[braking] distance, acceleration, and deceleration[.]” *Id.*; USAA-1003, ¶77.

Mobile phones like the Google phone were known to include “embedded accelerometers” that were “used for risk level detection while riding in a vehicle.” USAA-1029, 1. Further, “[p]rogramming with accelerometers on the Android

platform was straightforward in support of three axes[,]” and thus, “[u]sing accelerometer measurements, [making] it ... possible to classify driving habits as safe or unsafe.” *Id.* The technique “look[ed] at the two horizontal axes to determine the safety level of the driver, with driving behaviors are evaluated to identify unsafe driving activity, such as braking and lane changing. *Id.*; USAA-1003, ¶¶78-80.

(d) *Katayama*

Katayama is a European patent application that describes a “driving recorder” that records “situation data” that is relevant to driving behavior and that indicates the “surrounding situation or the like of a motor vehicle during a certain period before and after a time of an accident or ...risk incident” in which “a driver...is close to [being] involved in an accident....” USAA-1024, [0001], [0011], [0058]; USAA-1003, ¶81.

Through “after-the-fact analysis” of recorded data the recorder can, for example, determine the cause of an accident. *Id.*, [0001]-[0002]; USAA-1003, ¶72. After-the-fact analysis of recorded data is also leveraged by Katayama for insights into driving behavior that may have contributed to the occurrence of a given “risk incident.” USAA-1024, [0001]-[0002]; USAA-1003, ¶82.

Figure 2 (below) shows an external perspective view of an exemplary driving recorder 1.

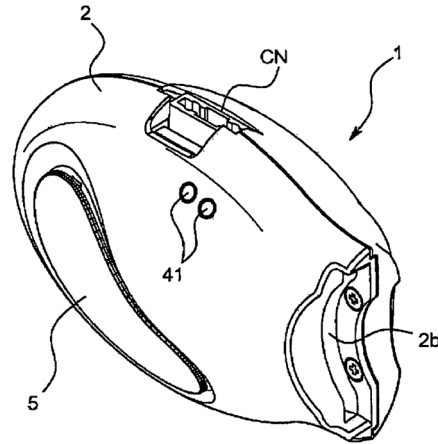


Fig.2

USAA-1024, Fig. 2

Recorder 1 detects occurrence of accidents and/or risk incidents based on “situation data” that includes both sensor data and information derived therefrom, including “acceleration data indicating acceleration applied to a vehicle, position data indicating a position of the vehicle, speed data indicating a speed of the vehicle, brake data indicating whether or not a brake of the vehicle is activated, [and] door open/close data indicating whether a door is open or closed....” USAA-1024, [0013]; USAA-1003, ¶83. Figure 4 (below) depicts components of an exemplary recorder 1, including both internal sensors and an “internal memory 82.” USAA-1024, [0034], [0044]; USAA-1003, ¶ 83. The internal sensors include, e.g., “CCD camera 31,” “acceleration sensor 32,” and “GPS receiver 33.” *Id.* The “internal memory 82” is configured to store sensor data and related derived information, in

addition to programs executed by “CPU 81.” *Id.*

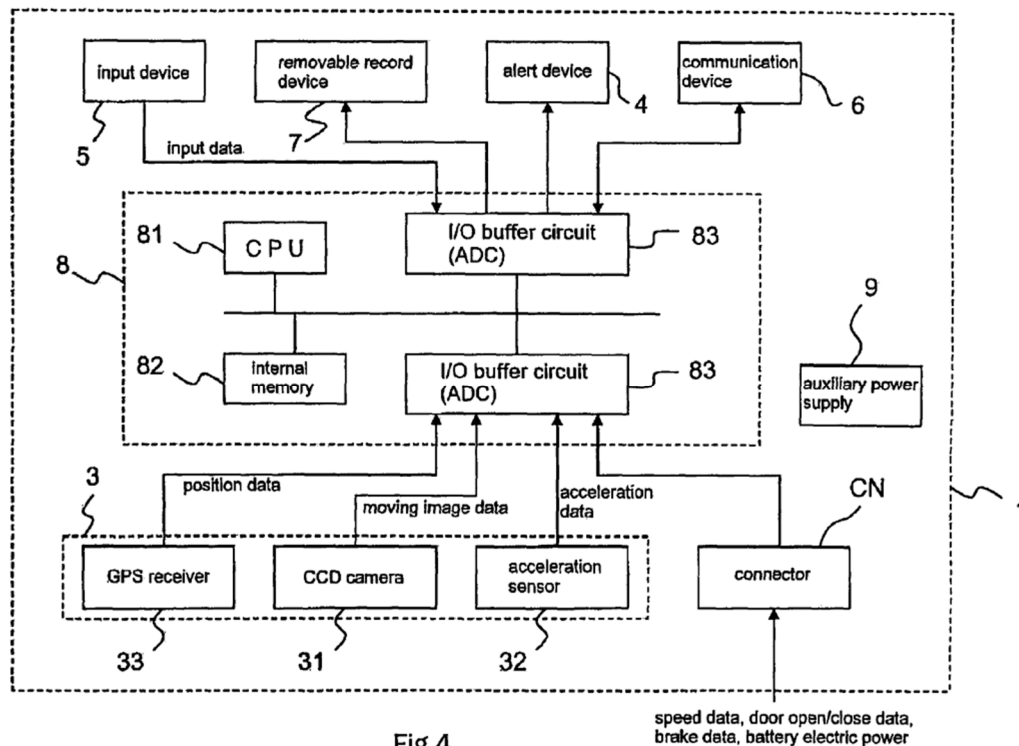


Fig.4

USAA-1024, Fig. 4

Figure 5 (below) is a “functional block diagram” of the “information processing device” depicted in Figure 4. USAA-1024, [0028], [0044]-[0045]; USAA-1003, ¶84. “As shown...each device is controlled...by operating the CPU 81 in accordance with programs stored in a predetermined area of the internal memory 82.” *Id.*

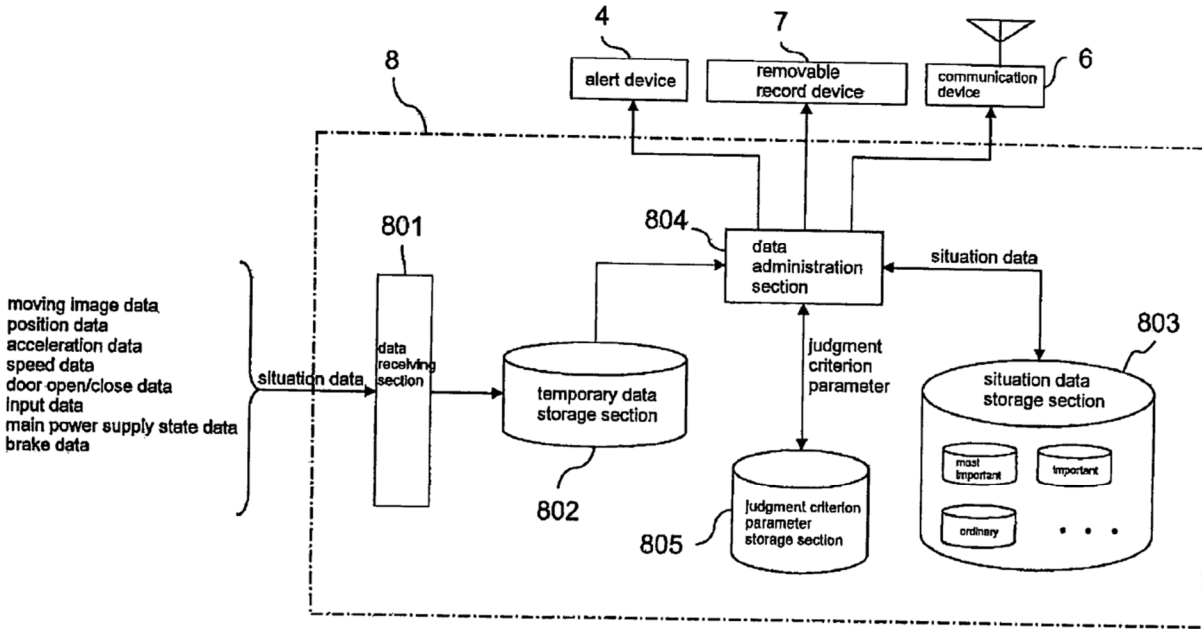


Fig.5

USAA-1024, Fig. 5

As described and shown, memory 82 features an architecture divided into multiple sections, including “data receiving section 801,” “temporary data storage section 802,” “situation data storage section 803,” “data administration section 804,” and “judgment criterion parameter storage section 805.” *Id.*, [0044]. In conjunction with this architecture, Katayama describes data handling techniques that enable “effective use” of the memory’s limited capacity, with protocols to ensure that “important data will not be erased,” but instead will remain available for easy and accurate “after-the-fact analysis” of accidents and/or risk incidents. *Id.*, [0016]; USAA-1003, ¶85.

In more detail, data receiving section 801 receives “situation data” including

sensor data “at a constant sampling time one after another in a chronological order and writes the received situation data” in temporary data storage section 802, which is set in another “predetermined area of the internal memory 82.” *Id.*; USAA-1003, ¶86. Due to that area’s limited capacity, “old data is sequentially erased” and replaced over time with “new situation data.” USAA-1024, [0045], [0016]; USAA-1003, ¶86.

To avoid erasing situation data that might prove useful in determining the cause of an accident or risk incident, data administration section 804 determines at the “time of recording” whether or not temporarily stored situation data meets one or more predetermined criteria for long term storage. USAA-1024, [0001]-[0002], [0016], [0046]-[0050]; USAA-1003, ¶87. If so, the recorded situation data is for example classified with an identifier marking it as “important,”³ and then transferred with the identifier from “temporary data storage section 802” to long term “situation data recording section 803.” *See* USAA-1024, [0001]-[0002], [0011]-

³ Katayama describes a variety of potential categories of classification, with corresponding identifiers for each category; for example, “categories may be specified according to an event that is estimated to have occurred such as...an accident,” according to an “order of importance,” or “in accordance with a combination of the above or other category system.” USAA-1024, [0012]-[0016].

[0016], [0027], [0046]-[0050], [0054], [0083]; USAA-1003, ¶76. In contrast, situation data that is classified with an identifier marking it as less than important remains in “temporary data storage section 802” until eventually overwritten with new data. *See* USAA-1024, [0011]-[0016], [0054]; USAA-1003, ¶87.

Criteria used in determining whether to mark and/or transfer a given set of recorded accelerometer data may include, for example, “whether or not the acceleration” indicated by that data exceeds a “predetermined” threshold, and “whether or not the acceleration continues for more than or equal to a certain period [of time].” USAA-1024, [0047]-[0048]; USAA-1003, ¶88. Accelerometer data meeting either of these criteria may, for example, be marked with a corresponding identifier and transferred to long term storage in “situation data recording section 803.” *See* USAA-1024, [0011]-[0016], [0027], [0046]-[0050], [0054], [0083]; USAA-1003, ¶88.

To enable these and other determinations to take place, “the value (the content) of each situation data is, for example, digitalized in accordance with the judgment criterion parameter” or parameters against which it will be compared, and the resulting “digitalized” values are temporarily stored. *See* USAA-1024, [0047]-[0049]; USAA-1003, ¶89. “[W]hether or not the content of each situation data meets” a “predetermined condition” for marking and/or transfer may then be

judged based on logical comparisons between the stored values and the corresponding parameter(s). USAA-1024, [0049]. For example, “concerning the acceleration,” the predetermined condition may be “satisfied at a time when...both the acceleration data exceeds the predetermined judgment criterion and the acceleration data continues over a certain period [of time].” USAA-1024, [0049].

(e) *Forstall-Rabu-Langle2009*

(i) Forstall-Rabu

A person of ordinary skill in the art (“POSITA”)⁴ would have found it obvious to integrate Rabu’s dock status sensing and associated mode-shifting capabilities into Forstall’s device 100, thereby enhancing the device’s ability to promote safe driving. USAA-1003, ¶¶100-101. As explained below, the resulting device would have added functionality, as it would be capable of defining and determining different types of driving periods based on user inputs and sensor data (including one in which the phone is docked within a moving vehicle, and another in which the phone is undocked within a moving vehicle). *Id.*

For example, the Forstall-Rabu device would have leveraged orientation and motion data from its accelerometer to determine both vehicle motion and phone docking status upon a user initiating an adaptive navigation period. USAA-1003, ¶102; USAA-1013, 3:1-10, 4:21-33, 8:13-10:42, 15:7-22, Figs. 1, 4-5, 7-8.

⁴ USAA-1003, ¶¶14-15 (defining a POSITA)

Consistent with both Forstall and Rabu, the Forstall-Rabu device would have provided a basis for changing the operational mode to “vehicle mode,” which would have enabled position measurement using a “default dead reckoning mode.” USAA-1003, ¶102; USAA-1028, [0064], [0070]; USAA-1013, 3:1-10, 4:21-33, Figs. 1, 4. For example, a POSITA would have found it obvious to leverage motion and orientation data from accelerometer 172 to detect whether device should operating in “vehicle mode.” USAA-1003, ¶102; USAA-1028, [0070].

A POSITA would have also been motivated to seek practical solutions relating to Forstall’s vehicle mode detection since its disclosure lacks implementation details relating to detecting a vehicle mode absent some explicit user indication. USAA-1003, ¶¶103-104; USAA-1028, Abstract, [0064]-[0071].

Those solutions are found within Rabu. USAA-1003, ¶105. Like Forstall, Rabu is focused on mode detection by a mobile device, and further teaches how mode detection improves the use of a mobile device for monitoring when used in a vehicle. The Rabu device leverages a “generally conventional” accelerometer (also in Forstall’s device) to determine its orientation angle and motion status, which is used to determine if it has been docked within a moving vehicle, which enables a change in the operational mode (as opposed, for example, to being hand-held). USAA-1013, 3:1-10, 4:21-33, 8:13-10:42, Figs. 1, 4.

Forstall and Rabu would have also motivated a POSITA to supplement the

detection of a “vehicle mode” on Forstall’s device based on user input. USAA-1028, [0064]. Forstall teaches a “navigation settings screen 400” through which a user can access a “user selectable touch-sensitive display button 402” to “toggle dead reckoning functions on or off.” *Id.*; USAA-1003, ¶¶106-107. The POSITA would have found obvious that enabling the device to automatically detect a “vehicle mode” using a docked/undocked status would introduce multiple additional advantages. *See id.*, ¶¶108-114.

(ii) Forstall-Rabu-Langle2009

As discussed in §III.A.1(a), Forstall describes using a navigation application running on mobile device for vehicle navigation. USAA-1028, [0004], [0030]-[0033], [0042], [0072]. Mobile-based navigation systems were known to increase the risk of accidents since they typically involve mounting a mobile device to a vehicle dashboard so that a user may view navigation information while driving. USAA-1003, ¶115 (citing USAA-1031, [0002]). This safety risk would have motivated a POSITA to venture beyond Forstall’s disclosure to well-known vehicle monitoring systems specifically concerned with safety. *Id.* USAA-1003, ¶115 (citing USAA-1032, 323; USAA-1024, [0004]-[0008]).

One such reference, Langle2009, described a technique to predict accident-related risks. USAA-1029, 1; USAA-1003, ¶116. Like Forstall, Langle2009’s technique utilizes embedded sensors of mobile phones, including accelerometer

data and position data. *Id.* Langle2009 teaches “mobile phones may be used to aid in safe driving practices and detection of emergencies[,]” and thus, the sensors used for improving safety are already present in Forstall’s device. USAA-1029, 1; USAA-1003, ¶116. A POSITA would have reasonably succeeded in incorporating Langle2009’s safety techniques into Forstall’s mobile device since Langle2009 recognizes that “[p]rogramming with accelerometers...is straightforward and supports three axes.” USAA-1003, ¶116 (citing USAA-1032, 323-24; USAA-1031, [0014]-[0018]); USAA-1077, 3-12.

(iii) Forstall-Rabu-Langle2009-Katayama

A POSITA would have found it obvious to enhance the Forstall-Rabu-Langle2009 device through implementation both of Katayama’s teachings on partitioning local memory into several sections (including sections for temporary and long term storage), and its related teachings on data handling, including both the comparison at the time of recording of digitalized sensor data against judgment criteria representative of specific driving behaviors, and storage in appropriate sections of memory of digitalized data with metadata identifiers indicating determinations made through those comparisons. USAA-1024, [0012], [0015], [0048], [0049]; USAA-1003, ¶117.

Furthermore, a POSITA would have understood and found obvious that, like Katayama’s local memory 82, the local memory featured in the Forstall-Rabu-

Langle2009 device, e.g., Forstall's "device 100" has limited capacity, accommodating continuously and sequentially received information including sensor data.

See USAA-1028, [0055]-[0057]; USAA-1003, ¶122.

Forstall explains, for example, that "a device position is stored in memory[,]" along with "[s]ensor data [] received from a motion sensor measuring movement of the device." USAA-1028, [0006], [0075]. Forstall also describes processing of this data, for example, that "[a]n estimated current device location is determined[,]" based on "the device position, received sensor data, and an interpretation of the received sensor data as corresponding to movement along at least one pathway defined by the map data." *Id.*, [0006]. As discussed in §III.A.1(c), Langle2009 further describes techniques to "classify safe versus unsafe driving[]" using sensor data collected by a phone, such as "[braking] distance, acceleration, and deceleration[.]" USAA-1029, 1. From this and related description, a POSITA would have understood and found obvious that driving safety information derived from sensor data is stored locally in a memory on the Forstall-Rabu-Langle2009 device for analysis. USAA-1003, ¶123; USAA-1029, 1 ("[u]sing accelerometer measurements, it should be possible to classify driving habits as safe or unsafe").

Accordingly, a POSITA would have recognized that important information stored in the local memory of the devices of Forstall and Langle2009 are subject to

the risk of being inadvertently erased and overwritten with new data, and would have recognized in Katayama's teachings a solution that could be readily applied in the context of the Forstall-Rabu-Langle2009 device: bifurcation of the local memory into temporary and long term sections, with storage of information identified as important in the long term section. USAA-1003, ¶124; USAA-1024, [0001]-[0002], [0016], [0044]-[0051], [0057].

Further, a POSITA would have recognized that configuring the Forstall-Rabu-Langle2009 device's memory in this manner while generally applying Katayama's related data storage techniques would "enable[] effective use of the memory without erasing important situation data" and "eliminat[e] accumulation of useless data," while at the same time furthering Langle2009's goals of "aid[ing] in safe driving practices and detection of emergencies" and "classify[ing] safe versus unsafe driving" by enabling the Forstall-Rabu-Langle2009 device to detect both accidents and "risk incidents." USAA-1029, Abstract, 1; USAA-1024, [0016], [0053], [0044], [0046]; USAA-1003, ¶125.

More specifically, and as taught by Katayama, the POSITA would have configured the Forstall-Rabu-Langle2009 device to receive "situation data" including sensor data "at a constant sampling time one after another in a chronological order," and to write "the received situation data" in a temporary data storage section within the Forstall-Rabu-Langle2009 device's local memory. USAA-1024,

[0016], [0044]-[0049]; USAA-1003, ¶126. To avoid erasure of situation data that might be useful in determining the cause of an accident or risk incident, or in otherwise analyzing driving behavior as taught by Langle2009, the POSITA would have further configured the Forstall-Rabu-Langle2009 device to “digitalize” temporarily stored situation data for purposes of determining, at the “time of recording,” whether that digitalized situation data meets one or more predetermined criteria for long term storage (for example, whether a value of temporarily stored digitalized accelerometer data exceeds a predetermined threshold). USAA-1024, [0001]-[0002], [0011]-[0016], [0027], [0046]-[0050], [0054], [0083]; USAA-1003, ¶126.

Consistent with Katayama’s teachings, the POSITA would have configured the Forstall-Rabu-Langle2009 device to record situation data determined to be “important” with a metadata “identifier” marking it as such, and to transfer situation data with the identifier from the local memory’s temporary storage to its long term recording section.” USAA-1024, [0001]-[0002], [0011]-[0016], [0027], [0046]-[0050], [0054], [0083]; USAA-1003, ¶127. And, again consistent with Katayama’s teachings, the POSITA would have configured the Forstall-Rabu-Langle2009 device to store situation data determined to be less than important with a metadata “identifier” marking it as such, until such time as the unimportant situation data is overwritten with new data. USAA-1024, [0011]-[0016], [0054];

USAA-1003, ¶127.

As noted above, a POSITA would have understood and found obvious that the Forstall-Rabu-Langle2009-Katayama device resulting from these collective enhancements would, in comparison with the Forstall-Rabu-Langle2009 device, enjoy improved data management with reduced likelihood of erasure of important data. USAA-1003, ¶128; USAA-1028, [0055]-[0057]; USAA-1024, [0014]-[0016], [0045], [0053]. Further, the POSITA would have understood and found obvious that the above enhancements would improve Langle2009's driving safety monitoring techniques, by enabling identification of accidents and "risk incidents", with corresponding improvements to the sophistication of driving safety metrics.⁵ USAA-1029, 1-3; USAA-1024, [0044]-[0046]; USAA-1003, ¶128.

These among other advantages would have amply motivated a POSITA to integrate Katayama's teachings into the Forstall-Rabu-Langle2009 device. USAA-

⁵ For example, a POSITA would have recognized that Katayama's techniques for managing "situation data" would advantageously enable the Forstall-Rabu-Langle2009 device to determine the "surrounding situation or the like of a motor vehicle during a certain period before and after a time of an accident or...risk incident," and to "very easily and accurately[,] enable "after-the-fact analysis" of accidents and risk incidents by third parties. USAA-1024, [0001], [0027].

1003, ¶129; USAA-1028, [0055]-[0057]; USAA-1029, 1-3; USAA-1024, [0001]-[0002], [0011]-[0016], [0027], [0044]-[0050], [0054], [0083]. As explained below, a POSITA would have reasonably expected these enhancements to together produce multiple benefits, including:

1. more effective use of the Forstall-Rabu-Langle2009-Katayama device's local memory, in view of that memory's limited capacity and the need despite that limited capacity to retain important information for analysis while otherwise continually updating the memory with new sensor data and related information (USAA-1003, ¶118; USAA-1028, [0006], [0008], [0055], [0056]; USAA-1024, [0014]-[0016], [0045], [0053]);
2. avoidance of inadvertent erasure of data from the Forstall-Rabu-Langle2009-Katayama device's local memory that might be useful in assessing driving behavior (USAA-1003, ¶119; USAA-1024, [0001]-[0002], [0016], [0045]-[0050]);
3. generation of more sophisticated and accurate predictions derived from information further indicating whether a driver may have been involved in an accident or "risk incident" (USAA-1003, ¶120; USAA-1029, 1-3; USAA-1024, [0044]-[0046]);
4. improved after-the-fact accident reconstruction utilizing the Forstall-

Rabu-Langle2009-Katayama device in support of, for example, real-time route navigation (USAA-1003, ¶121; USAA-1028, [0006]; USAA-1024, [0027], [0031]).

Moreover, configuring the Forstall-Rabu-Langle2009 device to leverage Katayama's teachings would have required only routine knowledge of programming and common electronic components – well within the skill of a POSITA prior to the earliest effective filing date. USAA-1003, ¶130. Indeed, the changes would have amounted to nothing more than the use of known techniques to improve similar devices – in each instance a device for recording and analyzing driving information equipped with a sensor set and a form of electronic storage – in a similar way, 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, ¶130.

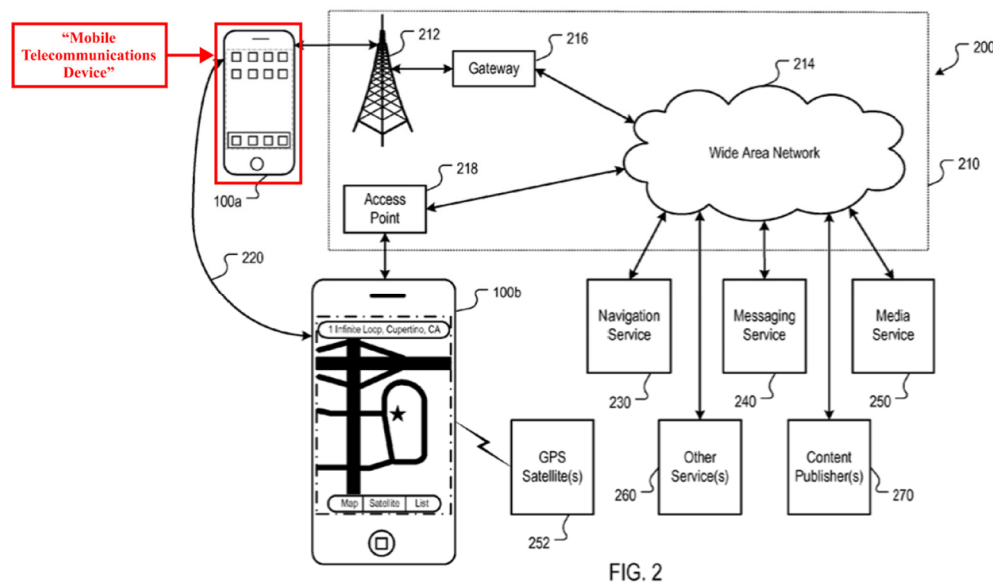
Furthermore, the elements of the resulting combination would each perform functions they had been known to perform prior to the combination—device 100 would store sensor data and related information but, in the specific manner taught by Katayama, would identify and preserve information determined to be important in a form of long-term storage. USAA-1003, ¶131. Accordingly, a POSITA would have naturally expected success when incorporating Katayama's teachings

into the Forstall-Rabu-Langle2009 device. ¶131.

2. Claim 1

[1.1]

The preamble is not properly limiting. Still, even if the preamble were properly limiting, a POSITA would have found it obvious in view of Forstall-Rabu-Langle2009-Katayama (§III.E.1(d)). The Forstall-Rabu-Langle2009-Katayama device (“*mobile telecommunications device*”) can be “a cellular telephone” or “smartphone.” USAA-1028, [0024], Fig. 1⁶; USAA-1003, ¶132



Forstall, Fig. 2 (annotated)

The device provides “adaptive mobile device navigation” where “a device

⁶ All emphasis has been added.

position is stored in memory,” “sensor data is received from a motion sensor measuring movement of the device,” and “sensor data is compared to map data corresponding to the device location.” USAA-1028, [0006]. The Forstall-Rabu-Langle2009-Katayama device therefore logs vehicle movement (“*driving activity associated with a vehicle*”). *Id.*, [0065]-[0071]; USAA-1003, ¶133.

[1.2]

The Forstall-Rabu-Langle2009-Katayama device includes at least one integrated sensor (“*sensor set*”) including accelerometer 172 (“*accelerometer*”) and compass 173 and/or gyroscope 175 (“*positioning module*”) to “measure movements of the device.” USAA-1028, [0061]; USAA-1003, ¶134.

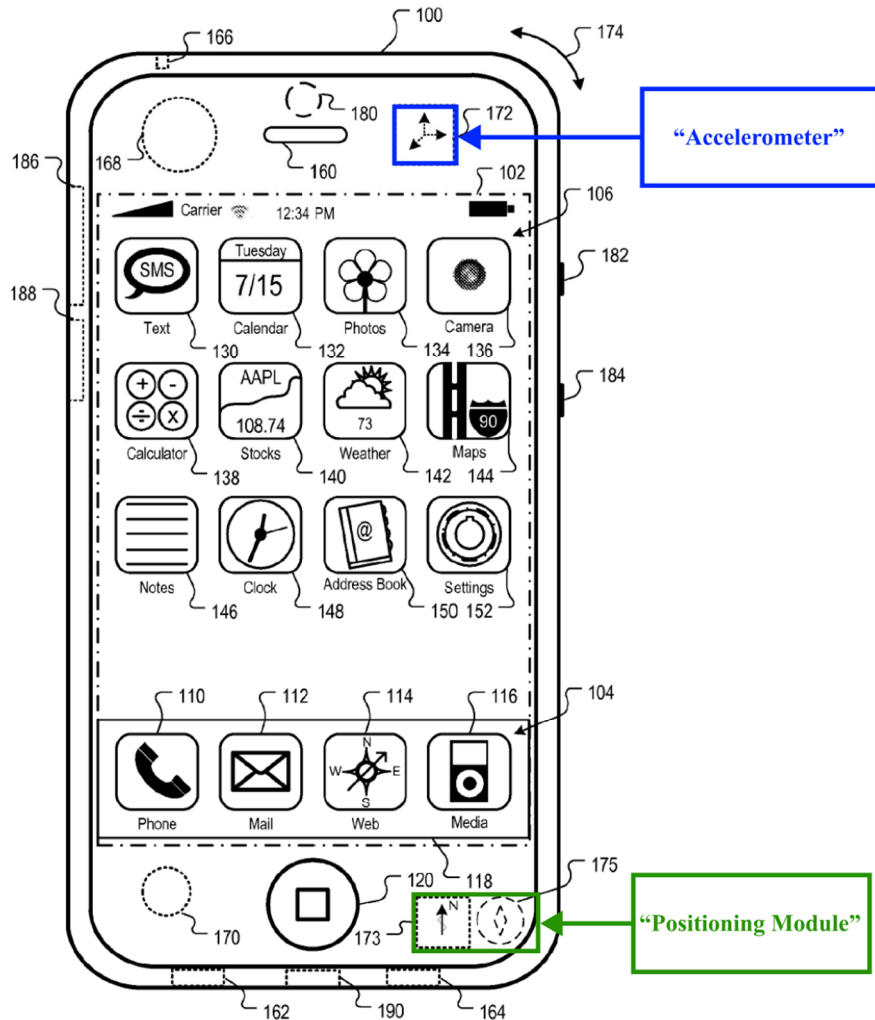


FIG. 1

Forstall, Fig. 1 (annotated)

Data from device's sensors is used to measure movement from "a point of origin or a known location[.]" USAA-1028, [0062]. The Forstall-Rabu-Langle2009-Katayama device would have processed sensor data related to movement to identify unsafe driving behaviors (e.g., unsafe acceleration, unsafe braking). USAA-1029, 1; USAA-1030, [0020]; USAA-1003, ¶135.

[1.3]

The Forstall-Rabu-Langle2009-Katayama device runs a navigation application that, for example, displays map display 500 (“*user interface*”) with a path “from [an] origin 502 to a destination 510[.]” *Id.*, [0072], [0027]; USAA-1003, ¶136.

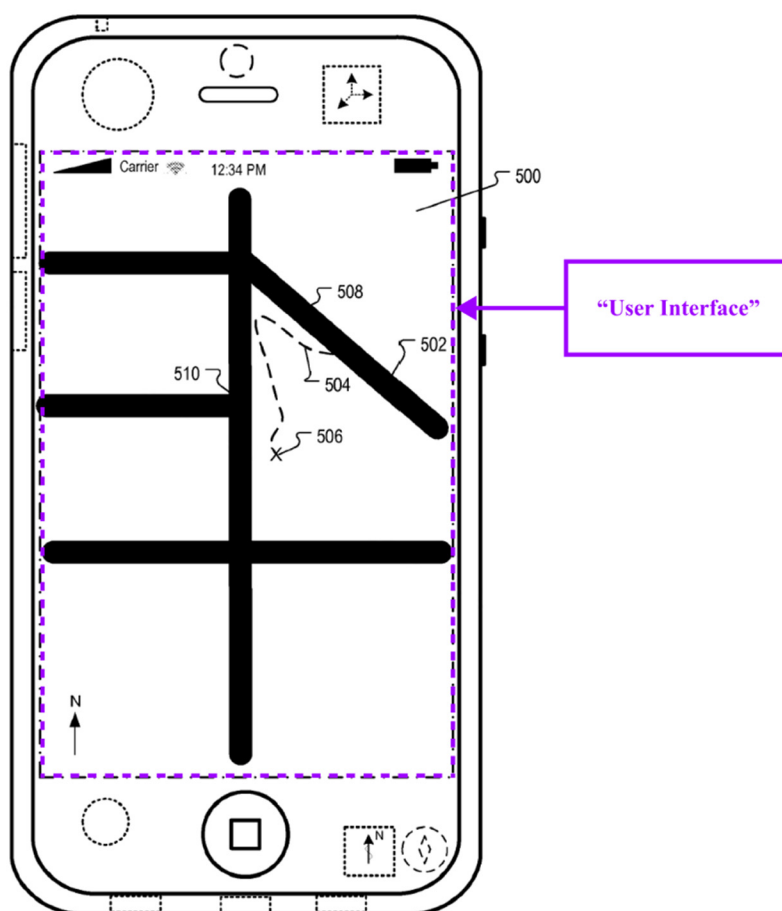


FIG. 5

USAA-1028, Fig. 5 (annotated)

[1.4]

The Forstall-Rabu-Langle2009-Katayama device includes “one or more processors” (“**processor**”) for interpreting sensor data “received from one or all of the accelerometer 172, compass 173, and/or gyroscope 175.” USAA-1028, [0074].

The one or more processors “[u]se an on board clock” to “interpret the sensor data as movement of the device 100[,]” and “determine velocity, and position[.]” and/or a direction of travel. *Id.*; USAA-1003, ¶137.

[1.5]

As discussed in §III.A.1(e), in the Forstall-Rabu-Langle2009-Katayama device, memory (“**memory**”) is configured according to Katayama’s memory 82 and thereby is partitioned into several sections, including a temporary section and a storage section. These sections enable performance of data handling techniques described in Katayama, including the comparison at the time of recording of digitalized sensor data against judgment criteria representative of specific driving behaviors, and storage in appropriate sections of memory of digitalized data with metadata identifiers indicating determinations made through those comparisons. USAA-1024, [0012], [0016], [0048], [0049]. The memory would have been configured to retain (i.e., store over long time periods) situation data indicting unsafe driving behavior in the data storage section while also ensure sufficient capacity to

store data in temporary section since “old data is sequentially erased and new situation data is written in[.]” USAA-1024, [0044]-[0046]; USAA-1028, [0006]; [0055]-[0057]; USAA-1003, ¶138.

Further, Forstall and Katayama each teach storage devices rendering the “*memory*” obvious. USAA-1003, ¶139. Forstall describes “memory 350” may be implemented as different types of storage. USAA-1028, [0055]. Stored information relates to “adaptive mobile device navigation,” such as “device position.” *Id.*, [0006]. Memory 350 also stores instructions providing device functionality, including “graphic user interface processing,” “sensor-related processing and functions,” “phone-related processes and functions,” among others. *Id.*, [0056]. Similarly, Katayama describes “internal memory 82,” which may be “nonvolatile memory” and functions as sections for data storage. USAA-1024, [0044]-[0046]; USAA-1003, ¶140.

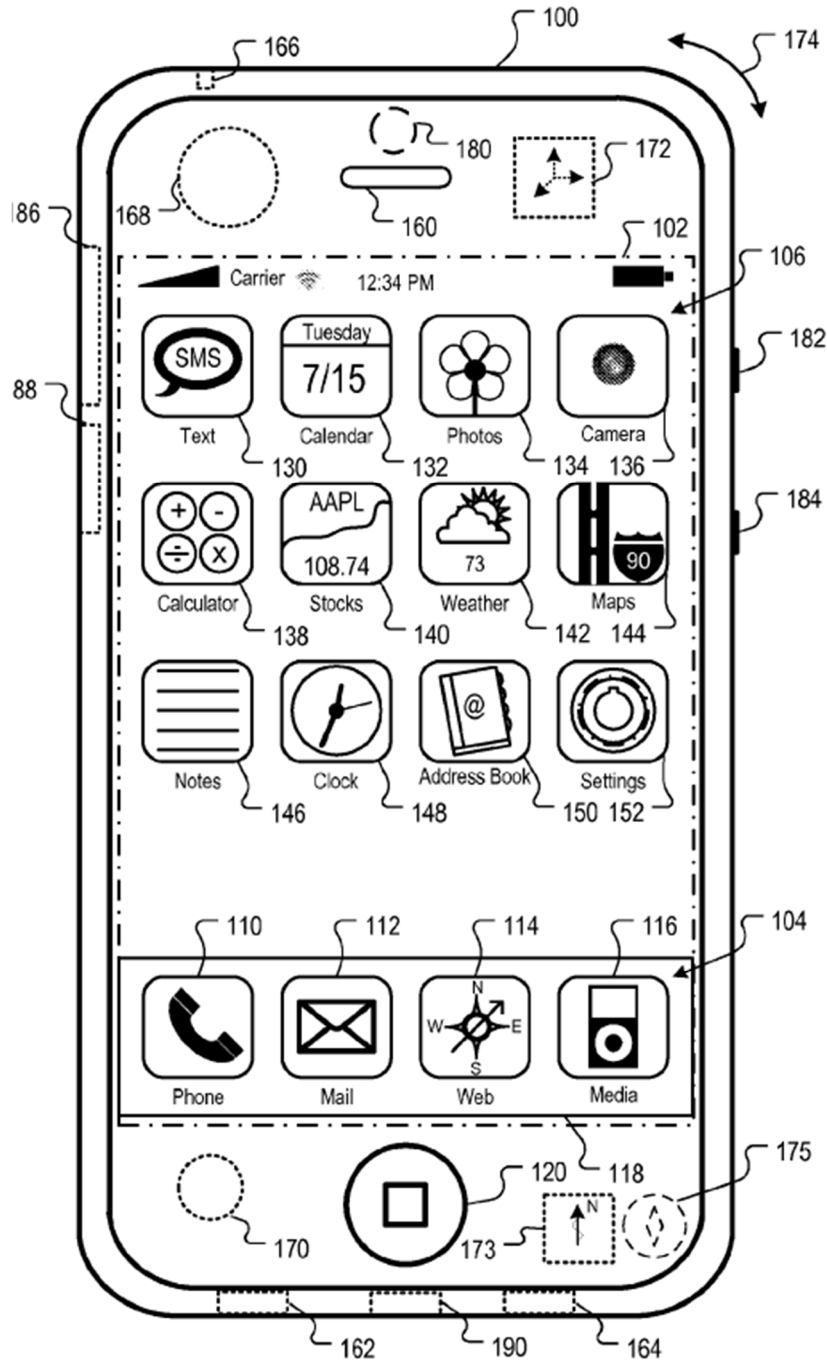
[1.6]

The Forstall-Rabu-Langle2009-Katayama device runs a navigation application to “provide directions from a point of origin to a destination” and “display[] a current position on a map as well as deliver navigation instructions based on the current position to route a user to a desired destination.” USAA-1028, [0004]. As discussed below, the Forstall-Rabu-Langle2009-Katayama device meets each of

the requirements imposed by [1.6] of the configuration of a “mobile telecommunications device” to determine a “start of a driving period” identified in §I.C.

USAA-1003, ¶144.

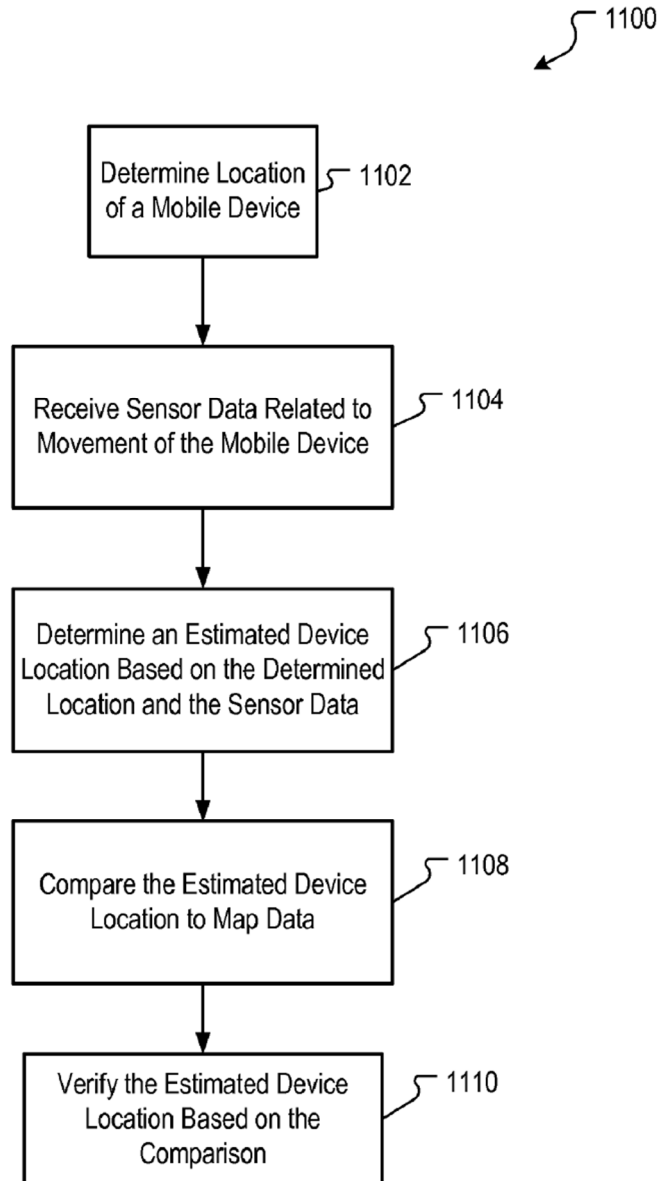
The start of a navigation period (“*start of a driving period*”) is determined based on a user’s interaction with map display 500 (“*inputs received by the user interface*”), for example, when a user specifies a “desired destination” (destination 506) for the map display 500 to “provide directions from a point of origin to [the] destination[.]” USAA-1028, [0004], [0072]; USAA-1003, ¶145. A user also interacts with objects displayed on a top-level interface graphical of the device to access the user interfaces specifically provided by the navigation application (e.g., map display 500). USAA-1028, [0042].



USAA-1028, Fig. 1

The start of a navigation period (“*start of a driving period*”) is determined

based on data collected by integrated sensors (“*sensor data from the device’s sensor set*”), e.g., when the device determines an estimated device location to set for the “point of origin” (origin 502). USAA-1028, [0072], [0082]. In Figure 11 (below), the estimated device location is determined based on sensor data received from “accelerometer 172, compass 173, gyroscope 175,” and by, for example, “performing dead reckoning calculations using the received sensor data to measure movements of the mobile device from the determined location.” *Id.*, [0073], [0082]. USAA-1003, ¶146.



USAA-1028, Fig. 11

In the example above, the start of the navigation period (“*start of a driving period*”) is based on the user’s interaction with map display 500 (“*inputs received by the user interface*”) and sensor data used to estimate device location in identifying an origin to be used for route guidance (“*sensor data from the device’s sensor*

set”). USAA-1003, ¶147; USAA-1028, [0004], [0042], [0072], [0073], [0082], [0083].

Moreover, based on Forstall-Rabu, it would have been obvious to a POSITA to provide a device that is “mounted in a vehicle” using an “automobile dock” or “vehicle holder,” and thus, is “*removably attached to the vehicle*” prior to and/or during a navigation period where a vehicle is traveling along a navigation path (“*the vehicle is in use*”). USAA-1013, 3:11-45, Figs. 1, 2; USAA-1003, ¶148. As discussed in §III.E.1(d)(i), this would have improved the transitioning of operational modes (walking mode, vehicle mode) by detecting a “dock status” indicating attachment to “automobile dock” or “vehicle holder” (as taught in Rabu). USAA-1003, ¶148; USAA-1028, [0064], [0065], [0068], [0070], [0071]; USAA-1013, 3:1-10, 4:21-33, 8:13-10:42, Figs. 1, 4, 5, 7, 8.

[1.7]

As discussed for [1.2], the Forstall-Rabu-Langle2009-Katayama device collects sensor data related to device movement from integrated sensors (“*sensor data from the sensor set*”) while a navigation application monitors vehicle movement (“*during the driving period*”). USAA-1028, [0036], [0045], [0061]. Langle2009 describes evaluating (“*processing*”) sensor data (e.g., accelerometer measurements) to identify driving safety data indicating safe and unsafe driving behaviors (“*driving information associated with how the vehicle is driven*”). USAA-1029,

1-3; Figs. 2, 4. Further, a POSITA would have found obvious that the driving safety data is derived from sensor data since Langle2009 describes analyzing information specified by the sensor data (e.g., acceleration values, lane change indicators) to “classify safe versus unsafe driving.” USAA-1029; Abstract; USAA-1003, ¶149.

Katayama similarly describes “situation data” relevant to driving behavior that indicates the “surrounding situation or the like of a motor vehicle during a certain period before and after a time of an accident or...risk incident” in which “a driver...is close to [being] involved in an accident....” USAA-1024, [0001], [0011], [0058]. The situation data includes both sensor data and information derived therefrom. *Id.*, [0013]; USAA-1003, ¶150.

[1.8] ⁷

As discussed for [1.2], a memory of Forstall-Rabu-Langle2009-Katayama device (e.g., memory 350) stores driving safety data (“***store a selection of the driving information to the memory***”). USAA-1003, ¶151; USAA-1029, 507; USAA-

⁷ 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).

1028, [0055], [0056]. From Forstall, a POSITA would have found it obvious to store all or a subset of the derived driving information in the memory of the Forstall-Rabu-Langle2009-Katayama device, and thus, to store a selection of the driving information to the memory. USAA-1003, ¶151. Additionally, from Katayama, a POSITA would have recognized that in the Forstall-Rabu-Langle2009-Katayama device, the storage of the “selection” of driving information could be preserved in a form of long-term storage, similar to the “situation data recording section” of Katayama. USAA-1024, [0044]-[0046]; *supra* §III.A.1(e). Notably, the plain meaning of a “selection of the driving information” is not limited to a selection of a subset of the same, but instead is broad enough to encompass selection of some or all of that information.

Still, to the extent that this limitation is narrowly interpreted to require a selection of less than all for storage, a POSITA would have found obvious to store in the Forstall-Rabu-Langle2009-Katayama device a subset of (i.e., selection of) the recorded sensor data since, e.g., Forstall explains storage of various types of data, indicating that specific types of recorded data are more useful for storage than others. USAA-1003, ¶152. USAA-1028, [0055], [0056]; USAA-1015, 233-250. [1.9]

As discussed for [1.7], it would have been obvious to a POSITA to determine driving safety data (“*driving information*”) based on evaluating sensor data

collected by integrated sensors (accelerometer 172, compass 173, gyroscope 175).

USAA-1028, [0036], [0045], [0061]; USAA-1003, ¶153. Since Forstall and Langle2009 each teach data collection and processing techniques using only data from smartphone sensors, it would have been obvious to derive driving safety data “*without data from vehicle sensors.*” *Id.*, [0006], [0007], [0061]; USAA-1029, 1-2; USAA-1003, ¶153 (citing USAA-1031, [0010]).

[1.10]

As discussed above (§III.A.1(e)(iii), [1.5]), a POSITA would have configured the Forstall-Rabu-Langle2009-Katayama device’s memory (“*memory*”) to feature several sections according to, and facilitating use of Katayama’s teachings on data management, including a temporary section (“*short term memory*”) and a storage section (“*long term memory*”). USAA-1024, [0044]; USAA-1028, [0055]-[0057]. Implementation of Katayama’s teachings on memory architecture and data management enable the Forstall-Rabu-Langle2009 device to, among other things, achieve several benefits, including the ability to retain (i.e., store over long time periods) data indicating unsafe driving behaviors in the storage section while also ensuring sufficient capacity to store data in the temporary section. USAA-1024, [0045]; USAA-1028, [0055]-[0057], Fig. 3; USAA-1003, ¶154.

As explained in [1.7], the Forstall-Rabu-Langle2009-Katayama device processes sensor data to derive “driver safety” information, as described in

Langle2009. USAA-1029, 1-3. Further, as taught by Katayama, the Forstall-Rabu-Langle2009-Katayama device would receive “situation data” including sensor data “at a constant sampling time one after another in a chronological order,” and write “the received situation data” in a temporary section within the Forstall-Rabu-Langle2009-Katayama device’s memory. USAA-1024, [0016], [0044]-[0049]; USAA-1003, ¶155.

To avoid erasure of situation data that might be useful in determining the cause of an accident or risk incident, or in otherwise analyzing driving behavior as taught by Langle2009, the POSITA would have further configured the Forstall-Rabu-Langle2009 device to “digitalize” temporarily stored situation data for purposes of determining, at the “time of recording,” whether that digitalized situation data meets one or more predetermined criteria for long term storage. USAA-1024, [0001]-[0002], [0011]-[0016], [0027], [0046]-[0050], [0054], [0083]; USAA-1003, ¶156.

A POSITA would have configured the Forstall-Rabu-Langle2009-Katayama device to record situation data determined to be “important” with a metadata “identifier” marking it as such, and to transfer situation data with that identifier from the local memory’s temporary storage to its long term recording section.” USAA-1024, [0001]-[0002], [0011]-[0016], [0027], [0046]-[0050], [0054], [0083];

USAA-1003, ¶157. More specifically, the important situation data would be retained to enable “after-the-fact analysis” of, for example, accidents and risk incidents, and would for at least that reason be understood as being “*persistently*” stored. USAA-1024, [0001], [0027], [0046]-[0052]. Katayama also render this limitation obvious through disclosures of various storage configurations. USAA-1003, ¶¶158-165.

[1.11]⁸

As previously discussed ([1.5], [1.10]), the Forstall-RabuLangle2009-Katayama device’s memory includes a temporary section (“*short term memory*”) and a storage section (“*long term memory*”) that enable implementation of Katayama’s data storage techniques. USAA-1024, [0044]; USAA-1028, [0055]-[0057]; USAA-1029, 1-3. According to Katayama, situation data is written “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[.]” USAA-1024, [0045]; USAA-1003, ¶166.

⁸ The “update rate” recited in this limitation is distinct from a “sampling rate” recited in dependent claim 5. Through claim differentiation, this limitation is not limited to sampling, and broad enough to encompass other aspects of data storage, consistent with the ’369 patent specification. USAA-1001, 7:62-8:7.

A POSITA would have understood and found obvious that the situation data sequentially written to the temporary section “one after another” includes both sensor data and information derived therefrom (digitalized data, metadata identifiers) given Katayama’s broader disclosure of the situation data being “automatically classified at a time of recording.” USAA-1003, ¶167; USAA-1024, [0016].

Katayama teaches that this configuration, “make[s] after-the-fact analysis accurately and easily” and such a configuration ensures that “important data will not be erased” despite circumstances where “a capacity of a memory runs out.” USAA-1024, [0016]. Given that the digitalization of sensor data values and metadata identifiers enables the importance categorizations of situation data, a POSITA would have found it advantageous to implement Katayama’s data handling techniques such that these specific portions of situation data are similarly written one after another in the temporary section. USAA-1003, ¶¶167-169.

A POSITA would have found obvious that the temporary section receives situation data, including sensor data and derived information (digitalized data, metadata identifiers). USAA-1003, ¶170. Further, the temporary section obtains data more frequently (“*receives driving information at a higher update rate*”) than the long term storage section. USAA-1024, [0044]-[0046], Fig. 5.

For instance, “the [temporary section] temporarily stores the situation data irrespective of the contents of the situation data while the [storage section] stores

the situation data for the record basically without updating the situation data...”

USAA-1024, [0051]. Situation data is transferred to the storage section “[o]nly in a case that the content meets the predetermined condition[.]” *Id.*, [0046]. Further, “[i]f a capacity of the [temporary section] runs out, old data is sequentially erased and new situation data is written in the [storage section].” *Id.*, [0045]. In scenarios where data is periodically recorded but no accident is detected, old data stored in the temporary section is more frequently erased relative to situation data transferred to the storage section. USAA-1003, ¶171; *supra* §III.A.1(c).

[1.12]

As discussed above, memory of the Forstall-Rabu-Langle2009-Katayama device includes a storage section and a temporary section to provide the enhance storage capabilities and data management techniques described in Katayama. USAA-1024, [0044]; USAA-1028, [0055]-[0057]; USAA-1029, 1-3. Further, as explained in §III.A.1(e)(iii), the memory of the Forstall-Rabu-Langle2009-Katayama device incorporates Katayama’s related data handling teachings, including both (i) the comparison at the time of recording of digitalized sensor data against judgment criteria representative of specific driving behaviors, and (ii) storage in appropriate sections of memory of digitalized data with metadata identifiers indicating determinations made through those comparisons. USAA-1024, [0012], [0015], [0048], [0049]; USAA-1003, ¶172.

A POSITA would have understood and found obvious that derived information within the situation data, such as digitalized data and associated metadata identifiers reflecting importance classifications, are each written in the temporary section. USAA-1003, ¶173-175.

Thus, a POSITA would have found it obvious the Forstall-Rabu-Langle2009-Katayama device writes derived information specified in situation data (digitalized values, metadata identifiers) in the temporary section (“***write driving information to the short term memory***”). According to Katayama, situation data is written “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[.]” *Id.*, [0045]. Thus, in the Forstall-Rabu-Langle2009-Katayama device writes the derived information specified in the situation data (digitalized values, metadata identifiers) at a constant sampling rate (“***predetermined update rate***”) and while a vehicle is monitored according to a chronological order (“***predetermined sequence***”). USAA-1024, [0044]-[0046], Fig. 5; USAA-1003, ¶¶176-177. A POSITA would have also understood that predetermined sampling of sensor data involves a predetermined update rate of writing associated data into storage since similar storage configurations were well-known by the Critical Date. USAA-1003, ¶178 (citing USAA-1027, 70-71).

[1.13]

As discussed above ([1.5], [1.10]), the POSITA would have configured the Forstall-Rabu-Langle2009-Katayama device's memory to feature both short term and long term storage sections, and would have further implemented Katayama's teachings on overwriting "situation data" including driving information previously written to the short term memory in accordance with the predetermined sequence as new situation data is derived. USAA-1003, ¶179; USAA-1024, [0046]. As discussed in §III.A.1(e)(iii), this configuration enables the Forstall-Rabu-Langle2009-Katayama device to "eliminat[e] accumulation of useless data" and to make "effective use of the memory without erasing important situation data," while at the same time furthering Langle2009's goals of "classify[ing] safe and unsafe lane changes." USAA-1029, Abstract; USAA-1024, [0016], [0053], [0044], [0046]; USAA-1003, ¶179.

The Forstall-Rabu-Langle2009-Katayama device would leverage Katayama's teaching that "[i]f a capacity of the [short term memory section]...runs out, old data is sequentially erased and new situation data is written in" to the short term memory section. USAA-1024, [0045]. A POSITA would have understood that, being "*sequentially* erased," the old data is erased according to the chronological order in which it was written into the short term memory section, 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, ¶180; USAA-1027, 70-71; USAA-1039, [0003]-[0004].

3. Elements of Claim 26

This claim is obvious in the same manner as explained above for the corresponding claim 1 limitations listed in the table below. USAA-1003, ¶201.

The ’369 patent specification does not distinguish the two terms “affix” versus “attach.” USAA-1003, ¶202. In fact, the ’369 patent specification uses both “affix” and “attach” in similar manner. *See* USAA-1001, 3:8-11 (“For example, if the sensor set comprises an accelerometer, the acceleration of the vehicle can be more accurately measured due to the mobile device being firmly attached to the vehicle.”); 15:9-11 (“For example, the device 17 may be attached to the windshield 19 of the automobile 3 in an adapter 21”), cf. USAA-1001, 18:49-52 (“The mobile telecommunications device is configured within the vehicle, at step 38. This may comprise affixing the mobile telecommunications device 17 to the vehicle via an adapter, as described previously.”), 15:19-25 (“The details of the adapter 21 are irrelevant for present purposes, with the exception that it must enable a clear line of sight in the principle direction of travel of the vehicle to be obtained, and it must firmly affix the mobile to the vehicle. Affixing the mobile telecommunications device 17 to the automobile 3, ensures that the mobile device 17 is able to

accurately capture the automobile's state of motion.”).

Claim 1 Limitation	Corresponding Limitations
[1.1]	[26.1]
[1.2]	[26.2]
[1.3]	[26.3]
[1.4]	[26.4]
[1.5]	[26.5]
[1.6]	[26.6]
[1.7]	[26.7]
[1.8]	[26.8]
[1.9]	[26.9]
[1.10]	[26.10]
[1.11]	[26.11]
[1.12]	[26.12]
[1.13]	[26.13]

4. Claims 2-4, 10-12, 16, 17, 19-24

[2]

The navigation application is downloaded by the Forstall-Rabu-Langle2009-Katayama device (“**downloaded application**”). USAA-1028, [0033], [0042], Fig. 5; USAA-1003, ¶181. As discussed in §III.E.1(a), the navigation application monitors location information such that the device is “**controlled**” by the navigation application while a user accesses map data. *Id.*, [0030]-[0033], [0042]; USAA-1003, ¶181.

The Forstall-Rabu-Langle2009-Katayama device detects driving behaviors

which involves “*detect[ing] occurrence of a predetermined event*” since these behaviors are among a finite number of predetermined classifications described in Langle (e.g., unsafe acceleration, unsafe braking). *Id.*; USAA-1003, ¶182; USAA-1029, 1. A POSITA would have also found it obvious that detection of an unsafe driving behaviors results in initiating access to emergency services (“*take at least one predetermined action*”). USAA-1003, ¶182 (citing USAA-1023, USAA-1046).

[3.1]

As discussed for [1.10] (§III.A.2), the Forstall-Rabu-Langle2009-Katayama device would have classified driving behaviors based on sensor data, and detection of a particular driving behavior represents “*detect occurrence of a predetermined event*.” USAA-1029, 1; USAA-1030, [0051]; USAA-1003, ¶183.

[3.2]

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 (deceleration) exceeds a predetermined judgement criterion,” or “whether or not the acceleration

continues for more than or equal to a certain period[.]” *Id.*, [0048]. In circumstances where an accident is detected based on acceleration data that also satisfies a predetermined condition for transfer, the situation data is transferred from temporary data storage section 802 to situation data recording section 803 “*in response to*” the accident being detected. USAA-1003, ¶184.

[4]

As discussed for [1.5] and [1.8], the Forstall-Rabu-Langle2009-Katayama device would have stored driving safety data (e.g., unsafe acceleration, unsafe braking) in memory (“*storing driving information...to the memory*”). USAA-1028, [0055], [0056]; USAA-1029, 6. Because stored driving safety data is evaluated to identify an unsafe acceleration (detect occurrence of an “*event*”), the stored driving safety data is “*associated with that event.*” USAA-1003, ¶185. A POSITA would have found it obvious to configure the device to initiate the start of collecting safety data in response to detecting unsafe acceleration and unsafe braking (“*predetermined event*”). USAA-1003, ¶185 (citing USAA-1029, 1).

[10]

Device 100 can be “cellular telephone” or a “smartphone” and “can place and receive phone calls (e.g., using VoIP protocols)[.]” USAA-1028, [0024], [0040]. Based on these disclosures, a POSITA would have recognized certain scenarios where device 100 receives an incoming phone call while the mobile

navigation application (“***downloaded application***”) is used for navigation (“***driving period***”). USAA-1003, ¶186; USAA-1028, [0024], [0040]. For such instances, a POSITA would have looked to disclosure that memory of phone 100 includes “graphical user interface instruction 356 to facilitate graphic user interface processing” and “phone instructions 360 to facilitate phone-related processes and functions[.]” USAA-1028, [0056]. From these disclosures, a POSITA would configured the navigation application to display information relating to the incoming phone call and thereby “***manage voice-calls incoming to the mobile telecommunications device during a driving period.***” *Id.*; USAA-1003, ¶186.

[11]

Device 100 can include “a loudspeaker 164” to “facilitate hands-free voice functionalities, such as speaker phone functions.” USAA-1028, [0034]. A POSITA would have found it obvious to configure device 100 to enable hands-free voice functionality while the navigation application is being used for navigation (“***driving period***”) since a user is occupied driving a vehicle and is unable to fully interact with device 100. USAA-1003, ¶187. One obvious configuration is that the navigation application controls device 100 to enable hands-free functionality upon detecting a start of navigation (“***enable a hands-free mode of operation on detection of the driving period***”) since the use of hand-free functions to increase user safety while using mobile navigation systems were well-known by the Critical

Date. *Id.* For example, “U.S. Pat. No. 5,274,560 (LaRue) disclosed an audio navigation system in which a user can provide voice input to enable a non-distracting and safe way to use navigation features while a vehicle is in motion.” *Id.* (citing USAA-1033, Abstract). LaRue also cites to several patents that “pertain to voice actuated control of a vehicle and are representative of these existing navigation systems,” further confirming the conventionality of the feature recited by this claim. USAA-1033, 1:45-50.

[12]

As discussed for [11], device 100 “facilitate[s] hands-free voice functionalities, such as speaker phone functions.” USAA-1028, [0034]. In an exemplary implementation (shown in Fig. 3 below), device 100 includes “audio subsystem 326,” “speaker 328,” and “microphone 330[,]” which collectively “facilitate voice-enabled functions, such as voice recognition, voice replication, digital recording, and telephony functions.” *Id.*, [0050]. Because device 100 provides voice recognition capabilities, device 100 “*enable[s] voice-activated commands*” through microphone 300. USAA-1003, ¶188.

[16.1]

Katayama describes a set of vehicle sensors (“*external device*”) that sense data related to “the behavior, surrounding situation, and operating condition or the

like of [a] motor vehicle V” (“***external driving information associated with a condition of the vehicle***”). USAA-1024, [0034], [0064]. Examples of the vehicle sensors include “automobile speed meter 10 incorporated into the vehicle, the door 11, the emergency brake 12 and the ignition switch 13.” *Id.*, [0064]. Thus, the Forstall-Rabu-Langle2009-Katayama device would have obtained data from vehicle sensors as this would have improved the accuracy of monitoring for unsafe driving behaviors. USAA-1003, ¶189.

[16.2]

As discussed for [16.1], Katayama describes the data used for accident detection includes “position data indicating a position of the vehicle, speed data indicating a speed of the vehicle, brake data indicating whether or not a brake of the vehicle is activated, door open/close data indicating whether a door is open or closed” (“***at least a portion of the external driving information***”). Given that Katayama teaches using data collected by external vehicle sensors to detect accidents, a POSITA would have found it obvious to configure the Forstall-Rabu-Langle2009-Katayama device would have received at least a portion of the data collected by external vehicle sensors (“***external device***”). USAA-1003, ¶190.

[17]

In the combination (*see* §III.A.1(b)), a POSITA would have configured device 100 (“***mobile telecommunications device***”) to communicate wirelessly with

external vehicle sensors (“*arranged to interface with the external device wirelessly*”). USAA-1003, ¶191. Katayama describes that driving recorder 1 receives data collected by external vehicle sensors (e.g., vehicle speed data, door open/close data, brake data). USAA-1024, [0038]. A POSITA would have understood and/or found obvious to configure device 100 to implement a wireless connection with the external vehicle sensors since Katayama’s recorder 1 and Forstall’s device 100 each include wireless modules configured to enable wireless communication with other devices. USAA-1028, [0038] (“wireless communication subsystems”); USAA-1024, [0074] (describing use of a wireless LAN; USAA-1003, ¶191 (citing USAA-1045, [00117], [00178], FIG. 41-43).

[19]

A POSITA would have found obvious that the Forstall-Rabu-Langle2009-Katayama device includes a battery as a power source (“*utilizes its own power supply*”) since cellphones and smartphones were known by the Critical Date to include batteries. USAA-1003, ¶192 (citing USAA-1043, 109-13); USAA-1028, [0024], [0040].

[20]

As discussed for [1.1], the Forstall-Rabu-Langle2009-Katayama device can be a “smartphone” and “can place and receive phone calls (e.g., using VoIP protocols)[.]” USAA-1028, [0024], [0040]; USAA-1003, ¶193.

[21]

As discussed for [1.7], device 100 uses “[s]ensor data from accelerometers, a compass, gyroscopes, and impact sensors” to “measure the movement of the device 100...” USAA-1028, [0062]. Device 100 also “detects an axis of periodic sudden accelerations using the accelerometer 172...” *Id.*, [0071]. Further, “[i]n the vehicle mode, sudden accelerations in a positive or negative direction” are also measured along several axes using accelerometer 172. A POSITA would have therefore configured device 100 to detect sudden accelerations in the positive direction (“**vehicle acceleration events**”) and sudden accelerations in the negative direction (“**vehicle braking events**”). USAA-1003, ¶194. A POSITA would have also configured device 100 to detect driving safety data from accelerometer measurements, including safe/unsafe accelerations (“**vehicle acceleration events**”) and safe/unsafe braking (“**vehicle braking events**”). *Id.*; USAA-1029, 502-504.

[22.1]

As previously discussed, Forstall and Langle each describe identifying a direction of travel by a vehicle using sensor data collected by a mobile device (e.g., accelerometer data, GPS data). USAA-1028, [0070], [0071], [0075], [0076]; USAA-1029, 502. Forstall describes that the sensor data can be processed to “determine a change of direction[]” (USAA-1028, [0070]), and similarly, Langle describes using triaxial acceleration measurements to identify a “[c]hange in

direction ([s]teering)” (USAA-1029, Table 1). According to Langle2009, “[u]sing this data, not only is it possible to count lane changes and detect when they occur, it is possible to classify safe and unsafe lane changes.” USAA-1029, 502. Thus, in the combination (*see* §III.A.1(e)), a POSITA would have configured device 100 to determine unsafe lane changes (“*determination of vehicle swerving events*”) from sensor data collected by integrated sensors. USAA-1003, ¶195.

[22.2]

As discussed for [1.7], Langle describes evaluating sensor data (e.g., accelerometer measurements) to identify driving safety data indicating safe and unsafe driving behaviors. USAA-1029, 502. A POSITA would have found obvious that the classification of driving behaviors involves the use of “*preset parameters*” to differentiate between “safe” and “unsafe” driving behaviors. USAA-1003, ¶196. For example, as shown in Fig. 1 (below), “safe acceleration and deceleration never reaches more than 0.3 g in either the positive or negative direction.” USAA-1029, 503.

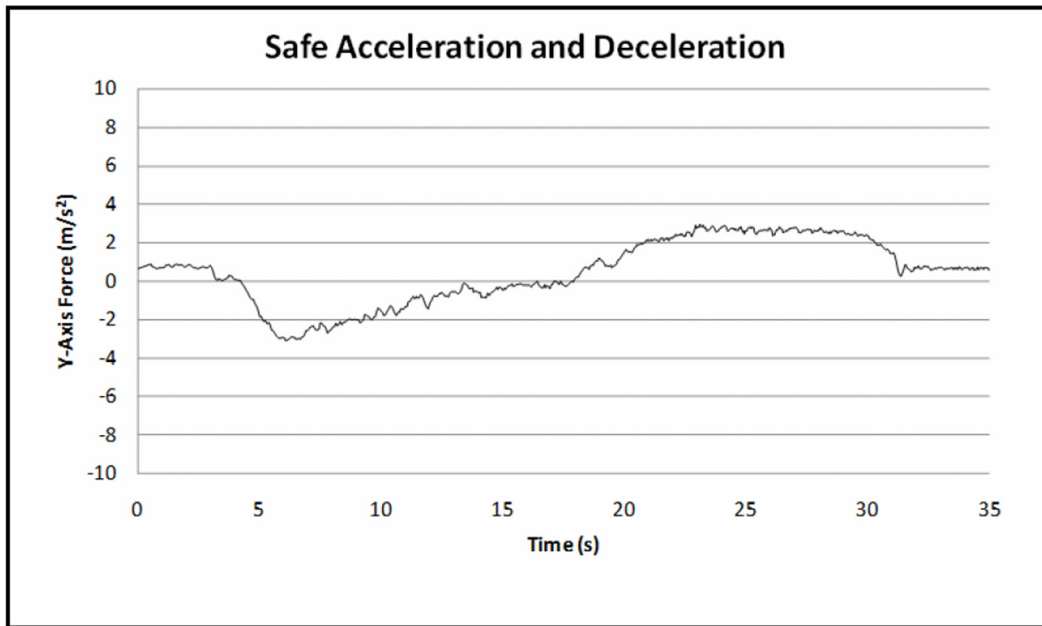


Figure 1. Safe Acceleration and Deceleration

USAA-1029, Fig. 1

In contrast, in Fig. 2 (below), the acceleration measurements have “the same overall shape” but have “a slightly higher G-force of 0.43 g on this incline.” *Id.* From these examples, unsafe acceleration is determined (“**determination of such events occurs**”) when measured acceleration exceeds a threshold parameter value of 0.3 g (“**when data from the sensor set accords with preset parameters**”). USAA-1003, ¶197. As another example, in Fig. 5 (below), acceleration measurements have “a G-force of well over 0.5 g in the x direction[,]” which indicates an unsafe lane change. USAA-1029, 504. In this example, the unsafe lane change is determined (“**determination of such events occurs**”) when measured acceleration in the x direction exceeds a threshold parameter value of 0.5 g (“**when data from the sensor**

set accords with preset parameters”). USAA-1003, ¶197.

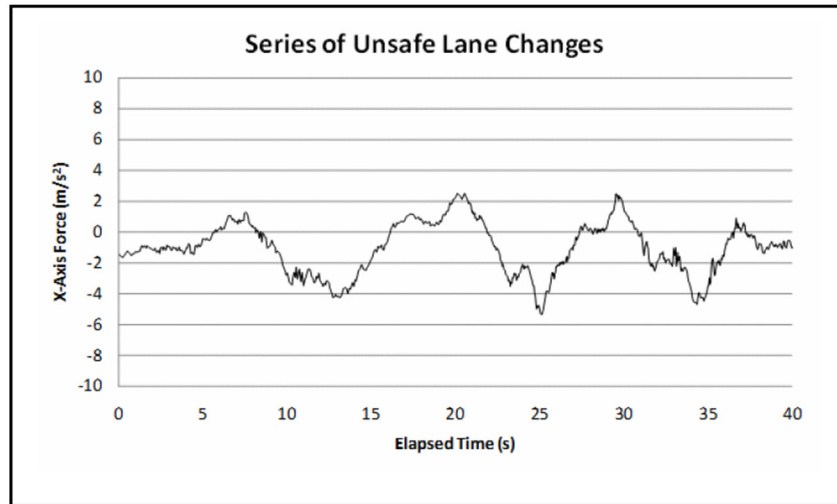


Figure 5. A Series of Unsafe Lane Changes

USAA-1029, Fig. 5

[23]

See [21], *supra*. USAA-1003, ¶198.

[24.1]

See [22.1], *supra*. USAA-1003, ¶199.

[24.2]

See [22.2], *supra*. USAA-1003, ¶200.

B. [GROUND 1B] – Forstall, Rabu, Langle2009, Katayama, and Tamir Renders Claim 5 Obvious

1. Proposed Combination

(a) *Tamir*

Tamir offers a traffic information system that evaluates driver behavior in a vehicle. USAA-1006, Abstract. Tamir employs a data collection technique by

which “samples are collected at a dynamically adjusted rate,” by determining a sampling rate “according to the location of the driving[.]” *Id.*, 9:10-20. Tamir suggests “accumulating more samples at areas where there are many accidents or near intersections.” *Id.* The sampling rate can also be adjusted according to “the driving behavior of the vehicle[.]” *Id.*, 20:52-21:11; USAA-1003, ¶90.

(b) *Motivation to Combine*

Incorporating Tamir’s data collection technique into the combination would have improved motion recording by, for example, allowing “lower power consumption and less wear and tear of” phone 100. USAA-1006, 9:10-20, 20:52-21:11, 20:52-21:2. Moreover, “dynamic sampling rates were conventional by the Critical Date[.]” USAA-1003, ¶203 (citing USAA-1017, 5:61-6:9, 9:3-7; USAA-1018, [0019]; USAA-1019, 5:1-3).

2. Claim 5

[5]

As discussed in §III.I.1(b), the Forstall-Rabu-Langle2009-Katayama-Tamir device would have used Tamir’s data collection technique to use variable sampling rates and improve Forstall’s data recording technique. USAA-1006, 9:10-20, 20:52-21:11. Tamir describes that “the sampling rate is adjusted according to the driving pattern of vehicle 15” and that “when it is determined that the driver is driving relatively daringly, a higher sampling rate is used.” *Id.*, 20:52-21:2. Tamir also contemplates adjusting data collection “at special occasions, such as when an

accident is possible.” *Id.* The Forstall-Rabu-Langle2009-Katayama-Tamir device would have detected an unsafe driving behavior (“*event*”) using a higher sampling rate for data collection relative to other scenarios (“*driving information captured at a higher sampling rate than when an event is not detected*”). USAA-1003, ¶204. The device would have also initiated the start of collecting safety data in response to detecting unsafe acceleration and unsafe braking (“*predetermined event*”). *Id.* (citing USAA-1029, 1).

C. [GROUND 1C] – Forstall, Rabu, Langle2009, Katayama, and Balachandran Renders Claims 7, 8, 15 Obvious

1. Proposed Combination

(a) *Balachandran*

Balachandran is focused on “enabling emergency call initiations in response to the detection of a vehicle accident.” USAA-1007, Abstract. Balachandran contemplates an activation signal being transmitted between vehicle sensors that detect an accident and a cellular telephone used for an emergency call. *Id.*, 1:34-47. And Balachandran further contemplates activation of “a timer for delaying initiation of an outgoing call to an emergency number, such as 911.” *Id.* Upon expiration, the cellphone “initiates an emergency call setup to the mobile switching center servicing the telephone unit.” *Id.*, 1:48-67. The cellphone can provide “[a]n audio or visual indication [that] notifies the passengers of activation of [a] timer 35 and ceases with expiration or cutoff of the timer.” *Id.*, 2:46-63; USAA-1003, ¶91.

(b) *Motivation to Combine*

As discussed in the previous section, Balachandran discloses an exemplary technique where emergency call is initiated by a cellphone in response to detection of a vehicle accident. USAA-1006, Abstract. A POSITA would have been motivated to incorporate this feature into the existing combination and thereby enable device 100 to prevent casualties resulting from a vehicle accident. USAA-1003, ¶205.

Balachandran's emergency response technique would have advanced Langle's overall motivation to reduce casualties resulting from vehicular accidents. USAA-1003, ¶206. For example, the combination would have enabled phone 100 to provide life-saving capabilities by enabling a mechanism for user to seek emergency response service when a vehicle accident occurs while a user is travel along a navigation route. *Id.* Further, because Langle describes that a cellphone is capable of communicating and/or sharing safety evaluation data with other external systems, a POSITA would have perceived configuring phone 100 to incorporate Balachandran's emergency response techniques as an implementation detail. USAA-1029, Abstract ("mobile phones may be used to aid in safe driving practices and detection of emergencies"); USAA-1003, ¶206. A POSITA would have had a reasonable success in implementing the combination without invention since "several

vehicle monitoring systems by the Critical Date were similarly capable of providing emergency response techniques.” USAA-1003, ¶206 (citing USAA-1021, USAA-1022, USAA-1023).

2. Claims 7, 8, 15

[7.1] A mobile telecommunications device according to claim 2, wherein the predetermined action comprises providing feedback to a user to indicate that an event has been detected,

Balachandran describes sensors that detect an accident (“*event [that] has been detected*”). USAA-1007, 2:16-27, 4:5-21. Upon detecting an accident, Balachandran’s emergency response technique involves an emergency call activation signal being transmitted to a cellphone, which initiates an emergency call after a timeout period specified by timer 35 has expired. *Id.*, Abstract, 2:46-3:6. Notifications relating to timer 35 are used to indicate an accident has been detected since the timer 35 is specifically used to initiate an emergency call relating to a detected accident. USAA-1003, ¶207. Thus, a POSITA would have found it obvious that the device of the combination provides an audio or visual output to indicate that an accident has been detected (“*providing feedback to a user*”). *Id.* Further, in some instances, an accident is detected (and an audible or visual notification of the detected accident is provided) in response to device identifying an unsafe driving behavior (“*occurrence of a predetermined event*”). *Id.*, ¶207 (citing USAA-1029, 1).

A POSITA would have also found it obvious to configure the phone of the combination to provide visual notifications relating to accident detection since the device provided by the combination already includes a touch screen (as discussed for [1.1] and [1.3]). USAA-1003, ¶208; USAA-1028, [0051]. Balachandran describes an interface 45 enabling a user to interact with a cellphone after detection of an accident and a POSITA would have recognized that touch screens were ubiquitous for enabling device-user interaction in mobile device-based accident systems by the Critical Date. USAA-1007, 2:64-3:6; USAA-1003, ¶208 (citing USAA-1008, 32-34). A POSITA would have therefore found it obvious to implement interface 45 as a visual interface and enable user interaction (e.g., interactive notifications) through a touch screen of the device provided by the combination. *Id.*; USAA-1028, [0051]-[0053].

[7.2]

As discussed for [7.1], in the device provided by the combination, a POSITA would have found it obvious to implement interface 45 as a visual interface to enable user interaction (e.g., interactive notifications) through a touch screen. USAA-1007, 2:64-3:6; USAA-1028, [0051]-[0053]; USAA-1003, ¶209 (citing USAA-1008, 32-34). A POSITA would have found it obvious that such user interaction involves a user providing input relating to a detected accident (“*receive a user interaction to...deny whether the detected event has actually occurred*”).

following said feedback”) since touch screens were ubiquitous for enabling device-user interaction in mobile device-based accident systems by the Critical Date. USAA-1003, ¶209. Further, Balachandran teaches that a cellphone is capable of providing a “**visual indication** [that] notifies the passengers of activation of timer” relating to a detected accident. USAA-1003, ¶209; USAA-1007, 2:16-63, 4:5-21.

[8.1]

As discussed for [7.1], the device of the combination would have provided an audio or visual indication that an accident has been detected. USAA-1007, 2:46-63. A POSITA would have also found it obvious to implement interface 45 in the device as a visual interface and enable user interaction (e.g., interactive notifications) through a touch screen of the device. USAA-1003, ¶210; USAA-1028, [0051]-[0053]. Thus, the device provided by the combination would have notified a user that an emergency call has been scheduled (“**further action [that] has been scheduled**”) after a time period specified by a timer (the action “**will be taken with a predetermined period**”). USAA-1003, ¶210.

[8.2]

As discussed for [8.1], the device provided by the combination would have received a user abort command relating to an emergency call. USAA-1006, 2:64-3:6, 4:22-31. A POSITA would have also found it obvious to implement interface

45 in the device as a visual interface and enable user interaction (e.g., interactive notifications) through a touch screen of the device. USAA-1003, ¶211; USAA-1028, [0051]-[0053]. Thus, the device provided by the combination would have received a user abort command (“***user interaction...to deny whether the further action should be taken***”) relating to an emergency call to be initiated (the action “***will be taken with a predetermined period***”). USAA-1003, ¶211.

[15]

As discussed for [7.1] and [7.2], Balachandran describes initiating a timeout period upon detecting an accident and allowing a user to interact with a cellphone via interface 45 during the timeout period. USAA-1007, 2:16-27. The cellphone provides “[a]n audio or visual indication [that] notifies the passengers of activation of [a] timer 35 and ceases with expiration or cutoff of the timer.” *Id.*, 2:46-63. During the timeout period, the user can “cancel initiation of an emergency call...if no emergency assistance is required.” *Id.*, 2:16-27, 4:5-21. Since cancellation is initiated by the user via interface 45, a POSITA would have found it obvious that interface 45 “***provid[es] the user with [an] option[] to control the mobile device to take further action[]***” (e.g., configuring the cellphone to end timer 35 and cancel initiation of an automated emergency call). USAA-1003, ¶212.

A POSITA would have also found it obvious to configure the phone of the

combination to provide a user with additional options, such as confirming, via interface 45, that an accident has occurred. *Id.* Katayama teaches that “in case that it is judged...an accident occurs[,]” “[a] driver can input that the accident or the hiyari hatto (risk incident) occurs by voluntarily pushing the button switch 5...” USAA-1024, [0050]. A POSITA would have found it obvious to configure interface 45 in the same manner to provide an option for the user to voluntarily confirm an accident. Such a configuration would have been advantageous as it would allow a cellphone to initiate an emergency call immediately and without requiring expiration of the timeout period, as described in Balachandran. *Id.* Similar configurations of accident detection systems were also well-known by the Critical Date. USAA-1003 ¶213 (citing USAA-1008, 32-34),

D. [GROUND 1D] – Forstall, Rabu, Langle2009, Katayama, and Thompson2010 Renders Claims 13 and 14 Obvious

Proposed Combination

(a) *Thompson2010*

Thompson2010 is focused on smartphone-based accident detection applications. It describes “how smartphones in a wireless mobile sensor network can capture the streams of data provided by their accelerometers, compasses, and GPS sensors to provide a portable ‘black box’ that detects traffic accidents and records data related to accident events, such as the G-forces (accelerations experienced by the driver).” USAA-1008, 30; USAA-1003, ¶92. Figure 2 shows a smartphone-

based accident detection system.

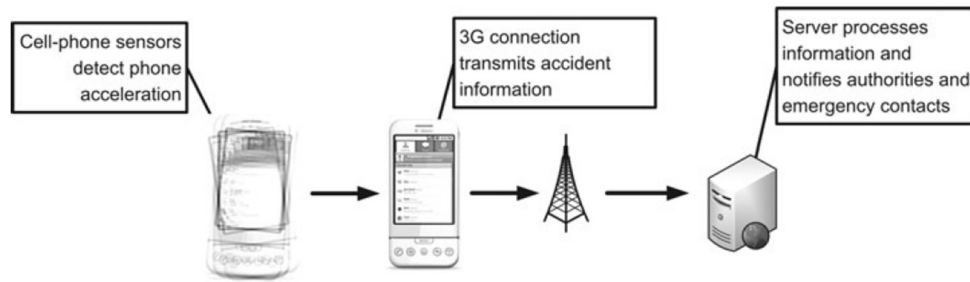


Fig. 2. Smartphone-Based Accident Detection System

USAA-1008, Fig. 2

Thompson2010’s system employs a client-server architecture in which “sensors built into a smartphone detect a major acceleration event indicative of an accident and utilize the built-in 3G data connection to transmit that information to a central server.” USAA-1008, 30. The server “then processes the information and notifies the authorities as well as any emergency contacts.” *Id.* This client-server architecture is called “WreckWatch,” which a “mobile client/server application [] developed to automatically detect car accidents.” USAA-1008, 30. WreckWatch is “separated into two main components—the WreckWatch server and the Wreck-Watch client,” as shown in Figure 3. USAA-1003, ¶93.

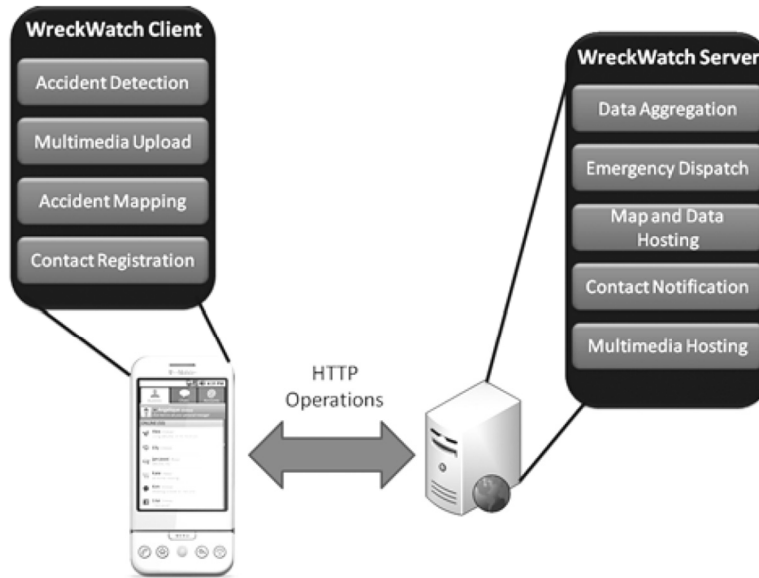


Fig. 3. WreckWatch Architecture Diagram

USAA-1008, Fig. 3

(b) *Motivation to Combine*

As discussed in the previous section, Thompson2010 describes techniques for using smartphone system sensors, such as GPS sensors and accelerometers, to provide smartphone-based accident detection. USAA-1008, 30, Fig. 2. A POSITA would have been motivated to incorporate this feature into the Forstall-Rabu-Langle2009-Katayama combination and thereby configure device 100 to prevent casualties that may result from a vehicle accident. USAA-1003, ¶214.

Thompson2010's accident detection technique would have advanced Langle's overall motivation to "enhance safety" using "embedded accelerometers" of mobile devices to provide "risk level detection while riding in a vehicle." USAA-1028, 502. This combination would have enabled motion recording

technique to achieve advantages that Thompson2010 describes for smartphone-based accident detection, including “reduc[ing] overall traffic congestion and increas[ing] the preparedness of emergency responders.” USAA-1008, Abstract. Further, because Forstall teaches that memory of device 100 stores “communication instructions” to permit communications with “one or more servers[,]” a POSITA would have perceived incorporating Thompson2010’s client-server architecture as an implementation detail. USAA-1028, [0056]; USAA-1008, 30, 33-34; USAA-1003, ¶215. A POSITA would have also had a reasonable success in implementing the combination without invention since accident detection using smartphones was well-known by the Critical Date. USAA-1003, ¶215 (citing USAA-1007).

2. Claims 13, 14

[13.1]

Thompson2010 describes a smartphone configured to detect traffic accidents (“*detect the occurrence of a predetermined event of significance, such as a crash*”). USAA-1008, 30. As discussed in §III.E.1, in the combination (*see* §III.E.1(b)), a POSITA would have configured phone 106 to perform Thompson2010’s accident detection technique and thereby detect traffic accidents. Thompson2010 describes this is accomplished using “sensors built into a

smartphone to detect a major acceleration event indicative of an accident and utilize the built-in 3G data connection to transmit that information to a central server.” USAA-1008, 30; USAA-1003, ¶216.

[13.2]

A POSITA would have understood and/or found obvious that, in the combination (*see* §III.E.1(b)), motion data cache stores sensor information that is processed by phone 106 (using Thompson2010’s accident detection technique) to identify a traffic accident (“*store driving information associated with that event to the memory*”). USAA-1003, ¶217. Thompson2010 describes that a smartphone executes a “WreckWatch Android client” that runs “[b]ackground services [that] detect accidents by polling smartphone system sensors, such as the GPS receiver and accelerometers[,]” where “[t]he polling rate is configurable at compile-time to meet user needs and to provide the appropriate consumption characteristics.” USAA-1008, 33. Given these disclosures, a POSITA would have found it obvious to configure motion data cache to store raw sensor data used for accident detection (e.g., GPS data, accelerometer data) and data generated through the processing of raw sensor data by phone 106 in detecting a traffic accident. USAA-1003, ¶217. Dr. Michalson explains that “a POSITA would have recognized Thompson2010’s disclosure of accident image upload to a server suggests that the uploaded accident images (and associated accident information) are at least temporarily stored in

memory prior to upload.” *Id.* (citing USAA-1008, 32, Fig. 4).

[14.1]

See [13.1], *supra*. USAA-1003, ¶218.

[14.2]

Thompson2010 describes that a mobile client on a smartphone (Wreck-Watch client) uploads (“*transmit*”) data associated with a detected accident (“*driving information associated with that event*”) to an associated server (WreckWatch server) (“*a remote data-logging system*”). USAA-1008, 30. In the combination (*see* §III.E.1(b)), client 110 of phone 106 provides similar functionality as Wreck-Watch client and server 104 provides similar functionality as WreckWatch server. Thus, the combination would have provided client 110 with functionality for uploading data associated with a detected accident to server 104 (as taught in Thompson2010). USAA-1008, 30, 32-35; USAA-1003, ¶219.

E. [GROUND 1E] – Forstall, Rabu, Langle2009, Katayama, and Warren Renders Claims 6, 9, 18 Obvious

1. Proposed Combination

(a) *Warren*

Warren describes calculating a “driver score” based on “monitoring vehicle operation[,]” such as “the times the vehicle is operated, the locations the vehicle is operated and the speeds or other characteristics of how the vehicle is operated[.]”

USAA-1030, Abstract. The driver score is “applied to ascertain the risk of insuring a particular driver” and “a tool for defining or adjusting the terms of an insurance policy for an insured driver.” *Id.*; USAA-1003, ¶¶96-97.

The driver score reflects “a risk level associated with insuring a particular driver[,]” (USAA-1030, [0024]) and “an insurance risk and is used to either increase or decrease an insurance premium or otherwise modify the terms of an insurance policy” (*id.*, [0026]). USAA-1003, ¶¶98-99; USAA-1030, [0024].

(b) *Motivation to Combine*

A POSITA would have found obvious from Langle2009’s disclosure that unsafe behaviors are driver-specific, and thereby looked to techniques for improving its use to improve driver safety. USAA-1003, ¶220; USAA-1029, 1; USAA-1044, 323. A POSITA would have found it obvious to incorporate well-known evaluation techniques to improve Langle2009’s focus on “classify[ing] driving habits as safe or unsafe.” USAA-1029, 1; USAA-1003, ¶220 (citing USAA-1030, Figs. 1-5).

A POSITA would have found obvious that incorporating Warren’s driver score into the Forstall-Rabu-Langle2009-Katayama device would have advanced—Langle2009’s overall motivation to increase the use of mobile devices “as a black box to determine varying levels of risk while riding in a vehicle.” USAA-1029, 1; USAA-1003, ¶221 (citing USAA-1028, [0061], [0067]); USAA-1029, 1; USAA-

1030, [0020]).

2. Claims 6, 9, 18

[6]

As discussed for [5.1], Warren's central system 170 ("**remote system**") receives data collected and/or generated for a monitored vehicle. USAA-1030, [0021]. Warren describes monitored data to central system 170 for processing ("**transmitting driving information...to a remote system**"). A vehicle monitor "periodically transmit[s] collected data to the central system 170[,]" using "wireless technology," such as "FLEX, REFLEX, POCSAG, AMPS, NAMPS, TDMA, CDMA, GSM, GPRS[.]" *Id.*, [0022]. Forstall describes a device that includes "one or more wireless communication subsystems" ("**wireless telecommunications module**"), including "802.11b/g communication device 186, and/or a Bluetooth™ communication device 188." USAA-1028, [0038]. Thus, the Forstall-Rabu-Langle2009-Katayama-Warren device would have provided driving safety data to central system 170 using one or more wireless communication subsystems ("**transmitting...via a wireless telecommunication module...**"). USAA-1003, ¶222.

[9.1]

Warren's central system 170 ("**remote system**") processes data collected and/or generated for a monitored vehicle. USAA-1030, [0021]. The Forstall-Rabu-Langle2009-Katayama-Warren device would have detected an unsafe

acceleration from driving safety data (detect “*event*”) and provided it to central system 170 (“*communicating to a remote system...*”). USAA-1003, ¶223; USAA-1029, 1; USAA-1030, [0022], [0038], [0051].

[9.2]

The Forstall-Rabu-Langle2009-Katayama-Warren device would have received a request from central system 170 to transmit driving safety data (“*request to transmit to the remote system ...*”). USAA-1003, ¶224; USAA-1030, [0022], [0023]. Further, client-server communication protocols were obvious design choices by the Critical Date. USAA-1003, ¶224; §III.A.3 (addressing [5.2]). A POSITA would have also found it obvious to configure central system 170 to request portions of the collected safety data (“*selected portions...*”) relevant to further analysis. USAA-1003, ¶224 (citing USAA-1030, [0020], [0023]).

[18]

As discussed in §III.E.1(b), the Forstall-Rabu-Langle2009-Katayama-Warren device would have determined a driver score based on driving safety data (“*driving score*”). USAA-1029; USAA-1030. In Warren, the driver score reflects “a qualitative view of the driving characteristics for a particular vehicle or a combination of a vehicle and driver[,]” such as “a risk level associated with insuring a particular driver[,]” USAA-1029, [0024]. The driver score can be based on “speeds at which the vehicle is operated.” *Id.*, [0014]. Langle2009’s driving

safety data relates to risks associated with driving, and thus, the device would have computed the driver score based on processing driving safety information (e.g., unsafe acceleration, unsafe braking) (“*driving score*”). USAA-1003, ¶225; USAA-1029, 1-2; USAA-1030, [0014], [0024]. Warren teaches embodiments where the driver score “include[s] a variety of parameters” and a POSITA would have found it obvious that to determine parameter weights based on identifying unsafe driving behaviors from sensor data (as taught in Langle2009). USAA-1030, [0051].

F. [GROUND 1F] – Forstall, Rabu, Langle2009, Katayama, and Willis Renders Claim 25 Obvious

1. Proposed Combination

(a) *Willis*

Willis offers techniques for “determining the proximity of radio frequency devices using the analysis of a series of receive signal strength indicator (RSSI) values.” USAA-1009, Abstract. Willis recognizes that “RSSI values are used in a range of situations” and “in various radio frequency technologies.” *Id.*, 1:23-27. Wilson discloses an exemplary embodiment “applied to measurement of Bluetooth signal strength from a mobile phone inside a stationary vehicle.” *Id.*, 14:25-15:3. This “provide[s] a proximity detection of the phone coming within 2 meters of the vehicle in any manner from any direction.” *Id.*; USAA-1003, ¶94.

(b) *Motivation to Combine*

Device 100 includes “one or more wireless communication subsystems,” such as a “Bluetooth[] communication device 188.” USAA-1028, USAA-1003, ¶226. A POSITA would have understood that “Bluetooth” means “the industrial specification for wireless personal area networks that provides a mechanism for exchanging information” between mobile devices. USAA-1009, 9:22-24.

A POSITA would have also understood that proximity detection based on Bluetooth signal strengths (as described in Willis) is an implementation detail and/or obvious design choice of many (if not all) Bluetooth sensors of mobile devices. USAA-1003, ¶227. Willis describes that its techniques involve “[t]he use of core Bluetooth™ functionality [that] enables the invention to be used with a broad range of Bluetooth™ capable devices and avoids the incompatibility issues suffered by predecessor devices.” USAA-1009, 31:6-8. Further, “a POSITA would have understood that ‘Bluetooth’ refers to an industrial specification that is standardized across devices with Bluetooth functionality and Willis’ disclosure of using Bluetooth signal strength to detect proximity of a nearby device is within the scope of the industrial specification.” USAA-1003, ¶227. Thus, a POSITA would have found it obvious that Bluetooth communication device 188 of device 100 detects a proximity of a car using “the signal strength of the Bluetooth receiver inside [the] car,” as described in Willis. USAA-1009, 19:10-14; USAA-1003, ¶227.

2. Claim 25

[25.1]

Willis describes a mobile device includes a Bluetooth sensor (“*proximity sensor*”) that detects proximity of a nearby vehicle using Bluetooth signal strength. USAA-1009, 1:23-27, 14:25-15:3. Device 100 includes Bluetooth communication device 188 and, in the combination with Willis (*see* §III.F.1(b)), a POSITA would have configured Bluetooth communication device 188 to detect proximity of a vehicle (as taught in Willis). *Id.*; USAA-1003, ¶228.

[25.2]

In the combination (*see* §III.F.1(b)), a POSITA would have configured Bluetooth communication device 188 of device 100 to detect proximity of a vehicle (“*detect the proximity of the mobile telecommunications device to the vehicle*”) (as taught in Willis). USAA-1009, 1:23-27, 14:25-15:3; USAA-1003, ¶229.

G. [GROUND 1G] – Forstall, Rabu, Langle2009, Katayama, and Berkobin Renders Claim 27 Obvious

1. Proposed Combination

(a) *Berkobin*

Berkobin offers techniques focused on determining driver behavior based on vehicle operating parameters and adjusting insurance premiums based on the driver behavior. USAA-1010, Abstract. Berkobin also teaches embodiments in which its disclosed techniques “can employ Artificial Intelligence techniques such as

machine learning and iterative learning[,]” such as “Bayesian networks, behavior based AI, neural networks, fuzzy systems, evolutionary computation...” *Id.*, [0031]; USAA-1003, ¶95.

(a) *Motivation to Combine*

As discussed in §III.F.1(a), using artificial intelligence to evaluate driver information well-known by the Critical Date. USAA-1003, ¶230; USAA-1010, [0031]; USAA-1025, [0047]; USAA-1014, [0094]. A POSITA would have been motivated to employ artificial intelligence to identify unsafe driving behaviors from motion data recorded for a vehicle for the reasons discussed in § III.G.1(b) (incorporated herein by reference). USAA-1003, ¶230.

A POSITA would have perceived the benefit of increasing accuracy of identifying unsafe driving behaviors since Langle expresses a desire to “enhance and strengthen [the world’s] emergency services[.]” through the use of mobile devices to “aid in safe driving practices and detection of emergencies.” USAA-1029, Abstract. A POSITA would have looked to techniques for improving accuracy in driver safety monitoring, and in doing so, identified artificial intelligence as an available tool to process sensor data collected by device 100 in identifying unsafe driving behaviors. USAA-1003, ¶231. A POSITA would also been reasonably expected to succeed since similar configurations were known by the Critical Date. USAA-1003, ¶231.

2. Claim 27

The combination (*see* §III.G.1(b)) renders this claim obvious the following limitations of claim 27 in the same manner as explained above for the corresponding claim 1 limitations listed in the table below. USAA-1003, ¶232.

Claim 1 Limitation	Corresponding Limitations
[1.1]	[27.1]
[1.2]	[27.2]
[1.3]	[27.3]
[1.4]	[27.4]
[1.5]	[27.5]
[1.6]	[27.6]
[1.7]	[27.7]
[1.8]	[27.9]
[1.9]	[27.10]
[1.10]	[27.11]
[1.11]	[27.12]
[1.12]	[27.13]
[1.13]	[27.14]

[27.8]

The term “neural network” appears once in the ’369 patent specification and relevant disclosure closely repeats the language recited by this claim limitation. USAA-1001, 6:63-7:3. Beyond these general descriptions, ’369 patent specification lacks any discernible disclosure relating to which types of specific neural net-

works are used to evaluate sensor data to identify acceptable or unacceptable driving patterns. USAA-1003, ¶233.

Berkobin describes using a neural network to process sensor data and evaluate driving information (“*processing involving the use of a neural network*”). USAA-1010, [0002], [0031]. In the combination (*see* §III.F.1(b)), a POSITA would have configured phone 106 to use a neural network to determine whether recorded motion data indicates a safe driving behavior (“*an acceptable [driving pattern]*”) or an unsafe driving behavior (“*unacceptable driving pattern*”). 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 (“*Director’s Guidance*”), USAA asks the Board to consider the challenges raised in this Petition. *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 6 (PTAB Mar. 20, 2020) (precedential)(“*Fintiv*”). First and foremost, the merits of the Petition are “compelling,” and this “alone demonstrates that the PTAB should not discretionarily deny institution under *Fintiv*.” USAA-1051 (*Director’s Guidance*), 3-5. A holistic analysis favors institution.

1. Factor 1

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 (PTAB Dec. 1, 2020)(“*Sotera*”)(precedential).

2. Factor 2

USAA 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 (*Director’s Guidance*), 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 29.5 months (USAA-1067, 37), jury trial can currently be expected to occur in late October 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 October 2024 (i.e., around the same time or in advance of the median-expected jury trial). USAA-1065, 9.

3. Factor 3

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 has 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

Though Telematics presently alleges infringement of the ’369 patent’s claims 1, 2, 4, 5, 6, 7, 15, 18, 19, 20, 21, and 26, its contentions are preliminary, and thus, USAA it unable to identify the full complement of claims for which Telematics will ultimately allege infringement. USAA-1075, 6. This Petition, however, challenges all claims of the ’369 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 Fostall, Rabu, Katayama, Tamir, Balachandran, Thompson2010, Willis, or Berkobin. 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 relied on in this IPR and the prior art in the parallel proceedings. *See* IPR2021-00972 Pap. 10, 13-16 (Dec. 8 2021)(“*AliveCor*”).

Indeed, the PTAB has found that preventing consideration of IPR references in this manner avoids the concerns over duplication of effort or conflicting decisions expressed by *Fintiv*. For example, in *Facebook*, the Board found that, “[b]ecause neither the references nor the grounds asserted in the Petition...will be raised in the parallel...proceeding, we determine that there is little risk of duplication of effort or conflicting decisions, and this factor weighs against exercising our discretion to deny institution.” IPR2021-00033, Pap. 13, 14 (April 30, 2021).

5. Factor 5

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

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 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 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 ’369 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 ’369 Patent. The other petitions for *inter partes* review of the ’369 patent are IPR2023-00768 and IPR2023-00769.

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

USAA provides the following designation of counsel.

Lead Counsel	Backup counsel
W. Karl Renner, Reg. No. 41,265 Fish & Richardson P.C. 60 South Sixth Street, Suite 3200 Minneapolis, MN 55402 Tel: 202-783-5070 Fax: 877-769-7945 Email: IPR36137-0026IP3@fr.com	Thomas Rozylowicz, Reg. No. 50,620 Andrew B. Patrick, Reg. No. 63,471 Michael Zoppo, Reg. No. 61,074 Ryan Chowdhury, Reg. No. 74,466 60 South Sixth Street, Suite 3200 Minneapolis, MN 55402 Tel: 202-783-5070 Fax: 877-769-7945 PTABInbound@fr.com

D. Service Information

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

Petitioner consents to electronic service by email at IPR36137-0026IP3@fr.com

(referencing No. 36137-0026IP3 and cc'ing PTABInbound@fr.com, axf-ptab@fr.com, tar@fr.com, patrick@fr.com, rchowdhury@fr.com, and zoppo@fr.com).

Respectfully submitted,

Dated: April 7, 2023

/Thomas A. Rozylowicz/
W. Karl Renner, Reg. No. 41,265
Thomas Rozylowicz, Reg. No. 50,620
Andrew B. Patrick, Reg. No. 63,471
Michael Zoppo, Reg. No. 61,074
Ryan Chowdhury, Reg. No. 74,466
Fish & Richardson P.C.
60 South Sixth Street, Suite 3200
Minneapolis, MN 55402
T: 202-783-5070
F: 877-769-7945
Attorneys for Petitioner

(Control No. IPR2023-00770)

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 13,954 words, which is less than the 14,000 allowed under 37 CFR § 42.24.

Dated: April 7, 2023

/Thomas A. Rozylowicz/
W. Karl Renner, Reg. No. 41,265
Thomas Rozylowicz, Reg. No. 50,620
Andrew Patrick, Reg. No. 63,471
Michael Zoppo, Reg. No. 61,074
Ryan Chowdhury, Reg. No. 74,466
Fish & Richardson P.C.
60 South Sixth Street, Suite 3200
Minneapolis, MN 55402
T: 202-783-5070
F: 877-769-7945

Attorneys for Petitioner

CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(4)(i) *et seq.* and 42.105(b), the undersigned certifies that on April 7, 2023, a complete and entire copy of this Petition for *Inter Partes* Review and all supporting exhibits were provided via Federal Express, to the Patent Owner, by serving the correspondence address of record as follows:

Baker & Hostetler LLP
Washington Square, Suite 1100
1050 Connecticut Ave. N.W.
Washington, DC 20036-5304

/Michael Stanwyck/
Michael Stanwyck
Fish & Richardson P.C.
60 South Sixth Street, Suite 3200
Minneapolis, MN 55402
stanwyck@fr.com