

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of: Andrew William Wright
U.S. Patent No.: 9,311,271 Attorney Docket No.: 36137-0024IP1
Issue Date: April 12, 2016
Appl. Serial No.: 13/994,455
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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. 9,311,271 PURSUANT TO 35 U.S.C. §§ 311–319,

37 C.F.R. § 42

TABLE OF CONTENTS

I.	REQUIREMENTS	1
A.	Grounds for Standing.....	1
B.	Challenge and Relief Requested.....	1
C.	Claim Construction	3
II.	THE ‘271 PATENT	4
A.	Specification	4
B.	Prosecution History.....	5
III.	THE CHALLENGED CLAIMS ARE UNPATENTABLE.....	6
A.	[GROUND 1A] – The Combination of Curry and Rabu Renders Claims 1 and 4 Obvious	6
1.	Analysis	6
(a)	Curry.....	6
(b)	Rabu.....	8
(c)	Curry-Rabu	11
2.	Claim 1	18
B.	[GROUND 1B] – The Combination of <i>Curry, Rabu and Katayama</i> Renders Claim 1 Obvious	41
1.	Analysis	41
(a)	Katayama.....	41
(b)	Curry-Rabu-Katayama	44
2.	Claim 1	48
C.	[GROUND 1C] – The Combination of <i>Curry, Rabu and Tamir</i> Renders Claim 3 Obvious	51
1.	Analysis	51
(a)	Tamir	51
(b)	Curry-Rabu-Tamir.....	52
2.	Claim 3	52
D.	[GROUND 1D] – The Combination of <i>Curry, Rabu, and McClellan</i> Renders Claim 4 Obvious	53
1.	Analysis	53
(a)	McClellan	53
(b)	Curry-Rabu-McClellan.....	54
2.	Claim 4	57
E.	[GROUND 2] – The Combination of <i>Callopy and Curry</i> Renders Claims 6 and 7 Obvious.....	59
1.	Analysis	59
(a)	Callopy	59

(b)	Callopy-Curry.....	61
2.	Claim 6	67
3.	Claim 7	79
IV.	PTAB DISCRETION SHOULD NOT PRECLUDE INSTITUTION.....	80
A.	Discretion Under §314.....	80
B.	Discretion Under §325(d)	83
V.	CONCLUSION AND FEES	84
VI.	MANDATORY NOTICES UNDER 37 C.F.R § 42.8(a)(1).....	84
A.	Real Party-In-Interest Under 37 C.F.R. § 42.8(b)(1).....	84
B.	Related Matters Under 37 C.F.R. § 42.8(b)(2).....	84
C.	Lead And Back-Up Counsel Under 37 C.F.R. § 42.8(b)(3).....	85
D.	Service Information	85

EXHIBITS

USAA-1001	U.S. Patent No. 9,311,271 to Wright (“the ‘271 Patent”)
USAA-1002	Excerpts from the Prosecution History of the ‘271 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,” <i>Mobilware 2010</i> , LNICST 48, pp. 29–42, 2010 (“Thompson2010”)
USAA-1009	International Publication No. WO 2007/114716 (“Willis”)
USAA-1010	U.S. Patent Application Publication No. 2008/0255888 (“Berkobin”)
USAA-1011	Cheng et al., “An Android System Design and Implementation for Telematics Services,” 2010 IEEE International Conference on Intelligent Computing and Intelligent Systems. Vol. 2. IEEE, 2010 (“Cheng2010”)
USAA-1012	U.S. 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: 131-136 (“Hunt2002”)
USAA-1021	Kanianthra, Joseph, Arthur Carter, and Gerard Preziotti, “Enhancing post-crash vehicle safety through an automatic collision notification system,” No. 2001-06-0085. SAE Technical Paper, 2001 (“Kanianthra2001”)
USAA-1022	Megalingam R.K. et al., “Wireless vehicular accident detection and reporting system.” 2010 International Conference on Mechanical and Electrical Technology. ICMET, 2010 (“Megalingam2010”)
USAA-1023	Farris, P. et al., “General Motors OnStar.” Darden Case No. UVA-M-0659 (2002) (“Farris2002”)
USAA-1024	European Pat. App. Pub. No. EP 1,914,691 to Katayama et al. (“Katayama”)
USAA-1025	U.S. Pat. App. Pub. No. 2012/0074770 to Lee (“Lee”)
USAA-1026	RESERVED

USAA-1027	Linda Null & Julia Lobur, “The Essentials of Computer Organization and Architecture” (2003) (“Null2003”)
USAA-1028	U.S. Pat. Publication No. 2009/0005975 to Forstall et al. (“Forstall”)
USAA-1029	Langle, Lonnie, and Ram Dantu, “Are you a safe driver” 2009 International Conference on Computational Science and Engineering. Vol. 2. IEEE, 2009 (“Langle2009”)
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,” SenSys ’08: Proceedings of the 6th ACM conference on Embedded network sensor systems, 2008, pp. 323-336 (“Mohan2008”)
USAA-1033	U.S. Pat. No. 5,274,560 to LaRue (“LaRue”)
USAA-1034	Declaration of Nathaniel E. Frank-White re Exhibits USAA-1077 (Ex. A) and USAA-1078 (Ex. B)
USAA-1035	RESERVED
USAA-1036	Declaration of Nathaniel E. Frank-White re Exhibits USAA-1079 (Ex. A), USAA-1080 (Ex. B), and USAA-1081 (Ex. C)
USAA-1037-1040	RESERVED
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USAA-1042	Del Rosso, Christian, “The method, the tools and rationales for assessing dynamic memory efficiency in embedded real-time

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- 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 (“Toledo2008”)

- USAA-1045 International Publication No. WO 2010/062899 (“Callopy”)

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- USAA-1047 Conover, Gerald D. “ITS Technology in Automotive—Who's on First?” SAE International (2006): 1-11 (“Conover2006”)

- USAA-1048 Skog, Isaac, et al., “A Versatile PC-Based Platform for Inertial Navigation,” Proceedings of the 7th Nordic Signal Processing Symposium-NORSIG 2006. IEEE, 2006 (“Skog2006”)

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- 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 WSAN 2007: IFIP International Federation for Information Processing. Springer, Boston, MA, 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). 35-40. (“Liutkauskas2004”)
- USAA-1057 Ealey, Lance & Luis Troyano-Bermúdez, “Are automobiles the next commodity?” The McKinsey Quarterly 4 (1996): 62-75 (“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, 1997. 555-559. (“Zhao1997B”)
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- 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”)
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- 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 (June 30, 2022), *available at* https://www.uscourts.gov/sites/default/files/fcms_na_distprofile_0630.2022_0.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 *Auto Telematics Ltd. v. United Services Automobile Association*, 6:22-cv-00474 (W.D. Tex. January 12, 2023)

USAA-1070	USAA’s Reply Claim Construction Brief in <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
USAA-1082	U.S. Patent Application Publication No. 2010/0131307 (“Collopy”)
USAA-1083	U.S. Patent Application Publication No. 2009/0024419 (“McClellan”)
USAA-1084	U.S. Patent Application Publication No. 2011/0077028 (“Wilkes”)
USAA-1085	U.S Patent Application Publication No. 2008/0042489 (“Lewis”)

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 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 device configured to: determine, based on inputs received by the user interface and sensor data from the sensor set, a start of a driving period during which the mobile device is removably attached to the vehicle and the vehicle is in use;
	[1.7]	process the sensor data from the sensor set during the driving period to derive driving information associated with how the vehicle is driven;
	[1.8]	store a selection of the driving information to the memory,
	[1.9]	wherein the driving information is derived without data from vehicle sensors; and,
	[1.10]	wherein the mobile communications device is controlled by a downloaded application to control the mobile device to register the start of the driving period in response to an initialization input generated automatically in response to the sensor data having predetermined values, wherein the initialization input is generated in response to sensor data reflecting a detected speed above a predetermined threshold.
3	[3]	A mobile telecommunications device according to claim 1, wherein the mobile communications device is controlled by a downloaded application to control the mobile device to down-sample sensor data from a first

Claim	Identifier	Claim Language
		sampling rate to a second sampling and store the sensor data at said second sampling rate.
4	[4.1]	A mobile telecommunications device configured to log driving information associated with a vehicle,
	[4.2]	the mobile device comprising: a sensor set comprising an image sensor, an audio sensor, an accelerometer, or a positioning module, or a combination thereof;
	[4.3]	a user interface;
	[4.4]	a processor; and
	[4.5]	a memory;
	[4.6]	the mobile device configured to: determine, based on inputs received by the user interface and sensor data from the 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;
	[4.7]	process the sensor data from the sensor set during the driving period to derive driving information associated with how the vehicle is driven,
	[4.8]	store a selection of the driving information to the memory,
	[4.9]	wherein the driving information is derived without data from vehicle sensors; and,
	[4.10]	wherein the mobile communications device is controlled by a downloaded application to control the mobile device to process the sensor data from the sensor set during a plurality of driving periods to derive driving information associated with how the vehicle is driven during the driving periods,
	[4.11]	the sensor data being processed during a first set of driving periods defining a benchmark against which sensor data is compared during subsequent sets of driving periods.
6	[6.1]	A data-logging system for logging driving information

Claim	Identifier	Claim Language
		received from a remote mobile telecommunications device, the data-logging system comprising
	[6.2]	a processor and
	[6.3]	memory,
	[6.4]	the data logging system comprising: a database for storing a plurality of accounts, each account having a unique identifier and the database being arranged to store driving information associated with at least one of a vehicle and a driver;
	[6.5]	a communications interface arranged to communicate with the remote mobile telecommunications device, and receive therefrom:
	[6.6]	a unique identifier for association of the remote mobile telecommunications device with a corresponding one of the plurality of accounts;
	[6.7]	driving information to be logged to that corresponding account, the driving information derived based on inputs received by a user interface of the remote mobile telecommunications device and sensor data from a sensor set of the remote mobile telecommunications device,
	[6.8]	the driving information derived without data from vehicle sensors; and,
	[6.9]	wherein the driving information comprises at least one of a driving score and sensor data captured and processed by the remote mobile telecommunications device during a driving period during which the remote mobile telecommunications device is removably attached to the vehicle being driven by the driver,
	[6.10]	the data logging system being further arranged to process the driving information logged to a corresponding account to generate a driving score used to determine a risk profile for at least one of the vehicle and driver.

Claim	Identifier	Claim Language
7	[7.1]	A data-logging system for logging driving information received from a remote mobile telecommunications device, the data-logging system comprising
	[7.2]	a processor and
	[7.3]	memory,
	[7.4]	the data logging system comprising: a database for storing a plurality of accounts, each account having a unique identifier and the database being arranged to store driving information associated with at least one of a vehicle and a driver;
	[7.5]	a communications interface arranged to communicate with the remote mobile telecommunications device, and receive therefrom:
	[7.6]	a unique identifier for association of the remote mobile telecommunications device with a corresponding one of the plurality of accounts;
	[7.7]	driving information to be logged to that corresponding account, the driving information derived based on inputs received by a user interface of the remote mobile telecommunications device and sensor data from a sensor set of the remote mobile telecommunications device,
	[7.8]	the driving information derived without data from vehicle sensors; and,
	[7.9]	wherein the driving information comprises at least one of a driving score and sensor data captured and processed by the remote mobile telecommunications device during a driving period during which the remote mobile telecommunications device is removably attached to the vehicle being driven by the driver,
	[7.10]	the data logging system being further arranged to process the driving information logged to a corresponding account to generate a driving score used to determine a risk profile for at least one of the vehicle

Claim	Identifier	Claim Language
		and driver; and
	[7.11]	wherein the driving score is used to define an insurance premium associated with the account and the data logging system is further arranged to communicate to the remote mobile telecommunication device an insurance offer generated in response to the driving information received from the remote mobile telecommunications device.

United Services Automobile Association (“Petitioner” or “USAA”) petitions for *Inter Partes* Review (“IPR”) of claims 1, 3-4, and 6-7 (“the Challenged Claims”) of U.S. Patent No. 9,311,271 (“the ‘271 Patent”).

I. REQUIREMENTS

A. Grounds for Standing

USAA certifies that the ‘271 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-1004.

B. Challenge and Relief Requested

USAA requests IPR of the Challenged Claims on the grounds below, and based on related testimony from Dr. William Michalson.¹ (USAA-1003).

Ground	Claim(s)	35 U.S.C. § 103
1A	1	Curry, Rabu
1B	1	Curry, Rabu, Katayama
1C	3	Curry, Rabu, Tamir
1D	4	Curry, Rabu, McClellan
2	6, 7	Callopy, Curry

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

The '271 Patent was filed 7/24/2013, as the U.S. National Stage entry of PCT/GB2011/052491, which claims priority, via several applications, 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 applies prior art before the alleged date. USAA-1003, ¶¶13-15, 26-29.² The applied references below are prior art:

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)
McClellan	1/22/2009	§102(b) §102(a)
Callopy	3/6/2010	§102(e)

² In its Infringement Complaint, Auto Telematics stated "[t]he '271 Patent claims priority to PCT Application No. PCT/GB2011/052492, filed on December 15, 2011." USAA-1004, 8-9.

C. Claim Construction

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

As discussed in §III.A.2 and §III.D.2, *infra*, claims 1 and 4 recite:

the mobile device configured to: determine, based on inputs received by the user interface and sensor data from the 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.”³ 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, ¶¶70, 133. The ’271 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

³ Independent claims 6 and 7 include a similar recitation. §III.E.2-3, *infra*.

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, 3:25-54; USAA-1003, ¶¶70, 134.

Thus, this claim term establishes just two “driving period” attributes: (1) “the mobile device is removably attached to the vehicle” and (2) “the vehicle is in use.” USAA-1003, ¶¶71, 135. 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 ‘271 PATENT

A. Specification

The ’271 Patent is directed to “logging driving information....” USAA-1001, Abstract. A mobile device installed in the vehicle logs information that can be used to “determine the cause of an accident,” “modify driver behavior,” or “determine insurance premiums.” *Id.*, 1:17-25; USAA-1003, ¶56.

Figure 1 shows a system 1 in automobile 3:

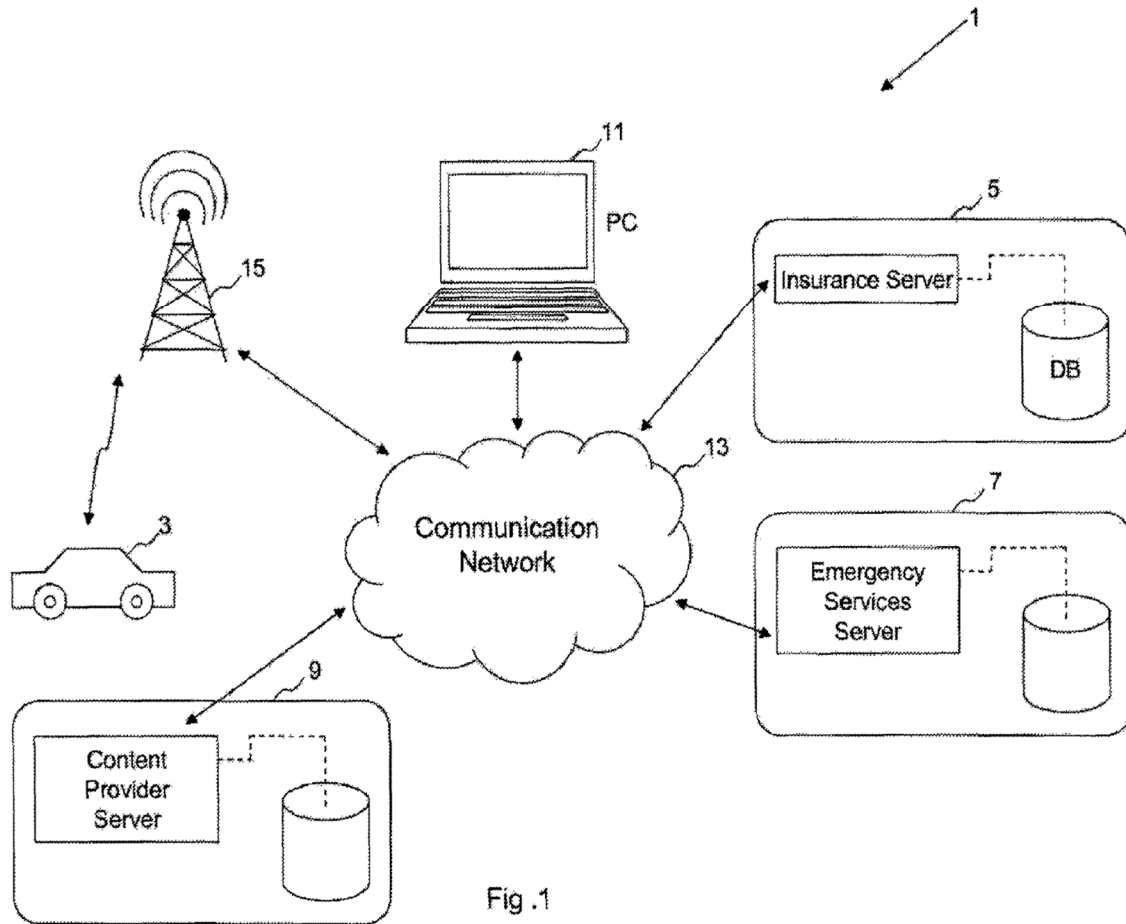


Fig. 1

USAA-1001, FIG. 1

B. Prosecution History

During prosecution, the examiner rejected the claims over U.S. Patent No. 8,140,358 and U.S. Pub. No. 2007/0150139 . *See* USAA-1002, 54-62, 86-97. The examiner did not consider any of Curry, Rabu, Katayama, Callopy⁴, Tamir, and McClellan, which, in the combinations listed in §I.B, render the Challenged Claims obvious. USAA-1003, ¶¶61-68. This petition addresses claim features

⁴ *See* discussion *infra* §IV.B.

distinguished during prosecution in a fresh way using new combinations of prior art, none of which were previously considered.

III. THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. [GROUND 1A] – The Combination of Curry and Rabu Renders Claims 1 and 4 Obvious

1. Analysis

(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, ¶72.

Figure 1 (below) shows a driving safety data server 104 in communication with a “mobile phone” 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”). *Id.*, 7:5-22, 8:30-9:33; USAA-1003, ¶73.

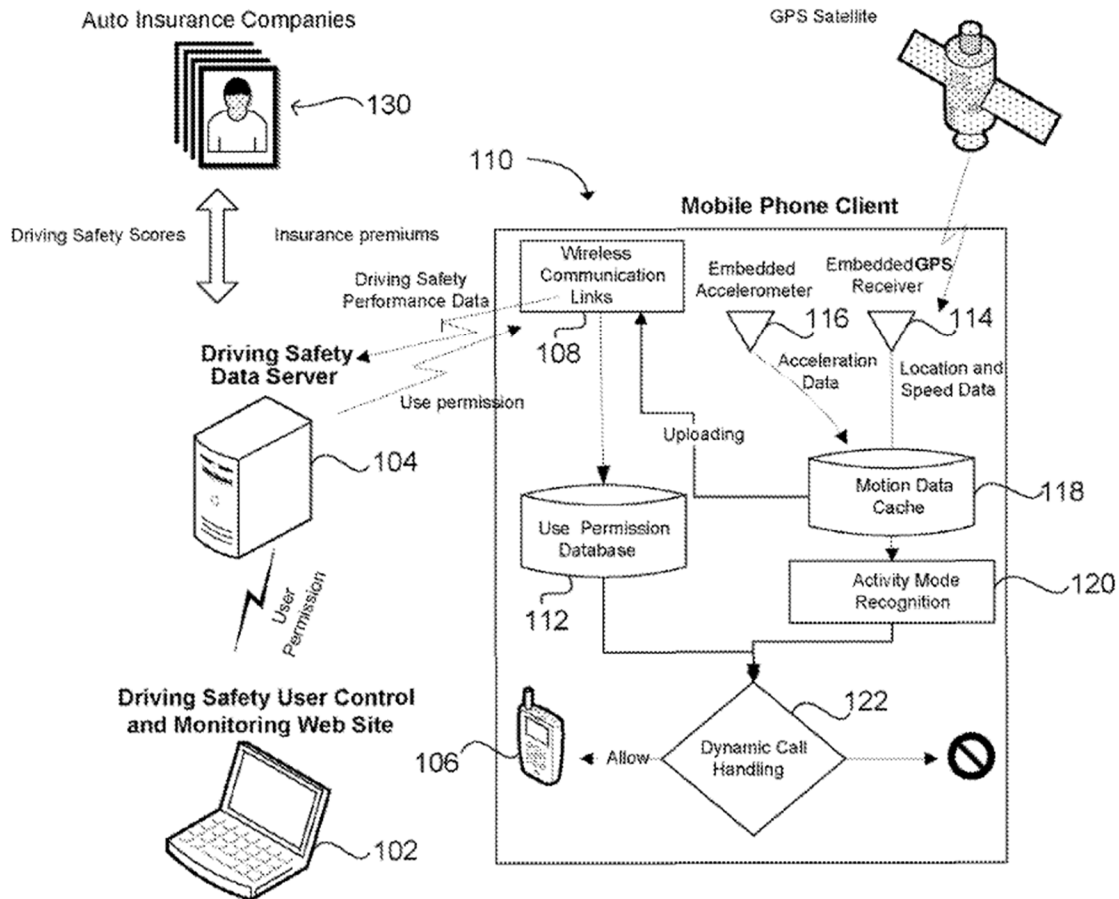


FIG. 1

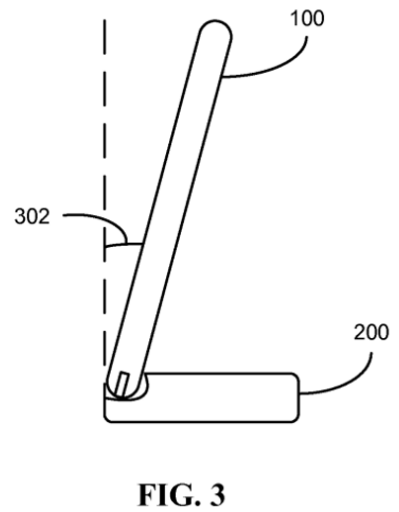
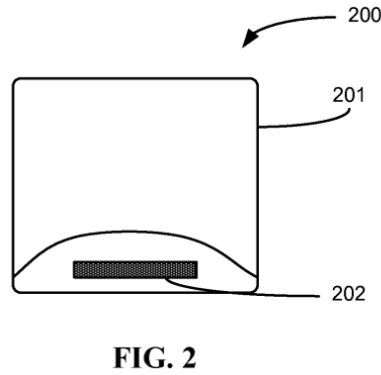
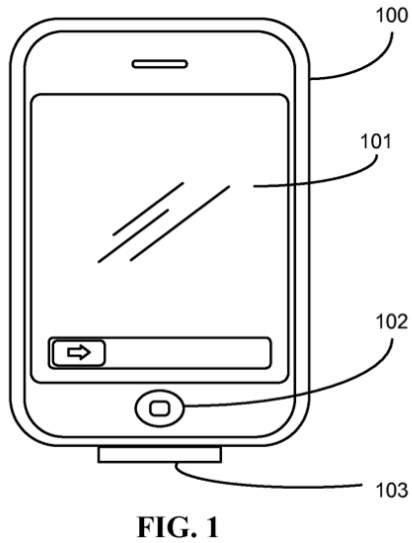
USAA-1005, FIG. 1

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.” USAA-1005, Abstract, 3:1-4:6, 8:29-12:18, 13:27-14:26, 17:1-18:4, FIGS. 1, 3, 6; USAA-1003, ¶74.

(b) **Rabu**

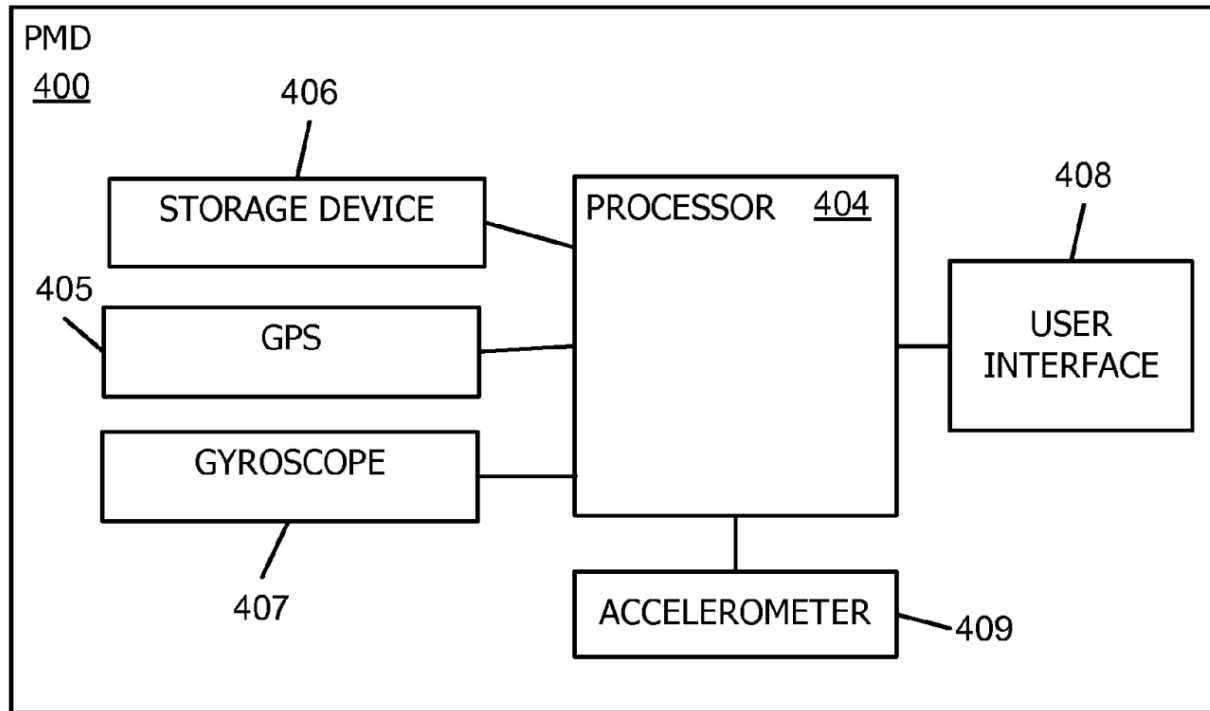
Rabu uses an accelerometer within a “portable media device” (“PMD”) (e.g., “smart phone”) to determine whether the PMD “is in a dock, resting on a surface, or being handled by a person,” and whether the PMD is located in a moving vehicle. USAA-1013, Abstract, 1:1-52, 1:60-2:11, 3:11-28, 6:49-7:6, FIGS. 1-8. Rabu leverages those determinations to “choose a particular mode of operation” for the PMD that can promote driver safety by restricting problematic phone interactions. *Id.*, 1:53-59, 8:13-10:42, FIG. 5; USAA-1003, ¶75. For example, if the PMD is “docked in a moving vehicle,” an operating mode with relatively few restrictions can be chosen. USAA-1013, 8:13-10:42, FIGS. 5, 7, 8; USAA-1003, ¶79. Conversely, “if the PMD determines that [it] is being held,” the PMD can, for example, “prevent the driver from sending or receiving text messages while driving.” USAA-1013, 12:26-43.

Rabu’s PMD is mounted using an “automobile dock.” *Id.*, 3:11-45, FIGS. 1, 2. Figures 1-3 (below) show PMD 100 “coupled to dock 200” and positioned “at an angle 302...” *Id.*, 3:46-50. This “orientation” angle is leveraged to confirm whether the PMD is coupled to dock 200, and to “switch to an associated mode of operation.” *Id.*, 3:29-4:4, 8:13-24, FIGS. 2, 7, 3:46-4:4; USAA-1003, ¶76.



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, ¶¶77-78.



USAA-1013, FIG. 4

Rabu uses, e.g., the PMD's accelerometer to make status determinations for the PMD (e.g., held by user versus docked in moving vehicle) and adjust PMD operating mode based on determined status, per Figures 7 and 8 (below). USAA-1013, 8:13-10:42. For example, Rabu describes disabling texting if the PMD is "being held by the driver," rather than docked in the moving vehicle. *Id.*, 12:26-43; USAA-1003, ¶79.

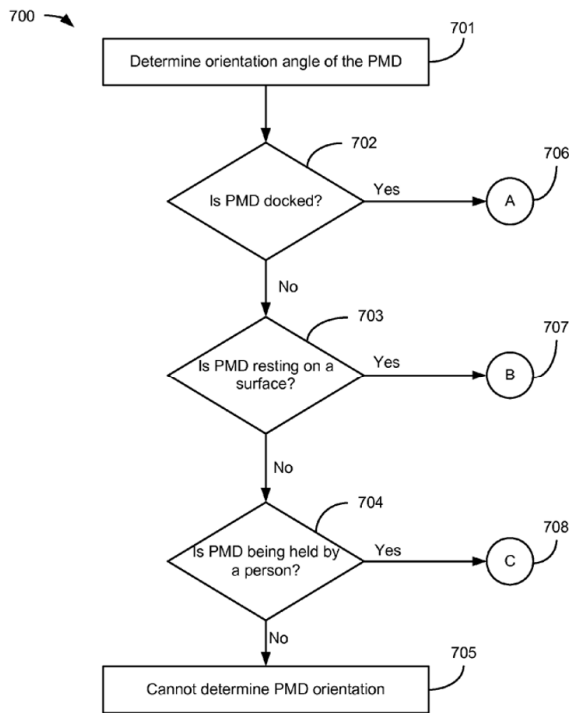


FIG. 7

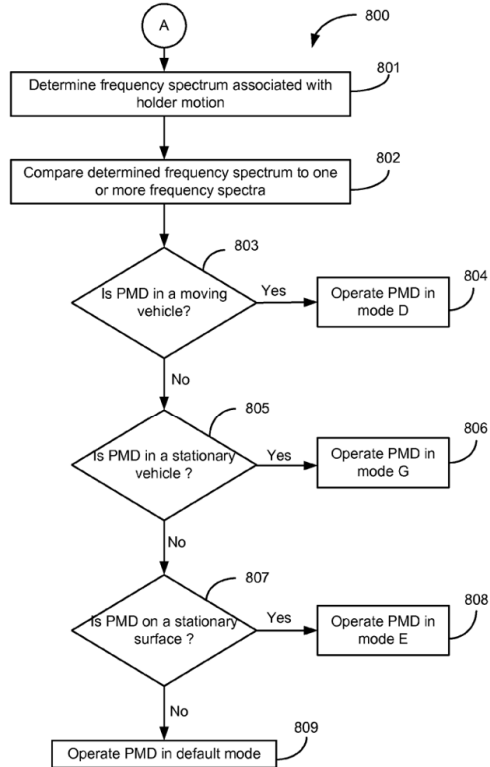


FIG. 8

USAA-1013, FIGS. 7, 8

(c) **Curry-Rabu**

A person of ordinary skill in the art at the time of the '271 Patent (“POSITA”)⁵ would have found obvious integration of Rabu’s dock status sensing and associated mode-shifting capabilities into Curry’s phone, thereby enhancing the Curry phone’s ability to promote safe driving. USAA-1003, ¶101. As explained below, the result is a device with added functionality (“Curry-Rabu phone”), capable of defining and determining different types of driving periods based on user inputs and sensor data (including one in which the phone is docked

⁵ USAA-1003, ¶¶14-15 (defining a POSITA).

within a moving vehicle, and another in which the phone is undocked within a moving vehicle), and of appropriately restricting phone use and/or adjusting user driving scores depending on a type of driving period determined. *Id.*

For example, the Curry-Rabu phone would leverage accelerometer orientation and motion data to determine both vehicle motion and phone docking status upon a user accepting a phone call while driving, or manually switching activity modes through interactions with the phone's user interface. USAA-1003, ¶102; 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 (e.g., preventing the user from texting while the phone is handheld). USAA-1005, 16:30-17:7, FIGS. 3, 6; USAA-1013, 8:13-10:42, FIG. 5; USAA-1003, ¶102.

In greater detail, Curry's client 110 determines phone 106's operating mode and, based on phone sensor data, derives driving behavior information used to generate a user driving safety score. 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 may reveal 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, ¶102.

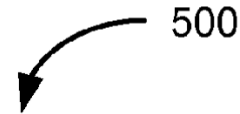
Curry describes two modes: (1) a "communication" operating mode that

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, ¶103. 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 (e.g., stop, driving) with different operating modes (e.g., different levels of restrictions on phone use), and accounting for phone usage context when generating a user driving score. USAA-1005, 2:3-2:28, 15:8-16:33. One embodiment contemplates an all-or-nothing approach to phone activity restrictions when phone 106 is in a monitoring operating mode; elsewhere Curry recognizes that it can be better to correlate different driving contexts with different phone restrictions. USAA-1003,

¶104; USAA-1005, 2:3-3:28, 15:8-16:33. Curry’s suggestion of a nuanced approach to phone restrictions and to driver scoring that takes into account phone usage context 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, ¶105.

A POSITA would have found relevant solutions within Rabu and would have expected success in incorporating Rabu’s solutions within Curry. USAA-1003, ¶106. For example, Rabu describes leveraging a “generally conventional” accelerometer like Curry’s to determine a phone’s orientation angle and motion status, for purposes of discerning phone usage context, and changing the phone’s operating mode to appropriately account for that context. USAA-1013, 3:1-10, 4:21-33, FIGS. 1, 4; USAA-1003, ¶106. For instance, as shown in Rabu’s FIG. 5 (below), Rabu describes switching operating modes based on determining that the phone is “docked in a moving vehicle” (as opposed to being “handheld while located in a moving vehicle”). USAA-1013, 8:13-10:42, FIGS. 5, 7, 8; USAA-1003, ¶106.

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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

Similar to Curry, each of Rabu's defined modes of operation includes appropriate levels of phone use restrictions. USAA-1013, 1:36-2:14, 5:53-7:6, 12:26-38, FIG. 5. For example, if the phone "is being held by the driver," the processor can prevent texting while driving. USAA-1003, ¶¶107-108; USAA-1013, 3:1-10, 4:21-33, 6:39-43, 12:38-43, FIGS. 1, 4.

In another example, consistent with Curry's description of allowing drivers to "talk[] while driving through headsets," a POSITA would have found it obvious, upon receipt of user inputs, to leverage accelerometer motion and orientation data to determine that a driver may utilize a docked phone's speaker mode while driving. USAA-1003, ¶108; USAA-1005, 14:14-17; USAA-1013, 6:39-43, FIG. 5.

Indeed, the combined disclosures of Curry and Rabu would have amply motivated a POSITA to supplement Curry's teachings of determining the start of a

driving period based on user inputs 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, ¶109; USAA-1005, 14:14-17; USAA-1013, 5:61-6:21, 6:39-43, 8:1-4, FIGS. 3-4, 5-8.

A POSITA would have found obvious that enhancing Curry's system based on Rabu would introduce multiple additional advantages (USAA-1003, ¶110), including:

1. increased user tolerance for Curry's monitoring mode, based on more user-friendly levels of restrictions enabled upon a determination that Curry's phone is docked within a vehicle, relative to those present when Curry's phone is undocked (USAA-1003, ¶111; 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 for the user, passengers, and others (USAA-1003, ¶112; 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 of user driving behaviors based on data obtained from sensors within

a docked phone relative to an undocked phone (USAA-1003, ¶113;

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

whether the user violated phone use permissions (USAA-1003, ¶114;

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 those more nuanced

driving scores (USAA-1003, ¶114; 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, ¶115; USAA-1005, 9:15-10:14, 12:20-15:22, 16:30-17:7, 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 that was well within the skill

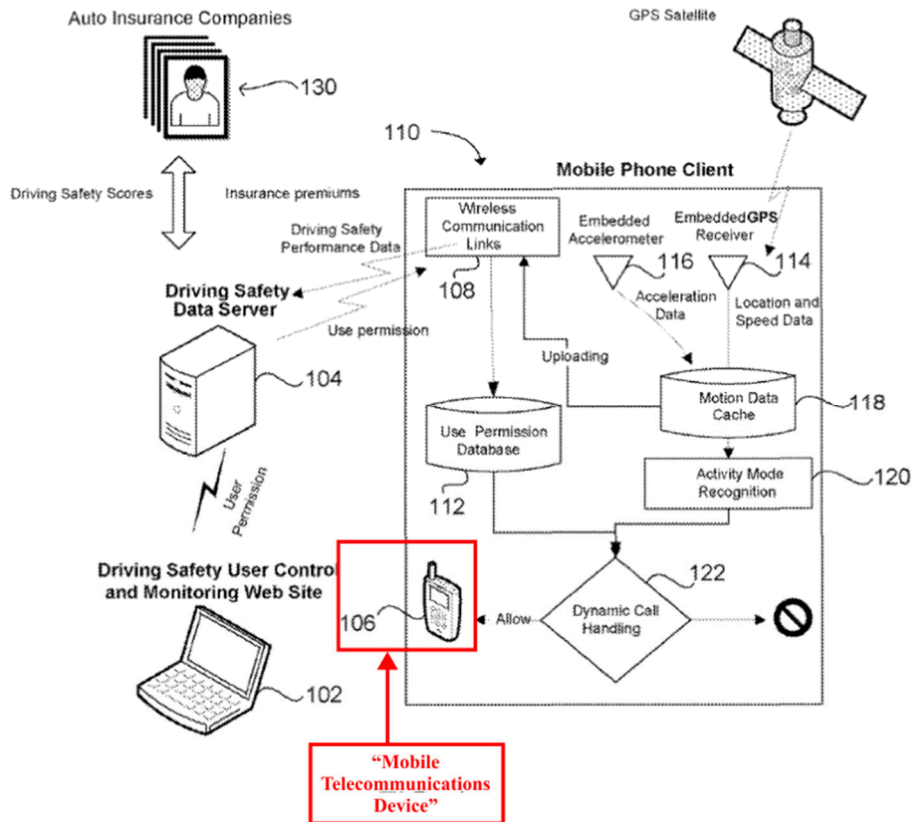
of a POSITA prior to the earliest effective filing date. USAA-1003, ¶116. Indeed, the change would have amounted to nothing more than the use of a known technique to improve similar devices – in each instance a smart phone equipped with a generic accelerometer – in a similar way, and combining prior art elements according to known methods to yield the predictable results described above. *KSR v. Teleflex*, 550 U.S. 398, 417 (2007); USAA-1003, ¶116.

Furthermore, the elements of the resulting combination would each perform functions they had been known to perform prior to the combination. USAA-1003, ¶117. Accordingly, a POSITA would have naturally expected success when incorporating Rabu’s teachings into Curry. *Id.*

2. Claim 1

[1.1]

If the preamble is limiting, Curry-Rabu (§III.A.1(c)) renders it obvious. Curry-Rabu includes an enhanced phone (“*mobile telecommunications device*”) “that may be used...in a vehicle”; for example, an “iPhone 3G smart phone[.]” USAA-1005, Abstract, 2:22-27, 7:5-29, 8:21-27, FIG. 1; USAA-1003, ¶118.



USAA-1005, FIG. 1 (annotated)

The exemplary Apple iPhone 3G included user interfaces enabling interaction with downloaded applications (e.g., “Maps” application). USAA-1003, ¶119; USAA-1005, Abstract, 2:1-27, 3:1-4:28, 10:15-12:18, FIG. 1; USAA-1013, 3:11-28, 4:15-20, FIGS. 1, 4; USAA-1078, 21-64; USAA-1079, 1-4, 6-8; USAA-1080, 20, 16-35, 87-92; USAA-1081, 1-5; USAA-1016, ¶¶[0046]-[0063], FIG. 3.

iPhone at a Glance



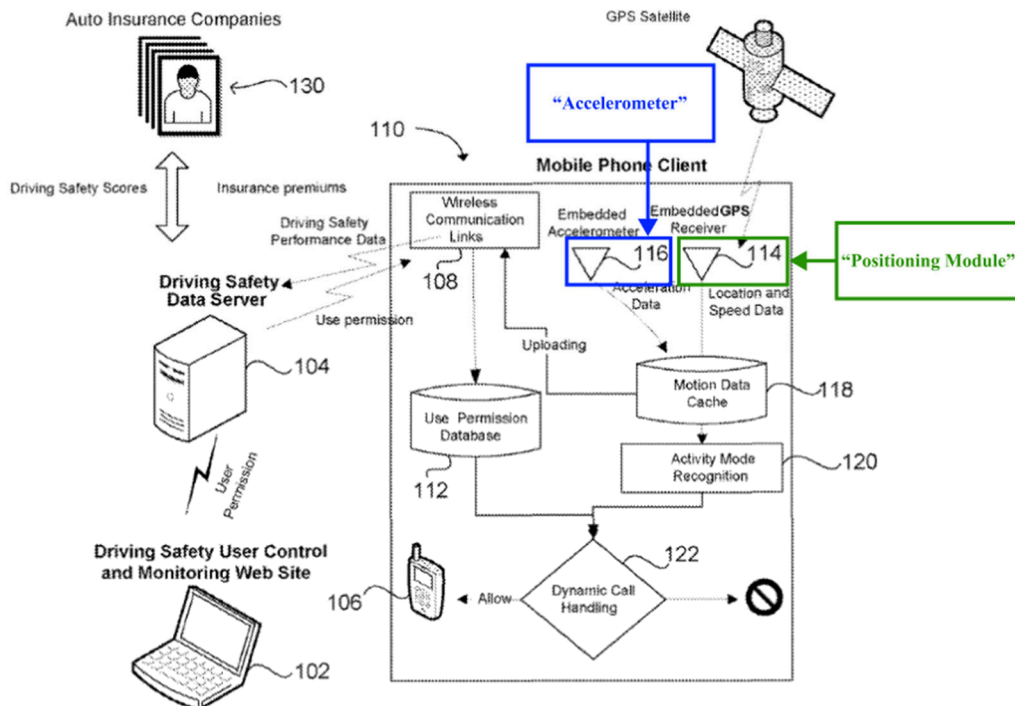
USAA-1080, 38 (left), 90 (right)

The Curry-Rabu phone includes client 110 (downloaded from server 104), which enables determination of whether an associated vehicle is being driven. USAA-1005, 8:20-9:33. Client 110 additionally enables the Curry-Rabu phone to process “raw data” from a driving period to derive driving information associated with a user’s driving behavior (“*log driving activity associated with a vehicle*”), and to use the derived information to generate a “driving safety score” for the user. USAA-1005, Abstract, 7:5-8:2, 8:29-10:26, 13:27-33, FIG. 1; USAA-1003, ¶¶120-121.

[1.2]

The Curry-Rabu 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.



Curry, FIG. 1 (annotated)

Data from sensors and driving information derived from that data is used, for example, to “monitor driving safety performance,” to “prevent unsafe driving behaviors,” and to “generate driving score[s].” USAA-1005, 7:5-8:2; USAA-1003, ¶¶122-123.

[1.3]

The Curry-Rabu 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 interac-

tions 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, ¶¶124-126; *supra* [1.1]; §III.A.1(c).

[1.4]

The Curry-Rabu 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-1003, ¶¶127-128; USAA-1005, 2:22-27, 6:3-10, 8:20-27, FIG. 1; USAA-1015, 4, 237-250; 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]

Curry describes "memory devices" that store sensor data, derived information, and "executable code." USAA-1003, ¶¶129-132; USAA-1005, 6:11-20, FIG. 3. Further, a POSITA would have understood and found obvious that the

Curry-Rabu phone includes a local memory, at least because Curry explains that “the term ‘mobile phone’ can include any type of electronic mobile computing device,” and because a POSITA would have understood that “[a]t the most basic level, a computer is a device consisting of...[a] processor...[a] memory to store both data and programs...[and a] mechanism for transferring data....” USAA-1003, ¶¶129-132, USAA-1005, 6:3-10; USAA-1015, 4.

For instance, the “iPhone 3G” described by Curry included flash memory for internal storage. USAA-1005, 2:22-27; USAA-1079, 1-2; *see also* USAA-1013, 3:11-28, 4:15-20, 5:15-33, FIGS. 1, 4; USAA-1016, ¶¶[0046]-[0063], FIG. 3; USAA-1003, ¶130.

Additionally, Curry states that “[a] user can download...required software...to the mobile phone 106 to set up the client unit [110] on the phone,” and that “the mobile phone client 110 can record...data from sensors embedded in the wireless device...to a local motion data cache 118 for further processing.” USAA-1005, 3:24-26, 8:20-27. A POSITA would have understood both that the downloading of a program to a phone implies the existence of internal memory, and that the term “cache” refers to local memory. USAA-1003, ¶131; USAA-1005, 3:24-26, 8:20-27, FIG. 1; USAA-1015, 233-250, 606, 614, 622.

Curry additionally describes “further processing” of data stored in cache 118 by a “user activity mode recognition program 120,” the transmission of “activity

mode estimation results” from mobile phone 106 to a driver safety data server, and the display through “an interactive website” of derived driving behavior information. USAA-1005, 8:29-9:28. From this and related description, a POSITA would have understood and found obvious that driving behavior information derived from sensor data is stored locally in a memory on the Curry-Rabu phone prior to its later transmission and display. USAA-1003, ¶132; USAA-1005, 7:5-22, 8:29-9:28, 13:20-16:6, FIG. 3; *see also* USAA-1024, [0012], [0016], [0044]-[0049].

[1.6]

As explained in §III.A.1(c), a POSITA would have configured the Curry-Rabu phone to determine, based on user inputs and orientation and motion data from accelerometer 116, 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, ¶136; 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. Curry-Rabu thereby meets each of the requirements imposed by [1.6] (discussed in §III.A.1(c)) in multiple ways. As explained below, the limitation is first met by a configuration of the Curry-Rabu phone in which the phone uses accelerometer data 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). Curry-Rabu also meets this limitation through other configurations where user inputs and sensor data are not concurrently used, since no such mandate exists within this limitation. USAA-1003, ¶136.

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 and motion sensor data generated by a phone's embedded accelerometer; in each instance, 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, ¶137; USAA-1013, 3:1-10, 4:21-33, 8:13-10:42, 15:7-22, FIGS. 1, 4-5, 7-8.

As indicated in Figure 1 (below) and related description, 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. 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, ¶138.

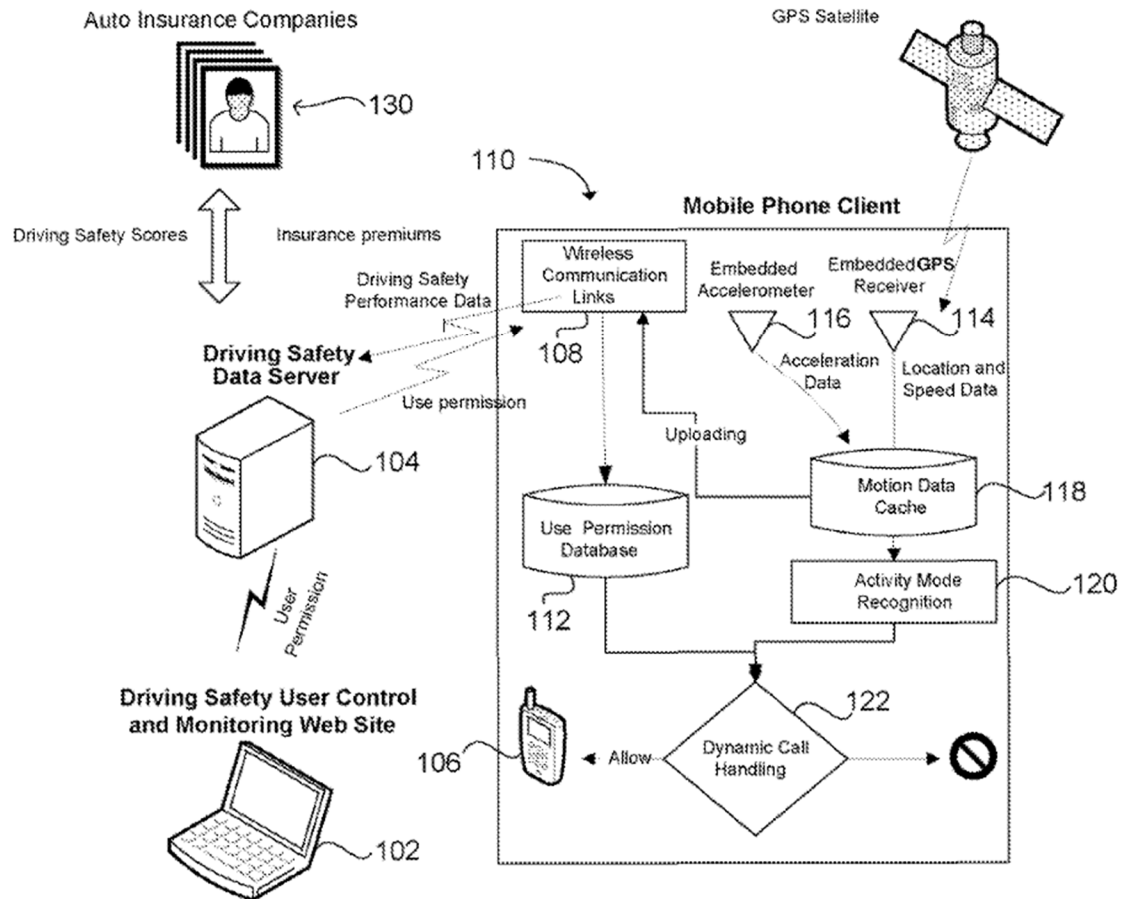
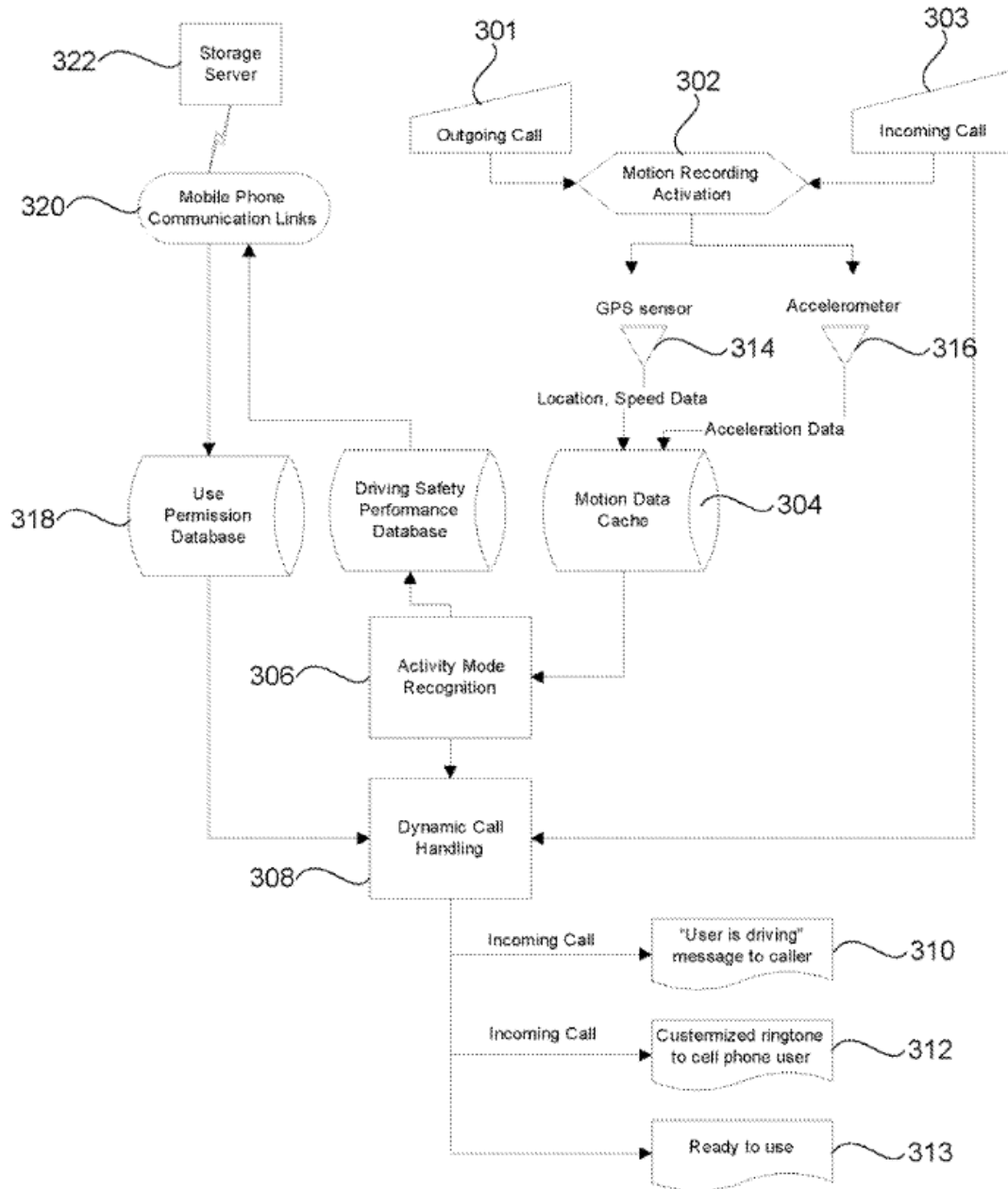


FIG. 1

USAA-1005, FIG. 1

As another example, in connection with Curry's FIG. 3 (below), Curry describes a "driving safety monitoring program on a mobile phone client" that determines, based on user inputs and "recorded time stamped [sensor] data," whether the phone is located within a vehicle that is in use, and that is further configured both to derive related driving information, and "to allow or disallow" phone functions based on that determination. USAA-1005, 12:20-13:26; USAA-1003, ¶139.



USAA-1005, FIG. 3

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, ¶140.

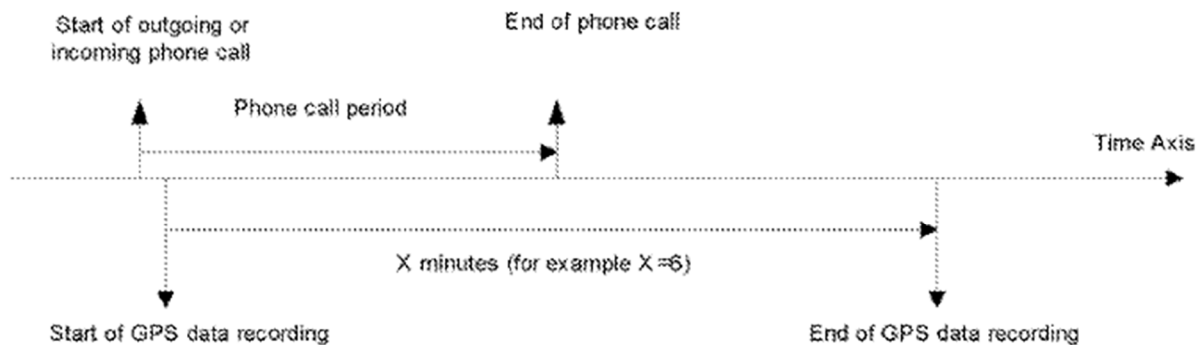


FIG. 4

USAA-1005, FIG. 4

As explained in §III.A.1(c), a 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 the period from those in which the phone is instead removably attached. USAA-1003, ¶141; 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 phone to make corresponding adjustments to phone restrictions, determinations of driving behaviors, and generation of driving scores. USAA-1003, ¶141; 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.

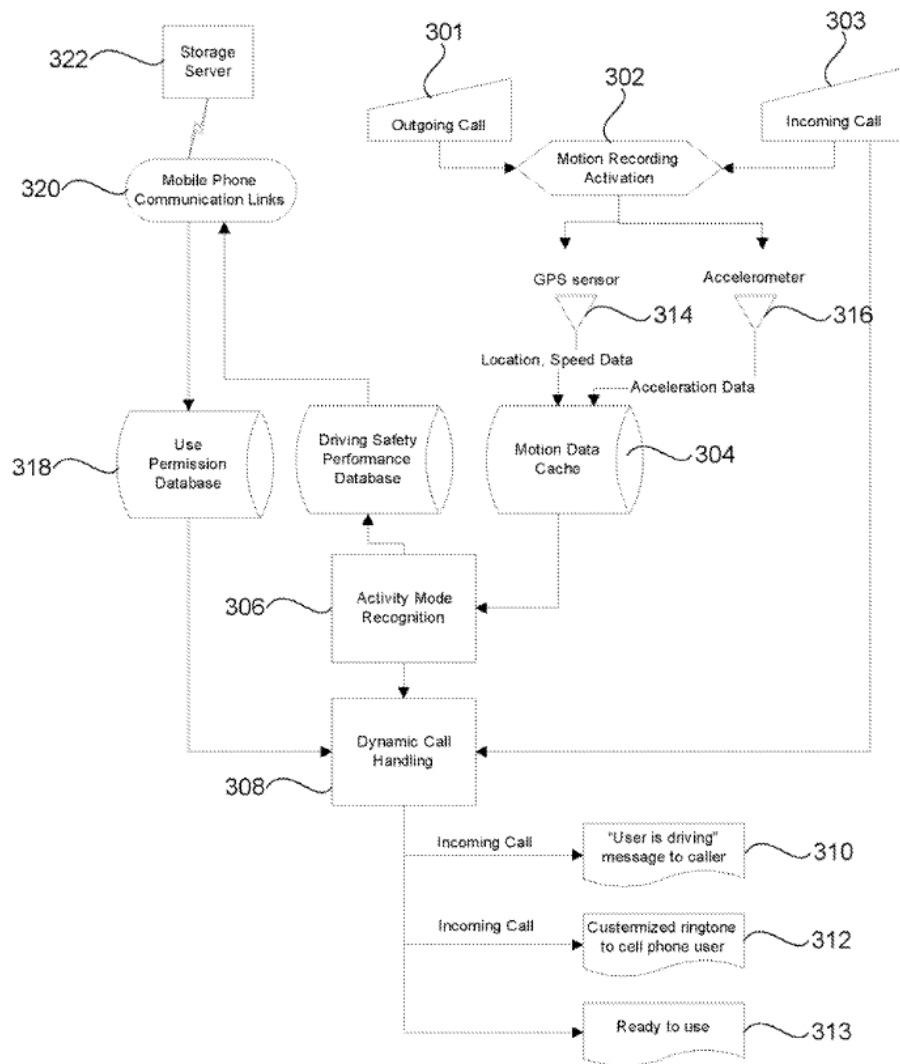
Accordingly, a POSITA would have configured the Curry-Rabu phone to determine a start of a driving period during which the phone is docked (“removably attached to the vehicle”) while the vehicle is being driven (“vehicle is in use”). USAA-1003, ¶¶133-141; USAA-1005, Abstract, 2:3-3:28, 10:15-11:14, 13:20-16:33, 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. Further, Curry-Rabu makes that determination based on concurrent use of inputs received by the user interface and sensor data from the sensor set. USAA-1003, ¶142.

[1.7]

As explained above, the Curry-Rabu phone processes sensor data recorded by its embedded sensors (e.g., accelerometer 116) (“*sensor data*”) during the driving period to derive “driving behavior” information, e.g., “talking...or texting...while driving” and “speeding” (“*driving information associated with how the vehicle is driven*”). USAA-1003, ¶¶143-145; 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, ¶146.



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, 13:20-16:6, FIGS. 1, 3; USAA-1015, 233-250; USAA-1003, ¶147. Further, Curry describes various means of processing sensor data, reinforcing the obviousness of sensor data being processed during the driving period to derive driving information. USAA-1005, 11:3-14, 13:20-14:26, FIG. 3; USAA-1003, ¶148.

[1.8]⁶

Curry-Rabu phone stores information derived from processed sensor data (“*selection of driving information*”) to memory (e.g., motion data cache 118, local memory) (“*memory*”) prior to transmission (e.g., to driving safety data server 104). USAA-1003, ¶149; 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

⁶ The reference to “selection” of driving information results from improper inferential claiming and is non-limiting since such selection is not one of the operations recited to be performed by the “mobile telecommunications device.” *Ex Parte Sullivan*, Appeal No. 2002-1924 (PTAB June 20, 2016). To the extent it deemed limiting, the combination renders it obvious as discussed herein.

store all or a subset of the derived driving information in the memory of the Curry-Rabu phone, and thus, to store a selection of the driving information to the memory. USAA-1003, ¶149. Notably, the plain meaning of a “selection of the driving information” is not limited to a selection of a subset of the same, but instead is broad enough to encompass selection of some or all of that information.

Still, to the extent that this limitation is narrowly interpreted to require a selection of less than all for storage, a POSITA would have found obvious to store in the Curry-Rabu phone a subset of (i.e., selection of) the recorded sensor data 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 indicating possible use violations, unsafe driving behavior). *Id.*; 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 (e.g., “user’s parents,” “guardian, “insurance company”) and thereby found obvious to implement Curry-Rabu to store specific aspects of recorded sensor data unique to a particular entity. USAA-1005, 4:8-11; USAA-1003, ¶149.

A POSITA would have also found obvious that data stored in local memory

(e.g., database 324) 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, ¶¶150-151; USAA-1005, 11:3-14, 13:29-14:26, FIG. 3. Each stored activity estimation result includes a selection of driving information for the corresponding interval. USAA-1005, 12:29-13:4; USAA-1005, Abstract, 2:1-27, 3:24-4:6, 4:7-11, 7:5-22, 8:29-10:12, 13:20-16:6, FIGS. 1, 3.

[1.9]

As discussed for [1.7], Curry-Rabu phone processes sensor data during a driving period to derive driving information. USAA-1003, ¶152; 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, ¶153.

A POSITA would have found it obvious to configure a Curry-Rabu 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, ¶154; 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, ¶¶154-155; USAA-1005, Abstract, 2:1-27, 3:24-4:11, 7:5-22, 8:29-10:12, 11:15-25, 13:20-16:6, FIGS. 1, 3.

[1.10]

As explained at [1.6], a POSITA would have configured the Curry-Rabu phone to determine, based on user inputs and sensor data, a start of a driving period during which phone 106 is removably attached to the vehicle and the vehicle is in use. USAA-1003, ¶157; 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. Further, as indicated in Figure 1 (below) and related description, a downloaded client application 110 processes “raw data” from a driving period to derive driving behavior information that is stored locally prior to later transmission to a “driving safety data server.” USAA-1005, 6:5-22, 8:5-11, 7:30-8:33, 15:7-22; USAA-1003, ¶157.

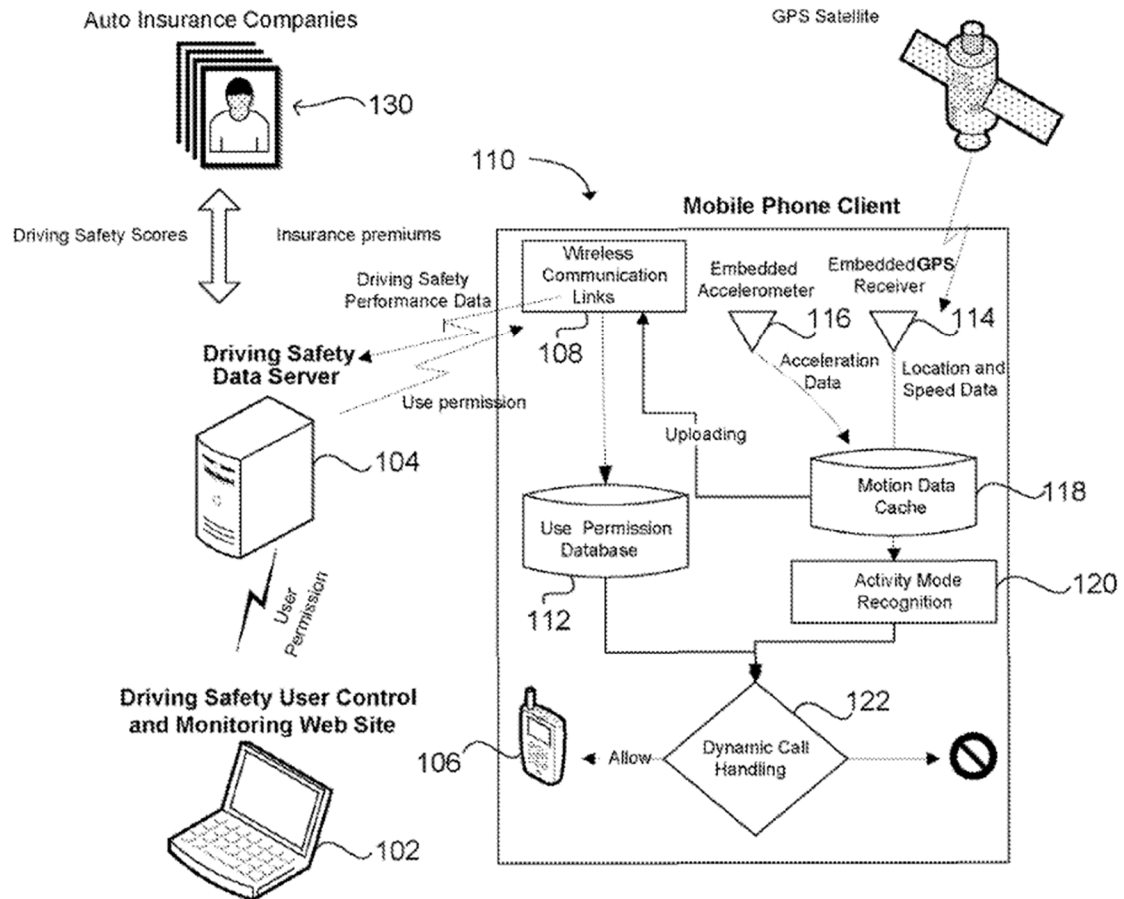


FIG. 1

USAA-1005, FIG. 1

For example, Curry explains that “the 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.” USAA-1005, 2:24-26, 6:5-22, 7:20-8:28, 12:20-15:6, FIGS. 1, 3; USAA-1003, ¶158. Curry describes “further processing” of data stored in cache 118 by a “user activity mode recognition program 120,” the transmission of “activity mode estimation results” from mobile phone 106 to a driver safety data server, and the display through “an

interactive website” of derived driving behavior information including “unsafe driving behavior.” USAA-1005, 7:29-8:28.

Thus, a POSITA would have understood and found obvious that driving behavior information derived from sensor data is stored locally in a memory on mobile phone 106 prior to its later transmission and display. USAA-1003, ¶159; USAA-1005, 6:5-22 (“the driving safety data can be recorded in mobile phones and then transmitted”), 7:29-8:28, 12:20-15:6, FIG. 3 (depicting a “local driving safety performance database 324”).

A POSITA would have further understood and found obvious that the local memory featured in the Curry-Rabu phone has limited capacity and uses this limited capacity to accommodate continuously and sequentially received information including sensor data and important driving behavior information derived from sensor data. USAA-1003, ¶160; USAA-1005, 1:22-27, 2:24-26, 7:20-27, 5:3-10, FIG. 1; *see also* USAA-1027, 65-66, 71-72.

Curry, for example, contemplates a “local motion data cache 304” that stores data with a “pre-specified sampling interval.” USAA-1005, 13:27-14:4; USAA-1003, ¶161; USAA-1027, 65-66, 71-72. At the same time, Curry describes that “a variety of modules, caches, and databases” can be provided either on its phone or remotely, “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, FIG. 1. Curry adds that although the addition of “modules,” “caches,” and/or “databases” can “require a more complex device (having more memory),” “the amount of communication needed to operate the system can be reduced.” *Id.*

In at least this way, Curry encourages the use of multiple memory modules within its phone to reduce the amount of communication needed between the phone and other elements of Curry’s system (including the data server). *Id.*; USAA-1003, ¶162. Thus, a POSITA would have understood the use of multiple memory modules within the Curry-Rabu phone to be advantageous, at least insofar as the multiple modules would allow the phone to retain information for transmission to the external server for potential post-processing and/or display, with reduced frequency of communication between the phone and the server. USAA-1003, ¶162.

Because the Curry-Rabu phone’s local memory would, in any particular configuration or number of modules have limited capacity, a POSITA would have recognized the risk of important information stored in that memory being inadvertently erased and overwritten with new data prior to transmission to Curry’s external data server. USAA-1003, ¶163; USAA-1005, 2:24-26, 6:5-22, 7:20-8:28, 12:20-15:6, FIGS. 1, 3; *see also* USAA-1024, [0001]-[0002], [0016], [0044]-[0051], [0057]; USAA-1027, 65-66, 71-72.

A POSITA would have found obvious from Curry and/or their own knowledge that arranging the Curry-Rabu phone's local memory to feature at least one short term module and at least one long term module, and recording information identified as important in the long term module, would solve this problem by preventing the important information from being inadvertently overwritten by new sensor data and related information, which could be continually and sequentially stored within the short term module. USAA-1003, ¶164; USAA-1005, 12:3-18, FIG. 1; *see also* USAA-1024, [0001]-[0002], [0016], [0044]-[0051], [0057]; USAA-1027, 65-66, 71-72.

In that regard, a POSITA would have sought to ensure that the downloaded client 110 application controls the Curry-Rabu phone to appropriately identify important driving behavior information and to retain that information and related sensor data within the long term module for potential post-processing and/or transmission. USAA-1003, ¶165; USAA-1005, Abstract, 2:3-3:28, 10:15-11:14, 13:20-16:33, 17:30-18:7, FIGS. 1, 3, 4, 6; *see also* USAA-1024, [0001]-[0002], [0011]-[0016], [0045]-[0050], [0054], [0083].

Further, to avoid erasing driving behavior information indicating unsafe behaviors such as speeding, a POSITA would have found obvious the configuration of client application 110 to, in response to an initialization input generated automatically in response to the Curry-Rabu phone's sensor data having predetermined

values indicating that such behaviors had occurred during a given driving period, register the already-determined start of that driving period for purposes of recording related driving information and sensor data within the Curry-Rabu phone's long term memory module. USAA-1003, ¶166; USAA-1005, 6:5-22, 8:5-11, 7:30-8:33, 15:7-22, FIG. 1; *see also* USAA-1024, [0001]-[0002], [0011]-[0016], [0027], [0046]-[0050], [0054], [0083].

For example, Curry describes in connection with FIG. 5 (below) the use of timestamped "GPS location data" produced by the GPS sensor included with Curry's phone to determine a "speed measure" that is calculated "as traveled distance divided by time interval," and that can be compared against a predetermined speed threshold to determine whether a vehicle within which the phone is located is traveling within "a high-speed range." USAA-1005, 16:1-22, FIG. 5.

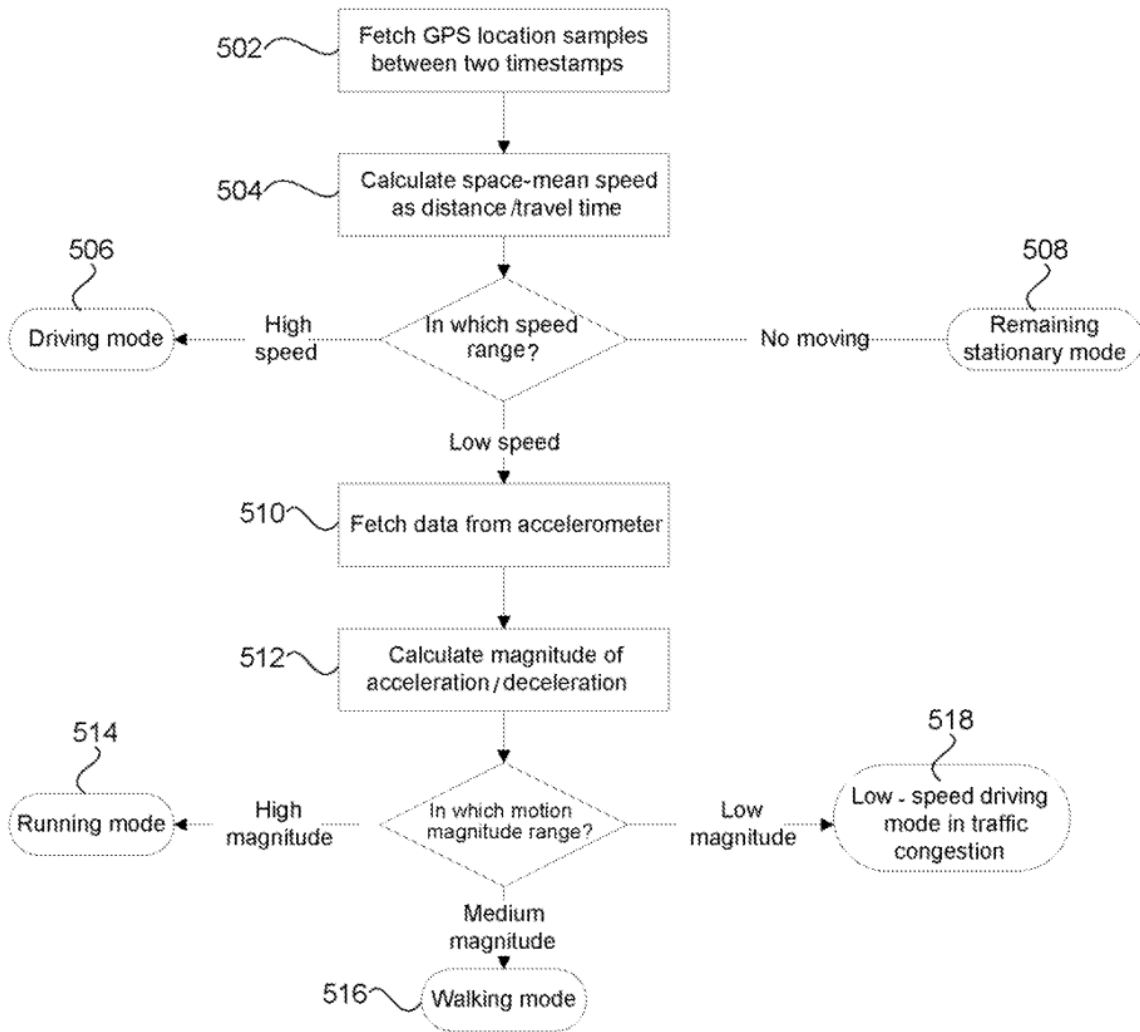


FIG. 5

USAA-1005, FIG. 5

Although this particular example relates to determination of a phone operating mode, a POSITA would have found obvious, from at least FIG. 5 and related description, the automatic generation by the Curry-Rabu phone's client application 110 of an initialization input for registering the start of the already-determined

driving period in response to GPS sensor data having predetermined values reflecting a detected speed above a predetermined threshold. USAA-1003, ¶168; USAA-1005, 8:23-28, 16:1-22, FIG. 5⁷.

This approach would advantageously enable the Curry-Rabu phone to retain, for later transmission “to the driving safety data server 104, and further display[] through an interactive user control website,” both the sensor data and related derived driving information pertaining to “unsafe driving behavior[s]” that occurred within that driving period, “such as speeding....” USAA-1005, 8:23-28, 11:3-14; 13:3-19; USAA-1003, ¶169; *see also* USAA-1024, [0001]-[0002], [0011]-[0016], [0027], [0046]-[0050], [0054], [0083].

B. [GROUND 1B] – The Combination of Curry, Rabu and Katayama Renders Claim 1 Obvious

1. Analysis

(a) Katayama

Katayama describes a recorder that detects accidents and/or risk incidents

⁷ As an additional example, Curry identifies based on sensor data events relevant to a user’s safety score, and then stores the “driving performance and resulting safety score” for later review and/or “post-processing.” USAA-1005, 11:3-14, 13:3-19. For example, “1-10 mph over the speed limit may deduct 20 points” from the safety score. *Id.*

based on “situation data” including 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, [0001], [0011], [0013], [0058]; USAA-1003, ¶83. Figure 4 (below) depicts an exemplary recorder 1, including accelerometer and GPS sensors and an “internal memory 82” to store sensor data and related derived information. USAA-1024, [0034], [0044].

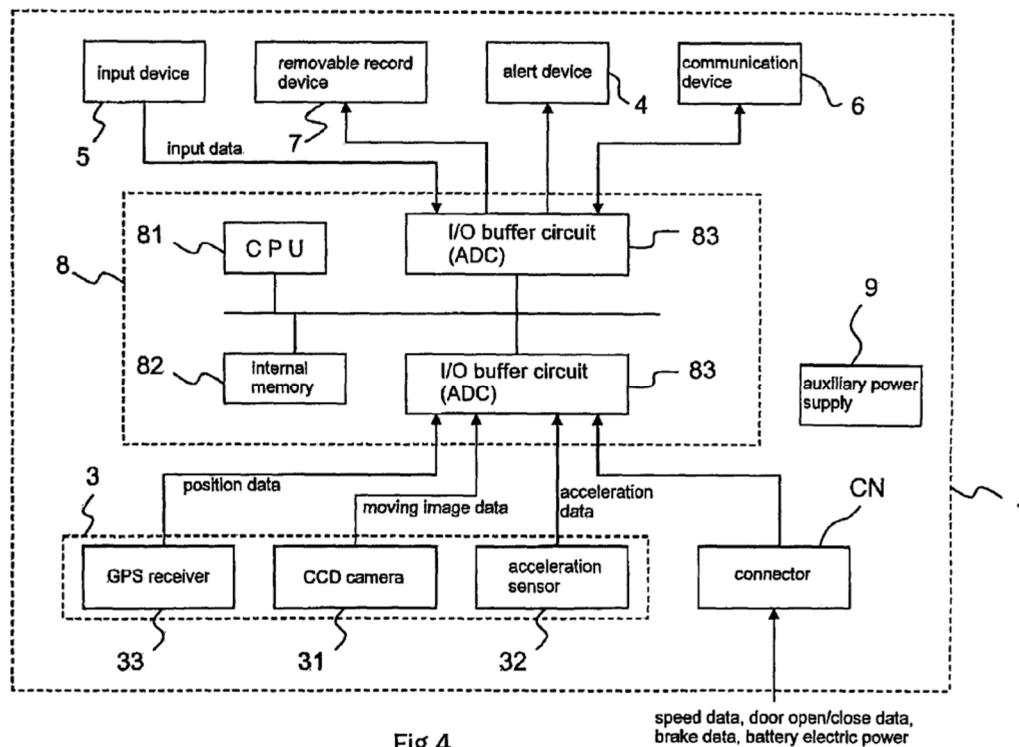


Fig.4

USAA-1024, FIG. 4

The recorder “is controlled...by operating the CPU 81 in accordance with programs stored in a predetermined area of the internal memory 82.” *Id.*, [0028], [0044]-[0045], FIG. 5.

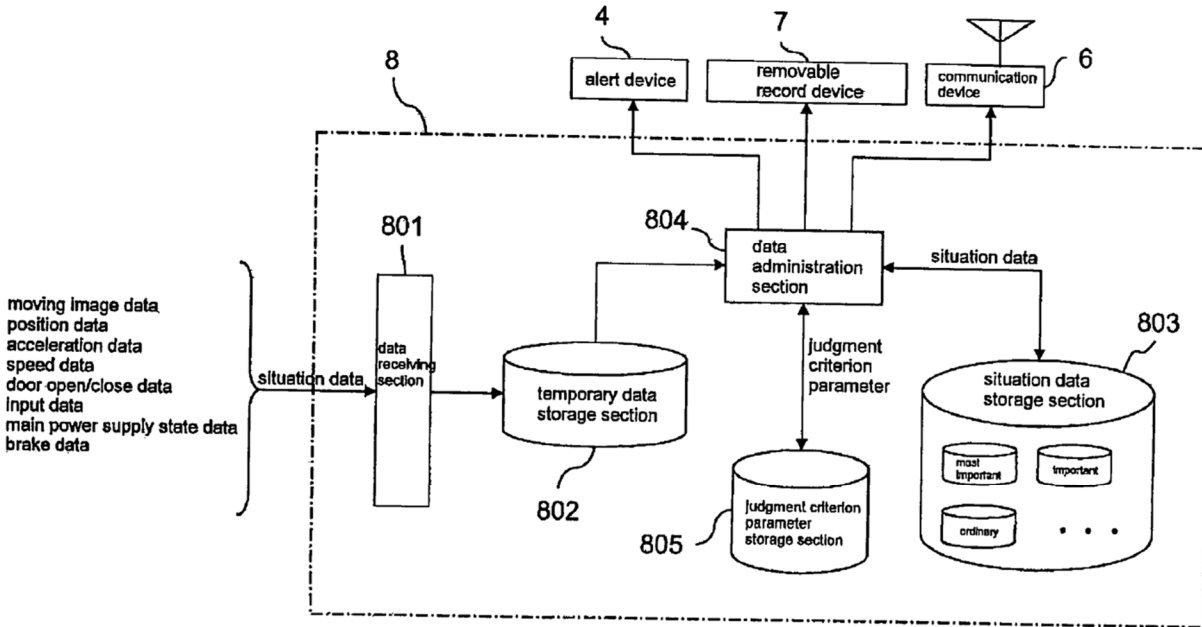


Fig.5

USAA-1024, FIG. 5

Memory 82 has a “temporary data storage section 802” and “situation data storage section 803.” *Id.*, [0044]. Katayama describes data handling techniques that enable “effective use” of the memory’s limited capacity to ensure that “important data will not be erased,” but instead will remain available “after-the-fact analysis.” *Id.*, [0016]; USAA-1003, ¶85.

Data receiving section 801 receives “situation data” including sensor data and “writes the received situation data” in memory 82’s temporary data storage section 802, but “old data is sequentially erased” and replaced over time. USAA-1024, [0016], [0045]; USAA-1003, ¶86. To avoid erasing useful data, data administration section 804 determines whether temporarily stored situation data meets

predetermined criteria. USAA-1024, [0001]-[0002], [0016], [0046]-[0050]; USAA-1003, ¶87. If so, the recorded situation data is classified as “important” and moved to long term storage. *See* USAA-1024, [0001]-[0002], [0011]-[0016], [0027], [0046]-[0050], [0054], [0083]; USAA-1003, ¶87. If sensor data exceeds a “predetermined” threshold, it may be transferred from temporary to long term storage. USAA-1024, [0011]-[0016], [0027], [0046]-[0050], [0054], [0083]; USAA-1003, ¶¶87-88.

(b) **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.

USAA-1024, [0012], [0015], [0048]-[0049]; USAA-1003, ¶170.

A POSITA would have found obvious that, like Katayama’s local memory 82, the Curry-Rabu phone’s local memory has limited capacity for accommodating received sensor data and information derived therefrom. *See* USAA-1005, 1:22-27, 2:24-26, 6:5-22, 7:20-8:28, 5:3-10, FIGS. 1, 3; USAA-1003, ¶¶171-172. Accordingly, a POSITA would have found obvious that derived driving behavior information is stored in local memory prior to its later transmission. USAA-1003, ¶172; 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 may be 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, ¶173; 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, ¶174.

More specifically, and as taught by Katayama, a 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,

¶175. To avoid erasure of important situation data, a 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 (e.g., whether a value of temporarily stored digitalized sensor data indicates that “the speed of the vehicle exceeds the predetermined...speed” threshold). USAA-1024, [0001]-[0002], [0011]-[0016], [0027], [0046]-[0050], [0054], [0083]; USAA-1003, ¶175.

A POSITA would have found obvious that the Curry-Rabu-Katayama phone resulting from these enhancements would enjoy improved data management with reduced likelihood of erasure of important data. USAA-1003, ¶177; USAA-1005, 2:2-15, 2:24-3:6; USAA-1024, [0014]-[0016], [0045], [0053]. Further, a 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, ¶177.

These among other advantages would have amply motivated a POSITA to integrate Katayama’s teachings into the Curry-Rabu phone. USAA-1003, ¶178; USAA-1005, 2:2-15, 2:24-3:6, 7:30-8:3; USAA-1024, [0001]-[0002], [0011]-[0016], [0027], [0044]-[0050], [0054], [0083]. 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, ¶178; 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, ¶178; 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, ¶178; 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, ¶178; 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, ¶178; 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 that was well within the skill of a POSITA prior to the earliest effective filing date. USAA-1003, ¶179. 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*, 550 U.S. at 417; USAA-1003, ¶179.

Furthermore, the elements of the resulting combination would each perform functions they had been known to perform prior to the combination. USAA-1003, ¶180. Accordingly, a POSITA would have naturally expected success when incorporating Katayama’s teachings into Curry-Rabu. *Id.*

2. Claim 1

[1.1]-[1.9]

Curry-Rabu-Katayama renders obvious claim elements [1.1]-[1.10] for at least the reasons discussed above for the Curry-Rabu combination applied in Ground 1A. Curry-Rabu-Katayama additionally renders obvious claim element [1.10] as discussed below.

[1.10]

As explained above, a POSITA would have configured the Curry-Rabu-Katayama phone to transfer situation data from a given driving period determined to be “important” from the local memory’s temporary storage section to its long

term section for potential post-processing and/or later transmission. USAA-1003, ¶182; USAA-1024, [0001]-[0002], [0011]-[0016], [0027], [0046]-[0050], [0054], [0083]; USAA-1005, Abstract, 2:3-3:28, 10:15-11:14, 13:20-16:33, 17:30-18:7, FIGS. 1, 3-4, 6.

For example, to avoid inadvertent erasure of important situation data, a POSITA would have configured client application 110 to, in response to an initialization input generated automatically in response to accelerometer and/or GPS sensor data values indicating unsafe speeding during a given driving period, register the already-determined start of that driving period for purposes of recording related situation data within long term memory. USAA-1003, ¶183; USAA-1005, 6:5-22, 8:5-11, 7:30-8:33, 11:3-14; 13:3-19, 15:7-22, 16:1-22, FIGS. 1, 5; USAA-1024, [0001]-[0002], [0011]-[0016], [0027], [0046]-[0050], [0054], [0083].

Specifically, Katayama describes digitalization of 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 instance, whether one or more values of temporarily stored digitalized sensor data indicate that “the speed of the vehicle exceeds the predetermined upper limit speed....” USAA-1024, [0048]; *see also id.*, [0001]-[0002], [0011]-[0016], [0027], [0046]-[0050], [0054], [0083]; USAA-1003, ¶184. “[W]hether or not the content of...situation data meets the predetermined condition is judged based on

results of the digitalized values on which a logical operation...is performed” and, if the condition is met, “situation data during a certain period is transferred....”

USAA-1023, [0048]-[0051].

In one Katayama embodiment, satisfaction of a predetermined speed threshold results in Katayama’s system first reporting a “risk incident” to the driver, and then transferring the related situation data in response to the driver pushing a button. *See id.*, [0048], [0053]. However, consistent with Curry’s goals of “detect[ing] and prevent[ing] unsafe driving behavior[s],” a POSITA would have found obvious the automatic generation of the initialization input for registration of the start of the driving period and transfer of related data in response to “the speed of the vehicle exceed[ing] the predetermined...speed” threshold. USAA-1003, ¶185; USAA-1005, Abstract, 2:1-27, 3:24-4:6, 4:7-11, 7:5-22, 9:31-33, FIG. 1; USAA-1024, [0048]-[0049].

This approach would advantageously enable the Curry-Rabu-Katayama phone to retain, for later transmission “to the driving safety data server 104,” both the sensor data and related derived driving information pertaining to speeding, without reliance on the unsafe driver themselves acquiescing to that data and information being automatically reported to the server for purposes of, for example, determining insurance premiums. USAA-1003, ¶186; USAA-1005, Abstract, 2:1-27, 3:24-4:6, 4:7-11, 7:5-22, 8:23-28, 9:31-33, 11:3-14; 13:3-19,

FIG. 1; *see also* USAA-1024, [0001]-[0002], [0011]-[0016], [0027], [0046]-[0050], [0054], [0083]. Further, because the data “is automatically classified at [the] time of recording, it is possible to make an after-the-fact analysis accurately and easily.” USAA-1024, [0015]-[0016].

For at least these reasons, a POSITA would have found obvious the configuration of Curry-Rabu-Katayama’s client application 110 to, in response to an initialization input generated automatically in response to sensor data having predetermined values indicating that speeding had occurred during a given driving period, register the already-determined start of that driving period for purposes of recording related situation data within the Curry-Rabu-Katayama phone’s long term memory section. USAA-1003, ¶187; USAA-1005, 6:5-22, 8:5-11, 7:30-8:33, 15:7-22, FIGS. 1, 5; USAA-1024, [0001]-[0002], [0011]-[0016], [0027], [0046]-[0050], [0054], [0083].

C. [GROUND 1C] – The Combination of *Curry, Rabu and Tamir* Renders Claim 3 Obvious

1. Analysis

(a) Tamir

Tamir describes a traffic information system that evaluates driver behavior in a vehicle. USAA-1006, Abstract. In Tamir’s data collection technique, “samples are collected at a dynamically adjusted rate,” by determining a sampling rate

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

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

A POSITA would have looked to well-known data collection techniques in implementing Curry’s collection of sensor data (e.g., accelerometer data, position data). USAA-1003, ¶188; USAA-1005, 13:27-33.

In doing so, a POSITA would have been aware of well-known data collection techniques in vehicle monitoring systems with variable data sampling rates. USAA-1003, ¶189. Tamir discloses one example in which a sampling rate is adjusted based on conditions associated with data collection (e.g., location of driving, 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 would have improved motion recording process by, for example, allowing “lower power consumption and less wear and tear of” a phone, as taught in Tamir. USAA-1006, 20:52-21:2; USAA-1003, ¶189 (citing USAA-1017, 5:61-6:9, 9:3-7; USAA-1018, [0019]; USAA-1019, 5:1-3).

2. Claim 3

[3]

As discussed (*see* [1.10] discussion *supra* §III.A.2), the Curry-Rabu phone is

controlled by a downloaded application to control the mobile device in various ways. USAA-1003, ¶190. The Curry-Rabu-Tamir phone would have used Tamir's data collection technique to improve Curry's motion recording process using variable sampling rates. USAA-1006, 9:10-20, 20:52-21:11. Tamir describes that "the sampling rate is adjusted according to the driving pattern of vehicle 15" and that "when it is determined that the driver is driving relatively daringly, a higher sampling rate is used." *Id.*, 20:52-21:2. Tamir also contemplates adjusting data collection "at special occasions, such as when an accident is possible." *Id.* For example, Tamir teaches that "when approaching an intersection and/or a curve, the sampling rate is increased, and after the intersection or curve, the sampling rate is decreased" ("*down-sample sensor data from a first sampling rate to a second sampling*") *Id.*, 20:56-58. Thus, a POSITA would have understood and/or found it obvious that the application in Curry-Rabu-Tamir stores the sensor data at whichever sampling rate is being used. USAA-1003, ¶190.

D. [GROUND 1D] – The Combination of Curry, Rabu, and McClellan Renders Claim 4 Obvious

1. Analysis

(a) McClellan

McClellan is directed to grading driver performance for insurance underwriting. USAA-1083, Abstract. It discloses monitoring a driver's performance and providing insurance coverage offers based on performance. *Id.*, [0043]-[0048],

FIG. 2. In particular, “the vehicle monitoring system begins monitoring the driver’s behavior during a baseline period,” during which “the vehicle monitoring device may be configured to observe and record the driver’s performance without providing any mentoring feedback or cues.” *Id.*, [0044]. The “baseline period would allow the vehicle monitoring system to determine an initial performance level for the driver to be later compared to ‘mentored’ driving performance, enabling a comparative measure of improvement.” *Id.*; USAA-1003, ¶91.

(b) **Curry-Rabu-McClellan**

Curry teaches that “safety performance data and use permission data can be cross-checked with each other and used in a later driving safety score evaluation module 212.” USAA-1005, 13:3-5. Specifically, “an initial driving score can be set as 100 points for a selected period, such as the period in which the car is in motion (i.e. the trip), or for a set period such as a day,” and that score can be adjusted during subsequent driving periods based on driving behavior, such as speeding. *Id.*, 13:5-12. “The score over a selected time period (e.g. 1 year or 2 years) can be compiled and summarized to form a driving safety score.” *Id.*, 13:12-19. The “safety score of the user of the mobile phone 106” can be shared with “an insurance company 130 to obtain insurance premiums,” and the “cost of the insurance premium for the user can be reduced or increased based on the safety score of the

user.” *Id.*, 10:3-12, 7:15-17. It would have been obvious to a POSITA to implement Curry-Rabu to use the safety score to define a benchmark against which sensor data is compared during subsequent sets of driving periods, as was well known by the Critical Date, as evidenced by McClellan’s teaching. USAA-1003, ¶192.

Like Curry, McClellan teaches that driving performance can be “evaluated and graded,” and “insurance companies may provide an insurance coverage offer to a driver.” USAA-1083, [0045]-[0047]. Additionally, McClellan discloses “monitoring [a] driver’s behavior during a baseline period” that “allow[s] the vehicle monitoring system to determine an initial performance level for the driver to be later compared ... enabling a comparative measure of improvement.” *Id.*, [0045]. It would have been obvious to a POSITA to modify Curry’s use of a driving safety score to implement McClellan’s explicit teaching of “enabling a comparative measure of improvement” by monitoring an initial performance during a baseline period. *Id.*; USAA-1003, ¶193. Indeed, Curry teaches that “the premium cost may be adjusted periodically based on the user’s safety score during the previous period” and encourages drivers “to operate the vehicle within acceptable parameters.” USAA-1005, 10:2-12, 11:3-14, 11:24-12:2, 13:3-19.

It would have been obvious to a POSITA to modify Curry’s use of driving safety score to compare later-acquired sensor data—and driving scores calculated

based on that sensor data—to monitor a driver’s performance over time by comparing sensor data to a benchmark, as taught by McClellan. USAA-1003, ¶194; USAA-1083, [0045] (“baseline period would allow the vehicle monitoring system to determine an initial performance level for the driver to be later compared”).

Such a modification would improve Curry’s driving safety monitoring program to “monitor[] and share[] the driving safety performance data between insurance policyholders and insurance companies” and “work together to improve driver safety performance.” USAA-1003, ¶¶195-196; USAA-1005, 11:26-12:2. In particular, by offering an approach where baseline data is compared to new data, the Curry-Rabu-McClellan system would compare new sensor data and driving scores based on the new sensor data to the benchmark (e.g., driving score taught by Curry) from the baseline period (taught by McClellan) to measure improvement by the driver, as taught by McClellan, and based on the improvement or lack thereof, adjust the driver’s insurance premiums. USAA-1005, 10:2-12; USAA-1083, [0045]; USAA-1003, ¶196. The combination would further allow a “parent, employer, or insurer” to “review the driving performance and resulting safety score[s] of a driver” by comparing those scores over time. USAA-1005, 13:14-19.

A POSITA would have had a reasonable chance of success in combining Curry, Rabu, and McClellan since Dr. Michalson explains that “several vehicle

monitoring systems by the Critical Date were similarly capable of providing comparative analysis of driving metrics.” USAA-1003, ¶197 (citing USAA-1085).

Furthermore, the elements of the resulting combination would each generally perform functions they had been known to perform prior to the combination—the combination device would perform the same functions, as described in Curry, to collect driving data while leveraging general techniques to compare later driving to a baseline driving period, as taught by McClellan, to incentivize safe driving with lower premiums. *Id.*; USAA-1005, 10:2-12-13:19; USAA-1083, [0045].

2. Claim 4

[4.1]-[4.9]

Curry-Rabu-McClellan renders obvious claim elements [4.1]-[4.9] for at least the reasons discussed above for the Curry-Rabu combination applied in Ground 1A. Curry-Rabu-McClellan additionally renders obvious claim element [4.10] as discussed below.

[4.10]

For at least the same reasons as discussed above regarding element [1.10] (§III.A.2), Curry teaches that its mobile device is controlled by a downloaded application to control the mobile device. For at least the same reasons as discussed above regarding element [4.7], Curry teaches processing the sensor data from the sensor set during a plurality of driving periods to derive driving information associated with how the vehicle is driven during the driving periods. USAA-1003,

¶207.

McClellan similarly teaches monitoring a driver's behavior during multiple time periods. USAA-1083, [0045]-[0046]. With reference to Figure 2, McClellan teaches that "the vehicle monitoring system begins monitoring the driver's behavior during a baseline period," during which the driver's performance is observed and recorded. *Id.*, [0045]; USAA-1003, ¶208.

[4.11]

McClellan teaches that "the vehicle monitoring system begins monitoring the driver's behavior during a baseline period" (*the sensor data being processed during a first set of driving periods defining a benchmark*) during which the driver's performance is observed and recorded. *Id.*, [0045]. McClellan explains that the initial "baseline period ... allow[s] the vehicle monitoring system to determine an initial performance level for the driver to be later compared to 'mentored' driving performance, *enabling a comparative measure of improvement.*" *Id.* Thus, the evaluation period of McClellan includes subsequent sets of driving periods that are compared against the baseline period (*benchmark*). USAA-1003, ¶209. It would have been obvious to a POSITA to modify Curry-Rabu to include McClellan's technique of comparing Curry's driving score to later sensor data (and corresponding driving scores) to better monitor individual driving behavior and adjust insurance premiums accordingly to incentivize safe driving.

Id.; USAA-1005, 10:2-12-13:19; USAA-1083, [0045].

E. [GROUND 2] – The Combination of *Callopy and Curry* Renders Claims 6 and 7 Obvious

1. Analysis

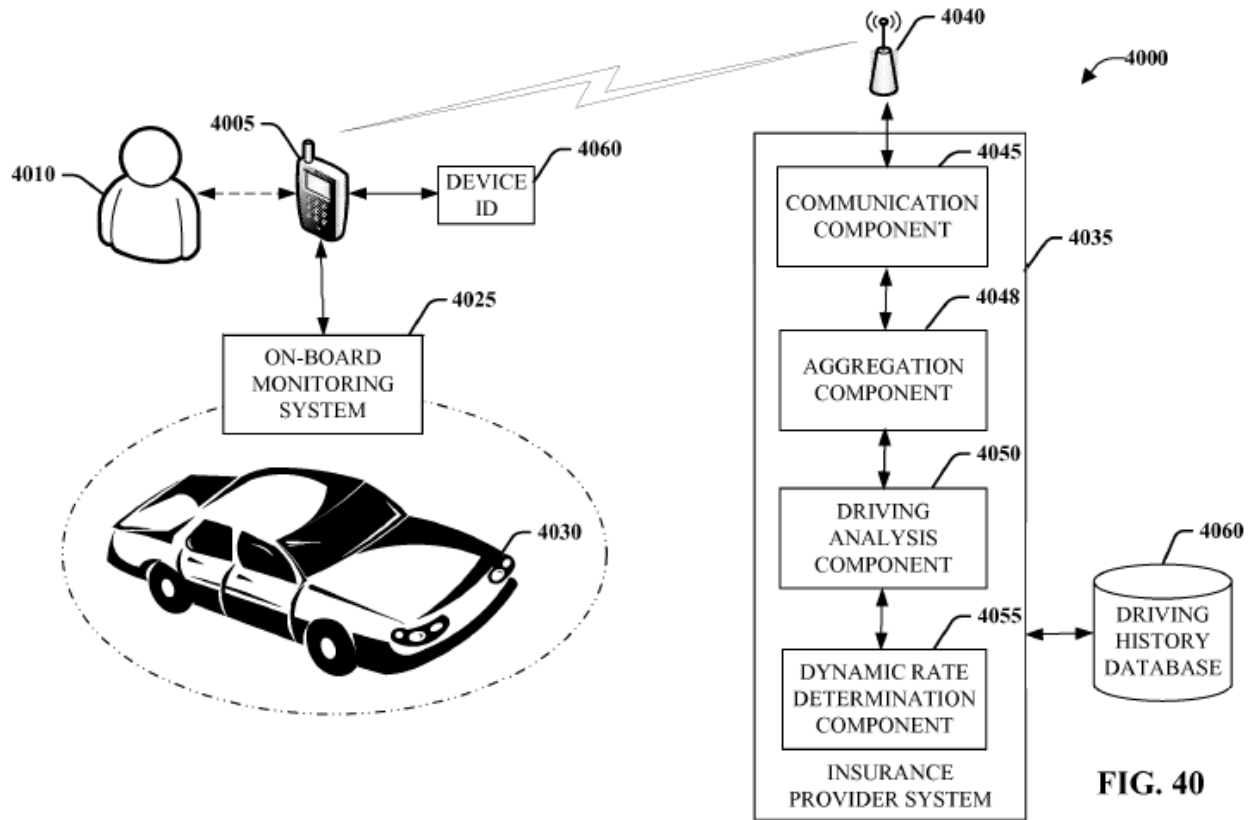
(a) Callopy

Callopy is describes providing dynamic insurance rate determinations to a driver based on collected driving data. USAA-1045, Abstract, [0017]-[0018], [0314]-[0316], FIGS. 40-42. Callopy explains that “data can be gathered while a vehicle is in operation” using sensors (GPS, accelerometer) in a mobile device . *Id.*, [0165], [0321]-[0323]. Insurance offers based on the gathered information can be presented to the driver through an interface. *Id.*, [0024], [0314]-[0316], [0165]; USAA-1003, ¶92.

Figure 40 shows “a system for real-time monitoring of a driver to facilitate determination of insurance rates(s).” USAA-1045, [0085], [0307]. The system 4000 includes a mobile device 4005 (with GPS 4110 and accelerometer 4120), on-board monitoring system 4025, and a vehicle 4030, where mobile device 4005 wireless communicates with insurance provider system 4035. *Id.*, [0307], [0323]-[0324]; USAA-1003, ¶93.

The mobile device 4005 “monitors and gathers information regarding driver 4010’s driving skills, habits, *etc.* and forwards the information to the insurance provider 4035” and wirelessly communicates with an “insurance provider system

4035 via a transceiver 4040 and a communication component 4045.” USAA-1045, [0307], [0321]; USAA-1003, ¶¶94-97.



USAA-1045, FIG. 40

The insurance provider system 4035 can transmit data, including insurance rates that reflect the driver’s habits, to mobile device 4005. USAA-1045, [0308], [0310].

Callopy also teaches a system that allows for the identification and authentication of a driver using a “unique identifier” associated with mobile device 4005 and stored in system 4035’s database. *Id.*, [0332]-[0334], FIG. 42; USAA-1003, ¶¶98-99.

(b) **Callopy-Curry**

As discussed (*supra* §III.E.1(a)), Callopy describes a system for dynamic insurance adjustment based on real-time data gathered using a mobile device in a vehicle. USAA-1045, Abstract, [0017]-[0018], [0165], [0321]-[0323], FIGS. 40-42. Data can be gathered “while a vehicle is in operation” and “over a period of hours, days, weeks, and so forth,” using a mobile device’s GPS and/or accelerometer. *Id.*, [0165], [0321]-[0323]. Based on the gathered data, insurance offers can be generated and presented to the driver through an interface. *Id.*, [0024], [0166], [0233], [0310], [0314]-[0316].

Callopy’s mobile device 4005 (with GPS and accelerometer) for captures, processes, and communicates driving-related data to insurance provider system 4035 to determine “an appropriate insurance rate.” USAA-1045, [0306]-[0357], FIGS. 40-42. Insurance provider system 4035 gathers information and “determine[s] an insurance rate(s) based upon the gathered data and data analysis.” *Id.*, [0308]-[0310]. To the extent that Callopy does not explicitly teach calculating scores to use for determining insurance premiums, doing so would have been obvious to a POSITA. USAA-1003, ¶211. The use of a score was well-known by the critical date, as evidenced by Curry, and a POSITA would have been motivated to look to Curry to improve Callopy’s system. *Id.*

Curry also teaches determining insurance premiums using driving-related

information captured by sensors (GPS, accelerometer) in a mobile device. USAA-1005, 10:2-12, 11:15-25, 13:27-14:4. It teaches that insurance agencies use scores calculated based on collected driving data to determine insurance premiums. *Id.*, 7:13-17. Specifically, Curry describes setting an initial driving score and adjusting that score in subsequent driving periods, e.g., in response to speeding, which could be detected using the GPS receiver, and sharing the score with an insurance company to determine insurance premiums. *Id.*, 13:3-14, 13:27-31, 7:13-17, 10:2-12. Curry explains that the “cost of the insurance premium for the user can be reduced or increased based on the safety score of the user,” “thereby encouraging the vehicle operator to operate the vehicle within acceptable parameters.” *Id.*, 10:2-12.

A POSITA would have found obvious implementing Callopy’s vehicle monitoring system for determining insurance premiums with Curry’s driving score based on its collected driving data for determining insurance premiums. USAA-1003, ¶¶212-213. A POSITA would have further found obvious either determining the driving score at the mobile device or at the insurance provider system, depending on “a tradeoff between the complexity of the mobile device and the amount of information communicated on the mobile device’s network.” *Id.*, ¶213; USAA-1005, 12:3-18. As explained in more detail below, the score could be determined at either location in Callopy, depending on the particular needs of the

system. USAA-1003, ¶213.

Callopy teaches sharing captured sensor data with insurance provider systems 4035 that calculate insurance premiums. USAA-1045, [0306]-[0314], [0321]-[0325], [0332]-[0340], [0350], FIGS. 40-42. Similarly, Curry teaches that insurance companies determine insurance premiums using a driving safety score determined by a mobile device from the sensor data. USAA-1005, 7:15-17.

A POSITA would have been motivated to modify Callopy's system to include the use of the safety score—either determined by the mobile device and provided to the insurance provider system, or determined by the insurance provider system—to determine insurance premiums. USAA-1003, ¶215. First, a POSITA would have found the use of a safety score obvious. *Id.* In fact, a POSITA would have understood that Callopy's insurance provider system 4035 necessarily calculates one or more metrics, which could be considered a score, as it “employs various analytical methods ... to facilitate determination of an appropriate insurance rate.” *Id.*, USAA-1045, [0307]. Indeed, Callopy's lack of implementation details regarding those “analytical methods” or how insurance provider system 4035 calculates the insurance rates would have caused a POSITA to turn to similar teachings, such as Curry, for further guidance. USAA-1003, ¶215; USAA-1045, [0307]-[0308]. Curry teaches how sensor data is analyzed to detect “driving safety violations” that cause point deductions to a driver's safety

score, affecting that driver's insurance premiums. USAA-1005, 7:15-17, 10:2-12, 11:7-14, 13:3-19.

Second, it would have been obvious to a POSITA to either determine the score at the mobile device and provide it to a third party, as Curry teaches, or perform such analysis at the third party (insurance provider location), as taught by Callopy. USAA-1003, ¶216. Firstly, a POSITA would have recognized the benefits of having Callopy's mobile device perform the analysis on the captured driving data (e.g., determine a driving score)—rather than performing all analyses at the insurance provider—and provide it to the insurance provider 4035. *Id.* In particular, Curry teaches that, by performing analyses at the mobile device, “the amount of communication needed to operate the system can be reduced.” USAA-1005, 12:10-13. A POSITA would have thus recognized that by determining a safety score at the mobile device and sharing that score with the insurance provider 4035, Callopy's mobile device would not be required to transmit as much data to the insurance provider 4035. USAA-1003, ¶216. Curry notes that performing the analysis at the mobile device would require a more complex mobile device, but a POSITA would have recognized that Callopy's mobile device is capably equipped. *Id.*; USAA-1005, 12:10-13; USAA-1045, [0122], [0314], [0321]. Specifically, although Callopy teaches that some data analysis is performed at the insurance provider system 4035 rather than the mobile device 4005, the mobile device 4005

includes components for processing, evaluation, and determination of insurance rates. USAA-1005, 12:10-13; USAA-1045, [0321]. Indeed, Callopy teaches or suggests that the mobile device 4005 could be a smart phone, which a POSITA would have understood was equipped to determine driving scores, as taught by Curry. USAA-1003, ¶216; USAA-1045, [0122], [0314].

Secondly, it would have been obvious to a POSITA for Callopy's insurance provider system 4035 to determine a driver safety score as part of the "various analytical methods" the "driving analysis component 4050" performs. USAA-1003, ¶217; USAA-1045, [0307]-[0308]. Callopy's insurance provider system 4035 already obtains data from its system, including mobile device 4005, "to assist in the determination of insurance rates." USAA-1045, [0308]. Callopy's driving analysis component 4050 could easily be modified, as necessary, with Curry's "software and firmware" to provide for "data analysis" that determines a driving score for determining an appropriate insurance premium. USAA-1003, ¶217; USAA-1005, 12:3-18; USAA-1045, [0308]-[0310]. Moreover, to the extent that Curry does not explicitly teach "generating" a driving score, a POSITA would have understood and found obvious generating a driving score from Curry's description of adjusting an initial safety score based on driving behavior (determined from sensor data). USAA-1003, ¶217; USAA-1005, 13:3-19.

Curry recognizes a tradeoff between having either the mobile device or

another network device perform these analyses. USAA-1005, 12:3-10. Callopy's system provides for a complex mobile device that permits an advantageous reduction of data transfer. USAA-1003, ¶218; USAA-1045, [0122], [0314]. On the other hand, Callopy's system also provides for an insurance provider system that can perform the analyses such that "simpler mobile devices" could also be employed. USAA-1005, 12:10-12. Thus, a POSITA would have additionally found relevant solutions in Curry and would have expected success in incorporating Curry's solutions in Callopy. USAA-1003, ¶218.

Configuring Callopy's systems to leverage Curry's teachings would have required only routine programming knowledge well within the skill of a POSITA prior to the earliest effective filing date. *Id.*, ¶219. 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 sensors and monitoring software and third party insurance providers determining appropriate insurance premiums – in a similar way, and combining prior art elements according to known methods to yield the predictable results described above. *KSR*, 550 U.S. at 417; USAA-1003, ¶219.

Furthermore, the elements of the resulting combination would each perform functions they had been known to perform prior to the combination—mobile device 4005 would perform the same functions to capture driving-related data for

the determination of insurance premiums. USAA-1003, ¶220. Accordingly, a POSITA would have naturally expected success when incorporating Curry's teachings into Callopy. *Id.*

2. Claim 6

[6.1]

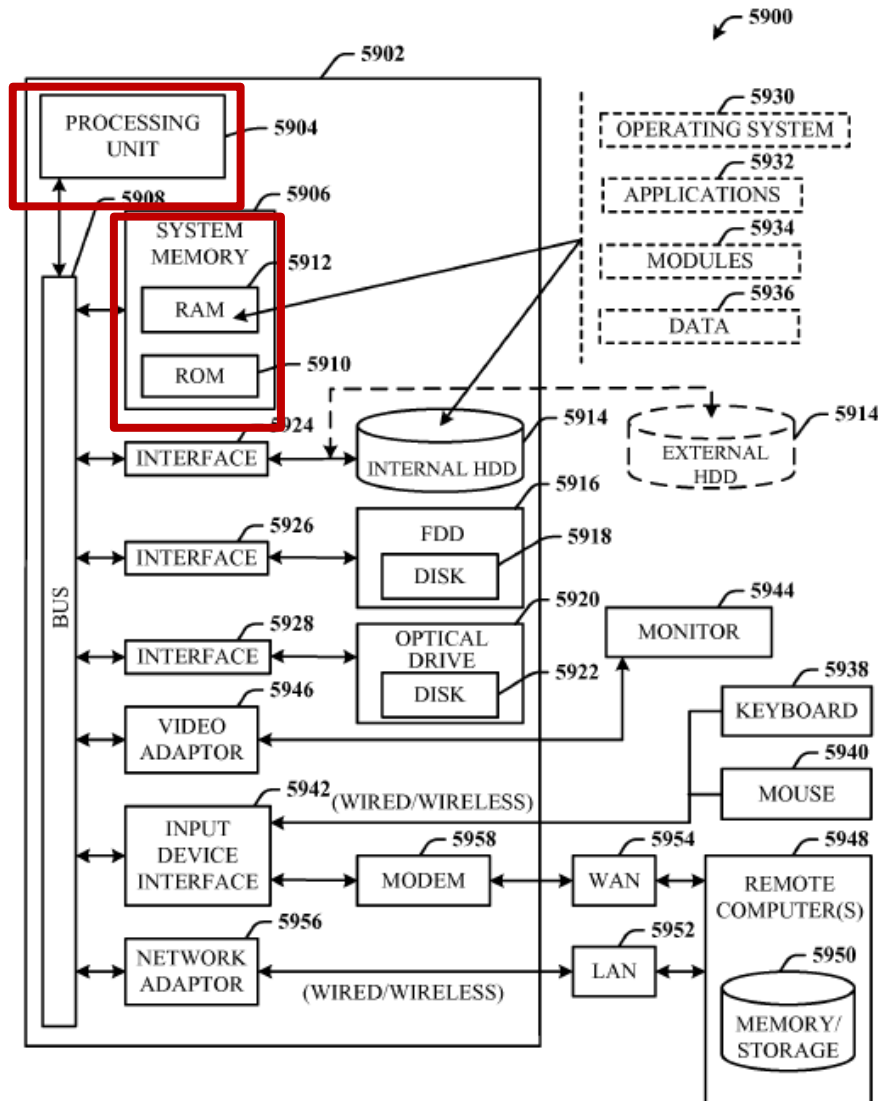
Callopy-Curry renders the preamble obvious. USAA-1003, ¶221. Callopy teaches a “system 4000 for real-time monitoring of a driver to facilitate determination of insurance rate(s),” including, a mobile device 4005, an on-board monitoring system 4025, and an insurance provider system 4035. USAA-1045, [0307]. The insurance provider system 4035 is in communication with the mobile device 4005 using wireless communications. *Id.* The mobile device 4005 derives driving information. In particular, Callopy explains that mobile device 4005 “monitors and gathers information regarding driver 4010's driving skills, habits, *etc.* and forwards the information to the insurance provider 4035.” *Id.*, [0307], [0320]. Callopy teaches that this driving information is transmitted to the insurance provider system via wireless communications. *Id.*, [0307]-[0308].

[6.2]

Callopy describes various systems for dynamic insurance rate adjustments or incentive offers that include different computing devices. USAA-1045, Abstract. Regarding these computing devices, Callopy provides Figure 59 (below), which shows a “block diagram of a computer environment that can execute or implement

the disclosed architecture,” which includes the insurance provider system. *Id.*, [0431].

Figure 59 shows a processing unit 5904, explain that the “the system memory 5906” is coupled “to the processing unit 5904,” which can include “[d]ual microprocessors and other multi-processor architectures.” *Id.*, [0436], FIG. 59. The various input devices of the computing device (e.g., insurance provider system 4035) is connected to the processor unit 5904 through one or more interfaces. *Id.*, [0441].



USAA-1045, FIG. 59 (annotated).

Figures 40 and 42 show a block diagram of the insurance provider system 4035, which includes components that perform various functions. *Id.*, [0307]-[0314], [0332]-[0335], FIGS. 40, 42. For example, “[t]he aggregation component can compile received data to facilitate processing by the data analysis component 4050.” *Id.*, [0307]. A POSITA would have understood from the description in Callopy that the insurance provider system 4035 necessarily includes a processor

that effectuates the various components of the insurance provider system 4035, including processing data and determination insurance rates. USAA-1003, ¶224; USAA-1045, [0307]-[0310], [0312] (“process...any data and information that facilitates determination of an insurance rate and driver feedback”), [0323] (“for processing”), [0332]-[0335].

Thus, a POSITA would have understood the insurance provider system 4035 includes a processor, as shown in Figure 59 to perform the various actions of its components (e.g., processing data, determining insurance rates, etc.), shown in Figures 40 and 42. USAA-1003, ¶¶224-225.

[6.3]

Figure 59 (above) of Callopy shows a “block diagram of a computer environment that can execute or implement the disclosed architecture,” which includes the insurance provider system. USAA-1045, [0431]. The system memory 5906, connected to processing unit 5904, includes RAM and ROM and can be used to store data. *Id.*, [0436]-[0437], FIG. 59.

Insurance provider system 4035 performs storage actions and includes “a storage device 4250 containing driver account information database(s).” *Id.*, [0331]-[0334]. Callopy further describes database 4060, which can be part of insurance provider system 4035, “which stores information pertaining to the vehicle operator 4010.” *Id.*, [0308]-[0309].

Thus, a POSITA would have understood the insurance provider system 4035 includes memory, as shown in Figure 59, to store data. USAA-1003, ¶¶226-228.

[6.4]

Callopy teaches that the “on-board monitoring system 4025 monitors and gathers information regarding driver 4010’s driving skills, habits, *etc.*” (***driving information associated with at least one of a vehicle and a driver***) “and forwards the information to the insurance provider 4035.” USAA-1045, [0307], [0284], [0294]. The insurance provider system 4035 includes ***database*** 4060, which “stores information pertaining to the vehicle operator 4010, *e.g.*, previous driving history, along with other data as required.” *Id.*, [0308]-[0309]. Data stored in the database 4060 also includes “data gathered by the on-board monitoring system 4023, information provided by operator 4010, information collected or generated by the various components of the insurance provider system 4035,” and the like (***driving information associated with at least one of a vehicle and a driver***). *Id.*, [0308].

Regarding Figure 42, Callopy explains that driver data, including “driver account information” to identify a user, is stored in ***database*** 4250 of the insurance provider system 4035. *Id.*, [0332]-[0334], FIG. 42 Specifically, the insurance provider system 4035 stores a unique identifier (*e.g.*, IMSI number) (“***each account having a unique identifier***”) retrieved from a mobile device that is used to identify

“an individual[] associated with mobile device 4005 and driver data stored in database 4250.” *Id.*, [0333]-[0334]. As such, a POSITA would have understood that Callopy’s database stores driver account information for a multiple users (*storing a plurality of accounts*) that are used to identify a particular driver. USAA-1003, ¶¶229-230.

[6.5]

Callopy explains that “[b]y employing wireless communications, the mobile device 4005 is in communication with [the] insurance provider system 4035 via a transceiver 4040 and a communication component 4045.” USAA-1045, [0307]; *see also id.*, FIGS. 40-42. Additionally, Callopy’s Figure 59 (above) shows interfaces for communicating with remote computers. *Id.*, [0443]-[0445], FIG. 59. Given that the mobile device 4005 and the insurance provider system 4035 can communicate, it would have been obvious to a POSITA that the insurance provider system 4035 includes a communications interface arranged to communicate with the mobile device 4005. USAA-1003, ¶231; USAA-1045, [0307]- [0308], [0322], [0329].

[6.6]

Callopy teaches that, “[t]o enable the correlation of a unique identifier” to a driver, “user identification information can be retrieved from the mobile device 4005 and forwarded” to insurance provider system 4035. USAA-1045, [0333].

The user identification information (“*unique identifier*”) can comprise, for example, an IMSI number retrieved from mobile device 4005. *Id.*; USAA-1003, ¶232.

The insurance provider system 4035 “can access storage device 4250, retrieve any user account information contained therein that is associated with the IMSI number, and, using the retrieved information, identify the user associated with the mobile device 4005 and accordingly the prospective driver of vehicle 4030.” USAA-1045, [0333]-[0342].

[6.7]

Callopy-Curry renders this element obvious. USAA-1003, ¶¶233-234. Callopy teaches that its database 4060, incorporated in the insurance provider system 4035, stores “any information gathered or generated by the various components of system 4000,” which “can include data gathered by the on-board monitoring system 4025, information provided by operator 4010, information retrieved from the mobile device 4005,” among other information. USAA-1045, [0309]. Callopy further describes the various information that is obtained and/or processed by the mobile device 4005 (and its various components) and retrieved from the mobile device 4005. *Id.*, [0323]-[0324], [0330], [0346], [0388]. For example, using an “interface associated with ... the mobile device 4005, the user can respond” to user prompts and provide feedback that is gathered. *Id.*, [0346]. Additionally, GPS

4110 located in the mobile device 4005 can “provide information regarding the location” of the mobile device 4005, which “can be forwarded to the insurance provider system 4035 for processing as part of an insurance rate determination.” *Id.*, [0323]. Similarly, accelerometer 4120 located in the mobile device 4005 “can be employed to monitor the rate of acceleration/deceleration of the vehicle being driven, with the captured data being employed by the insurance provider system 4035 as part of a determination of insurance rate.” *Id.*, [0323]-[0324].

Callopy explains that the mobile device 4005 “can include one or more local applications 4180 to facilitate monitoring, processing, and generation of data for insurance purposes.” *Id.*, [0330]. The location applications 4180 “can process the data as it is gathered thereby allowing the processed data to be stored as opposed to the raw data, where it is envisioned that the processed data occupies less memory than the raw data.” *Id.* This processed data from the mobile device 4005 (including both data input through the user interface and sensor data from the GPS and accelerometer) provides driving information for the particular driver. USAA-1003, ¶234. The driving information for the particular driver is then monitored and subsequently logged with the user’s account after identification of the driver. USAA-1045, [0342] (“After the driver has been identified ... the driver can proceed to drive the vehicle and monitoring of their driving is conducted.”), [0350], [0333]-[0334], [0308] (“database 4060 which stores information pertaining to the vehicle

operator 4010, e.g., previous driving history, along with other data as required”);
supra discussion of [6.4].

[6.8]

As discussed (*supra* [6.7]), it would have been obvious to configure Callopy-Curry’s system to receive driving information derived based on mobile device user interface inputs and sensor data mobile device sensors (GPS, accelerometer). USAA-1003, ¶¶235-238; USAA-1045, [0308], [0323]-[0324], [0330], [0333]-[0334], [0342], [0346], [0388].

Notably, Callopy explains that the “GPS 4110 and the accelerometer 4120 can be *located in the mobile device.*” USAA-1045, [0323]. Callopy also describes video cameras 4140 that can be located on a vehicle 4030 but does not teach that the cameras are vehicle sensors. *See id.*, [0327]. Callopy’s discussion of sensors in relation to Figure 41 are contrasted with Callopy’s discussion of a *separate and different* “real-time insurance system” (in Figure 43) that explicitly includes “an on-board monitoring system [] installed in a vehicle to facilitate the collection of real-time data *from the vehicle.*” *Id.*, [0358]; *see also*, 157 (claim 109). To the extent that Callopy discusses vehicle sensors with respect to Figures 40-42, it describes permissive, not mandatory, language. *Id.*, [0325]-[0326] (“*can*”); USAA-1003, ¶236.

A POSITA would have found obvious that, based on the above examples,

the combination device derives driving information without data from the vehicle sensors, at least because some of those examples focus only on leveraging driving data (GPS and accelerometer data) from sensors “located in the mobile device,” rather than collecting data from the vehicle. USAA-1003, ¶237; USAA-1045, [0323], [0358].

Further, from Callopy’s teaching, a POSITA would have understood there to be no need to use data from vehicle sensors to derive driving information and would have found obvious that derivation of that driving information without data from the vehicle’s sensors provides an elegant and cost-effective means of obtaining driving information, without the complexities and costs that might potentially be involved in obtaining and integrating data from a vehicle’s sensors. USAA-1003, ¶238; USAA-1045, [0306], [0366]; USAA-1005, 11:15-25.

[6.9]

As discussed (*supra* [6.4]), Callopy teaches insurance provider system 4035 monitoring and gathering driving information relating to a driver’s driving skills and habits, including information collected or generated by mobile device 4005. USAA-1045, [0307]-[0308]; USAA-1003, ¶239. Callopy explains that the focus “is placed upon the individual and real-time information generated reflecting the driver’s driving habits/skills.” USAA-1045, [0306]. The mobile device captures and processes sensor data in real time (*during a driving period*) while the mobile

device is removably attached to a vehicle in operation. *Id.*, [0154], 159 (claim 129); USAA-1003, ¶242. Information from mobile device 4005 comprises GPS and accelerometer sensor data processed by the mobile device (***driving information comprises ... sensor data captured and processed by the remote mobile telecommunications device***). USAA-1045, [0323], [0321], [0330]; *see* [6.4] discussion *supra* §III.E.2; USAA-1003, ¶242. Additionally, it would have been obvious for the Callopy-Curry device to process the sensor data during the driving period. USAA-1003, ¶242; USAA-1045, [0321], [0329]-[0330] (explaining how the mobile device can process data as its gathered).

The Curry-Callopy combination further teaches that the sensor data is captured and processed ***during a driving period during which the remote mobile telecommunications device is removably attached to the vehicle being driven by the driver***. USAA-1003, ¶¶240-242; §III.E.1(b). In particular, Callopy teaches a system that generates “performance records” based on “real-time operation information of a vehicle” while a display component is “removably attached” to the vehicle. USAA-1045, 158 (claim 121), 159 (claim 129). Callopy explains that smart phones can be used where the display of the device “can be perceived while the vehicle is in operation” and that “data can be gathered while a vehicle is in operation.” *Id.*, [0109], [0122], [0165].

To the extent this element is interpreted as the driving information

comprising **both** a driving score and sensor data, as discussed above (*supra* §III.E.1(b)), Callopy-Curry discloses or otherwise renders obvious that the driving information comprises a **driving safety score**. *Supra* §III.E.1.b; USAA-1005, 13:3-14; USAA-1003, ¶241.

[6.10]

Callopy-Curry renders obvious the data logging system being further arranged to process the driving information logged to a corresponding account to generate a driving score used to determine a risk profile for at least one of the vehicle and driver. USAA-1003, ¶243. As discussed ([6.7] discussion *supra* §III.E.2), Callopy teaches or renders obvious driving information logged to a corresponding account. Additionally, as discussed (*supra* §III.E.1(b)), Callopy-Curry renders obvious processing driving information to generate a driving score.

Callopy states that the “goal of [insurance] models is to determine a risk level associated with a driver or vehicle – based upon the risk level, an amount for the premium can be ascertained.” USAA-1045, [0004]. Moreover, Curry teaches that the data collected by embedded sensors of a mobile device (driving information) can be used by the data server 108 to perform a statistical analysis to identify a safety score or index associated with a driver. USAA-1005, 9:30-33; 7:5-22. Curry further teaches that the safety score is used “to determine insurance premiums” and to adjust a driver’s premium cost (reduced or increased) over time.

Id., 7:5-22, 10:1-12. A POSITA would have understood that an insurance premium for a particular driver and a driving score are both reflective of that driver's risk profile. *Id.*, 16:7-22; USAA-1003, ¶244. Moreover, in light of Curry's teachings, a POSITA would have understood that Curry's insurance premium is a risk profile for the driver. *Id.*

3. Claim 7

[7.1]-[7.10]

Callopy-Curry renders obvious claim elements [7.1]-[7.10] for at least the reasons discussed above for claim elements [6.1]-[6.10] applied in Ground 2.

Callopy-Curry additionally renders obvious claim element [7.11] as discussed below.

[7.11]

As discussed (*supra* [6.10]), Callopy-Curry discloses or otherwise renders obvious wherein the driving score is used to define an insurance premium associated with the account. USAA-1003, ¶246. Callopy-Curry further renders obvious that data logging system is further arranged to communicate to the remote mobile telecommunication device an insurance offer generated in response to the driving information received from the remote mobile telecommunications device. *Id.* Callopy teaches communicating insurance offers, including “insurance rates” and “changes to an insurance premium and/or an insurance coverage” to a remote de-

vice. USAA-1045, [0166], [0233], [0310]. In particular, Callopy teaches that “dynamic rate determination component 4055” in the “insurance provider system 4035” “dynamically determine[s] an insurance rate(s) based upon the gathered data and data analysis,” and the “determined insurance rate(s) and any other pertinent information can be transmitted to the mobile device 4005 ... for presentation to the driver.” *Id.*, [0310].

IV. PTAB DISCRETION SHOULD NOT PRECLUDE INSTITUTION

A. Discretion Under §314

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

Even were that not the case, the Petition presents compelling challenges and, for at least that additional reason, “the PTAB should not discretionarily deny

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

institution under *Fintiv*.” USAA-1065, 3-5; IPR2022-01242 Pap. 23 at 3, 5-6 (Feb. 27, 2023) (precedential) (“*Commscope*”).

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

Factor 2 (proximity of trial date to FWD) favors institution. USAA has been diligent. PO filed its complaint on 5/11/2022, and this Petition has been prepared concurrent with eight other petitions challenging related patents, each filed before the statutory bar date. IPR2020-00156, Paper 10, 9 & n.8 (June 15, 2020) (“*Seven*”); USAA-1004.

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

Indeed, applying the District’s median time-to-trial of about 29.5 months (USAA-1067, 37) to the complaint filing date suggests a jury trial in late October 2024. Based on the 18-month IPR schedule, the Board would be expected to issue its Final Written Decision (“FWD”) in November 2024 (i.e., around the same time

as the median-expected trial). USAA-1065, 9.

Factor 3 (investment in parallel proceedings) favors institution. This Petition is being filed at an early stage of the litigation, which “has weighed against exercising the authority to deny institution....” *Seven*, 11-13 (quoting *Fintiv*, 11).

Factor 4 (overlap in issues) favors institution because the Petition’s Grounds are materially different from any that might be raised in litigation. 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 using any of Curry, Rabu, Katayama, Tamir, McClellan, or Callopy. USAA-1074. By this stipulation, Factor 4 weighs heavily against denial of institution because, upon institution, there would be *zero overlap* between the prior art in this IPR and the prior art in District Court. *See* IPR2021-00972 Pap. 10, 13-16 (Dec. 8, 2021)(“*AliveCor*”); IPR2021-00033, Pap. 13, 14 (April 30, 2021).

Factor 5 (overlap in parties) is, at worst, neutral. The Litigation involves the same parties. IPR2020-00122, Pap. 15, 10 (Crumbley, dissenting); *Fintiv*, 13-14; *Snap*, 16.

Factor 6 (other circumstances) compels institution. “[T]he 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.

This Petition's merits are compelling. Institution would result in a finding of unpatentability and the strength of the merits alone is enough to outweigh any inefficiencies born of parallel litigation. USAA-1065, 3-5, 9; *Fintiv*, 14-15. Further, institution would *promote* the AIA's objectives. Sen. Rep. No. 110-259 (2008); H.R. Rep. No. 112-98, pt. 1, 39-40; *Snap*, 16-19; *Commscope*, 4.

B. Discretion Under §325(d)

The asserted references were not considered during prosecution. *See, generally*, USAA-1002. The Challenged Claims have not previously been challenged in an IPR or PGR proceeding. While the '271 Patent lists U.S. Pub. No. 2010/0131307 ("Collopy," USAA-1082), it was not relied upon for any rejection. USAA-1001, 2; *see, generally*, USAA-1002. Moreover, while related, Callopy is not cumulative of Collopy. *Compare* USAA-1045, *with* USAA-1082; USAA-1003, ¶68. Callopy has a significantly longer disclosure, including approximately 300 paragraphs and 46 figures not disclosed in Collopy. USAA-1003, ¶68 (Appendix B). Moreover, the invalidity grounds rely primarily on portions of Callopy (e.g., Figures 40-42 and related descriptions in [0306]-[0357]) that were not in Collopy. *Id.*; *see supra* §III.D.

The examiner's plain errors in failing to cite or apply those references cited herein are highlighted by the element-by-element analysis set forth herein and by

the Michalson declaration (USAA-1003). *See supra* Grounds 1A-1D and 2. Indeed, nothing in the prosecution record applies or analyzes any of the references in a manner cumulative to the analysis in the present petition. Thus, the *Becton, Dickinson* factors weigh against exercising §325(d) discretion. *See* IPR2017-01586, Paper 8, 17-28 (Dec. 15, 2017).

Accordingly, the Board should reach the merits of this Petition and institute review of the Challenged Claims.

V. CONCLUSION AND FEES

The Challenged Claims are unpatentable. Petitioner 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 ‘271 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 concurrently filing a second petition challenging claims of the ‘271 Patent (IPR2023-00912). USAA is not aware of any other disclaimers, reexamination certificates, or IPR petitions addressing the

'271 Patent.

USAA has also previously filed eight IPR petitions challenging patents related to the '271 Patent, including petitions challenging U.S. Pat. No. 9,633,487 (IPR2023-00518, IPR2023-00519), U.S. Pat. No. 10,192,369 (IPR2023-00768, IPR2023-00769, IPR2023-00770), and U.S. Pat. No. 10,918,879 (IPR2023-00857, IPR2023-00858, IPR2023-00859).

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

Petitioner provides the following designation of counsel.

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D. Service Information

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

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Respectfully submitted,

Dated May 11, 2023

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CERTIFICATION UNDER 37 CFR § 42.24

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petition for *Inter Partes* Review totals 13,904 words, which is less than the 14,000 allowed under 37 CFR § 42.24.

Dated May 11, 2023

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(4)(i) *et seq.* and 42.105(b), the undersigned certifies that on May 11, 2023, a complete and entire copy of this Petition for *Inter Partes* Review and all supporting exhibits were provided by Federal Express, to the Patent Owner, by serving the correspondence address of record as follows:

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