

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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

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

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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 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

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- 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”)
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- 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”)
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- USAA-1061 Schäfer, Ralf-Peter, et al., “A traffic information system by means of real-time floating-car data” (2002) (“Schäfer2002”)
- USAA-1062 Kerner, B. S., et al., “Traffic state detection with floating car data in road networks,” Proceedings of the 8th International IEEE Conference on Intelligent Transportation Systems, 2005 (“Kerner2005”)
- USAA-1063 Leduc, Guillaume, “Road traffic data: Collection methods and applications,” Working Papers on Energy, Transport and Climate Change 1.55 (2008): 1-55 (“Leduc2008”)
- USAA-1064 Troncoso, Carmela, et al, “Pripayd: privacy friendly pay-as-you-drive insurance,” IEEE Transactions on Dependable and Secure Computing, Vol. 8, No. 5, October 2011 (“Troncoso2011”)
- USAA-1065 Memorandum, Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation (USPTO June 21, 2022) (“Director’s Guidance”)
- USAA-1066 Order Granting Motion for Entry of Scheduling Order in *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, 6, 9-12, 16-24, 26	§103: Curry, Rabu, Katayama
1B	5	§103: Curry, Rabu, Katayama, Tamir
1C	7, 8, 15	§103: Curry, Rabu, Katayama, Balachandran
1D	13, 14	§103: Curry, Rabu, Katayama,

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

Ground	Claims	Basis
		Thompson2010
1E	25	§103: Curry, Rabu, Katayama, Willis
1F	27	§103: Curry, Rabu, 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
Curry	4/15/2010	§102(a)
Rabu	12/15/2009	§102(e)
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)
Willis	10/11/2007	§102(b)
Berkobin	10/16/2008	§102(b)

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.

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, ¶136. 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, ¶137.

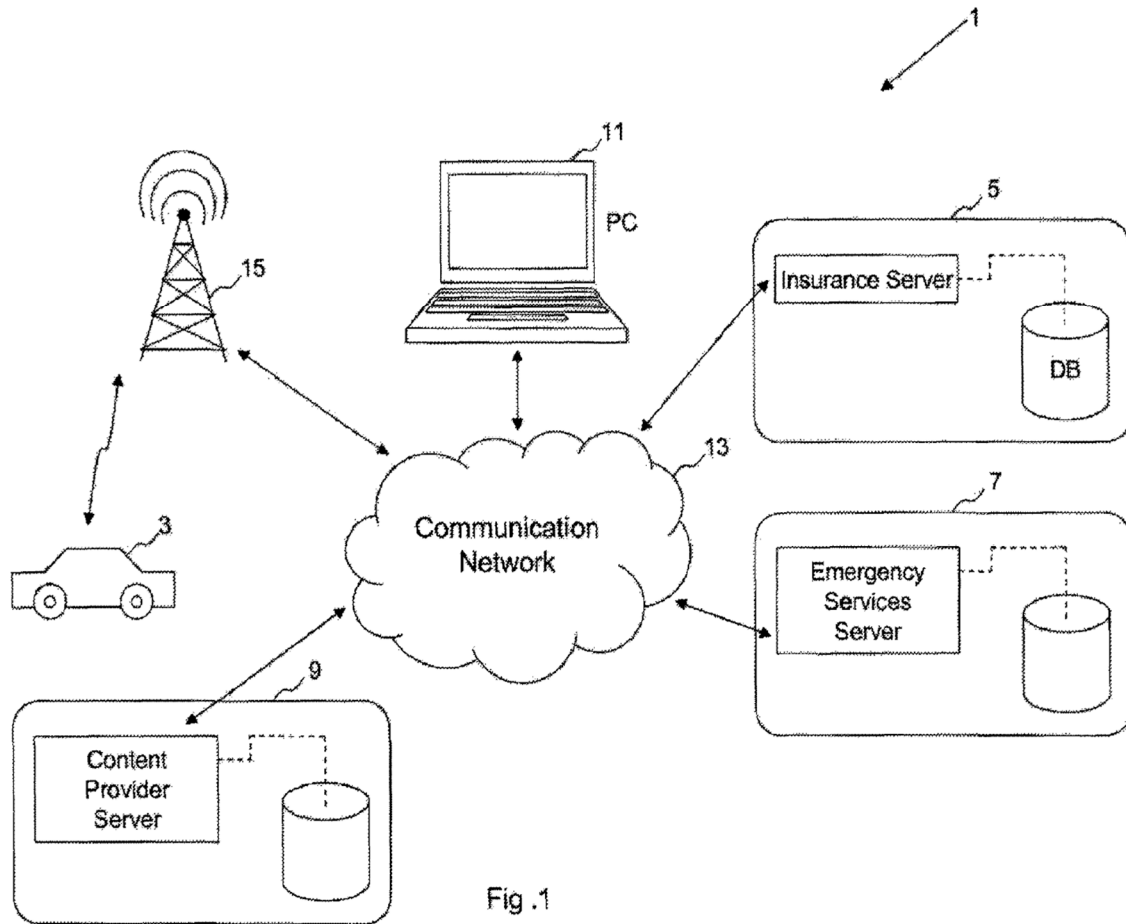
Thus, this claim term establishes two distinct “driving period” attributes: (1) “the mobile device is removably attached to the vehicle” and (2) “the vehicle is in use.” USAA-1003, ¶138. These attributes may be satisfied by a start of a monitoring period, whether at the onset of vehicle driving or whether instead before or thereafter. *Id.*

II. THE ’369 PATENT

A. Specification

The ’369 patent is directed to a mobile device that conventionally “monitor[s] and process[es] sensor data” to “derive driving information” related to “a driver’s driving performance.” USAA-1001, 13:33-53; 13:15-32; USAA-1003, ¶¶30-58 *Id.*, 1:19-27, 1:46-55; USAA-1003, ¶55.

Figure 1 shows an exemplary system:



USAA-1001, Fig. 1

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, ¶¶60.

III. THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. [GROUND 1A] – Curry, Rabu, Katayama Renders Claims 1-4, 6, 7, 9-12, 16-24, and 26 Obvious

1. Proposed Combination

(a) *Curry*

Curry describes using a “mobile wireless computing device” with embedded accelerometers and/or positioning sensors (e.g., an “iPhone 3G smart phone[]”) to “detect and prevent unsafe driving behavior[s]”, and generate related “driving safety...score[s]” for determining insurance premiums. USAA-1005, Abstract, 2:1-27, 3:24-4:6, 4:7-11, 7:5-22, 9:31-33, Fig. 1; USAA-1003, ¶62.

Figure 1 (below) shows a driving safety data server 104 in communication with a “mobile phone” located in a vehicle. USAA-1005, 7:23-29, 8:21-27. The phone runs a downloadable client 110 to monitor vehicle movement (e.g., evaluating “location, speed, and acceleration data” from an embedded “GPS sensor 114 and accelerometer 116”). *Id.*, 8:30-34. Client 110 also identifies phone usage (e.g., texting/calling while driving) and other risky driving behaviors (e.g., “speeding, abnormal acceleration, abnormal deceleration, and taking sharp turns”). USAA-1005, 7:5-22, 9:5-11, 8:30-9:33; USAA-1003, ¶63.

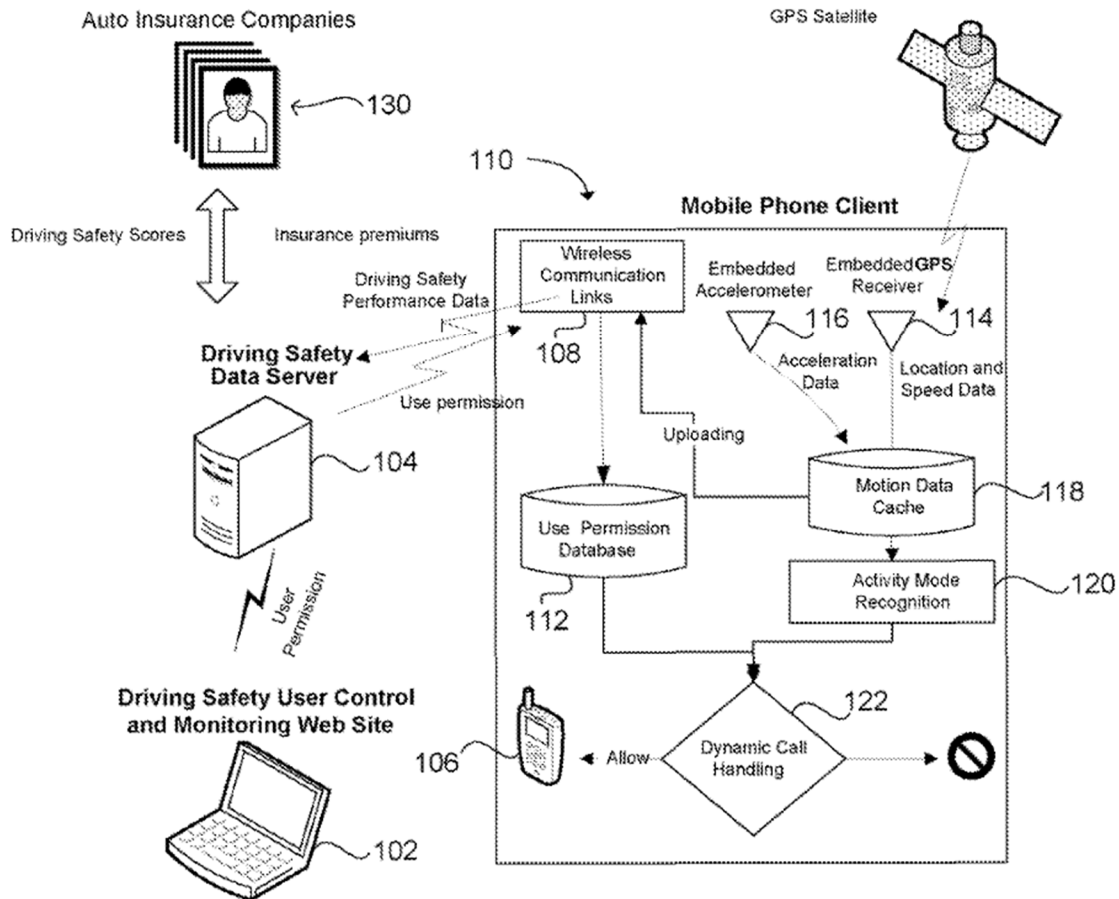


FIG. 1

USAA-1005, Fig. 1

Raw data and resolved driving behavior information are stored in the phone (e.g., “motion data cache 118,” “driving safety performance database 324”) and processed to (1) determine an operating mode of the phone (e.g., “GPS monitoring/navigation mode,” “communication mode”) and (2) generate a user “driving safety score.” *Id.*, Abstract, 3:1-4:6, 8:29-12:18, 13:27-14:26, 17:1-18:4, Figs. 1, 3, 6; USAA-1003, ¶64.

(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. Rabu leverages the accelerometer both to determine whether the PMD is located in a moving or stationary vehicle, and 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, ¶65. 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, ¶69. 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, ¶69.

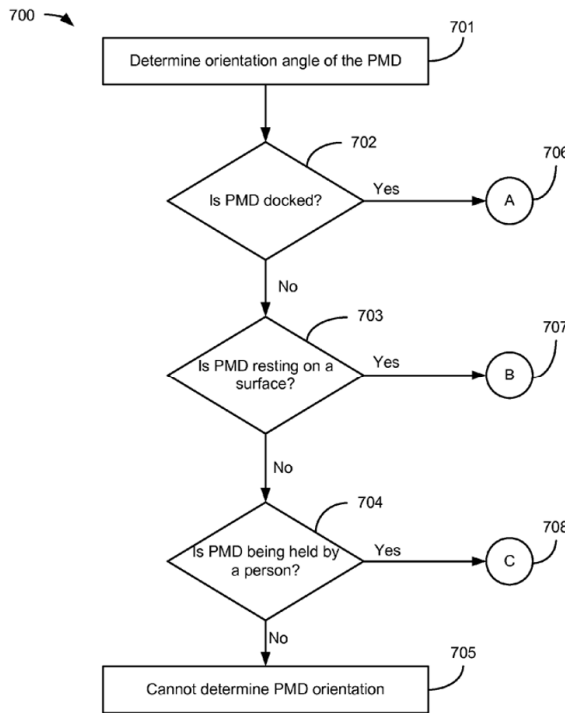


FIG. 7

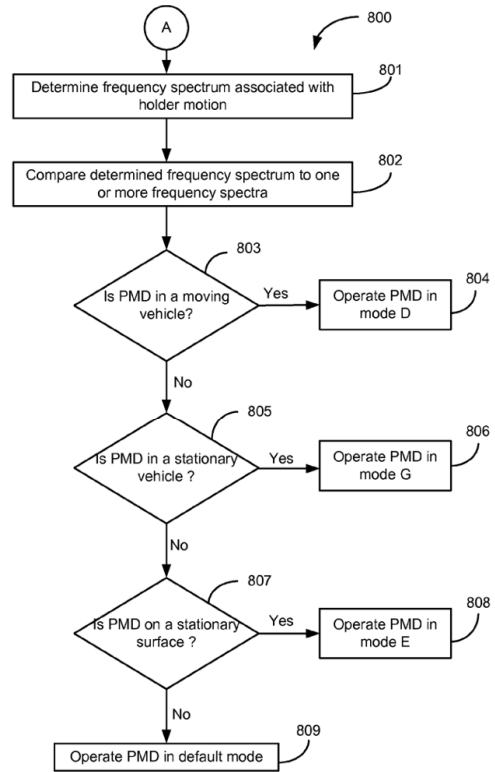


FIG. 8

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. Rabu leverages this "orientation" angle to confirm whether the PMD is coupled to dock 200, and to switch to an associated operating mode. USAA-1013, 3:29-4:4, 8:13-24, Figs. 2, 7, 3:46-4:4; USAA-1003, ¶66.

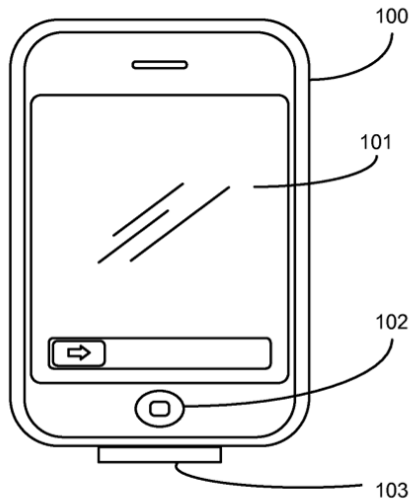


FIG. 1

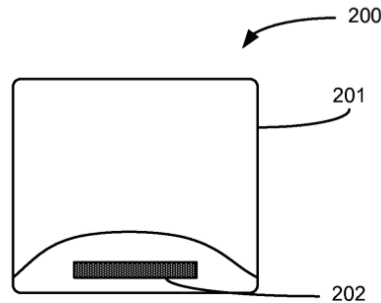


FIG. 2

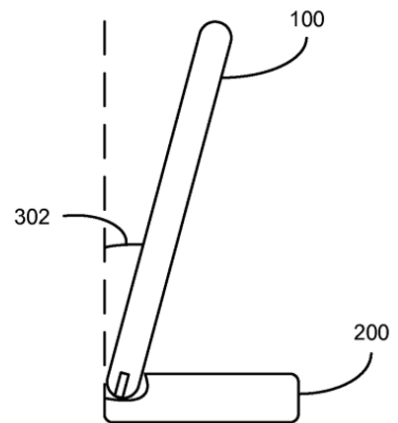
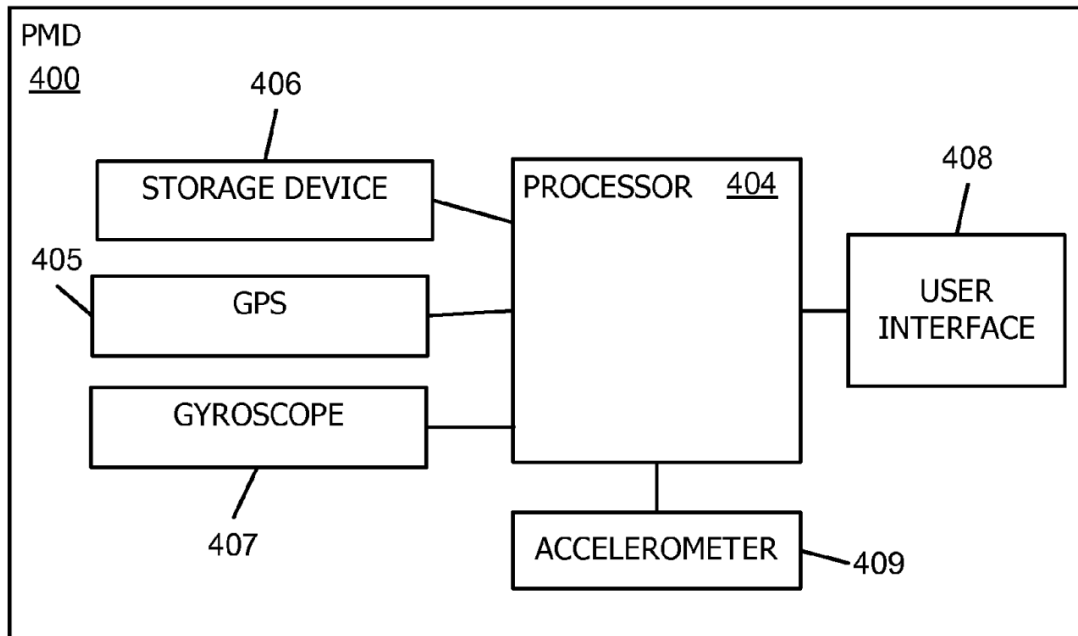


FIG. 3

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, ¶¶67-68.



USAA-1013, Fig. 4

(c) *Curry-Rabu*

A person of ordinary skill in the art (“POSITA”)³ would have found obvious the integration of Rabu’s dock-status sensing and associated mode-shifting capabilities into Curry’s phone to promote safe driving. USAA-1003, ¶87. As explained below, the resulting Curry-Rabu device would define and determine different types of driving periods based on user inputs and sensor data, and restrict phone use and/or adjust driving scores depending on a type of driving period determined. *Id.*

For example, the Curry-Rabu phone would leverage orientation and motion

³ USAA-1003, ¶¶14-15 (defining a POSITA)

data from its accelerometer to determine both vehicle motion and phone docking status upon a user accepting a phone call while the vehicle is in use, or manually switching from a stationary to driving activity mode through interactions with the phone's user interface. USAA-1003, ¶88; USAA-1013, 3:1-10, 4:21-33, 8:13-10:42, 15:7-22, Figs. 1, 4-5, 7-8. Consistent with both Curry and Rabu, the Curry-Rabu phone would appropriately restrict phone interactions depending on the determined status. USAA-1005, 16:30-17:7, Figs. 3, 6; USAA-1013, 8:13-10:42, Fig. 5; USAA-1003, ¶88.

In greater detail, the Curry-Rabu phone's client would, from phone sensor data, determine operating mode and derive driving behavior information. USAA-1005, Abstract, 3:1-4:6, 7:5-22, 8:29-12:18, 13:27-14:26, 17:1-18:4, Figs. 1, 3, 6. The derived driving behavior information would indicate whether/how the user interacts with the phone while driving, and whether the user engages in other risky behaviors such as speeding. *Id.*; USAA-1003, ¶88.

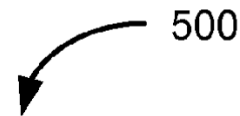
Curry describes two modes: (1) a "communication" operating mode that allows for normal phone usage and (2) "a GPS monitoring/navigation" mode that restricts calling, texting, and/or software capability on phone 106 to promote driving safety. USAA-1005, 9:15-10:14, 12:20-15:22, Figs. 3, 4. Phone 106 switches between these operating modes, for instance, based on an "activity mode" (e.g., "remaining substantially still" or "driving") that can be activated by the

phone's user and/or in response to sensor data. USAA-1005, 12:20-13:4, 15:18-22; USAA-1003, ¶89. User inputs can, for example, "change[] the activity mode...from stop to driving," and "the system uses acceleration data...to determine the change...and then further estimate the motion type before or after the change." USAA-1005, 12:20-26, 15:18-22, Fig. 3. "Access to...calling, texting, and...applications" can be restricted, and "driver safety data can be communicated," "based on the activity mode...." USAA-1005, 16:30-17:7, Figs. 3, 6.

Curry further suggests correlating different activity modes with different operating modes, and accounting in nuanced ways for phone usage context when determining driving scores and phone usage restrictions. USAA-1003, ¶90; USAA-1005, 2:3-3:28, 15:8-16:33. This and description of benefits would have motivated a POSITA to seek related practical solutions for implementation. USAA-1005, Abstract, 2:3-3:28, 15:8-16:33; USAA-1003, ¶91.

As explained below, the POSITA would have found relevant solutions and further motivations within Rabu, and would have expected success in incorporating Rabu's solutions within Curry. USAA-1003, ¶92. For example, Rabu describes discerning phone usage context from accelerometer data indicating phone orientation angle and motion status, and changing the phone's operating mode to account for that context. USAA-1013, 3:1-10, 4:21-33, Figs. 1, 4; USAA-1003,

¶92. For instance, Rabu's Fig. 5 (below) and related description suggests switching operating modes based on determining that the phone is "docked in a moving vehicle." USAA-1013, 1:36-2:14, 5:53-7:6, 8:13-10:42, 12:26-38, Figs. 5, 7, 8; USAA-1003, ¶92.

500


PMD Modes	Description
A	PMD handheld while located in a moving vehicle.
B	PMD resting in a moving vehicle
C	PMD handheld while person is in motion.
D	PMD docked in a moving vehicle
E	PMD docked in a desktop dock and stationary
F	PMD resting on a stationary surface
G	PMD docked in a stationary vehicle

USAA-1013, Fig. 5

From this and related description, it would have for example been obvious to change the phone's operating mode to one involving relatively fewer restrictions if the phone is docked within a moving vehicle. USAA-1003, ¶¶93-94; USAA-1013, 3:1-10, 4:21-33, 6:39-43, 12:38-43, Figs. 1, 4. Consistent with Curry and Rabu's descriptions it would have further been obvious to, upon receipt of user inputs, leverage motion and orientation data from Curry's accelerometer to allow usage of a docked phone's speaker mode while driving. USAA-1003, ¶94; USAA-1005, 14:14-17; USAA-1013, 6:39-43, Fig. 5.

Accordingly, the combined disclosures of Curry and Rabu would have motivated a POSITA to supplement Curry's teachings of initiating a motion estimation process for determining the start of a driving period based on user inputs (e.g., a user's interactions with the phone's user interface when accepting a phone call) and sensor data to include, e.g., using accelerometer motion and orientation data to differentiate between defined driving periods in which phone 106 is hand-held, and those in which phone 106 is instead docked. USAA-1003, ¶95; USAA-1005, 14:14-17; USAA-1013, 5:61-6:21, 6:39-43, 8:1-4; Figs. 3-4, 5-8.

The POSITA would have found obvious that enhancing Curry's system based on Rabu's teachings would introduce multiple additional advantages (USAA-1003, ¶96), including:

1. increased user tolerance for Curry's monitoring mode, based on safe but user-friendly levels of restrictions enabled through determination of docking status (USAA-1003, ¶97; USAA-1005, 7:5-22, 8:5-18, 11:3-14; USAA-1013, 1:36-2:14);
2. increased likelihood of user participation in Curry's monitoring mode, with correspondingly improved safety (USAA-1003, ¶98; USAA-1005, 7:5-22, 8:5-18, 11:3-14; USAA-1013, 1:36-2:14);
3. enhanced reliability of motion detection and related determinations

based on data obtained from sensors within a docked phone relative to an undocked phone (USAA-1003, ¶99; USAA-1005, 3:24-4:6, 7:5-22, 8:23-28; USAA-1013, 2:61-3:10, 3:46-4:3, 5:61-6:21; USAA-1012, 59:34-43);

4. generation of more nuanced user driving scores taking into account usage violations related to docking status (USAA-1003, ¶100; USAA-1005, 7:5-22, 9:31-33, 10:3-12, 11:3-14, 13:3-19; USAA-1013, 2:61-3:10, 3:46-4:3, 5:61-6:21); and
5. enhanced utility for third parties in leveraging more nuanced driving scores in, for example, determining insurance premiums (USAA-1003, ¶100; USAA-1005, 4:7-11, 7:5-22, 10:3-12, 11:26-12:2; USAA-1013, 2:61-3:10, 3:46-4:3, 5:61-6:21).

These among other advantages would have amply motivated a POSITA to integrate Rabu's teachings into Curry in a manner enabling Curry's phone 106 both to determine, based on user inputs and sensor data, a start of a driving period during which phone 106 is docked within a moving vehicle, and to make corresponding adjustments to phone 106's operating modes, determinations of user driving behaviors, and generation of user driving scores. USAA-1003, ¶101; USAA-1005, 10:15-11:14, 13:20-16:22, 17:30-18:7, Figs. 3, 4, 6; USAA-1013, 24:8-3:10.

Moreover, configuring Curry's systems to leverage Rabu's teachings would have required only routine programming knowledge well within the skill of a POSITA prior to the earliest effective filing date. USAA-1003, ¶102. Indeed, the change would have amounted to nothing more than the use of a known technique to improve similar devices – in each instance a smart phone equipped with a generic accelerometer – in a similar way, and combining prior art elements according to known methods to yield the predictable results described above. *KSR v. Teleflex*, 550 U.S. 398, 417 (2007); USAA-1003, ¶102.

Furthermore, the elements of the resulting combination would each perform functions they had been known to perform prior to the combination. USAA-1003, ¶103. Accordingly, a POSITA would have naturally expected success when incorporating Rabu's teachings into Curry. *Id.*

(d) *Katayama*

Katayama describes a “driving recorder” that records “situation data” that indicates the “surrounding situation or the like of a motor vehicle during a certain period before and after a time of an accident or...risk incident” in which “a driver...is close to [being] involved in an accident...” USAA-1024, [0001], [0011], [0058]; USAA-1003, ¶70.

Through “after-the-fact analysis” of recorded data, the recorder can for example determine provide insights into driving behavior that may have contributed

to the occurrence of a given accident or “risk incident.” USAA-1024, [0001]-
[0002]; USAA-1003, ¶71.

Figure 2 (below) shows an exemplary driving recorder 1.

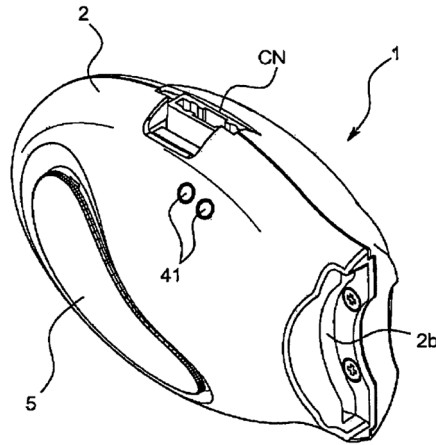


Fig.2

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, [and] position data indicating a position of the vehicle....” USAA-1024, [0013]; USAA-1003, ¶72. Figure 4 (below) depicts components of an exemplary recorder 1, including both internal accelerometer and GPS sensors and an “internal memory 82” that is configured to store sensor data and related derived information. USAA-1024, [0034], [0044]; USAA-1003, ¶72.

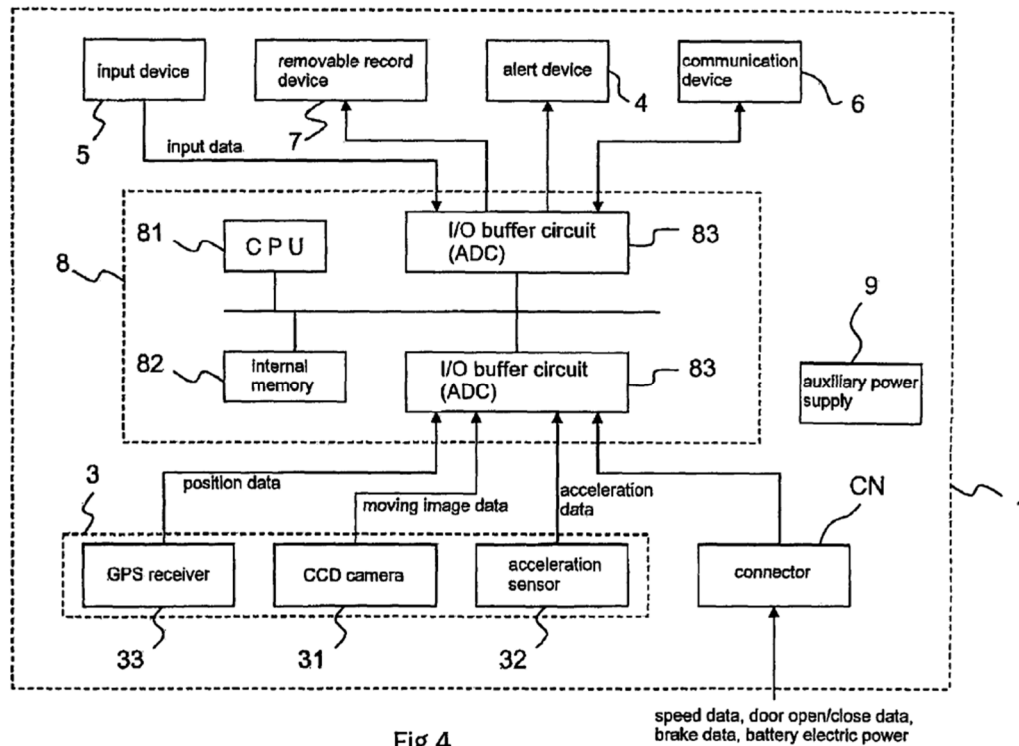


Fig.4

USAA-1024, Fig. 4

Figure 5 (below) is a “functional block diagram” of the recorder. USAA-1024, [0028], [0044]-[0045]; USAA-1003, ¶73. As shown, the recorder “is controlled...by operating the CPU 81 in accordance with programs stored in a predetermined area of the internal memory 82.” USAA-1003, ¶73.

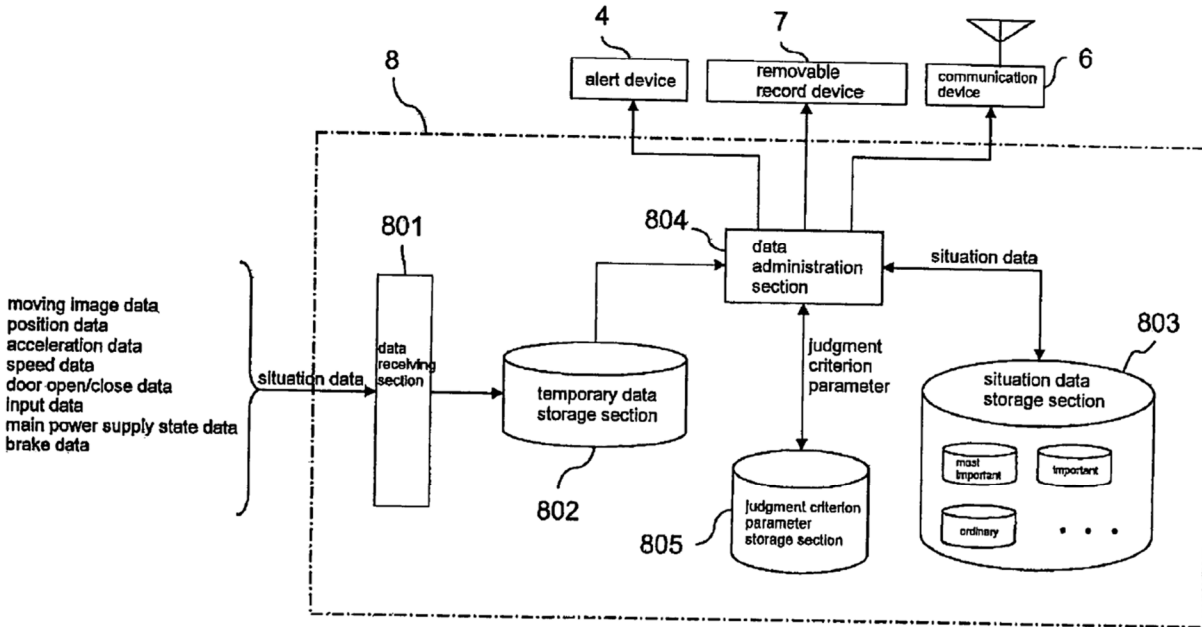


Fig.5

USAA-1024, Fig. 5

As described, memory 82 features an architecture with multiple sections, including “temporary data storage section 802” and “situation data storage section 803.” *Id.*, [0044]. Relatedly, Katayama describes data handling techniques that enable “effective use” of the memory’s limited capacity, and 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, ¶74.

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 memory 82’s temporary data storage section 802. *Id.*; USAA-1003, ¶75. 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, ¶75.

To avoid erasing situation data that might prove useful, data administration section 804 determines at the “time of recording” whether temporarily stored situation data meets one or more predetermined criteria for long term storage. USAA-1024, [0001]-[0002], [0016], [0046]-[0050]; USAA-1003, ¶76. If so, the recorded situation data is, for example, classified with an identifier marking it as “important,” and then transferred with the identifier to long term “situation data recording section 803.” *See* USAA-1024, [0001]-[0002], [0011]-[0016], [0027], [0046]-[0050], [0054], [0083]; USAA-1003, ¶76. In contrast, situation data that is marked with an identifier as less than important remains in temporary storage until eventually overwritten. *See* USAA-1024, [0011]-[0016], [0054]; USAA-1003, ¶76.

Criteria used in determining whether to mark and/or transfer a given set of accelerometer data may include, for example, “whether or not the acceleration” indicated exceeds a “predetermined” threshold, and “whether or not the acceleration continues for more than or equal to a certain period [of time].” USAA-1024, [0011]-[0016], [0027], [0046]-[0050], [0054], [0083]; USAA-1003, ¶77.

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, ¶78. “[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].

(e) *Curry-Rabu-Katayama*

As explained below, a POSITA would have found obvious enhancement of the Curry-Rabu phone through implementation both of Katayama’s teachings on partitioning local memory into several sections (including sections for temporary and long term storage), and Katayama’s 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, ¶¶104-105.

In more detail, a POSITA would have found obvious that, like Katayama’s local memory 82, the local memory featured in the Curry-Rabu phone has limited

capacity for accommodating both continuously and sequentially received sensor data, and information derived therefrom. *See* USAA-1005, 1:22-27, 2:24-26, 7:20-27, 5:3-10, Fig. 1; USAA-1003, ¶110.

Curry explains, for example, that “mobile phone client 110 can record location, speed and acceleration data from sensors embedded in the wireless device...to a local motion data cache 118 for further processing” prior to later transmission of derived driving behavior information. USAA-1005, 2:24-26, 6:5-22, 7:20-8:28, 12:20-15:6, Figs. 1, 3; USAA-1003, ¶111. Accordingly, a POSITA would have found obvious that derived driving behavior information is stored in local memory prior to its later transmission. USAA-1003, ¶112; USAA-1005, 6:5-22, 7:29-8:28, 12:20-15:6, Fig. 3.

As such, a POSITA would have recognized that important information stored in Curry’s local memory is 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 Curry-Rabu phone: partition of the local memory into temporary and long term sections, with storage of information identified as important in the long term section. USAA-1003, ¶113; USAA-1024, [0001]-[0002], [0016], [0044]-[0051], [0057].

Further, a POSITA would have recognized that configuring the Curry-Rabu phone’s memory in this manner while 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 Curry’s goals of “detect[ing] and prevent[ing] unsafe driving behavior[s]” by enabling the Curry-Rabu phone to detect both accidents and “risk incidents.” USAA-1005, Abstract, 2:1-27, 3:24-4:6, 4:7-11, 7:5-22, 9:31-33, Fig. 1; USAA-1024, [0016], [0053], [0044], [0046]; USAA-1003, ¶114.

More specifically, and as taught by Katayama, the POSITA would have configured the Curry-Rabu phone 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 Curry-Rabu phone’s local memory. USAA-1024, [0016], [0044]-[0049]; USAA-1003, ¶115. To avoid erasure of important situation data, the POSITA would have further configured the phone to “digitalize” temporarily stored situation data for purposes of determining, at the “time of recording,” whether that digitalized situation data meets 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, ¶115.

Further, the POSITA would have configured the Curry-Rabu phone to rec-

ord 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 section. USAA-1024, [0001]-[0002], [0011]-[0016], [0027], [0046]-[0050], [0054], [0083]; USAA-1003, ¶116. And, again consistent with Katayama, the POSITA would have configured the Curry-Rabu phone to store situation data determined to be less than important with a metadata “identifier” marking it as such, until overwritten. USAA-1024, [0011]-[0016], [0054]; USAA-1003, ¶116.

A POSITA would have found obvious that the Curry-Rabu-Katayama phone resulting from these collective enhancements would enjoy improved data management with reduced likelihood of erasure of important data. USAA-1003, ¶117; USAA-1005, 2:2-15, 2:24-3:6; USAA-1024, [0014]-[0016], [0045], [0053]. Further, the POSITA would have found obvious that the enhancements would improve the Curry-Rabu-Katayama phone’s safety monitoring, by enabling identification of accidents and “risk incidents,” with corresponding improvements to driving safety metrics. USAA-1005, 1-4:6, 2:3-2:28, 7:5-22, 8:29-12:18, 13:27-14:26, 15:8-16:33, 17:1-18:4; USAA-1024, [0044]-[0046]; USAA-1003, ¶117.

These among other advantages would have amply motivated a POSITA to integrate Katayama’s teachings into the Curry-Rabu phone. USAA-1003, ¶118; USAA-1005, 2:2-15, 2:24-3:6, 7:30-8:3; USAA-1024, [0001]-[0002], [0011]-

[0016], [0027], [0044]-[0050], [0054], [0083]. For example, a POSITA would have expected these enhancements to produce benefits including:

1. more effective use of the Curry-Rabu-Katayama phone's local memory (USAA-1003, ¶105; USAA-1005, 2:2-15, 2:24-3:6; USAA-1024, [0014]-[0016], [0045], [0053]);
2. avoidance of inadvertent erasure of important information (USAA-1003, ¶106; USAA-1024, [0001]-[0002], [0016], [0045]-[0050]);
3. generation of more sophisticated and accurate user driving scores derived from information further indicating whether a driver may have been involved in an accident or "risk incident" (USAA-1003, ¶107; USAA-1005, 7:5-22, 9:31-33, 10:3-12, 11:3-14, 13:3-19; USAA-1024, [0044]-[0046]);
4. enhanced utility for third parties in leveraging the Curry-Rabu-Katayama phone's improved driving scores (USAA-1003, ¶108; USAA-1005, 4:7-11, 7:5-22, 10:3-12, 11:26-12:2; USAA-1013, 2:61-3:10, 3:46-4:3, 5:61-6:21); and
5. improved after-the-fact accident reconstruction by third parties (USAA-1003, ¶109; USAA-1005, 10:26-33, 11:1-2; USAA-1024, [0027], [0031]).

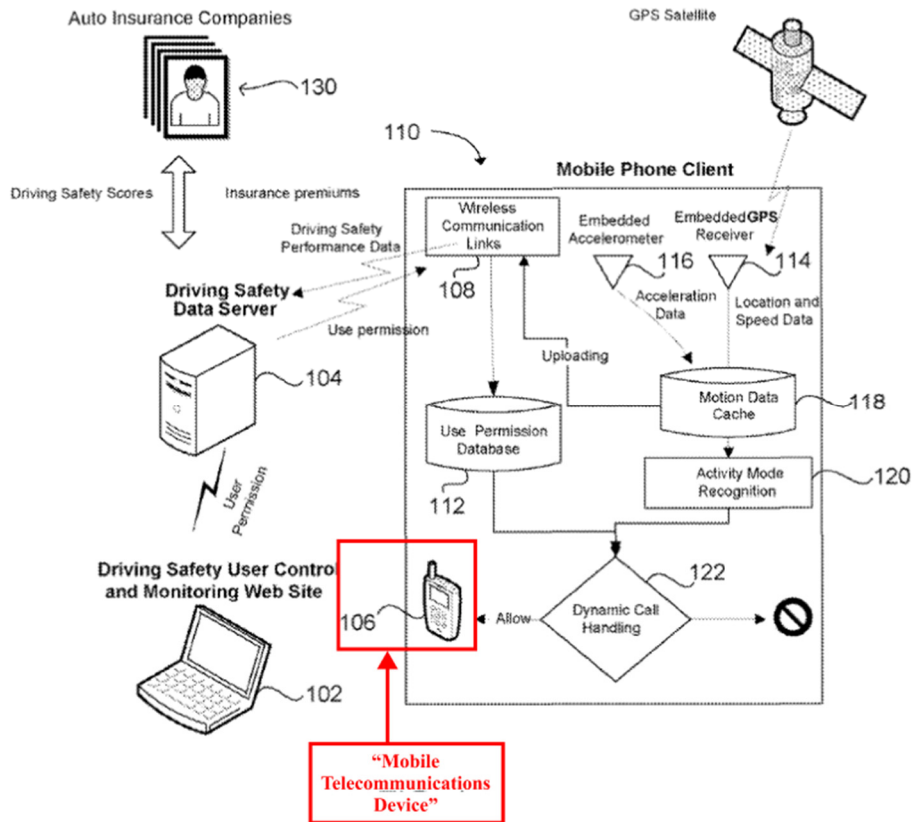
Moreover, configuring the Curry-Rabu phone to leverage Katayama's teachings would have required only routine knowledge of programming and common electronic components – well within the skill of a POSITA prior to the earliest effective filing date. USAA-1003, ¶119. Indeed, the changes would have amounted 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, ¶119.

Furthermore, the elements of the resulting combination would each perform functions they had been known to perform prior to the combination. USAA-1003, ¶120. Accordingly, a POSITA would have naturally expected success when incorporating Katayama's teachings into Curry-Rabu. ¶120.

2. Claim 1

[1.1]

Even if the preamble were properly limiting (it is not), a POSITA would have found it obvious in view of Curry-Rabu-Katayama (§III.A.1(c)). Curry-Rabu-Katayama includes a smartphone configured to log vehicular driving information. USAA-1005, Abstract, 2:1-27, 3:1-4:28, 7:5-29, 8:21-27, 10:15-12:18, Fig. 1; USAA-1003, ¶¶121-122.



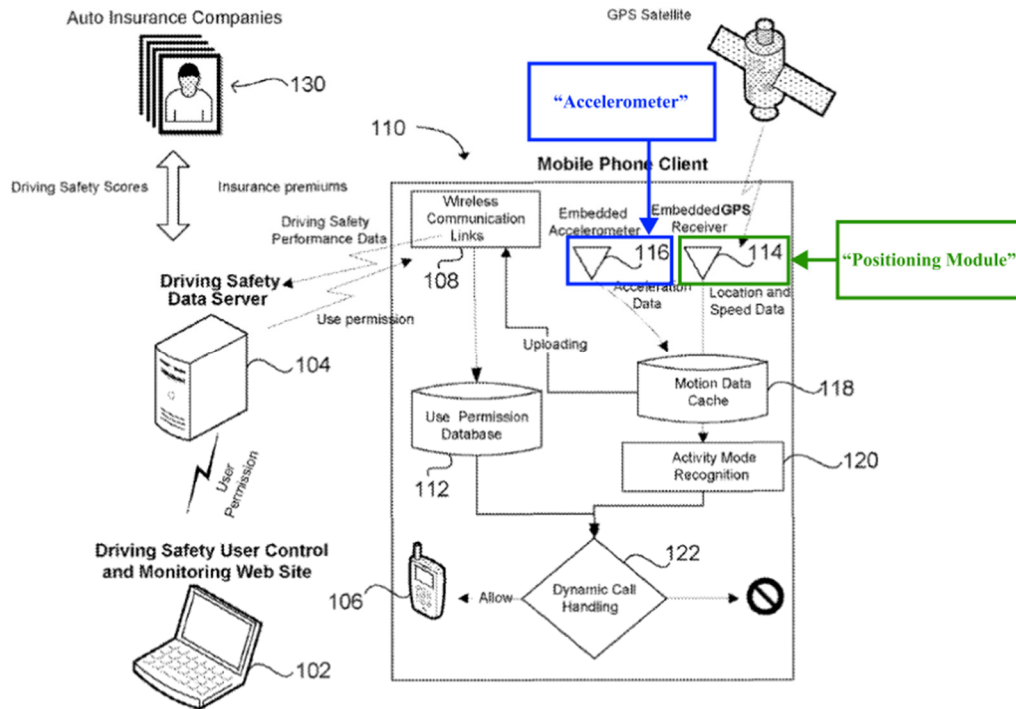
USAA-1005, Fig. 1 (annotated)

The Curry-Rabu-Katayama phone includes client 110, which enables determination of whether an associated vehicle is being driven. USAA-1005, 8:20-9:33. Client 110 additionally enables the Curry-Rabu-Katayama phone to process “raw data” from a driving period to log driving activity and derive driving information associated with a user’s driving behavior. USAA-1005, Abstract, 2:1-27, 3:1-4:6, 4:7-11, 7:5-8:2, 8:29-10:26, 13:27-33, Fig. 1; USAA-1003, ¶123.

[1.2]

The Curry-Rabu-Katayama phone features embedded sensors, including accelerometer 116 and GPS receiver 114. USAA-1005, 3:2-15, 2:23-27, 7:24-8:2,

8:30-9:3, 10:16-26, 11:15-25, Fig. 1; USAA-1079, 2-3; USAA-1080, 87, 88, 108;
USAA-1013, 3:11-28, 4:15-58, Figs. 1, 4; USAA-1003, ¶¶124-125.



Curry, Fig. 1 (annotated)

[1.3]

The Curry-Rabu-Katayama phone features a “graphical *user interface*” (USAA-1005, 7:20-27, 8:5-18, 20:15-17) configured to display data (*id.*, 21:23-25) and to enable user interactions. Curry describes various examples of UI-enabled user interactions including receiving a phone call while driving, and manually switching activity modes. USAA-1005, 7:5-27, 8:5-27, 9:5-26, 10:15-26, 12:20-26, 15:7-22, 20:23-25; USAA-1003, ¶¶126-128; *supra* [1.1]; (§III.A.1(d)).

[1.4]

The Curry-Rabu-Katayama phone's processes may be "implemented in software for execution by various types of processors." USAA-1005, 6:3-10. For example, "[a] user can download...required software...to the mobile phone [] to set up the client unit [110]," and "client 110 can record location, speed and acceleration data from [embedded] sensors...to a local motion data cache 118 for further processing." USAA-1005, 3:24-26, 8:20-27. Based on data stored in a "local" cache within the phone "for further processing," and other references to "mobile computing," a POSITA would have considered the existence of a processor within the same phone to have been implicitly disclosed, and if not, obvious. USAA-1005, 8:20-27, Fig. 1; USAA-1015, 237-250. USAA-1003, ¶¶129-130; USAA-1005, 2:22-27, 6:3-10; USAA-1015, 4; USAA-1079, 2-8; USAA-1013, 3:11-28, 4:15-20, 5:3-14, Figs. 1, 4; USAA-1016, ¶¶[0046]-[0063], FIG. 3.

[1.5]

As explained in §III.A.1(e), the POSITA would have configured the Curry-Rabu-Katayama phone's local memory according to Katayama's teachings, such that that memory would include several sections, including a short term section and a long term storage section. USAA-1005, Abstract, 2:1-27, 3:24-4:6, 4:7-11, 6:5-22, 7:25-8:28, 9:31-33, 12:20-15:6, Figs. 1, 3; USAA-1024, [0044]-[0046]; USAA-1024, [0012], [0016], [0044]-[0049]; USAA-1003, ¶¶131, 135.

[1.6]

As explained in §III.A.1(d), a POSITA would have configured the Curry-Rabu-Katayama phone to determine, based on user inputs and orientation and motion data from an accelerometer a start of a driving period during which phone 106 is removably attached to the vehicle via a docking station and the vehicle is in use. USAA-1003, ¶139; USAA-1005, Abstract, 1:3-2:28, 9:15-10:14, 12:20-15:33, 16:30-17:7, Figs. 1, 3, 4, 6; USAA-1013, 3:1-10, 4:21-33, 8:13-10:42, Figs. 1, 4-5, 7-8. Curry-Rabu-Katayama thereby meets each of the requirements imposed by [1.6] (discussed in §I.C) in multiple ways.

For example, the limitation is first met by a configuration of the Curry-Rabu-Katayama phone in which the phone uses orientation and motion data from its accelerometer to determine both vehicle motion and phone docking status upon, e.g., a user accepting a phone call while driving (i.e., concurrent use of orientation data and user input data). USAA-1003, ¶139.

Curry describes multiple embodiments in which a phone determines a start of a driving period during which the phone is located within a moving vehicle, based on user inputs received through the phone's user interface (e.g., a user accepting a phone call, or manually switching between activity modes using the phone's touch screen and GUI) and motion sensor data generated by a phone's embedded accelerometer; in each instance, and as above described, Rabu would have

motivated a POSITA to enhance Curry's phone by configuring it to leverage orientation data from the same accelerometer to determine whether the phone is removably attached to the vehicle. USAA-1003, ¶140; USAA-1013, 3:1-10, 4:21-33, 8:13-10:42, 15:7-22, Figs. 1, 4-5, 7-8.

As shown in Figure 1 (below), client 110 enables phone 106 to determine, based on user inputs (e.g., accepting phone call, manually changing activity modes) and sensor data (e.g., "location, speed, and acceleration data") whether an associated vehicle is being driven. USAA-1005, 6:5-22, 8:5-11, 7:30-8:33, 15:7-22; *see also* USAA-1005, 12:20-13:26, FIG. 3; USAA-1003, ¶142. Client 110 also processes "raw data" from a driving period to derive driving behavior information, including whether the phone is unsafely used during the driving period, and whether the user engages in other unsafe behaviors such as speeding. USAA-1005, 6:5-22, 8:5-11, 7:30-8:33, 15:7-22; USAA-1003, ¶141.

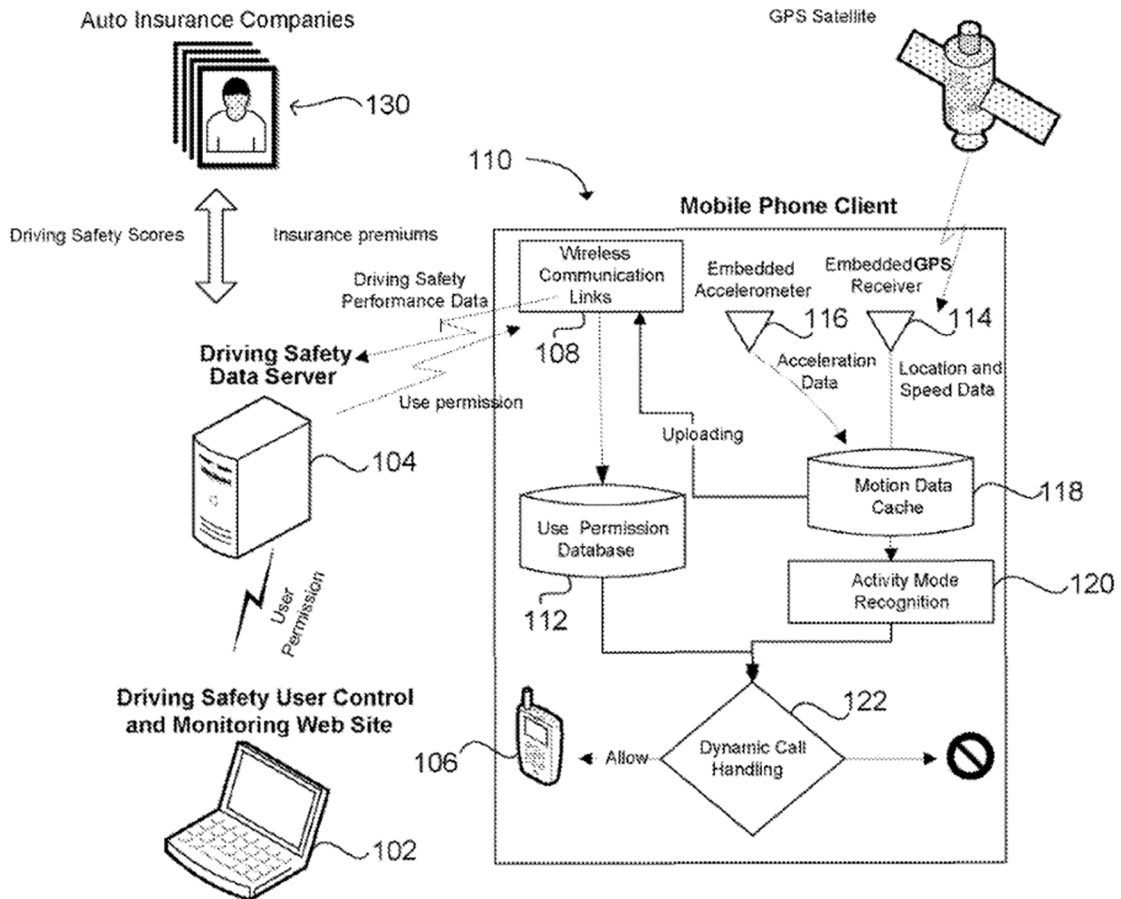


FIG. 1

USAA-1005, Fig. 1

As another example, in connection with Curry's Fig. 4 (below), Curry describes determining the start of a driving period based on a combination of user inputs received in relation to a call or text and motion data from the phone's sensor set. USAA-1005, 15:7-22. "Right after an incoming phone [call] or text message is received or an outgoing phone call is made" (i.e., right after receipt of user inputs), "the GPS sensor and accelerometer...start to record a motion time series... to determine the type of the current activity," so as to allow identification of "risky

behaviors of” talking or texting while driving and adjustment of driving score.

USAA-1005, 15:7-22; USAA-1003, ¶143.

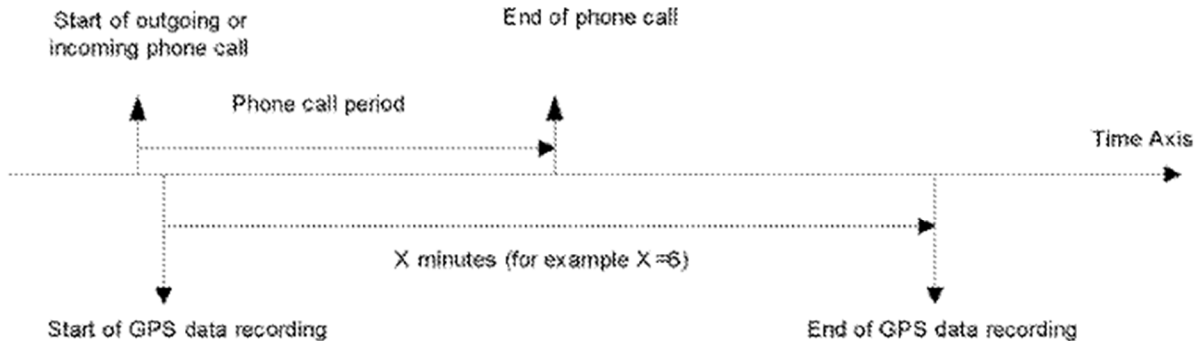


FIG. 4

USAA-1005, Fig. 4

As explained in §III.A.1(d), the POSITA would have found obvious that extending these and other teachings of Curry to further leverage orientation data from the phone’s embedded accelerometer to determine a start of a driving period during which the phone is removably attached to the moving vehicle via a docking station, would enable the phone to differentiate instances in which the phone is hand-held during a driving period from those in which the phone is instead removably attached to the vehicle during the driving period. USAA-1003, ¶144; USAA-1005, 15:14-17; USAA-1013, 1:36-52, 6:49-7:6. As noted, that capacity for differentiation would in turn have enabled the enhanced Curry-Rabu-Katayama phone to make corresponding adjustments to phone access restrictions associated with the

phone's operating modes, to determinations of user driving behaviors, and to generation of user driving scores, with multiple additional advantages flowing therefrom. USAA-1003, ¶144; USAA-1005, 9:15-10:14, 12:20-15:22, 16:30-17:7, Figs. 3, 4, 6; USAA-1013, 5:61-6:21, 6:39-43, 8:1-4; Figs. 3, 4, 5-8.

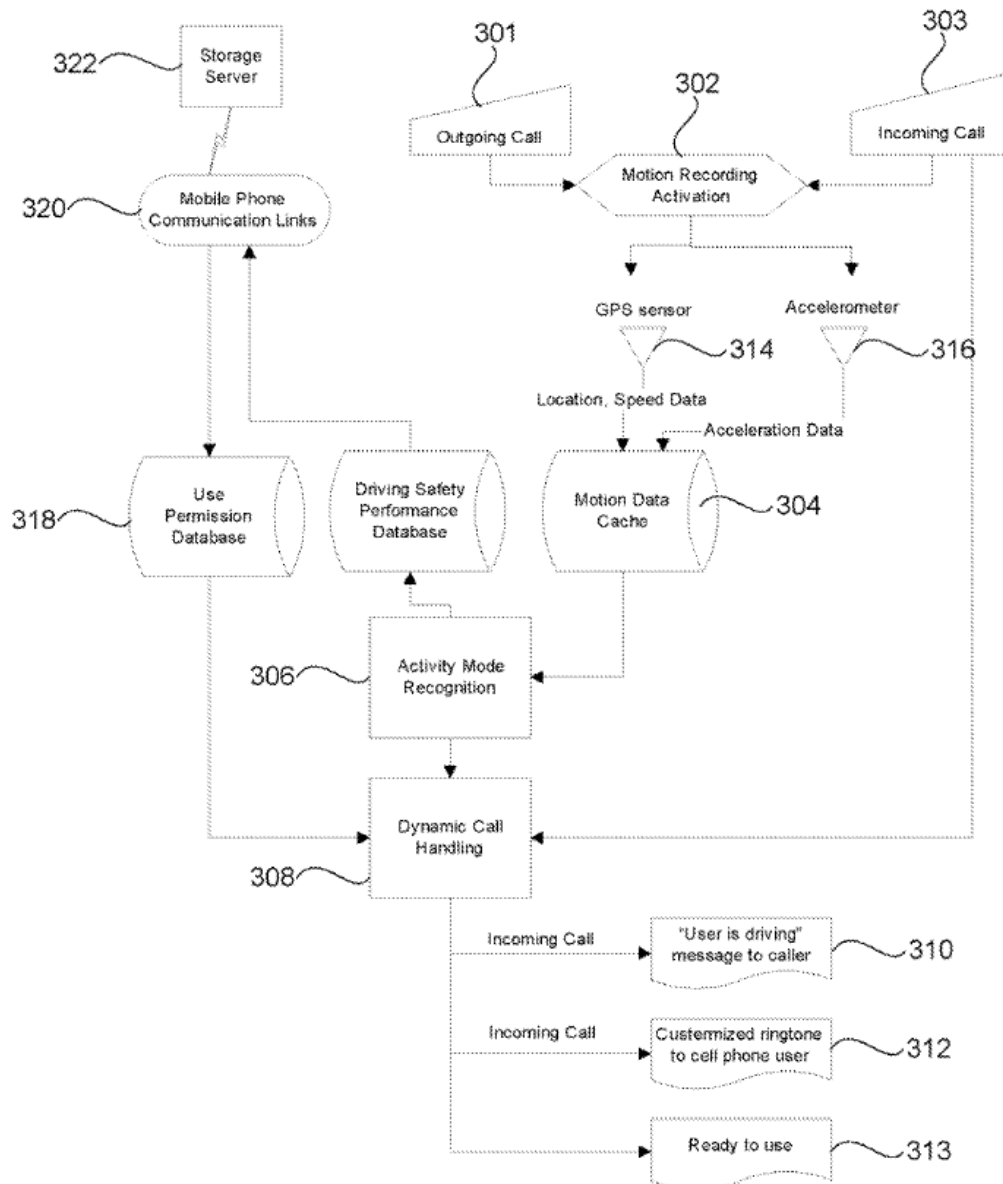
Accordingly, the POSITA would have configured the Curry-Rabu-Katayama phone to determine a start of a driving period during which the phone is docked while the vehicle is being driven. USAA-1003, ¶145; USAA-1005, Abstract, 2:3-3:28, 10:15-11:14, 13:20-16:33, 17:30-18:7, Figs. 1, 3, 4, 6; USAA-1013, 3:1-10, 4:21-33, 8:13-10:42, Figs. 1, 4-5, 7-8.

[1.7]

As explained above, the Curry-Rabu-Katayama phone processes sensor data (e.g., motion and orientation data) recorded by its embedded sensors (e.g., accelerometer 116) during the driving period to derive “driving behavior” information, e.g., “talking...or texting...while driving” and “speeding, abnormal acceleration, abnormal deceleration, and taking sharp turns.” USAA-1003, ¶¶146-148; USAA-1005, 7:13-29, 8:21-27, 8:30-9:33, 10:15-26, 11:3-17.

With Fig. 3 (below), Curry explains that “[e]ach motion measurement” is associated “with a timestamp” and stored “in a local motion data cache 304 for each pre-specified sampling interval.” USAA-1005, 12:27-31. An “activity mode recognition module 306” uses the “recorded time stamped data to estimate the type

of activity” (e.g., “driving, walking, running or remaining substantially still”) “*in real-time*,” both “to allow or disallow users to receive or make a call, text...or use...software programs,” and to derive driving information that is stored in local memory. USAA-1005, 12:20-13:26, Fig. 3; USAA-1003, ¶149.



USAA-1005, Fig. 3

A POSITA would have found obvious processing sensor data during the driving period to derive “possible violations of mobile phone use or unsafe driving behavior[.]” USAA-1005, 7:5-22, 8:29-10:12, 11:3-14, 13:20-16:6, Figs. 1, 3; USAA-1015, 233-250; USAA-1003, ¶¶150-152.

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, 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,” and metadata identifiers indicating the results of comparisons of digitalized sensor data against judgment criteria representing specific driving behaviors. *Id.*, [0013]; USAA-1003, ¶153.

And, as noted above, the POSITA would have configured the Curry-Rabu-Katayama phone to leverage Katayama’s data management techniques, including its use of situation data, to facilitate among other things, accident detection. USAA-1003, ¶153.

[1.8]⁴

The Curry-Rabu-Katayama phone stores a selection of driving information derived from processed sensor data to local memory (e.g., motion data cache 118) prior to transmission (e.g., to driving safety data server 104). USAA-1003, ¶154; USAA-1005, 7:5-22, 8:29-10:12, 13:20-16:6, Figs. 1, 3; USAA-1015, 233-250. From Curry, a POSITA would have found it obvious to store all or a subset of the derived driving information in the memory of the Curry-Rabu-Katayama phone, and thus, to store a selection of the driving information to the memory. USAA-1003, ¶154.

Additionally, from Katayama, a POSITA would have recognized that in the Curry-Rabu-Katayama phone, a plurality of “selections” of driving information representing specific driving behaviors are preserved through storage in long-term memory, similar to Katayama’s storage of “important” situation data in its “situation data recording section.” USAA-1024, [0044]-[0046]; USAA-1003, ¶154.

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.

⁴ The “selection” of driving information is improper and non-limiting inferential claiming. *Ex Parte Sullivan*, Appeal No. 2002-1924 (PTAB June 20, 2016).

Still, to the extent that this limitation is narrowly interpreted, a POSITA would have found obvious to store in the Curry-Rabu-Katayama phone a subset of (i.e., selection of) the recorded sensor data (including digitalized situation data with associated metadata identifiers) since, e.g., Curry explains that “motion data cache can be compared with the user permission data to enable a driver safety statistic to be calculated,” indicating that specific aspects of recorded sensor data are more useful for storage and transmission to safety data server 104 (e.g., motion data and related derived information indicating possible use violations, unsafe driving behavior). USAA-1003, ¶155. USAA-1005, 3:24-4:6, 7:5-22, 8:29-10:12, 13:20-16:6, Fig. 1; USAA-1015, 233-250. A POSITA would have also recognized a variety of entities to which recorded data is relevant and thereby found obvious to implement Curry-Rabu-Katayama to store specific aspects of recorded situation data unique to a particular entity. USAA-1005, 4:8-11; USAA-1003, ¶156.

A POSITA would have also found obvious that data stored in local memory includes “a selection of the driving information,” at least insofar as Curry describes driving information as being derived from timestamped motion data associated with pre-specified sampling intervals, and further describes the potential to mark activity estimation results for a given interval for further processing at later times. USAA-1003, ¶157; USAA-1005, Abstract, 2:1-27, 3:24-4:6, 4:7-11, 7:5-22, 8:29-10:12, 11:3-14, 12:29-16:6, Figs. 1, 3.

[1.9]

As discussed for [1.7], the Curry-Rabu-Katayama phone processes sensor data during a driving period to derive driving information. USAA-1003, ¶158; USAA-1005, 7:5-22, 8:29-10:12, 13:20-16:6, Fig. 1. Curry also describes “a driving safety monitoring program on a mobile phone client” including an “activity mode recognition module 306” that processes “recorded time stamped” data from the mobile phone’s sensor set during a determined driving period to derive driving information. USAA-1005, 13:20-14:26; USAA-1003, ¶159.

A POSITA would have found it obvious to configure a Curry-Rabu-Katayama phone to derive driving information based on its recorded sensor data alone when considering Curry’s disclosures of data obtained by embedded sensors (e.g., accelerometer 116) being used to derive the driving information. USAA-1003, ¶160; USAA-1005, Abstract, 2:1-27, 3:24-4:11, 7:5-22, 8:29-10:12, 13:20-16:6, Figs. 1, 3. In those disclosures, Curry never once describes or suggests leveraging the vehicle’s sensors. USAA-1003, ¶161; USAA-1005, Abstract, 2:1-27, 3:24-4:11, 7:5-22, 8:29-10:12, 13:20-16:6, Figs. 1, 3. To this point, a POSITA would have understood and found obvious from Curry that vehicle sensor data is not necessary to derive driving information as Curry instead discloses leveraging sensors, processors, and memory found in the Curry-Rabu-Katayama phone to derive the driving information. USAA-1005, 11:15-25; USAA-1013, 1:36-2:14;

USAA-1003, ¶161. This remains true even if a POSITA were to consider Curry's disclosure to be open-ended given other disclosures relating to other types of data distinct from the recorded sensor data. *Compare* USAA-1005, 15:24-32 *with* USAA-1005, 8:29-10:12, 13:20-14:26, Figs. 1, 3; USAA-1003, ¶162.

[1.10]

As discussed above (§III.A.1(e) and [1.5]), the POSITA would have configured the Curry-Rabu-Katayama phone's local memory to feature several sections according to, and facilitating use of, Katayama's teachings on data management, including a temporary short term memory section and a long term memory section. USAA-1024, [0044]; USAA-1005, 6:11-20. As further noted, implementation of Katayama's teachings on local memory architecture and data management would advantageously enable the Curry-Rabu-Katayama phone to, among other things, persistently store important "situation data" indicating accidents, risk incidents, or unsafe driving behaviors in the long term section, and to transiently store "situation data" determined to be less important in the short term section. USAA-1024, [0016], [0053], [0044]-[0046]; USAA-1005, Abstract, 2:1-27, 3:24-4:6, 4:7-11, 6:5-22, 7:25-8:28, 9:31-33, 12:20-15:6, Figs. 1, 3; USAA-1003, ¶163.

In more detail, and as explained in [1.7], the Curry-Rabu-Katayama phone processes sensor data to derive "driving behavior" information, as described in Curry. USAA-1005, 7:13-29, 8:21-27, 8:30-9:33, 10:15-26, 11:3-17. Further, as

taught by Katayama, the Curry-Rabu-Katayama phone 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 data storage section within the Curry-Rabu-Katayama phone’s local memory. USAA-1024, [0016], [0044]-[0049]; USAA-1003, ¶164.

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 Curry, the POSITA would have further configured the Curry-Rabu phone 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, ¶165.

Consistent with Katayama’s teachings, the POSITA would have configured the Curry-Rabu-Katayama phone 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, ¶166. 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].

And, again consistent with Katayama’s teachings, the POSITA would have configured the Curry-Rabu-Katayama phone to temporarily 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, ¶167. More specifically, the unimportant situation data would be “sequentially erased” as “new situation data is written[,]” and would for at least that reason be understood as being “*transiently*” stored. USAA-1024, [0045]; USAA-1003, ¶167.

From Katayama, the POSITA would have understood and found obvious that both the digitalized “situation data” transiently stored in the Curry-Rabu-Katayama phone’s short term memory section and the digitalized “situation data” persistently stored in the Curry-Rabu-Katayama phone’s long term memory section are derived by processing sensor data received during a driving period (e.g., the driving period discussed above in connection with [1.6]), and constitute “*driving information*” associated with how a vehicle is driven. USAA-1024, [0001]-[0002], [0011]-[0016], [0027], [0046]-[0050], [0054], [0083]; USAA-1003, ¶168.

Further, the POSITA would have understood and found obvious from Katayama that the metadata identifiers that are, respectively, transiently and persistently stored in the Curry-Rabu-Katayama phone’s short term and long term

memory sections themselves constitute “*driving information*” that is associated with how a vehicle is driven and that is derived by processing sensor data received during a driving period. USAA-1024, [0001]-[0002], [0011]-[0016], [0027], [0046]-[0050], [0054], [0083]; USAA-1003, ¶169. Katayama suggests, for example, that an identifier marking a particular set of digitalized accelerometer data as “important” may be generated and stored as result of determinations that a value of that digitalized accelerometer data exceeds a predetermined threshold, and that the acceleration continued over a certain period of time. USAA-1024, [0047]-[0049]; USAA-1003, ¶169.

For at least these reasons, the POSITA would have understood that the Curry-Rabu-Katayama phone transiently stores driving information in short term memory, and persistently stores driving information in long term memory. USAA-1003, ¶170; USAA-1024, [0001]-[0002], [0011]-[0016], [0027], [0046]-[0050], [0054], [0083].

Further, Curry and Katayama each also render this limitation obvious through their respective disclosures of various storage configurations. Curry for example describes that “a variety of modules, caches, and database” can be provided based on “based on a tradeoff between the complexity of the mobile device and the amount of information communicated on the mobile device’s network.” USAA-1005, 12:3-18. Curry also contemplates a “local motion data cache 304”

that stores data with a “pre-specified sampling interval.” *Id.*, 13:27-14:4; USAA-1003, ¶171.

Likewise, Katayama contemplates a storage configuration in which “old data is sequentially erased and new situation data is written in the temporary data storage section[.]” USAA-1024, [0045]. Further, where “content meets the predetermined condition,” the corresponding content is “transferred” from section 802 (temporary section) section 803 (storage section). *Id.*, [0046]. Because Curry and Katayama each contemplate scenarios that benefit from persistent and temporary storage of recorded data, a POSITA would have found such configurations obvious over their respective disclosures. USAA-1005, 8:30-9:3, 3:2-15, 3:24-4:6; USAA-1024, [0044]-[0046], [0053]; USAA-1003, ¶¶172-175.

*[1.11]*⁵

As discussed at [1.5] and [1.10], the Curry-Rabu-Katayama phone’s memory includes a temporary section and a long term storage section that together enable implementation of Katayama’s data storage techniques. USAA-1024, [0044]; USAA-1005, 6:11-20. Katayama further teaches that the situation data is written

⁵ 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.

“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]; USAA-1003, ¶176.

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 sensor data, metadata identifiers) given Katayama’s broader disclosure of the situation data being “automatically classified at a time of recording.” USAA-1003, ¶177; USAA-1024, [0016]. Katayama teaches that this configuration, “make[s] after-the-fact analysis accurately and easily” and further recognizes that 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—which Katayama teaches permit the prioritization of situation data to be transferred to the storage section for further evaluation in the after-the-fact analysis—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 into the temporary section one after another. USAA-1003, ¶¶177-179.

From the disclosure above, 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, 180. 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, ¶180; *supra* §III.A.1(c).

[1.12]

As discussed above, local memory of the Curry-Rabu-Katayama phone includes a storage section and a temporary section to provide the enhanced storage capabilities and data management techniques described in Katayama. USAA-1024, [0044]; USAA-1005, 6:11-20. Further, as explained in §III.A.1(e), the

memory of the Curry-Rabu-Katayama phone 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, ¶181.

As to comparisons to judgement criteria, Katayama describes that "the value (the content) of each situation data is, for example, digitalized in accordance with [a] judgment criterion parameter." USAA-1024, [0048]. Further, "all" situation data is digitalized, to represent various types of information, such as "whether or not the acceleration (deceleration) exceeds a predetermined judgment criterion, whether or not the acceleration continues for more than or equal to a certain period, whether or not the door is open, whether or not the electric power is supplied from the battery, whether or not the speed of the vehicle exceeds the predetermined upper limit speed, whether or not the speed of the vehicle is not over the predetermined lower limit speed and whether or not the brake is applied." *Id.*; USAA-1003, ¶182.

As to storage of digitalized data in appropriate sections of memory, Katayama describes "giv[ing] an identifier to each situation data according to [a]

category” that “may be specified according to an event that is estimated to have occurred[.]” *Id.*, [0012]. The identifier enables a recording device to “store the situation data into a folder (a category) specified” in storage. *Id.*; USAA-1003, ¶183.

Further, as explained above for [1.11], a POSITA would have understood and found obvious that the situation data, including sensor data and derived information (digitalized data, metadata identifiers) is sequentially written to the temporary section “one after another” given Katayama’s broader disclosure of the situation data being “automatically classified at a time of recording.” USAA-1003, ¶184; USAA-1024, [0016]. Thus, a POSITA obvious to configure the Curry-Rabu-Katayama phone to write derived information specified in situation data (digitalized values, metadata identifiers) in the temporary section. Further, based on the predetermined sampling rate of sensor data collection, it would have further been obvious that derived information is written to the temporary section at a corresponding predetermined update rate and while a vehicle is monitored according to a chronological order (“*predetermined sequence*”). USAA-1024, [0044]-[0046], Fig. 5; USAA-1003, ¶185. 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, ¶186.

[1.13]

As discussed above for [1.5] and [1.10], the POSITA would have configured the Curry-Rabu-Katayama phone's local memory to feature both short term and long term 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, ¶187; USAA-1024, [0046]. As discussed in §III.A.1(e), this configuration enables the Curry-Rabu-Katayama phone 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 Curry's goals of "detect[ing] and prevent[ing] unsafe driving behavior[s]" and generating related "driving safety...score[s]." USAA-1005, Abstract, 2:1-27, 3:24-4:6, 4:7-11, 7:5-22, 9:31-33, Fig. 1; USAA-1024, [0016], [0053], [0044], [0046]; USAA-1003, ¶187.

For example, the Curry-Rabu-Katayama phone 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, ¶188; USAA-1027, 70-71; USAA-1039, [0003]-[0004].

3. Elements of Claim 26

The combination renders this claim obvious in the same manner as explained above for the corresponding claim 1 limitations listed in the table below. USAA-1003, ¶215.

The ’369 patent specification does not distinguish the two terms “affix” versus “attach.” USAA-1003, ¶216. 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, 6-7, 9-12, 16-24

[2]

Client 110, which Curry contemplates downloading from server 104 (“*downloaded application*”), enables the phone to process sensor data from a driving period to derive information associated with a user’s driving behavior. USAA-1005, 7:5-29, 9:5-11, 8:21-9:33. Derived driving behavior information is stored in the Curry-Rabu-Katayama phone, and client 110 processes the stored information to determine a mode within which the mobile phone should operate.

Id., Abstract, 3:1-3:6, 7:5-22, 8:29-12:18, 13:3-19, 13:27-14:26, 16:13-18, 17:1-18:4, Figs. 1, 3, 4, 6. A POSITA would have also found it obvious to configure the client 110 to “*control*” the Curry-Rabu-Katayama phone by, for example, configuring an accelerometer to record sensor data. USAA-1003, ¶189.

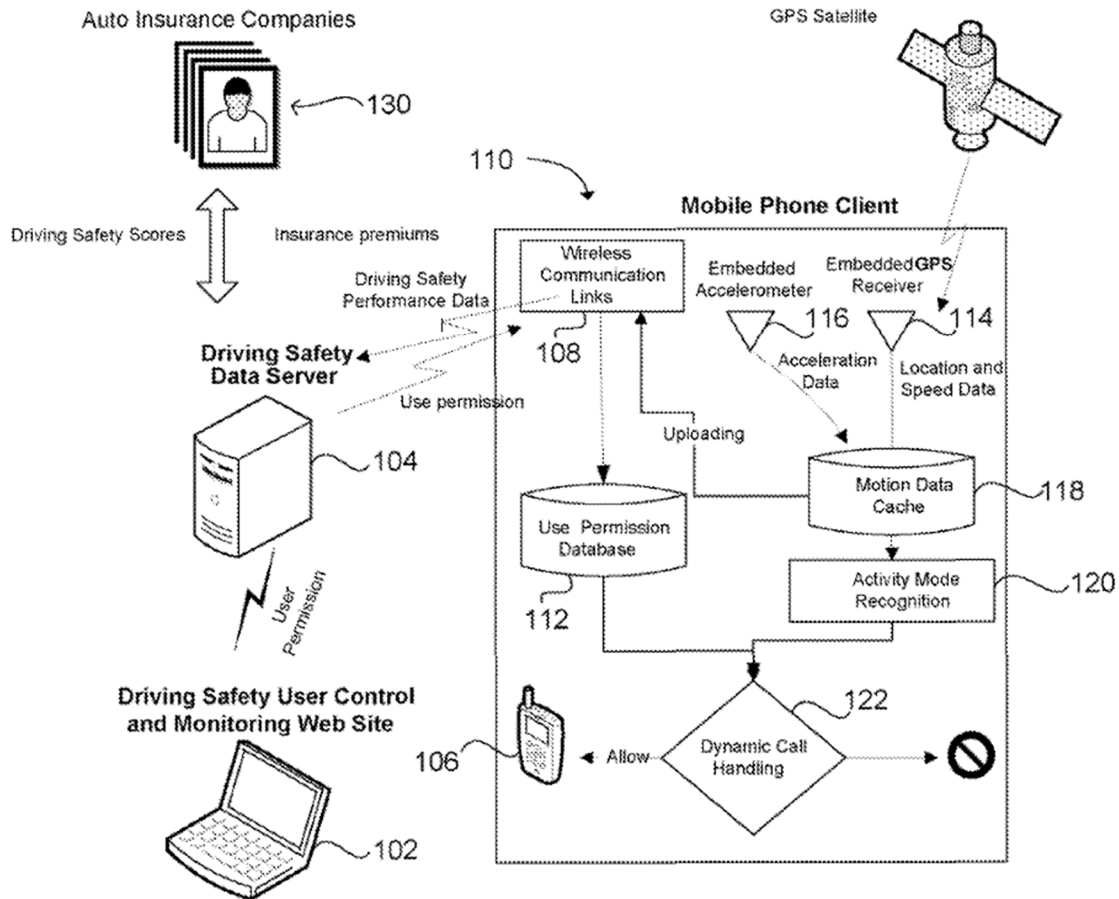


FIG. 1

USAA-1005, Fig. 1

Also, in view of various embodiments of Curry, a POSITA would have found it obvious to configure the Curry-Rabu-Katayama phone to detect predetermined events and to execute responsive actions, and to perform these

operations on an application residing on (and downloaded to) the phone. USAA-1003, ¶190. In some embodiments, the Curry-Rabu-Katayama phone detects an incoming phone call or text message while a user is driving a vehicle (“*predetermined event*”), and in response, starts to estimate activity from a motion time series (“*predetermined action*”). USAA-1005, 16:7-22. As another example, sensor data collected by the phone is used to identify unsafe driving behaviors (“*predetermined event*”) and, in response, transmit driver safety information to server 104 (“*predetermined action*”) and/or adjust phone restrictions in real-time (“*predetermined action*”). USAA-1005, 11:15-25, 12:20-13:26, Fig. 3.

Additionally, the phone determines that a context associated with driver safety information indicates that a driver is talking or texting while driving (“*predetermined event*”) and, in response, adjusts a safety score for the driver based on the detected activity (“*predetermined action*”). *Id.*, 11:3-14.

[3.1]

As discussed for [2] (§III.A.4), the Curry-Rabu-Katayama phone 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, ¶191.

[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, ¶192.

[4]

As discussed for [1.1] and [1.5], data collected by embedded sensors of the Curry-Rabu-Katayama phone is stored in motion data cache 118 (“*storing driving information associated with that event to the memory*”). This stored data is evaluated to identify events, such as the existence of unsafe driving behaviors (detect an “*event*”), and driving safety data is *associated with that event*. In some embodiments, the phone initiates the start of recording data for storage in motion data cache 118 in response to detecting an incoming phone call or text message while a user is driving a vehicle (“*predetermined event*”). USAA-1005, 16:7-22; *id.*, 3:24-6:6, 8:30-9:3; USAA-1003, ¶193.

[6]

As discussed for [2], the Curry-Rabu-Katayama phone can determine that a driver is talking or texting while driving (“***detect occurrence of a predetermined event***”). USAA-1005, 10:15-25. The Curry-Rabu-Katayama phone can upload driver safety information stored in motion data cache 118 to server 105 for additional processing via wireless connection 108 (“***transmitting driving information via a wireless telecommunication module of the mobile telecommunication device to a remote system***”). USAA-1005, 7:21-27, 8:23-28; USAA-1003, ¶194.

[9.1]

In some instances, the Curry-Rabu-Katayama phone determines that driver safety information indicates a potential unsafe driving behavior (e.g., receiving a phone call while driving) (“***event***”), and in response, transmits the driver safety information to server 104 (“***communicating to a remote system that an event has been detected***”). USAA-1005, 8:21-9:3, 9:23-28, 11:15-25, 16:7-22; USAA-1003, ¶195.

[9.2]

A POSITA would have found it obvious to implement Curry such that the Curry-Rabu-Katayama phone receives a request from server 104 to transmit monitored information (“***request to transmit to the remote system selected portions of the driving information associated with the detected event***”). USAA-1003, ¶196;

USAA-1005, 3:2-15. Further, “[c]ommunication protocols between a mobile device and a server were well known by the Critical Date” and “[t]he specific configuration of these communication protocols was also an obvious design choice by the Critical Date because systems that enabled various types of communication between these devices were also well known by the Critical Date.” USAA-1003, ¶196 (citing USAA-1041, 11). A POSITA would have also found it obvious to configure server 104 to request portions of the data recorded by the phone (“*selected portions of the driving information*”) that are relevant to further analysis by server 104. USAA-1003, ¶197 (citing USAA-1005, 9:23-28).

[10]

As discussed for [2], the Curry-Rabu-Katayama phone is controlled by client 110 (“*the device is controlled by the downloaded application*”) and also outputs different ringtones while in driving mode, which is one example of “*manag[ing] voice-calls incoming to the mobile telecommunications device during a driving period.*” USAA-1005, 13:5-16; USAA-1003, ¶198. As another example, a POSITA would have understood that the Curry-Rabu-Katayama phone includes “dynamic call handling module 308,” which provides call management functionality, such as “determin[ing] if the [phone] is allowed to function based on use permission data 318.” USAA-1005, 13:5-16.

[11]

As discussed for [10], the Curry-Rabu-Katayama phone is controlled by client 110 (“*the device is controlled by the downloaded application*”) and is placed in driving mode. USAA-1005, 13:5-16; USAA-1003, ¶199. A POSITA would have understood that the driving mode is an example of “*hands-free mode of operation*” since Curry teaches that it can be used to “disable the [phone 106] from making or receiving calls...” USAA-1005, 3:16-28. A POSITA would have recognized that, in the context of vehicle monitoring, a hands-free mode refers to preventing use of a mobile device by a driver while driving, which the Curry accomplishes through placing the phone in a driving mode and preventing the receipt of incoming calls. USAA-1003, ¶199. The Curry-Rabu-Katayama phone can be placed in a driving mode “when it is identified that the user is driving based on the information from the accelerometer and GPS receiver.” USAA-1005, 3:16-28. The phone 106 is placed in the driving mode “*on detection of*” a vehicle being monitored while in motion (“*driving period*”). USAA-1003, ¶199.

[12]

As discussed for [11], the Curry-Rabu-Katayama phone includes a dynamic call handling module to place the phone in a driving mode. USAA-1005, 13:5-28. A POSITA would have configured the Curry-Rabu-Katayama phone to “*enable[e] voice-activated commands*” since the phone encompasses “any type of electronic

mobile computing device that may be used while traveling in a vehicle.” USAA-1003, ¶200; USAA-1005, 6:23-29. Curry also references the Apple iPhone 3G smartphone, which a POSITA would have understood is an example of a phone, according to Curry-Rabu-Katayama, and one that is configured to enable voice-activated commands. USAA-1005, 1:22-27; USAA-1003, ¶200 (citing USAA-1034, 55-56).

[16.1]

Katayama describes a set of vehicle sensors (“*external device*”) to 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 Curry-Rabu-Katayama phone would have obtained data from vehicle sensors as this would have improved the accuracy of monitoring for unsafe driving behaviors. USAA-1003, ¶201.

[16.2]

As discussed for [8.1], the 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 Curry-Rabu-Katayama phone to receive at least a portion of the data collected by external vehicle sensors (“*external device*”). USAA-1003, ¶202.

[17]

A POSITA would have found it obvious that, in some implementations of the Curry-Rabu-Katayama combination, the phone (“*mobile telecommunications device*”) is configured to communicate wirelessly with external vehicle sensors (“*arranged to interface with the external device wirelessly*”). USAA-1003, ¶203.

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 implement a wireless connection with the external vehicle sensors since

Katayama’s recorder 1 and Curry’s phone 6 each include wireless modules configured to enable wireless communication with other devices. USAA-1005,

6:5-22 (describing wireless communication with a server); USAA-1024, [0074]

(describing use of a wireless LAN). Further, “a POSITA would have had a reasonable expectation of success in implementing this configuration since

wireless communication between a mobile device and external vehicle sensors was a well-known by the Critical Date in vehicle monitoring systems.” USAA-1003, ¶203 (citing USAA-1045, [00117], [00178], FIG. 41-43).

[18]

Curry’s Fig. 1 (reproduced below), illustrates a driving safety data server 104 in wireless communication with a “mobile phone” 106; a client application 110, which can be downloaded from server 104 to phone 106 (*downloaded application*) enables phone 106 to process sensor data from a driving period to derive information associated with a user’s driving behavior, including whether the phone is being used while driving, and whether the user engages in behaviors such as “speeding, abnormal acceleration, abnormal deceleration, and taking sharp turns.” USAA-1005, 6:5-29, 8:5-11, 7:21-8:33. Derived driving behavior information is stored in mobile phone 106, and client 110 processes the stored information both to determine a mode within which the mobile phone should operate. *Id.*, Abstract, 2:1-3:6, 6:5-22, 7:29-11:18, 12:3-19, 12:27-13:26, 15:13-18, 16:1-17:4, Figs. 1, 3, 4, 6; USAA-1003, ¶204.

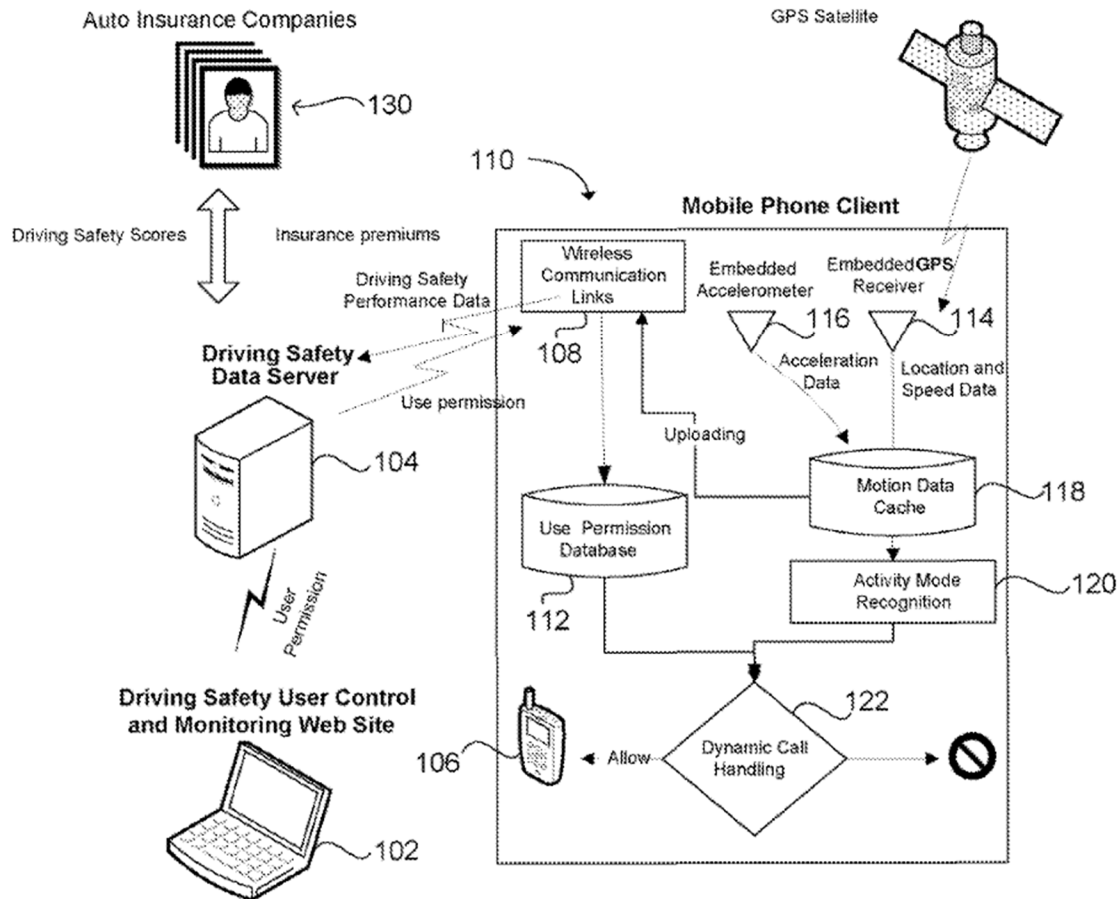


FIG. 1

USAA-1005, Fig. 1

As discussed for [1.7], data collected by embedded sensors of phone 106 is processed during a monitoring to period determine whether a vehicle is being driven safely, i.e., driver safety information (“*process the driving information*”). USAA-1005, 2:24-3:11, 6:5-22, 8:31-9:12. The driver safety information includes a safety score (“*driving score associated with a particular driver*”). The safety score is calculated based on “perform[ing] a statistical analysis on collected raw driving data.” *Id.*, 6:5-22. Examples of safety score calculation including

factoring “unsafe behaviors of talking-while-driving and texting-while-driving,” which are “associated with different point penalties.” *Id.*, 12:3-19. Further, the safety scores can be used in different applications, such as “by consumers and insurance agencies to determine insurance premiums for related drivers” or “by parents to prevent their teenage drivers from operating a motorized vehicle while...performing [] unsafe driving actions[,]” and “to proactively control the use of mobile devices while [] commercial vehicle drivers are operating vehicles...” *Id.*, 6:5-22; USAA-1003, ¶205.

[19]

A POSITA would have understood and/or found obvious that the Curry-Rabu-Katayama phone includes a device battery (“***power supply***”) given Curry’s non-limiting disclosure of phone 106 encompassing “any type of electronic mobile computing device that may be used while traveling in a vehicle.” USAA-1003, ¶206; USAA-1005, 6:23-29. Curry also references the Apple iPhone 3G smartphone, which a POSITA would have understood is an example of phone 106 and includes a battery. USAA-1005, 1:22-27; USAA-1003, ¶206 (citing USAA-1039, 2).

[20]

A POSITA would have understood and/or found obvious that the Curry-Rabu-Katayama phone is “***a smartphone***”) given Curry’s non-limiting disclosure

of phone 106 encompassing “any type of electronic mobile computing device that may be used while traveling in a vehicle.” USAA-1003, ¶207; USAA-1005, 6:23-29. Curry also recognizes that “the next generation of mobile phones” includes “cell phones, smart phones,” further reinforcing that phone 106 can also be implemented as a smartphone. USAA-1005, 1:22-27.

[21]

The Curry-Rabu-Katayama phone collects accelerometer data, which a POSITA would have understood includes a magnitude of acceleration (“*vehicle acceleration events*”) and a magnitude of deceleration (“*vehicle braking events*”). Curry describes that information from GPS and accelerometer sensors are combined to “precisely identify the type of activity.” USAA-1005, 16:1-23. Acceleration measurements are processed to calculate “the magnitude of acceleration/deceleration,” which is then used to select an activity mode from “walking, running, driving, and stationary.” *Id.*; USAA-1003, ¶208; *see id.*, cl. 19 (“abnormal acceleration, abnormal deceleration”).

[22.1]

A POSITA would have understood that the Curry-Rabu-Katayama phone is configured to detect sharp turns (“*vehicle swerving events*”) since Curry teaches that “[t]he driver safety statistic can also be decreased based on driving behavior, such as...taking sharp turns.” USAA-1005, 2:24-5:6, cl. 19; USAA-1003, ¶209.

Further, “[a] POSITA would have also understood that detection of vehicle swerving events using accelerometer data was well-known by the Critical Date.” USAA-1003, ¶209 (citing USAA-1014, [0027]-[0036]; USAA-1015, [0035], [0202]-[0205]; USAA-1016, [0075]).

[22.2]

Sensor data collected by the Curry-Rabu-Katayama phone (including acceleration data) is processed relative to threshold acceleration values. As discussed for [46.10], accelerometer data indicates a magnitude of acceleration and a magnitude of deceleration (“*events*”). USAA-1005, 16:1-23. These measurements are used to identify an activity mode (e.g., “walking, running, driving, and stationary”) associated with phone 106. *Id.* Because this technique involves analyzing measured values within a numerical range to identify one of three discrete modes, a POSITA would have understood and/or found obvious that the technique involves one or more threshold acceleration values (which are used for classification). *See, id.*, 2:24-3:6, cl. 19; USAA-1003, ¶210.

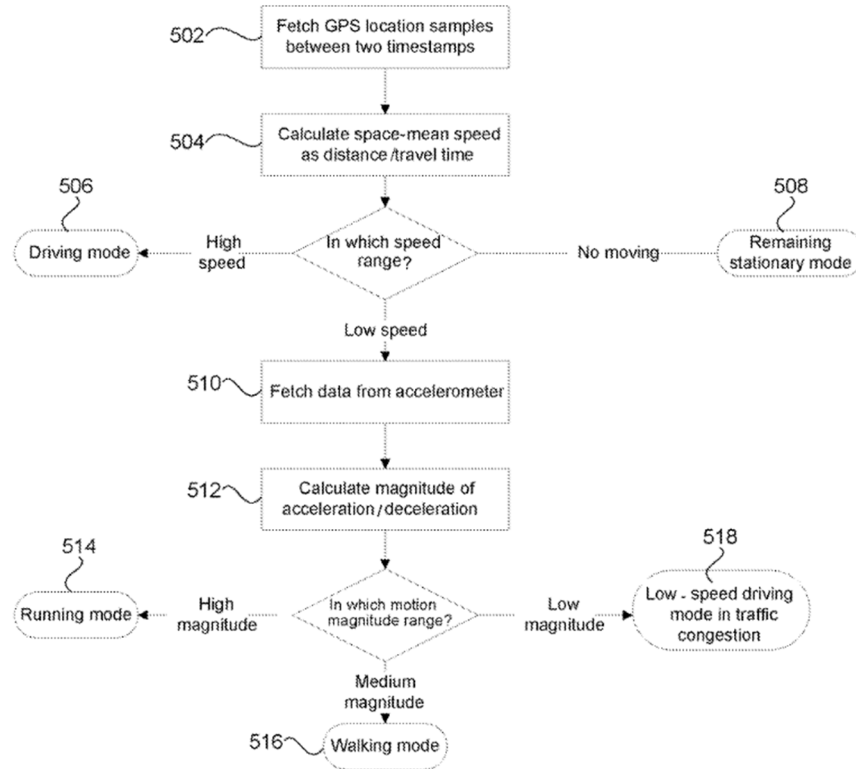


FIG. 5

USAA-1005, Fig. 5

As discussed above, sensor data collected by phone 106 (including acceleration data) is processed relative to threshold values (“*preset parameters*”). USAA-1005, 2:24-3:6, 16:1-23, cl. 19; USAA-1003, ¶211. Further, “[a] POSITA would have understood that techniques for detecting abnormal turns based on preset parameters were well-known by the Critical Date. USAA-1003, ¶211 (citing USAA-1029).

[23]

See [21], *supra*. USAA-1003, ¶212.

[24.1]

See [22.1], *supra*. USAA-1003, ¶213.

[24.2]

See [22.2], *supra*. USAA-1003, ¶214.

B. [GROUND 1B] – Curry, Rabu, 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, ¶79.

(b) *Curry-Rabu-Katayama-Tamir*

A POSITA would have looked to known data collection techniques such as Tamir when seeking to implement Curry’s teachings relating collecting sensor data (e.g., accelerometer data). USAA-1003, ¶217; USAA-1005, 13:27-33.

Indeed, a POSITA would have been aware of well-known data collection techniques in vehicle monitoring systems with variable data sampling rates.

USAA-1003, ¶218. Tamir discloses one example in which a sampling rate is adjusted based on conditions associated with data collection (e.g., driving behavior).

USAA-1006, 9:10-20, 20:52-21:11. A POSITA would have recognized that incorporating Tamir’s data collection technique into Curry-Rabu-Katayama would have improved motion recording process by, for example, allowing “lower power consumption and less wear and tear of” a phone. USAA-1006, 20:52-21:2; USAA-1003, ¶218 (citing USAA-1017, 5:61-6:9, 9:3-7; USAA-1018, [0019]; USAA-1019, 5:1-3).

2. Claim 5

[5]

The Curry-Rabu-Katayama-Tamir phone would have improved Curry’s motion recording process using variable sampling rates. USAA-1006, 9:10-20, 20:52-21:11. In Tamir, “the sampling rate is adjusted according to the driving pattern of vehicle 15” and in some circumstances, a “higher sampling rate is used.” *Id.*, 20:52-21:2. Data collection is adjusted “at special occasions, such as when an accident is possible.” *Id.* A POSITA would have found it obvious that in scenarios in which the phone detects an unsafe driving behavior (“*an event*”), a higher sampling rate is used for data collection relative to other scenarios (“*higher sampling rate*”). USAA-1003, ¶219. . USAA-1005, 16:7-22; *id.*, 3:24-6:6, 8:30-9:3 (“*pre-determined event*”).

C. [GROUND 1C] – Curry, Rabu, 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 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; USAA-1003, ¶¶80-81.

(b) *Curry-Rabu-Katayama-Balachandran*

Curry is focused on “programs and initiatives to reduce traffic-related fatalities and injuries.” *Id.*, 2:9-21. It expresses a concern for “motorized vehicle accidents and deaths[,]” which it addresses by proposing techniques that “reduce potentially catastrophic accidents for which [a] company may be responsible.” *Id.*, 11:26-12:2. A POSITA would have understood that this motivation benefits from preventing unwanted accidents and deaths. USAA-1003, ¶¶220-221.

With this insight, a POSITA would have looked to known incorporate emergency response techniques into Curry-Rabu-Katayama. USAA-1003, ¶222. For example, in Balachandran, a cellphone initiates an emergency call in response to a detected vehicle accident. USAA-1006, Abstract. This would have motivated a POSITA configure the Curry-Rabu-Katayama phone to perform Balachandran's emergency response technique to prevent casualties. USAA-1003, ¶222.

The Curry-Rabu-Katayama-Balachandran phone would have solicited emergency responses in scenarios where a vehicle accident occurs even though sensor data recorded by the phone indicates safe driving behaviors (e.g., not texting or calling while driving). *Id.*; USAA-1005, 9:23-10:12; USAA-1003, ¶223 (citing USAA-1021, USAA-1022, USAA-1023).

2. Claims 7, 8, and 15

[7.1]

Balachandran describes sensors configured to detect an accident (“*event [that] has been detected*”). USAA-1007, 2:16-27, 4:5-21. Upon detecting an accident, cellphone initiates an emergency call after a timeout period. *Id.*, Abstract, 2:64-3:6. 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. The cellphone also “provides an audible indication” of “initiat[ing] [an] emergency call setup[.]” *Id.* Notifications relating

to timer 35, such as audio or visual output, are used to indicate an accident has been detected (“*providing feedback to a user*”). USAA-1003, ¶224. ¶225 (citing USAA-1005, 9:23-28).

A POSITA would have also found it obvious to configure the Curry-Rabu-Katayama-Balachandran phone to provide visual notifications relating to accident detection since the device provided by the combination already includes a touch screen (as discussed for [1.6]). USAA-1003, ¶226; USAA-1005, 8:5-18.

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, ¶227 (citing USAA-1008, 32-34); *Id.*; USAA-1005, 8:5-18.

[7.2]

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, ¶228. Further, Balachandran teaches that a cellphone provides a “*visual indication* [that] notifies the passengers of activation of timer” relating to a

detected accident. USAA-1003, ¶228; USAA-1007, 2:46-63.

[8.1]

Thus, the Curry-Rabu-Katayama-Balachandran phone 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, ¶180; USAA-1003, ¶229; USAA-1005, 8:5-18

[8.2]

As discussed for [7.2], the Curry-Rabu-Katayama -Balachandran phone would have received a user abort command relating to an emergency call. USAA-1006, 2:64-3:6, 4:22-31; USAA-1003, ¶230; USAA-1005, 8:5-18. Thus, Curry-Rabu-Katayama -Balachandran phone would have been configured to receive a user abort command (“**user interaction...to deny whether the further action should be taken**”) relating to an emergency call to be initiated after a time period specified by a timer (the action “**will be taken with a predetermined period**”). USAA-1003, ¶230.

[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[]*”. USAA-1003, ¶231.

A POSITA would have also found it obvious to configure the Curry-Rabu-Katayama-Balachandran phone 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]. *Id.* (user confirms an accident); USAA-1003 ¶232 (citing USAA-1008, 32-34) (cellphone initiates emergency call immediately without timeout expiration).

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

1. Proposed Combination

(a) *Thompson2010*

Thompson2010 offers techniques focused on smartphone-based accident detection applications. It describes how smartphones “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, ¶82. Figure 2 shows a smartphone-based accident detection system.

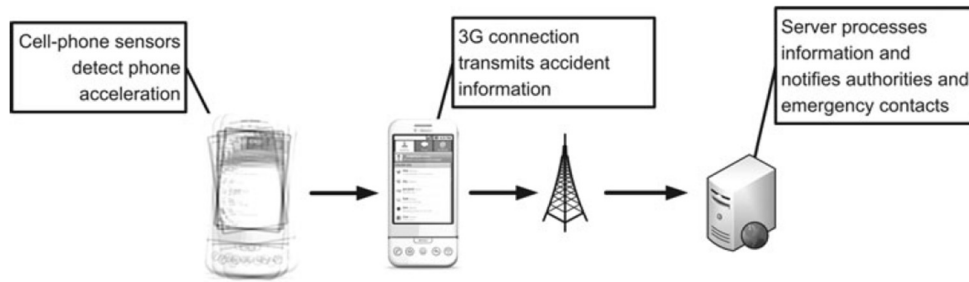


Fig. 2. Smartphone-Based Accident Detection System

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 (“WreckWatch”) is a “mobile client/server application [] developed to automatically detect car accidents.” USAA-1008, 30. USAA-1003, ¶83.

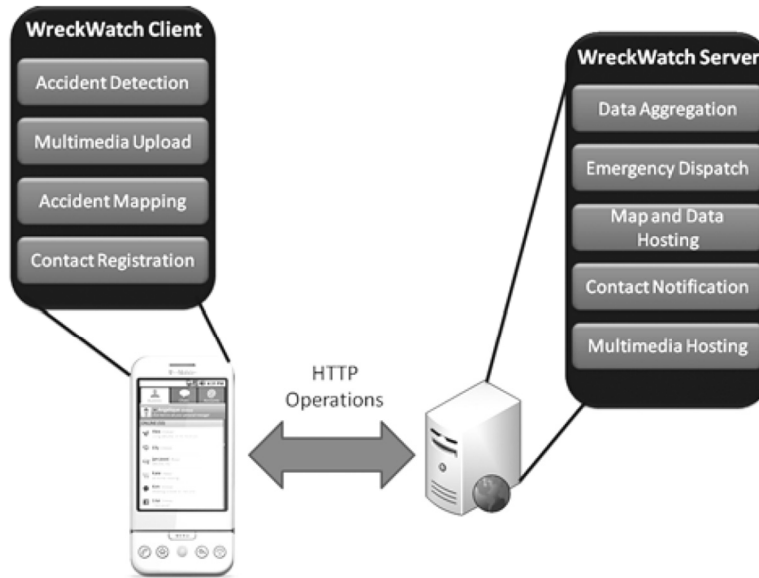


Fig. 3. WreckWatch Architecture Diagram

USAA-1008, Fig. 3

(b) *Curry-Rabu-Katayama-Thompson2010*

As discussed in §III.A.1, while Curry contemplates emergency scenarios (e.g., accidents) may occur, it does not disclose specific embodiments focused on detecting an emergency or actions performed by phone 106 in response to a detected emergency. USAA-1005, 3:16-28, 9:16-26, cl. 9. Curry also provides a broader motivation towards “programs and initiatives to reduce traffic-related fatalities and injuries.” USAA-1005, 1:9-21. And, due to its concern for motorized vehicle accidents and deaths, a POSITA would have understood that accident detection techniques advance Curry’s overall motivation to reduce vehicular casualties. USAA-1003, ¶233.

A POSITA looking would have looked to supplement Curry using accident

known detection techniques. USAA-1003, ¶234. As discussed in §III.D.1, Thompson2010 is one example disclosing a smartphone-based accident detection system using smartphone system sensors. USAA-1008, 30, Fig. 2; USAA-1003, ¶234.

A POSITA would have performed this modification since Thompson2010's accident detection technique would have advanced Curry's overall motivation to reduce casualties resulting from vehicular accidents. Moreover, the combination (*see* §III.D.1(b)) would have allowed Curry's 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, a POSITA would have perceived configuring phone 106 to incorporate the client-server architecture described in Thompson2010 as an implementation detail. USAA-1005, 8:23-9-12; USAA-1008, 30, 33-34; USAA-1003, ¶235; USAA-1003, ¶235 (citing USAA-1007) (reasonable success).

2. Claims 13, 14

[13.1]

Thompson2010 describes a smartphone configured to detect traffic accidents ("*event of significance... a crash*"). USAA-1008, 30. As discussed in §III.D.1, in the combination (*see* §III.D.1(b)), a POSITA would have configured phone 106 to

perform Thompson2010's accident detection technique and thereby detect traffic accidents. USAA-1008, 30 (identifying/reporting accident); USAA-1003, ¶236.

[13.2]

A POSITA would have understood and/or found obvious that, in the combination (*see* §III.D.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-1005, 2:24-5:6; USAA-1003, ¶237. In Curry, the motion data cache is “used to record the location, speed, and acceleration of [phone 106]...” USAA-1005, 2:24-5:6. In Thompson2010, 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[.]” USAA-1008, 33. USAA-1003, ¶237 (citing USAA-1008, 32, Fig. 4).

[14.1]

See [13.1], *supra*. USAA-1003, ¶238.

[14.2]

Thompson2010 describes that a mobile client on a smartphone (WreckWatch 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.D.1(b)), client 110 of phone 106 provides similar functionality as Wreck-Watch client and server 104 provides similar functionality as WreckWatch server. USAA-1005, 8:23-29, 9:3-12; USAA-1008, 30, 32-35; USAA-1003, ¶239.

E. [GROUND 1E] – Curry, Rabu, 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 embodiment “provide[s] a proximity detection of the phone coming within 2 meters of the vehicle in any manner from any direction.” *Id.*; USAA-1003, ¶84.

(b) *Curry-Rabu-Katayama-Willis*

A POSITA would have understood that phone 106 includes a Bluetooth sensor. USAA-1003, ¶240. Curry defines “mobile phone” in a non-limiting fashion and specifies that it “include[s] any type of electronic mobile computing device.” USAA-1005, 6:23-29. Curry also references the Apple iPhone 3G smartphone, which a POSITA would have understood to include a Bluetooth sensor. USAA-

1005, 1:22-27; USAA-1003, ¶240 (citing USAA-1078, 21-64); USAA-1009, 9:22-24.

A POSITA would have also understood that proximity detection based on Bluetooth signal strengths is an obvious design choice of Bluetooth sensors of mobile devices. USAA-1003, ¶241. In Willis, techniques involve “[t]he use of core BluetoothTM functionality [that] enables the invention to be used with a broad range of BluetoothTM capable devices and avoids the incompatibility issues suffered by predecessor devices.” USAA-1009, 31:6-8; USAA-1003, ¶241. Thus, a POSITA would have found it obvious that a Bluetooth sensor in Curry’s phone 106 is configured to detect a proximity of a car using “the signal strength of the Bluetooth receiver inside [the] car.” USAA-1009, 19:10-14; USAA-1003, ¶241.

2. Claim 25

[25.1]

Willis describes a mobile device includes a Bluetooth sensor (“*proximity sensor*”) configured to detect proximity of a nearby vehicle using Bluetooth signal strength. USAA-1009, 1:23-27, 14:25-15:3. A POSITA would have understood that phone 106 includes a Bluetooth sensor and, in the combination (*see* §III.E.1(b)), a POSITA would have configured the Bluetooth sensor to detect proximity of a vehicle. *Id.*; USAA-1003, ¶242.

[25.2]

In the combination (*see* §III.E.1(b)), a POSITA would have configured a

Bluetooth sensor of phone 106 to detect proximity of a vehicle (“*detect the proximity of the mobile telecommunications device to the vehicle*”). USAA-1009, 1:23-27, 14:25-15:3; USAA-1003, ¶243.

**F. [GROUND 1F] – Curry, Rabu, Katayama, and Berkobin
Renders Claim 27 Obvious**

1. Proposed Combination

(a) *Berkobin*

Berkobin offers techniques for determining driver behavior based on vehicle operating parameters and adjusting insurance premiums based on the driver behavior. USAA-1010, Abstract. Berkobin also teaches embodiments that “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, ¶85.

(b) *Curry-Rabu-Katayama-Berkobin*

Techniques for using artificial intelligence to evaluate driver information known by the Critical Date. USAA-1003, ¶244; USAA-1010, [0031]; USAA-1025, [0047]; USAA-1014, [0094]. Also known were improvements offered by artificial intelligence, such as offering superior performance when the inputs are complex, features of the input data cannot be readily discerned, or the relationships between input data are complex and nonlinear. USAA-1003, ¶244. POSITA would have therefore been motivated to employ artificial intelligence to identify unsafe driving

behaviors. USAA-1003, ¶244.

Curry describes evaluating measured sensor data to identify unsafe driving behaviors. USAA-1005, 6:5-22. A POSITA would have perceived the benefit of increasing accuracy of identifying unsafe driving behaviors since Curry's desire to "make driving safety monitoring more reliable." USAA-1005, 10:3-14. A POSITA would have thereby identified artificial intelligence as an available tool to process motion data in identifying unsafe driving behaviors. USAA-1003, ¶245. A POSITA would have been expected to reasonably succeed in doing so since the combination would have involved incorporating known techniques (artificial intelligence) into a known system (Curry's system). USAA-1003, ¶245.

2. Claim 27

The combination (*see* §III.F.1(b)) renders this claim obvious in the same manner as explained above for the corresponding limitations listed in the table below. USAA-1003, ¶246.

The '369 patent specification does not distinguish the two terms "affix" versus "attach." USAA-1003, ¶246. In fact, the '369 patent specification uses both "affix" and "attach" in similar manner. *See, e.g.*, USAA-1001, 3:8-11, 15:9-11, 18:49-52, 15:19-25.

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, 6:61-7:3;USAA-1003, ¶247.

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 or an unsafe driving behavior. USAA-1005, 2:24-3:11, 6:5-22, 8:31-9:12; USAA-1003, ¶248.

IV. PTAB DISCRETION SHOULD NOT PRECLUDE INSTITUTION

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

1. Factor 1

Factor 1 is at worst neutral, as neither party has yet requested 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).

⁶ Apart from Petitioner’s showing that the *Fintiv* factors favor institution, the *Fintiv* framework should not be followed because it is legally invalid. The framework (1) exceeds the Director’s authority, (2) is arbitrary and capricious, and (3) was adopted without notice-and-comment rulemaking.

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 October 2024 (i.e., around the same time or in advance of the median-expected jury trial). USAA-1065, 9; *See* USAA-1065 (*Director’s Guidance*), 8-9.

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 Telematicas 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 prior art asserted in this petition. USAA-1074; *See* IPR2021-00972 Pap. 10, 13-16 (Dec. 8 2021)(“*AliveCor*”); *see* also 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. USAA-1065, 3-5, 9; *Fintiv*, 14-15.

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 IPR2023-00769, and IPR2023-0770.

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: IPR36137-0026IP1@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 IPR36137-0026IP1@fr.com

(referencing No. 36137-0026IP1 and cc'ing PTABInbound@fr.com, [\[ptab@fr.com\]\(mailto:ptab@fr.com\), \[tar@fr.com\]\(mailto:tar@fr.com\), \[patrick@fr.com\]\(mailto:patrick@fr.com\), \[rchowdhury@fr.com\]\(mailto:rchowdhury@fr.com\) and](mailto:axf-</p></div><div data-bbox=)

zoppo@fr.com).

Attorney Docket No. 36137-0026IP1

IPR of U.S. Patent No. 10,192,369

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

(Control No. IPR2023-00768)

Attorneys for Petitioner

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 13,909 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