

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

**PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT NO. 9,333,946**

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Exhibit No.	Description of Document
1001	U.S. Patent No. 9,33,946 (the “’946 patent”)
1002	Declaration of Dr. Lin Zhong (“Decl.”)
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
1009	<i>Cambridge Mobile Telematics, Inc. v. Sfara, Inc.</i> , No. 3:23-cv-01368 (D.N.J.), ECF No. 89, Letter Order Granting Motion to Amend Schedule
1010	<i>Cambridge Mobile Telematics, Inc. v. Sfara, Inc.</i> , No. 3:23-cv-01368 (D.N.J.), ECF No. 98, Text Order Extending Discovery Deadlines

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1011	U.S. Courts, Statistics and Reports, Table C-5, U.S. District Courts- Civil Federal Judicial Caseload Statistics (December 31, 2023), https://www.uscourts.gov/statistics/table/c-5/statistical-tables-federal-judiciary/2023/12/31 (last visited April 28, 2024).
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.
1014	Vukajlovic et al, The Practical Design of In-vehicle Telematics Device with GPS and MEMS Accelerometers, Telfor Journal, Vol. 4, No. 2, 2012.
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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.

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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.
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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.
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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.
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.
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1028	Fleming, Overview of Automotive Sensors, IEEE Sensors Journal, Vol. 1, No. 4, December 2001.
1029	U.S. Patent No. 9,311,271 (“Wright”)

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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

APPENDIX OF CLAIMS

Claim	Limitation
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

Claim	Limitation
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.
2	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.
3	The device of claim 1, further comprising: a parameter-detecting component operable to detect a parameter and to generate a parameter signal based on the detected parameter, wherein said identifying component is operable to identify the one of an item and a location based additionally on the parameter signal.
4	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.
5	The device of claim 1, further comprising a communication component operable to wirelessly communicate with a network.

Claim	Limitation
6	The device of claim 1, wherein said field-detecting component is operable to detect a magnetic field, wherein said input component is further operable to input an association between a vehicle and the detected 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, and wherein said identifying component is further operable, based on the association, to identify the vehicle as the item.
8 <pre>[pre]</pre>	A method, for use with a database, said method comprising:
8 <pre>[a]</pre>	detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field;
8 <pre>[b]</pre>	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 <pre>[c]</pre>	inputting, via an input component, the detected field signature into the database;
8 <pre>[d]</pre>	accessing, via an accessing component, the detected field signature from the database;
8 <pre>[e]</pre>	generating, via a comparing component, a comparison signal;
8 <pre>[f]</pre>	identifying, via an identifying component, one of an item and a location based on the comparison signal;

Claim	Limitation
8[g]	detecting, via the field-detecting component, a second one of an electric field, a magnetic field and an electro-magnetic field; and
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.
9	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.
10	The method of claim 8, further comprising: detecting, via a parameter-detecting component, a parameter; and generating, via the parameter-detecting component, a parameter signal based on the detected parameter, wherein said identifying comprises identifying the one of an item and a location based additionally on the parameter signal.
11	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.

Claim	Limitation
12	The method of claim 8, further comprising wirelessly communicating, via a communication component, with a network.
13	The method of claim 8, further comprising: inputting, via the input component is further operable to input an association; and identifying, via the identifying component, a vehicle, 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 inputting an association comprises inputting an association between a vehicle and the detected magnetic field, 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, and wherein said identifying a vehicle comprises identifying, based on the association, the vehicle as the item.
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;

Claim	Limitation
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;
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.

Claim	Limitation
16	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.
17	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: detecting, via a parameter-detecting component, a parameter; and generating, via the parameter-detecting component, a parameter signal based on the detected parameter, wherein said identifying comprises identifying the one of an item and a location based additionally on the parameter signal.
18	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.

Claim	Limitation
19	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.
20	The non-transitory, tangible, computer-readable media of claim 15, the computer-readable instructions being capable of instructing the computer to perform the method further comprising: inputting, via the input component is further operable to input an association; and identifying, via the identifying component, a vehicle, 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 inputting an association comprises inputting an association between a vehicle and the detected magnetic field, 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, and wherein said identifying a vehicle comprises identifying, based on the association, the vehicle as the item.

Petitioner Cambridge Mobile Telematics, Inc. (“Petitioner”) seeks *inter partes* review (“IPR”) of claims 1-6, 8-13, 15-20 (“Challenged Claims”) of U.S. Patent No. 9,333,946 (“’946 patent,” Ex.1001).

I. Introduction

The Challenged Claims are directed to using electric, magnetic, and/or electro-magnetic field signatures to determine the identity and type of vehicle a smartphone is in. According to the prosecution history, the alleged novelty of the ’946 patent relates to using a smartphone to compare a first detected field signature, which has previously been stored in a database, with a subsequent detected field signature to determine the identity of a vehicle or a location of the smartphone. Ex.1007, 243. However, comparing stored and detected field signatures to identify a vehicle or a location was well known in the art before the filing of the ’946 patent.

As explained below and in the accompanying Zhong Declaration, each element or combination of elements in the Challenged Claims was disclosed in the prior art and known to a person having ordinary skill in the art (“POSITA”) prior to the ’946 patent’s December 21, 2012 priority date. The Board should institute review because there is a reasonable likelihood that Petitioner will prevail on one or more of the grounds set forth herein.

II. Grounds for Standing

Petitioner certifies that the '946 patent is available for IPR and that Petitioner is not barred or otherwise estopped.

III. Identification of Challenge and Statement of Relief Requested

A. Prior Art

The '946 patent was filed on November 5, 2013 and claims earliest priority to Provisional Application Nos. 61/740,814, 61/740,831, and 61/740,851, filed on December 21, 2012. Patent Owner identifies this as the earliest priority date of the '946 patent. Ex.1006, 13. Petitioner does not acquiesce that Patent Owner is entitled to this priority date. Regardless, each of the references cited in this Petition was filed or published before December 21, 2012.

1. **U.S. Patent No. 8,509,812 to Fong** ("Fong"; Ex.1005), filed on December 27, 2011, is prior art to the '946 patent under pre-AIA 35 U.S.C. §102(e).

2. **U.S. Patent No. 8,290,480 to Abramson** ("Abramson"; Ex.1004), issued on October 16, 2012, is prior art to the '946 patent under pre-AIA 35 U.S.C. §102(a).

These references were not considered on the record or applied by the Examiner in a rejection during prosecution of the '946 patent. Ex.1001, References Cited; *see also generally* Ex.1007.

B. Grounds for Challenge

Ground 1: Fong renders claims 1, 5, 6, 8, 12, 13, 15, 19, and 20 obvious.

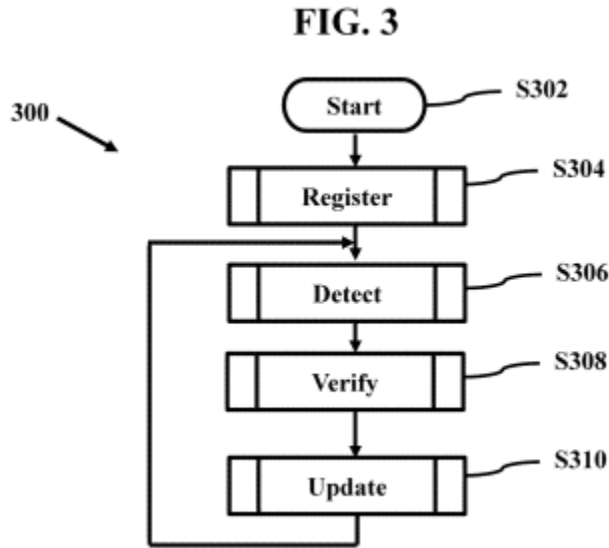
Ground 2: Abramson renders claims 1-6, 8-13, 15-20 obvious.

Ground 3: Fong in view of Abramson renders claims 2-4, 6, 9-11, 13, and 16-18 obvious.

IV. The '946 Patent

A. Overview

The '946 patent is directed to a “[s]ystem and method for identifying vehicle by utilizing detected magnetic field.” According to the '946 patent, there existed “rudimentary attempts in the past to determine when a smartphone is in a moving vehicle,” but there were a number of problems with those technologies. '946 patent, 1:60-2:8. The '946 patent attempted to address the problem that the prior systems allegedly do “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.*, 2:29-32. To solve this purported problem in the prior art, 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., Fig. 3.

After the method starts at S302, “an item or location is registered” at S304. *Id.*, 5:1-2. The ’946 patent uses field properties, such as a magnetic field, to identify a specific item or location and register data associated with that item or location. *Id.*, 3:50-53; 5:2-7; Decl., ¶49. After the item or location is registered at S304, an item or location is subsequently detected (S306) and verified (S308). *Id.*, 15:18-25. 15:55-62. If the item or location is verified, the associated data is updated at S310. *Id.*, 16:33-34. Once that process is complete, the smartphone returns to S306, waiting to detect a new field. *Id.*, 16:56-57.

B. Prosecution History

The non-provisional application leading to the ’946 patent had 42 claims. Ex.1007, 46-57. 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.*, 242-45.

C. Level of Ordinary Skill in the Art

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. Decl., ¶29.

V. Claim Construction

The Board need not expressly construe any term for purposes of this proceeding. *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999). Petitioner applies the plain and ordinary meaning to the claim terms. 37 C.F.R. §42.100(b); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc).

In the co-pending district court action, the parties dispute the construction of certain terms. For purposes of this Petition, Petitioner has applied Patent Owner's

proposed “plain and ordinary meaning” constructions of the disputed claim terms.¹

Specifically, Petitioner has applied the following constructions proposed by Patent Owner in the district court action (Ex.1008, 48-54):²

Claim Term	Patent Owner’s Proposed Construction
“detected field signature” (claims 1, 6, 8, 13, 15, 20)	“properties, characteristics, or pattern of a detected field”
“second detected field signature” (claims 1, 6, 8, 13, 15, 20)	“a second set of properties, characteristics, or pattern of a detected field”

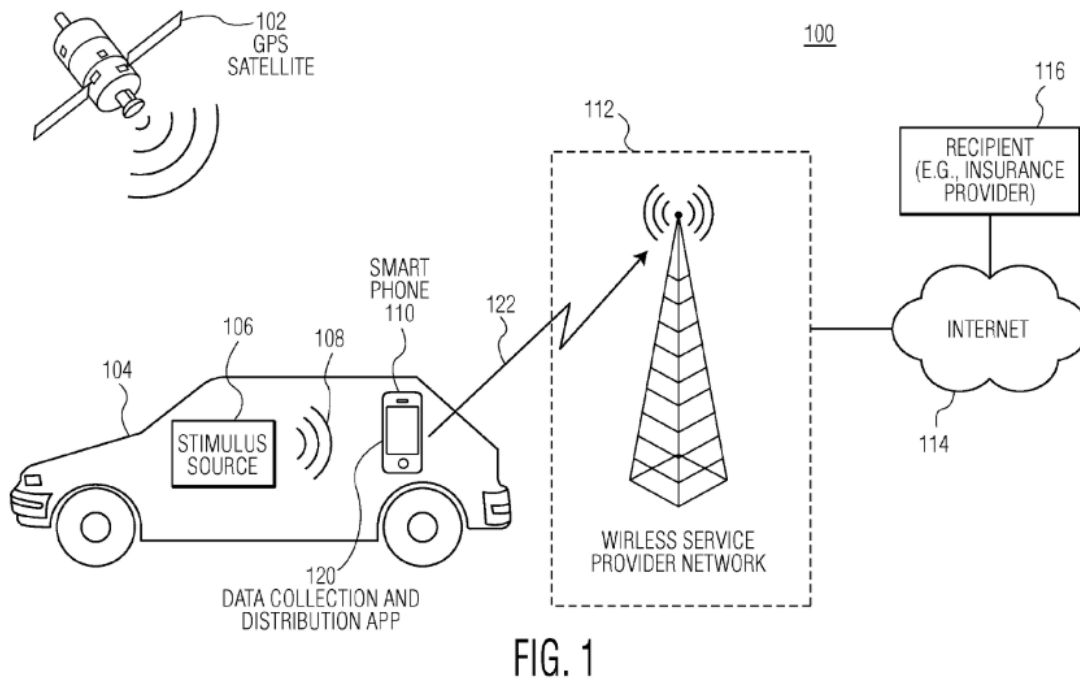
¹ In the litigation, Petitioner asserts that the “component” terms in the Challenged Claims should be means-plus-function terms under §112(f) and that such terms are indefinite. Ex.1008, 39-48. Patent Owner asserts that Petitioner infringes the ’946 patent according to the plain and ordinary meaning of the “component” terms, which are the constructions applied in this Petition. *Samsung Elecs. Co., Ltd v. Collect, LLC*, IPR2020-00476, Paper 14 at 12 (PTAB July 31, 2020) (“It is not a requirement of 37 C.F.R. 104(b)(3) that for every term for which Petitioner has proposed an express construction in related court litigation, Petitioner must propose the same construction in the Petition.”).

² In the district court action, Petitioner asserts that each of the claim terms below is indefinite under 35 U.S.C. §112(b). Ex.1008, 48-54.

“comparison signal” (claims 1, 8, 15)	“a signal that corresponds to a comparison”
“parameter signal” (claims 3, 10, 17)	“a signal that corresponds to a parameter”
“an association” (claims 6, 13, 20)	“a relationship”

VI. Ground 1 – Fong Renders Claims 1, 5, 6, 8, 12, 13, 15, 19, and 20 Obvious.**A. Overview of Fong**

Fong is directed to “[a] technique for collecting automobile-related travel data ... in response to a stimulus that emanates from an automobile.” Fong, 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 ... corresponds to a time when the smartphone user (and the smartphone) is near to or inside the cabin of the automobile.” *Id.*, 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.*, 3:23-25.



Id., Fig. 1.

Figure 2 below “illustrates a system in which the stimulus 108 is detected directly by a sensor system 130 in the smartphone 110.” *Id.*, 4:60-62. “[T]he 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.” *Id.*, 4:62-66. Another stimulus is sound waves “set in motion by the ignition system and from operation of a combustion engine.” *Id.*, 5:5-8.

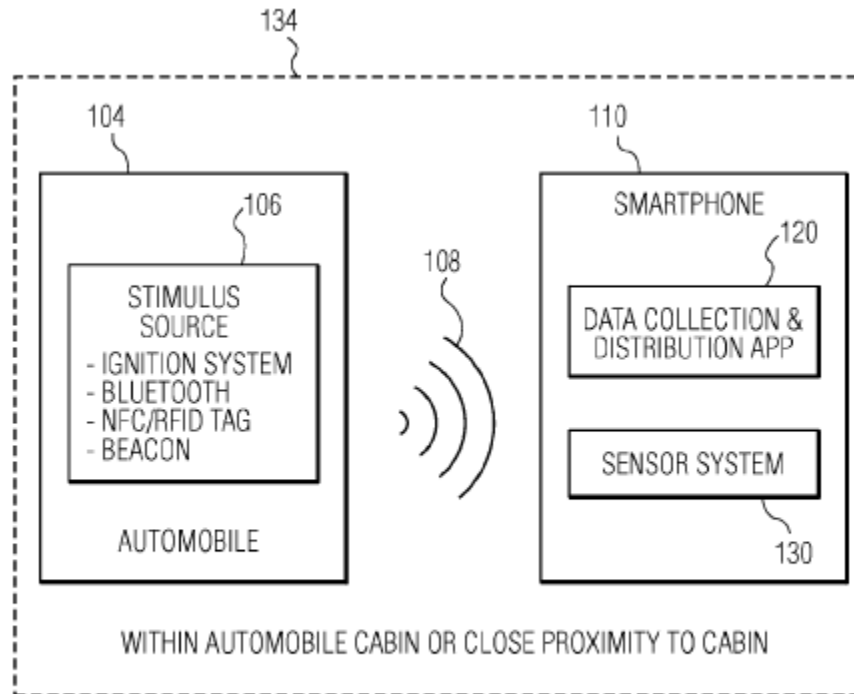


FIG. 2

Id., 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.*, 5:26-28. The EMF and sound each "has a particular signature or fingerprint (e.g., frequency, magnitude, and/or duration) that can be characterized and recognized by the smartphone." *Id.*, 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.*, 5:22-25. Then, "the sensor system generates a signal that either directly or indirectly

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

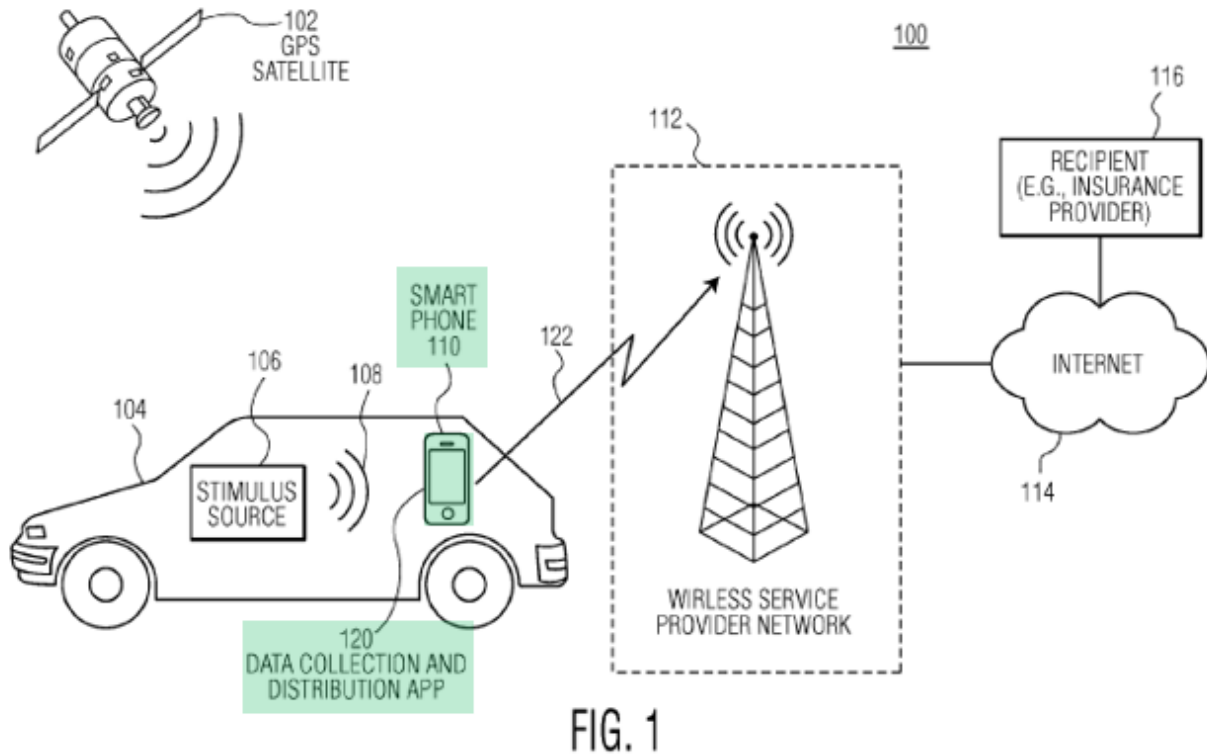
B. Independent Claims

1. Claim 1

a. 1[pre]: A device, for use with a database³

Fong is directed to “initiating a travel data collection function of a smartphone in response to a stimulus that emanates from an automobile.” Fong, 1:47-50. Fong’s 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.*, 4:3-6. The data collected by the sensor “is then **stored** by the sensor system.” *Id.*, 5:22-25. Fong’s App is stored on the smartphone’s memory (a “database”). *Id.*, 4:15-20.

³ Petitioner does not concede that the preamble is limiting.



Id., Fig. 1.

Fong’s smartphone memory is similar to the ’946 patent’s disclosures of a “database,” which states that “database 404 may be any known device or system that is operable to receive, store, organize and provide (upon a request) data,” such as “**a memory hard-drive** and a semiconductor memory.” ’946 patent, 7:24-29.

In light of the above, Fong’s smartphone 110 is a “device” and the smartphone’s storage is a “database.” Decl., ¶¶72-76.

b. 1[a]: field-detecting component

Limitation 1[a] requires the device to include 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.”

Fong’s “sensor system 130” is the “field-detecting component” of claim 1. Figure 2 of Fong “illustrates a system in which the stimulus 108 is detected directly by a **sensor system 130** in the smartphone 110.” Fong, 4:60-62.

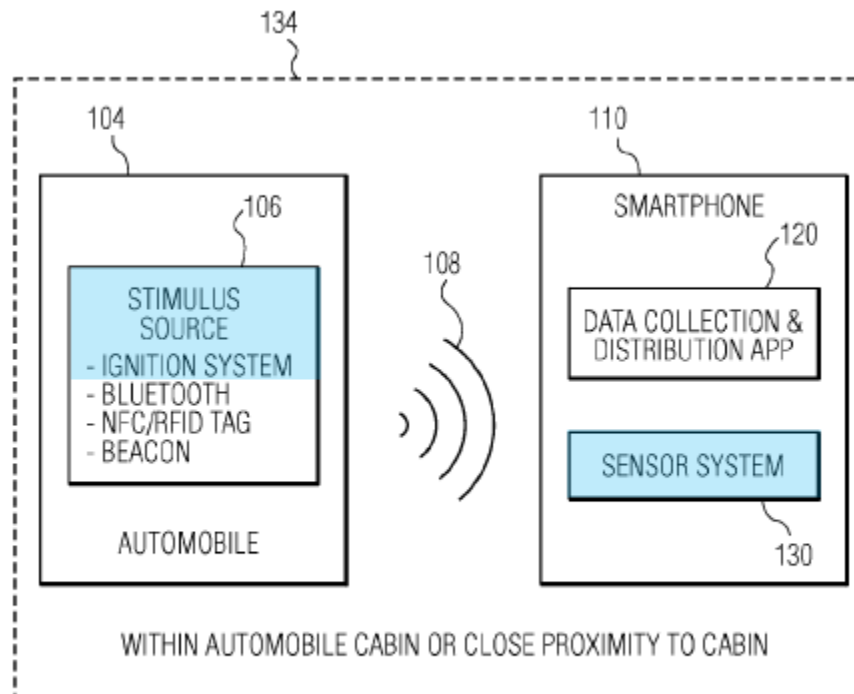


FIG. 2

Id., Fig. 2. Fong discloses that “the stimulus source 106 is an ignition system of the automobile 104 and the stimulus is an **EMF [electromagnetic field]** that is generated upon startup of the automobile.” *Id.*, 4:62-66. Thus, the sensor system 130 is “a field-detecting component operable to detect ... an electro-magnetic field.” Decl., ¶¶78-79.

Fong's sensor system 130 also 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." Fong explains that the EMF generated upon startup of an automobile **"has a particular signature or fingerprint (e.g., frequency, magnitude, and/or duration)** that can be characterized and recognized by the smartphone." Fong, 4:66-5:2. 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. Decl., ¶81. 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." *Id.*

Accordingly, Fong's sensor system 130 is the "field-detecting component" of limitation 1[a]. *Id.*, ¶82.

c. 1[b]: input component

Limitation 1[b] requires "an input component operable to input the detected field signature into the database."

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.” Fong, 5:20-25. 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,” allowing Fong’s sensor system 130 to detect the EMF signature and store it for later comparison. *Id.*, 4:63-64; Decl., ¶85; *Bos. Sci. Scimed, Inc. v. Cordis Corp.*, 554 F.3d 982, 991 (Fed. Cir. 2009) (“Combining two embodiments disclosed adjacent to each other in a prior art patent does not require a leap of inventiveness.”).

Accordingly, Fong’s sensor system 130 is the “input component” of limitation 1[b]. Decl., ¶86; *Google LLC v. Pers. Audio, LLC*, 743 F. App’x 978, 985 (Fed. Cir. 2018) (“The Board’s [obviousness] holding is consistent with the principle that in infringement or obviousness analysis, a single element, feature, or mechanism can ordinarily satisfy multiple claim limitations, including by performing multiple claimed functions.”).

d. 1[c]: accessing component

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

Fong discloses that “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.**” Fong, 5:20-25. 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 (the "database"). Decl., ¶¶90. The '946 patent states that an "accessing component" may be any known device or system that can access data from a database, '946 patent, 6:45-47, so sensor system 130 is an "accessing component." Decl., ¶¶90.

Accordingly, Fong's sensor system 130 is the "input component" of limitation 1[c]. Decl., ¶¶91-92.

e. 1[d]: comparing component

Limitation 1[d] requires the device to include "a comparing component operable to generate a comparison signal."

Fong discloses that "[t]he signature of the stimulus is ... used in a **comparison process** to identify a subsequently detected stimulus as a stimulus that should initiate the App." Fong, 5:20-25. "**Once 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.*, 5:26-29.

Fong's sensor system 130 is a "comparing component." Decl., ¶¶95; '946 patent, 6:50-52 ("Comparing component 418 may be any known device or system that is operable to compare two inputs."). The signal generated by the sensor system

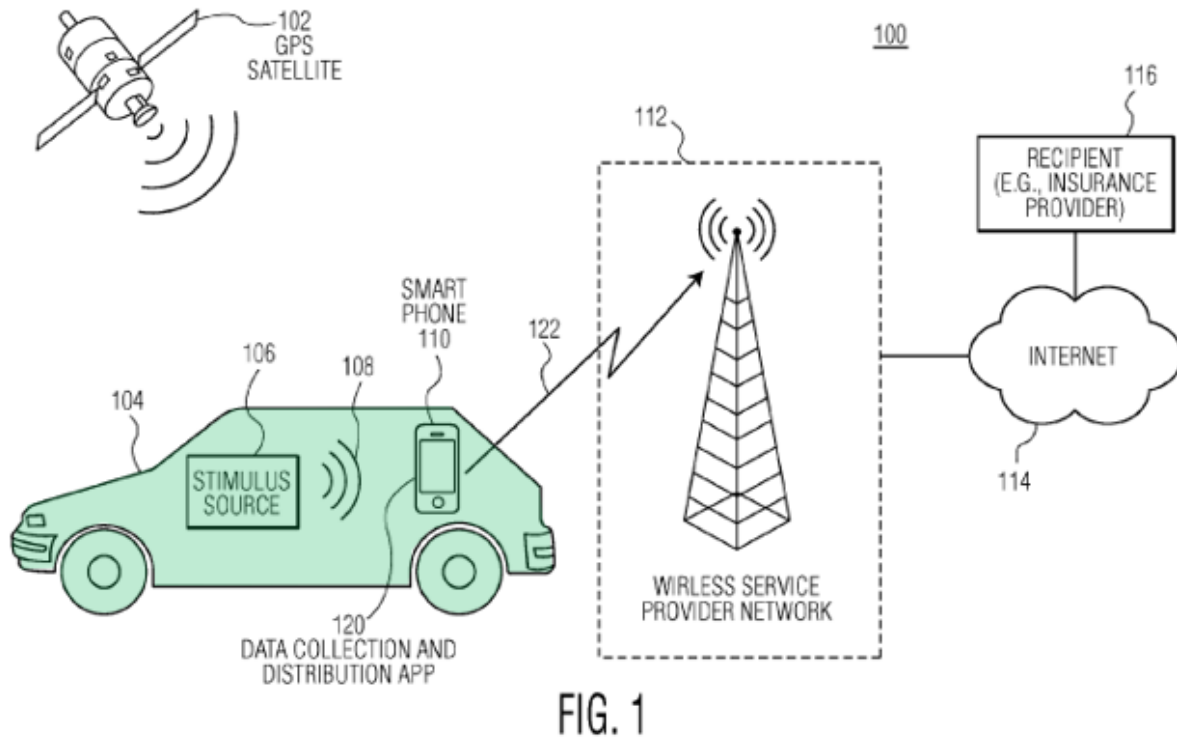
130 to initiate the App is a “comparison signal,” i.e., “a signal that corresponds to a comparison.” Decl., ¶95. A POSITA would have understood that the signal subsequently generated to initiate the App is based on the comparison performed by the sensor system. *Id.*

Accordingly, Fong’s sensor system 130 is the “comparing component” of limitation 1[d]. Decl., ¶¶96-97.

f. 1[e]: identifying component

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

Fong discloses that the sensor system 130 compares a detected EMF signature to a previously stored EMF signature (that was generated upon startup of an automobile); if the two EMF signatures match, the sensory system 130 determines that the smartphone is in the automobile and the App should be initiated. §VI.B.1.e; Fong, 3:53-56, 4:60-66, 5:20-29.



Id., Fig. 1.

In light of the disclosures above, a POSITA would understand that Fong’s sensor system 130 identifies a vehicle (automobile 104 in Figure 1) based on a comparison of a stored first signature (from the original detected EMF generated upon startup of the automobile) and a detected second signature (from a subsequently detected EMF). Decl., ¶99. A POSITA would also understand that Fong’s sensor system 130 identifies that the smartphone (and thus its user) is in a vehicle based on the same comparison. *Id.*

Fong’s disclosure of the “identifying component” is consistent with the disclosures of ’946 patent, which 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.” ’946 patent, 4:6-11; Decl., ¶100. 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, 16:7-31.

Accordingly, Fong’s sensor system 130 is “an identifying component operable to identify one of an item and a location based on the comparison signal,” as required for limitation 1[e]. Decl., ¶¶101-02.

g. 1[f]: field-detecting component detecting a second field

Limitation 1[f] requires that “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.”

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. Decl., ¶106; Fong, 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. Decl., ¶106. 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. *Id.*

Accordingly, Fong’s sensor system 130 is the “field-detecting component” of limitation 1[f]. Decl., ¶¶107-08.

h. 1[g]: comparing component for comparing the detected field signature and the second detected field signature

Limitation 1[g] requires that “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.”

Fong discloses that, “[o]nce the sensor system 130 has detected and recognized the EMF ... generated by the ignition system and/or by the ignition process, the sensor system generates a signal that ... initiates the App 120.” Fong, 5:26-29. As discussed above, a POSITA would understand Fong’s sensor system 130 to be a “comparing component” and the signal generated by the sensor system 130 to initiate the App to be a “comparison signal,” as the signal is generated based on the comparison of two detected field signatures, i.e., the “first detected field signature” (the original detected EMF generated stored in the database) and the “second detected field signature” (a subsequently detected EMF). §VI.B.1.e; Decl.,

¶¶112-13.

Accordingly, Fong’s sensor system 130 is the “comparing component” of limitation 1[g]. Decl., ¶113.

2. Claim 8

Claim 8 is directed to the method performed by the device of claim 1. Fong renders claim 8 obvious in largely the same manner as it does claim 1.

a. 8[pre]: A method, for use with a database

Fong discloses “[a] device, for use with a database.” §VI.B.1.a. Fong also discloses a method of using that device that includes the step of “initiating a travel data collection function of a smartphone in response to a stimulus that emanates from an automobile.” Fong, claim 15; *see also* Fig. 9.

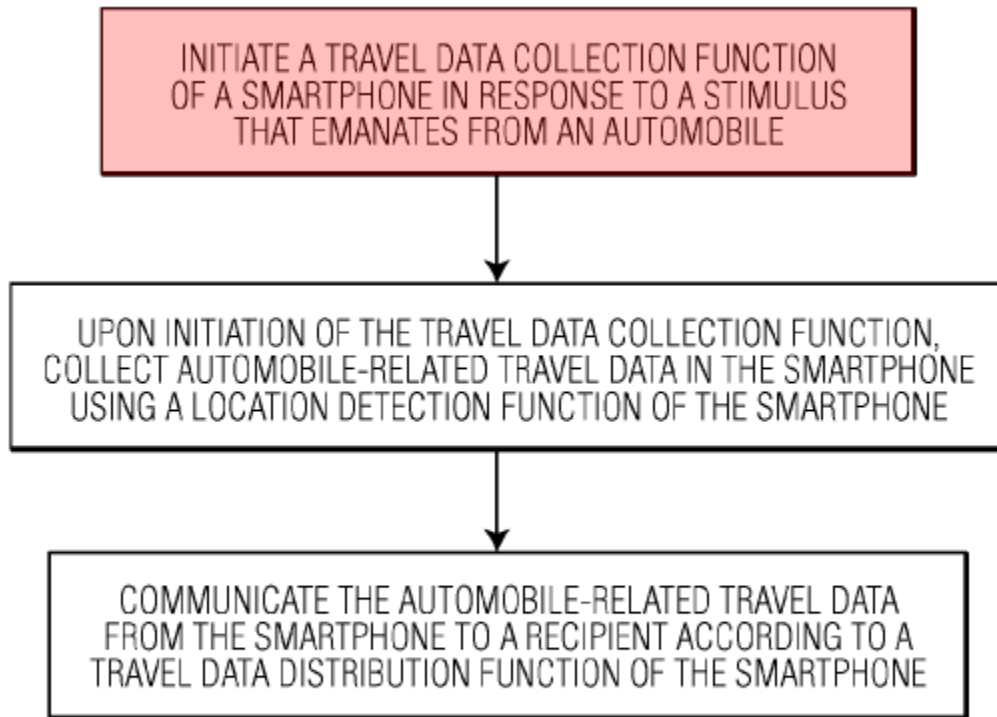


FIG. 9

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. Decl., ¶139. Accordingly, Fong discloses the preamble of claim 8. *Id.*, ¶140.

b. Limitations 8[a]-[i]

Limitations 8[a]-8[b] recite that the "field-detecting component" performs the same functionality set forth in limitation 1[a]. Limitation 8[c] recites that the "input component" performs the same functionality set forth in limitation 1[b]. Limitation 8[d] recites that the "accessing component" performs the same functionality set forth

in limitation 1[c]. Limitation 8[e] recites that the “comparing component” performs the same functionality set forth in limitation 1[d]. Limitation 8[f] recites that the “identifying component” performs the same functionality set forth in limitation 1[e]. Limitations 8[g]-8[h] recite that the “field-detecting component” performs the same functionality set forth in limitation 1[f]. Limitation 8[i] recites that the “comparing component” performs the same functionality set forth in limitation 1[g].

Accordingly, Fong discloses or renders obvious limitations 8[a]-8[i] for the reasons as limitation 1[a]-[g]. §VI.B.1.b-h; Decl., ¶¶141-61.

3. Claim 15

Claim 15 is directed to a non-transitory, tangible, computer-readable media containing instructions to be performed by the device of claim 1. Fong renders claim 15 obvious in largely the same manner as it does claim 1.

a. 15[pre]: A non-transitory, tangible, computer-readable media having computer-readable instructions stored thereon

Fong discloses “[a] device, for use with a database” in the form of smartphone 110. §VI.B.1.a.

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” or “a microphone and sensor logic of the smartphone,” respectively. Fong, 5:11-20. Fong further discloses that sensor system goes through an

initialization or learning process to learn the signature of the stimulus. *Id.*, 5:21-22. 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.*, 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,” which is “capable of being read by a computer and ... instructing the computer to perform the method.” Decl., ¶183.

b. Limitations 15[a]-[i]

The stored instructions for performing the method steps of claim 15 relate to the same functionality recited for the components in claim 1. Limitations 15[a]-15[b] recite that the “field-detecting component” performs the same functionality set forth in limitation 1[a]. Limitation 15[c] recites that the “input component” performs the same functionality set forth in limitation 1[b]. Limitation 15[d] recites that the “accessing component” performs the same functionality set forth in limitation 1[c]. Limitation 15[e] recites that the “comparing component” performs the same functionality set forth in limitation 1[d]. Limitation 15[f] recites that the “identifying component” performs the same functionality set forth in limitation 1[e]. Limitations 15[g]-15[h] recite that the “field-detecting component” performs the same

functionality set forth in limitation 1[f]. Limitation 15[i] recites that the “comparing component” performs the same functionality set forth in limitation 1[g].

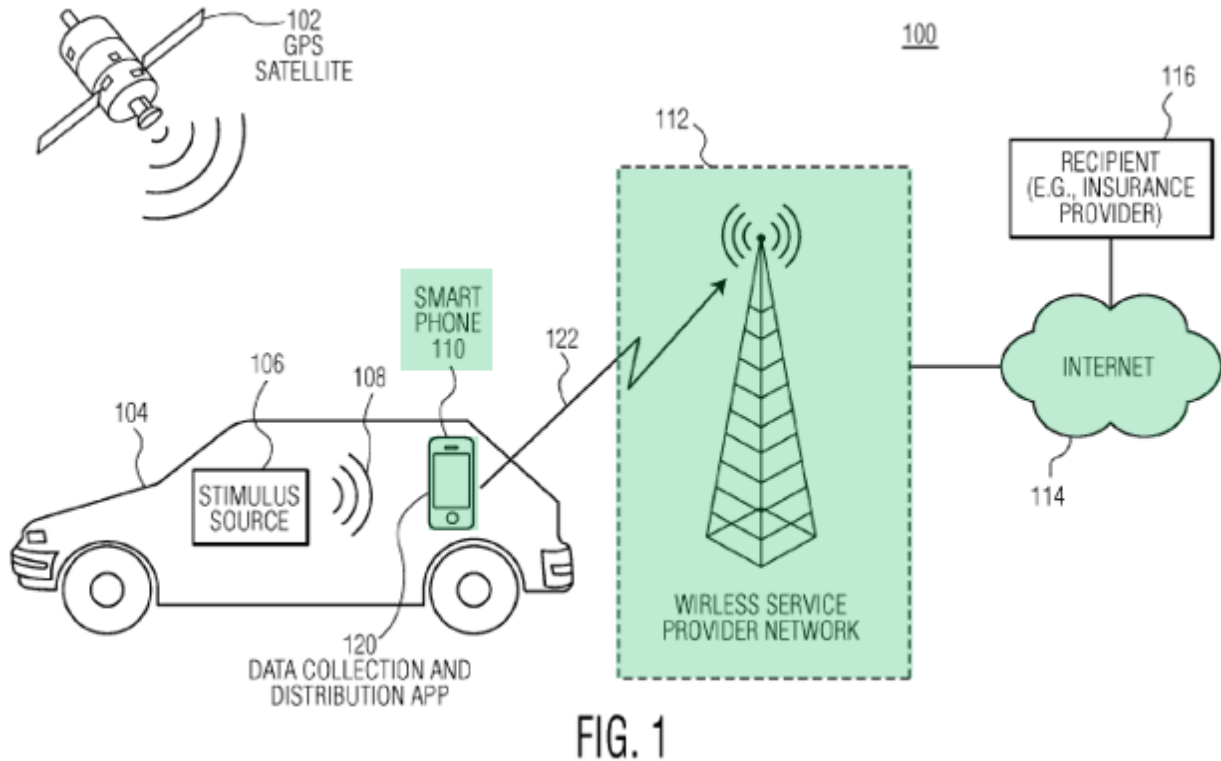
Accordingly, Fong renders obvious limitations 15[a]-15[i] for the reasons explained above for limitation 1[a]-[g]. §VI.B.1.b-h; Decl., ¶¶185-205.

C. Dependent Claims

1. Claims 5, 12, and 19

Claims 5, 12, and 19 require “a communication component operable to wirelessly communicate with a network.”

Fong’s smartphone 110 wirelessly communicates, via the App, with the Internet 114 through the service provider network 112. Fong, 4:31-34. Alternatively, the App may communicate accumulated travel data via a Wi-Fi connection once such a connection has been established. *Id.*, 4:34-37.



Id., Fig. 1.

Accordingly, the App on the smartphone 110 is “a communication component operable to wirelessly communicate with a network.” Fong therefore renders obvious claims 5, 12, and 19. Decl., ¶¶114-18, 162-63, 445-47.

2. Claims 6, 13, and 20

Claim 6 requires:

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.

Claims 13 and 20 add the same limitations, except as method steps.

a. 6[a]: operable to detect a magnetic field

Fong discloses that sensor system 130 (“field detecting component”) can detect an electromagnetic field (EMF) (“operable to detect at least one of an electric field, a magnetic field and an electro-magnetic field”) to detect whether a vehicle has been started. §VI.B.1.b. A POSITA would understand an EMF sensor can detect both electric fields and magnetic fields. Decl., ¶122. Alternatively, Fong discloses using a smartphone, which a POSITA would know includes a magnetometer, which can detect a magnetic field. *Id.*, ¶123. Accordingly, Fong discloses or renders obvious limitation 6[a]. *Id.*, ¶124.

b. 6[b]: input an association between a vehicle and the detected magnetic field

Fong discloses that sensor system 130 is “an input component operable to input the detected field signature into the database.” §VI.B.1.c. Additionally, the EMF data from sensor system 130 is a “detected field signature.” §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.” Fong, 5:22-25. In other words, Fong’s system associates the stored signature from the ignition with the user’s vehicle. Decl., ¶127. Accordingly, Fong discloses or renders obvious limitation 6[b]. *Id.*, ¶128.

c. 6[c]: detect a second magnetic field

Fong’s sensor system 130 is the “field-detecting component” that can detect a second EMF signature after having stored a first EMF signature generated by the automobile at startup. §VI.B.1.g. As discussed above, an EMF sensor can detect both electric fields and magnetic fields, so the second detected EMF includes a detected magnetic field. Decl., ¶131. Alternatively, it would have been obvious to a POSITA reviewing Fong to use a smartphone’s magnetometer to detect a second magnetic field. *Id.* Accordingly, Fong discloses or renders obvious limitation 6[c]. *Id.*, ¶132.

d. 6[d]: identify the vehicle as the item

Fong discloses or renders obvious inputting “an association between a vehicle and the detected magnetic field.” §VI.B.1.c. Fong also teaches that the sensor system 130 (“identifying component”) identifies the vehicle as the item. §VI.B.1.f. Therefore, Fong teaches that the “identifying component is further operable, based

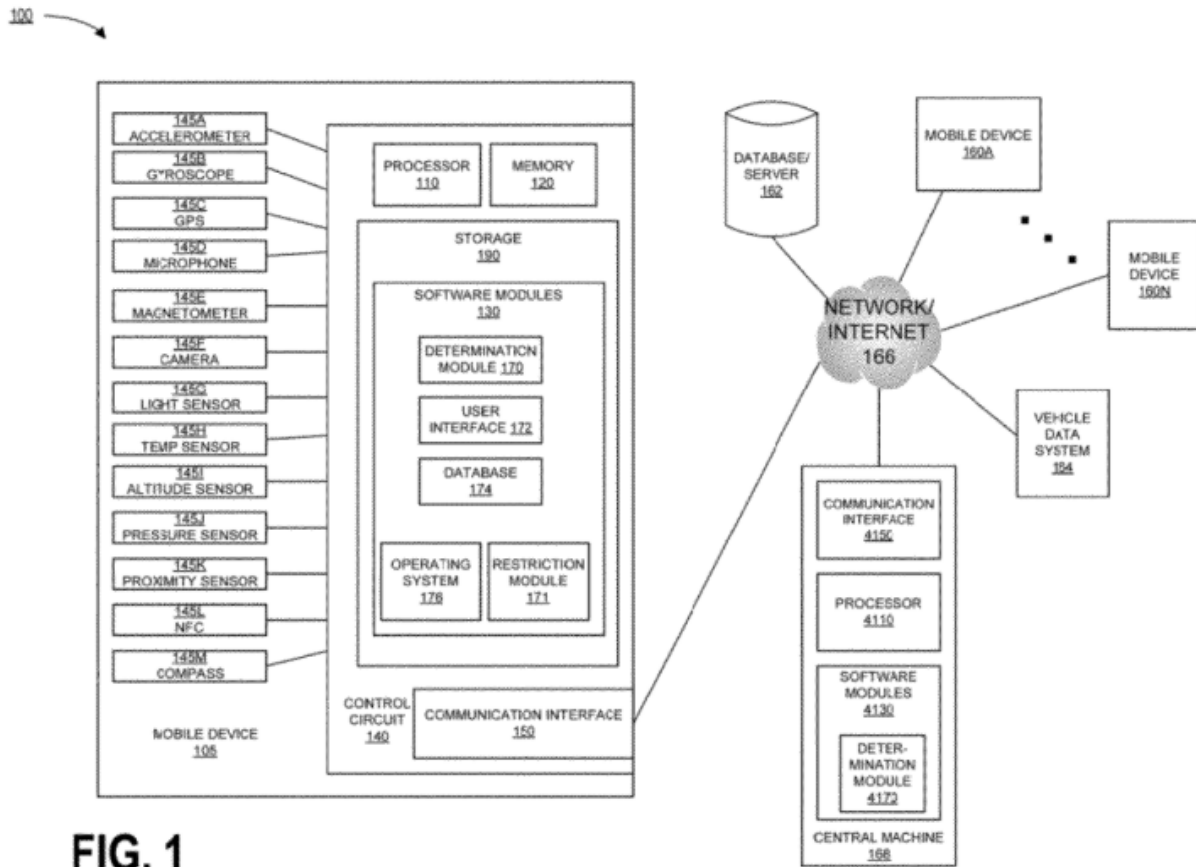
on the association, to identify the vehicle as the item.” Decl., ¶134. Accordingly, Fong discloses or renders obvious limitation 6[d]. *Id.*, ¶¶135-36.

Fong therefore renders obvious claims 6, 13, and 20. *Id.*, ¶¶119-36, 164-179, 209-224.

VII. Ground 2 – Abramson Renders Claims 1-6, 8-13, and 15-20 Obvious.

A. Overview of Abramson

Abramson is directed to a “[s]ystem and method for selectively restricting in-vehicle mobile device usage.” Abramson, Title. Abramson’s system includes various sensors, a processor, a memory, software modules, a communication interface and the network. *Id.*, 15:24-16-7.

**FIG. 1**

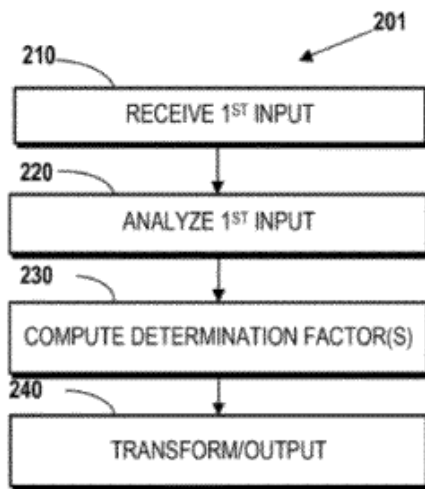
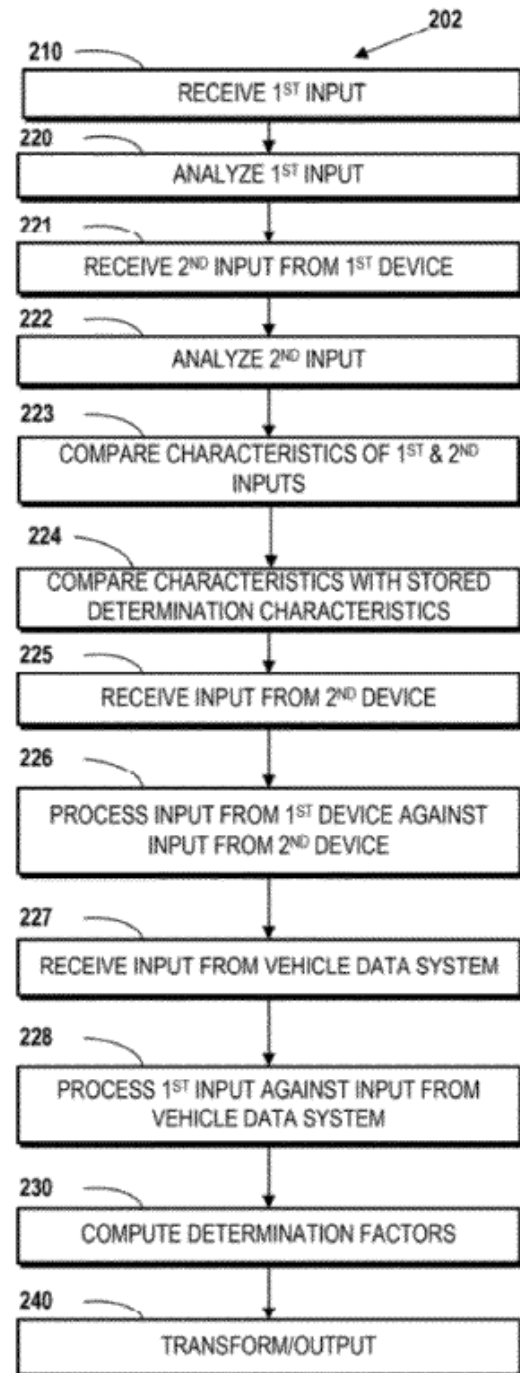
Id., Fig. 1.

Abramson discloses methods for determining an in-vehicle role of a user of a mobile device 105. *Id.*, 19:31-34. Abramson's method begins by receiving a first input at step 210. *Id.*, 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.*, 22:36-39. Abramson discloses that the first and second inputs are from sensors 145, shown in Figure 1 (above). *Id.*, 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 ... identified within the first input (such as those identified at step 220) with the determination characteristics ... identified within the second input (such as those identified at step 222).” *Id.*, 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 ... from the first input, ... with stored determination characteristics....” *Id.*, 23:44-55. 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.*, 20:34-46.

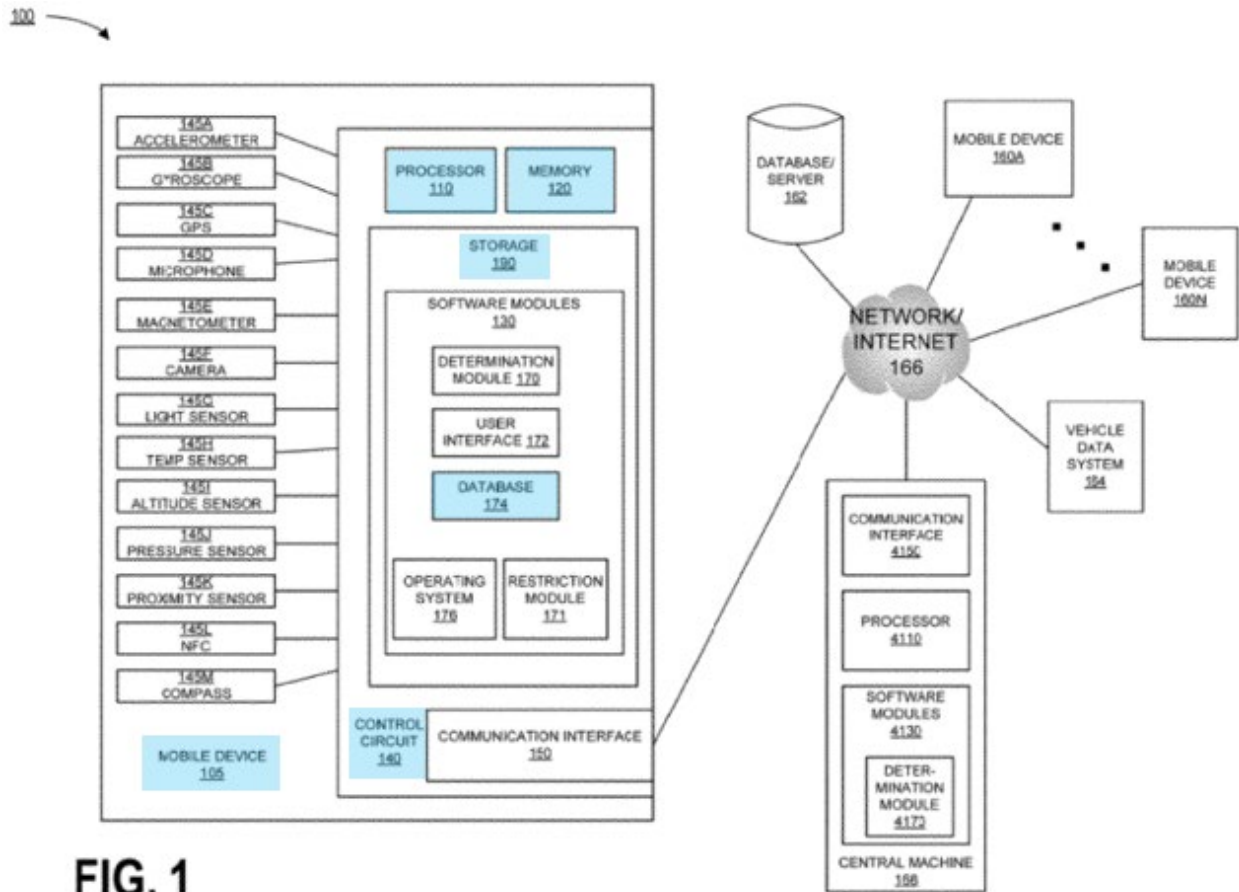
**FIG. 2A****FIG. 2B**

Id., Figs. 2A, 2B.

B. Independent Claims**1. Claim 1****a. 1[pre]: A device, for use with a database**

Abramson discloses a system for detecting a mobile device in a vehicle. Abramson, 1:18-21 The mobile device 105 can be a smartphone or other common portable device. *Id.*, 15:15-17. Abramson’s mobile device 105 is “a device.” Decl., ¶227.

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

**FIG. 1**

Id., Fig. 1.

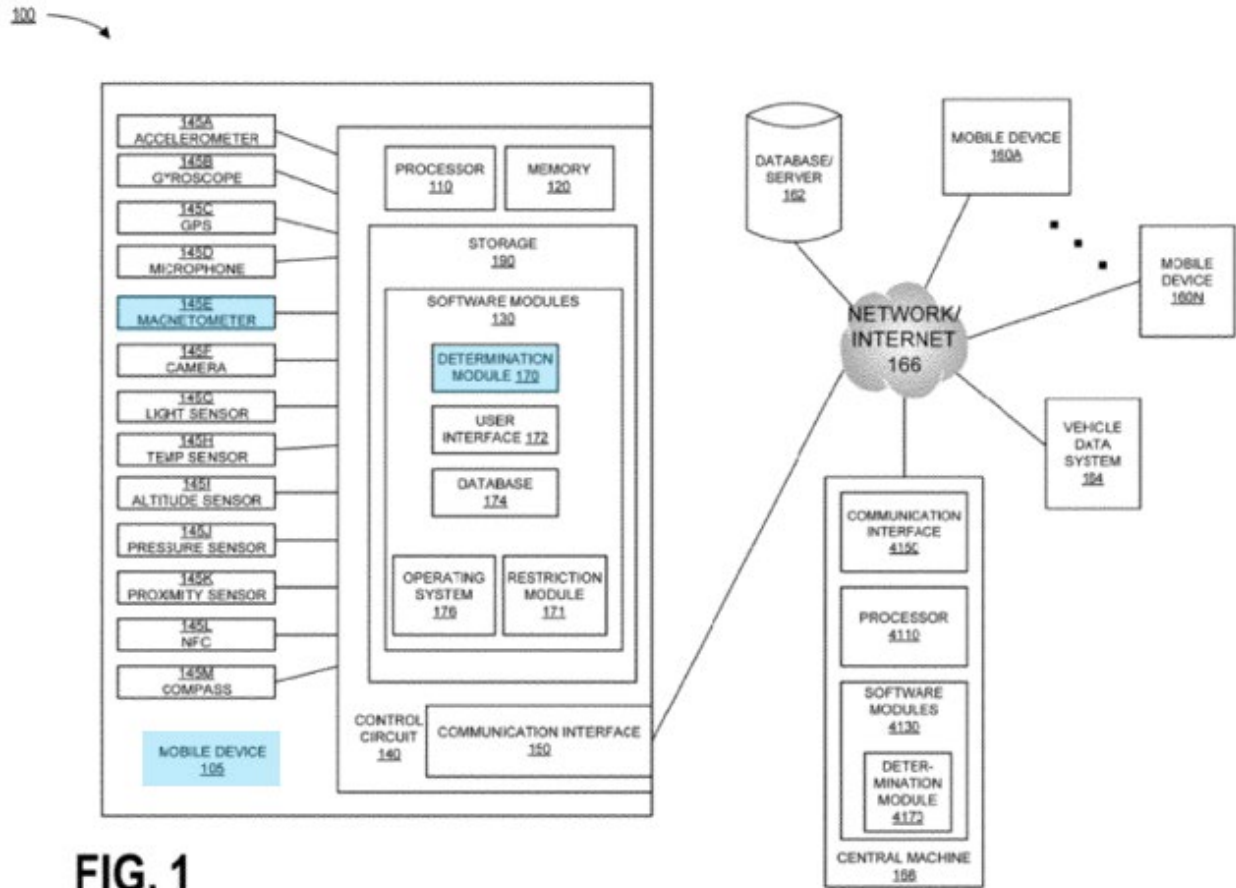
Abramson's mobile device 105 contains a control circuit 140 that is connected to a processor 110 and memory 120 as well as storage 190. Abramson, 15:24-29, 15:40-43. Processor 110 is able to "to receive and execute instructions stored on memory 120 and/or on storage 190." *Id.*, 15:40-43. "Memory 120 can be, for example, a random access memory (RAM) or any other suitable volatile or non-volatile computer readable storage medium." *Id.*, 15:43-46. Additionally, "storage 190 can be a hard drive, a flash memory, a rewritable optical disk, a rewritable magnetic tape, or some combination of the above." *Id.*, 15:48-52. Abramson further

discloses that storage 190 can include a database 174, which stores information or data relevant to Abramson's system. *Id.*, 16:56-62, 23:51-55.

Abramson's mobile device uses memory 120 and/or storage 190, each of which is a "database." Accordingly, Abramson discloses the preamble of claim 1. Decl., ¶¶230-31.

b. 1[a]: field-detecting component

Abramson's determination module 170 is the "field-detecting component." 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." Abramson, 19:53-60. Like the '946 patent, Abramson's mobile device 105 can use a magnetometer 145E to detect a magnetic or electro-magnetic field. *Id.*, 17:41-49 ("sensors 145 ... that are preferably incorporated within and/or in communication with mobile device 105" may include "a magnetometer 145E"), 53:48-60 (explaining that a "3-axis magnetometer 145E of mobile device 105" can be used").



Id., Fig. 1. Abramson’s determination module 170, which receives magnetometer data from the 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” as claimed in the ’946 patent. Decl., ¶234.

Abramson’s determination module 170 can also “generate a detected field signature” based on the detected magnetic and/or electromagnetic field. At step 220, the determination module 170 “analyzes at least the first input, ... to identify one or more determination characteristics.” Abramson, 20:3-8. An example of a

determination characteristic is the magnetic field sensed by the mobile phone. *Id.*, 20:3-13, 53:61-54:2.

A determination characteristic in Abramson is a “propert[y], characteristic[], or pattern” of the detected magnetic field. Decl., ¶236. 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).” Abramson, 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. Decl., ¶236.

Accordingly, Abramson’s determination module 170 is the “field-detecting component” of limitation 1[a]. Decl., ¶237.

c. 1[b]: input component

Abramson’s processor 110 running software modules 130 is “an input component” of claim 1. With respect to step 210 below, “processor 110 executing one or more of software modules 130, including, preferably, determination module 170, receives a first input” from, for example, magnetometer 145E. Abramson,

19:53-60. The “first input” received is field signature data generated from the determination module 170 discussed above. Decl., ¶240.

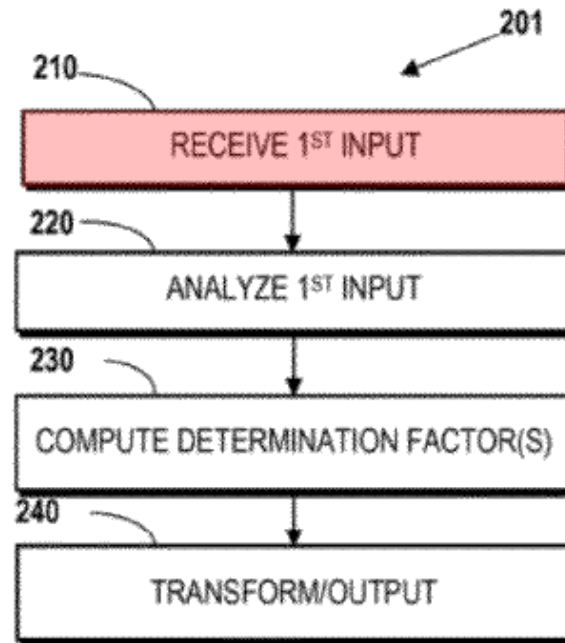
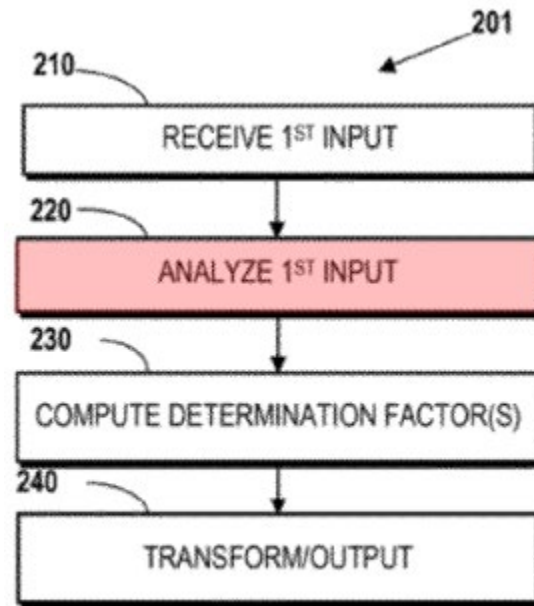


FIG. 2A

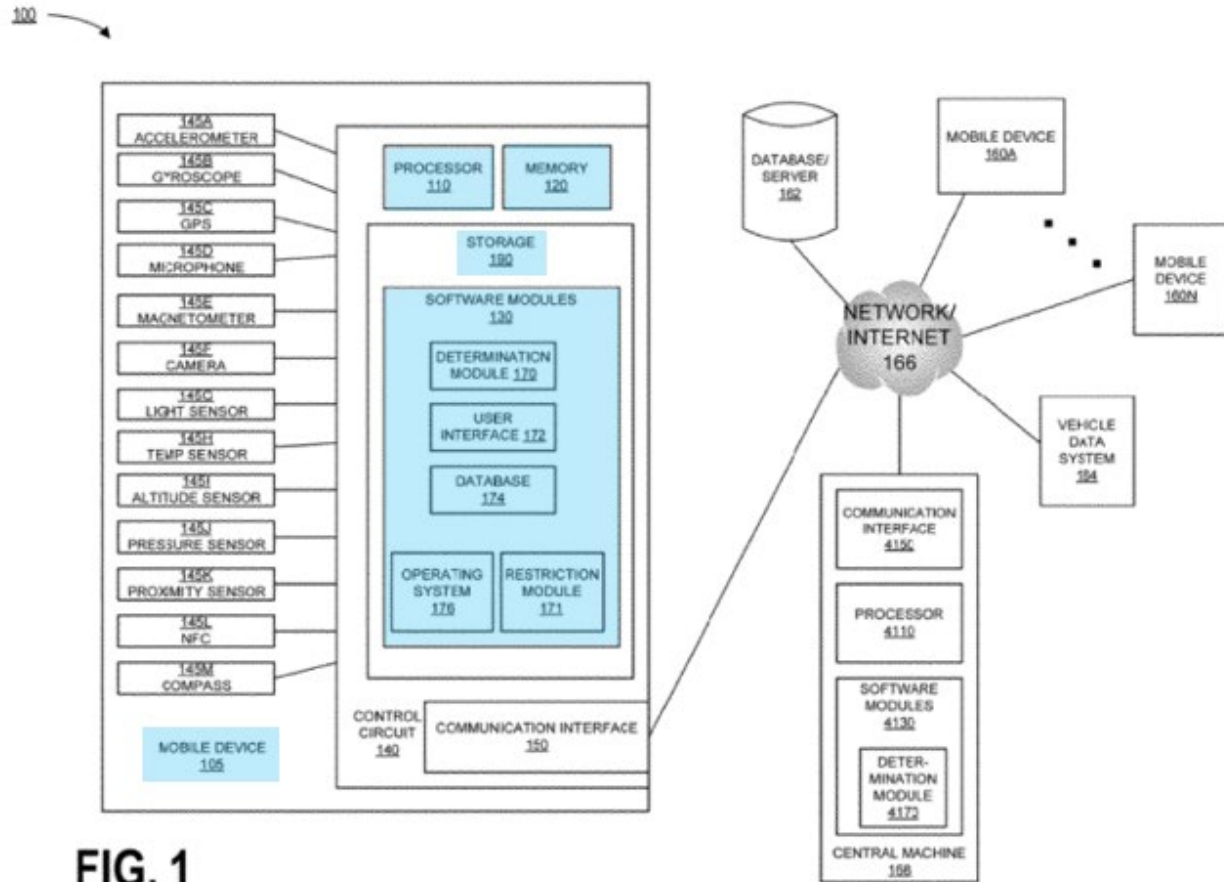
Abramson, Fig. 2A.

Next, at step 220, the processor 110, executing determination module 170, “analyzes at least the first input ... to identify one or more determination characteristics.” *Id.*, 20:3-13.

**FIG. 2A**

Id., Fig. 2A.

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. *Id.*, 15:40-16:16. The software modules are depicted in Figure 1 below.

**FIG. 1**

Id., Fig. 1.

A POSITA would understand that the software modules, including determination module 170, are executed by the processor 110 using storage 190 and/or memory 120. Decl., ¶242. Further, a POSITA would understand that processing data received from one of the sensors 145, including magnetometer 145E, would require that the data be stored on either storage 190 and/or memory 120 for the processing to occur. *Id.* Thus, the processor 110 running software modules 130 is “an input component” operable to input the magnetometer data (i.e., “the detected

field signature”) received from the magnetometer 145E into memory 120 and/or storage 190 (i.e., “the database”). *Id.*

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

d. 1[c]: accessing component

Abramson discloses that the processor 110 running software modules 130 inputs data 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. §VII.B.1.c. Then, “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.” Abramson, 20:3-8. A POSITA would understand that in order for the first input (i.e., data from magnetometer 145E) to be analyzed by processor 110, the first input would need to be stored in, and subsequently accessed from, memory 120 and/or storage 190. Decl., ¶¶245-46. Thus, a POSITA would understand that the processor 110 running software modules 130 is “an accessing component” operable to access the data from the magnetometer reading (i.e., “the detected field signature”) from memory 120 and/or storage 190 (i.e., “the database”). *Id.*

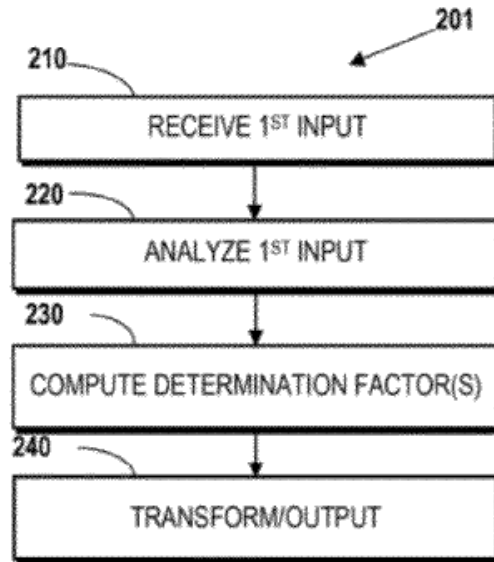
A POSITA would understand that multiple components, including the “input component” and the “accessing component,” may exist in Abramson’s processor

110. Decl., ¶245. The '946 patent confirms this understanding, as two or more of the claimed components “may be combined as a unitary device.” '946 patent, 5:29-35; *see also Google*, 743 F. App'x at 985.

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

e. 1[d]: comparing component

As discussed below, Abramson's determination module 170 is the “comparing component.” With reference to Figure 2A, Abramson discloses that, at step 220, the determination module 170 of processor 110 “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.” Abramson, 20:3-13.

**FIG. 2A**

Id., Fig. 2A.

Then, at step 230, the determination module 170 of processor 110 “**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.*, 20:34-42. For example, Abramson states 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.*, 20:42-46.

Abramson discloses “a number of inputs that can be utilized in various arrangements in order to identify one or more user determination characteristics,” including, in particular, “Magnetic Field.” *Id.*, 47:63-65, 53:48-60. Abramson states

that “[a] vehicle’s metallic and electrical parts influence the magnetic field in the vicinity of and inside such vehicle.” *Id.*, 53:48-50. Thus, Abramson explains:

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**.

Id., 53:50-58. One example Abramson provides relates to detecting a magnetic field associated with a vehicle’s motor: “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.*, 53:61-54:2.

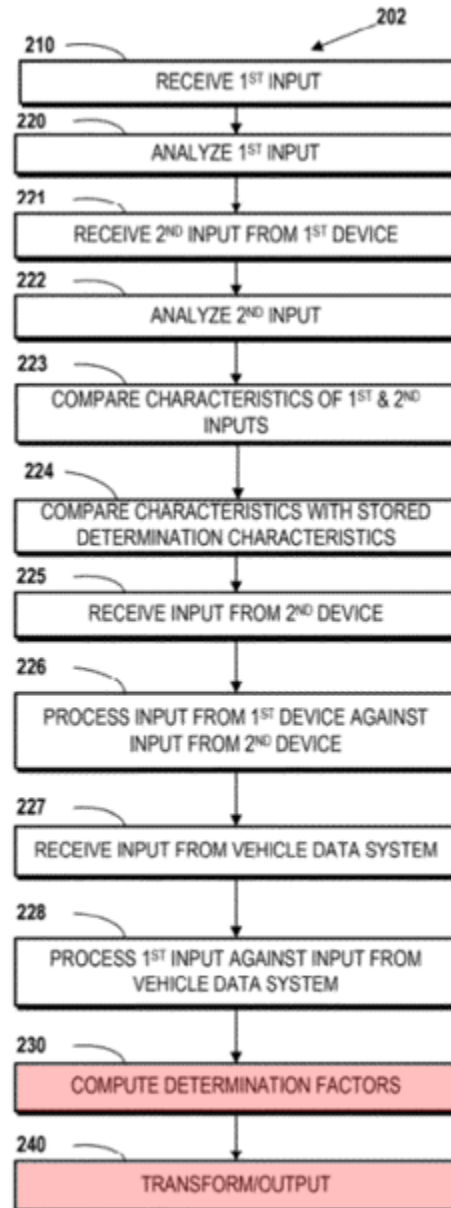
In light of the above disclosures, a POSITA would understand that Abramson’s determination module 170 is a “comparing component” because it can compare known and detected field signatures associated with a vehicle. Decl., ¶252. The ’946 patent broadly states that “[c]omparing component 418 may be any known device or system that is operable to compare two inputs.” ’946 patent, 6:50-52. The determination module 170 satisfies this definition. Decl., ¶253.

The determination module 170 also is “operable to generate a comparison signal,” which is “a signal that corresponds to a comparison.” Abramson discloses that, at step 240, the processor 110 performs one or more predefined actions (e.g., “transforms an operation state of the mobile device 105,” or “outputs at least one operation state”) based on the processed determination factors (such as, for example, the magnetic field comparison discussed above). Abramson, 21:12-22; Decl., ¶255. A POSITA would understand that the determination module 170 communicates its determinations to the rest of the system in the form of computer signals (“comparison signal”). Decl., ¶255.

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

f. 1[e]: identifying component

Abramson’s determination module 170 is the “identifying component.” Referring to Figure 2B, 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 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....**” Abramson, 21:12-22.

**FIG. 2B**

Id., Fig. 2B. A POSITA would understand that the analysis performed at step 240 is “based on the comparison signal” (i.e., the output of step 230). Decl., ¶259.

At step 240, determination module 170 is “operable to identify one of an item and a location.” A POSITA would understand that at least the “in-vehicle **location**

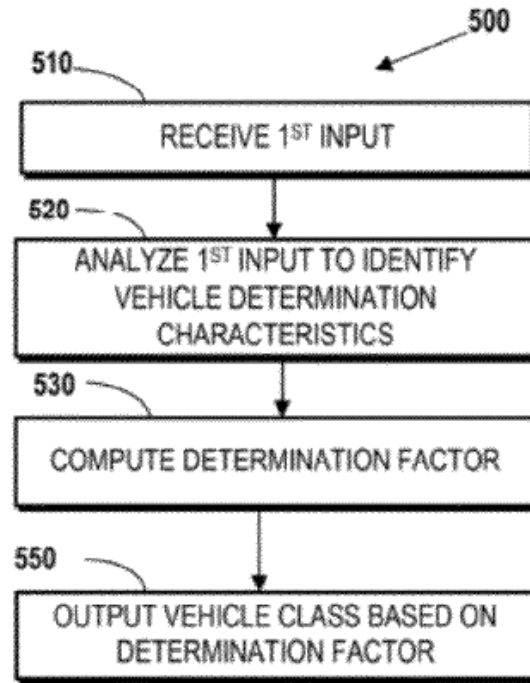
of the mobile device” is a location as claimed in the ’946 patent. Decl., ¶260. Moreover, Abramson describes how to use magnetic field disturbance to determine the “in-car location of mobile device 105.” *Id.*, 53:61-54:2. A POSITA would understand that the magnetometer method disclosed in Abramson was operable with a car or bus. Decl., ¶260. Therefore, a POSITA would understand that the output of an in-vehicle role of a user would be the in-vehicle role of a car or bus. *Id.* A POSITA would understand that the vehicle was identified as an “item” as claimed in the ’946 patent.

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.” ’946 patent, 4:58-61; *see also id.*, 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; Decl., ¶261.

Additionally, Patent Owner has taken positions in the related litigation that align with the disclosures of Abramson. In the litigation, 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, Patent Owner 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, 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. Decl., ¶262.

Alternatively, a POSITA would be motivated to combine the embodiment shown in Figure 2B with the embodiment of Figure 5. *Id.*, ¶264. Figure 5 shows “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, 34:38-42. At step 510, “processor 110 executing one or more of software modules 130, including, preferably, determination module 170, receives a first input from one or more of sensors 145.” *Id.*, 34:49-54. At step 520, “determination module 170, analyzes at least the first input to identify...one or more aspects ... that provide insight regarding the vehicle class within or upon which and/or in relation to mobile device 105 is traveling.” *Id.*, 34:65-35-6. Abramson discloses that “various baseline values” related to different types of vehicles “can be stored and/or provided at databases 174 and/or 162,” thereby enabling the determination of the vehicle class *Id.*, 35:33-43, 35:47-50.

**FIG. 5**

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

A POSITA would be motivated to combine the methods of Figures 2A-B and 5. Decl., ¶264. Figures 2A-B and 5 share “substantial similarities” and can be “employed in conjunction” with each other. Abramson, 34:45-48, 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.”). Abramson also 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.*, 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. Decl., ¶264. A POSITA would have had a reasonable expectation of success in combining the methods shown in Figures 2A-B and 5 because Abramson explicitly discloses that the methods could be combined and the combination could improve the accuracy of an in-vehicle determination. A POSITA would understand that the system detects and analyzes the same data in Figures 2A-B and 5 and combining the two methods would have been a simple substitution of steps. Decl., ¶264.

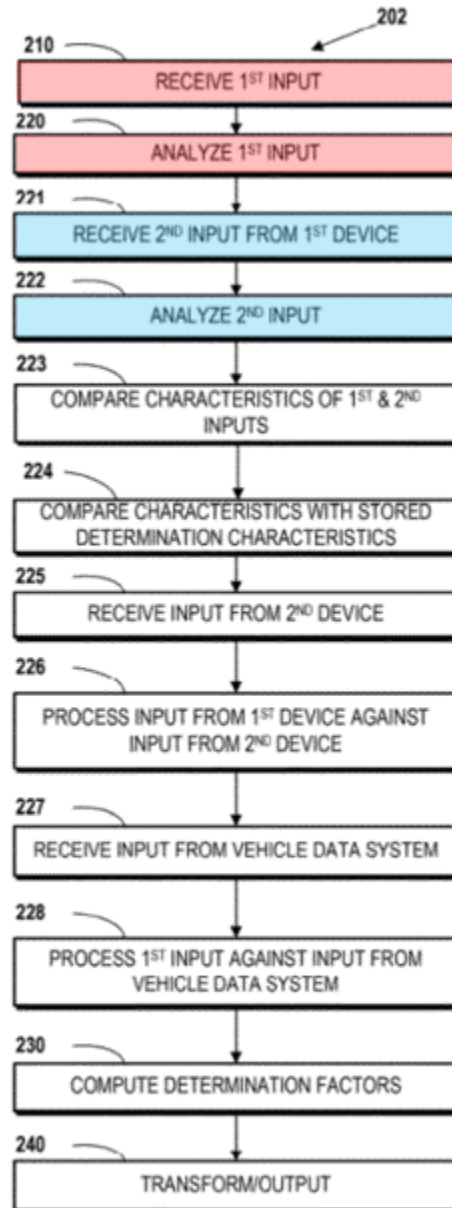
Accordingly, Abramson discloses or renders obvious limitation 1[e].

g. 1[f]: field-detecting component detecting a second field

As discussed above, Abramson’s determination module 170 is a “field-detecting component” as claimed in the ’946 patent.

Figure 2B of Abramson 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.” Abramson, 20:17-20. 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[in red, below] have already been described above with reference to FIG. 2A ... their operation is substantially identical to steps 210 and 220 described above.” *Id.*, 22:30-35. Abramson discloses

that “determination module 170, receives a second input from one or more of sensors 145,” shaded in blue below. *Id.*, 22:36-39. 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.” Decl., ¶269.

**FIG. 2B**

Id., Fig. 2B.

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.” 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.” Decl., ¶271. 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.” Abramson, 22:46-51. Abramson further discloses that, “[h]ere, determination module 170 can analyze various patterns within the second input.” *Id.*, 22:55-58, 20:3-13. An example of a user determination characteristic is the magnetic field sensed by the mobile phone. *Id.*, 53:61-54:2.

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. Decl., ¶272. For example, a POSITA would understand 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.” Decl., ¶272.

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

h. 1[g]: comparing component for comparing the detected field signature and the second detected field signature

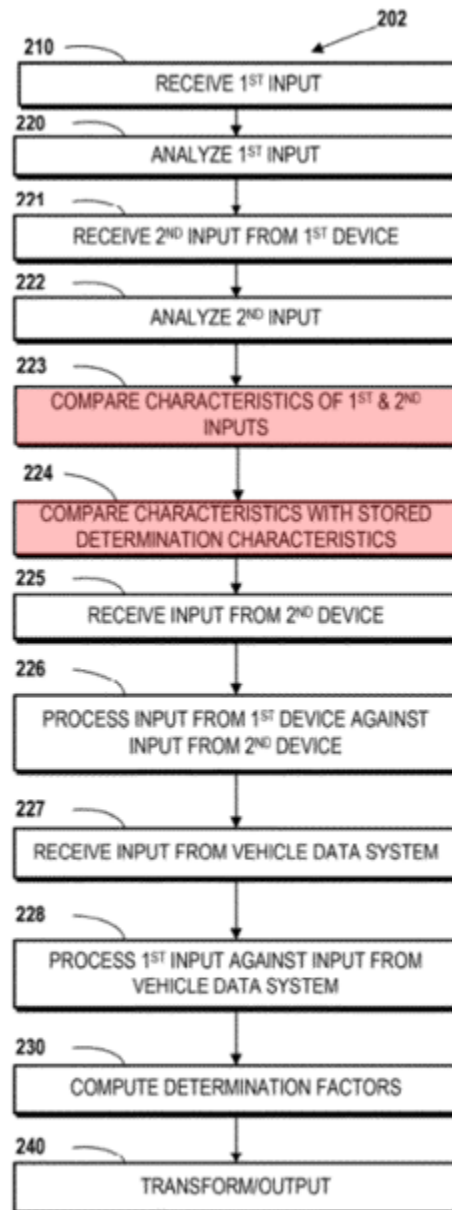
As discussed above, Abramson’s determination module 170 is the “comparing component operable to generate a comparison signal” required by the ’946 patent.

§VII.B.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.”

As discussed above, the determination module 170 receives first and second inputs from sensors 145 (including magnetometer 145E) and analyzes the first and second input, respectively, to identify one or more user determination characteristics. 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*.” Abramson, 23:10-17; Fig. 2B. Abramson further explains 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.*, 23:17-20. Thus, a POSITA would understand that determination module 170 compares determination characteristics derived from the first input and second input. Decl., ¶278.

Abramson further discloses that “[a]t step 224, the processor 110 executing one or more of software modules 130, including, preferably, determination module 170, compares determination characteristics ... with stored determination characteristics.” *Id.*, 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.*, 23:55-61. Abramson further discloses that with such comparison “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.*, 23:61-24:2; 24:9-15.

**FIG. 2B**

Id., Fig. 2B.

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.*, 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. Decl., ¶280.

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.” Decl., ¶281.

Accordingly, Abramson discloses or renders obvious limitation [g].

2. Claim 8

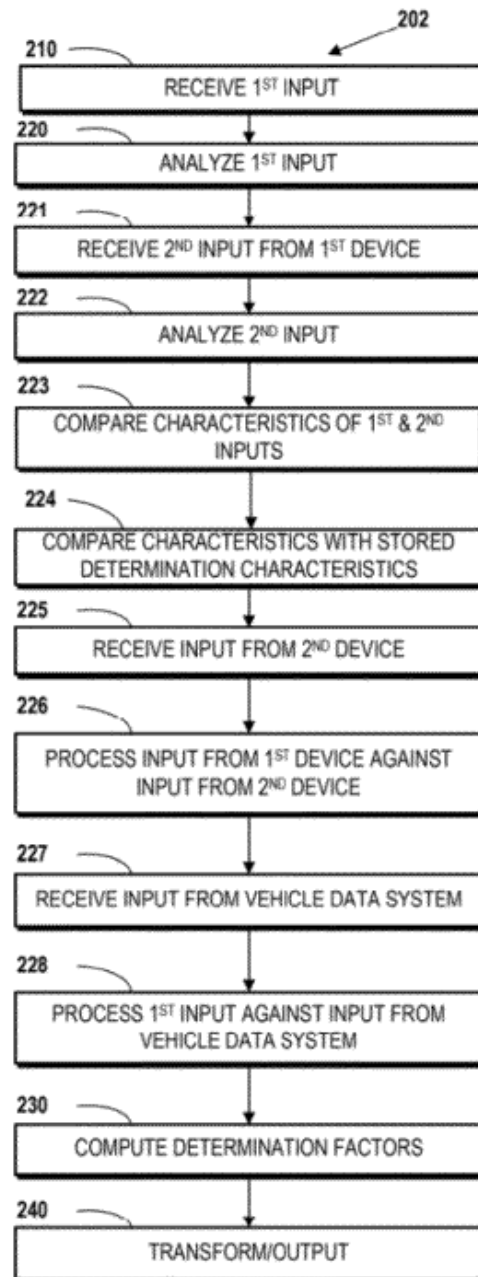
Claim 8 is directed to the method performed by the device of claim 1. As explained below, Abramson renders claim 8 obvious in largely the same manner as it does claim 1.

a. 8[pre]: A method, for use with a database

To the extent it is limiting, Abramson renders obvious the preamble of claim 8. As discussed above, Abramson renders obvious “[a] device, for use with a database.” §VII.B.1.a.

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, Abstract; *see also id.*, Title, 1:17-20. Abramson’s Figures 2A and 2B show process flow diagrams of a method for determining an in-vehicle role and location of a mobile device in accordance with Abramson’s disclosed invention. *Id.*, 19:31-35, 22:17-21.

**FIG. 2B**

Id., Fig. 2B. Abramson's method is performed by a device for use with a database.

§VII.B.1.a; Decl., ¶348.

Accordingly, Abramson discloses the preamble of claim 8. Decl., ¶349.

b. Limitations 8[a]-[i]

Limitations 8[a]-8[b] recite that the “field-detecting component” performs the same functionality set forth in limitation 1[a]. Limitation 8[c] recites that the “input component” performs the same functionality set forth in limitation 1[b]. Limitation 8[d] recites that the “accessing component” performs the same functionality set forth in limitation 1[c]. Limitation 8[e] recites that the “comparing component” performs the same functionality set forth in limitation 1[d]. Limitation 8[f] recites that the “identifying component” performs the same functionality set forth in limitation 1[e]. Limitations 8[g]-8[h] recite that the “field-detecting component” performs the same functionality set forth in limitation 1[f]. Limitation 8[i] recites that the “comparing component” performs the same functionality set forth in limitation 1[g].

Accordingly, Abramson renders obvious limitations 8[a]-8[i] for the reasons explained above for limitation 1[a]-[g]. §VII.B.1.b-h; Decl., ¶¶350-70.

3. Claim 15

Claim 15 is directed to a non-transitory, tangible, computer-readable media containing instructions to be performed by the device of claim 1. As explained below, Fong renders claim 15 obvious in largely the same manner as it does claim 1.

- a. **15[pre]: A non-transitory, tangible, computer-readable media having computer-readable instructions stored thereon**

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 in-vehicle user-role determination system 100,” which includes mobile device 105. Abramson, 19:35-39, Figs. 2A, 2B. 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 explains: “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.” Decl., ¶407. 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.” *Id.* Accordingly, Abramson discloses the preamble of claim 15. *Id.*, ¶408.

b. Limitations 15[a]-[i]

The stored instructions for performing the method steps of claim 15 relate to the same functionality recited for the components in claim 1. Limitations 15[a]-15[b] recite that the “field-detecting component” performs the same functionality set forth in limitation 1[a]. Limitation 15[c] recites that the “input component” performs the same functionality set forth in limitation 1[b]. Limitation 15[d] recites that the “accessing component” performs the same functionality set forth in limitation 1[c]. Limitation 15[e] recites that the “comparing component” performs the same functionality set forth in limitation 1[d]. Limitation 15[f] recites that the “identifying component” performs the same functionality set forth in limitation 1[e]. Limitations 15[g]-15[h] recite that the “field-detecting component” performs the same functionality set forth in limitation 1[f]. Limitation 15[i] recites that the “comparing component” performs the same functionality set forth in limitation 1[g].

Accordingly, Abramson renders obvious limitations 15[a]-15[i] for the reasons explained above for limitation 1[a]-[g]. §VI.B.1.b-h; Decl., ¶¶409-29.

C. Dependent Claims**1. Claims 2, 9, and 16**

Claims 2, 9, and 16 require 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.”

Abramson discloses that the determination module 170 (“field-detecting component”) receives magnetic and/or electro-magnetic field data from magnetometer 145E. §VII.B.1.b. As of December 2012, it was well-known that sensors, including a magnetometer in a smartphone, could detect an electric or electro-magnetic field as a function over a period of time. Decl., ¶287.

Abramson confirms this. *Id.* Abramson discloses that, at step 210, “processor 110 executing one or more of software modules 130, including, preferably, determination module 170, receives a first input,” where “the first input originates from one or more identifying events that are perceptible to at least one of sensors 145,” including magnetometer 145E. Abramson, 19:53-60. As used in Abramson, “identifying events ... 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.*, 12:33-43. Abramson further discloses that “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.*, 12:43-47. As a result, a POSITA would understand that the identifying events in Abramson, including from the magnetometer 145E, could be detected as a function over a period of time. Decl., ¶287.

Accordingly, Abramson discloses or renders obvious claims 2, 9, and 16. *Id.*, ¶¶284-89, 371-374,

2. Claims 3, 10, and 17

Claim 3 requires:

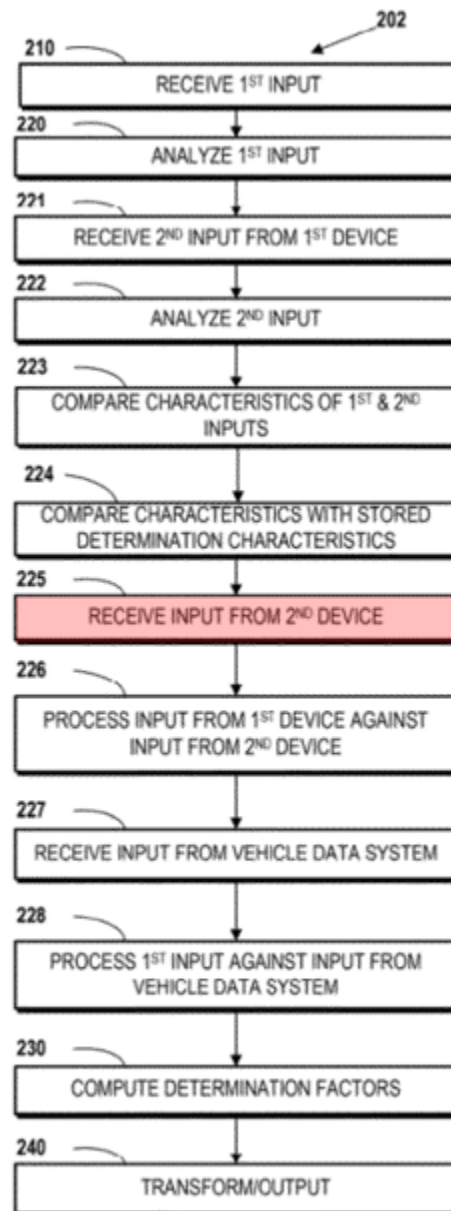
3[a]	a parameter-detecting component operable to detect a parameter and to generate a parameter signal based on the detected parameter,
3[b]	wherein said identifying component is operable to identify the one of an item and a location based additionally on the parameter signal.

Claims 10 and 17 recite the same requirements as method steps.

a. 3[a]: parameter-detecting component

Abramson’s communication interface 150 is a “parameter-detecting component” as claimed. Abramson discloses that the first and second inputs can originate from sensors 145 or communication interface 150. Abramson, 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. *Id.*, 24:18-33.

A POSITA would have understood that the communication interface 150 was operable to detect a parameter from a smartphone 160. Decl., ¶294. Referring to Figure 2B, Abramson discloses that at step 225 “determination module 170, receives an input from another device, such as one of mobile devices 160.” *Id.*, 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.*, 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. Abramson 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.*, 24:29-33.

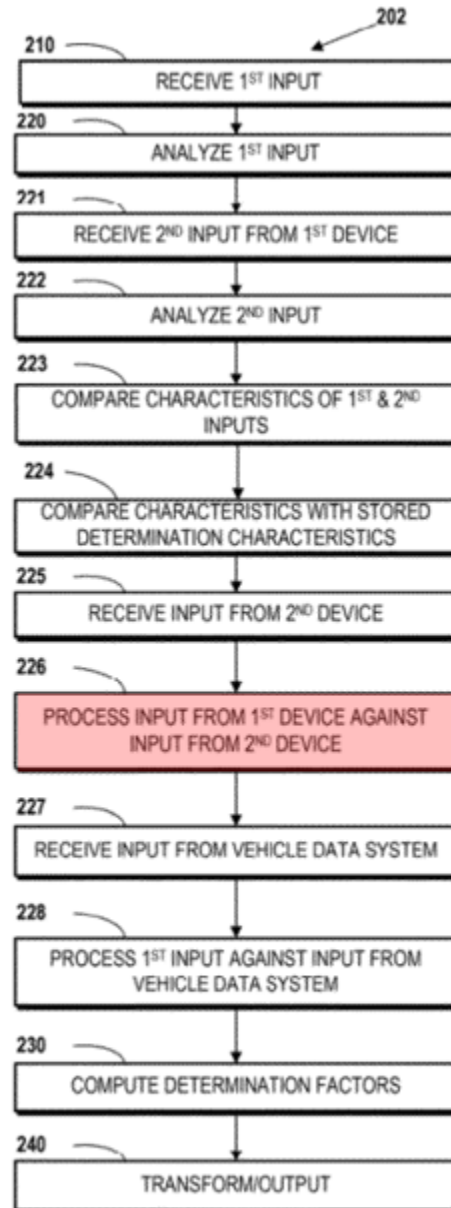
**FIG. 2B**

Id., Fig. 2B.

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. Decl., ¶295. 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” ’946 patent, 6:55-61. Abramson’s communication interface 150 is operable to detect a parameter, such as acceleration or location, from mobile device 160. Decl., ¶295.

Referring to Figure 2B, 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, 4:36-37.

**FIG. 2B**

Id., Fig. 2B. A POSITA would understand 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. Decl., ¶297.

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

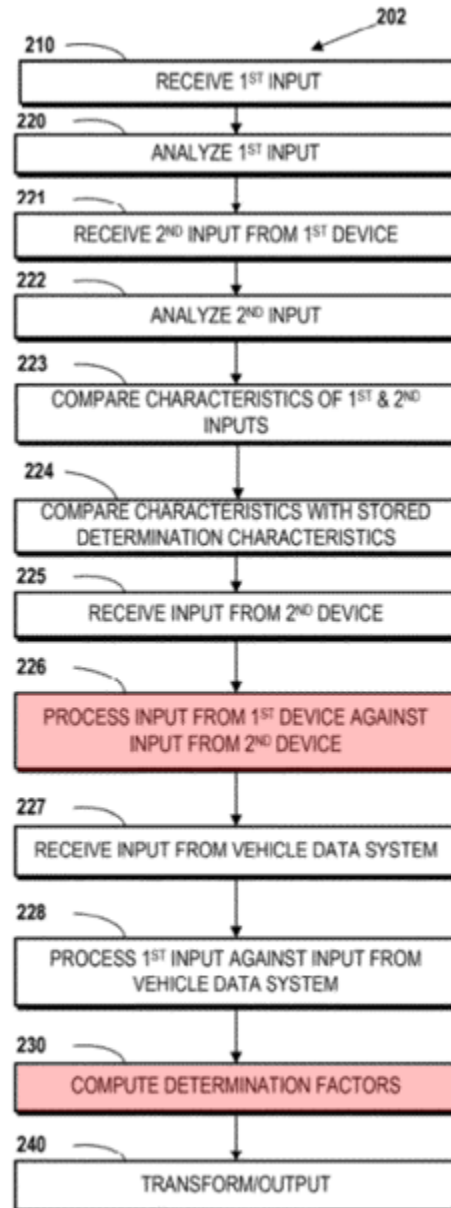
b. 3[b]: identifying based on the parameter signal

Abramson's determination module 170 is the "identifying component operable to identify one of an item and a location based on the comparison signal." §VII.B.1.f. 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). §VI.B.1.f. 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." Decl., ¶301.

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. Abramson, 20:34-46. A POSITA would understand that Abramson discloses identifying whether the user is a driver or a passenger based on the comparison signal. Decl., ¶302. A POSITA would further understand that whether a user is a driver or a passenger corresponds to their location in the vehicle. *Id.* 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. Abramson, 53:61-54:2. The magnetometer readings associate the user with a

location within the vehicle. Thus, the determination module 170 (“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”). Decl., ¶302.

Referring to Figure 2B, 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. Abramson, 24:34-37.

**FIG. 2B**

Id., Fig. 2B.

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.” Abramson, 26:66-27:6. A POSITA would understand that the disclosures relating to step 230 of Figure 2A also apply to step 230 of Figure 2B. Decl., ¶304.

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 based on the calculated determination factors, which are sent to processor 110 (i.e., “based on the comparison signals”). Decl., ¶305. A POSITA would further understand that Abramson discloses identifying the type of vehicle (e.g., car, bus, airplane) based on the comparison signals. *Id.*

As discussed above, in step 226, the detected parameter from communications module 170 is compared to the input of mobile device 105. Abramson, 4:36-37. In step 230, the detected parameter from communications module 170 is included in the computation of determination factors. *Id.*, 20:34-46; Decl., ¶306.

Thus, given the addition of the parameter signal for use in steps 226 and 230, a POSITA would understand that the determination module 170 (“identifying component”) is operable to identify a mobile phone and the location of the mobile phone within the vehicle (“a location”) based on the calculated determination factors, which are sent to processor 110 (“based on the comparison signals” and

“additionally on the parameter signal”). Decl., ¶307.

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

Abramson therefore discloses or renders obvious claims 3, 10, and 17. *Id.*, ¶¶290-309, 375-81, 434-40.

3. Claims 4, 11, and 18

Claim 4 requires that “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.” Claims 11 and 18 add the same limitations, except as method steps.

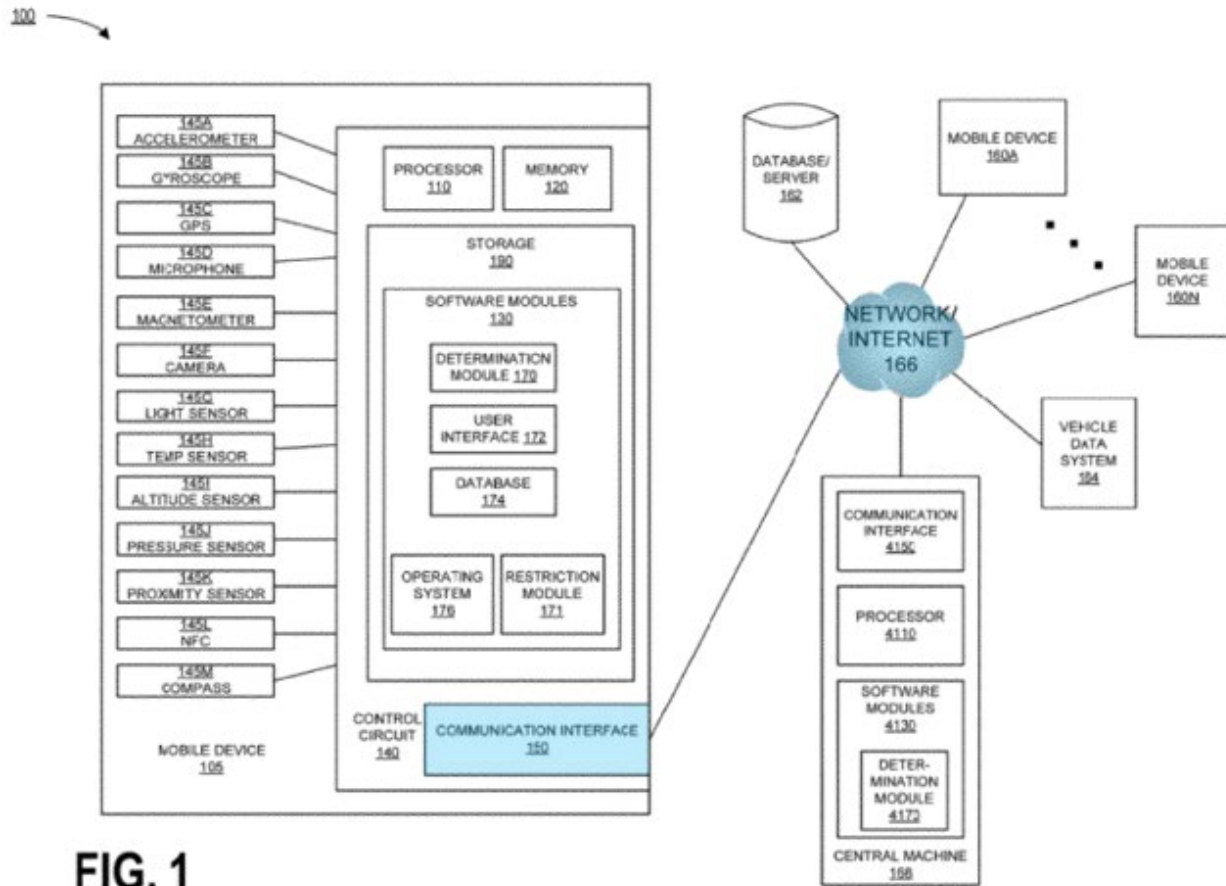
The communication interface 150 of Abramson’s mobile device 105 is a “parameter-detecting component.” §VII.D.2.a. In particular, the communication interface 150 is operable to detect parameters received from sensors located on other mobile devices 160 in communication with mobile device 105. *Id.* Abramson discloses that sensors on the other devices 160 can be the same as those on mobile device 105, Abramson, 24:21-28, and that such sensors can include accelerometer 145A, a GPS receiver 145C, and microphone 145D. *Id.*, 17:46-48.

An accelerometer can detect at least “acceleration” and “angular acceleration.” Decl., ¶312; Abramson, 19:61-65 (accelerometer 145A can detect “an acceleration input that originates from an acceleration event (e.g., the speeding up or slowing down of a car)”). A GPS receiver can detect at least “geodetic position.” Decl., ¶312; Abramson, 22:44-45 (GPS receiver 145C can detect “an input corresponding to a change in geographic location”). A microphone can detect at least “sound.” Decl., ¶312; Abramson, 56:57-53 (microphone 145D can detect “sounds, signals, and/or transmissions”).

Accordingly, Abramson discloses or renders obvious claims 4, 11, and 18. Decl., ¶¶310-14, 382-85, 556-59.

4. Claims 5, 12, and 19

Claims 5, 12, and 19 require a “communication component.” As shown in Figure 1 of Abramson, the mobile device 105 includes a communication interface 150 the is connected to control circuit 140. Abramson, 16:63-64.



Id., Fig. 1.

Abramson teaches 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.*, 16:64-67. For example, “communication interface 150 includes, but is not limited to, ... **a radio frequency transmitter/receiver** (e.g., Bluetooth, **cellular**, NFC), [and] **a satellite communication transmitter/receiver**, ... or any other such interfaces for connecting mobile device 105 to other computing devices and/or communication networks such as the Internet.” *Id.*, 16:67-17:7. Further, “[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.*, 17:7-11.

Abramson’s communication interface 150, therefore, is “a communication component operable to wirelessly communicate with a network.” Accordingly, Abramson discloses or renders obvious claims 5, 12, and 19. Decl., ¶¶315-19, 386-88, 445-47.

5. Claims 6, 13, and 20

The additional limitations of claims 6, 13, and 20 are substantively the same. §VI.C.2.

a. 6[a]: operable to detect a magnetic field

Abramson discloses “wherein said field-detecting component is operable to detect a magnetic field.” As discussed in §VII.B.1.b, 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 electromagnetic field.” For the same reasons discussed above, Abramson discloses that “said field-detecting component is operable to detect a magnetic field.” Decl., ¶323. Accordingly, Abramson discloses or renders obvious limitation 6[a]. *Id.*, ¶¶322-25.

b. 6[b]: input an association between a vehicle and the detected magnetic field

As discussed above, Abramson’s processor 110 executing one or more of

software modules 130 is the “input component.” §VII.B.1.c. Further, as discussed in relation 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). §VII.B.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. Abramson, 53:61-54:2. The magnetometer readings associate the user with a location within the vehicle. Decl., ¶329. Thus, a POSITA would understand that the determination module 170 is operable to identify a mobile phone the location of the mobile phone within the vehicle based on the magnetometer readings (i.e., “the detected magnetic field”) within the vehicle. *Id.* A POSITA would understand that the known variation of the magnetic field within different areas of a vehicle is “an association” (or “a relationship”) between the vehicle and the detected magnetic field. *Id.* Moreover, with respect to Figure 5, a POSITA would understand that the stored vehicle determination characteristics “correspond” (i.e., have a relationship) with a vehicle type. Decl., ¶331.

Accordingly, Abramson discloses or renders obvious limitation 6[b]. Decl., ¶332.

c. 6[c]: detect a second magnetic field

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.” §VII.B.1.g.

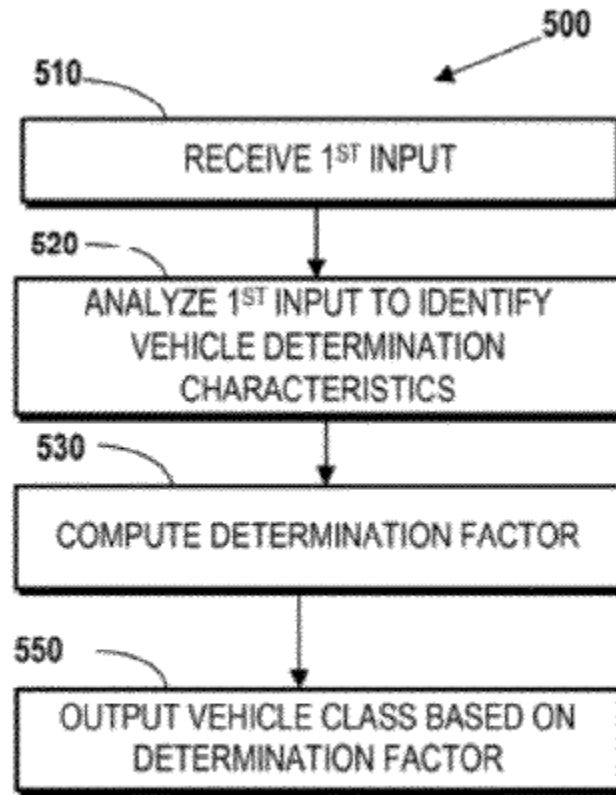
Accordingly, Abramson discloses or renders obvious limitation 6[c]. Decl., ¶¶333-36.

d. 6[d]: identify the vehicle as the item

Abramson’s determination module 170 is “an identifying component operable to identify one of an item and a location based on the comparison signal.” §VII.B.1.f,

As discussed above, 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. §VII.B.1.e. A POSITA would understand that there was an association between the vehicle (i.e., a car or bus) and the detected magnetic field. §VII.C.5.b.

Alternatively, as described in reference to Figure 5, Abramson discloses that at step 230, 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.*, 35:47-50.

**FIG. 5**

Id., Fig. 5. A POSITA would understand that the method of Figure 5 determined an “item” (i.e., vehicle class). Decl., ¶341. Thus, a POSITA would understand that the determination component 170 “is further operable ... to identify the vehicle as an item” (i.e., car, bus, train, plain, etc.) based on the relationship between the magnetic field readings related to the vehicle (i.e., an association). *Id.*, ¶¶341-42.

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

Abramson therefore discloses or renders obvious claims 6, 13, and 20. *Id.*,

¶¶320-45, 389-404, 448-63.

VIII. Ground 3 – Fong In Combination with Abramson Renders Obvious Claims 2-4, 6, 9-11, 13, 16-18

As discussed in Ground 1, Fong discloses or renders obvious independent claims 1, 8, and 15. A POSITA would have been further motivated to combine Fong with Abramson.

A. Motivation to Combine Fong and Abramson

A POSITA would be motivated to combine the teachings of Fong and Abramson to create a more accurate system for identifying an item or a location based on detected fields. Decl., ¶464. Like the '946 patent, Fong and Abramson are both drawn to systems for determining if a smartphone (and thus a user) is in a vehicle, so a POSITA would look to the teachings of both references to see what improvements can be made to Fong's invention. Decl., ¶465; Fong, Abstract, 1:35-50; Abramson, Abstract.

Because they are both directed to the same goal, the systems of Fong and Abramson are similar. Both disclose smartphone sensors to measure data associated with the running of a vehicle engine. Fong, 3:38-4:22; Abramson, 53:48-54:2. Both Fong and Abramson use these sensors to determine if the smartphone user is in a vehicle. Decl., ¶466; Fong, 3:38-56; Abramson, 19:31-35, 22:17-21.

Fong discloses using one detected sensor field (EMF or sound) to make this determination. Fong, 4:60-5:29. Abramson discloses determining if a smartphone

user is the driver or passenger of a vehicle based on one detected sensor field (Abramson, 19:31-21:11, Fig. 2A) and based on at least two detected sensor fields (*id.*, 22:17-24:17, Fig. 2B). A POSITA would understand that using readings from additional sensors, as taught by Abramson, would increase the accuracy of the prediction that a user is in a vehicle and the driver or a passenger. Decl., ¶467.

A POSITA would have considered modifications to Fong based on Abramson's teachings to be routine. The main difference between these devices is that Fong discloses the use of one detected sensor field, whereas Abramson discloses at least two. Fong and Abramson both disclose the use of the existing smartphone sensors to collect the sensor field data. Abramson adds important details about the use of additional sensors to increase the accuracy of the determination that a smartphone (and thus a user) was in a vehicle. *Id.*, ¶468.

This combination entails combining prior-art elements (sensors of a smartphone, etc.) in a way that yields predictable results. Indeed, it is a simple substitution of the use of one sensor for the use of two sensors. The use of smartphone sensors to determine certain locations, characteristics, etc., was a well-known technique by 2012, and the use of at least two smartphone sensors would have been the application of a known technique 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. *Id.*, ¶469.

B. Claims 2, 9, and 16

As discussed in §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. 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. Decl., ¶474. It was well-known that sensors could detect an electric or electro-magnetic field as a function over a period of time. *Id.* For example, Abramson disclosed that detected fields, including electric or electro-magnetic fields, can be collected as a function over a period of time. §VII.D.1; Decl., ¶474. Abramson’s measurement of an EMF over a period of time would have provided the POSITA with a reasonable expectation of success. Decl., ¶474.

Accordingly, Fong in view of Abramson renders claims 2, 9, and 16 obvious. Decl., ¶¶471-75, 515-18, 545-48.

C. Claims 3, 10, and 17

The additional limitations of claims 3, 10, and 17 are substantively the same.

§VII.C.2.**1. 3[a]: parameter-detecting component**

Fong discloses that a microphone of sensor system 130 can be used to detect sounds associated with the ignition of a vehicle. Fong, 5:17-20 (“[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.”). This in line with the ’946 patent’s disclosure that the parameter-detecting component may detect sound. ’946 patent, 6:53-59. Before December 2012, a microphone on a smartphone was a well-known sensor that could detect sound. Decl., ¶480. Fong’s sensor system 130 is therefore “a parameter-detecting component operable to detect a parameter,” i.e., sound. *Id.*

The sensor system 130 also is “operable ... to generate a parameter signal based on the detected parameter.” Petitioner interprets “parameter signal” to mean “a signal that corresponds to a parameter.” Fong’s sensor system 130 detects sound and EMF data. Decl., ¶482. A POSITA would understand that measurements from sensor system 130 are “a signal that corresponds to a parameter” (i.e., what the sensor measures, such as EMF, sound, etc.). *Id.* That is, a POSITA would have understood that sensor system 130 is “operable . . . to generate a parameter signal

based on the detected parameter.” *Id.*

2. 3[b]: identifying based on the parameter signal

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, 5:26-29. A POSITA would be 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. Decl., ¶486. 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. *Id.*; *see also* Abramson, 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.”). A POSITA would have 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. Decl., ¶486.

Accordingly, Fong in view of Abramson renders claims 3, 10, and 17 obvious. Decl., ¶¶476-87, 519-25, 549-55.

D. Claims 4, 11, and 18

Fong's sensor system 130 is a "parameter-detecting component," as it uses a microphone to detect sounds associated with the ignition of a vehicle. §VIII.C.1; Fong 5:2-8; Decl., ¶490. Sound is one of the listed parameters in claim 4. Accordingly, Fong discloses "wherein said parameter-detecting component is operable to detect, as the parameter, one of the group consisting of ... sound." Fong in view of Abramson thus renders claims 4, 11, and 18 obvious. Decl., ¶¶488-91, 526-29, 556-59.

E. Claims 6, 13, and 20

The additional limitations of claims 6, 13, and 20 are substantively the same. §VI.C.2. Fong alone discloses or renders obvious the elements of 6, 13, and 20. However, a POSITA would also have been independently motivated to employ detection of a magnetic field to gather the data required.

1. 6[a]: operable to detect a magnetic field

Fong teaches a variety of "field-detecting component[s]" capable of detecting different types of fields. §VI.B.1.b.

Using a sensor, such as a magnetometer, to detect a magnetic field (as opposed to an electro-magnetic field) would have been obvious to a POSITA reviewing Fong.

Decl., ¶496. 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, 8:22-23. A POSITA would have been motivated to use the magnetometer in a smartphone to detect a magnetic field in light of Abramson’s disclosures. Decl., ¶496. A POSITA would understand that detecting the magnetic field from the ignition of a vehicle would have been one way to efficiently detect whether a device is in a vehicle and avoid false positive signals. *Id.* A POSITA would have reasonably expected success in using a magnetometer to detect a magnetic field due to Abramson’s disclosure of such use. *Id.*; §§VII.B.1.a-h.

Accordingly, Fong in view of Abramson renders obvious limitation 6[a]. Decl., ¶497.

2. 6[b]: input an association between a vehicle and the detected magnetic field

Fong discloses that sensor system 130 is “an input component operable to input the detected field signature into the database.” §VI.B.1.c. Further, the EMF reading from the sensor system 130 is the “detected field signature.” §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.” Fong, 5:22-25. Thus, a POSITA would understand that the stored signature is associated with a vehicle. Decl., ¶500.

Abramson informs a POSITA that a magnetometer can be used to detect a magnetic field associated with the ignition of a vehicle. §VII.B.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. Decl., ¶501.

Accordingly, Fong in view of Abramson renders obvious limitation 6[b]. *Id.*, ¶503.

3. 6[c]: detect a second magnetic field

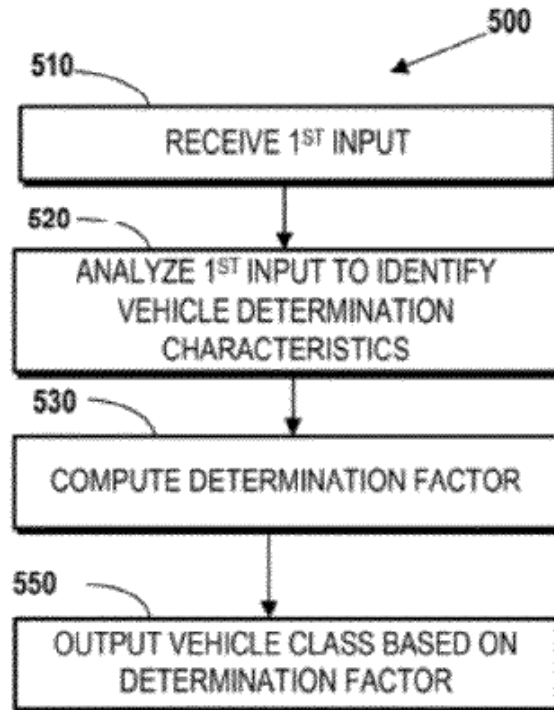
Detecting a second magnetic field would also have been obvious to a POSITA as of December 2012. A POSITA would have understood that magnetic field signatures detected by the magnetometer could be stored and compared to an additional, second magnetic field signature via the process disclosed by Fong. Decl., ¶506. Thus, a POSITA would be 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. *Id.*

Accordingly, Fong in view of Abramson renders element 6[c] obvious. *Id.*, ¶507.

4. 6[d]: identify the vehicle as the item

Fong in view of Abramson teaches inputting “an association between a vehicle and the detected magnetic field.” §VII.F.2. Fong also teaches identifying the vehicle as the item, as discussed above regarding claim 1. §VI.B.1.f; Decl., ¶¶509-11.

Alternatively, as described in reference to Figure 5, Abramson discloses that at step 230, 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.). Abramson, 35:47-50.

**FIG. 5**

Id., Fig. 5. A POSITA would understand that the method of Figure 5 determined an “item” (i.e., vehicle class). Decl., ¶512. Thus, a POSITA would be motivated to use the determination component 170 of Abramson “to identify the vehicle as an item” (i.e., car, bus, train, plain, etc.) based on the relationship between the magnetic field readings related to the vehicle (i.e., an association). *Id.*

Accordingly, Fong in view of Abramson renders obvious limitation 6[d]. *Id.*, ¶514.

Fong in view of Abramson therefore renders claims 6, 13, and 20 obvious. *Id.*, ¶¶492-514, 530-44, 560-74.

IX. No Secondary Considerations

Petitioner is unaware of any secondary considerations that may support the patentability of the Challenged Claims.

X. Discretionary Issues

A. The Board Should Decline to Deny Institution Under *Advanced Bionics*.

The Board should decline to deny institution because the first part of the *Advanced Bionics* framework—“whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office”—is not satisfied. *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, 2020 WL 740292, at *3 (PTAB Feb. 13, 2020) (precedential); 35 U.S.C. §325(d).

None of the references relied on in this Petition were cited during prosecution of the '946 patent, so the Examiner never applied or discussed them. '946 patent (References Cited section). The Board has “consistently held that a reference that was neither applied against the claims nor discussed by the Examiner does not weigh in favor of exercising ... discretion under § 325(d).” *Bowtech v. MCP IP, LLC*, IPR2019-00379, Paper 14, at 18 (PTAB July 3, 2019) (quotations omitted). Therefore, the Board should decline to exercise discretion under §325(d).

B. The Board Decline to Deny Institution Under *Fintiv*.

The Board should not discretionarily deny this Petition under *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, 2020 WL 2126495, at *3 (PTAB Mar. 20, 2020). *Fintiv* factors 2, 3, 4, and 6 weigh against denial.⁴

Fintiv Factor 2 weighs strongly against discretionary denial. In the parallel litigation, the court has not yet set a trial date. Based on the filing date of the Petition, an institution decision is likely to issue around December 2024, with a final written decision issuing in December 2025. The average time to trial is over three years in the District of New Jersey, meaning that a trial may not be held until 2026—well after a final written decision in this proceeding. Ex.1011.

Factor 3—under factor 3, the early stage of this case weighs against

⁴ *Fintiv* factors 1 and 5 do not outweigh the remaining factors here.

discretionary denial. Fact discovery does not close in the District Court Action until August 20, 2024, and no further case deadlines have been set beyond that date. Ex.1010. Patent Owner’s amended infringement contentions were served on May 31, 2024, less than one week before this Petition was filed. Ex.1010. While the parties have submitted claim construction briefing, the district court has not yet issued a *Markman* decision. Ex.1009. Thus, the court is unlikely to invest significant resources or issue substantive orders related to the ’946 patent prior to the issuance of an institution decision. *Fintiv*, 2020 WL 2126495, at *4.

Factor 4—regarding the overlap between issues raised in the Petition and the District Court Action—weighs against a discretionary denial. Given the estoppel provisions of §315(e)(2), if the Board institutes IPR here, Petitioner will be estopped from raising in the District Court Action “any ground that the petitioner raised or reasonably could have raised” in this proceeding. Thus, there is no risk of overlapping and conflicting findings. *Google LLC v. Wildseed Mobile, LLC*, IPR2023-00247, 2023 WL 3846399, at *11 (PTAB June 6, 2023).

Factor 6—the final *Fintiv* factor addressing other considerations weighs against discretionary denial. Under the Director’s Interim Procedures, “the PTAB will not rely on the *Fintiv* factors to discretionarily deny institution in view of parallel district court litigation where a petition presents compelling evidence of unpatentability.” Director’s Interim Procedures at 2. The grounds in the Petition

present compelling evidence of unpatentability of the Challenged Claims, so the Board should not exercise discretionary denial for this reason alone. This factor weighs against discretionary denial.

XI. Conclusion

For the reasons set forth above, Petitioner respectfully submits that it has demonstrated a reasonable likelihood that it will prevail on one or more of the grounds set forth herein, and the Board should institute review.

XII. Mandatory Notices

A. Real Parties-in-Interest (37 C.F.R. § 42.8(b)(1))

The Petitioner, Cambridge Mobile Telematics, Inc., is the real party-in-interest.

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

The '946 patent is at issue in *Cambridge Mobile Telematics, Inc. v. Sfara, Inc.*, No. 3:23-cv-01368, pending in the District Court for the District of New Jersey ("District Court Action"). On June 7, 2023, Patent Owner asserted the '946 patent in its counterclaims in response to Petitioner's complaint alleging infringement of other patents.

Petitioner is not aware of any other judicial or administrative matter that would affect or be affected by a decision in this IPR.

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

Petitioner provides the following designation of counsel.

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D. Service Information (37 C.F.R. § 42.8(b)(4))

Counsel agrees to service by mail to the addresses of counsel listed above, and to electronic service by email at the following addresses:

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Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

Petitioner certifies that the word count in this Petition is 13,809 words, as counted by the word-processing program (Microsoft Word for Office 365) used to generate this Petition, where such word count excludes the table of contents, table of authorities, listing of challenged claims, mandatory notices, certificate of service, appendix of exhibits, and this certificate of word count. This Petition is in compliance with the 14,000 word limit set in 37 C.F.R. § 42.24(a)(1)(i).

Dated: June 6, 2024

By: /Linnea Cipriano/
Linnea Cipriano

CERTIFICATE OF SERVICE

The undersigned certifies that a true and correct copy of the foregoing Petition for *Inter Partes* Review together with Exhibits 1001-1031 has been served on the Patent Owner via Federal Express Next Business Day Delivery at the following correspondence address:

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A courtesy copy has also been emailed to Patent Owner's litigation counsel at the email addresses provided below:

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Dated: June 6, 2024

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