

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CAMBRIDGE MOBILE TELEMATICS, INC.
Petitioner

v.

SFARA, INC.
Patent Owner

IPR2024-00966

U.S. Patent No. 9,333,946

Issue Date: March 10, 2016

Title: SYSTEM AND METHOD FOR IDENTIFYING VEHICLE BY UTILIZING DETECTED
MAGNETIC FIELD

**DECLARATION OF LIN ZHONG PH.D. IN SUPPORT OF PETITION FOR
INTER PARTES REVIEW OF U.S. PATENT NO. 9,333,946**

TABLE OF CONTENTS

	Page
I. INTRODUCTION AND QUALIFICATIONS	1
A. Introduction	1
B. Qualifications and Experience	2
C. Materials Considered.....	4
II. LEGAL PRINCIPLES.....	5
A. Prior Art.....	5
B. Claim Construction	5
C. Obviousness.....	7
III. LEVEL OF ORDINARY SKILL IN THE ART	9
IV. KNOWLEDGE IN THE ART AT THE TIME OF THE ALLEGED INVENTION OF THE '946 PATENT.....	10
V. THE '946 PATENT	18
A. Overview of the '946 Patent.....	18
B. Prosecution History	21
C. The Challenged Claims	22
D. Claim Construction	26
VI. APPLICATION OF THE PRIOR ART TO ASSERTED CLAIMS	28
A. Brief Summary of Prior Art	29
1. Abramson	29
2. Fong.....	34
B. Ground 1: Fong Renders Obvious Claims 1, 5, 6, 8, 12, 13, 15, 19, and 20	38
1. Independent Claim 1	38
a. 1[pre]: “A device, for use with a database, said device comprising:”	38

TABLE OF CONTENTS

(continued)

Page

b.	1[a]: “a field-detecting component operable to detect at least one of an electric field, a magnetic field and an electro-magnetic field and to generate a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field”.....	40
c.	1[b]: “an input component operable to input the detected field signature into the database”	43
d.	1[c]: “an accessing component operable to access the detected field signature from the database”	44
e.	1[d]: “a comparing component operable to generate a comparison signal”	45
f.	1[e]: “an identifying component operable to identify one of an item and a location based on the comparison signal”	46
g.	1[f]: “wherein said field-detecting component is further operable to detect a second one of an electric field, a magnetic field and an electro-magnetic field and to generate a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field”.....	48
h.	1[g]: “wherein said comparing component is operable to generate the comparison signal based on a comparison of the detected field signature and the second detected field signature”	50
2.	Claim 5	52
3.	Claim 6	53
a.	6[a]: “wherein said field-detecting component is operable to detect a magnetic field”	54
b.	6[b]: “wherein said input component is further operable to input an association between a vehicle and the detected magnetic field”	56

TABLE OF CONTENTS

(continued)

	Page
c. 6[c]: “wherein said field-detecting component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field”	57
d. 6[d]: “wherein said identifying component is further operable, based on the association, to identify the vehicle as the item”	58
4. Independent Claim 8	59
a. 8[pre]: “A method, for use with a database, said method comprising:”	59
b. 8[a] & 8[b]: “detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field” & “generating, via the field-detecting component, a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field”	60
c. 8[c]: “inputting, via an input component, the detected field signature into the database”	62
d. 8[d]: “accessing, via an accessing component, the detected field signature from the database”	62
e. 8[e]: “generating, via a comparing component, a comparison signal”	63
f. 8[f]: “identifying, via an identifying component, one of an item and a location based on the comparison signal”	63
g. 8[g] & 8[h]: “detecting, via the field-detecting component, a second one of an electric field, a magnetic field and an electro-magnetic field” & “generating, via the field-detecting component, a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field”	64

TABLE OF CONTENTS

(continued)

	Page
h. 8[i]: “wherein said generating a comparison signal comprises generating the comparison signal based on a comparison of the detected field signature and the second detected field signature”	65
5. Claim 12	66
6. Claim 13	67
a. 13[a] & 13[d]: “inputting, via the input component is further operable to input an association” & “wherein said inputting an association comprises inputting an association between a vehicle and the detected magnetic field”	67
a. 13[b]: “identifying, via the identifying component, a vehicle”	68
b. 13[g]: “wherein said identifying a vehicle comprises identifying, based on the association, the vehicle as the item”	69
c. 13[c]: “wherein said detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field comprises detecting detect a magnetic field”	70
d. 13[e] & 13[f]: “wherein said detecting a second one of an electric field, a magnetic field and an electro-magnetic field comprises detecting a second magnetic field” & “wherein said generating a second detected field signature comprises generating a second detected field signature based on the detected second magnetic field”	71
7. Independent Claim 15	73

TABLE OF CONTENTS

(continued)

Page

a.	15[pre]: “A non-transitory, tangible, computer-readable media having computer-readable instructions stored thereon, for use with a database, the computer-readable instructions being capable of being read by a computer and being capable of instructing the computer to perform the method comprising:”	73
b.	15[a] & 15[b]: “detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field” & “generating, via the field-detecting component, a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field”	75
c.	15[c]: “inputting, via an input component, the detected field signature into the database”	76
d.	15[d]: “accessing, via an accessing component, the detected field signature from the database”	77
e.	15[e]: “generating, via a comparing component, a comparison signal”	78
f.	15[f]: “identifying, via an identifying component, one of an item and a location based on the comparison signal”	78
g.	15[g] & 15[h]: “detecting, via the field-detecting component, a second one of an electric field, a magnetic field and an electro-magnetic field” & “generating, via the field-detecting component, a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field”	79
h.	15[i]: “wherein said generating a comparison signal comprises generating the comparison signal based on a comparison of the detected field signature and the second detected field signature”	80

TABLE OF CONTENTS
(continued)

	Page
8. Claim 19	81
9. Claim 20	82
a. 20[a] & 20[d]: “inputting, via the input component is further operable to input an association” & “wherein said inputting an association comprises inputting an association between a vehicle and the detected magnetic field”	83
b. 20[b]: “identifying, via the identifying component, a vehicle”	83
c. 20[g]: “wherein said identifying a vehicle comprises identifying, based on the association, the vehicle as the item”	84
d. 20[c]: “wherein said detecting, via a field- detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field comprises detecting detect a magnetic field”	85
e. 20[e] & 20[f]: “wherein said detecting a second one of an electric field, a magnetic field and an electro-magnetic field comprises detecting a second magnetic field” & “wherein said generating a second detected field signature comprises generating a second detected field signature based on the detected second magnetic field”	86
C. Ground 2: Abramson Renders Obvious Claims 1-6, 8-13, And 15-20	88
1. Independent Claim 1	88
a. 1[pre]: “A device, for use with a database, said device comprising:”	88
b. 1[a]: “a field-detecting component operable to detect at least one of an electric field, a magnetic field and an electro-magnetic field and to generate a detected field signature based on the detected one of an electric field, a magnetic field and an electro- magnetic field”	91

TABLE OF CONTENTS

(continued)

	Page
c. 1[b]: “an input component operable to input the detected field signature into the database”	95
d. 1[c]: “an accessing component operable to access the detected field signature from the database”	99
e. 1[d]: “a comparing component operable to generate a comparison signal”	100
f. 1[e]: “an identifying component operable to identify one of an item and a location based on the comparison signal”	104
g. 1[f]: “wherein said field-detecting component is further operable to detect a second one of an electric field, a magnetic field and an electro-magnetic field and to generate a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field”	111
h. 1[g]: “wherein said comparing component is operable to generate the comparison signal based on a comparison of the detected field signature and the second detected field signature”	118
2. Claim 2	123
3. Claim 3	125
a. 3[a]: “a parameter-detecting component operable to detect a parameter and to generate a parameter signal based on the detected parameter”	125
b. 3[b]: “wherein said identifying component is operable to identify the one of an item and a location based additionally on the parameter signal”	130
4. Claim 4	134
5. Claim 5	135
6. Claim 6	138

TABLE OF CONTENTS

(continued)

	Page
a. 6[a]: “wherein said field-detecting component is operable to detect a magnetic field”	138
b. 6[b]: “wherein said input component is further operable to input an association between a vehicle and the detected magnetic field”	139
c. 6[c]: “wherein said field-detecting component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field”	141
d. 6[d]: “wherein said identifying component is further operable, based on the association, to identify the vehicle as the item”	142
7. Independent Claim 8	145
a. 8[pre]: “A method, for use with a database, said method comprising:”	145
b. 8[a] & 8[b]: “detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field” & “generating, via the field-detecting component, a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field”	148
c. 8[c]: “inputting, via an input component, the detected field signature into the database”	149
d. 8[d]: “accessing, via an accessing component, the detected field signature from the database”	150
e. 8[e]: “generating, via a comparing component, a comparison signal”	150
f. 8[f]: “identifying, via an identifying component, one of an item and a location based on the comparison signal”	151

TABLE OF CONTENTS

(continued)

Page

g.	8[g] & 8[h]: “detecting, via the field-detecting component, a second one of an electric field, a magnetic field and an electro-magnetic field” & “generating, via the field-detecting component, a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field”	152
h.	8[i]: “wherein said generating a comparison signal comprises generating the comparison signal based on a comparison of the detected field signature and the second detected field signature”	153
8.	Claim 9	153
9.	Claim 10	155
a.	10[a] & 10[b]: “detecting, via a parameter-detecting component, a parameter” & “generating, via the parameter-detecting component, a parameter signal based on the detected parameter”	155
b.	10[c]: “wherein said identifying comprises identifying the one of an item and a location based additionally on the parameter signal”	156
10.	Claim 11	157
11.	Claim 12	158
12.	Claim 13	159
a.	13[a] & 13[d]: “inputting, via the input component is further operable to input an association” & “wherein said inputting an association comprises inputting an association between a vehicle and the detected magnetic field”	159
b.	13[b]: “identifying, via the identifying component, a vehicle”	160
c.	13[g]: “wherein said identifying a vehicle comprises identifying, based on the association, the vehicle as the item”	161

TABLE OF CONTENTS

(continued)

Page

d.	13[c]: “wherein said detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field comprises detecting detect a magnetic field” 162	
e.	13[e] & 13[f]: “wherein said detecting a second one of an electric field, a magnetic field and an electro-magnetic field comprises detecting a second magnetic field” & “wherein said generating a second detected field signature comprises generating a second detected field signature based on the detected second magnetic field” 163	
13.	Independent Claim 15 164	
a.	15[pre]: “A non-transitory, tangible, computer-readable media having computer-readable instructions stored thereon, for use with a database, the computer-readable instructions being capable of being read by a computer and being capable of instructing the computer to perform the method comprising:” 164	
b.	15[a] & 15[b]: “detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field” & “generating, via the field-detecting component, a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field” 166	
c.	15[c]: “inputting, via an input component, the detected field signature into the database” 167	
d.	15[d]: “accessing, via an accessing component, the detected field signature from the database” 168	
e.	15[e]: “generating, via a comparing component, a comparison signal” 168	

TABLE OF CONTENTS

(continued)

	Page
f. 15[f]: “identifying, via an identifying component, one of an item and a location based on the comparison signal”	169
g. 15[g] & 15[h]: “detecting, via the field-detecting component, a second one of an electric field, a magnetic field and an electro-magnetic field” & “generating, via the field-detecting component, a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field”	170
h. 15[i]: “wherein said generating a comparison signal comprises generating the comparison signal based on a comparison of the detected field signature and the second detected field signature”	171
14. Claim 16	172
15. Claim 17	173
a. 17[a] & 17[b]: “detecting, via a parameter-detecting component, a parameter” & “generating, via the parameter-detecting component, a parameter signal based on the detected parameter”	174
b. 17[c]: “wherein said identifying comprises identifying the one of an item and a location based additionally on the parameter signal”	175
16. Claim 18	176
17. Claim 19	177
18. Claim 20	178
a. 20[a] & 20[d]: “inputting, via the input component is further operable to input an association” & “wherein said inputting an association comprises inputting an association between a vehicle and the detected magnetic field”	179
b. 20[b]: “identifying, via the identifying component, a vehicle”	179

TABLE OF CONTENTS

(continued)

	Page
c. 20[g]: “wherein said identifying a vehicle comprises identifying, based on the association, the vehicle as the item”	180
d. 20[c]: “wherein said detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field comprises detecting detect a magnetic field”	181
e. 20[e] & 20[f]: “wherein said detecting a second one of an electric field, a magnetic field and an electro-magnetic field comprises detecting a second magnetic field” & “wherein said generating a second detected field signature comprises generating a second detected field signature based on the detected second magnetic field”	182
D. Ground 3: Fong in View of Abramson Renders Obvious Claims 2-4, 6, 9-11, 13, and 16-18	184
1. Motivation to Combine Fong and Abramson	184
2. Claim 2	187
3. Claim 3	188
a. 3[a]: “a parameter-detecting component operable to detect a parameter and to generate a parameter signal based on the detected parameter”	189
b. 3[b]: “wherein said identifying component is operable to identify the one of an item and a location based additionally on the parameter signal”	191
4. Claim 4	193
5. Claim 6	194
a. 6[a]: “wherein said field-detecting component is operable to detect a magnetic field”	194
b. 6[b]: “wherein said input component is further operable to input an association between a vehicle and the detected magnetic field”	196

TABLE OF CONTENTS

(continued)

	Page
c. 6[c]: “wherein said field-detecting component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field”	198
d. 6[d]: “wherein said identifying component is further operable, based on the association, to identify the vehicle as the item”	199
6. Claim 9	201
7. Claim 10	202
a. 10[a] & 10[b]: “detecting, via a parameter-detecting component, a parameter” & “generating, via the parameter-detecting component, a parameter signal based on the detected parameter”	203
b. 10[c]: “wherein said identifying comprises identifying the one of an item and a location based additionally on the parameter signal”	204
8. Claim 11	205
9. Claim 13	206
a. 13[a] & 13[d]: “inputting, via the input component is further operable to input an association” & “wherein said inputting an association comprises inputting an association between a vehicle and the detected magnetic field”	206
b. 13[b]: “identifying, via the identifying component, a vehicle”	207
c. 13[g]: “wherein said identifying a vehicle comprises identifying, based on the association, the vehicle as the item”	208
d. 13[c]: “wherein said detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field comprises detecting detect a magnetic field”	209

TABLE OF CONTENTS

(continued)

	Page
e. 13[e] & 13[f]: “wherein said detecting a second one of an electric field, a magnetic field and an electro-magnetic field comprises detecting a second magnetic field” & “wherein said generating a second detected field signature comprises generating a second detected field signature based on the detected second magnetic field”	210
10. Claim 16	211
11. Claim 17	213
a. 17[a] & 17[b]: “detecting, via a parameter-detecting component, a parameter” & “generating, via the parameter-detecting component, a parameter signal based on the detected parameter”	213
b. 17[c]: “wherein said identifying comprises identifying the one of an item and a location based additionally on the parameter signal”	214
12. Claim 18	215
13. Claim 20	217
a. 20[a] & 20[d]: “inputting, via the input component is further operable to input an association” & “wherein said inputting an association comprises inputting an association between a vehicle and the detected magnetic field”	217
b. 20[b]: “identifying, via the identifying component, a vehicle”	218
c. 20[g]: “wherein said identifying a vehicle comprises identifying, based on the association, the vehicle as the item”	219
d. 20[c]: “wherein said detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field comprises detecting detect a magnetic field”	220

TABLE OF CONTENTS
(continued)

	Page
e. 20[e] & 20[f]: “wherein said detecting a second one of an electric field, a magnetic field and an electro-magnetic field comprises detecting a second magnetic field” & “wherein said generating a second detected field signature comprises generating a second detected field signature based on the detected second magnetic field”	220
VII. NO SECONDARY CONSIDERATIONS OF NON-OBVIOUSNESS	222
VIII. CONCLUSION.....	223

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

LIST OF MATERIALS CONSIDERED

Exhibit No.	Description of Document
1001	U.S. Patent No. 9,33,946 (the “’946 patent”)
1003	Curriculum Vitae of Dr. Lin Zhong
1004	U.S. Patent No. 8,290,480 (“Abramson”)
1005	U.S. Patent No. 8,509,812 (“Fong”)
1006	Plaintiff’s Preliminary Infringement Contentions, <i>Cambridge Mobile Telematics, Inc. v. Sfara, Inc.</i> , No. 3:23-cv-01368 (D.N.J.) (“Infringement Contentions”)
1007	Prosecution History of the ’946 patent (“prosecution history”)
1008	Cambridge Mobile Telematics, Inc. v. Sfara, Inc., No. 3:23-cv-01368 (D.N.J.), ECF No. 84, Joint Claim Construction and Prehearing Statement
1012	Fazeen et al, Safe Driving Using Mobile Phones, IEEE Transactions on Intelligent Transportation Systems (Volume: 13, Issue: 3, September 2012) (“Fazeen”)
1013	Mohan et al, TrafficSense: Rich Monitoring of Road and Traffic Conditions using Mobile Smartphones. Microsoft Research, April 2008.

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

Exhibit No.	Description of Document
1014	Vukajlovic et al, The Practical Design of In-vehicle Telematics Device with GPS and MEMS Accelerometers, Telfor Journal, Vol. 4, No. 2, 2012.
1015	Yilin Zhao, Telematics: Safe and Fun Driving, IEEE Intelligent Systems 2002
1016	Cook et al, Control, computing and communications: technologies for the twenty-first century model T, Proceedings of the IEEE. Vol. 95, Issue: 2, February 2007.
1017	Ching-Yao Chan, A treatise on crash sensing for automotive air bag systems, IEEE/ASME Transactions on Mechatronics. Vol. 7, Issue. 2, June 2002.
1018	Shaout et al, Automotive airbag technology: past, present and future, International Journal of Computer Applications in Technology Vol. 13, No. 3-5. Jan 1, 2000.
1019	Cech et al, Active Magnetic Field Based Sensing System for Improved Detection and Discrimination of Side Impact Crashes, Proceedings - 19th International Technical Conference on the Enhanced Safety of Vehicles (ESV), Washington, D.C., June 6-9, 2005, Paper Number 05-0406.
1020	Bell, Policy issues for the future intelligent road transport infrastructure, IEE Proceedings - Intelligent Transport Systems, Volume 153, Issue 2, June 2006, p. 147 - 155.
1021	Hull et al, CarTel: a distributed mobile sensor computing system, SenSys '06: Proceedings of the 4th international

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

Exhibit No.	Description of Document
	conference on Embedded networked sensor systems, Oct 2006, p. 125-138. https://doi.org/10.1145/1182807.1182821 .
1022	Dai et al, Mobile phone based drunk driving detection, 2010 4th International Conference on Pervasive Computing Technologies for Healthcare, IEEE, June 2010, DOI: 10.4108/ICST.PERVASIVEHEALTH2010.8901.
1023	Thompson et al, Using Smartphones to Detect Car Accidents and Provide Situational Awareness to Emergency Responders. In: Cai, Y., Magedanz, T., Li, M., Xia, J., Giannelli, C. (eds) Mobile Wireless Middleware, Operating Systems, and Applications. MOBILWARE 2010. Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, vol 48. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-17758-3_3 (“Thompson 2010”)
1024	U.S. Patent No. 9,037,407 (“Thompson 2011”)
1025	Johnson et al, Driving Style Recognition Using a Smartphone as a Sensor Platform, 2011 14th International IEEE Conference on Intelligent Transportation Systems (ITSC), IEEE, November 2011, DOI: 10.1109/ITSC.2011.6083078.

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

Exhibit No.	Description of Document
1026	Mednis et al, Real time pothole detection using Android smartphones with accelerometers, 2011 International Conference on Distributed Computing in Sensor Systems and Workshops (DCOSS), IEEE, August 2011, DOI: 10.1109/DCOSS.2011.5982206.
1027	Eren et al, Estimating driving behavior by a smartphone, 2012 IEEE Intelligent Vehicles Symposium, IEEE, July 2012, DOI: 10.1109/IVS.2012.6232298.
1028	Fleming, Overview of Automotive Sensors, IEEE Sensors Journal, Vol. 1, No. 4, December 2001.
1029	U.S. Patent No. 9,311,271 (“Wright”)
1030	Halgamuge et al, Measurement and Analysis of Electromagnetic Fields From Trams, Trains, and Hybrid Cars, Radiation Protection Dosimetry (2010), Vol. 141, No. 3, DOI:10.1093
1031	Ahn et al, Low Frequency, Electromagnetic Field Reduction Techniques for the On-Line Electric Vehicle (OLEV), 2010 IEEE International Symposium on Electromagnetic Compatibility, Fort Lauderdale, FL, USA, 2010, pp. 625-630, doi: 10.1109/IEMC.2010.5711349

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

I, Lin Zhong, Ph.D., declare as follows:

I. INTRODUCTION AND QUALIFICATIONS

A. Introduction

1. I have been retained by Petitioner Cambridge Mobile Telematics, Inc. (“CMT”) as a technical expert witness in connection with the petition for inter partes review of U.S. Patent No. 9,333,946 (“the ’946 patent”). The statements set forth in this declaration are based on my own personal knowledge. I am being compensated at my usual rate for the time spent preparing this declaration, and my compensation is not contingent on the outcome of any matter or any of the opinions provided below. I have no financial interest in this matter.

2. I understand that the ’946 patent issued on May 10, 2016 from U.S. Application Serial No. 14/072,321, naming Sascha Simon as the inventor. I further understand that, based on these provisional applications, Patent Owner Sfara, Inc. (“Sfara”) contends that “[t]he asserted claims of the ’946 patent are entitled to a priority date (i.e., earliest date of invention) at least as early as December 21, 2012.” Ex. 1006 (Infringement Contentions) at 13. For purposes of my analysis herein, I have used this date as the relevant time period.

3. I have been asked by CMT to provide testimony regarding the state of the art in the field of smartphone-based telematics prior to December 21, 2012. I

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

have also been asked to provide my opinion regarding the validity of claims 1-6, 8-13, and 15-20 of the '946 patent.

4. I make this Declaration based upon my own personal knowledge, information, and belief, and I would and could competently testify to the matters set forth in this Declaration if called upon to do so.

B. Qualifications and Experience

5. I am a professor at the Department of Computer Science of Yale University. My background includes roughly 30 years of academic and professional experience in the fields of system software, wireless subsystems, and hardware architecture. My research focuses on developing efficient technologies for future computing, communication, and interfacing with a focus on mobile systems.

6. I received a M.S. and a B.S. in Electronic Engineering from Tsinghua University in 2000 and 1998, respectively. I obtained my Ph.D. in Computer Engineering from Princeton University in 2005. My doctoral dissertation focuses on energy efficiency of mobile systems.

7. Prior to my professorship at Yale, I was a professor in the Department of Electrical and Computer Engineering at Rice University from 2005 to 2019. I also conducted research in the industry during sabbaticals. For example, I was a Visiting Researcher at Microsoft Research during the summer of 2011, March to

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

December of 2012, and October 2019 to August 2020. My industry research focused on Mobile Systems and Networks.

8. I have received numerous awards, including: (i) ACM SigMobile Test-of-Time Award; (ii) Best Paper Award (first place) for Quantum Systems Software, IEEE QCE; (iii) Distinguished Paper Finalist, NDSS Symposium; (iv) ACM SigMobile RockStar Award; (v) Charles Duncan Award for Outstanding Academic Achievement (Rice University); (vi) Best Paper Award (three times), ACM MobiSys; (vii) Best Paper Award, ACM ASPLOS; (viii) Mark Weiser Best Paper Award, IEEE PerCom; (ix) Best Paper Award, ACM MobileHCI; (x) National Science Foundation CAREER Award; (xi) One of the 30 most influential papers published in the first decade of IEEE Design Automation & Test in Europe Conference; and (xii) AT&T Asian Pacific Leadership Award.

9. I have served on professional committees, groups, and organizations. I was Program Committee Co-Chair of ACM MobiSys 2012. I have served on the Steering Committee of ACM MobiSys since 2013. I was Program Committee Co-Chair of IEEE/ACM IPSN 2014 and Program Committee Chair of ACM HotMobile 2019. I have been the Chair of SigMobile Research Highlights Selection Committee since 2022. I am a Fellow of IEEE and ACM.

10. I am a named inventor on more than 20 U.S. patents, including U.S.

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

Patent No. 9,817,125, entitled “Estimating and predicting structures proximate to a mobile device.”

11. I am the author or co-author of more than 130 scientific and engineering publications, including articles, conference presentations, technical and scientific reports and tutorials. These publications cover a wide variety of topics, including but not limited to wireless communications, signal processing, mobile & embedded systems, and computer architecture.

12. A copy of my curriculum vitae is attached hereto as Ex. 1003 to this Declaration.

C. Materials Considered

13. In preparing this Declaration, I have reviewed the '946 patent, its prosecution history, and each of the documents I reference herein. I have provided above a list of the exhibits referenced in my Declaration. In reaching my opinions, I have relied upon my experience in the field and have also considered the viewpoint of a person of ordinary skill in the art at the time of the '946 patent's priority date, which I assume is December 21, 2012 based on Patent Owner's contention in litigation. As explained below, I am familiar with the level of skill of a person of ordinary skill in the art regarding the technology at issue as of that timeframe.

II. LEGAL PRINCIPLES

14. I am not an attorney. For purposes of this declaration, I have been informed by counsel for CMT about certain aspects of the law that are relevant to my analysis and opinions, as set forth below.

A. Prior Art

15. I understand that the prior art to the '946 patent includes patents and printed publications in the relevant art that predate the '946 patent's priority date. As I explained previously, I have been instructed to assume for purposes of my analysis that December 21, 2012, is the relevant date for determining what is "prior art." In other words, I should consider as "prior art" anything publicly available prior to December 21, 2012. I further understand that, for purposes of this proceeding in the United States Patent Trial and Appeal Board, only patents and documents that have the legal status of a "printed publication" may be relied on as prior art.

B. Claim Construction

16. I understand that under the legal principles, claim terms are generally given their ordinary and customary meaning, which is the meaning that the term would have had to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application. I further

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

understand that the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which a claim term appears, but in the context of the entire patent, including the specification.

17. I am informed by counsel that relevant legal principals indicate that the patent specification is the single best guide to the meaning of a claim term, and is thus highly relevant to the interpretation of claim terms. I understand for terms that do not have a customary meaning within the art, the specification usually supplies the best context of understanding the meaning of those terms.

18. I am further informed by counsel that other claims of the patent in question, both asserted and unasserted, can be valuable sources of information as to the meaning of a claim term. Because the claim terms are normally used consistently throughout the patent, the usage of a term in one claim can often illuminate the meaning of the same term in other claims. Differences among claims can also be a useful guide in understanding the meaning of particular claim terms.

19. I understand that the prosecution history can further inform the meaning of the claim language by demonstrating how the inventors understood the invention and whether the inventors limited the invention in the course of prosecution, making the claim scope narrower than it otherwise would be. Extrinsic evidence may also be consulted in construing the claim terms, such as my expert testimony.

20. I have been informed by counsel that, in *inter partes* review (“IPR”) proceedings, a claim of a patent shall be construed using the same claim construction standard that would be used to construe the claim in a civil action filed in a U.S. district court (which I understand is called the “*Phillips*” claim construction standard), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.

21. I have been instructed by counsel to apply the “*Phillips*” claim construction standard for purposes of interpreting the claims in this proceeding, to the extent they require an explicit construction. The description of the legal principles set forth above thus provides my understanding of the “*Phillips*” standard as provided to me by counsel.

22. I understand that some claims are independent, and that these claims are complete by themselves. Other claims refer to these independent claims and are “dependent” from those independent claims. The dependent claims include all of the limitations of the claims on which they depend.

C. Obviousness

23. I understand that obviousness is a determination of law based on various underlying determinations of fact. In particular, these underlying factual

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

determinations include (1) the scope and content of the prior art; (2) the level of ordinary skill in the art at the time the claimed invention was made; (3) the differences between the claimed invention and the prior art; and (4) the extent of any proffered objective indicia of non-obviousness. I understand that the objective indicia that may be considered in such an analysis include commercial success of the patented invention (including evidence of industry recognition or awards), whether the invention fills a long-felt but unsolved need in the field, the failure of others to arrive at the invention, industry acquiescence and recognition, initial skepticism of others in the field, whether the inventors proceeded in a direction contrary to the accepted wisdom of those of ordinary skill in the art, and the taking of licenses under the patent by others, among other factors.

24. To ascertain the scope and content of the prior art, it is necessary to first examine the field of the inventor's endeavor and the particular problem for which the invention was made. The relevant prior art includes prior art in the field of the invention, as well as prior art from other fields that a person of ordinary skill in the art would look to when attempting to solve the problem.

25. I understand that a determination of obviousness cannot be based on the hindsight combination of components selectively culled from the prior art to fit the parameters of the patented invention. Instead, it is my understanding that in order

to render a patent claim invalid as being obvious from a combination of references, there must be some evidence within the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination in a way that would produce the patented invention.

26. I further understand that in an obviousness analysis, neither the motivation nor the purpose of the patentee dictates. Rather, any problem known in the field can provide a reason for combining the prior art in the manner claimed.

III. LEVEL OF ORDINARY SKILL IN THE ART

27. I understand that an assessment of claims of the '946 patent should be undertaken from the perspective of a person of ordinary skill in the art as of the earliest claimed priority date, which, as I explained above, I assumed to be December 21, 2012.

28. I understand that a POSITA is a hypothetical person who is presumed to be aware of all pertinent art, applies conventional wisdom in the art, and is a person of ordinary creativity. I have also been advised that to determine the appropriate level of a person having ordinary skill in the art, the following factors may be considered: (1) the types of problems encountered by those working in the field and prior art solutions thereto; (2) the sophistication of the technology in question, and the rapidity with which innovations occur in the field; (3) the

educational level of active workers in the field; and (4) the educational level of the inventor.

29. Applying these factors, as to the '946 patent, a POSITA in December 2012 would have had at least a Master's degree in computer science, computer engineering, mechanical engineering, electrical engineering, physics, or a related field, and at least four years of experience in telematics or in computer engineering. To the extent necessary, a POSITA may have collaborated with others having expertise in software development, such as computer scientists or software engineers. My opinion regarding the qualifications of a POSITA is based on my knowledge, skill, training, experience and review of the materials discussed herein.

30. Based on this definition, I am at least a person of ordinary skill in the art at least due to my extensive experience in mobile systems embodied in complex hardware and software. I was also at least a person of ordinary skill in the art in the December 2012 timeframe relevant to the field of smartphone-based telematics.

IV. KNOWLEDGE IN THE ART AT THE TIME OF THE ALLEGED INVENTION OF THE '946 PATENT

31. I understand that a skilled artisan is presumed to know and be familiar with all of the relevant art in the field at the time of the invention.

32. The technology at issue in the challenged claims of the '946 patent relates to vehicle monitoring and telematics. Starting the late 20th century,

telematics began to find its way into consumer vehicles. Indeed, these technologies have been known and used well before December 2012. Ex. 1014, Vukajlovic at Abstract; Ex. 1015, Zhao at Abstract.

33. Vehicle monitoring and telematics have progressed from a common goal of improving driver safety and reducing car accidents, driven by the increasing ubiquity of automobiles. In the vast and highly competitive automotive sector, marked by multiple players and worldwide influence, significant investments in research and development have propelled the development of groundbreaking technologies throughout every aspect of vehicle design and engineering. Ex. 1012, Fazeen at Abstract.

34. Telematics and navigation systems, originating in Europe during the early 1990s, saw pioneering applications, such as Bosch navigation systems on the Ford Transit and Mondeo vehicles, utilizing electronic compasses and Global Positioning Systems (GPS). *See also* Ex. 1016, Cook at Abstract. For example, an early application of magnetic sensors as flux gates was the electronic compass on the 1982 Model Year Lincoln Continental. In the 1990's accelerometers replaced mechanical crash sensors as the key sensor for airbag deployment. Ex. 1017, Chan at Abstract, 1, 10; Ex. 1018, Shaout at 1-2. Indeed, automotive technology—including crash detection technology—involves the use of sensors, such as magnetic

sensors and accelerometers, to detect when a vehicle has been involved in a collision. Ex. 1019, Cech at 5. These sensors can detect sudden changes in velocity, impact forces, or other indicators of a crash. *Id.* at 4.

35. For example, accelerometers play a vital role in detecting acceleration, which is measured as a vector that has magnitude and direction. Ex. 1029, Wright at 8:7-10. In the field of crash detection in telematics, the accelerometer is typically used to detect parameters such as roll, pitch, and yaw via a single and/or multi-axis models, which are essential for understanding the orientation and movement of the vehicle. *Id.* at 8:10-20. Roll refers to the rotation of the vehicle around its longitudinal axis (from side to side), pitch refers to the rotation around its lateral axis (forward and backward tilt), and yaw refers to the rotation around its vertical axis (turning left or right). By utilizing an accelerometer and accurately measuring changes in acceleration along the three axes (X, Y, and Z), one can infer these rotational movements. Ex. 1012, Fazeen at 2. For example, during a turn, it detects the lateral acceleration, indicating a change in the vehicle's yaw. For example, Fazeen discloses an engine gear shift analysis of an automobile using the single-axis, y-axis, of an accelerometer. *Id.* at 3. Fazeen further discloses the lane changes recorded by the x-axis of the accelerometer. *Id.* at 4. Algorithms within the telematics system analyze these accelerometer readings in real-time.

36. Concurrently, the Pan-European PROMETHEUS program of 1987 marked a milestone in testing telematics and navigation systems, utilizing Radio Data System and later GSM cellular communications for data transmission, including location data provided by location services that are GPS-based first available in 1988. Ex. 1020, Bell at 1.

37. Throughout this period, the industry's focus transitioned from passive safety measures such as airbags to active safety technologies such as collision warning, mitigation, and avoidance (e.g., lane departure warning) and Adaptive Cruise Control (ACC). Indeed, in the early 1990s, automotive companies undertook significant development efforts relating to a wide variety of sensor technologies, user interfaces, camera systems, and control algorithms to help solve safety problems associated with transportation. Notably, innovations like Ford's SYNC system in 2008 and subsequent smartphone integration through frameworks like Apple's Core Location and Core Motion have shaped the landscape of automotive infotainment and safety features.

38. The telematics programs developed typically utilized GPS, cellular, and satellite technologies to track the location, movement, and behavior of vehicles. They can also gather data on driving habits, such as speed, acceleration, braking, and cornering. Historically, telematics data has found application in fleet management,

stolen vehicle retrieval, and optimizing routes for logistics and delivery services. Additionally, until approximately 2010, telematics started to play a role in usage-based insurance models—specifically in monitoring driver behavior to promote safety and compliance. For example, Europe, especially Italy, was an early adopter of Usage Based Insurance in 2005. Allstate in the United States followed suit in 2010 with their DriveWise product pilot.

39. A pioneer in the development of vehicle telematics, specifically the use of phone based sensors, was the MIT CarTel project. The project was initiated in 2004 as a six vehicle demonstration in the Boston area. Hari Balakrishnan, CMT’s CEO, participated in the CarTel project and is a named author of the paper describing it. Ex. 1021, Hull at 1. Data from cell phones equipped with GPS, accelerometers, and other sensors, was combined or “fused” from the various data sources and sent to a central portal or server to analyze traffic conditions, road quality, and driver behavior (enabling “insurance telematics” applications). This foundational and influential research and vehicle demonstration portended future ADAS and telematic systems that are enabled by “sensor fusion,” typically vehicle based sensors. In a seminal paper published in 2006, before the time of Android and iOS smartphones, the authors described the early results from the CarTel project, including using location and acceleration data collected from a mobile system placed in the car.

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

While the paper used custom-made hardware, they clearly anticipated the use of future phones with sensors: “We are targeting cellular phones and other handheld devices as a future platform for CarTel software; we envision mobile users collecting information about the environment just as cars do in our system today.” Ex. 1021, Hull at 12. Soon after that, researchers from Microsoft Research India, Bangalore attached custom-made sensor hardware (accelerometer) to GPS-equipped mobile phones and placed them in cars. By combining location information from GPS and acceleration data from the accelerometer, the authors showed that it is possible to monitor traffic and road condition. They reported their findings in a 2008 paper, “TrafficSense: Rich Monitoring of Road and Traffic Conditions using Mobile Smartphones”. See Ex. 1013, Mohan.

40. Sensors are “devices that transform (or transduce) physical quantities such as pressure or acceleration (called measurands) into output signals (usually electrical) that serve as inputs for control systems.” See Ex. 1028, Flemming at 1.

41. As early as 2008 and following the launch of the iPhone and its operating system (i.e., iOS), the developer community increasingly gained access to Apple’s development tools or “frameworks” that provided access to the phone’s built-in capabilities, including sensors. With the release of the iPhone 4 in 2010, these iPhone frameworks became quite sophisticated to include Core Location

(access to GPS and location service) and Core Motion (accelerometers, gyroscopes, and, when available, magnetometer and a barometer). The Ford SYNC system available in 2008 was an early example of new infotainment features enabled by connectivity to the driver's phone—voice enabled hands free calling, streaming music from media players and navigation. In late 2010 Ford launched AppLink, for application developers to link certain phone sensors (e.g., GPS for location-based services) to the vehicle systems.

42. By 2010, research was being done into the exposure of vehicle passengers to electromagnetic fields. *See generally* Ex. 1030, Halgamuge. The study used a device that “contain[ed] three orthogonally oriented magnetic field sensor coils (induction coils)” that could “measur[e] AC EMFs.” *Id.* at 6. The researchers also used a device “to measure the electric and magnetic fields.” *Id.* The researchers found that “[m]ost of the sources of magnetic fields on trains and trams, such as electric motors, converters and inverters, are under the floor. Hence, the magnetic field strength at the floor level tends to be greatest when compared with the seat level.” *Id.* at 9. After measuring electric and magnetic fields in a hybrid car, the researchers found that “[t]he hybrid car has a high voltage battery pack and circuitry that is positioned under the rear seat. Hence, the magnetic field exposure levels are higher at the rear side than at the front side.” *Id.* at 9-10. The researchers

noted that “[t]he electric cable is closer to the passenger compartment and therefore the passenger on the left side might be exposed to higher magnetic fields.” *Id.* at 10.

43. Another group of researchers studied electromagnetic fields (EMFs) generated by On-Line Electric Vehicle (OLEV) systems and proposed some techniques to reduce exposure to EMFs. *See generally* Ex. 1031, Ahn. OLEVs receive power to run when “[t]he magnetic flux generated from the power lines is gathered at the pickup module to generate DC power for the motor of the vehicle.” *Id.* at 6. “The horizontal magnetic flux type” has a “return flux path [that] creates the fringing magnetic flux, and this flux is measured as the EMF level of OLEV.” *Id.* at 6. “As OLEV uses a current source to generate a magnetic field and large currents are flowing in power lines and pickup coils, the EMF from OLEV consists more of magnetic flux than an electric field.” *Id.*

44. With sensor-equipped smartphones becoming commercially available, the pioneering work by the CarTel Project and Microsoft Research India, Bangalore inspired many to follow. By the middle of 2012, numerous research groups had published results leveraging sensors available in smartphones, to detect drunk driving (Ex. 1022, Dai at Abstract, 2, 8); to detect car accidents (Ex. 1023, Thompson 2010 at Abstract 2, 4-9, 12-13; Ex. 1024, Thompson 2011 at Abstract, 1:57-2:8); to recognize driving styles (typical vs. aggressive) (Ex. 1025, Johnson at

Abstract, 1, 3, 5-6); to detect potholes (Ex. 1026, Mednis at Abstract, 2-3, 5); and to estimate driving behaviors (Ex. 1027, Eren at Abstract, 1-3).

V. THE '946 PATENT

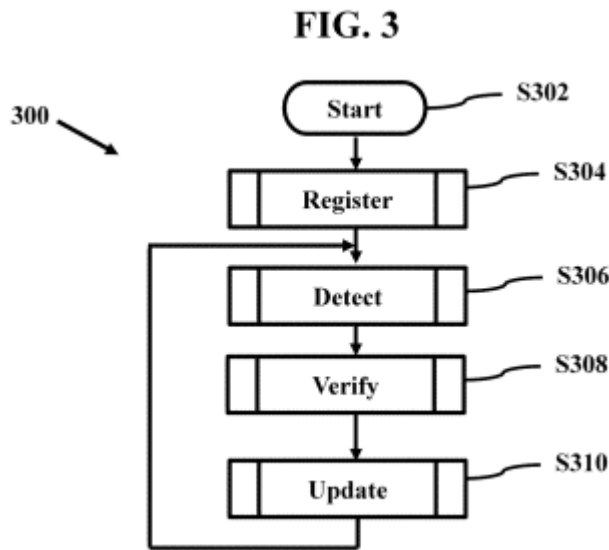
A. Overview of the '946 Patent

45. The '946 patent, titled “System and method for identifying vehicle by utilizing detected magnetic field,” issued on May 10, 2016, from Application No. 14/072,231, which was filed on November 5, 2013 and claims earliest priority to Provisional Application No. 61/740,814, Provisional Application No. 61/740,831, and Provisional Application No. 61/740,851, filed on December 21, 2012. I understand that the earliest priority date of the '946 patent, as asserted by Sfara, is December 21, 2012. Ex. 1006, Infringement Contentions at 13.

46. The '946 patent, explains that the prior art included “rudimentary attempts in the past to determine when a smartphone is in a moving vehicle.” Ex. 1001, '946 patent at 1:60-65. The '946 patent identifies one of those attempts as the AT&T DriveMode™ application. *Id.* Using this application, “a wireless telephone is considered to be in ‘drive mode’ when either the driver manually tells the application to enter drive mode or the DriveMode™ application automatically enters drive mode “when ... the smartphone GPS sensor senses that the smartphone is travelling at greater than 25 miles per hour, ...” *Id.* at 1:65-2:8.

47. According to the '946 patent, DriveMode's automatic approach to entering drive mode is flawed. The '946 patent identifies three main flaws of the automatic approach. First, "the speed threshold of the application is arbitrary, meaning that drive mode will not be detected/engaged at less than 25 mph. If the vehicle is stopped in traffic or at a traffic signal, for example, then the Drive Mode application may inadvertently terminate." *Id.* at 2:19-23. Second, DriveMode "requires that the smartphone's GPS functionality be turned on at all times[,] " which unnecessarily drains the smartphone's battery. *Id.* at 2:23-29. Third, DriveMode "does not differentiate between the type of vehicle that the phone is in, e.g. a bus, a taxi or a train and therefore allows no correlation between the owner of the phone and her driving situation." *Id.* at 2:29-32.

48. The '946 patent, focuses on the third problem of the DriveMode application. For example, the '946 patent explains that "it is an object of the present invention to provide an improved method and apparatus of determining the specific identity and type of vehicle a smartphone is in." *Id.* at 2:39-42. The '946 patent describes a basic method for identifying an item (such as a car) or a location, using well-known components of smartphones.



Id. at Fig. 3.

49. The method starts at S302. *See id.* at Fig. 3. At S304, “an item or location is registered.” *Id.* at 5:1-2. The ’946 patent explains: “For example, if a person would like to be able to identify their vehicle, the vehicle would be registered based on a field associated with the vehicle, whereas if a person would like to be able to identify a location such as their place of work, then the location would be registered based on a field associated with the vehicle.” *Id.* at 5:2-7. The ’946 patent specifies that the “field associated with the vehicle” can be a magnetic field used to identify an item or location. *Id.* at 3:50-53.

50. After the item or location is registered at S304, “an item or location is detected (S306).” *Id.* at 15:18-19. For example, the smartphone could be used to detect a field associated with a vehicle (an item) or a field associated with a location.

Id. at 15:19-25. Then, “after the item or location has been detected (S306), it is verified (S308).” *Id.* at 15:55-56. Such verification could include, for example, having the smartphone determine “whether the newly detected vehicle is the vehicle that was previously registered” or “whether the newly detected location is the location that was previously registered.” *Id.* at 15:56-62.

51. If the item or location is verified, the associated data is updated at S310. *Id.* at 16:33-34. Once that process is complete, the smartphone returns to S306, waiting to detect a new field. *Id.* at 16:56-57.

B. Prosecution History

52. I reviewed the history of the application as it was considered and then approved by the United States Patent and Trademark Office (“Office”), which I understand is called the “prosecution history.” Ex. 1007, prosecution history.

53. The non-provisional application leading to the ’946 patent had 42 claims. Ex. 1007 at 46-57. The application was “examined under the pre-AIA first to invent provisions.” *Id.* at 243. The Examiner did not issue any rejections during prosecution of the ’946 patent. Instead, the first and only office action issued was a notice of allowance, allowing all 42 claims as filed. *Id.* at 242-45. With the prior art, the Examiner provided the following statement of reasons for allowance:

U.S. Patent Application Publication Number 2008/0040004 A1 to Breed teach a system and method for preventing accidents. U.S. Patent Number 9,286,783 B1 to Teller et al. teach a device and method for monitoring the presence of items and issuing an alert if an item is not detected. The prior art of record does not teach **an identifying component operable to identify one of an item and a location based on the comparison signal, wherein said field-detecting component is further operable to detect a second one of an electric field, a magnetic field and an electro-magnetic field and to generate a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field, and wherein said comparing component is operable to generate the comparison signal based on a comparison of the detected field signature and the second detected field signature.**

Id. at 243.

C. The Challenged Claims

54. This Declaration addresses claims 1-6, 8-13, and 15-20 of the '946 patent. Claims 1, 8, and 15 are the independent claims. Claims 2-6 depend from claim 1, claims 9-13 depend from claim 8, and claims 16-20 depend from claim 15.

55. Independent claim 1 recites:

1[pre]	A device, for use with a database, said device comprising:
1[a]	a field-detecting component operable to detect at least one of an electric field, a magnetic field and an electro-magnetic field and
1[b]	to generate a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field;
1[c]	an input component operable to input the detected field signature into the database;
1[d]	an accessing component operable to access the detected field signature from the database;
1[e]	a comparing component operable to generate a comparison signal; and
1[f]	an identifying component operable to identify one of an item and a location based on the comparison signal,
1[g]	wherein said field-detecting component is further operable to detect a second one of an electric field, a magnetic field and an electro-magnetic field and
1[h]	to generate a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field, and

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

1[i]	wherein said comparing component is operable to generate the comparison signal based on a comparison of the detected field signature and the second detected field signature.
------	---

56. Independent claim 8 recites:

8[pre]	A method, for use with a database, said method comprising:
8[a]	detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field;
8[b]	generating, via the field-detecting component, a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field;
8[c]	inputting, via an input component, the detected field signature into the database;
8[d]	accessing, via an accessing component, the detected field signature from the database;
8[e]	generating, via a comparing component, a comparison signal;
8[f]	identifying, via an identifying component, one of an item and a location based on the comparison signal;
8[g]	detecting, via the field-detecting component, a second one of an electric field, a magnetic field and an electro-magnetic field; and

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

8[h]	generating, via the field-detecting component, a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field,
8[i]	wherein said generating a comparison signal comprises generating the comparison signal based on a comparison of the detected field signature and the second detected field signature.

57. Independent claim 15 recites:

15[pre]	A non-transitory, tangible, computer-readable media having computer-readable instructions stored thereon, for use with a database, the computer-readable instructions being capable of being read by a computer and being capable of instructing the computer to perform the method comprising:
15[a]	detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field;
15[b]	generating, via the field-detecting component, a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field;
15[c]	inputting, via an input component, the detected field signature into the database;
15[d]	accessing, via an accessing component, the detected field signature from the database;

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

15[e]	generating, via a comparing component, a comparison signal;
15[f]	identifying, via an identifying component, one of an item and a location based on the comparison signal;
15[g]	detecting, via the field-detecting component, a second one of an electric field, a magnetic field and an electro-magnetic field; and
15[h]	generating, via the field-detecting component, a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field,
15[i]	wherein said generating a comparison signal comprises generating the comparison signal based on a comparison of the detected field signature and the second detected field signature.

D. Claim Construction

58. I understand that Patent Owner is asserting the '946 patent against CMT in patent litigation in the United States District Court for the District of New Jersey captioned *Cambridge Mobile Telematics, Inc. v. Sfara, Inc.*, No. 3:23-cv-01368 (D.N.J.). I understand that the court in that case has not issued a claim construction order for any terms in the Challenged Claims of the '946 patent.

59. I understand that CMT has taken the position in litigation that each of the claim terms listed in the table below is indefinite under 35 U.S.C. §112(b). I

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

further understand that Sfara disagrees and has proposed what it contends are plain-and-ordinary meaning constructions of those terms. For purposes of this Declaration, I have applied Sfara’s proposed constructions, as set forth below.

Claim Term	Construction Applied in IPR
“detected field signature” (claims 1, 6, 8, 13, 15, 20)	Plain-and-ordinary meaning, wherein the plain-and-ordinary meaning of “detected field signature” is “properties, characteristics, or pattern of a detected field”
“second detected field signature” (claims 1, 6, 8, 13, 15, 20)	Plain-and-ordinary meaning, wherein the plain-and-ordinary meaning of “second detected field signature” is “a second set of properties, characteristics, or pattern of a detected field”
“comparison signal” (claims 1, 8, 15)	Plain-and-ordinary meaning, wherein the plain-and-ordinary meaning of “comparison signal” is “a signal that corresponds to a comparison”
“parameter signal” (claims 3, 10, 17)	Plain-and-ordinary meaning, wherein the plain-and-ordinary meaning of “parameter signal” is “a signal that corresponds to a parameter”
“an association” (claims 6, 13, 20)	Plain-and-ordinary meaning, wherein the plain-and-ordinary meaning of “an

	association” is “a relationship”
--	----------------------------------

60. Additionally, I understand that the parties dispute whether the “component” terms in the claims of the ’946 patent are means-plus-function limitations governed by 35 U.S.C. §112(f). Sfara contends the “component” terms are not means-plus-function the meanings of certain terms in the claims of the ’946 patent. For purposes of this Declaration, I have applied Sfara’s proposed constructions of any disputed claim terms. In short, Sfara contends that all claim terms should be given their plain and ordinary meaning.

61. I have applied my understanding of what would be the plain and ordinary meaning to a POSITA of all other claim terms appearing in the Challenged Claims.

VI. APPLICATION OF THE PRIOR ART TO ASSERTED CLAIMS

62. Based on my review of the prior art it is my opinion that the claims of the ’946 patent are rendered unpatentable based on the following prior art:

Ground	References	Claim(s)
1	Obviousness based on Fong (Ex. 1005)	1, 5, 6, 8, 12, 13, 15, 19, and 20

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

Ground	References	Claim(s)
2	Obvious based on Abramson (Ex. 1004)	1-6, 8-13, and 15-20
3	Obvious based on Fong in view of Abramson	2-4, 6, 9-11, 13, and 16-18

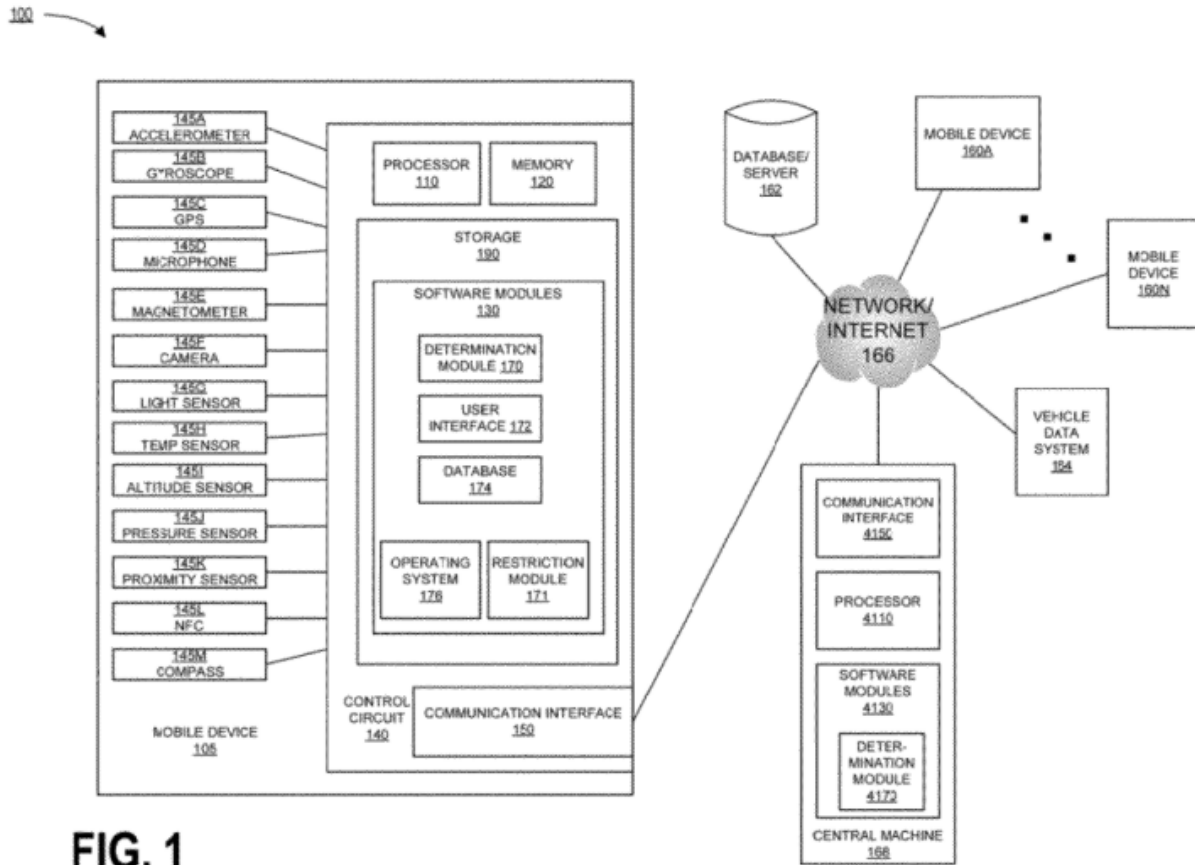
63. I am informed by counsel that each reference listed above qualifies as prior art to the challenged claims because each reference was filed and/or published before the earliest claimed priority date of the '946 patent. I reserve the right to respond in the future to any arguments or positions that Patent Owner may raise, taking account of new information as it becomes available to me.

A. Brief Summary of Prior Art

1. Abramson

64. U.S. Patent No. 8,290,480 (“Abramson”) (Ex. 1004), titled “System and method for selectively restricting in-vehicle mobile device usage,” issued on October 16, 2012, from Application No. 13/244,978, filed on Sep 26, 2011, which itself claims priority to Provisional application No. 61/427,228, filed on Dec 27, 2010, and provisional application No. 61/384,726, filed on Sep 21, 2010. Abramson is a continuation-in-part of application No. PCT/US2011/052655, filed on Sep. 21, 2011.

65. Abramson is directed to “a system and method for determining an in-vehicle role of a user of a mobile device.” Abramson at 2:66-3:1. Specifically, Abramson teaches that the determinations can occur at a mobile device using an analysis of sensors from the same device. Abramson at Abstract. Abramson discloses that these determinations include “determining an in-vehicle role, an in-vehicle location, a handheld state, and a vehicle class” followed by various transformations, modifications, and outputs. Abramson also discloses methods for restricting operation of a mobile device by a driver and methods for orienting a coordinate system of a mobile device. *Id.* at Abstract. Abramson’s system includes various sensors, a processor, a memory, software modules, a communication interface and the network. *Id.* at 15:24-16-7.



Id. at Fig. 1.

66. Abramson discloses methods for determining an in-vehicle role of a user of a mobile device 105. *See* Abramson at 19:31-35. Abramson's method begins by receiving a first input at step 210. *Id.* at Figs. 2A, 2B. Referring to Figure 2B, Abramson discloses that "at step 221 . . . determination module 170, receives a second input from one or more of sensors 145." *Id.* at 22:36-39. Abramson discloses that the first and second inputs are from sensors 145, shown in Figure 1 (above). *Id.* at 17:44-52. Abramson discloses that "at step 223, the processor 110 executing one

or more of software modules 130, including, preferably, determination module 170, can compare the determination characteristics such as user determination characteristics identified within the first input (such as those identified at step 220) with the determination characteristics such as user determination characteristics identified within the second input (such as those identified at step 222).” *Id.* at 23:10-17. “At step 224, the processor 110 executing one or more of software modules 130, including, preferably, determination module 170, compares determination characteristics such as user determination characteristics (including, but not limited to, the user determination characteristics from the first input, as identified at step 220, and/or the user determination characteristics from the second input, as identified at step 222) with stored determination characteristics such as user determination characteristics, such as those stored at one or more databases, such as database 174 (that is local to mobile device 105).” *Id.* at 23:44-55. At step 225, “determination module 170, receives an input from another device, such as one of mobile devices 160,” including from the other device’s sensors 145, via a communication interface 150. *Id.* 24:18-33. At step 230, Abramson’s method uses the previously collected inputs to determine “that the in vehicle role of the user of mobile device 105 is a driver and/or that the in-vehicle role of the user of the mobile device 105 is a passenger.” *Id.* at 20:42-46.

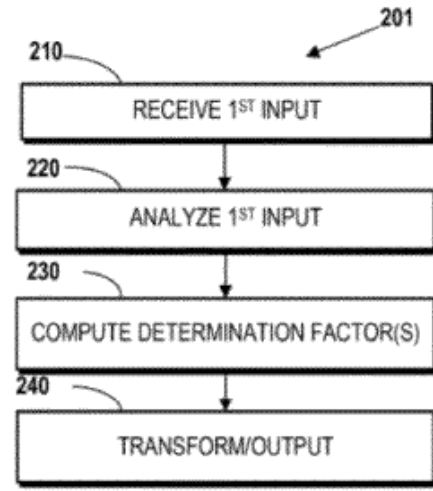


FIG. 2A

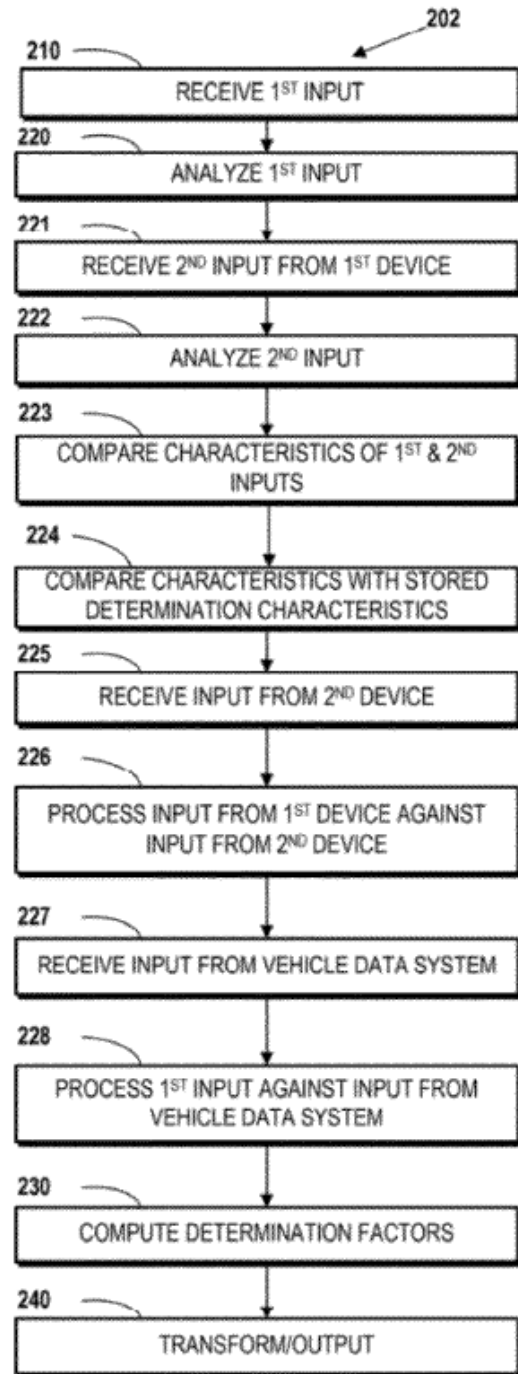


FIG. 2B

Id. at Figs. 2A, 2B.

67. Figure 5 of Abramson shows a routine 500 that illustrates an aspect of a method of determining a vehicle class of a vehicle using a first mobile device in accordance with at least one embodiment disclosed herein.” Abramson at 34:38-42.

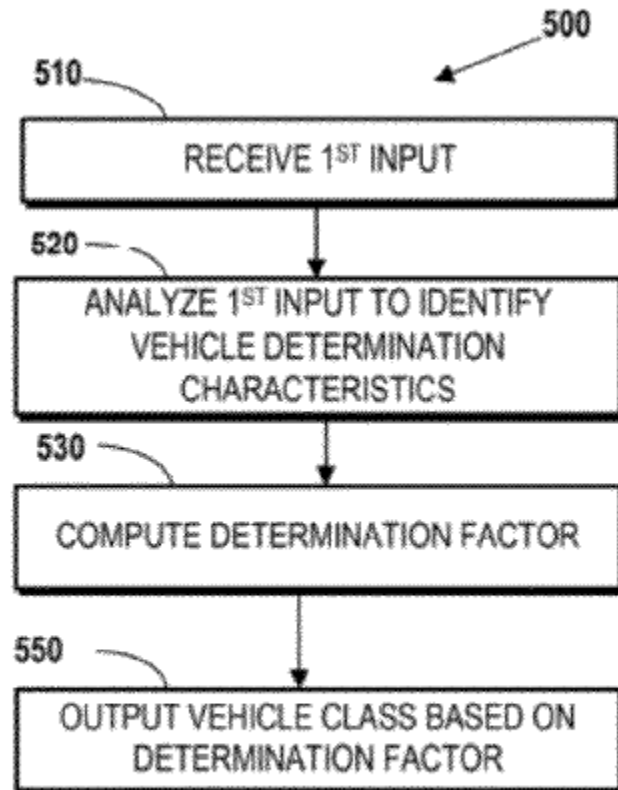


FIG. 5

Id. at Fig. 5. This method allows the system and method disclosed in Abramson to determine “that the vehicle corresponds to a particular vehicle class,” (e.g., car, motorcycle, bicycle, train, bus, etc.). *Id.* at 35:47-50.

2. Fong

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

68. U.S. Patent No. 8,509,812 (“Fong”) (Ex. 1005) titled “Method and system for collecting automobile-related travel data with a smartphone,” was issued on August 13, 2013, from Application No. 13/338,078, filed on Dec 27, 2011.

69. Fong is directed to “[a] technique for collecting automobile-related travel data . . . in response to a stimulus that emanates from an automobile.” Fong at Abstract, 1:46-50. Fong discloses that a stimulus emanating from a vehicle “launch[es] a data collection and distribution function of a smartphone that requires little or no effort on the part of the smartphone user and that corresponds to a time when the smartphone user (and the smartphone) is near to or inside the cabin of the automobile.” *Id.* at 1:65-2:5. Figure 1 of Fong shows “system 100 in which a technique for collecting and distributing automobile-related travel data can be implemented.” *Id.* at 3:23-25.

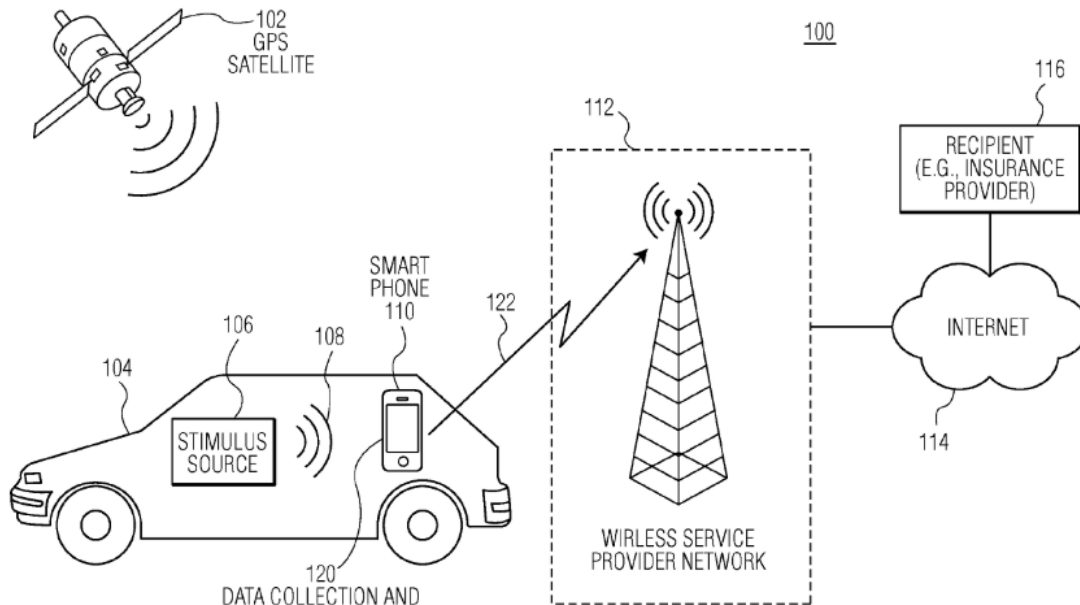


FIG. 1

Id. at Fig. 1.

70. Figure 2 of Fong, copied below, “illustrates a system in which the stimulus 108 is detected directly by a sensor system 130 in the smartphone 110.” *Id.* at 4:60-62. Referring to Figure 2, “the stimulus source 106 is an ignition system of the automobile 104 and the stimulus is an EMF that is generated upon startup of the automobile. For example, the EMF is generated as a result of electrical power that is applied to the starter motor.” *Id.* at 4:62-66. Another example of the stimulus is sound waves generated as a result of friction between mechanical parts of the automobile that are set in motion by the ignition system and from operation of a combustion engine.” *Id.* at 5:5-8.

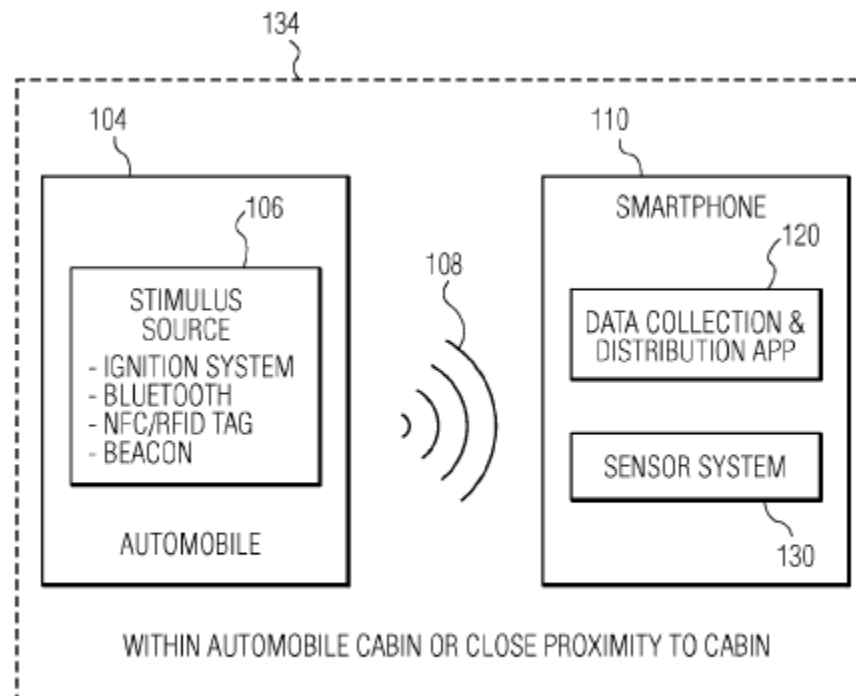


FIG. 2

Id. at Fig. 2. The smartphone's sensor system "detect[s] and recognize[s] the EMF or sound that is generated by the ignition system and/or by the ignition process." *Id.* at 5:26-28. The EMF and sound "has a particular signature or fingerprint (e.g., frequency, magnitude, and/or duration) that can be characterized and recognized by the smartphone." *Id.* at 4:66-5:11. The sensor system 130 stores the signature of the stimulus and uses the stored signatures "in a comparison process to identify a subsequently detected stimulus as a stimulus that should initiate the App." *Id.* at 5:22-25. Then, "the sensor system generates a signal that either directly or indirectly

initiates the App 120.” *Id.* at 5:28-29. The App implements “the data collection and distribution functions” on the smartphone. *Id.* at 31-34.

B. Ground 1: Fong Renders Obvious Claims 1, 5, 6, 8, 12, 13, 15, 19, and 20

1. Independent Claim 1

71. It is my opinion that Fong discloses or renders obvious each and every limitation of independent claim 1 as discussed below.

a. 1[pre]: “A device, for use with a database, said device comprising:”

72. To the extent the preamble of claim 1 is limiting, Fong discloses “a device, for use with a database.”

73. For example, Fong is directed to “collecting automobile-related travel data . . . [by] initiating a travel data collection function of a smartphone in response to a stimulus that emanates from an automobile.” Ex. 1005, Fong at 1:47-50. Referring to Figure 1, copied below, Fong discloses that “the smartphone 110 includes a data collection and distribution application 120, referred to herein simply as the ‘App,’ which is configured to implement the collection of travel data and the distribution of the travel data” *Id.* at 4:3-6. Fong discloses that the data collected by the sensor “is then *stored* by the sensor system and used in a comparison process to identify a subsequently detected stimulus as a stimulus that should initiate

the App.” *Id.* at 5:22-25. Fong discloses that the App is stored on the smartphone’s memory and executed by the “microprocessor” of the smartphone. *See id.* at 4:15-20.

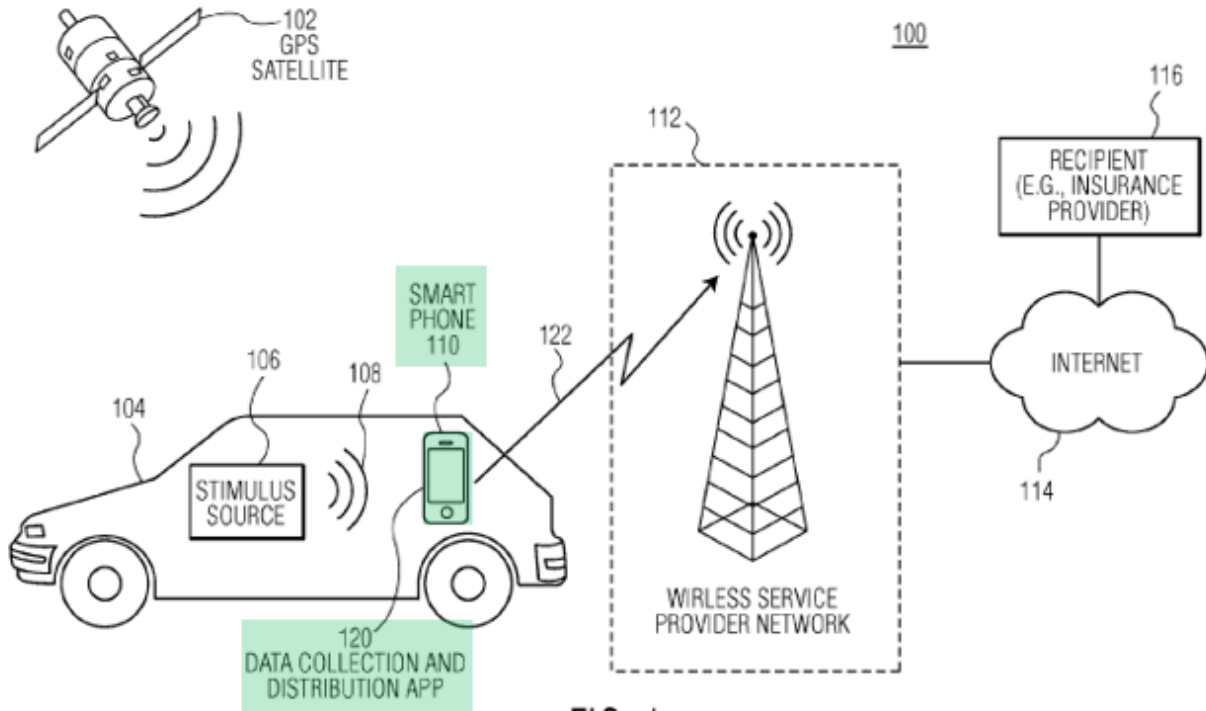


FIG. 1

Id. at Fig. 1 (annotated).

74. Fong’s disclosure of a smartphone 110 storing sensor data is consistent with the “device for use with a database” of the ’946 patent. The ’946 patent discusses that “database 404 may be any known device or system that is operable to receive, store, organize and provide (upon a request) data” and “[n]on-limiting examples of database 404 include *a memory hard-drive* and a semiconductor memory.” Ex. 1001, ’946 patent at 7:24-29.

75. A POSITA would have understood the smartphone 110 to be the “device” and the storage of the smartphone to be the “database” in light of the ’946 patent.

76. Accordingly, Fong discloses the preamble of independent claim 1.

- b. **1[a]: “a field-detecting component operable to detect at least one of an electric field, a magnetic field and an electro-magnetic field and to generate a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field”**

77. Fong discloses or renders obvious “a field-detecting component operable to detect at least one of an electric field, a magnetic field and an electro-magnetic field and to generate a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field.” As discussed below, Fong’s sensor system 130 is the “field-detecting component” claimed in the ’946 patent.

78. Figure 2 of Fong, copied below, “illustrates a system in which the stimulus 108 is detected directly by a sensor system 130 in the smartphone 110.” Ex. 1005, Fong at 4:60-62. Referring to Figure 2, Fong discloses that “the stimulus source 106 is an ignition system of the automobile 104 and the stimulus is an EMF that is generated upon startup of the automobile. For example, the EMF is generated as a result of electrical power that is applied to the starter motor.” Fong at 4:62-66.

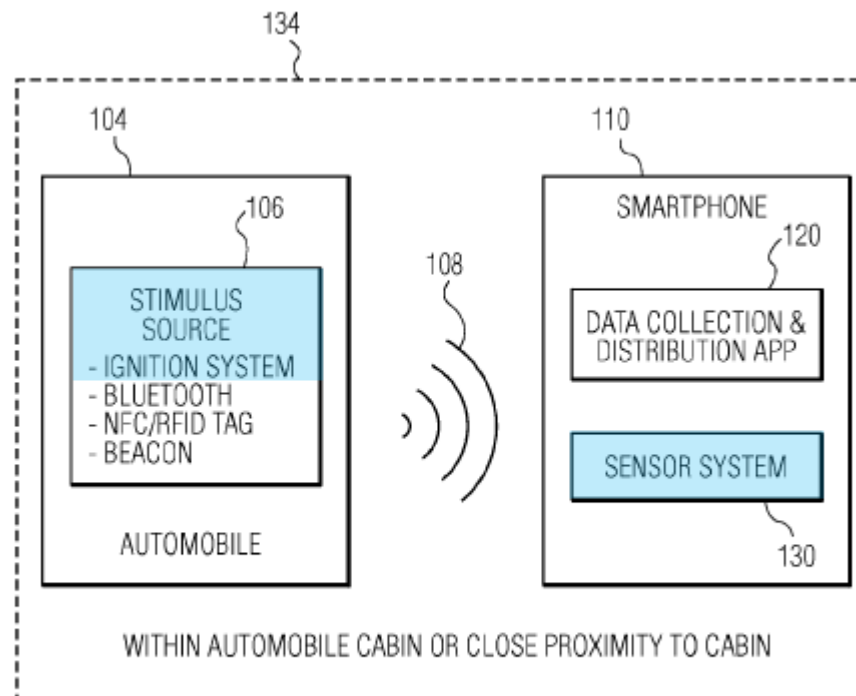


FIG. 2

Id. at Fig. 2 (annotated).

79. EMF stands for electro-magnetic field. Fong at 1:55-56 (“the stimulus that emanates from the automobile is an electromagnetic field (EMF) . . .”). Thus, a POSITA would have understood that Fong’s sensor system 130 detects “one of an electric field, a magnetic field and an electro-magnetic field.”

80. Fong discloses that the App is stored on the smartphone’s memory and executed by the “microprocessor” of the smartphone. *See* Ex. 1005, Fong at 4:15-20. Fong discloses that “[o]nce the sensor system 130 has detected and recognized the EMF . . . that is generated by the ignition system . . . , the sensor system generates a signal that either directly or indirectly initiates the App 120.” *Id.* at 5:26-29. Fong

explains that “the EMF has a particular signature or fingerprint (e.g., frequency, magnitude and/or duration) that can be characterized and recognized by the smartphone.” Fong at 4:66-5:2.

81. The sensor system 130 is “operable . . . to generate a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field.” As discussed in section V.D above, I interpret “detected field signature” to be “properties, characteristics, or pattern of a detected field” for purposes of this declaration. A POSITA would understand that Fong’s sensor system 130 is the component in the smartphone that recognizes the EMF signature and then provides information about the EMF signature (e.g., frequency, magnitude, and/or duration) in a data format that can be used by the smartphone. The information passed from the sensor system 130 to the rest of the system is a “detected field signature,” because it constitutes “properties, characteristics, or pattern of a detected field.”

82. In light of the above disclosures, a POSITA would have understood that sensor system 130 is “a field-detecting component operable to detect at least one of an electric field, a magnetic field and an electro-magnetic field and to generate a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field.”

83. Accordingly, Fong discloses or renders obvious limitation 1[a].

c. 1[b]: “an input component operable to input the detected field signature into the database”

84. Fong discloses or renders obvious “an input component operable to input the detected field signature into the database”

85. As discussed above, the memory of the smartphone is a database disclosed by the '946 patent. *See supra* section VI.B.1.a. As discussed above, the EMF signature generated by the sensor system 130 is a “detected field signature.” *See supra* VI.B.1.b. Fong discloses that “the sensor system goes through an initialization or learning process to learn the particular signature of the stimulus. The signature of the stimulus is then stored by the sensor system and used in a comparison process to identify a subsequently detected stimulus as a stimulus that should initiate the App.” Ex. 1005, Fong at 5:20-25. A POSITA would have understood that the signature of the stimulus is stored in the memory of the smartphone (i.e., the database). A POSITA reading Fong would have understood that this comparison process could be applied to the “EMF that is generated upon startup of the automobile.” *Id.* at 4:63-64. In other words, Fong’s sensor system 130 detects the EMF signature and stores it for later comparison.

86. In light of the above disclosures, a POSITA would have understood that the sensor system 130 is the “input component operable to input the detected field

signature into the database.”

87. Accordingly, Fong discloses or renders obvious limitation 1[b].

d. 1[c]: “an accessing component operable to access the detected field signature from the database”

88. Fong discloses or renders obvious “an accessing component operable to access the detected field signature from the database.”

89. As discussed above, sensor system 130 “input[s] the detected field signature into the database.” *See supra* section VI.B.1.c.

90. As discussed above, Fong discloses that “the sensor system goes through an initialization or learning process to learn the particular signature of the stimulus. The signature of the stimulus is then stored by the sensor system and used in a comparison process to identify a subsequently detected stimulus as a stimulus that should initiate the App.” Ex. 1005, Fong at 5:20-25. A POSITA would understand that in order for sensor system 130 to make the disclosed comparison between a stored EMF signature and a newly detected EMF signature, the stored signature of the stimulus would need to be accessed by the sensor system 130 from the smartphone’s memory, i.e., the “database.” The ’946 patent broadly asserts that an “accessing component” may be any known device or system that can access data from a database. Ex. 1001, ’946 patent at 6:45-47. In light of the above, a POSITA would understand that sensor system 130 is an “accessing component” as claimed in

the '946 patent.

91. In light of the above disclosures, a POSITA would have understood that the sensor system 130 is the “accessing component operable to access the detected field signature from the database.”

92. Accordingly, Fong discloses or renders obvious limitation 1[c].

e. **1[d]: “a comparing component operable to generate a comparison signal”**

93. Fong discloses or renders obvious “a comparing component operable to generate a comparison signal.”

94. As discussed above, Fong discloses that “the sensor system goes through an initialization or learning process to learn the particular signature of the stimulus. The signature of the stimulus is then stored by the sensor system and used in a *comparison process* to identify a subsequently detected stimulus as a stimulus that should initiate the App.” Ex. 1005, Fong at 5:20-25. Fong further discloses that “[o]nce the sensor system 130 has detected and recognized the EMF . . . that is generated by the ignition system and/or by the ignition process, *the sensor system generates a signal* that either directly or indirectly initiates the App 120.” *Id.* at 5:26-29.

95. As discussed in section V.D above, I interpret “comparison signal” to be “a signal that corresponds to a comparison,” for purposes of this declaration. A

POSITA would understand that Fong's sensor system 130 is a "comparing component." This understanding is confirmed by the '946 patent, which states that "[c]omparing component 418 may be any known device or system that is operable to compare two inputs." '946 patent at 6:50-52. A POSITA would understand that the signal generated by the sensor system 130 to initiate the App is a "comparison signal." As described above, a POSITA would have understood that the signal subsequently generated to initiate the App is based on the comparison performed by the sensor system.

96. In light of the above disclosures, a POSITA would have understood that the sensor system 130 is the "comparing component" and is "operable to generate a comparison signal."

97. Accordingly, Fong discloses or renders obvious limitation 1[d].

f. 1[e]: "an identifying component operable to identify one of an item and a location based on the comparison signal"

98. Fong discloses or renders obvious "an identifying component operable to identify one of an item and a location based on the comparison signal."

99. Fong discloses that Figure 1, copied below, represents "a situation in which the user of the smartphone (not shown) has entered the automobile along with his/her smartphone," thus, the smartphone indicates "the presence of its user." Ex.

1005, Fong at 3:53-59. Fong discloses that “the App [120] of the smartphone is initiated in response to a stimulus 108 that emanates from the stimulus source 106 of the automobile 104.” *Id.* at 4:13-15. As discussed above, Fong discloses comparing a detected EMF signature to a previously stored EMF signature to determine if the App should be initiated. *See supra* section VI.B.1.e.

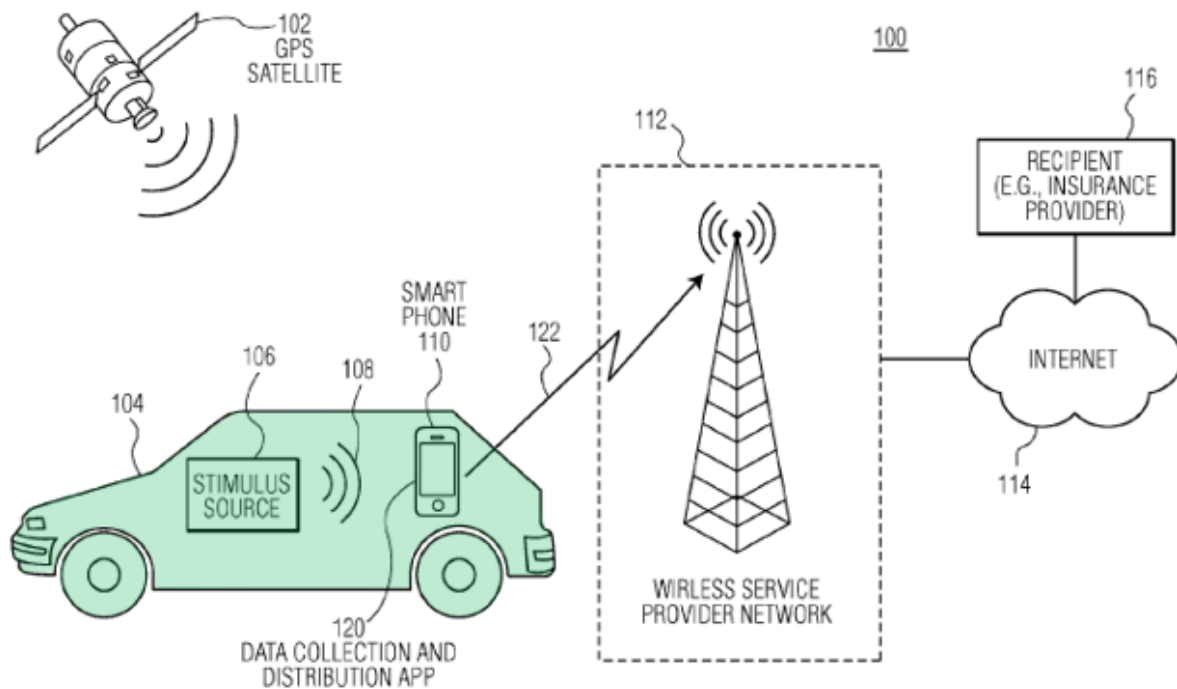


FIG. 1

Id. at Fig. 1 (annotated). In light of the disclosures above, a POSITA would have understood that Fong discloses that the sensor system 130 identifies a vehicle (e.g., automobile 104) based on a comparison of a stored first signature and a detected second signature. A POSITA would also understand that Fong discloses that the

sensor system 130 identifies that a smartphone (and thus its user) is in a vehicle based on the same comparison.

100. Fong's disclosure of sensor system 130 identifying a vehicle as an item and the location of a smartphone user in the vehicle is consistent with "identify[ing] one of an item or location based on the comparison signal" required by the '946 patent. The '946 patent discloses "measur[ing] the magnetic field associated with a vehicle to identify the vehicle" and "measur[ing] the magnetic field associated with a house to identify the location of the user of the smartphone." Ex. 1001, '946 patent at 4:6-11. The '946 patent further discloses the comparison of a previously stored signature and a newly detected signature to identify the item or location. '946 patent at 16:7-31.

101. In light of the above, a POSITA would have understood that Fong discloses that the sensor system 130 is "an identifying component operable to identify one of an item and a location based on the comparison signal."

102. Accordingly, Fong discloses or renders obvious limitation 1[e].

- g. 1[f]: "wherein said field-detecting component is further operable to detect a second one of an electric field, a magnetic field and an electro-magnetic field and to generate a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field"**

103. Fong discloses or renders obvious "wherein said field-detecting

component is further operable to detect a second one of an electric field, a magnetic field and an electro-magnetic field and to generate a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field.”

104. As discussed above, Fong discloses storing a detected EMF signature, detecting an additional EMF signature, then comparing the previously stored signature and the additional signature. *See supra* section VI.B.1.d. Fong further discloses that this storing, collecting, and comparing is done by sensor system 130. *See supra* section VI.B.1.d.

105. As discussed in section V.D above, I interpret “second detected field signature” to be “a second set of properties, characteristics, or pattern of a detected field.”

106. Fong discloses that the sensor system 130 (1) stores a detected EMF signature from when the automobile 104 first generates an EMF at startup (a “first detected field signature”), (2) subsequently detects an additional EMF signature (a “second detected field signature”), and then (3) compares the two signatures to determine whether the second EMF signature is the same as the first signature and, thus, associated with a vehicle. Fong at 4:66-5:2, 5:26-29. In other words, the same sensor system 130 (“field-detecting component”) detects EMF and generates

detected field signatures at different points in time. The information passed from the sensor system 130 about the additional detected EMF to the rest of the system is a “second detected field signature,” because it constitutes “a second set of properties, characteristics, or pattern of a detected field” that is distinct from the “first detected field signature” of the original EMF at startup.

107. A POSITA would have understood that the sensor system 130 is the “field detecting component” and is “operable to detect a second one of an electric field, a magnetic field and an electro-magnetic field and to generate a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field.”

108. Accordingly, Fong discloses or renders obvious limitation 1[f].

- h. 1[g]: “wherein said comparing component is operable to generate the comparison signal based on a comparison of the detected field signature and the second detected field signature”**

109. Fong discloses or renders obvious “wherein said comparing component is operable to generate the comparison signal based on a comparison of the detected field signature and the second detected field signature.”

110. As discussed in section V.D above, I interpret “comparison signal” to be “a signal that corresponds to a comparison” for purposes of this declaration.

111. As discussed above, Fong discloses that “the sensor system goes

through an initialization or learning process to learn the particular signature of the stimulus. The signature of the stimulus is then stored by the sensor system and used in a ***comparison process*** to identify a subsequently detected stimulus as a stimulus that should initiate the App.” Ex. 1005, Fong at 5:20-25. Fong further discloses that “[o]nce the sensor system 130 has detected and recognized the EMF . . . that is generated by the ignition system and/or by the ignition process, ***the sensor system generates a signal*** that either directly or indirectly initiates the App 120.” *Id.* at 5:26-29.

112. As discussed above, Fong’s sensor system 130 is the “comparing component.” *See supra* section VI.B.1.e. As further discussed above, the sensor system 130 compares a stored signature to an additional, detected signature. *See supra* section VI.B.1.d. A POSITA would have understood that “detect[ing] and recogniz[ing] the EMF” included the comparison of stored and detected signatures described in Fong. Thus, a POSITA would have understood that the signal generated by the sensor signal “corresponds to a comparison.”

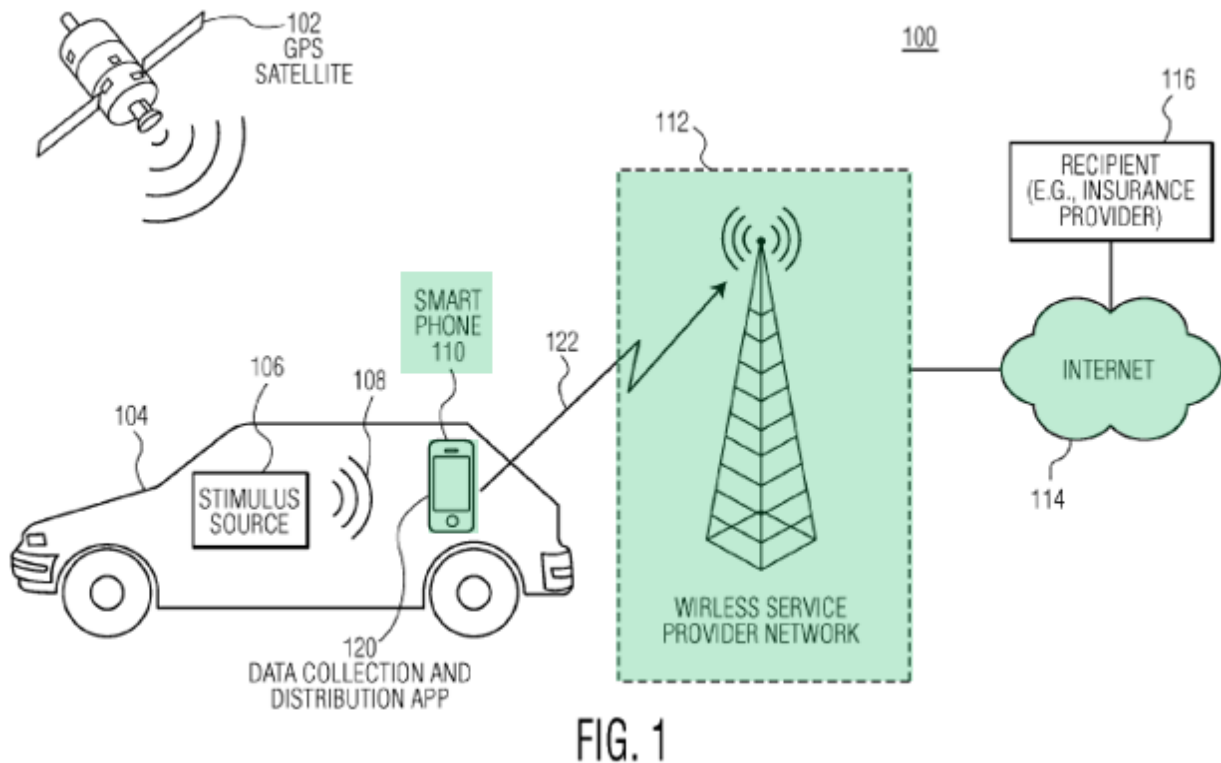
113. Moreover, a POSITA would have understood that the “comparison signal” being generated is based on the comparison of the first and second detected field signatures. *See supra* sections VI.B.1.b, VI.B.1.g. Accordingly, Fong discloses or renders obvious limitation 1[g].

2. Claim 5

114. Claim 5 depends on claim 1, which Fong discloses or renders obvious as discussed above. It is my opinion that Fong also discloses or renders obvious claim 5.

115. Claim 5 reads as follows: “The device of claim 1, further comprising a communication component operable to wirelessly communicate with a network.”

116. Figure 1 of Fong, copied below, shows the smartphone 110 wirelessly communicating with the Internet 114 through service provider network 112. *See* Ex. 1005, Fong at 4:31-34, Fig. 1. The smartphone, through the App, may also communicate accumulated travel data over Wi-Fi once such a connection is established. *Id.* at 4:34-37.



Id. at Fig. 1 (annotated).

117. In light of the above disclosures, a POSITA would have understood that the App is the “communication component” and is “operable to wirelessly communicate with a network.”

118. Accordingly, Fong discloses or renders obvious or renders obvious claim 5.

3. Claim 6

119. Claim 6 depends on claim 1, which Fong discloses or renders obvious as discussed above. It is my opinion that Fong discloses or renders obvious claim 6.

120. Claim 6 recites:

6[pre]	The device of claim 1,
6[a]	wherein said field-detecting component is operable to detect a magnetic field,
6[b]	wherein said input component is further operable to input an association between a vehicle and the detected magnetic field,
6[c]	wherein said field-detecting component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field, and
6[d]	wherein said identifying component is further operable, based on the association, to identify the vehicle as the item.

a. 6[a]: “wherein said field-detecting component is operable to detect a magnetic field”

121. Fong discloses or renders obvious “wherein said field-detecting component is operable to detect a magnetic field.”

122. As discussed above, Fong discloses “a field detecting component that is “operable to detect at least one of an electric field, a magnetic field and an electromagnetic field.” *See supra* section VI.B.1.b. Specifically, Fong discloses that sensor system 130 can detect an electromagnetic field (EMF) to detect whether a vehicle has been started. *See supra* section VI.B.1.b. A POSITA would have understood that an electromagnetic field is a combination of an electric and magnetic field. *See*

supra section IV. That is, a measure of EMF includes measurements of both the electric and magnetic fields. *See supra* section IV. A POSITA would understand that an EMF sensor can detect an electric field alone as well as a magnetic field alone. Fong discloses that EMF can be detected by sensor system 130, specifically via the “antenna and sensor logic of the smartphone.” *See* Ex. 1005, Fong at 5:11-17. Fong discloses comparing a previously stored EMF reading to an additional EMF reading to determine what specific vehicle was started. *See supra* section VI.B.1.h. Fong also discloses that “[m]any of the elements of a smartphone are well known in the field, and therefore are not described further,” in the disclosure. Ex. 1005, Fong at 8:22-23. Fong discloses that the smartphone could run iOS, Apple’s operating system. *Id.* at 8:24-26. As Fong alludes to, a POSITA would have known based on his/her knowledge of the art that smartphones, including iPhones running iOS, has a magnetometer. *See supra* section IV. A POSITA would have known that a magnetometer can be used to detect a magnetic field associated with the ignition of a vehicle.

123. Using a sensor, such as a magnetometer, to detect a magnetic field (as opposed to an electro-magnetic field) also would have been obvious to a POSITA reviewing Fong before December 2012. Fong discloses using a smartphone and, because “[m]any of the elements of a smartphone are well known in the field,” Fong

does not describe them in detail. Fong at 8:22-23. A POSITA would understand that detecting the magnetic field from the ignition of a vehicle would have been one way to accurately detect whether a device is in a vehicle.

124. Accordingly, it is my opinion that Fong discloses or renders obvious limitation 6[a].

b. 6[b]: “wherein said input component is further operable to input an association between a vehicle and the detected magnetic field”

125. Fong discloses or renders obvious “wherein said input component is further operable to input an association between a vehicle and the detected magnetic field.”

126. As discussed in section V.D above, I interpret “an association” to be “a relationship” for purposes of this declaration.

127. As discussed above, Fong discloses that sensor system 130 is “an input component operable to input the detected field signature into the database.” *See supra* section VI.B.1.c. As further disclosed above, the EMF reading from the sensor system 130 is the “detected field signature.” *See supra* section VI.B.1.b. Fong discloses that the signature generated by the ignition of the vehicle (i.e., the EMF reading) is “stored by the sensor system and used in a comparison process to identify a subsequently detected stimulus as a stimulus that should initiate the App.” Ex.

1005, Fong at 5:22-25. Thus, a POSITA would have understood that the stored signature is associated with a vehicle.

128. Accordingly, Fong discloses or renders obvious limitation 6[b].

- c. **6[c]: “wherein said field-detecting component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field”**

129. Fong discloses or renders obvious “wherein said field-detecting component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field.”

130. As discussed above, Fong discloses that sensor system 130 measures EMF and, thus, it is the “field-detecting component” that is “operable to detect a second one of an electric field, a magnetic field and an electro-magnetic field and to generate a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field.” *See supra* section VI.B.1.g.

131. As I noted above, a measure of EMF includes measurements of both the electric and magnetic fields. Thus, when the sensor system 130 detects a second EMF signature (wherein the first EMF signature is that generated by the automobile at startup), it is detecting a second magnetic field. Alternatively, as I noted above, it would have been obvious to a POSITA to use a magnetometer, a known

component of smartphones in December 2012, to detect a second magnetic field.

132. Accordingly, Fong discloses or renders obvious limitation 6[c].

d. 6[d]: “wherein said identifying component is further operable, based on the association, to identify the vehicle as the item”

133. Fong discloses or renders obvious “wherein said identifying component is further operable, based on the association, to identify the vehicle as the item.”

134. As discussed above, Fong discloses or renders obvious “an association between a vehicle and the detected magnetic field.” *See supra* section VI.B.3.b. A POSITA would have understood that the association between the vehicle and the detected magnetic field necessarily identifies the vehicle as the item—the vehicle is identified by the comparison of the magnetic signatures.

135. Moreover, Sfara alleges that identifying the mode of transportation (i.e., a car, a train, a bus, an airplane, etc.) satisfies “identify[ing] the vehicle as an item.” *See* Ex. 1006 at 149-51. A POSITA would have understood that the comparison disclosed in Fong can distinguish between the ignition of a vehicle and some other event. Thus, a POSITA would have understood that Fong discloses identifying a vehicle (e.g., a car) based on the detected ignition.

136. Accordingly, Fong discloses or renders obvious limitation 6[d].

4. Independent Claim 8

137. It is my opinion that Fong discloses or renders obvious each and every limitation of independent claim 8 for the reasons set forth below.

a. 8[pre]: “A method, for use with a database, said method comprising:”

138. To the extent the preamble of claim 8 is limiting, it is disclosed by Fong. Fong discloses or renders obvious “[a] device, for use with a database.”

139. Fong is directed to a “method and system for collecting automobile-related travel data with a smartphone.” Fong at Title. Figure 9 of Fong, copied below, shows “a process flow diagram of a method for collecting automobile-related travel data with a smartphone in accordance with an embodiment of the invention.” *Id.* at 9:37-39. Fong’s method includes the step of “initiating a travel data collection function of a smartphone in response to a stimulus that emanates from an automobile.” Fong at claim 15; *see also* Fig. 9.

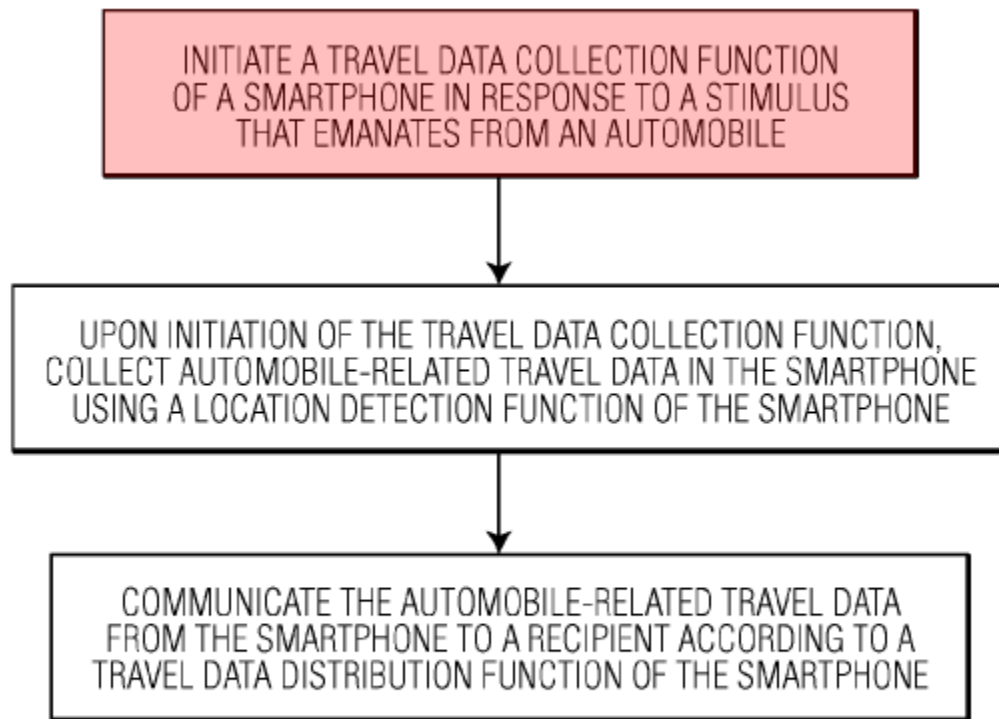


FIG. 9

Id. at Fig. 9 (annotated). The step highlighted above occurs when Fong’s sensor system 130 stores a detected EMF signature from an automobile’s ignition in the smartphone’s memory (a “database”) and compares the stored signature to a later-detected EMF signature to determine whether the smartphone is in a vehicle.

140. Accordingly, Fong discloses or renders obvious “[a] method, for use with a database.”

- b. **8[a] & 8[b]: “detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field” & “generating, via the field-detecting component, a detected field**

**signature based on the detected one of an electric field,
a magnetic field and an electro-magnetic field”**

141. It is my opinion that Fong discloses or renders obvious limitations 8[a] and 8[b].

142. Limitations 8[a] and 8[b] refer to steps of the method performed by the components recited in limitation 1[a], as shown in the table below:

Limitations 8[a] & 8[b]	Limitation 1[a]
8[a]: detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field	a field-detecting component operable to detect at least one of an electric field, a magnetic field and an electro-magnetic field and to generate a
8[b]: generating, via the field-detecting component, a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field	detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field;

143. Therefore, Fong discloses or renders obvious limitations 8[a] and 8[b] for the same reasons as limitation 1[a] (*see supra* section VI.B.1.b).

c. 8[c]: “inputting, via an input component, the detected field signature into the database”

144. It is my opinion that Fong discloses or renders obvious limitation 8[c].

145. Limitation 8[c] refers to steps of the method performed by the components recited in limitation 1[b], as shown in the table below:

Limitation 8[c]	Limitation 1[b]
8[c]: inputting, via an input component, the detected field signature into the database	an input component operable to input the detected field signature into the database

146. Therefore, Fong discloses or renders obvious limitation 8[c] for the same reasons as limitation 1[b] (*See supra* VI.B.1.c).

d. 8[d]: “accessing, via an accessing component, the detected field signature from the database”

147. It is my opinion that Fong discloses or renders obvious limitation 8[d].

148. Limitation 8[d] refers to steps of the method performed by the components recited in limitation 1[c], as shown in the table below:

Limitation 8[d]	Limitation 1[c]
8[d]: accessing, via an accessing component, the detected field signature from the database	an accessing component operable to access the detected field signature from the database

149. Therefore, Fong discloses or renders obvious limitation 8[d] for the same reasons as limitation 1[c] (*see supra* section VI.B.1.d).

e. 8[e]: “generating, via a comparing component, a comparison signal”

150. It is my opinion that Fong discloses or renders obvious element 8[e].

151. Limitation 8[e] refers to steps of the method performed by the components recited in limitation 1[d], as shown in the table below:

Limitation 8[e]	Limitation 1[d]
8[e]: generating, via a comparing component, a comparison signal	a comparing component operable to generate a comparison signal

152. Therefore, Fong discloses or renders obvious limitation 8[e] for the same reasons as limitation 1[d] (*see supra* section VI.B.1.e).

f. 8[f]: “identifying, via an identifying component, one of an item and a location based on the comparison signal”

153. It is my opinion that Fong discloses or renders obvious limitation 8[f].

154. Limitation 8[f] refers to steps of the method performed by the components recited in limitation 1[e], as shown in the table below:

Limitation 8[f]	Limitation 1[e]
8[f]: identifying, via an identifying component, one of an item and a location based on the comparison signal	an identifying component operable to identify one of an item and a location based on the comparison signal

155. Therefore, Fong discloses or renders obvious limitation 8[f] for the same reasons as limitation 1[e] (*see supra* section VI.B.1.f).

- g. **8[g] & 8[h]: “detecting, via the field-detecting component, a second one of an electric field, a magnetic field and an electro-magnetic field” & “generating, via the field-detecting component, a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field”**

156. It is my opinion that Fong discloses or renders obvious limitations 8[g] and 8[h].

157. Limitations 8[g] and 8[h] refer to steps of the method performed by the components recited in limitation 1[f], as shown in the table below:

Limitations 8[g] & 8[h]	Limitation 1[f]
8[g]: detecting, via the field-detecting component, a second one of an electric field, a magnetic field and an electro-magnetic field	wherein said field-detecting component is further operable to detect a second one of an electric field, a magnetic field and an electro-magnetic field and to generate a
8[h]: generating, via the field-detecting component, a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field	second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field

158. Therefore, Fong discloses or renders obvious limitations 8[g] and 8[h] for the same reasons as limitation 1[f] (*see supra* section VI.B.1.g).

h. 8[i]: “wherein said generating a comparison signal comprises generating the comparison signal based on a comparison of the detected field signature and the second detected field signature”

159. It is my opinion that Fong discloses or renders obvious limitation 8[i].

160. Limitation 8[i] refers to steps of the method performed by the components recited in limitation 1[g], as shown in the table below:

Limitation 8[i]	Limitation 1[g]
8[i]: wherein said generating a comparison signal comprises generating the comparison signal based on a comparison of the detected field signature and the second detected field signature	wherein said comparing component is operable to generate the comparison signal based on a comparison of the detected field signature and the second detected field signature

161. Therefore, Fong discloses or renders obvious limitation 8[i] for the same reasons as limitation 1[g] (*see supra* section VI.B.1.h).

5. Claim 12

162. Claim 12 depends on claim 8, which Fong discloses or renders obvious as discussed above. It is also my opinion that Fong discloses or renders obvious claim 12.

163. Claim 5 depends on claim 1, which Fong discloses or renders obvious as discussed above. The limitations of claim 12 are substantially similar to those recited in claim 5, as shown in the table below:

Claim 12	Claim 5
The method of claim 8, further comprising wirelessly communicating, via a communication component, with a network.	The device of claim 1, further comprising a communication component operable to wirelessly communicate with a network.

Therefore, Fong discloses or renders obvious claim 12 for the same reasons Fong discloses or renders obvious claim 5 (*see supra* section VI.B.2).

6. Claim 13

164. Claim 13 depends on claim 8, which Fong discloses or renders obvious as discussed above. It is my opinion that Fong discloses or renders obvious claim 13.

165. Claim 6 depends on claim 1, which Fong discloses or renders obvious as discussed above.

- a. **13[a] & 13[d]: “inputting, via the input component is further operable to input an association” & “wherein said inputting an association comprises inputting an association between a vehicle and the detected magnetic field”**

166. Limitations 13[a] and 13[d] are substantially similar to those recited in limitation 6[b], as shown in the table below:

Limitations 13[a] & 13[d]	Limitation 6[b]
13[a]: inputting, via the input component is further operable to input an association	wherein said input component is further operable to input an association between a vehicle and the detected magnetic field
13[d]: wherein said inputting an association comprises inputting an association between a vehicle and the detected magnetic field	

167. Therefore, Fong discloses or renders obvious elements 13[a] and 13[d] for the same reasons Fong discloses or renders obvious limitation 6[b] (*see supra* section VI.B.3.b).

a. 13[b]: “identifying, via the identifying component, a vehicle”

168. Fong discloses or renders obvious “identifying, via the identifying component, a vehicle.”

169. As discussed above with respect to limitation 1[e], Fong’s sensor system 130 is “an identifying component operable to identify one of an item and a location based on the comparison signal.” *See supra* section VI.B.1.f. For the same reasons described above, a POSITA would have understood that the sensor system

130 is the identifying component of limitation 13[b].

170. As discussed above, Fong discloses that the sensor system 130 can determine if a device is in a vehicle. *See supra* section VI.B.3.a. As explained above, a POSITA would understand that sensor system 130 can also determine the type of vehicle (*see supra* section VI.B.3.d). Therefore a POSITA would have understood that the sensor system 130 “identif[ies] a vehicle.”

171. Therefore, Fong discloses or renders obvious element 13[b]

b. 13[g]: “wherein said identifying a vehicle comprises identifying, based on the association, the vehicle as the item”

172. Limitation 13[g] is substantially similar to those recited in limitation 6[d], as shown in the table below:

Limitations 13[g]	Limitation 6[d]
13[g]: wherein said identifying a vehicle comprises identifying, based on the association, the vehicle as the item	wherein said identifying component is further operable, based on the association, to identify the vehicle as the item

173. Claim element 6[d] of the ’946 patent requires that “said identifying component is further operable, based on the association, to identify the vehicle as the item.” As discussed above, claim 8, to which claim 13 depends, requires

“identifying, via an identifying component, one of an item and a location based on the comparison signal.” Thus a POSITA would have understood that the “identifying component” of claim 8 performs the “identifying, based on the association, the vehicle as the item,” as required by limitation 13[g].

174. Therefore, Fong discloses or renders obvious element 13[g] for the same reasons Fong discloses or renders obvious limitation 6[d] (*see supra* section VI.B.3.d).

- c. **13[c]: “wherein said detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field comprises detecting detect a magnetic field”**

175. Limitation 13[c] is substantially similar to those recited in limitation 6[a], as shown in the table below:

Limitation 13[c]	Limitation 6[a]
13[c]: wherein said detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field comprises detecting detect a magnetic field	wherein said field-detecting component is operable to detect a magnetic field

176. Therefore, Fong discloses or renders obvious elements 13[c] for the same reasons Fong discloses or renders obvious limitation 6[a] (*see supra* section VI.B.3.a).

- d. 13[e] & 13[f]: “wherein said detecting a second one of an electric field, a magnetic field and an electro-magnetic field comprises detecting a second magnetic field” & “wherein said generating a second detected field signature comprises generating a second detected field signature based on the detected second magnetic field”

177. Limitations 13[e] and 13[f] are substantially similar to those recited in limitation 6[c], as shown in the table below:

Limitations 13[e] & 13[f]	Limitation 6[c]
13[e]: wherein said detecting a second one of an electric field, a magnetic field and an electro-magnetic field comprises detecting a second magnetic field	wherein said field-detecting component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field
13[f]: wherein said generating a second detected field signature comprises generating a second detected field	

Limitations 13[e] & 13[f]	Limitation 6[c]
signature based on the detected second magnetic field	

178. Claim element 6[c] of the '946 patent requires that “said field-detecting component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field.” As discussed above, claim 8, to which claim 13 depends, requires “detecting, *via the field-detecting component*, a second one of an electric field, a magnetic field and an electro-magnetic field; and generating, *via the field-detecting component*, a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field.” Thus a POSITA would have understood that the “field-detecting component” of claim 8 performs the “said detecting a second one of an electric field, a magnetic field and an electro-magnetic field comprises detecting a second magnetic field” and “said generating a second detected field signature comprises generating a second detected field signature based on the detected second magnetic field,” as required by limitations 13[e] and 13[f].

179. Therefore, Fong discloses or renders obvious limitations 13[e] and 13[f] for the same reasons Fong discloses or renders obvious limitation 6[c] (*see supra* section VI.B.3.c).

7. Independent Claim 15

180. It is my opinion that Fong discloses or renders obvious each and every limitation of independent claim 15 for the reasons set forth below.

- a. **15[pre]: “A non-transitory, tangible, computer-readable media having computer-readable instructions stored thereon, for use with a database, the computer-readable instructions being capable of being read by a computer and being capable of instructing the computer to perform the method comprising:”**

181. To the extent the preamble of claim 15 is limiting, it is disclosed by Fong. Fong discloses “[a] non-transitory, tangible, computer-readable media having computer-readable instructions stored thereon, for use with a database, the computer-readable instructions being capable of being read by a computer and being capable of instructing the computer to perform the method comprising.”

182. Fong discloses that the operations for the methods disclosed in Figure 9 can “be implemented using software instructions stored on a computer readable storage medium for execution by a computer.” Fong at 9:57-59. A POSITA would understand that this includes the step highlighted below, which is also performed by a device for use with a database. *See supra* sections VI.B.1.a-h.

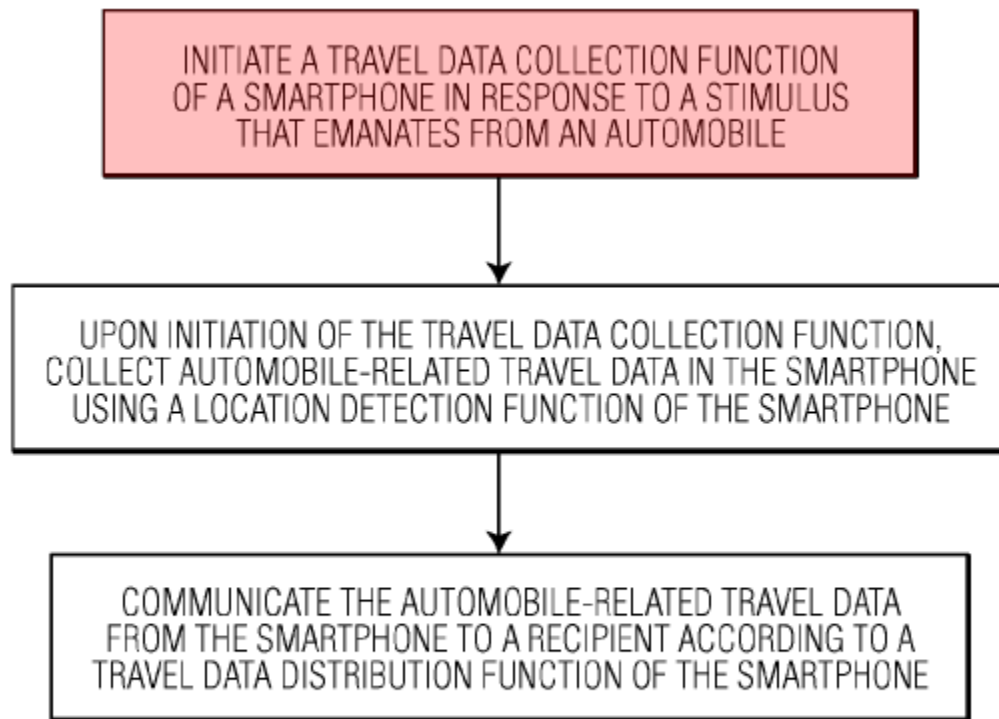


FIG. 9

Id. at Fig. 9 (annotated).

183. Fong discloses that the “sensor system . . . is capable of detecting and recognizing the EMF or sound” using “an antenna and sensor logic of the smartphone detect and recognize the EMF” or “a microphone and sensor logic of the smartphone to detect and recognize the sound that is generated by the ignition system and/or the ignition process,” respectively. Fong at 5:11-19. Fong further discloses that sensor system 130 goes through an initialization or learning process to learn the particular signature of the stimulus. Fong further discloses that “[t]he signature of the stimulus is then stored by the sensor system and used in a comparison process to

identify a subsequently detected stimulus as a stimulus that should initiate the App.”

Id. at 5:22-25. A POSITA would understand that the processes performed by the sensor system leading up to the initiation of the App is done using “non-transitory, tangible, computer-readable media having computer-readable instructions stored thereon, for use with a database, the computer-readable instructions being capable of being read by a computer and being capable of instructing the computer to perform the method comprising.”

184. Accordingly, it is my opinion that Fong discloses or renders obvious the preamble of claim 15.

- b. 15[a] & 15[b]: “detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field” & “generating, via the field-detecting component, a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field”**

185. It is my opinion that Fong discloses or renders obvious limitations 15[a] and 15[b].

186. Limitations 15[a] and 15[b] refer to the steps of the computer-readable instructions performed by the components recited in limitation 1[a], as shown in the table below:

Limitations 15[a] & 15[b]	Limitation 1[a]
15[a]: detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field	a field-detecting component operable to detect at least one of an electric field, a magnetic field and an electro-magnetic field and to generate a
15[b]: generating, via the field-detecting component, a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field	detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field;

187. Therefore, Fong discloses or renders obvious limitations 15[a] and 15[b] for the same reasons as limitation 1[a] (*see supra* section VI.B.1.b).

c. 15[c]: “inputting, via an input component, the detected field signature into the database”

188. It is my opinion that Fong discloses or renders obvious limitation 15[c].

189. Limitation 15[c] refers to the steps of the computer-readable instructions performed by the components recited in limitation 1[b], as shown in the table below:

Limitation 15[c]	Limitation 1[b]
15[c]: inputting, via an input component, the detected field signature into the database	an input component operable to input the detected field signature into the database

190. Therefore, Fong discloses or renders obvious limitation 15[c] for the same reasons as limitation 1[b] (*see supra* section VI.B.1.c).

d. 15[d]: “accessing, via an accessing component, the detected field signature from the database”

191. It is my opinion that Fong discloses or renders obvious limitation 15[d].

192. Limitation 15[d] refers to the steps of the computer-readable instructions performed by the components recited in limitation 1[c], as shown in the table below:

Limitation 15[d]	Limitation 1[c]
15[d]: accessing, via an accessing component, the detected field signature from the database	an accessing component operable to access the detected field signature from the database

193. Therefore, Fong discloses or renders obvious limitation 15[d] for the same reasons as limitation 1[c] (*see supra* section VI.B.1.d).

e. 15[e]: “generating, via a comparing component, a comparison signal”

194. It is my opinion that Fong discloses or renders obvious element 15[e].

195. Limitation 15[e] refers to the steps of the computer-readable instructions performed by the components recited in limitation 1[d], as shown in the table below:

Limitation 15[e]	Limitation 1[d]
15[e]: generating, via a comparing component, a comparison signal	a comparing component operable to generate a comparison signal

196. Therefore, Fong discloses or renders obvious limitation 15[e] for the same reasons as limitation 1[d] (*see supra* section VI.B.1.e).

f. 15[f]: “identifying, via an identifying component, one of an item and a location based on the comparison signal”

197. It is my opinion that Fong discloses or renders obvious element 15[f].

198. Limitation 15[f] refers to the steps of the computer-readable instructions performed by the components recited in limitation 1[e], as shown in the table below:

Limitation 15[f]	Limitation 1[e]
15[f]: identifying, via an identifying component, one of an item and a location based on the comparison signal	an identifying component operable to identify one of an item and a location based on the comparison signal

199. Therefore, Fong discloses or renders obvious limitation 15[f] for the same reasons as limitation 1[e] (*see supra* section VI.B.1.f).

- g. **15[g] & 15[h]: “detecting, via the field-detecting component, a second one of an electric field, a magnetic field and an electro-magnetic field” & “generating, via the field-detecting component, a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field”**

200. It is my opinion that Fong discloses or renders obvious limitations elements 15[g] and 15[h].

201. Limitations 15[g] and 15[h] refer to the steps of the computer-readable instructions performed by the components recited in limitation 1[f], as shown in the table below:

Limitations 15[g] & 15[h]	Limitation 1[f]
15[g]: detecting, via the field-detecting	wherein said field-detecting

Limitations 15[g] & 15[h]	Limitation 1[f]
component, a second one of an electric field, a magnetic field and an electro-magnetic field	component is further operable to detect a second one of an electric field, a magnetic field and an electro-magnetic field and to generate a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field
15[h]: generating, via the field-detecting component, a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field	

202. Therefore, Fong discloses or renders obvious limitations 15[g] and 15[h] for the same reasons as limitation 1[f] (*see supra* section VI.B.1.g).

- h. 15[i]: “wherein said generating a comparison signal comprises generating the comparison signal based on a comparison of the detected field signature and the second detected field signature”**

203. It is my opinion that Fong discloses or renders obvious element 15[i].

204. Limitation 15[i] refers to the steps of the computer-readable instructions performed by the components recited in limitation 1[g], as shown in the table below:

Limitation 15[i]	Limitation 1[g]
15[i]: wherein said generating a comparison signal comprises generating the comparison signal based on a comparison of the detected field signature and the second detected field signature	wherein said comparing component is operable to generate the comparison signal based on a comparison of the detected field signature and the second detected field signature

205. Therefore, Fong discloses or renders obvious limitation 15[i] for the same reasons as limitation 1[g] (*see supra* section VI.B.1.h).

8. Claim 19

206. Claim 19 depends on claim 15, which Fong discloses or renders obvious as discussed above. It is also my opinion that Fong discloses or renders obvious claim 19.

207. Claim 5 depends on claim 1, which Fong discloses or renders obvious as discussed above. The limitations of claim 19 are substantially similar to those recited in claim 5, as shown in the table below:

Claim 19	Claim 5
The non-transitory, tangible, computer-readable media of claim 15, the computer-readable instructions being capable of being read by a computer and being capable of instructing the computer to perform the method further comprising wirelessly communicating, via a communication component, with a network.	The device of claim 1, further comprising a communication component operable to wirelessly communicate with a network.

208. Therefore, Fong discloses or renders obvious claim 19 for the same reasons Fong discloses or renders obvious claim 5 (*see supra* section VI.B.2).

9. Claim 20

209. Claim 20 depends on claim 15, which Fong discloses or renders obvious as discussed above. It is my opinion that Fong discloses or renders obvious claim 20.

210. Claim 6 depends on claim 1, which Fong discloses or renders obvious as discussed above.

- a. **20[a] & 20[d]: “inputting, via the input component is further operable to input an association” & “wherein said inputting an association comprises inputting an association between a vehicle and the detected magnetic field”**

211. Limitations 20[a] and 20[d] are substantially similar to those recited in limitation 6[b], as shown in the table below:

Limitations 20[a] & 20[d]	Limitation 6[b]
20[a]: inputting, via the input component is further operable to input an association	wherein said input component is further operable to input an association between a vehicle and the detected magnetic field
20[d]: wherein said inputting an association comprises inputting an association between a vehicle and the detected magnetic field	

212. Therefore, Fong discloses or renders obvious elements 20[a] and 20[d] for the same reasons Fong discloses or renders obvious limitation 6[b] (*see supra* section VI.B.3.b).

- b. **20[b]: “identifying, via the identifying component, a vehicle”**

213. Fong discloses or renders obvious “identifying, via the identifying

component, a vehicle.”

214. As discussed above with respect to limitation 1[e], Fong’s sensor system 130 is “an identifying component operable to identify one of an item and a location based on the comparison signal.” *See supra* section VI.B.1.f. For the same reasons described above (*see supra* section VI.B.1.f), a POSITA would have understood that the sensor system 130 is the identifying component of limitation 13[b].

215. As discussed above, Fong discloses that the sensor system 130 can determine if a device is in a vehicle. *See supra* section VI.B.3.a. A POSITA would understand that sensor system 130 can also determine the type of vehicle (*see supra* section VI.B.3.d). Therefore a POSITA would have understood that the sensor system 130 “identif[ies] a vehicle.”

216. Therefore, Fong discloses or renders obvious element 20[b]

c. 20[g]: “wherein said identifying a vehicle comprises identifying, based on the association, the vehicle as the item”

217. The limitation of limitation 20[g] is substantially similar to those recited in limitation 6[d], as shown in the table below:

Limitations 20[g]	Limitation 6[d]
20[g]: wherein said identifying a vehicle comprises identifying, based on the association, the vehicle as the item	wherein said identifying component is further operable, based on the association, to identify the vehicle as the item

218. Claim element 6[d] of the '946 patent requires that “said identifying component is further operable, based on the association, to identify the vehicle as the item.” As discussed above, claim 15, to which claim 20 depends, requires “identifying, via an identifying component, one of an item and a location based on the comparison signal.” Thus a POSITA would have understood that the “identifying component” of claim 15 performs the “identifying, based on the association, the vehicle as the item,” as required by limitation 20[g].

219. Therefore, Fong discloses or renders obvious element 20[g] for the same reasons Fong discloses or renders obvious limitation 6[d] (*see supra* section VI.B.3.d).

- d. 20[c]: “wherein said detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field comprises detecting detect a magnetic field”**

220. The limitation of limitation 20[c] is substantially similar to those recited

in limitation 6[a], as shown in the table below:

Limitation 20[c]	Limitation 6[a]
20[c]: wherein said detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field comprises detecting detect a magnetic field	wherein said field-detecting component is operable to detect a magnetic field

221. Therefore, Fong discloses or renders obvious element 20[c] for the same reasons Fong discloses or renders obvious limitation 6[a] (*see supra* section VI.B.3.a).

- e. 20[e] & 20[f]: “wherein said detecting a second one of an electric field, a magnetic field and an electro-magnetic field comprises detecting a second magnetic field” & “wherein said generating a second detected field signature comprises generating a second detected field signature based on the detected second magnetic field”

222. Limitations 20[e] and 20[f] are substantially similar to those recited in limitation 6[c], as shown in the table below:

Limitations 20[e] & 20[f]	Limitation 6[c]
20[e]: wherein said detecting a second one of an electric field, a magnetic field and an electro-magnetic field comprises detecting a second magnetic field	wherein said field-detecting component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field
20[f]: wherein said generating a second detected field signature comprises generating a second detected field signature based on the detected second magnetic field	

223. Claim element 6[c] of the '946 patent requires that “said field-detecting component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field.” As discussed above, claim 15, to which claim 20 depends, requires “detecting, *via the field-detecting component*, a second one of an electric field, a magnetic field and an electro-magnetic field; and generating, *via the field-detecting component*, a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field.” Thus a POSITA would have

understood that the “field-detecting component” of claim 15 performs the “said detecting a second one of an electric field, a magnetic field and an electro-magnetic field comprises detecting a second magnetic field” and “said generating a second detected field signature comprises generating a second detected field signature based on the detected second magnetic field,” as required by limitations 20[e] and 20[f].

224. Therefore, Fong discloses or renders obvious limitations 20[e] and 20[f] for the same reasons Fong discloses or renders obvious limitation 6[c] (*see supra* section VI.B.3.c).

C. Ground 2: Abramson Renders Obvious Claims 1-6, 8-13, And 15-20

1. Independent Claim 1

225. It is my opinion that Abramson teaches or discloses each and every limitation of independent claim 1 as discussed below.

a. 1[pre]: “A device, for use with a database, said device comprising:”

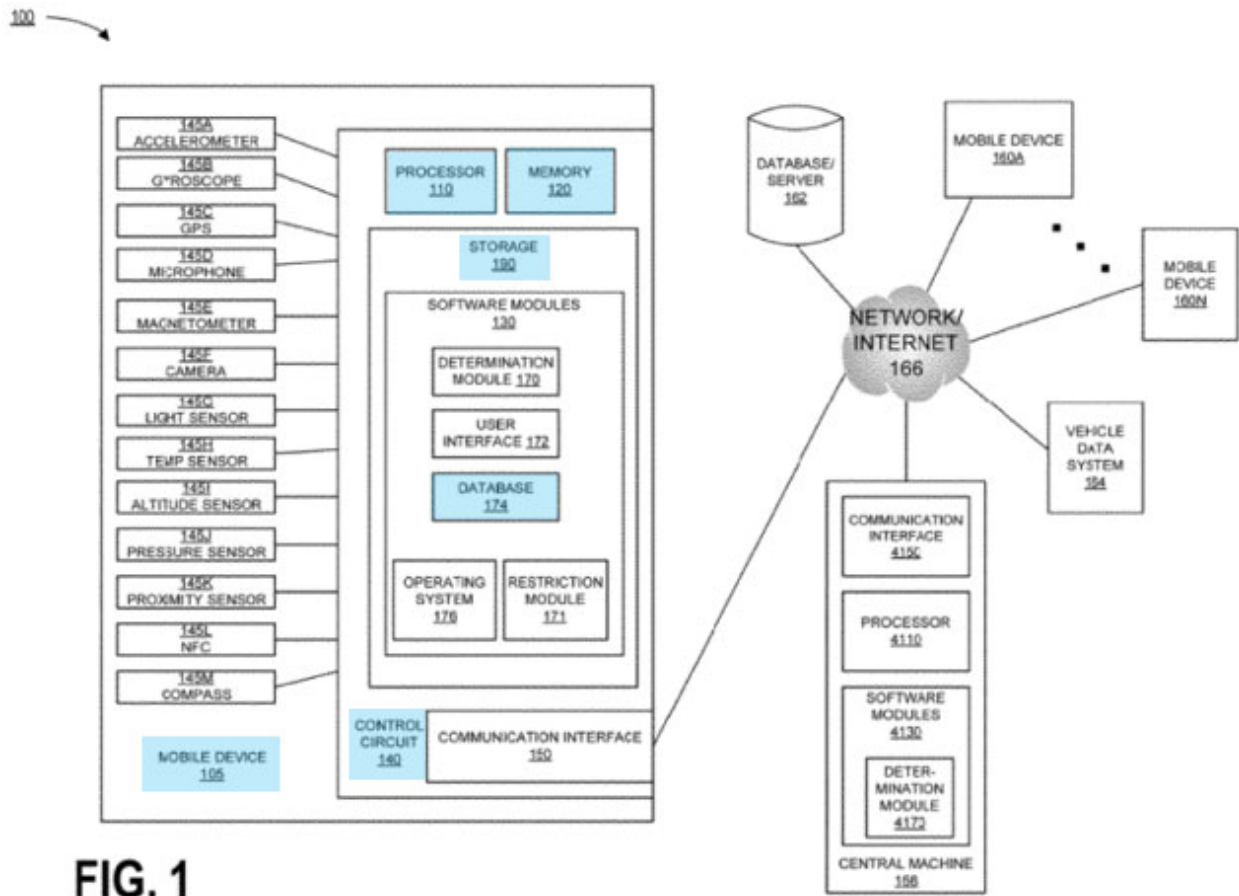
226. To the extent the preamble of claim 1 is limiting, Abramson discloses “a device, for use with a database.”

227. Abramson generally discloses a system of detecting and operating a mobile device in a vehicle. Ex. 1004, Abramson at 1:18-21 (“This disclosure relates generally to the field of mobile device identification, and, in particular, to computer-

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

implemented systems and methods for determining roles and usages of a mobile device within a vehicle.”). Abramson discloses that the mobile device 105 can be a smartphone or other common portable device. *Id.* at 15:15-23. In light of the above disclosures, a POSITA would understand that Abramson’s mobile device 105 would be “a device” of the ’946 patent.

228. Figure 1 of Abramson, copied below, “is a high-level diagram illustrating an exemplary configuration of an in-vehicle user-role determination system 100.” Ex. 1004, Abramson at 15:13-15.



Id. at Fig. 1 (annotated).

229. Abramson discloses that the mobile device contains storage that includes an internal database. Referring to Figure 1, Abramson discloses that mobile device 100 contains a control circuit 140 that is connected to a processor 110 and memory 120. *Id.* at 15:24-29. As shown in Figure 1, the control circuit is further connected to storage 190. *See id.* at 15:40-43, Fig. 1. Processor 110 is able to “to receive and execute instructions stored on memory 120 and/or on storage 190.” *Id.* at 15:40-43. Abramson discloses that “[m]emory 120 can be, for example, a random access memory (RAM) or any other suitable volatile or non-volatile computer readable storage medium” and can be “can be fixed or removable.” *Id.* at 15:43-46. Abramson discloses that “storage 190 can contain one or more components or devices. For example, storage 190 can be a hard drive, a flash memory, a rewritable optical disk, a rewritable magnetic tape, or some combination of the above” and “can be fixed or removable.” *Id.* at 15:48-52. Abramson further discloses that a “database 174 (that is local to mobile device 105)” can be used to “store[] determination characteristics.” *Id.* at 23:51-55.

230. A POSITA would understand that the memory 120 and/or storage 190 of mobile device 105 is the “database” claimed in the ’946 patent. The ’946 patent states that “database 404 may be any known device or system that is operable to

receive, store, organize and provide (upon a request) data” and “[n]on-limiting examples of database 404 include *a memory hard-drive* and a semiconductor memory.” Ex. 1001, ’946 patent at 7:24-29.

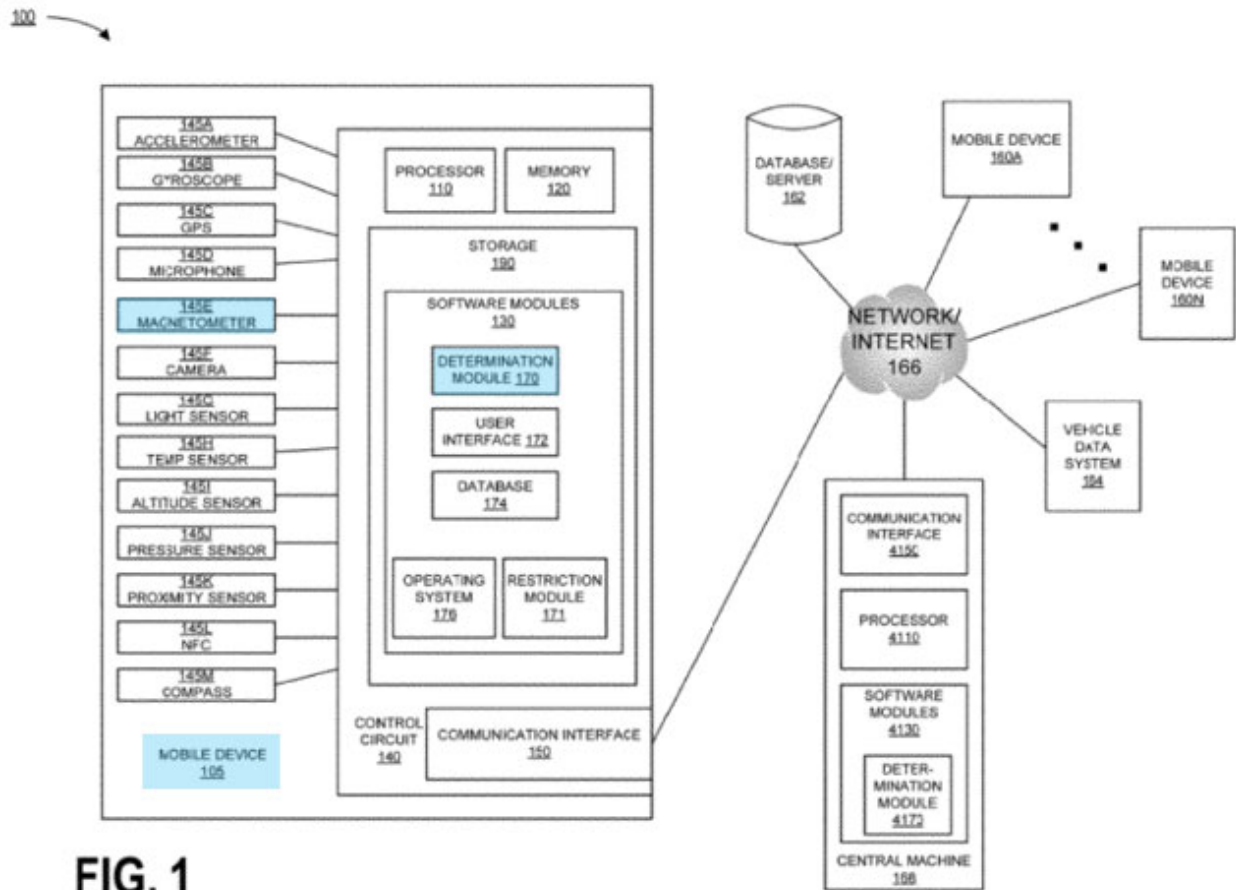
231. Accordingly, if it is limiting, Abramson discloses the preamble of independent claim 1.

- b. 1[a]: “a field-detecting component operable to detect at least one of an electric field, a magnetic field and an electro-magnetic field and to generate a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field”**

232. Abramson discloses “a field-detecting component operable to detect at least one of an electric field, a magnetic field and an electro-magnetic field and to generate a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field.”

233. Specifically, Abramson’s determination module 170 is a “field-detecting component” that functions to detect magnetic and electro-magnetic fields. Abramson discloses that, “processor 110 executing one or more of software modules 130, including, preferably, determination module 170, receives a first input, . . . [p]referably, the first input originates from one or more identifying events that are perceptible to at least one of sensors 145,” including magnetometer 145E. *Id.* at 19:53-60. As shown in Figure 1, copied below, Abramson discloses that one or more

sensors 145A-145M (generically “sensors 145”) “are various components, devices, and/or receivers that are preferably incorporated within and/or in communication with mobile device 105.” Ex. 1004, Abramson at 17:41-44. Abramson discloses that “[s]ensors 145 preferably detect one or more stimuli, phenomena, or any other such inputs” and “[e]xamples of such sensors 145 include, but are not limited to, an accelerometer 145A, a gyroscope 145B, a GPS receiver 145C, a microphone 145D, *a magnetometer 145E*, a camera 145F, a light sensor 145G, a temperature sensor 145H, an altitude sensor 145I, a pressure sensor 145J., a proximity sensor 145K, a near-field communication (NFC) device 145L, and a compass 145M.” *Id.* at 17:44-52. Abramson discloses that “mobile device 105 can preferably receive one or more inputs from one or more sensors 145 in order to determine an in-vehicle role of a user of mobile device 105.” *Id.* at 17:52-56. Moreover, Abramson explicitly discloses the use of magnetometer 145E of mobile device 105. *Id.* at 20:31-33, 53:48-54:2.



Id. at Fig. 1 (annotated). As discussed above, a POSITA would understand that a magnetometer measures electromagnetic and magnetic fields. *See supra* section IV.

234. A POSITA would have understood determination module 170 to be the “field detecting component” in light of the ’946 patent’s specification. For example, Abramson’s determination module 170 receiving an input from magnetometer 145E detects the exact same fields—electromagnetic and magnetic—as the “field detecting component” of the ’946 patent. Ex. 1001, ’946 patent at 6:15-19. Accordingly, Abramson’s determination module 170 is “a field-detecting

component operable to detect at least one of an electric field, a magnetic field and an electro-magnetic field.” This is consistent with the disclosure of the ’946 patent which explains that “a smartphone may utilize its magnetometer function to periodically measure the electromagnetic levels sensed at the smartphone’s current location.” ’946 patent at 17:25-28.

235. Abramson also discloses that the determination module 170 can “generate a detected field signature” based on the detected magnetic and/or electromagnetic field.¹ At step 220, the determination module 170 “analyzes at least the first input, . . . to identify one or more determination characteristics.” Ex. 1004, Abramson at 20:3-8. “[U]ser determination characteristics are one or more aspects originating at and/or derived from an input that provide insight regarding the in-vehicle role and/or identity of the user that is exerting control over and/or otherwise associated with a mobile device, such as mobile device 105.” *Id.* at 20:3-13. An example of a user determination characteristic is the magnetic field sensed by the mobile phone. *Id.* at 53:61-54:2.

236. A POSITA would understand that a determination characteristic is a

¹ As discussed in section V.D above, I interpret “detected field signature” to be “properties, characteristics, or pattern of a detected field.”

“propert[y], characteristic[], or pattern” of that detected magnetic field. Abramson explains that “[a] vehicle’s metallic and electrical parts influence the magnetic field in the vicinity of and inside such vehicle. A 3-axis magnetometer 145E of mobile device 105 can be used to detect these influences by measuring such magnetic field(s) at various times before and during a vehicle's operation (e.g., a car that has not yet been started will have a different *magnetic signature* than one in which the electric systems are operating).” Ex. 1004, Abramson at 53:48-55. A POSITA would understand that the measurements of magnetic field(s) collected by magnetometer 145E and processed by determination module 170 would make up a magnetic signature, as described in Abramson.

237. A POSITA would therefore understand that the determination module 170 of Abramson is “a field-detecting component operable to detect at least one of an electric field, a magnetic field and an electro-magnetic field and to generate a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field.”

238. Accordingly, Abramson discloses limitation 1[a].

c. **1[b]: “an input component operable to input the detected field signature into the database”**

239. Abramson discloses “an input component operable to input the detected field signature into the database.” Specifically, the processor 110 running software

modules 130 is “an input component” operable to input the value from the magnetometer reading (i.e., “the detected field signature”) into memory 120 and/or storage 190 (i.e., “the database”).

240. With respect to step 210, “processor 110 executing one or more of software modules 130, including, preferably, determination module 170, receives a first input, . . . [p]referably, the first input originates from one or more identifying events that are perceptible to at least one of sensors 145,” including magnetometer 145E. *Id.* at 19:53-60.

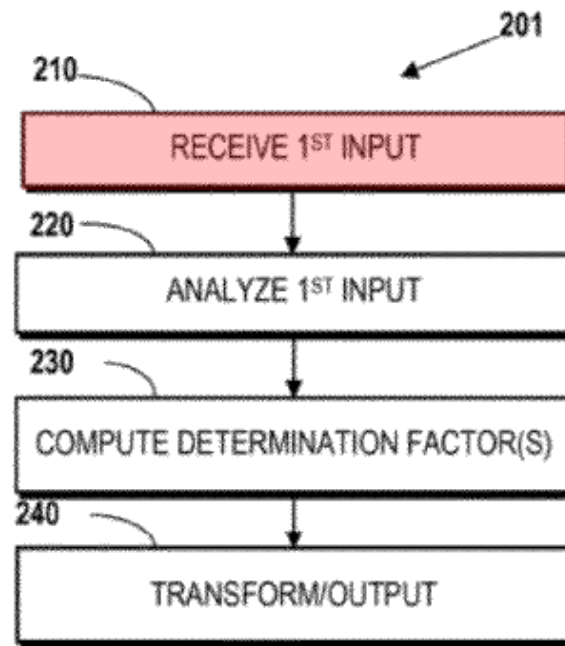


FIG. 2A

Id. at Fig. 2A. A POSITA would understand that the “input” received in step 210 is field signature data generated from the determination module 170 discussed above.

241. At step 220, the determination module 170 “analyzes at least the first input, . . . to identify one or more determination characteristics.” *Id.* at 20:3-8.

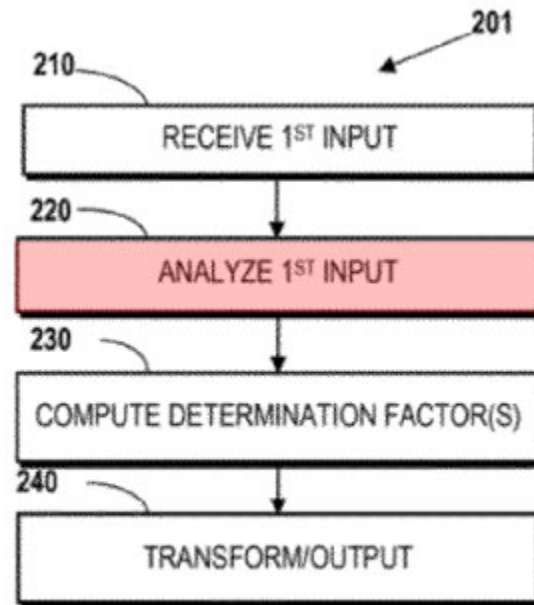


FIG. 2A

Id. at Fig. 2A.

242. As shown below in Figure 1, Abramson discloses that processor 110 accesses “one or more software modules 130 [that] are encoded in storage 190 and/or in memory 120” to execute the disclosed system and method. *See id.* at 15:40-16:16.

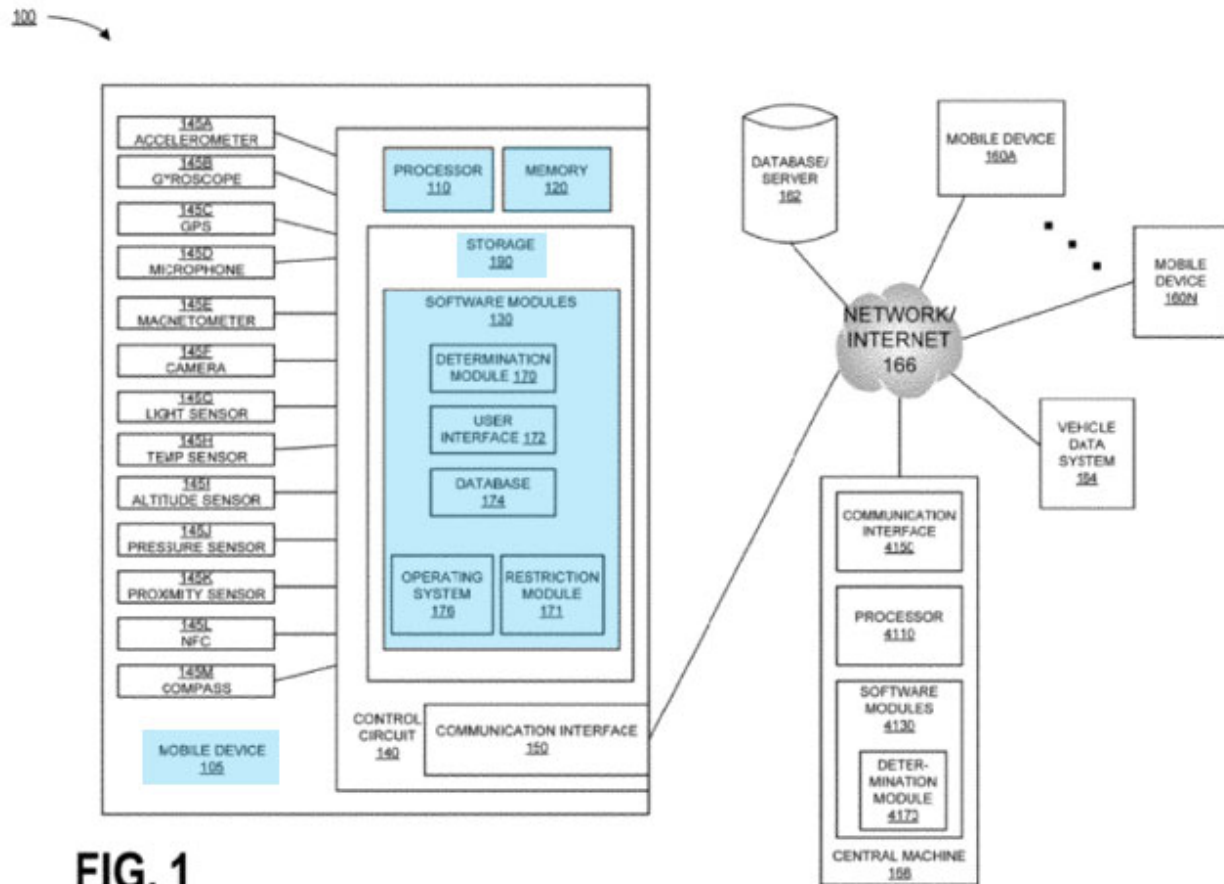


FIG. 1

Id. at Fig. 1 (annotated). A POSITA would have further understood that processing an input from one of the sensors 145, including magnetometer 145E, using determination module 170, would require that the input be stored, even if temporarily, on either storage 190 and/or memory 120, for the processing to occur. Thus, a POSITA would understand that the processor 110 running software modules 130 is “an input component” operable to input the value from the magnetometer reading (i.e., “the detected field signature”) into memory 120 and/or storage 190 (i.e., “the database”).

243. Accordingly, Abramson discloses or renders obvious limitation 1[b].

d. 1[c]: “an accessing component operable to access the detected field signature from the database”

244. Abramson discloses “an accessing component operable to access the detected field signature from the database.”

245. As discussed above, processor 110 running software modules 130 inputs the reading from sensors 145, including magnetometer 145E, into memory 120 and/or storage 190 (i.e., the “database”) to be used by the software modules 130. *See supra* section VI.C.1.c. As discussed above, “processor 110 executing one or more of software modules 130, including, preferably, determination module 170, analyzes at least the first input, such as to identify one or more determination characteristics within the first input.” Ex. 1004, Abramson at 20:3-8. A POSITA would have understood that in order to be processed by determination component 170, the readings from sensors 145, including magnetometer 145E would need to be accessed from memory 120 and/or storage 190. A POSITA would also understand that multiple components, including the “input component” and the “accessing component,” may exist in Abramson’s processor 110. The ’946 patent confirms this understanding, as two or more of the claimed components “may be combined as a unitary device.” ’946 patent at 5:29-35.

246. In light of the above disclosures, a POSITA would understand that the

first input is stored in memory 120 and/or storage 190, which the processor running software modules 130 accesses to execute the program disclosed by Abramson. Thus, a POSITA would understand that the processor 110 running software modules 130 is “an accessing component” operable to access the value from the magnetometer reading (i.e., “the detected field signature”) from memory 120 and/or storage 190 (i.e., “the database”).

247. Accordingly, Abramson discloses or renders obvious limitation 1[c].

e. 1[d]: “a comparing component operable to generate a comparison signal”

248. Abramson further discloses “a comparing component operable to generate a comparison signal.” Specifically, Abramson discloses a step where the detected signature is compared to known signatures in order to determine a feature of the device, e.g., who is using it or where it is in the vehicle.

249. As discussed above, Abramson discloses that at step 220, the “determination module 170, analyzes at least the first input, . . . to identify one or more determination characteristics within the first input, including but not limited to user determination characteristics,” which “provide insight regarding the in-vehicle role and/or identity of the user.” Ex. 1004, Abramson at 20:3-13.

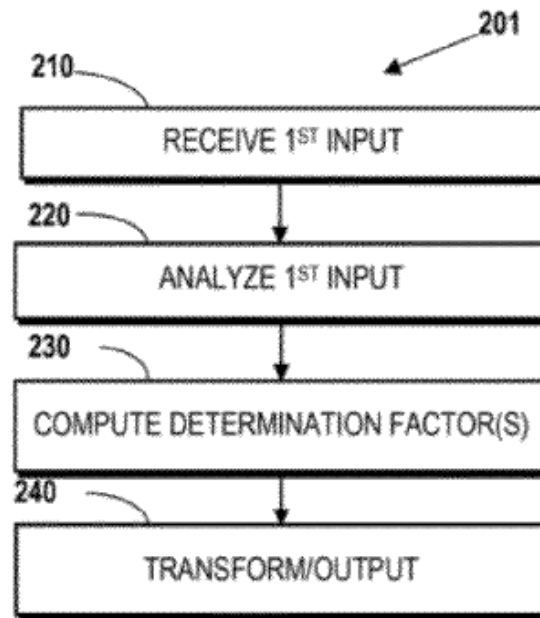


FIG. 2A

Id., Fig. 2A.

250. Still referring to Figure 2A, Abramson discloses that “at step 230 . . . determination module 170, ***computes one or more determination factors*** (that is, factors that reflect and/or suggest one or more determinations that can be arrived at ***with respect to one or more of the mobile device, its location, the user, and/or the vehicle***).” *Id.* at 20:34-42. Abramson discloses that “a ***probability can be computed, based on the user determination characteristics***, that the in vehicle role of the ***user of mobile device 105 is a driver*** and/or that the in-vehicle role of the ***user of the mobile device 105 is a passenger***.” *Id.* at 20:42-46.

251. Referring to Example 1, Abramson discloses that “[t]here are a number

of inputs that can be utilized in various arrangements in order to identify one or more user determination characteristics, such as the *location of a mobile device 105 and/or if a mobile device 105 is being operated by the driver or by the passenger of a car/truck/bus.*” *Id.* at 47:63-67. As one of those examples, Abramson describes the use of “Magnetic Field.” *Id.* at 47:63-67. Abramson explains that “[a] vehicle’s metallic and electrical parts influence the magnetic field in the vicinity of and inside such vehicle. A 3-axis *magnetometer 145E* of mobile device 105 can be used to detect these influences by *measuring such magnetic field(s) at various times before and during a vehicle’s operation* (e.g., a car that has not yet been started will have a different magnetic signature than one in which the electric systems are operating) and *by comparing them with known magnetic signatures of different in-vehicle locations in order to determine the in-vehicle location of mobile device 105.* Such signatures can be universal and/or can depend on additional parameters such as vehicle model, vehicle location, etc.” *Id.* at 53:48-60. As an example, Abramson explains that “the major metallic component in most vehicles is the motor and in most vehicles (e.g., cars, buses), and it is normally *situated in the front part of the vehicle, near the center.* The magnetic field sensed by *magnetometer 145E* of mobile device 105 can be compared with the magnetic field that is otherwise present absent the magnetic disturbances—*thereby indicating the direction of the motor.*

The lateral component of that direction is preferably the opposite of the left-right in-car location of mobile device 105.” *Id.* at 53:61-54:2.

252. For the reasons discussed above, a POSITA would understand that the determination module 170 is “the comparing component.” As discussed above, a POSITA would understand that Abramson discloses that the determination module 170 uses determination characteristics to compute one or more determination factors by comparing the determination factors to baseline determination factor values.

253. The ’946 patent discloses that “[c]omparing component 418 may be any known device or system that is operable to compare two inputs.” Ex. 1001, ’946 patent, 6:50-52. This confirms my opinion that the determination module 170, which performs a comparison between two inputs (determination characteristics), is a “comparing component.”

254. Abramson also discloses that the comparing component is operable to generate a comparison signal. As discussed in section V.D above, I interpret “comparison signal” to be “a signal that corresponds to a comparison” for purposes of this declaration.

255. A POSITA would understand that Abramson discloses sending the determination factors to at least processor 110 for further processing. Abramson discloses that “[a]t step 240, the processor 110 executing one or more of software

modules 130, including, preferably, determination module 170, transforms an operation state of the mobile device 105 *based on the determination factors (such as the probability computed at step 230)*, and/or outputs at least one operation state based on the at least one determination factor, and/or outputs at least one in-vehicle role of the user based on at least one determination factor, and/or outputs at least one in-vehicle location of the mobile device 105 based on at least one determination factor, and/or outputs at least one result based on the at least one determination factor.” Ex. 1004, Abramson at 21:12-22. A POSITA would understand that in order for the processor 110 to transform operation state of the mobile device 105 based on the output of step 230, some sort of signal, whether electronic or via software would need to be sent to the processor 110. A POSITA would understand that such a signal is “a signal that corresponds to a comparison,” at step 230.

256. Thus a POSITA would understand that determination module 170 (i.e., the “comparison component”) was operable to generate a comparison signal (i.e., a signal that corresponds to a comparison).

257. Accordingly, Abramson discloses or renders obvious limitation 1[d].

f. 1[e]: “an identifying component operable to identify one of an item and a location based on the comparison signal”

258. Abramson discloses “an identifying component operable to identify one

of an item and a location based on the comparison signal.”

259. A POSITA would understand that the determination module 170 is “an identifying component.” As discussed above, referring to Figure 2B (copied below), Abramson discloses that “at step 240, the processor 110 executing one or more of software modules 130, including, preferably, determination module 170, transforms an operation state of the mobile device 105 ***based on the determination factors (such as the probability computed at step 230)***, and/or outputs at least one operation state based on the at least one determination factor, and/or outputs at least one ***in-vehicle role of the user*** based on at least one determination factor, and/or outputs at least one ***in-vehicle location of the mobile device 105*** based on at least one determination factor, and/or outputs at least one result based on the at least one determination factor.” *Id.* 21:12-22.

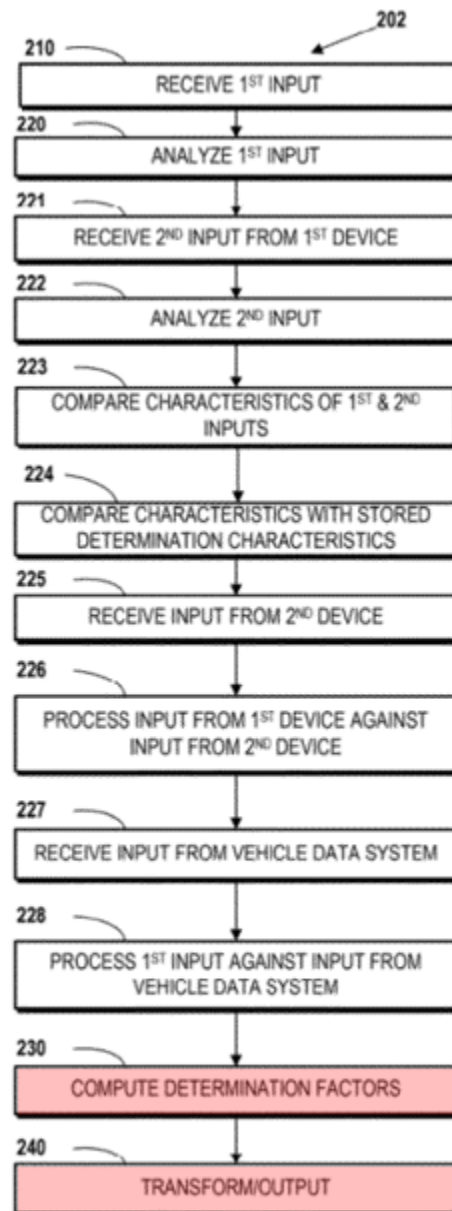


FIG. 2B

Id. at Fig. 2B (annotated). A POSITA would understand that the analysis performed at step 240 is “based on the comparison signal” (i.e., the output of step 230).

260. A POSITA would understand that, at this step, determination module

170 is “operable to identify one of an item and a location.” As discussed above, Abramson discloses that the output of step 240 can be “at least one in-vehicle role of the user . . . and/or at least one in-vehicle location of the mobile device 105.” A POSITA would understand that at least the “in-vehicle **location** of the mobile device” was a location as claimed in the ’946 patent. Moreover, as discussed with respect to the magnetic field example of Example 1, Abramson discloses that “the major metallic component in most vehicles is the motor and in most vehicles (e.g., cars, buses), and it is normally situated in the front part of the vehicle, near the center.” Abramson at 53:61-64. Abramson then describes how to use magnetic field disturbance to determine the “in-car location of mobile device 105.” *Id.* at 53:64-54:2. A POSITA would understand that the magnetometer method disclosed in Abramson was operable with a car or bus. Therefore, a POSITA would have understood that the output of an in-vehicle role of a user must be the in-vehicle role of a car or bus. Therefore, a POSITA would understand that the vehicle was identified as an “item” as claimed in the ’946 patent.

261. The identification of an item is consistent with the disclosure of the ’946 patent. The ’946 patent discloses that “a smartphone carried by person 104 may identify whether person 204 is entering house 202 or building 208 by aspects of magnetic field 206 or magnetic field 210.” Ex. 1001, ’946 patent at 4:58-61. The

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

'946 patent further discloses that “[i]f the retrieved, previously stored signature as provided by access component 416 matches the newly generated signature as provided by field-detecting component 412, then . . . identifying component 420 may indicate that the newly detected item/location is the same item/location that was previously registered.” ’946 patent at 16:17-24. Similarly, Abramson discloses the use of stored user determination characteristics to determine if newly detected data indicates that a vehicle is present or the location of the driver within the vehicle. *See, e.g.*, Abramson at 20:42-46, 53:48-54:2.

262. Additionally, I understand that Patent Owner has taken positions in the District Court Action that align with the disclosures of Abramson. In the District Court Action, Patent Owner contends that “identify[ing] one of an item and a location” can be identifying what type of vehicle the mobile device is in and whether the user is the driver or a passenger. For example, Sfara asserts that examples of an “item” include “mode of transportation, such as a car, motorcycle, bicycle, train, bus” and examples of a “location” include “driver/passenger side of the vehicle.” Ex. 1006, Infringement Contentions at 116. As discussed above, Abramson discloses both identifying what type of vehicle the mobile device is in and whether the user of the mobile device is the driver or a passenger.

263. Alternatively, a POSITA would have been motivated to combine the

embodiment shown in Figure 2B with the embodiment of Figure 5. Figure 5 shows “a routine 500 that illustrates an aspect of a method of determining a vehicle class of a vehicle using a first mobile device in accordance with at least one embodiment disclosed herein.” Abramson at 34:38-42. At step 510, “processor 110 executing ..., preferably, determination module 170, receives a first input from one or more of sensors 145, software modules 130, user interface 172, operating system 176, and/or communication interface 150.” *Id.* at 34:49-54. At step 520, “determination module 170, analyzes at least the first input to identify one or more vehicle determination characteristics within the first input.” *Id.* at 34:65-35:2. The vehicle determination characteristics are “one or more aspects originating at and/or derived from an input that provide insight regarding the vehicle class within or upon which and/or in relation to mobile device 105 is traveling.” *Id.* at 35:2-6. Abramson discloses that “various baseline values corresponding to the vehicle determination characteristics referenced herein (such as values for vehicle determination characteristics that correspond to boats, values for vehicle determination characteristics that correspond to airplanes, etc.) can be stored and/or provided at databases 174 and/or 162, thereby enabling the computation of a probability (based on the vehicle determination characteristics perceived/determined by mobile device 105) that the vehicle within which mobile device 105 is traveling corresponds to a particular vehicle class.” *Id.*

at 35:33-43. At step 530, determination module 170 “computes at least one determination factor based on the vehicle determination characteristic(s), such as a probability that the vehicle corresponds to a particular vehicle class,” (e.g., car, motorcycle, bicycle, train, bus, etc.). *Id.* at 35:47-50.

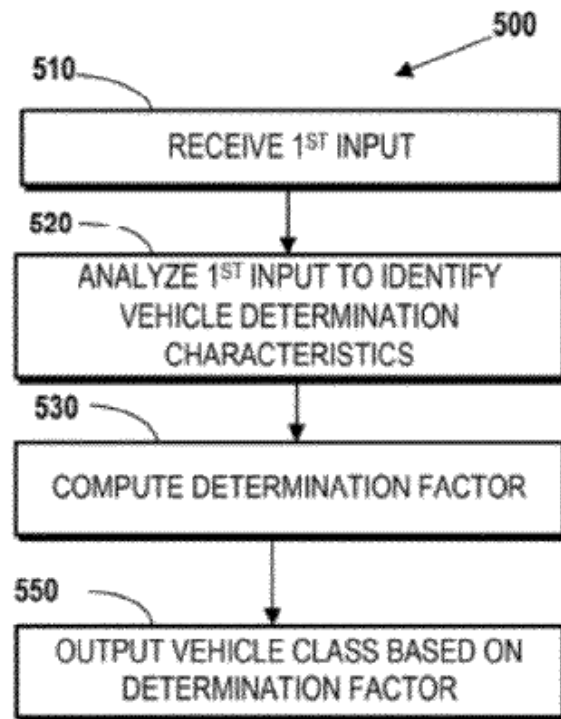


FIG. 5

Id. at Fig. 5. A POSITA would understand that the method of Figure 5 determined an “item” (i.e., vehicle class).

264. A POSITA would have been motivated to combine the methods of Figures 2A-B and 5. First, Abramson discloses that Figures 2A-B and 5 share “substantial similarities” and can be “employed in conjunction” with each other. *Id.*

at 34:45-48 (“[I]t should be understood that the various steps and/or operations that make up routine 500 share substantial similarities to those described above in connection with FIGS. 2A-C and 3-4.”), 36:48-52 (“This operation can be further appreciated when employed in conjunction with a determination of an in-vehicle role of a user of mobile device 105, such as that depicted in FIGS. 2A-C and described in detail above.”). Second, Abramson discloses that “determining the vehicle class of a particular vehicle can provide further insight and accuracy in the *determination of an in-vehicle role* of a user of a mobile device.” *Id.* at 34:42-45. A POSITA would understand that combining the vehicle determination of Fig. 5 with the in-vehicle determination of Fig. 2 would accomplish that increased accuracy. Third, a POSITA would have had a reasonable expectation of success in combining the methods shown in Figures 2A-B and 5. As discussed above, Abramson explicitly discloses that the methods could be combined and the combination could improve the accuracy of an in-vehicle determination (Figures 2A-B). A POSITA would understand that combining the two methods would have been a simple substitution of steps. As discussed above, the system detects and analyzes the same data in Figures 2A-B and 5.

265. Accordingly, Abramson discloses or renders obvious limitation 1[e].

- g. 1[f]: “wherein said field-detecting component is further operable to detect a second one of an electric**

**field, a magnetic field and an electro-magnetic field
and to generate a second detected field signature based
on the detected second one of an electric field, a
magnetic field and an electro-magnetic field”**

266. Abramson discloses “wherein said field-detecting component is further operable to detect a second one of an electric field, a magnetic field and an electro-magnetic field and to generate a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field.”

267. As discussed above, Abramson’s determination module 170, including for example magnetometer 145E, correspond to the “field detecting component” of the ’946 patent. *See supra* section VI.C.1.b.

268. Figure 2B of Abramson, copied below, shows a flow diagram of “routine 202 that illustrates a further aspect of a method for determining an in-vehicle role of a user of a mobile device 105.” Ex. 1004, Abramson at 22:17-20. Abramson discloses that “[t]he process begins at step 210 where a first input of a first device 105 is received, and proceeds to step 220 where the first input is analyzed. Steps 210 and 220 have already been described above with reference to FIG. 2A and thus will not be further elaborated upon here as their operation is substantially identical to steps 210 and 220 described above.” *Id.* at 22:30-35.

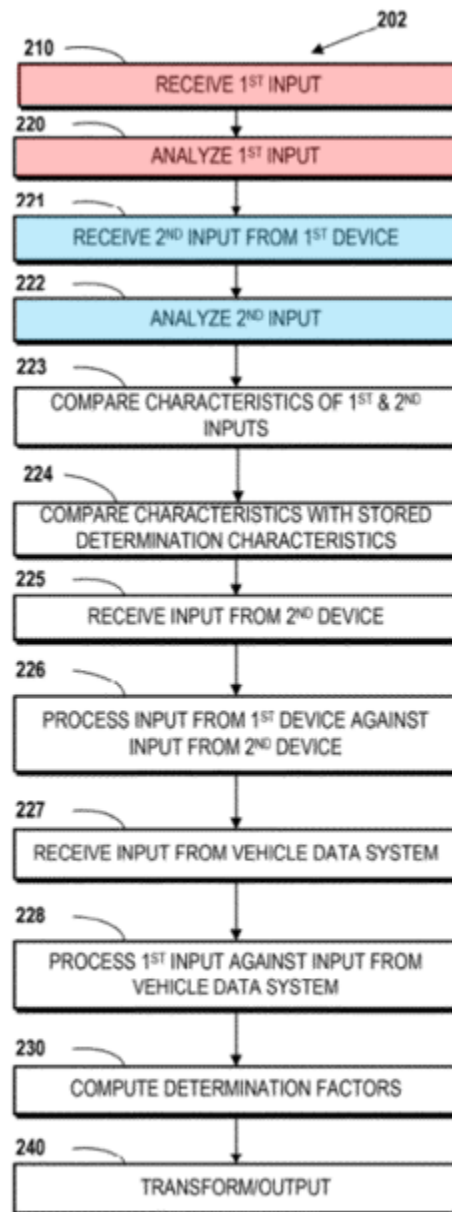


FIG. 2B

Id. at Fig. 2B (annotated).

269. Referring to Figure 2B, Abramson discloses that “at step 221 . . . determination module 170, receives a second input from one or more of sensors

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

145.” *Id.* at 22:36-39. As discussed above, Abramson discloses that sensors 145, including magnetometer 145E, “preferably detect one or more stimuli, phenomena, or any other such inputs.” *Id.* at 17:44-52. Thus, a POSITA would have understood that one of the determination module 170, including magnetometer 145E, “detects a second one of an electric field, a magnetic field and an electro-magnetic field.”

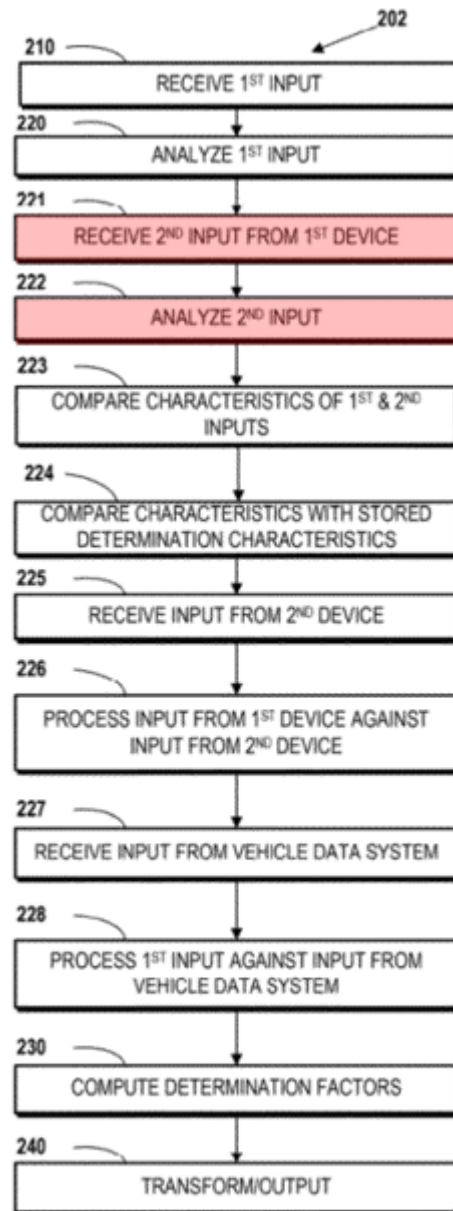


FIG. 2B

Id. at Fig. 2B (annotated).

270. Abramson also discloses that the determination module 170, including magnetometer 145E, “generate[s] a second detected field signature based on the

detected second one of an electric field, a magnetic field and an electro-magnetic field.” As discussed in section V.D above, I interpret “second detected field signature” to be “a second set of properties, characteristics, or pattern of a detected field” for purposes of this declaration.

271. A POSITA would understand that gathering additional information from the magnetometer would generate “a second set of properties, characteristics, or pattern of a detected field.” As discussed above, Abramson also discloses that the determination module 170 can “generate a detected field signature” based on the detected magnetic and/or electromagnetic field. *See supra* section VI.C.1.b. Referring to Figure 2B, Abramson discloses that “[a]t step 222, the second input is analyzed by processor 110 executing determination module 170, in a manner substantially similar to that described above with reference to step 220, in order to identify one or more determination characteristics such as user determination characteristics within the second input.” Abramson at 22:46-51. Abramson further discloses that, “[h]ere, determination module 170 can analyze various patterns within the second input.” *Id.* at 22:55-57. As discussed above, “user determination characteristics are one or more aspects originating at and/or derived from an input that provide insight regarding the in-vehicle role and/or identity of the user that is exerting control over and/or otherwise associated with a mobile device, such as

mobile device 105..” *Id.* at 20:3-13. An example of a user determination characteristic is the magnetic field sensed by the mobile phone. *Id.* at 53:61-54:2. Abramson further discloses “comparing user determination characteristics (such as those identified at step 220 and/or step 222) with stored user determination characteristics (such as stored user determination characteristics that have historically demonstrated a high degree of prediction accuracy in determining an in vehicle role of a user).” *Id.* at 23:61-24:2. Abramson further discloses that this comparison can be done using information from the same sensor 145, including magnetometer 145E. *Id.* at 53:64-67 (“The magnetic field sensed by magnetometer 145E of mobile device 105 can be compared with the magnetic field that is otherwise present absent the magnetic disturbances—thereby indicating the direction of the motor.”). Thus, a POSITA would understand that “second detected field signature” could be generated based on a second reading from magnetometer 145E (i.e., “the detected second one of an electric field, a magnetic field and an electro-magnetic field”).

272. In light of the above disclosures, a POSITA would understand that a determination characteristic is a “propert[y], characteristic[], or pattern” of that detected magnetic field. For example, a POSITA would have understood that a reading from a magnetometer indicating the strength of a magnetic field is a

“propert[y], characteristic[], or pattern” of that detected magnetic field that would represent a “second detected field signature.” *See supra* section VI.C.1.g.

273. Thus, Abramson’s determination module 170, including for example magnetometer 145E, is a field-detecting component “operable to detect a second one of an electric field, a magnetic field and an electro-magnetic field and to generate a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field.”

274. Accordingly, Abramson discloses limitation 1[f].

h. 1[g]: “wherein said comparing component is operable to generate the comparison signal based on a comparison of the detected field signature and the second detected field signature”

275. Abramson discloses “wherein said comparing component is operable to generate the comparison signal based on a comparison of the detected field signature and the second detected field signature.”

276. As discussed in section V.D above, I interpret “comparison signal” to be “a signal that corresponds to a comparison” for purposes of this declaration.

277. As discussed above, Abramson’s determination module 170 is the “comparing component operable to generate a comparison signal” required by the ’946 patent. *See supra* section VI.C.1.e. A POSITA would further understand that the determination module 170 is operable to generate a comparison signal “based on

a comparison of the detected field signature and the second detected field signature.”

278. As discussed above with respect to Abramson Figure 2B steps 210, 220, 221, and 222, the determination module 170 receives first and second inputs from sensors 145 (including magnetometer 145E). *See supra* section VI.C.1.h). At steps 220 and 222, the determination module 170 analyzes the first and second input, respectively, to identify one or more user determination characteristics. *See supra* section VI.C.1.g). Referring still to Figure 2B, copied below, Abramson discloses that “at step 223, the processor 110 executing one or more of software modules 130, including, preferably, determination module 170, can ***compare the determination characteristics*** such as user determination characteristics identified within the ***first input*** (such as those identified at step 220) with the determination characteristics such as user determination characteristics identified within the ***second input*** (such as those identified at step 222).” Ex. 1004, Abramson at 23:10-17. Abramson further discloses that “[i]n doing so, one or more patterns, correlations and/or relationships can be identified between the user determinations characteristics of the first input and the user determination characteristics of the second input.” *Id.* at 23:17-20. Thus a POSITA would understand that determination module 170 compares determination characteristics derived from the first input and second input.

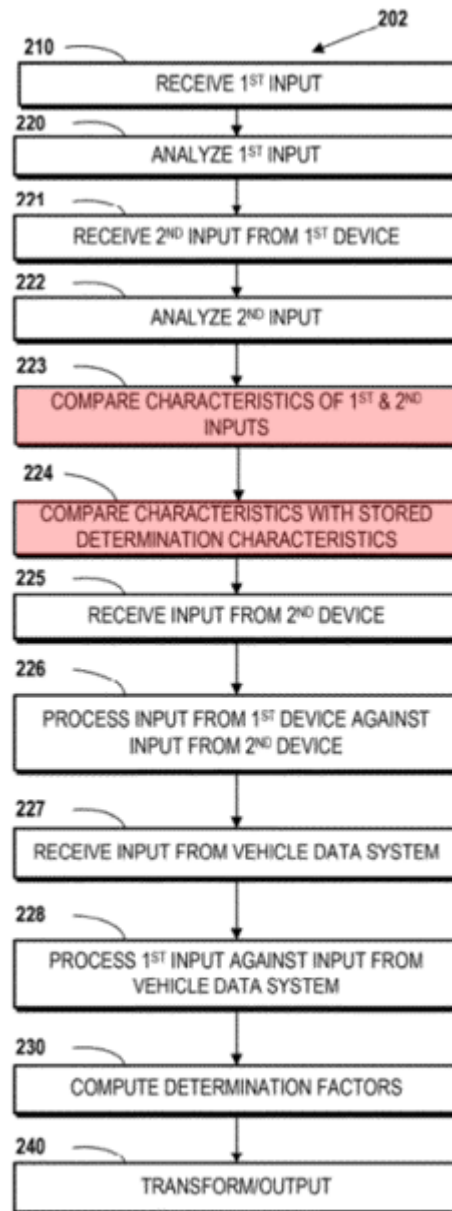


FIG. 2B

Id. at Fig. 2B.

279. Referring to Figure 2B, Abramson discloses that “[a]t step 224, the processor 110 executing one or more of software modules 130, including, preferably,

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

determination module 170, compares determination characteristics such as user determination characteristics (including, but not limited to, the user determination characteristics from the first input, as identified at step 220, and/or the user determination characteristics from the second input, as identified at step 222) with stored determination characteristics such as user determination characteristics, such as those stored at one or more databases, such as database 174 (that is local to mobile device 105).” Ex. 1004, Abramson at 23:44-55. Abramson discloses that “[s]tored user determination characteristics can be archived user determination characteristics that have been retained from previous user determinations that have been performed, can be generated based on statistical analyses of previous user determinations, and/or can be defined or established independent of any particular previous user determination.” *Id.* at 23:55-61. Abramson further discloses that “[i]n comparing user determination characteristics (such as those identified at step 220 and/or step 222) with stored user determination characteristics (such as stored user determination characteristics that have historically demonstrated a high degree of prediction accuracy in determining an in vehicle role of a user), the processor 110 can more accurately compute the probability that the in-vehicle role of the user of mobile device 105 is a driver or that the in-vehicle role of the user of mobile device 105 is a passenger.” *Id.* at 23:61-24:2. Abramson explains that “[i]f the identified

determination characteristics closely correlate to highly reliable/predictive stored determination characteristics, the identified determination characteristics can be similarly considered highly reliable and this correlation can further enhance the reliability of the computation of a probability regarding the in-vehicle role of a particular user.” *Id.* at 24:9-15.

280. Abramson further discloses that “[a]t step 230, . . . determination module 170, computes one or more determination factors, such as a probability, based on the various determination characteristics, that the in-vehicle role of the user of mobile device 105 is a driver and/or a probability that the in-vehicle role of the user of the mobile device 105 is a passenger, substantially in the manner described in detail above with regard to step 230.” *Id.* at 26:66-27:6. Thus, a POSITA would understand that the discussion of step 230 with respect to Figure 2A applies equally to Figure 2B.

281. In light of the disclosures of Abramson, above, a POSITA would understand that the determination module 70 “generate[s] the comparison signal based on a comparison of the detected field signature and the second detected field signature.”

282. Accordingly, Abramson discloses limitation 1[g].

283. Taken together it is my opinion that a POSITA would have been

motivated to arrive at claim 1 based on the disclosures of Abramson with a reasonable expectation of success.

2. Claim 2

284. Claim 2 depends on claim 1, which Abramson discloses or renders obvious as discussed above. It is my opinion that Abramson also discloses or renders obvious claim 2.

285. Claim 2 reads as follows: “The device of claim 1, wherein said field-detecting component is operable to detect the at least one of an electric field, a magnetic field and an electro-magnetic field as a function over a period of time.”

286. As discussed above, Abramson discloses a “field-detecting component is operable to detect the at least one of an electric field, a magnetic field and an electro-magnetic field.” *See supra* section VI.C.1.b. The only substantive difference between claim 2 and limitation 1[a] is the addition of “as a function over a period of time.”

287. Referring to Figure 2A, Abramson discloses that with respect to step 210, “processor 110 executing one or more of software modules 130, including, preferably, determination module 170, receives a first input, . . . [p]referably, the first input originates from one or more identifying events that are perceptible to at least one of sensors 145,” including magnetometer 145E. Ex. 1004, Abramson at

19:53-60. Abramson discloses that “[t]he terms ‘identifying event’ and ‘identifying events’ as used herein are intended to encompass one or more occurrences or instances of events, stimuli, or phenomena, including explicitly the perceived coordinated or correlated occurrence or instance of two or more such events, stimuli, and/or phenomena, such as those originating at one or more devices. It should be understood that the referenced occurrences or instances of events, stimuli, or phenomena include single/singular events, stimuli, or **phenomena as well as a set or series of multiple events, stimuli, or phenomena over a period of time.**” *Id.* at 12:33-43. Abramson further discloses that “[i]n addition, the referenced occurrences or instances of events, stimuli, or phenomena should also be understood to include one or more coordinations or correlations of the occurrence or instance of any number of such events, stimuli, and/or phenomena **over any period of time.**” *Id.* at 12:43-47. Based on these disclosures from Abramson, a POSITA would understand that the identifying events could be represented as a function of time. Indeed, it was well known by December 2012 that sensors, including magnetometers, could detect an electric or electro-magnetic field as a function over a period of time.

288. For the reasons discussed above, Abramson that “said field-detecting component is operable to detect the at least one of an electric field, a magnetic field and an electro-magnetic field as a function over a period of time.”

289. Accordingly, Abramson discloses the additional limitation of claim 2.

3. Claim 3

290. Claim 3 depends on claim 1, which Abramson discloses or renders obvious as discussed above. It is my opinion that Abramson also discloses or renders obvious claim 3.

291. Claim 3 recites:

3[pre]	The device of claim 1, further comprising:
3[a]	a parameter-detecting component operable to detect a parameter and to generate a parameter signal based on the detected parameter,
3[b]	wherein said identifying component is operable to identify the one of an item and a location based additionally on the parameter signal.

a. 3[a]: “a parameter-detecting component operable to detect a parameter and to generate a parameter signal based on the detected parameter”

292. Abramson discloses “a parameter-detecting component operable to detect a parameter and to generate a parameter signal based on the detected parameter.”

293. Abramson discloses that the first and second inputs can originate from sensors 145 or communication interface 150. *See* Ex. 1004, Abramson at 19:58-61, 22:36-40. Abramson further discloses that a parameter from another smartphone

(i.e., mobile device 160) could originate from communication interface 150. *See id.* at 24:18-33.

294. A POSITA would have understood that the communication interface 150 is operable to detect a parameter from a smartphone 160. Referring to Figure 2B, copied below, Abramson discloses that at step 225 “determination module 170, receives an input from another device, such as one of mobile devices 160.” Ex. 1004, Abramson at 24:18-21. This input “is preferably from among the various types of inputs referenced above at steps 210 and 221,” including sensors 145. *Id.* at 24:21-28. Examples include, “an acceleration input that originates from an acceleration event that is perceived by accelerometer 145A, and/or a change in geographic location input that originates from a location changing event that is perceived by GPS receiver 145C,” of mobile device 160. *Id.* at 24:24-28. Abramson further discloses that “the input from mobile device 160 is preferably received by mobile device 105 through communication interface 150.” *Id.* at 24:29-33.

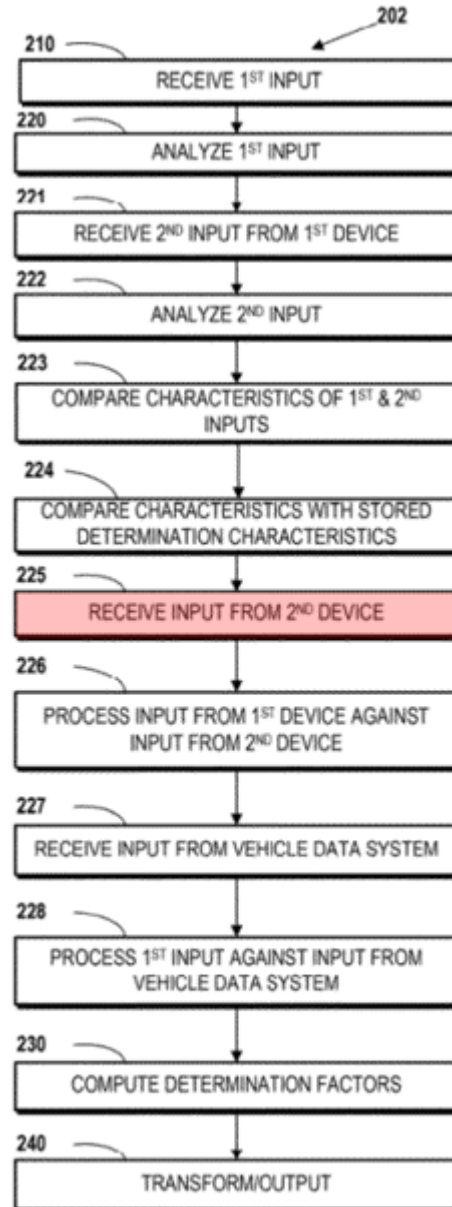


FIG. 2B

Id. at Fig. 2B (annotated).

295. In light of the disclosure above, a POSITA would have understood that the communication interface 150 was the “parameter detecting component” of the ’946 patent. The ’946 patent states that “[p]arameter-detecting component 422 may

be any known device or system that is operable to detect a parameter, non-limiting examples of which include, . . . acceleration, angular acceleration, [and] geodetic position” Ex. 1001, ’946 patent at 6:55-61. Similarly, the communication interface 150 is operable to detect a parameter, such as acceleration or location, from mobile device 160.

296. A POSITA would have understood that the communication interface 150 was “operable . . . to generate a parameter signal based on the detected parameter.” As discussed in section V.D above, I interpret “parameter signal” to be “a signal that corresponds to a parameter” for purposes of this declaration.

297. Referring to Figure 2B, copied below, Abramson discloses that at step 226, determination component 170 “processes an input of mobile device 105 against an input of one or more mobile devices 160.” Abramson at 4:36-37.

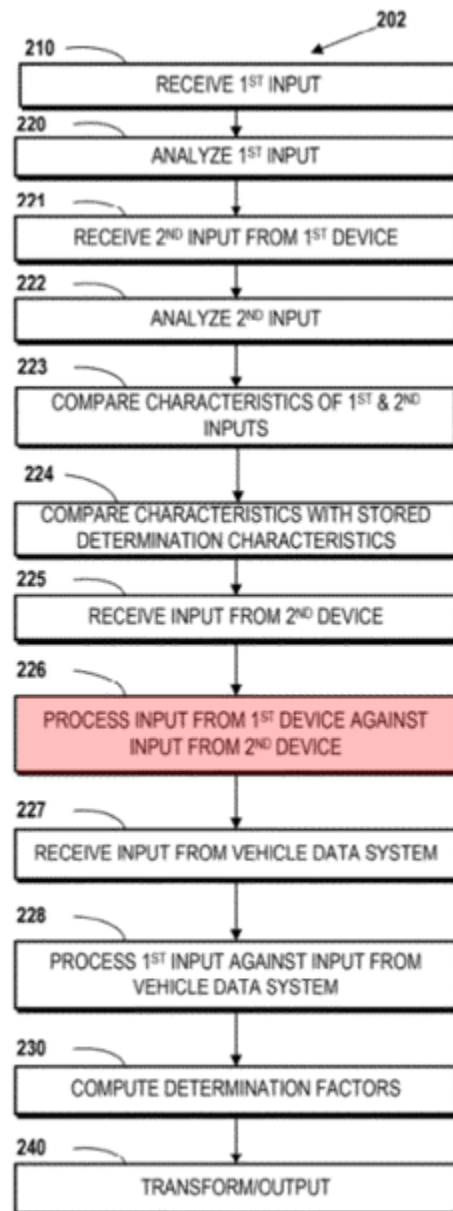


FIG. 2B

Id. at Fig. 2B (annotated). A POSITA would have understood that a value of a parameter would need to be sent to determination module 170 from communications component 150 to perform the analysis of step 226. Thus, a POSITA would

understand that communications module 150 generates a signal that correspond with a parameter.

298. For the reasons discussed above, Abramson discloses or renders obvious “a parameter-detecting component operable to detect a parameter and to generate a parameter signal based on the detected parameter.”

299. Accordingly, Abramson discloses or renders obvious limitation 3[a].

b. 3[b]: “wherein said identifying component is operable to identify the one of an item and a location based additionally on the parameter signal”

300. Abramson discloses “wherein said identifying component is operable to identify the one of an item and a location based additionally on the parameter signal.”

301. As discussed above, determination module 170 is the “identifying component operable to identify one of an item and a location based on the comparison signal” required by the ’946 patent. *See supra* section VI.C.1.f. As discussed above, Abramson discloses determining a vehicle type (e.g., if the mobile phone is in a car, bus, or airplane) (i.e., “item”) and a location (e.g., whether the mobile device is in the driver or passenger seat). *See supra* section VI.C.1.f. For the reasons discussed below, a POSITA would understand that the determination module 170 is also “operable to identify the one of an item and a location based

additionally on the parameter signal.”

302. As discussed above with respect to step 230, the determination module determines whether the user of mobile device 105 is a driver or a passenger. *See supra* section VI.C.1.e. A POSITA would understand that Abramson discloses identifying whether the user is a driver or a passenger based on the comparison signal. A POSITA would further understand that whether a user is a driver or a passenger corresponds to their location in the vehicle. As Abramson discloses, one way this determination can be made is through the use of magnetometer readings, which are stronger in the front of the vehicle near the center. *See* Ex. 1004, Abramson at 53:61-54:2. The magnetometer readings associate the user with a location with the vehicle. Thus, a POSITA would understand that the determination module 170 (i.e., “an identifying component”) is operable to identify a mobile phone (i.e., “an item”) and the location of the mobile phone within the vehicle (i.e., “a location”) based on the calculated determination factors, which are sent to processor 110 (i.e., “based on the comparison signals” and “additionally on the parameter signal”).

303. Referring to Figure 2B, copied below, Abramson discloses that “at step 226 . . . determination module 170, processes an input of mobile device 105 against an input of one or more mobile devices 160,” from the communications interface

150. Ex. 1004, Abramson at 24:34-37.

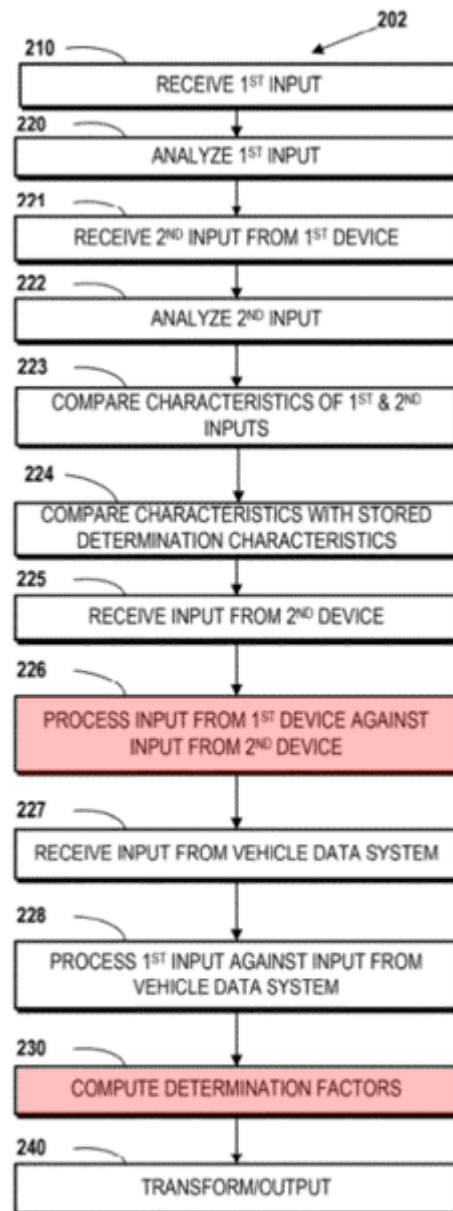


FIG. 2B

Id. at Fig. 2B.

304. Next, Abramson discloses that “[a]t step 230, . . . determination module 170, computes one or more determination factors, such as a probability, based on the

various determination characteristics, that the in-vehicle role of the user of mobile device 105 is a driver and/or a probability that the in-vehicle role of the user of the mobile device 105 is a passenger, substantially in the manner described in detail above with regard to step 230.” Ex. 1004, Abramson at 26:66-27:6. As discussed above, a POSITA would understand that the disclosures relating to step 230 of Figure 2A also apply to step 230 of Figure 2B. *See supra* section VI.C.1.h.

305. As discussed above, a POSITA would have understood that the determination module 170 (i.e., “an identifying component”) is operable to identify a mobile phone and the location of the mobile phone within the vehicle based on the calculated determination factors, which are sent to processor 110 (i.e., “based on the comparison signals”). *See supra* section VI.C.1.g. A POSITA would further understand that Abramson discloses identifying the type of vehicle (e.g., car, bus, airplane) based on the comparison signals. *Id.*

306. As discussed above, in step 226, the detected parameter from communications module 170 is compared to the input of mobile device 105. *See supra* section VI.C.3.a. And, in step 230, the detected parameter from communications module 170 is included in the computation of determination factors. *See supra* section VI.C.1.h; *see also* Abramson at Fig. 2B.

307. Thus, given the addition of the parameter signal for use in steps 226

and 230, a POSITA would understand that the determination module 170 (i.e., “an identifying component”) is operable to identify a mobile phone and the location of the mobile phone within the vehicle (i.e., “a location”) based on the calculated determination factors, which are sent to processor 110 (i.e., “based on the comparison signals” and “additionally on the parameter signal”).

308. In light of the above disclosures, a POSITA would understand that Abramson discloses that determination module 170 (“said identifying component”) “is operable to identify the one of an item and a location based additionally on the parameter signal.”

309. Accordingly, Abramson discloses or renders obvious limitation 3[b].

4. Claim 4

310. Claim 4 depends on claims 1 and 3, which Abramson discloses or renders obvious as discussed above. It is my opinion that Abramson also discloses or renders obvious claim 4.

311. Claim 4 reads as follows: “The device of claim 3, wherein said parameter-detecting component is operable to detect, as the parameter, one of the group consisting of a velocity, acceleration, angular velocity, angular acceleration, geodetic position, sound, temperature, vibrations, pressure, biometrics, contents of surrounding atmosphere and combinations thereof.”

312. As discussed above in relation to limitation 3[a], a POSITA would understand that mobile device 160 would have the same sensors 145 and mobile device 160. *See supra* section VI.C.3.a; *see also* Abramson at 24:21-28. Abramson discloses that sensors 145 can be “an accelerometer 145A, a gyroscope 145B, a GPS receiver 145C, a microphone 145D, a magnetometer 145E, a camera 145F, a light sensor 145G, a temperature sensor 145H, an altitude sensor 145I, a pressure sensor 145J, a proximity sensor 145K, a near-field communication (NFC) device 145L, and a compass 145M.” Ex. 1004, Abramson at 17:44-52. A POSITA would understand that accelerometer 145A detects acceleration, the microphone 145D detects sound, and the GPS receiver 145C detects geodetic position, etc.

313. In light of the above disclosures, a POSITA would understand that the “parameter-detecting component is operable to detect, as the parameter, one of . . . acceleration, . . . geodetic position, [or] sound”

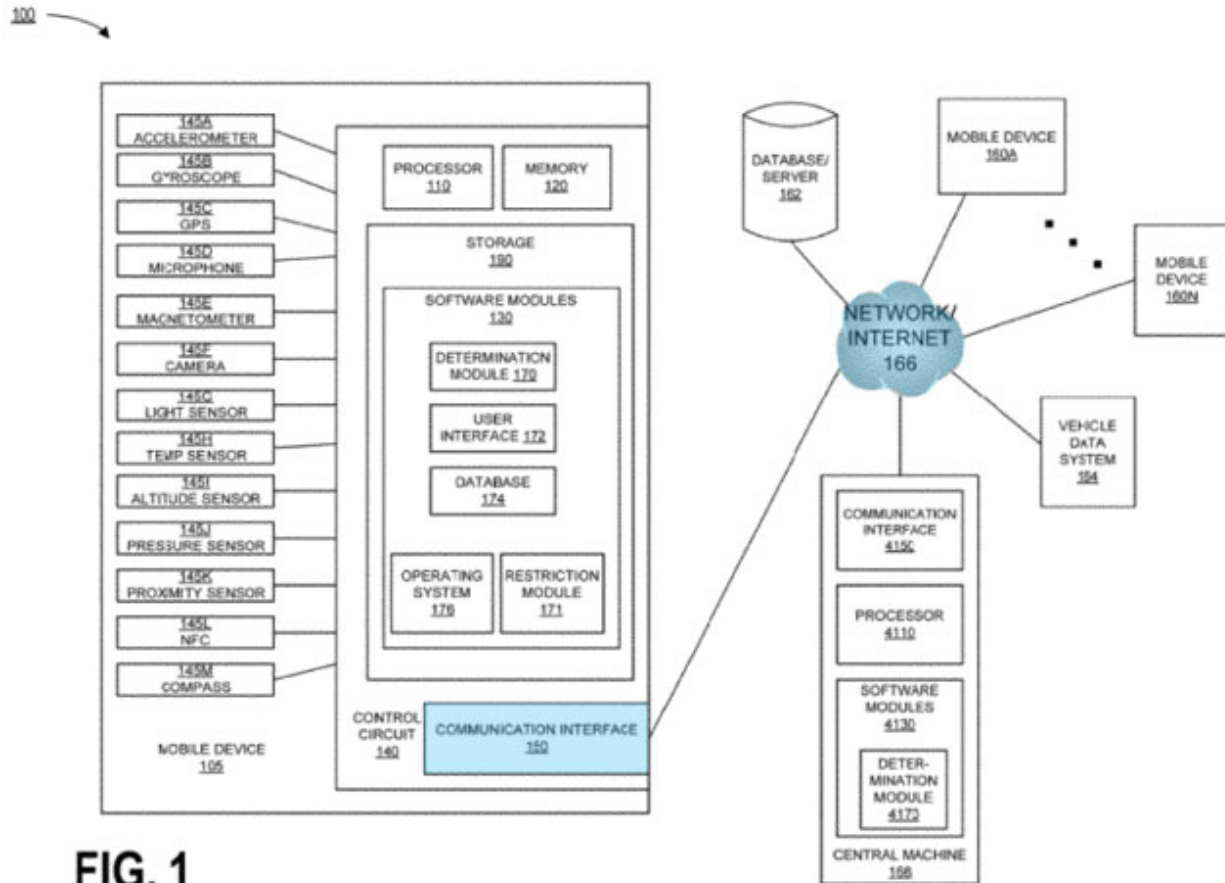
314. Accordingly, Abramson discloses or renders obvious claim 4.

5. Claim 5

315. Claim 5 depends on claim 1, which Abramson discloses or renders obvious as discussed above. It is my opinion that Abramson also discloses or renders obvious claim 5.

316. Claim 5 reads as follows: “The device of claim 1, further comprising a

communication component operable to wirelessly communicate with a network.”



Id., Fig. 1 (annotated).

317. Figure 1 of Abramson, copied above, “is a high-level diagram illustrating an exemplary configuration of an in-vehicle user-role determination system 100.” Ex. 1004, Abramson at 15:13-15. Abramson discloses that “mobile device 105 can be a portable computing device such as a mobile phone, smartphone, or PDA. In other arrangements, mobile device 105 can be a tablet computer, a laptop computer, a personal computer, or an in-vehicle computer (e.g., ECU/OBD) though

it should be understood that mobile device 105 of in-vehicle user-role determination system 100 can be practically any computing device capable of embodying the systems and/or methods described herein.” *Id.* at 15:15-23. Abramson discloses that “[a] communication interface 150 is also operatively connected to control circuit 140.” *Id.* at 16:63-64. Abramson explains that “[c]ommunication interface 150 can be any interface that enables communication between the mobile device 105 and external devices, machines and/or elements.” *Id.* at 16:64-67. Abramson further discloses that “communication interface 150 includes, but is not limited to, a modem, a Network Interface Card (NIC), an integrated network interface, a radio frequency transmitter/receiver (e.g., Bluetooth, cellular, NFC), a satellite communication transmitter/receiver, an infrared port, a USB connection, or any other such interfaces for connecting mobile device 105 to other computing devices and/or communication networks such as the Internet.” *Id.* at 16:67-17:7. Abramson discloses that “[s]uch connections can include a wired connection or a **wireless connection** (e.g. 802.11) though it should be understood that communication interface 150 can be practically any interface that enables communication to/from the control circuit 140.” *Id.* at 17:7-11.

318. In light of the above disclosure, a POSITA would understand that Abramson’s communication interface 150 is “a communication component” that is

operable to wirelessly communicate with a network” (e.g., the Internet).

319. Accordingly, Abramson discloses or renders obvious claim 5.

6. Claim 6

320. Claim 6 depends on claim 1, which Abramson discloses or renders obvious as discussed above. It is my opinion that Abramson also discloses or renders obvious claim 6.

321. Claim 6 recites:

6[pre]	The device of claim 1,
6[a]	wherein said field-detecting component is operable to detect a magnetic field,
6[b]	wherein said input component is further operable to input an association between a vehicle and the detected magnetic field,
6[c]	wherein said field-detecting component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field, and
6[d]	wherein said identifying component is further operable, based on the association, to identify the vehicle as the item.

a. 6[a]: “wherein said field-detecting component is operable to detect a magnetic field”

322. Abramson discloses or renders obvious “wherein said field-detecting

component is operable to detect a magnetic field.”

323. As discussed above, Abramson’s determination module 170, including magnetometer 145E, is “a field-detecting component operable to detect at least one of an electric field, *a magnetic field* and an electro-magnetic field.” *See supra* section VI.C.1.b.

324. For the same reasons discussed above discussing Abramson’s disclosure of limitation 1[a], Abramson discloses that “said field-detecting component is operable to detect a magnetic field.”

325. Accordingly, Abramson discloses or renders obvious limitation 6[a].

b. 6[b]: “wherein said input component is further operable to input an association between a vehicle and the detected magnetic field”

326. Abramson discloses or renders obvious “wherein said input component is further operable to input an association between a vehicle and the detected magnetic field.”

327. As discussed in section V.D above, I interpret “an association” to be “a relationship” for purposes of this declaration.

328. As discussed above with respect to limitation 1[b], Abramson’s processor 110 executing one or more of software modules 130 is “an input component operable to input the detected field signature into the database.” *See*

supra section VI.C.1.c.

329. As discussed above with regard to limitation 1[e], Abramson discloses identifying whether the user is a driver or a passenger based on the comparison signal (i.e., a location). *See supra* section VI.C.1.f. Abramson further discloses that one way this determination can be made is through the use of magnetometer readings, which are stronger in the front of the vehicle near the center. *See* Ex. 1004, Abramson at 53:61-54:2. The magnetometer readings associate the user with a location within the vehicle. *See id.*; *see also supra* section VI.C.1.f. Thus, a POSITA would understand that the determination module 170 is operable to identify the location of the mobile phone within the vehicle based on the magnetometer readings (i.e., “the detected magnetic field”) within the vehicle. *See supra* section VI.C.1.f. A POSITA would understand that the known variation of the magnetic field within different areas of a vehicle are “an association” (or “a relationship”) between the vehicle and the detected magnetic field.

330. Moreover, as discussed above, Abramson discloses that Abramson discloses the use of stored user determination characteristics to determine if newly detected data indicates that a vehicle is present. *See supra* section VI.C.1.f. A POSITA would understand that the user determination characteristic corresponding to the vehicle evidence a relationship and, thus, an association.

331. Alternatively, referring to Figure 5, Abramson discloses that, using processor 110 executing one or more of software modules 130, “various baseline values corresponding to the vehicle determination characteristics referenced herein (such as values for vehicle determination characteristics that correspond to boats, values for vehicle determination characteristics that correspond to airplanes, etc.) can be stored and/or provided at databases 174 and/or 162, thereby enabling the computation of a probability (based on the vehicle determination characteristics perceived/determined by mobile device 105) that the vehicle within which mobile device 105 is traveling corresponds to a particular vehicle class.” Abramson at 35:33-43; *see also supra* section VI.C.1.f. A POSITA would understand that the stored vehicle determination characteristics “correspond” (i.e., have a relationship) with a vehicle type.

332. For the reasons discussed above, Abramson discloses that “said input component is further operable to input an association between a vehicle and the detected magnetic field.” Accordingly, Abramson discloses or renders obvious limitation 6[b].

- c. **6[c]: “wherein said field-detecting component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field”**

333. Abramson discloses or renders obvious “wherein said field-detecting

component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field.”

334. As discussed above, Abramson’s processor 110 executing one or more of software modules 130, including, determination module 170, receiving information from magnetometer 145E is “wherein said field-detecting component is further operable to detect a second one of an electric field, *a magnetic field* and an electro-magnetic field and to generate a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field.” *See supra* section VI.C.1.g.

335. For the same reasons discussed above discussing Abramson’s disclosure of limitation 1[f], Abramson discloses that “said field-detecting component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field.”

336. Accordingly, Abramson discloses or renders obvious limitation 6[c].

d. 6[d]: “wherein said identifying component is further operable, based on the association, to identify the vehicle as the item”

337. Abramson discloses or renders obvious “wherein said identifying component is further operable, based on the association, to identify the vehicle as the item.”

338. As discussed above with respect to limitation 1[e], Abramson's determination module 170 is "an identifying component operable to identify one of an item and a location based on the comparison signal." *See supra* section VI.C.1.f.

339. As discussed above with respect to limitation 6[b], Abramson's determination module 170 is "operable to input an association between a vehicle and the detected magnetic field." *See supra* section VI.C.6.b.

340. As discussed above, Abramson discloses that Abramson discloses the use of stored user determination characteristics to determine if newly detected data indicates that a vehicle is present. *See supra* section VI.C.1.f. A POSITA would understand that the user determination characteristic corresponding to the vehicle evidence a relationship and, thus, an association. A POSITA would further understand that the vehicle is identified as an item as disclosed in the '946 patent.

341. Alternatively, referring to Figure 5, Abramson discloses that, using processor 110 executing one or more of software modules 130, "various baseline values corresponding to the vehicle determination characteristics referenced herein (such as values for vehicle determination characteristics that correspond to boats, values for vehicle determination characteristics that correspond to airplanes, etc.) can be stored and/or provided at databases 174 and/or 162, thereby enabling the computation of a probability (based on the vehicle determination characteristics

perceived/determined by mobile device 105) that the vehicle within which mobile device 105 is traveling corresponds to a particular vehicle class.” Abramson at 35:33-43; *see also supra* section VI.C.1.f. At step 530, determination module 170 “computes at least one determination factor based on the vehicle determination characteristic(s), such as a probability that the vehicle corresponds to a particular vehicle class,” (e.g., car, motorcycle, bicycle, train, bus, etc.). *Id.* at 35:47-50. In light of the above, a POSITA would understand that the method of Figure 5 determined an “item” (i.e., vehicle class). *See supra* section VI.C.1.f.

342. The identification of an item is consistent with the disclosure of the ’946 patent. The ’946 patent discloses that “a smartphone carried by person 104 may identify whether person 204 is entering house 202 or building 208 by aspects of magnetic field 206 or magnetic field 210.” Ex. 1001, ’946 patent at 4:58-61. The ’946 patent further discloses that “[i]f the retrieved, previously stored signature as provided by access component 416 matches the newly generated signature as provided by field-detecting component 412, then . . . identifying component 420 may indicate that the newly detected item/location is the same item/location that was previously registered.” ’946 patent at 16:17-24. Similarly, Abramson discloses the use of stored user determination characteristics to determine if the presence and type of vehicle.

343. Additionally, as discussed above, I understand that Patent Owner has taken positions in the District Court Action that align with the disclosures of Abramson. In the District Court Action, Patent Owner contends that “identify[ing] one of an item and a location” can be identifying what type of vehicle the mobile device is in and whether the user is the driver or a passenger. For example, Sfara asserts that examples of an “item” include “mode of transportation, such as a car, motorcycle, bicycle, train, bus.” Ex. 1006, Infringement Contentions at 116. As discussed above, Abramson discloses identifying what type of vehicle the mobile device is in.

344. In light of the disclosures above, a POSITA would understand that Abramson discloses “wherein said identifying component is further operable, based on the association, to identify the vehicle as the item.”

345. Accordingly, Abramson discloses or renders obvious limitation 6[d].

7. Independent Claim 8

346. It is my opinion that Abramson discloses or renders obvious each and every limitation of independent claim 8 for the reasons set forth below.

a. 8[pre]: “A method, for use with a database, said method comprising:”

347. To the extent the preamble of claim 8 is limiting, it is disclosed by Abramson. As discussed above, Abramson discloses or renders obvious “[a] device,

for use with a database.”

348. Abramson is directed to “[s]ystems and methods . . . for computing various determinations at one or more mobile devices,” including “determining an in-vehicle role, an in-vehicle location.” Abramson at Abstract, *see also id.* at Title, 1:17-20. Figures 2A and 2B, copied below, of Abramson show process flow diagrams of a method for determining an in-vehicle role and location of a mobile device in accordance with the disclosed invention. *See* Abramson at 19:31-35, 22:17-21.

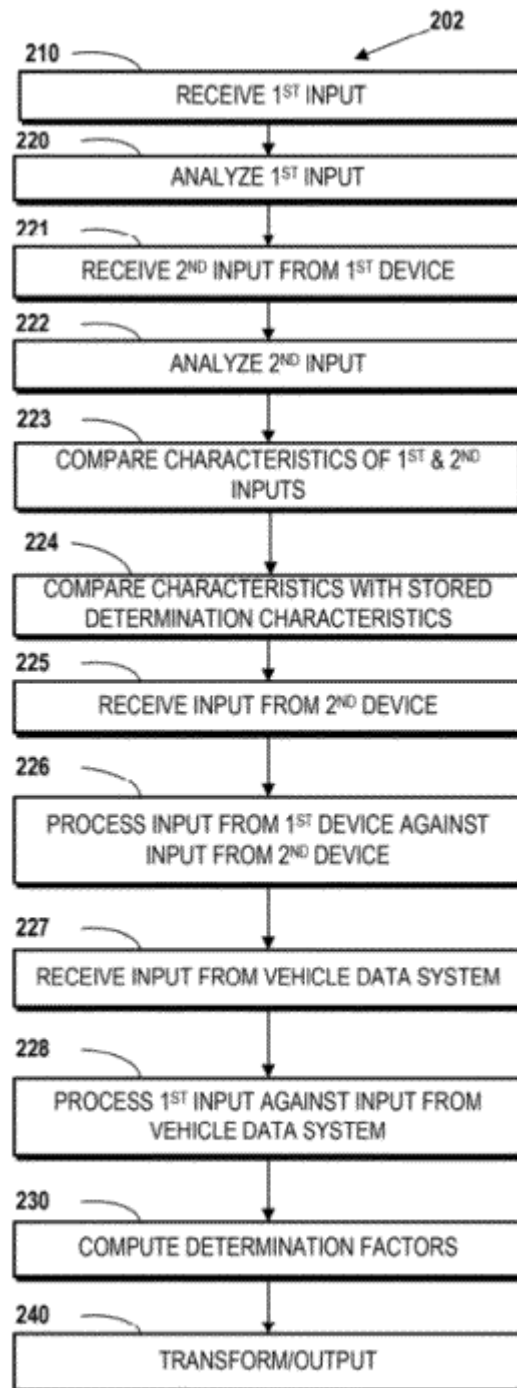


FIG. 2B

Id. at Fig. 2B. As discussed above, the method is performed by a device for use with a database. *See supra* sections VI.C.1.a-h.

349. Accordingly, it is my opinion that Abramson discloses the preamble of claim 8.

- b. 8[a] & 8[b]: “detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field” & “generating, via the field-detecting component, a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field”

350. It is my opinion that Abramson discloses or renders obvious limitations 8[a] and 8[b].

351. Limitations 8[a] and 8[b] refer to steps of the method performed by the components recited in limitation 1[a], as shown in the table below:

Limitations 8[a] & 8[b]	Limitation 1[a]
8[a]: detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field	a field-detecting component operable to detect at least one of an electric field, a magnetic field and an electro-magnetic field and to generate a
8[b]: generating, via the field-detecting component, a detected field	detected field signature based on the detected one of an electric field, a

Limitations 8[a] & 8[b]	Limitation 1[a]
signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field	magnetic field and an electro- magnetic field;

352. Therefore, Abramson discloses or renders obvious limitations 8[a] and 8[b] for the same reasons as limitation 1[a] (*see supra* section VI.C.1.b).

c. 8[c]: “inputting, via an input component, the detected field signature into the database”

353. It is my opinion that Abramson discloses or renders obvious limitation 8[c].

354. Limitation 8[c] refers to steps of the method performed by the components recited in limitation 1[b], as shown in the table below:

Limitation 8[c]	Limitation 1[b]
8[c]: inputting, via an input component, the detected field signature into the database	an input component operable to input the detected field signature into the database

355. Therefore, Abramson discloses or renders obvious limitation 8[c] for the same reasons as limitation 1[b] (*see supra* section VI.C.1.c).

d. 8[d]: “accessing, via an accessing component, the detected field signature from the database”

356. It is my opinion that Abramson discloses or renders obvious limitation 8[d].

357. Limitation 8[d] refers to steps of the method performed by the components recited in limitation 1[c], as shown in the table below:

Limitation 8[d]	Limitation 1[c]
8[d]: accessing, via an accessing component, the detected field signature from the database	an accessing component operable to access the detected field signature from the database

358. Therefore, Abramson discloses or renders obvious limitation 8[d] for the same reasons as limitation 1[c] (*see supra* section VI.C.1.d).

e. 8[e]: “generating, via a comparing component, a comparison signal”

359. It is my opinion that Abramson discloses or renders obvious element 8[e].

360. Limitation 8[e] refers to steps of the method performed by the components recited in limitation 1[d], as shown in the table below:

Limitation 8[e]	Limitation 1[d]
8[e]: generating, via a comparing component, a comparison signal	a comparing component operable to generate a comparison signal

361. Therefore, Abramson discloses or renders obvious limitation 8[e] for the same reasons as limitation 1[d] (*see supra* section VI.C.1.e).

f. 8[f]: “identifying, via an identifying component, one of an item and a location based on the comparison signal”

362. It is my opinion that Abramson discloses or renders obvious limitation 8[f].

363. Limitation 8[f] refers to steps of the method performed by the components recited in limitation 1[e], as shown in the table below:

Limitation 8[f]	Limitation 1[e]
8[f]: identifying, via an identifying component, one of an item and a location based on the comparison signal	an identifying component operable to identify one of an item and a location based on the comparison signal

364. Therefore, Abramson discloses or renders obvious limitation 8[f] for the same reasons as limitation 1[e] (*see supra* section VI.C.1.f).

- g. 8[g] & 8[h]: “detecting, via the field-detecting component, a second one of an electric field, a magnetic field and an electro-magnetic field” & “generating, via the field-detecting component, a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field”

365. It is my opinion that Abramson discloses or renders obvious limitations 8[g] and 8[h].

366. Limitations 8[g] and 8[h] refer to steps of the method performed by the components recited in limitation 1[f], as shown in the table below:

Limitations 8[g] & 8[h]	Limitation 1[f]
8[g]: detecting, via the field-detecting component, a second one of an electric field, a magnetic field and an electro-magnetic field	wherein said field-detecting component is further operable to detect a second one of an electric field, a magnetic field and an electro-magnetic field and to generate a
8[h]: generating, via the field-detecting component, a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field	second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field

367. Therefore, Abramson discloses or renders obvious limitations 8[g] and 8[h] for the same reasons as limitation 1[f] (*see supra* section VI.C.1.g).

- h. 8[i]: “wherein said generating a comparison signal comprises generating the comparison signal based on a comparison of the detected field signature and the second detected field signature”**

368. It is my opinion that Abramson discloses or renders obvious limitation 8[i].

369. Limitation 8[i] refers to steps of the method performed by the components recited in limitation 1[g], as shown in the table below:

Limitation 8[i]	Limitation 1[g]
8[i]: wherein said generating a comparison signal comprises generating the comparison signal based on a comparison of the detected field signature and the second detected field signature	wherein said comparing component is operable to generate the comparison signal based on a comparison of the detected field signature and the second detected field signature

370. Therefore, Abramson discloses or renders obvious limitation 8[i] for the same reasons as limitation 1[g] (*see supra* section VI.C.1.h).

8. Claim 9

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

371. Claim 9 depends on claim 8, which Abramson discloses or renders obvious as discussed above. It is also my opinion that Abramson discloses claim 9.

372. Claim 2 depends on claim 1, which Abramson discloses or renders obvious as discussed above. The limitations of claim 9 are substantially similar to those recited in claim 2, as shown in the table below:

Claim 9	Claim 2
The method of claim 8, wherein said detecting comprises detecting the at least one of an electric field, a magnetic field and an electro-magnetic field as a function over a period of time.	The device of claim 1, wherein said field-detecting component is operable to detect the at least one of an electric field, a magnetic field and an electro-magnetic field as a function over a period of time.

373. Claim 2 of the '946 patent requires that “said field-detecting component is operable to detect the at least one of” As discussed above, claim 8, to which claim 9 depends, requires “detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field.” Thus a POSITA would understand that the “field-detecting component” performs the “detecting the at least one of an” as required by claim 9.

374. Therefore, Abramson discloses or renders obvious claim 9 for the same

reasons as claim 2 (*see supra* section VI.C.2).

9. Claim 10

375. Claim 10 depends on claim 8, which Abramson discloses as discussed above. It is my opinion that Abramson also discloses claim 10.

376. Claim 3 depends on claim 1, which Abramson discloses as discussed above. The limitations of claim 10 are substantially similar to the limitations of claim 3, as shown below.

- a. **10[a] & 10[b]: “detecting, via a parameter-detecting component, a parameter” & “generating, via the parameter-detecting component, a parameter signal based on the detected parameter”**

377. Limitations 10[a] and 10[b] are substantially similar to those recited in limitation 3[a], as shown in the table below:

Limitations 10[a] & 10[b]	Limitation 3[a]
10[a]: detecting , via a parameter-detecting component, a parameter , and	a parameter-detecting component operable to detect a parameter and to generate a parameter signal based on the detected parameter
10[b]: generating , via the parameter-detecting component, a parameter	

Limitations 10[a] & 10[b]	Limitation 3[a]
signal based on the detected parameter,	

378. Therefore, Abramson discloses or renders obvious limitations 10[a] and 10[b] for the same reasons as limitation 3[a] (*see supra* section VI.C.3.a).

b. 10[c]: “wherein said identifying comprises identifying the one of an item and a location based additionally on the parameter signal”

379. Limitation 10[c] is substantially similar to limitation 3[b], as shown in the table below:

Limitation 10[c]	Limitation 3[b]
10[c]: wherein said identifying comprises identifying the one of an item and a location based additionally on the parameter signal	wherein said identifying component is operable to identify the one of an item and a location based additionally on the parameter signal

380. Limitation 3[b] of the ’946 patent requires that “said identifying component is operable to identify the one of an item and a location. . . .” As discussed above, claim 8, to which claim 10 depends, requires “identifying, via an

identifying component, one of an item and a location based on the comparison signal.” Thus a POSITA would understand that the “identifying component” of claim 8 performs the “identifying the one of an item and a location” as required by limitation 10[c].

381. Therefore, Abramson discloses or renders obvious limitation 10[c] for as limitation 3[b] (*see supra* section VI.C.3.b).

10. Claim 11

382. Claim 11 depends on claims 8 and 10, which Abramson discloses or renders obvious as discussed above. It is also my opinion that Abramson discloses or renders obvious claim 11.

383. Claim 4 depends on claims 1 and 3, which Abramson discloses or renders obvious as discussed above. The limitations of claim 11 are substantially similar to those recited in claim 4, as shown in the table below:

Claim 11	Claim 4
The method of claim 10, wherein said detecting a parameter comprises detecting, as the parameter, one of the group consisting of a velocity, acceleration, angular velocity, angular	The device of claim 3, wherein said parameter-detecting component is operable to detect, as the parameter, one of the group consisting of a velocity, acceleration, angular velocity, angular

Claim 11	Claim 4
acceleration, geodetic position, sound, temperature, vibrations, pressure, biometrics, contents of surrounding atmosphere and combinations thereof.	acceleration, geodetic position, sound, temperature, vibrations, pressure, biometrics, contents of surrounding atmosphere and combinations thereof.

384. Claim 4 of the '946 patent requires that “said parameter-detecting component is operable to detect, as the parameter, one of the group consisting of a velocity” As discussed above, claim 10, to which claim 11 depends, requires “detecting, via a parameter-detecting component, a parameter.” Thus a POSITA would understand that the “parameter-detecting component” of claim 10 performs the “detecting, as the parameter, one of the group consisting of a velocity” as required by claim 11.

385. Therefore, Abramson discloses or renders obvious claim 11 for the same reasons as claim 4 (*see supra* section VI.C.4).

11. Claim 12

386. Claim 12 depends on claim 8, which Abramson discloses or renders obvious as discussed above. It is also my opinion that Abramson discloses or renders obvious claim 12.

387. Claim 5 depends on claim 1, which Abramson discloses or renders

obvious as discussed above. The limitations of claim 12 are substantially similar to those recited in claim 5, as shown in the table below:

Claim 12	Claim 5
The method of claim 8, further comprising wirelessly communicating, via a communication component, with a network.	The device of claim 1, further comprising a communication component operable to wirelessly communicate with a network.

388. Therefore, Abramson discloses or renders obvious claim 12 for the same reasons as claim 5 (*see supra* section VI.C.5).

12. Claim 13

389. Claim 13 depends on claim 8, which Abramson discloses or renders obvious as discussed above. It is my opinion that Abramson also discloses or renders obvious claim 13.

390. Claim 6 depends on claim 1, which Abramson discloses or renders obvious as discussed above.

- a. 13[a] & 13[d]: “inputting, via the input component is further operable to input an association” & “wherein said inputting an association comprises inputting an association between a vehicle and the detected magnetic field”

391. Limitations 13[a] and 13[d] are substantially similar to those recited in

limitation 6[b], as shown in the table below:

Limitations 13[a] & 13[d]	Limitation 6[b]
13[a]: inputting, via the input component is further operable to input an association	wherein said input component is further operable to input an association between a vehicle and the detected magnetic field
13[d]: wherein said inputting an association comprises inputting an association between a vehicle and the detected magnetic field	

392. Therefore, Abramson discloses or renders obvious limitations 13[a] and 13[d] for the same reasons as limitation 6[b] (*see supra* section VI.C.6.b).

b. 13[b]: “identifying, via the identifying component, a vehicle”

393. Abramson discloses or renders obvious “identifying, via the identifying component, a vehicle.”

394. As discussed above with respect to limitation 1[e], Abramson’s determination module 170 is “an identifying component operable to identify one of an item and a location based on the comparison signal.” *See supra* section VI.C.1.f. For the same reasons described above (*see supra* section VI.C.1.f), a POSITA would

understand that the determination module 170 is the identifying component of limitation 13[b].

395. As discussed above, Abramson discloses or renders obvious that the determination module 170 can determine where a device is positioned within a vehicle and the type of vehicle. *See supra* section VI.C.1.f. Therefore a POSITA would understand that the determination module 170 “identif[ies] a vehicle.”

396. Therefore, Abramson discloses or renders obvious element 13[b]

c. 13[g]: “wherein said identifying a vehicle comprises identifying, based on the association, the vehicle as the item”

397. The limitation of limitation 13[g] is substantially similar to those recited in limitation 6[d], as shown in the table below:

Limitations 13[g]	Limitation 6[d]
13[g]: wherein said identifying a vehicle comprises identifying, based on the association, the vehicle as the item	wherein said identifying component is further operable, based on the association, to identify the vehicle as the item

398. Claim element 6[d] of the ’946 patent requires that “said identifying component is further operable, based on the association, to identify the vehicle as the item.” As discussed above, claim 8, to which claim 13 depends, requires

“identifying, via an identifying component, one of an item and a location based on the comparison signal.” Thus a POSITA would have understood that the “identifying component” of claim 8 performs the “identifying, based on the association, the vehicle as the item,” as required by limitation 13[g].

399. Therefore, Abramson discloses or renders obvious limitation 13[g] for the same reasons as limitation 6[d] (*see supra* section VI.C.6.d).

- d. 13[c]: “wherein said detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field comprises detecting detect a magnetic field”**

400. Limitation 13[c] is substantially similar to limitation 6[a], as shown in the table below:

Limitation 13[c]	Limitation 6[a]
13[c]: wherein said detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field comprises detecting detect a magnetic field	wherein said field-detecting component is operable to detect a magnetic field

401. Therefore, Abramson discloses or renders obvious limitation 13[c] for

the same reasons as limitation 6[a] (*see supra* section VI.C.6.a).

- e. **13[e] & 13[f]: “wherein said detecting a second one of an electric field, a magnetic field and an electro-magnetic field comprises detecting a second magnetic field” & “wherein said generating a second detected field signature comprises generating a second detected field signature based on the detected second magnetic field”**

402. Limitations 13[e] and 13[f] are substantially similar to limitation 6[c], as shown in the table below:

Limitations 13[e] & 13[f]	Limitation 6[c]
13[e]: wherein said detecting a second one of an electric field, a magnetic field and an electro-magnetic field comprises detecting a second magnetic field	wherein said field-detecting component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field
13[f]: wherein said generating a second detected field signature comprises generating a second detected field signature based on the detected second magnetic field	

403. Claim element 6[c] of the '946 patent requires that “said field-detecting

component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field.” As discussed above, claim 8, to which claim 13 depends, requires “detecting, *via the field-detecting component*, a second one of an electric field, a magnetic field and an electro-magnetic field; and generating, *via the field-detecting component*, a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field.” Thus a POSITA would understand that the “field-detecting component” of claim 8 performs the “said detecting a second one of an electric field, a magnetic field and an electro-magnetic field comprises detecting a second magnetic field” and “said generating a second detected field signature comprises generating a second detected field signature based on the detected second magnetic field,” as required by limitations 13[e] and 13[f].

404. Therefore, Abramson discloses or renders obvious limitations 13[e] and 13[f] for the same reasons as limitation 6[c] (*see supra* section VI.C.6.c).

13. Independent Claim 15

405. It is my opinion that Abramson discloses or renders obvious each and every limitation of independent claim 15 for the reasons set forth below.

- a. **15[pre]: “A non-transitory, tangible, computer-readable media having computer-readable instructions stored thereon, for use with a database, the computer-readable instructions being capable of**

**being read by a computer and being capable of
instructing the computer to perform the method
comprising:”**

406. To the extent the preamble of claim 15 is limiting, it is disclosed by Abramson. Abramson discloses “[a] non-transitory, tangible, computer-readable media having computer-readable instructions stored thereon, for use with a database, the computer-readable instructions being capable of being read by a computer and being capable of instructing the computer to perform the method comprising.”

407. Abramson discloses that the operations for the method disclosed in Figures 2A and 2B can be “implemented . . . as a sequence of computer implemented acts or program modules” running on the smartphone. Abramson at 19:35-39; *see also id.* at 15:43-45, 16:8-16. Abramson discloses that the processor 110 of mobile device 105 “serves to execute instructions for software that can be loaded into memory 120.” *Id.*, 15:29-31. Abramson further states: “One or more software modules 130 are *encoded in storage 190 and/or in memory 120*. The software modules 130 can comprise *one or more software programs or applications having computer program code or a set of instructions* executed in processor 110.” *Id.*, 15:53-57; *see also id.*, 16:8-16. The storage 190 and/or memory 120 containing the instructions for software modules 130 is a “non-transitory, computer-readable media having computer-readable instructions stored thereon.” The software modules 130

(“the computer-readable instructions”) can be executed by the mobile device’s processor (“a computer”), i.e., the instructions are “capable of being read by a computer and being capable of instructing the computer to perform [a] method.”

408. Accordingly, it is my opinion that Abramson discloses the preamble of claim 15.

- b. 15[a] & 15[b]: “detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field” & “generating, via the field-detecting component, a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field”**

409. It is my opinion that Abramson discloses or renders obvious limitations 15[a] and 15[b].

410. Limitations 15[a] and 15[b] refer to the steps of the computer-readable instructions performed by the components recited in limitation 1[a], as shown in the table below:

Limitations 15[a] & 15[b]	Limitation 1[a]
15[a]: detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field	a field-detecting component operable to detect at least one of an electric field, a magnetic field and an electro-magnetic field and to generate a

Limitations 15[a] & 15[b]	Limitation 1[a]
15[b]: generating, via the field-detecting component, a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field	detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field;

411. Therefore, Abramson discloses or renders obvious limitations 15[a] and 15[b] for the same reasons as limitation 1[a] (*see supra* section VI.C.1.b).

c. 15[c]: “inputting, via an input component, the detected field signature into the database”

412. It is my opinion that Abramson discloses or renders obvious limitation 15[c].

413. Limitation 15[c] refers to the steps of the computer-readable instructions performed by the components recited in limitation 1[b], as shown in the table below:

Limitation 15[c]	Limitation 1[b]
15[c]: inputting, via an input component, the detected field signature into the database	an input component operable to input the detected field signature into the database

414. Therefore, Abramson discloses or renders obvious limitation 15[c] for the same reasons as limitation 1[b] (*see supra* section VI.C.1.c).

d. 15[d]: “accessing, via an accessing component, the detected field signature from the database”

415. It is my opinion that Abramson discloses or renders obvious limitation 15[d].

416. Limitation 15[d] refers to the steps of the computer-readable instructions performed by the components recited in limitation 1[c], as shown in the table below:

Limitation 15[d]	Limitation 1[c]
15[d]: accessing, via an accessing component, the detected field signature from the database	an accessing component operable to access the detected field signature from the database

417. Therefore, Abramson discloses or renders obvious limitation 15[d] for the same reasons as limitation 1[c] (*see supra* section VI.C.1.d).

e. 15[e]: “generating, via a comparing component, a comparison signal”

418. It is my opinion that Abramson discloses or renders obvious element 15[e].

419. Limitation 15[e] refers to the steps of the computer-readable instructions performed by the components recited in limitation 1[d], as shown in the table below:

Limitation 15[e]	Limitation 1[d]
15[e]: generating, via a comparing component, a comparison signal	a comparing component operable to generate a comparison signal

420. Therefore, Abramson discloses or renders obvious limitation 15[e] for the same reasons as limitation 1[d] (*see supra* section VI.C.1.e).

f. 15[f]: “identifying, via an identifying component, one of an item and a location based on the comparison signal”

421. It is my opinion that Abramson discloses or renders obvious element 15[f].

422. Limitation 15[f] refers to the steps of the computer-readable instructions performed by the components recited in limitation 1[e], as shown in the table below:

Limitation 15[f]	Limitation 1[e]
15[f]: identifying, via an identifying component, one of an item and a location based on the comparison signal	an identifying component operable to identify one of an item and a location based on the comparison signal

423. Therefore, Abramson discloses or renders obvious limitation 15[f] for the same reasons as limitation 1[e] (*see supra* section VI.C.1.f).

- g. **15[g] & 15[h]: “detecting, via the field-detecting component, a second one of an electric field, a magnetic field and an electro-magnetic field” & “generating, via the field-detecting component, a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field”**

424. It is my opinion that Abramson discloses or renders obvious limitations elements 15[g] and 15[h].

425. Limitations 15[g] and 15[h] refer to the steps of the computer-readable instructions performed by the components recited in limitation 1[f], as shown in the table below:

Limitations 15[g] & 15[h]	Limitation 1[f]
15[g]: detecting, via the field-detecting	wherein said field-detecting

Limitations 15[g] & 15[h]	Limitation 1[f]
component, a second one of an electric field, a magnetic field and an electro-magnetic field	component is further operable to detect a second one of an electric field, a magnetic field and an electro-magnetic field and to generate a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field
15[h]: generating, via the field-detecting component, a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field	

426. Therefore, Abramson discloses or renders obvious limitations 15[g] and 15[h] for the same reasons as limitation 1[f] (*see supra* section VI.C.1.g).

- h. 15[i]: “wherein said generating a comparison signal comprises generating the comparison signal based on a comparison of the detected field signature and the second detected field signature”**

427. It is my opinion that Abramson discloses or renders obvious element 15[i].

428. Limitation 15[i] refers to the steps of the computer-readable instructions performed by the components recited in limitation 1[g], as shown in the

table below:

Limitation 15[i]	Limitation 1[g]
15[i]: wherein said generating a comparison signal comprises generating the comparison signal based on a comparison of the detected field signature and the second detected field signature	wherein said comparing component is operable to generate the comparison signal based on a comparison of the detected field signature and the second detected field signature

429. Therefore, Abramson discloses or renders obvious limitation 15[i] for the same reasons as limitation 1[g] (*see supra* section VI.C.1.h).

14. Claim 16

430. Claim 16 depends on claim 15, which Abramson discloses or renders obvious as discussed above. It is also my opinion that Abramson discloses or renders obvious claim 16.

431. Claim 2 depends on claim 1, which Abramson discloses or renders obvious as discussed above. The limitations of claim 16 are substantially similar to those recited in claim 2, as shown in the table below:

Claim 16	Claim 2
The non-transitory, tangible, computer-readable media of claim 15, wherein the computer-readable instructions are capable of instructing the computer to perform the method such that said detecting comprises detecting the at least one of an electric field, a magnetic field and an electro-magnetic field as a function over a period of time.	The device of claim 1, wherein said field-detecting component is operable to detect the at least one of an electric field, a magnetic field and an electro-magnetic field as a function over a period of time.

432. Claim 2 of the '946 patent requires that “said field-detecting component is operable to detect the at least one of” As discussed above, claim 15, to which claim 16 depends, requires “detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field.” Thus, a POSITA would understand that the “field-detecting component” performs the “detecting the at least one of an” as required by claim 16.

433. Therefore, Abramson discloses or renders obvious claim 16 for the same reasons as claim 2 (*see supra* section VI.C.2).

15. Claim 17

434. Claim 17 depends on claim 15, which Abramson discloses or renders obvious as discussed above. It is my opinion that Abramson also discloses or renders obvious claim 17.

435. Claim 3 depends on claim 1, which Abramson discloses or renders obvious as discussed above.

- a. **17[a] & 17[b]: “detecting, via a parameter-detecting component, a parameter” & “generating, via the parameter-detecting component, a parameter signal based on the detected parameter”**

436. Limitations 17[a] and 17[b] are substantially similar to limitation 3[a], as shown in the table below:

Limitations 17[a] & 17[b]	Limitation 3[a]
17[a]: detecting , via a parameter-detecting component, a parameter , and	a parameter-detecting component operable to detect a parameter and to generate a parameter signal based on the detected parameter
17[b]: generating , via the parameter-detecting component, a parameter signal based on the detected parameter ,	

437. Therefore, Abramson discloses limitations 17[a] and 17[b] for the same

reasons as limitation 3[a] (*see supra* section VI.C.3.a).

b. 17[c]: “wherein said identifying comprises identifying the one of an item and a location based additionally on the parameter signal”

438. Limitation 17[c] is substantially similar to limitation 3[b], as shown in the table below:

Limitation 17[c]	Limitation 3[b]
17[c]: wherein said identifying comprises identifying the one of an item and a location based additionally on the parameter signal	wherein said identifying component is operable to identify the one of an item and a location based additionally on the parameter signal

439. Claim element 3[b] of the '946 patent requires that “said identifying component is operable to identify the one of an item and a location. . . .” As discussed above, claim 15, to which claim 17 depends, requires “identifying, via an identifying component, one of an item and a location based on the comparison signal.” Thus a POSITA would understand that the “identifying component” of claim 15 performs the “identifying the one of an item and a location” as required by limitation 17[c].

440. Therefore, Abramson discloses or renders obvious limitation 17[c] for

the same reasons as limitation 3[b] (*see supra* section VI.C.3.b).

16. Claim 18

441. Claim 18 depends on claims 15 and 17, which Abramson discloses or renders obvious as discussed above. It is also my opinion that Abramson discloses or renders obvious claim 18.

442. Claim 4 depends on claims 1 and 3, which Abramson discloses or renders obvious as discussed above. The limitations of claim 18 are substantially similar to those recited in claim 4, as shown in the table below:

Claim 18	Claim 4
The non-transitory, tangible, computer-readable media of claim 17, wherein the computer-readable instructions are capable of instructing the computer to perform the method such that said detecting a parameter comprises detecting, as the parameter, one of the group consisting of a velocity, acceleration, angular velocity, angular acceleration, geodetic position, sound,	The device of claim 3, wherein said parameter-detecting component is operable to detect, as the parameter, one of the group consisting of a velocity, acceleration, angular velocity, angular acceleration, geodetic position, sound, temperature, vibrations, pressure, biometrics, contents of surrounding atmosphere and combinations thereof.

Claim 18	Claim 4
temperature, vibrations, pressure, biometrics, contents of surrounding atmosphere and combinations thereof.	

443. Claim 4 of the '946 patent requires that “said parameter-detecting component is operable to detect, as the parameter, one of the group consisting of a velocity” As discussed above, claim 15, to which claim 18 depends, requires “detecting, via a parameter-detecting component, a parameter.” Thus a POSITA would understand that the “parameter-detecting component” of claim 15 performs the “detecting, as the parameter, one of the group consisting of a velocity” as required by claim 18.

444. Therefore, Abramson discloses or renders obvious claim 18 for the same reasons as claim 4 (*see supra* section VI.C.4).

17. Claim 19

445. Claim 19 depends on claim 15, which Abramson discloses or renders obvious as discussed above. It is also my opinion that Abramson discloses or renders obvious claim 19.

446. Claim 5 depends on claim 1, which Abramson discloses or renders obvious as discussed above. The limitations of claim 19 are substantially similar to

those recited in claim 5, as shown in the table below:

Claim 19	Claim 5
The non-transitory, tangible, computer-readable media of claim 15, the computer-readable instructions being capable of being read by a computer and being capable of instructing the computer to perform the method further comprising wirelessly communicating, via a communication component, with a network.	The device of claim 1, further comprising a communication component operable to wirelessly communicate with a network.

447. Therefore, Abramson discloses or renders obvious claim 19 for the same reasons as claim 5 (*see supra* section VI.C.5).

18. Claim 20

448. Claim 20 depends on claim 15, which Abramson discloses or renders obvious as discussed above. It is my opinion that Abramson also discloses claim 20.

449. Claim 6 depends on claim 1, which Abramson discloses or renders obvious as discussed above.

- a. **20[a] & 20[d]: “inputting, via the input component is further operable to input an association” & “wherein said inputting an association comprises inputting an association between a vehicle and the detected magnetic field”**

450. Limitations 20[a] and 20[d] are substantially similar to limitation 6[b],
as shown in the table below:

Limitations 20[a] & 20[d]	Limitation 6[b]
20[a]: inputting, via the input component is further operable to input an association	wherein said input component is further operable to input an association between a vehicle and the detected magnetic field
20[d]: wherein said inputting an association comprises inputting an association between a vehicle and the detected magnetic field	

451. Therefore, Abramson discloses or renders obvious limitations 20[a] and 20[d] for the same reasons as limitation 6[b] (*see supra* section VI.C.6.b).

- b. **20[b]: “identifying, via the identifying component, a vehicle”**

452. Abramson discloses or renders obvious “identifying, via the identifying component, a vehicle.”

453. As discussed above with respect to limitation 1[e], Abramson's determination module 170 is "an identifying component operable to identify one of an item and a location based on the comparison signal." *See supra* section VI.C.1.g. For the same reasons described above (*see supra* section VI.C.1.g), a POSITA would understand that the determination module 170 is the identifying component of limitation 13[b].

454. As discussed above, Abramson discloses that the determination module 170 can determine where a device is positioned within a vehicle and the type of vehicle. *See supra* section VI.C.1.f. Therefore a POSITA would understand that the determination module 170 "identif[ies] a vehicle."

455. Therefore, Abramson discloses or renders obvious element 20[b]

- c. **20[g]: "wherein said identifying a vehicle comprises identifying, based on the association, the vehicle as the item"**

456. Limitation 20[g] is substantially similar to limitation 6[d], as shown in the table below:

Limitations 20[g]	Limitation 6[d]
20[g]: wherein said identifying a vehicle comprises identifying, based on the association, the vehicle as the item	wherein said identifying component is further operable, based on the association, to identify the vehicle as the item

457. Claim element 6[d] of the '946 patent requires that “said identifying component is further operable, based on the association, to identify the vehicle as the item.” As discussed above, claim 15, to which claim 20 depends, requires “identifying, via an identifying component, one of an item and a location based on the comparison signal.” Thus a POSITA would have understood that the “identifying component” of claim 15 performs the “identifying, based on the association, the vehicle as the item,” as required by limitation 20[g].

458. Therefore, Abramson discloses or renders obvious element 20[g] for the same reasons as limitation 6[d] (*see supra* section VI.C.6.d).

- d. 20[c]: “wherein said detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field comprises detecting detect a magnetic field”**

459. Limitation 20[c] is substantially similar to limitation 6[a], as shown in the table below:

Limitation 20[c]	Limitation 6[a]
20[c]: wherein said detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field comprises detecting detect a magnetic field	wherein said field-detecting component is operable to detect a magnetic field

460. Therefore, Abramson discloses or renders obvious limitation 20[c] for the same reasons as limitation 6[a] (*see supra* section VI.C.6.a).

- e. **20[e] & 20[f]: “wherein said detecting a second one of an electric field, a magnetic field and an electro-magnetic field comprises detecting a second magnetic field” & “wherein said generating a second detected field signature comprises generating a second detected field signature based on the detected second magnetic field”**

461. Limitations 20[e] and 20[f] are substantially similar to limitation 6[c], as shown in the table below:

Limitations 20[e] & 20[f]	Limitation 6[c]
20[e]: wherein said detecting a second one of an electric field, a	wherein said field-detecting component is further operable to

Limitations 20[e] & 20[f]	Limitation 6[c]
magnetic field and an electro- magnetic field comprises detecting a second magnetic field	detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field
20[f]: wherein said generating a second detected field signature comprises generating a second detected field signature based on the detected second magnetic field	

462. Limitation 6[c] of the '946 patent requires that “said field-detecting component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field.” As discussed above, claim 15, to which claim 20 depends, requires “detecting, *via the field-detecting component*, a second one of an electric field, a magnetic field and an electro-magnetic field; and generating, *via the field-detecting component*, a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field.” Thus a POSITA would understand that the “field-detecting component” of claim 15 performs the “said detecting a second one of an electric field, a magnetic field and an electro-magnetic field

comprises detecting a second magnetic field” and “said generating a second detected field signature comprises generating a second detected field signature based on the detected second magnetic field,” as required by limitations 20[e] and 20[f].

463. Therefore, Abramson discloses or renders obvious limitations 20[e] and 20[f] for the same reasons as limitation 6[c] (*see supra* section VI.C.6.c).

D. Ground 3: Fong in View of Abramson Renders Obvious Claims 2-4, 6, 9-11, 13, and 16-18

1. Motivation to Combine Fong and Abramson

464. In my opinion, a POSITA would have been motivated to combine the teachings of Fong and Abramson to create a more accurate system.

465. First, Fong and Abramson are both drawn to systems for determining if a smartphone (and thus a user) is in a vehicle. For example, Fong discloses “initiating a travel data collection function of a smartphone in response to a stimulus that emanates from an automobile.” Ex. 1005, Fong at Abstract; *see also id.* at 1:46-50. Fong discloses that “it is desirable to have the data collection and distribution functions operate only when the user (and the user’s smartphone) is traveling in an automobile.” *Id.* at 1:35-39. Thus, Fong discloses a system and method of detecting when a user is in a vehicle and automatically triggering the collection of travel data. For example, Abramson discloses “computing various determinations at one or more mobile devices,” including “determining an in-vehicle role, an in-vehicle location, a

hand held state, and a vehicle class” “based on analysis of one or more inputs originating at one or more sensors of one or more devices.” Ex. 1004, Abramson at Abstract.

466. Fong expressly discloses using the sensors of a smartphone to measure data associated with the running of a vehicle engine. *See* Ex. 1005, Fong at 3:38-4:22, Fig. 1. Fong does this in order to determine if the user is in a vehicle. *Id.* at 3:38-56. Similarly, Abramson also discloses the use of the sensors of a smartphone to measure data associated with the running of a vehicle engine. *See, e.g.,* Ex. 1004, Abramson at 53:48-54:2. Abramson does this, in part, to determine if a user is in a vehicle and whether the user is the driver or a passenger. *See, e.g., id.* at 19:31-35, 22:17-21.

467. Fong explicitly discloses the use of one detected sensor field (i.e., EMF or sound) to make this determination. *See* Ex. 1005, Fong at 4:60-5:29. Abramson discloses the use of determining if a smartphone user is the driver or passenger of a vehicle based on one detected sensor field (*see* Ex. 1004, Abramson at 19:31-21:11, Fig. 2A) and based on at least two detected sensor fields (*see id.* at 22:17-24:17, Fig. 2B). A POSITA would have understood that using readings from additional sensors would increase the accuracy of the prediction that a user is in a vehicle and the driver or a passenger.

468. Based on the similarity of the systems, a POSITA would have considered the modifications to the system of Fong—e.g., by implementing selective teachings from Abramson—to be a straightforward matter. For example, Fong discloses the use of one detected sensor field, whereas Abramson discloses the use of one and at least two sensor fields to determine if a user. Fong and Abramson both disclose the use of the existing smartphone sensors, which were known to a POSITA at the time, to collect the sensor field data. Abramson adds important details about the use of additional, existing sensors to increase the accuracy of the determination that a smartphone (and thus a user) was in a vehicle.

469. This combination entails combining prior-art elements (sensor data of a smartphone, etc.) in a way that yields predictable results. Indeed, it is a simple substitution of the use of one set of sensor data for the use of two sets. The use of smartphone sensor data to determine certain locations, characteristics, etc., was a well-known technique by 2012, and the use of at least two sets of smartphone sensor data would have been the application of a known technique—sensor fusion—to yield predictable results. There were a small, finite number of possible and predictable solutions (the use of the sensors within smartphones, including an accelerometer, magnetometer, microphone, GPS, etc.) and almost any combination of those sensors would have had a reasonable chance of success. The modifications would have been

readily implementable with very high confidence of success.

470. For at least these reasons, it is my opinion that a POSITA would have been motivated to combine the teachings of Fong and Abramson to produce the device and method of the '946 patent.

2. Claim 2

471. Claim 2 depends on claim 1, which Fong discloses or renders obvious as discussed above. *See supra* section VI.B.1.a-h. It is my opinion that Fong in view of Abramson discloses or renders obvious claim 2.

472. Claim 2 reads as follows: “The device of claim 1, wherein said field-detecting component is operable to detect the at least one of an electric field, a magnetic field and an electro-magnetic field as a function over a period of time.” As discussed above, Fong discloses that a “field-detecting component is operable to detect the at least one of an electric field, a magnetic field and an electro-magnetic field.” *See supra* section VI.B.1.b. The only substantive difference between claim 2 and limitation 1[a] is the addition of “as a function over a period of time.”

473. As discussed in Section VI.B.1.b, Fong discloses a sensor system 130 (i.e., the “field-detecting component” of claim 1) that can detect EMF, or electro-magnetic field.

474. A POSITA would have been motivated to detect EMF as a function

over a period of time because adding a period of time to an EMF reading can provide a more detailed field signature. Thus, when the comparison of signatures occurs, a POSITA would understand that the additional time data was likely to result in more accurate comparisons. In fact, Abramson informed a POSITA that the detected fields can be collected over a period of time. *See supra* section VI.C.2. Further, a POSITA would have known based on his/her own knowledge of the art that collecting detected data over a period of time was well known and established in the art before the filing of the '946 patent. *See supra* IV. Thus, Abramson's measurement of an EMF over a period of time would have provided the POSITA with a reasonable expectation of success.

475. Accordingly, Fong in view of Abramson discloses or renders obvious claim 2.

3. Claim 3

476. Claim 3 depends on claim 1, which Fong discloses or renders obvious as discussed above. It is my opinion that Fong in view of Abramson discloses or renders obvious claim 3.

477. Claim 3 recites:

3[pre]	The device of claim 1, further comprising:
--------	--

3[a]	a parameter-detecting component operable to detect a parameter and to generate a parameter signal based on the detected parameter,
3[b]	wherein said identifying component is operable to identify the one of an item and a location based additionally on the parameter signal.

a. 3[a]: “a parameter-detecting component operable to detect a parameter and to generate a parameter signal based on the detected parameter”

478. Fong in view of Abramson discloses or renders obvious “a parameter-detecting component operable to detect a parameter and to generate a parameter signal based on the detected parameter.”

479. Fong discloses that, a microphone of sensor system 130 can be used to detect sounds associated with the ignition of a vehicle. Ex. 1005, Fong at 5:2-8 (“In addition to the EMF, the ignition system of the automobile and/or the ignition operation generates a series of sound waves, manifested as sound, upon startup. For example, the sound is generated as a result of friction between mechanical parts of the automobile that are set in motion by the ignition system and from operation of a combustion engine.). Fong further discloses that “the sound has a particular signature or fingerprint (e.g., frequency, magnitude, and/or duration) that can be characterized and recognized by the smartphone.” *Id.* at 5:8-11. Fong further discloses that “a microphone and sensor logic of the smartphone are used to detect

and recognize the sound that is generated by the ignition system and/or the ignition process.” *Id.* at 5:17-20. Fong also discloses that “the sensor system goes through an initialization or learning process to learn the particular signature of the stimulus.” *Id.* at 5:20-22. And, Fong uses the same comparison process described above to compare sound signatures. *Id.* at 5:22-25.

480. This in line with the ’946 patent’s disclosure that the parameter-detecting component may detect sound. Ex. 1001, ’946 patent, 6:53-59. Even before the December 2012 priority date of the ’946 patent, a microphone on a smartphone was a well-known sensor that could detect sound. *See supra* section IV. Fong’s sensor system 130 is therefore “a parameter-detecting component operable to detect a parameter,” i.e., sound.

481. A POSITA would have understood that the sensor system 130, including the microphone, is “operable . . . to generate a parameter signal based on the detected parameter.” As discussed in section V.D above, I interpret “parameter signal” to be “a signal that corresponds to a parameter” for purposes of this declaration.

482. As discussed above, sensor system 130 detects sound and EMF data. *See supra* section VI.B.1.b. A POSITA would have understood that measurements from sensor system 130 as disclosed by Fong are “a signal that corresponds to a

parameter” (i.e., what the sensor measures, such as EMF, sound, etc.). That is, a POSITA would have understood that sensor system 130 is “operable . . . to generate a parameter signal based on the detected parameter.”

483. Accordingly, Fong in view of Abramson discloses or renders obvious limitation 3[a].

b. 3[b]: “wherein said identifying component is operable to identify the one of an item and a location based additionally on the parameter signal”

484. Fong in view of Abramson discloses or renders obvious “wherein said identifying component is operable to identify the one of an item and a location based additionally on the parameter signal.”

485. As discussed above, Abramson discloses using multiple sensor readings to confirm whether a user is a driver or a passenger in a vehicle. *See supra* sections VI.C.1.a-h. In particular, Abramson discloses using data detected by the sensors commonly included in a smartphone (i.e., sensors 145, including a microphone 145D and a magnetometer 145E) to determine an in-vehicle role of a user of mobile device 105” held by a user. Ex. 1004, Abramson at 17:44-56. Abramson further informs a POSITA that collecting multiple types of data can be used to determine the ignition of a vehicle with a higher degree of certainty. Thus, it is my opinion that a POSITA would have understood the sensor system 130,

including the microphone, to be “a parameter-detecting component operable to detect” sound (i.e., “a parameter”).

486. As discussed above, Fong discloses that “[o]nce the sensor system 130 has detected and recognized the EMF or sound that is generated by the ignition system and/or by the ignition process, the sensor system generates a signal that either directly or indirectly initiates the App 120.” Fong at 5:26-29. A POSITA would have been motivated to use both EMF and sound data to initiate the App because a POSITA would understand that using both the detected field signature (EMF) and an additional parameter signal (sound) increases the reliability or accuracy of the smartphone’s determination that it is in fact in a vehicle before the App is initiated. Indeed, Abramson informs a POSITA that multiple sensor readings can be used to determine whether a user is the driver or a passenger in a vehicle, which a POSITA would understand increases the accuracy of the determination. Sections VI.C.1.f, VI.C.3.b; *see also* Ex. 1004, Abramson at 22:63-23:1 (“As described in detail herein, by identifying one or more user determination characteristics (such as identifying that the user of mobile device 105 is likely traveling in a car, as described above), the context and significance of one or more other user determination characteristics can be better evaluated and/or quantified.”). Thus, a POSITA would have had a reasonable expectation of success in using two parameters based on both Fong’s

disclosure of using these parameters and Abramson's disclosure of using multiple parameters in combination.

487. Accordingly, Fong in view of Abramson discloses or renders obvious limitation 3[b].

4. Claim 4

488. Claim 4 depends on claims 1 and 3, which Fong in view of Abramson discloses or renders obvious as discussed above. It is my opinion that Fong in view of Abramson also discloses or renders obvious claim 4.

489. Claim 4 reads as follows: "The device of claim 3, wherein said parameter-detecting component is operable to detect, as the parameter, one of the group consisting of a velocity, acceleration, angular velocity, angular acceleration, geodetic position, sound, temperature, vibrations, pressure, biometrics, contents of surrounding atmosphere and combinations thereof."

490. As discussed above, the sensor system 130 of Fong is the "parameter-detecting component." *See supra* section VI.D.3.a. In particular, Fong discloses the use of a microphone to detect sounds associated with the ignition of a vehicle. Ex. 1005, Fong at 5:2-8. Sound is one of the listed parameters in claim 4. In light of the disclosures above, a POSITA would understand that the microphone of sensor system 130 is "operable to detect, as the parameter, . . . sound"

491. Accordingly, Fong in view of Abramson discloses or renders obvious claim 4.

5. Claim 6

492. Claim 6 depends on claim 1, which Fong discloses or renders obvious as discussed above. It is my opinion that Fong in view of Abramson discloses or renders obvious claim 6.

493. Claim 6 recites:

6[pre]	The device of claim 1,
6[a]	wherein said field-detecting component is operable to detect a magnetic field,
6[b]	wherein said input component is further operable to input an association between a vehicle and the detected magnetic field,
6[c]	wherein said field-detecting component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field, and
6[d]	wherein said identifying component is further operable, based on the association, to identify the vehicle as the item.

a. 6[a]: “wherein said field-detecting component is operable to detect a magnetic field”

494. Fong in view of Abramson discloses or renders obvious “wherein said

field-detecting component is operable to detect a magnetic field.”

495. As discussed above, Fong discloses “a field detecting component that is “operable to detect at least one of an electric field, a magnetic field and an electromagnetic field.” *See supra* section VI.B.1.b. Specifically, Fong discloses that sensor system 130 can detect an electromagnetic field (EMF) to detect whether a vehicle has been started. *See supra* section VI.B.1.b. A POSITA would have understood that an electromagnetic field is a combination of an electric and magnetic field. *See supra* section IV. That is, a measure of EMF includes measurements of both the electric and magnetic fields. *See supra* section IV. Fong discloses that EMF can be detected by sensor system 130, specifically via the “antenna and sensor logic of the smartphone.” *See* Ex. 1005, Fong at 5:11-17. Fong discloses comparing a previously stored EMF reading to an additional EMF reading to determine what specific vehicle was started. *See supra* section VI.B.1.h. Fong also discloses that “[m]any of the elements of a smartphone are well known in the field, and therefore are not described further,” in the disclosure. Ex. 1005, Fong at 8:22-23. Fong discloses that the smartphone could run iOS, Apple’s operating system. *Id.* at 8:24-26.

496. A POSITA would have been motivated to use the magnetometer in a smartphone to detect a magnetic field in light of Abramson’s disclosure of such use.

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

Abramson discloses the use of a magnetometer of a smartphone to detect the magnetic and electro-magnetic fields from the ignition of a vehicle. *See supra* section VI.C.1.b. As Fong alludes to, a POSITA would have known based on his/her knowledge of the art that smartphones, including iPhones running iOS, has a magnetometer. *See supra* section IV; *see also* Fong at 8:22-23 (“Many of the elements of a smartphone are well known in the field”). A POSITA would understand that detecting the magnetic field from the ignition of a vehicle would have been one way to accurately detect whether a device is in a vehicle. A POSITA would have reasonably expected success in using a magnetometer to detect a magnetic field as claimed due to Abramson’s disclosure of such use.

497. Accordingly, it is my opinion that Fong in view of Abramson discloses or renders obvious limitation 6[a].

b. 6[b]: “wherein said input component is further operable to input an association between a vehicle and the detected magnetic field”

498. Fong in view of Abramson discloses or renders obvious “wherein said input component is further operable to input an association between a vehicle and the detected magnetic field.”

499. As discussed in section V.D above, I interpret “an association” to be “a relationship” for purposes of this declaration.

500. As discussed above, Fong discloses that sensor system 130 is “an input component operable to input the detected field signature into the database.” *See supra* section VI.B.1.c. As further disclosed above, the EMF reading from the sensor system 130 is the “detected field signature.” *See supra* section VI.B.1.c. Fong discloses that the signature generated by the ignition of the vehicle (i.e., the EMF reading) is “stored by the sensor system and used in a comparison process to identify a subsequently detected stimulus as a stimulus that should initiate the App.” Ex. 1005, Fong at 5:22-25. *See supra* section VI.B.1.h. Thus, a POSITA would have understood that the stored signature is associated with a vehicle.

501. As discussed above, Abramson informs a POSITA that a magnetometer can be used to detect a magnetic field associated with the ignition of a vehicle. *See supra* section VI.C.1.b. A POSITA would have understood that, like the EMF signatures, the magnetic field signatures detected by the magnetometers would indicate the ignition of a vehicle. Thus, a POSITA would have understood that the stored signature is associated with a vehicle.

502. Moreover, as discussed above, a POSITA would understand that the stored vehicle determination characteristics disclosed in relation to Figure 5 of Abramson “correspond” (i.e., have a relationship) with a vehicle type. *See supra* section VI.C.6.b.

503. Accordingly, Fong in view of Abramson discloses or renders obvious limitation 6[b].

- c. **6[c]: “wherein said field-detecting component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field”**

504. Fong in view of Abramson discloses or renders obvious “wherein said field-detecting component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field.”

505. As discussed above, Fong discloses that sensor system 130 is the “field-detecting component” that is “operable to detect a second one of an electric field, a magnetic field and an electro-magnetic field and to generate a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field.” *See supra* section VI.B.1.b.

506. Detecting only a magnetic field would have been obvious to a POSITA as of December 2012. As discussed above, Abramson informs a POSITA that a magnetometer can be used to detect a magnetic field associated with the ignition of a vehicle. *See supra* section VI.C.1.b. A POSITA would have understood that, the magnetic field signatures detected by the magnetometer could be stored and compared to an additional, second magnetic field signature via the process disclosed

by Fong. Thus, a POSITA would have been motivated to use a magnetometer to “detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field” with a reasonable expectation of success.

507. Accordingly, Fong in view of Abramson discloses or renders obvious limitation 6[c].

d. 6[d]: “wherein said identifying component is further operable, based on the association, to identify the vehicle as the item”

508. Fong in view of Abramson discloses or renders obvious “wherein said identifying component is further operable, based on the association, to identify the vehicle as the item.”

509. As discussed above, Fong in view of Abramson discloses or renders obvious “an association between a vehicle and the detected magnetic field.” *See supra* section VI.D.5.b. Fong also teaches identifying the vehicle as the item, as discussed above regarding claim 1. *See supra* section VI.B.1.f. Therefore, Fong teaches “identifying component is further operable, based on the association, to identify the vehicle as the item.”

510. Moreover, as discussed above, Sfara alleges that identifying the mode of transportation (i.e., a car, a train, a bus, an airplane, etc.) satisfies “identify[ing]

the vehicle as an item.” *See* Ex. 1006, Infringement Contentions at 149-51. A POSITA would have understood that the comparison disclosed in Fong can distinguish between the ignition of a vehicle and some other event. Thus, a POSITA would have understood that Fong discloses identifying a vehicle (e.g., a car) based on the detected ignition. Therefore, Fong’s identification of the vehicle falls within the scope of this limitation.

511. As discussed above, Abramson discloses that Abramson discloses the use of stored user determination characteristics to determine if newly detected data indicates that a vehicle is present. *See supra* section VI.C.1.f. A POSITA would understand that the user determination characteristic corresponding to the vehicle evidence a relationship and, thus, an association. A POSITA would further understand that the vehicle is identified as an item as disclosed in the ’946 patent.

512. Alternatively, referring to Figure 5, Abramson discloses that, using processor 110 executing one or more of software modules 130, “various baseline values corresponding to the vehicle determination characteristics referenced herein (such as values for vehicle determination characteristics that correspond to boats, values for vehicle determination characteristics that correspond to airplanes, etc.) can be stored and/or provided at databases 174 and/or 162, thereby enabling the computation of a probability (based on the vehicle determination characteristics

perceived/determined by mobile device 105) that the vehicle within which mobile device 105 is traveling corresponds to a particular vehicle class.” Abramson at 35:33-43; *see also supra* section VI.C.1.f. At step 530, determination module 170 “computes at least one determination factor based on the vehicle determination characteristic(s), such as a probability that the vehicle corresponds to a particular vehicle class,” (e.g., car, motorcycle, bicycle, train, bus, etc.). *Id.* at 35:47-50. In light of the above, a POSITA would understand that the method of Figure 5 determined an “item” (i.e., vehicle class). *See supra* section VI.C.1.f.

513. As discussed above, Abramson’s disclosures are consistent with those of the ’946 patent and Sfara’s Infringement Contentions. *See supra* section VI.C.6.d.

514. Accordingly, Fong in view of Abramson discloses or renders obvious limitation 6[d].

6. Claim 9

515. Claim 9 depends on claim 8, which Fong discloses or renders obvious as discussed above. It is also my opinion that Fong in view of Abramson discloses or renders obvious claim 9.

516. Claim 2 depends on claim 1, which Fong discloses or renders obvious as discussed above. The limitations of claim 9 are substantially similar to those recited in claim 2, as shown in the table below:

Claim 9	Claim 2
The method of claim 8, wherein said detecting comprises detecting the at least one of an electric field, a magnetic field and an electro-magnetic field as a function over a period of time.	The device of claim 1, wherein said field-detecting component is operable to detect the at least one of an electric field, a magnetic field and an electro-magnetic field as a function over a period of time.

517. Claim 2 of the '946 patent requires that “said field-detecting component is operable to detect the at least one of” As discussed above, claim 8, to which claim 9 depends, requires “detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field.” Thus a POSITA would have understood that the “field-detecting component” performs the “detecting the at least one of an” as required by claim 9.

518. Therefore, Fong in view of Abramson discloses or renders obvious claim 9 for the same reasons Fong in view of Abramson discloses or renders obvious claim 2 (*see supra* section VI.D.2).

7. Claim 10

519. Claim 10 depends on claim 8, which Fong discloses or renders obvious as discussed above. It is my opinion that Fong in view of Abramson also discloses

or renders obvious claim 10.

520. Claim 3 depends on claim 1, which Fong discloses or renders obvious as discussed above.

- a. **10[a] & 10[b]: “detecting, via a parameter-detecting component, a parameter” & “generating, via the parameter-detecting component, a parameter signal based on the detected parameter”**

521. Limitations 10[a] and 10[b] are substantially similar to those recited in limitation 3[a], as shown in the table below:

Limitations 10[a] & 10[b]	Limitation 3[a]
10[a]: detecting , via a parameter-detecting component, a parameter , and	a parameter-detecting component operable to detect a parameter and to generate a parameter signal based on the detected parameter
10[b]: generating , via the parameter-detecting component, a parameter signal based on the detected parameter,	

522. Therefore, Fong in view of Abramson discloses or renders obvious elements 10[a] and 10[b] for the same reasons Fong in view of Abramson discloses or renders obvious limitation 3[a] (*see supra* section VI.D.3.a).

b. 10[c]: “wherein said identifying comprises identifying the one of an item and a location based additionally on the parameter signal”

523. The limitations of limitation 10[c] are substantially similar to those recited in limitation 3[b], as shown in the table below:

Limitation 10[c]	Limitation 3[b]
10[c]: wherein said identifying comprises identifying the one of an item and a location based additionally on the parameter signal	wherein said identifying component is operable to identify the one of an item and a location based additionally on the parameter signal

524. Claim element 3[b] of the '946 patent requires that “said identifying component is operable to identify the one of an item and a location. . . .” As discussed above, claim 8, to which claim 10 depends, requires “identifying, via an identifying component, one of an item and a location based on the comparison signal.” Thus a POSITA would have understood that the “identifying component” of claim 8 performs the “identifying the one of an item and a location” as required by limitation 10[c].

525. Therefore, Fong in view of Abramson discloses or renders obvious element 10[c] for the same reasons Fong in view of Abramson discloses or renders

obvious limitation 3[b] (*see supra* section VI.D.3.b).

8. Claim 11

526. Claim 11 depends on claims 8 and 10, which Fong in view of Abramson discloses or renders obvious as discussed above. It is also my opinion that Fong in view of Abramson discloses or renders obvious claim 11.

527. Claim 4 depends on claims 1 and 3, which Fong in view of Abramson discloses or renders obvious as discussed above. The limitations of claim 11 are substantially similar to those recited in claim 4, as shown in the table below:

Claim 11	Claim 4
The method of claim 10, wherein said detecting a parameter comprises detecting, as the parameter, one of the group consisting of a velocity, acceleration, angular velocity, angular acceleration, geodetic position, sound, temperature, vibrations, pressure, biometrics, contents of surrounding atmosphere and combinations thereof.	The device of claim 3, wherein said parameter-detecting component is operable to detect, as the parameter, one of the group consisting of a velocity, acceleration, angular velocity, angular acceleration, geodetic position, sound, temperature, vibrations, pressure, biometrics, contents of surrounding atmosphere and combinations thereof.

528. Claim 4 of the '946 patent requires that “said parameter-detecting

component is operable to detect, as the parameter, one of the group consisting of a velocity” As discussed above, claim 10, to which claim 11 depends, requires “detecting, via a parameter-detecting component, a parameter.” Thus a POSITA would have understood that the “parameter-detecting component” of claim 10 performs the “detecting, as the parameter, one of the group consisting of a velocity” as required by claim 11.

529. Therefore, Fong in view of Abramson discloses or renders obvious claim 11 for the same reasons Fong in view of Abramson discloses or renders obvious claim 4 (*see supra* section VI.D.4).

9. Claim 13

530. Claim 13 depends on claim 8, which Fong discloses or renders obvious as discussed above. It is my opinion that Fong in view of Abramson discloses or renders obvious claim 13.

531. Claim 6 depends on claim 1, which Fong discloses or renders obvious as discussed above.

- a. 13[a] & 13[d]: “inputting, via the input component is further operable to input an association” & “wherein said inputting an association comprises inputting an association between a vehicle and the detected magnetic field”**

532. Limitations 13[a] and 13[d] are substantially similar to those recited in

limitation 6[b], as shown in the table below:

Limitations 13[a] & 13[d]	Limitation 6[b]
13[a]: inputting, via the input component is further operable to input an association	wherein said input component is further operable to input an association between a vehicle and the detected magnetic field
13[d]: wherein said inputting an association comprises inputting an association between a vehicle and the detected magnetic field	

533. Therefore, Fong in view of Abramson discloses or renders obvious elements 13[a] and 13[d] for the same reasons Fong in view of Abramson discloses or renders obvious limitation 6[b] (*see supra* section VI.D.5.b).

b. 13[b]: “identifying, via the identifying component, a vehicle”

534. Fong in view of Abramson discloses or renders obvious “identifying, via the identifying component, a vehicle.”

535. As discussed above with respect to limitation 1[e], Fong’s sensor system 130 is “an identifying component operable to identify one of an item and a location based on the comparison signal.” *See supra* section VI.B.1.f. For the same

reasons described above (*see supra* section VI.B.1.f), a POSITA would have understood that the sensor system 130 is the identifying component of limitation 13[b].

536. Therefore, Fong in view of Abramson discloses or renders obvious element 13[b]

- c. **13[g]: “wherein said identifying a vehicle comprises identifying, based on the association, the vehicle as the item”**

537. The limitation of limitation 13[g] is substantially similar to those recited in limitation 6[d], as shown in the table below:

Limitations 13[g]	Limitation 6[d]
13[g]: wherein said identifying a vehicle comprises identifying, based on the association, the vehicle as the item	wherein said identifying component is further operable, based on the association, to identify the vehicle as the item

538. Claim element 6[d] of the '946 patent requires that “said identifying component is further operable, based on the association, to identify the vehicle as the item.” As discussed above, claim 8, to which claim 13 depends, requires “identifying, via an identifying component, one of an item and a location based on the comparison signal.” Thus a POSITA would have understood that the

“identifying component” of claim 8 performs the “identifying, based on the association, the vehicle as the item,” as required by limitation 13[g].

539. Therefore, Fong in view of Abramson discloses or renders obvious element 13[g] for the same reasons Fong in view of Abramson discloses or renders obvious limitation 6[d] (*see supra* section VI.D.5.d).

- d. 13[c]: “wherein said detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field comprises detecting detect a magnetic field”**

540. The limitation of limitation 13[c] is substantially similar to those recited in limitation 6[a], as shown in the table below:

Limitation 13[c]	Limitation 6[a]
13[c]: wherein said detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field comprises detecting detect a magnetic field	wherein said field-detecting component is operable to detect a magnetic field

541. Therefore, Fong in view of Abramson discloses or renders obvious elements 13[c] for the same reasons Fong in view of Abramson discloses or renders

obvious limitation 6[a] (*see supra* section VI.D.5.a).

- e. 13[e] & 13[f]: “wherein said detecting a second one of an electric field, a magnetic field and an electro-magnetic field comprises detecting a second magnetic field” & “wherein said generating a second detected field signature comprises generating a second detected field signature based on the detected second magnetic field”

542. Limitations 13[e] and 13[f] are substantially similar to those recited in limitation 6[c], as shown in the table below:

Limitations 13[e] & 13[f]	Limitation 6[c]
13[e]: wherein said detecting a second one of an electric field, a magnetic field and an electro-magnetic field comprises detecting a second magnetic field	wherein said field-detecting component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field
13[f]: wherein said generating a second detected field signature comprises generating a second detected field signature based on the detected second magnetic field	

543. Claim element 6[c] of the '946 patent requires that “said field-detecting

component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field.” As discussed above, claim 8, to which claim 13 depends, requires “detecting, *via the field-detecting component*, a second one of an electric field, a magnetic field and an electro-magnetic field; and generating, *via the field-detecting component*, a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field.” Thus a POSITA would have understood that the “field-detecting component” of claim 8 performs the “said detecting a second one of an electric field, a magnetic field and an electro-magnetic field comprises detecting a second magnetic field” and “said generating a second detected field signature comprises generating a second detected field signature based on the detected second magnetic field,” as required by limitations 13[e] and 13[f].

544. Therefore, Fong in view of Abramson discloses or renders obvious limitations 13[e] and 13[f] for the same reasons Fong in view of Abramson discloses or renders obvious limitation 6[c] (*see supra* section VI.D.5.c).

10. Claim 16

545. Claim 16 depends on claim 15, which Fong discloses or renders obvious as discussed above. It is also my opinion that Fong in view of Abramson discloses or renders obvious or renders obvious claim 16.

546. Claim 2 depends on claim 1, which Fong discloses or renders obvious as discussed above. The limitations of claim 16 are substantially similar to those recited in claim 2, as shown in the table below:

Claim 16	Claim 2
The non-transitory, tangible, computer-readable media of claim 15, wherein the computer-readable instructions are capable of instructing the computer to perform the method such that said detecting comprises detecting the at least one of an electric field, a magnetic field and an electro-magnetic field as a function over a period of time.	The device of claim 1, wherein said field-detecting component is operable to detect the at least one of an electric field, a magnetic field and an electro-magnetic field as a function over a period of time.

547. Claim 2 of the '946 patent requires that “said field-detecting component is operable to detect the at least one of” As discussed above, claim 15, to which claim 16 depends, requires “detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field.” Thus, a POSITA would have understood that the “field-detecting component” performs the “detecting the at least one of an” as required by claim 16.

548. Therefore, Fong in view of Abramson discloses or renders obvious claim 16 for the same reasons Fong in view of Abramson discloses or renders obvious claim 2 (*see supra* section VI.D.2).

11. Claim 17

549. Claim 17 depends on claim 15, which Fong discloses or renders obvious as discussed above. It is my opinion that Fong in view of Abramson discloses or renders obvious claim 17.

550. Claim 3 depends on claim 1, which Fong discloses or renders obvious as discussed above.

- a. **17[a] & 17[b]: “detecting, via a parameter-detecting component, a parameter” & “generating, via the parameter-detecting component, a parameter signal based on the detected parameter”**

551. Limitations 17[a] and 17[b] are substantially similar to those recited in limitation 3[a], as shown in the table below:

Limitations 17[a] & 17[b]	Limitation 3[a]
17[a]: detecting , via a parameter-detecting component, a parameter , and	a parameter-detecting component operable to detect a parameter and to

Limitations 17[a] & 17[b]	Limitation 3[a]
17[b]: generating, via the parameter- detecting component, a parameter signal based on the detected parameter,	generate a parameter signal based on the detected parameter

552. Therefore, Fong in view of Abramson discloses or renders obvious elements 17[a] and 17[b] for the same reasons Fong in view of Abramson discloses or renders obvious limitation 3[a] (*see supra* section VI.D.3.a).

b. 17[c]: “wherein said identifying comprises identifying the one of an item and a location based additionally on the parameter signal”

553. The limitations of limitation 17[c] are substantially similar to those recited in limitation 3[b], as shown in the table below:

Limitation 17[c]	Limitation 3[b]
17[c]: wherein said identifying comprises identifying the one of an item and a location based additionally on the parameter signal	wherein said identifying component is operable to identify the one of an item and a location based additionally on the parameter signal

554. Claim element 3[b] of the '946 patent requires that “said identifying component is operable to identify the one of an item and a location. . . .” As discussed above, claim 15, to which claim 17 depends, requires “identifying, via an identifying component, one of an item and a location based on the comparison signal.” Thus a POSITA would have understood that the “identifying component” of claim 15 performs the “identifying the one of an item and a location” as required by limitation 17[c].

555. Therefore, Fong in view of Abramson discloses or renders obvious element 17[c] for the same reasons Fong in view of Abramson discloses or renders obvious limitation 3[b] (*see supra* section VI.D.3.b).

12. Claim 18

556. Claim 18 depends on claims 15 and 17, which Fong in view of Abramson discloses or renders obvious as discussed above. It is also my opinion that Fong in view of Abramson discloses or renders obvious claim 18.

557. Claim 4 depends on claims 1 and 3, which Fong in view of Abramson discloses or renders obvious as discussed above. The limitations of claim 18 are substantially similar to those recited in claim 4, as shown in the table below:

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

Claim 18	Claim 4
The non-transitory, tangible, computer-readable media of claim 17, wherein the computer-readable instructions are capable of instructing the computer to perform the method such that said detecting a parameter comprises detecting, as the parameter, one of the group consisting of a velocity, acceleration, angular velocity, angular acceleration, geodetic position, sound, temperature, vibrations, pressure, biometrics, contents of surrounding atmosphere and combinations thereof.	The device of claim 3, wherein said parameter-detecting component is operable to detect, as the parameter, one of the group consisting of a velocity, acceleration, angular velocity, angular acceleration, geodetic position, sound, temperature, vibrations, pressure, biometrics, contents of surrounding atmosphere and combinations thereof.

558. Claim 4 of the '946 patent requires that “said parameter-detecting component is operable to detect, as the parameter, one of the group consisting of a velocity” As discussed above, claim 15, to which claim 18 depends, requires “detecting, via a parameter-detecting component, a parameter.” Thus a POSITA would have understood that the “parameter-detecting component” of claim 15

performs the “detecting, as the parameter, one of the group consisting of a velocity . . .” as required by claim 18.

559. Therefore, Fong in view of Abramson discloses or renders obvious claim 18 for the same reasons Fong in view of Abramson discloses or renders obvious claim 4 (*see supra* section VI.D.4).

13. Claim 20

560. Claim 20 depends on claim 15, which Fong discloses or renders obvious as discussed above. It is my opinion that Fong in view of Abramson discloses or renders obvious claim 20.

561. Claim 6 depends on claim 1, which Fong discloses or renders obvious as discussed above.

- a. 20[a] & 20[d]: “inputting, via the input component is further operable to input an association” & “wherein said inputting an association comprises inputting an association between a vehicle and the detected magnetic field”**

562. Limitations 20[a] and 20[d] are substantially similar to those recited in limitation 6[b], as shown in the table below:

Limitations 20[a] & 20[d]	Limitation 6[b]
20[a]: inputting, via the input component is further operable to input an association	wherein said input component is further operable to input an association between a vehicle and the detected magnetic field
20[d]: wherein said inputting an association comprises inputting an association between a vehicle and the detected magnetic field	

563. Therefore, Fong in view of Abramson discloses or renders obvious limitations 20[a] and 20[d] for the same reasons Fong in view of Abramson discloses or renders obvious limitation 6[b] (*see supra* section VI.D.5.b).

b. 20[b]: “identifying, via the identifying component, a vehicle”

564. Fong in view of Abramson discloses or renders obvious “identifying, via the identifying component, a vehicle.”

565. As discussed above with respect to limitation 1[e], Fong’s sensor system 130 is “an identifying component operable to identify one of an item and a location based on the comparison signal.” *See supra* section VI.B.1.f. For the same reasons described above (*see supra* section VI.B.1.f), a POSITA would have

understood that the sensor system 130 is the identifying component of limitation 13[b].

566. Therefore, Fong discloses or renders obvious element 20[b]

- c. **20[g]: “wherein said identifying a vehicle comprises identifying, based on the association, the vehicle as the item”**

567. The limitation of limitation 20[g] is substantially similar to those recited in limitation 6[d], as shown in the table below:

Limitations 20[g]	Limitation 6[d]
20[g]: wherein said identifying a vehicle comprises identifying, based on the association, the vehicle as the item	wherein said identifying component is further operable, based on the association, to identify the vehicle as the item

568. Claim element 6[d] of the '946 patent requires that “said identifying component is further operable, based on the association, to identify the vehicle as the item.” As discussed above, claim 15, to which claim 20 depends, requires “identifying, via an identifying component, one of an item and a location based on the comparison signal.” Thus a POSITA would have understood that the “identifying component” of claim 15 performs the “identifying, based on the association, the vehicle as the item,” as required by limitation 20[g].

569. Therefore, Fong in view of Abramson discloses or renders obvious element 20[g] for the same reasons Fong in view of Abramson discloses or renders obvious limitation 6[d] (*see supra* section VI.D.5.d).

- d. **20[c]: “wherein said detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field comprises detecting detect a magnetic field”**

570. The limitation of limitation 20[c] is substantially similar to those recited in limitation 6[a], as shown in the table below:

Limitation 20[c]	Limitation 6[a]
20[c]: wherein said detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field comprises detecting detect a magnetic field	wherein said field-detecting component is operable to detect a magnetic field

571. Therefore, Fong in view of Abramson discloses or renders obvious element 20[c] for the same reasons Fong in view of Abramson discloses or renders obvious limitation 6[a] (*see supra* section VI.D.5.a).

- e. **20[e] & 20[f]: “wherein said detecting a second one of an electric field, a magnetic field and an electro-**

magnetic field comprises detecting a second magnetic field” & “wherein said generating a second detected field signature comprises generating a second detected field signature based on the detected second magnetic field”

572. Limitations 20[e] and 20[f] are substantially similar to those recited in limitation 6[c], as shown in the table below:

Limitations 20[e] & 20[f]	Limitation 6[c]
20[e]: wherein said detecting a second one of an electric field, a magnetic field and an electro-magnetic field comprises detecting a second magnetic field	wherein said field-detecting component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field
20[f]: wherein said generating a second detected field signature comprises generating a second detected field signature based on the detected second magnetic field	

573. Claim element 6[c] of the ’946 patent requires that “said field-detecting component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field.” As

discussed above, claim 15, to which claim 20 depends, requires “detecting, *via the field-detecting component*, a second one of an electric field, a magnetic field and an electro-magnetic field; and generating, *via the field-detecting component*, a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field.” Thus a POSITA would have understood that the “field-detecting component” of claim 15 performs the “said detecting a second one of an electric field, a magnetic field and an electro-magnetic field comprises detecting a second magnetic field” and “said generating a second detected field signature comprises generating a second detected field signature based on the detected second magnetic field,” as required by limitations 20[e] and 20[f].

574. Therefore, Fong in view of Abramson discloses or renders obvious limitations 20[e] and 20[f] for the same reasons Fong in view of Abramson discloses or renders obvious limitation 6[c] (*see supra* section VI.D.5.c).

VII. NO SECONDARY CONSIDERATIONS OF NON-OBVIOUSNESS

575. I am unaware of any secondary considerations that may support the patentability of any claims of the '946 patent, and I understand from counsel that, in the district court litigation, Patent Owner also has not identified any evidence with respect to secondary considerations of non-obviousness. I expressly reserve the right to respond to any allegations of secondary considerations that may be asserted by

Patent Owner in this proceeding.

VIII. CONCLUSION

576. In my opinion, based on my review of the '946 patent, the materials referenced herein, and my knowledge of what a POSITA would have known at the time of and before the '946 patent's priority date about the technology at issue, a POSITA would understand all of the limitations of challenged claims 1-6, 8-13, and 15-20 to be obvious over the prior art for the reasons described above.

577. Accordingly, it is my opinion that challenged claims 1-6, 8-13, and 15-20 should be found unpatentable.

578. Furthermore, I reserve the right to supplement my opinions in the future to respond to any arguments or positions that the Patent Owner may raise, taking account of new information as it becomes available to me.

579. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Declaration of Lin Zhong, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 9,333,946

Executed on June 6, 2024 at Woodbridge, Connecticut.

A handwritten signature in black ink, appearing to read 'Lin Zhong', written in a cursive style.

Dr. Lin Zhong