

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of: Koebler et al.
U.S. Patent No.: 10,850,616 Attorney Docket No. 49649-0021IP1
Issue Date: December 1, 2020
Appl. Serial No.: 15/693,899
Filing Date: September 1, 2017
Title: USING VEHICLE SYSTEMS TO GENERATE A ROUTE
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**PETITION FOR *INTER PARTES* REVIEW OF UNITED STATES PATENT
NO. 10,850,616 PURSUANT TO 35 U.S.C. §§ 311–319, 37 C.F.R. § 42**

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	REQUIREMENTS FOR IPR.....	1
	A. Grounds for Standing.....	1
	B. Challenge and Relief Requested.....	1
III.	THE '616 PATENT	2
	A. Description.....	2
	B. Prosecution History.....	3
	C. Claim Construction	4
	1. Relevant Limitations	5
	2. <i>At least One Of...And</i>	6
	D. Priority Date.....	10
	1. Legal Standard.....	12
	2. Analysis	13
IV.	THE CHALLENGED CLAIMS ARE UNPATENTABLE.....	20
	A. Ground 1: Claims 1-16 are Anticipated And/or Rendered Obvious By Koebler650.....	20
	1. Koebler650	20
	2. Analysis	23
	B. Ground 2: Claims 1-16 are rendered obvious over Koebler650, Kabel, Lagerstedt, Okano, Kirkwood, and Breed	56
	1. References	56
	2. Proposed Combination	62
	3. Analysis	70
V.	PTAB DISCRETION SHOULD NOT PRECLUDE INSTITUTION....	78
	A. 35 U.S.C. §325(d).....	78
	B. 35 U.S.C. §314(a)	79
	1. Factor 1	80
	2. Factor 2.....	80
	3. Factor 3	81
	4. Factor 4.....	82
	5. Factor 5.....	82
	6. Factor 6.....	82
VI.	PAYMENT OF FEES – 37 C.F.R. § 42.103	83
VII.	CONCLUSION	83
VIII.	MANDATORY NOTICES UNDER 37 C.F.R § 42.8(a)(1)	84

A.	Real Party-In-Interest Under 37 C.F.R. § 42.8(b)(1).....	84
B.	Related Matters Under 37 C.F.R. § 42.8(b)(2).....	84
C.	Lead And Back-Up Counsel Under 37 C.F.R. § 42.8(b)(3).....	84
D.	Service Information	85

LIST OF EXHIBITS

TESLA-1001	U.S. Pat. No. 10,850,616 (“the ’616 patent”)
TESLA-1002	Excerpts from the File History of the ’616 patent
TESLA-1003	Declaration of Dr. Vassilios Morellas
TESLA-1004	U.S. Pat. No. 8,712,650 (“Koebler650”)
TESLA-1005	U.S. Pat. No. 11,065,977 (“Koebler977”)
TESLA-1006	U.S. Pat. No. 9,682,624 (“Koebler624”)
TESLA-1007	U.S. Pat. No. 8,972,162 (“Koebler162”)
TESLA-1008	U.S. Pat. No. 7,925,426 (“Koebler426”)
TESLA-1009	Complaint, <i>iQar Inc. v. Tesla, Inc.</i> , 1:23-cv-00694, W.D. Tex., June 20, 2023
TESLA-1010	U.S. Pat. No. 7,516,011 (“Kabel”)
TESLA-1011	U.S. Pat. No. 7,148,648 (“Okano”)
TESLA-1012	U.S. Pat. No. 7,211,019 (“Kirkwood”)
TESLA-1013	U.S. Pat. No. 7,983,836 (“Breed”)
TESLA-1014	U.S. Pat. No. 7,752,188 (“Lagerstedt”)
TESLA-1015	U.S. Pat. No. 7,650,956 (“Hirata”)
TESLA-1016	U.S. Pat. No. 10,746,901 (“O’Brien”)
TESLA-1017	U.S. Pat. No. 10,703,162 (“Kanda”)
TESLA-1018	U.S. Pat. No. 5,848,378 (“Shelton”)

TESLA-1019	E.P. Pat. No. 3,475,729 (“Elkebetz”)
TESLA-1020	Wimmer A. & Schnessl E., “Effects of Humidity and Ambient Temperature on Engine Performance of Lean Burn Natural Gas Engines,” Proceedings of ICEF2006, ASME Combustion Engine Division 2006 Fall Technical Conference, Nov. 5-8, 2006, Sacramento, CA (“Wimmer”)
TESLA-1021	U.S. Pat. No. 6,505,123 (“Root”)
TESLA-1022- TESLA-1049	RESERVED
TESLA-1050	Memorandum, Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation (USPTO June 21, 2022) (“Director’s Guidance”)
TESLA-1051	RESERVED
TESLA-1052	District Court Trial Statistics (12-Month Period Ending June 30, 2023 June 30, 2023)
TESLA-1053	Proof of Service of Complaint, <i>iQar Inc. v. Tesla, Inc.</i> , 1:23-cv-00694, W.D. Tex., June 22, 2023

LISTING OF CLAIMS

Claim 1	
[1pre]	An apparatus comprising:
[1a-1]	an interface configured to (a) receive (i) sensor data samples during operation of a vehicle and (ii) data from a telemetry system and
[1a-2]	[the interface configured to] (b) connect to a remote database;
[1b]	a memory configured to store (a) said sensor data samples for different points in time along a route segment travelled by said vehicle and (b) said data from said telemetry system; and
[1c-1]	a processor configured to (i) analyze said sensor data samples stored in said memory to determine current conditions and (ii) associate said current conditions with said route segment
[1c-2]	wherein (a) said route segment is identified according to said data from said telemetry system and
[1c-3]	(b) said current conditions associated with said route segment are uploaded to said remote database to create historical route information for a plurality of route segments;
[1d]	wherein the sensor data samples are received from at least one of an optical sensor, a position sensor, a speed sensor, a gyroscopic sensor, a revolutions-per-minute sensor, an accelerator pedal position sensor, a brake pedal position sensor, a battery state sensor, a tire pressure sensor, a proximity sensor, a weight sensor, an airflow sensor, and a gas flow sensor; and
[1e]	wherein said current conditions comprise at least one of: drag, wind resistance, tire resistance, a location relative to a destination, traffic patterns, an amount of light energy, a position of the sun, geographical information, an elevation of said vehicle, a grade of a road, a location of stoplights, a timing of stoplights, weather, a wind direction, a wind velocity, a temperature, air pressure, moisture, visibility, an amount of vibration, and traction.

Claim 2	
[2]	The apparatus according to claim 1, wherein said current conditions associated with said route segment are stored in said remote database with previously stored conditions associated with said route segment.
Claim 3	
[3]	The apparatus according to claim 2, wherein said historical route information comprises said current conditions and said previously stored conditions associated with said plurality of route segments.
Claim 4	
[4]	The apparatus according to claim 1, wherein said data from said telemetry system comprises a Global Positioning System (GPS) signal.
Claim 5	
[5]	The apparatus according to claim 1, wherein said data from said telemetry system comprises at least one of a map service and a traffic service.
Claim 6	
[6]	The apparatus according to claim 1, wherein said current conditions comprise information about an environment (a) surrounding said vehicle and (b) acting on said vehicle.
Claim 7	
[7]	The apparatus according to claim 1, wherein said current conditions are determined by deriving inferences from said sensor data samples.
Claim 8	
[8]	The apparatus according to claim 1, wherein said historical route information comprises said current conditions received from a plurality of vehicles each using one of said apparatuses.

Claim 9	
[9]	The apparatus according to claim 1, wherein said apparatus is configured to receive said historical route information for said plurality of route segments.
Claim 10	
[10]	The apparatus according to claim 9, where operational parameters of said vehicle are adjusted for said route segment based on said historical route information.
Claim 11	
[11]	The apparatus according to claim 10, wherein adjusting said operational parameters for said route segment based on said historical route information is performed to optimize power consumption of said vehicle.
Claim 12	
[12]	The apparatus according to claim 1, wherein said interface is configured to receive from a bus of said vehicle at least one of (a) said sensor data samples and (b) said data from said telemetry system.
Claim 13	
[13]	The apparatus according to claim 1, wherein said interface is configured to receive from an external device at least one of (a) said sensor data samples and (b) said data from said telemetry system.
Claim 14	
[14pre]	The apparatus according to claim 1, wherein said current conditions comprise at least one of:
[14a]	energy requirements, a speed of said vehicle, road conditions, and traffic.

Claim 15	
[15pre]	A vehicle comprising:
[15a]	a power train;
[15b]	a drive train;
[15c-1]	an interface configured to (a) receive (i) sensor data samples during operation of a vehicle and (ii) data from a telemetry system and
[15c-2]	[the interface configured to] (b) connect to a remote database;
[15d]	a storage device configured to store (a) said sensor data samples for different points in time along a route segment travelled by said vehicle and (b) said data from said telemetry system; and
[15e-1]	a processor configured to (i) analyze said sensor data samples stored in said storage device to determine current conditions and (ii) associate said current conditions with said route segment,
[15e-2]	wherein (a) said route segment is identified according to said data from said telemetry system and
[15e-3]	(b) said current conditions associated with said route segment are uploaded to said remote database to create historical route information for a plurality of route segments;
[15f]	wherein said sensor data samples are received from at least one of an optical sensor, a position sensor, a speed sensor, a gyroscopic sensor, a revolutions-per-minute sensor, an accelerator pedal position sensor, a brake pedal position sensor, a battery state sensor, a tire pressure sensor, a proximity sensor, a weight sensor, an airflow sensor, and a gas flow sensor; and
[15g]	wherein said current conditions comprise at least one of: drag, wind resistance, tire resistance, a location relative to a destination, traffic patterns, an amount of light energy, a position of the sun, geographical information, an elevation of said vehicle, a grade of a road, a location of stoplights, a timing of stoplights, weather, a wind direction, a wind

	velocity, a temperature, air pressure, moisture, visibility, an amount of vibration, and traction.
Claim 16	
[16pre]	A method performed by a processor for creating a database of route conditions, comprising the steps of:
[16a]	(A) monitoring a plurality of sensors to generate sensor data during operation of a vehicle, wherein the plurality of sensors comprise at least one of an optical sensor, a position sensor, a speed sensor, a gyroscopic sensor, a revolutions-per-minute sensor, an accelerator pedal position sensor, a brake pedal position sensor, a battery state sensor, a tire pressure sensor, a proximity sensor, a weight sensor, an airflow sensor, and a gas flow sensor;
[16b]	(B) connecting to a telemetry system;
[16c]	(C) connecting to a remote database;
[16d]	(D) storing (i) said sensor data for different points in time along a route segment travelled by said vehicle and (ii) data from said telemetry system;
[16e]	(E) analyzing said sensor data to determine current conditions, wherein said current conditions comprise at least one of: drag, wind resistance, tire resistance, a location relative to a destination, traffic patterns, an amount of light energy, a position of the sun, geographical information, an elevation of said vehicle, a grade of a road, a location of stoplights, a timing of stoplights, weather, a wind direction, a wind velocity, a temperature, air pressure, moisture, visibility, an amount of vibration, and traction; and
[16f-1]	(F) associating said current conditions with said route segment, wherein
[16f-2]	(a) said route segment is identified according to said data from said telemetry system and

[16f-3]	(b) said current conditions associated with said route segment are uploaded to said remote database to create historical route information for a plurality of route segments.
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I. INTRODUCTION

Tesla Inc. (“Petitioner,” “Tesla”) petitions for *Inter Partes Review* (“IPR”) of claims 1-16 (“Challenged Claims”) of U.S. Patent No. 10,850,616 (“’616 patent”). Compelling evidence presented herein demonstrates at least a reasonable likelihood that Tesla will prevail with respect to at least one of the Challenged Claims.

II. REQUIREMENTS FOR IPR

A. Grounds for Standing

Tesla certifies that the ’616 patent is available for IPR. The petition is being filed within one year of service of a complaint against Tesla. TESLA-1009; TESLA-1053. Tesla is not barred or estopped from requesting this review of the Challenged Claims on the below-identified grounds.

B. Challenge and Relief Requested

Tesla requests an IPR of the Challenged Claims based on the grounds below, with supporting declaration testimony from Dr. Vassilios Morellas. TESLA-1003, ¶¶20-27.

Ground	Claims	Basis
1	1-16	§102/§103: Koebler650
2	1-16	§103: Koebler650, Kabel, Lagerstedt, Okano, Kirkwood, Breed

The ’616 patent was filed 9/1/2017 and includes a priority chain that includes several continuation applications (U.S. Pat. Nos. 11,065,977, 9,682,624,

8,972,162, 8,712,650) and a continuation-in-part application (U.S. Pa. No.

7,925,426) (“Koebler-Priority-Documents”).¹ But, as explained in §III.D, the ’616 patent is not entitled to the benefit of its priority claim because the Koebler-Priority-Documents do not provide sufficient written description of various claim features.

Reference	Date
Koebler650	10/29/2014
Kabel	1/13/2005
Lagerstedt	2/16/2007
Kirkwood	8/11/2005
Okano	10/6/2005
Breed	2/18/2009

III. THE ’616 PATENT

A. Description

The ’616 patent is focused on “managing the power consumption of an automotive vehicle” using a “probable optimal speed,” e.g., a speed that optimizes fuel efficiency along the route segment. TESLA-1001, 2:19-22. This involves calculating “an applied power for the vehicle engine” based on various

¹ Because the disclosure of U.S. Pat. No. 8,712,650 (“Koebler650”) is identical to or subsumes those of others in the Koebler-Priority-Documents, this Petition cites to Koebler650 as a representative document.

information. *Id.*, 2:22-28. The information may “come from data inputs (e.g., sensors, telemetries, etc.), memory, user commands, or it may be derived.” *Id.*, 2:28-31. Further, “[a]ny appropriate sensors, detectors or data inputs may be used,” e.g., “optical, mechanical, electrical, or magnetic sensors.” *Id.*, 21:65-22:3. For example, “polling logic” may be used to “coordinate continuous or periodic polling” of various sensor information. *See id.*, 3-31, 8:43-62, 8:23-30, 8:43-62. Sensor data information may also be received from “telemetry with off-board information sources such as databases and the like.” *Id.*, 8:29-35. This sensor data is processed to determine one or more current conditions to determine a probable optimal speed. TESLA-1001, 2:22-31, 3:43-66, 7:42-55; TESLA-1003, ¶¶30-35.

Importantly, the independent claims of the ’616 patent each require analyzing *sensor data samples*² to determine 21 enumerated *current conditions* (e.g., *moisture*) (“Enumerated Current Conditions”). The *sensor data samples* are collected from 13 enumerated *sensor[s]* (e.g., *optical sensor*) (“Enumerated Sensors”). *See* III.C, *infra*. Ten of the Enumerated Current Conditions were either never mentioned or properly described in any of the applications to which the ’616 patent claims priority. *See* III.D, *infra*.

B. Prosecution History

² Claim terms are bolded and italicized throughout.

During prosecution, the claims were rejected over U.S. Pat. No. 6,169,495 (“Koike”). TESLA-1002, 97-103, 126-132. Applicant amended the claims to recite that the “current conditions associated with said route segment are uploaded to said remote database to create historical route information (*id.*, 108-117), which then resulted in allowance (*id.*, 28-33). TESLA-1003, ¶¶36-39.

C. Claim Construction

All claim terms should be construed according to the *Phillips* standard. *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005); 37 C.F.R. § 42.100. Besides those discussed below, no constructions are necessary because “claim terms need only be construed to the extent necessary to resolve the controversy.” *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011); TESLA-1003, ¶¶40-41. Tesla reserves the right to respond to any constructions offered by iQar or adopted by the Board.

The Challenged Claims recite configurations that each reference ***sensor data samples/sensor data*** and also include wherein clauses ([1d], [15f], [16a]) requiring the ***sensor data samples/sensor data*** to be ***received from at least one of*** thirteen enumerated sensors. Through antecedent basis, these wherein clauses further limit the configurations to ***sensor data samples/sensor data*** from ***at least one of***³ the Enumerated Sensors. *See* TESLA-1003, ¶¶42-51.

³ *See* §III.D.6 for constructions of the ***at least one of...and*** phrase.

1. Relevant Limitations

Claim Term	Construction
Interface Configuration ([1a-1], [1a-2], [15c-1], [15-2])	“receiving sensor data samples from <i>at least one of</i> the sensors enumerated in [[1d]/[15f]] during operation of a vehicle”
Memory/Storage Device Configuration ([1b], [15d])	“storing sensor data samples, received via the interface, from <i>at least one</i> of the sensors enumerated in [[1d]/[15f]] for different points in time along a route segment travelled by said vehicle”
Processor Configuration ([1c-1], [15e-1])	“analyzing sensor data samples to determine <i>at least one of</i> the current conditions enumerated in [1e], where the sensor data samples are: (1) received via the interface during operation of a vehicle, (2) received from <i>at least one of</i> several sensors enumerated in [[1d]/[15f]], and (3) stored for different points in time along a route segment travelled by said vehicle”
Monitoring Step ([16a])	“monitoring a plurality of sensors that comprise <i>at least one of</i> the sensors enumerated in [16a]”

Analyzing Step ([16e])	“analyzing sensor data generated by monitoring at least one of the sensors enumerated in [16a] to determine at least one of the current conditions enumerated in [16e]”
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2. *At least One Of...And*

Claims 1, 15, and 16 include the phrase *at least one of . . . and* in two limitations: (1) *sensor data samples are received from at least one of 13 Enumerated Sensors ([1d], [15f], [16a]),⁴* and (2) *current conditions comprise at least one of 21 Enumerated Current Conditions ([1e], [15g], [16e]).⁵*

Enumerated Sensors	Enumerated Current Conditions
<i>optical sensor</i>	<i>drag</i>
<i>position sensor</i>	<i>wind resistance</i>
<i>speed sensor</i>	<i>tire resistance</i>
<i>gyroscopic sensor</i>	<i>location relative to a destination</i>
<i>revolutions-per-minute sensor</i>	<i>traffic patterns</i>

⁴ [16a] recites a *plurality of sensors comprise at least one of* the same Enumerated Sensors in [1d] and [15f].

⁵ The same interpretation of *at least one...and* should be applied to each of two claim limitations that recite the phrase.

<i>accelerator pedal position sensor</i>	<i>amount of light energy</i>
<i>brake pedal position sensor</i>	<i>position of the sun</i>
<i>battery state sensor</i>	<i>geographical information</i>
<i>tire pressure sensor</i>	<i>elevation of said vehicle</i>
<i>proximity sensor</i>	<i>grade of a road</i>
<i>weight sensor</i>	<i>location of stoplights</i>
<i>airflow sensor</i>	<i>timing of stoplights</i>
<i>gas flow sensor</i>	<i>weather</i>
	<i>wind direction</i>
	<i>wind velocity</i>
	<i>temperature</i>
	<i>air pressure</i>
	<i>moisture</i>
	<i>visibility</i>
	<i>amount of vibration</i>
	<i>traction</i>

According to the Federal Circuit, the “plain and ordinary meaning” of “at least one of...and” is a “conjunctive list,” but left open the possibility that its claim scope could be “enlarge[d] ... from its plain and ordinary meaning based on the

prosecution history.” *SuperGuide Corp. v. DirecTV Enterprises, Inc.*, 358 F.3d 870, 888 (Fed. Cir. 2004).⁶

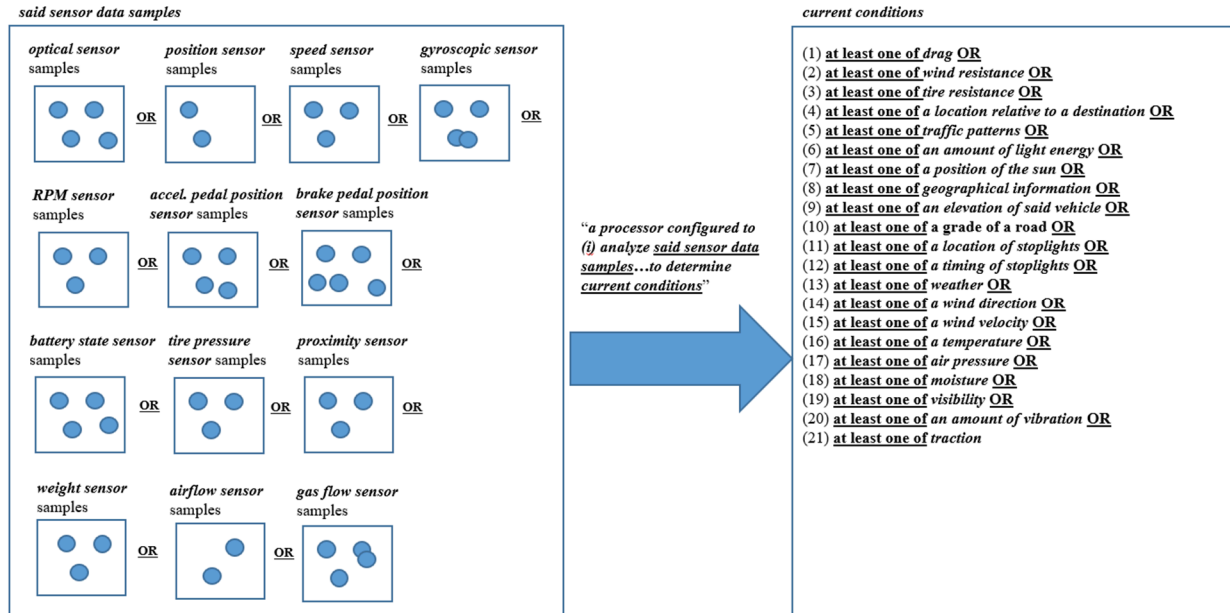
Here, under a *conjunctive read* of the ***at least one...and*** phrases, the relevant limitations would require all of the recited elements (e.g., thirteen sensors, twenty-one current conditions). Under a *disjunctive read*, the limitations would only require one of the recited elements. Further, because each of the independent claims include limitations interrelating ***current conditions*** and ***sensor data samples/sensor data***,⁷ the Enumerated Current Conditions are required to be determined from sensor data samples from the Enumerated Sensors. TESLA-1003, ¶¶52-54.

The disjunctive read is shown below:

⁶ *SuperGuide* has been distinguished where the patent’s claims, specification, or prosecution history necessitate a broader meaning. See, e.g., *Fujifilm Corp. v. Motorola Mobility LLC*, No. 12-CV-03587-WHO, 2015 WL 1265009, at *8 (N.D. Cal. Mar. 19, 2015).

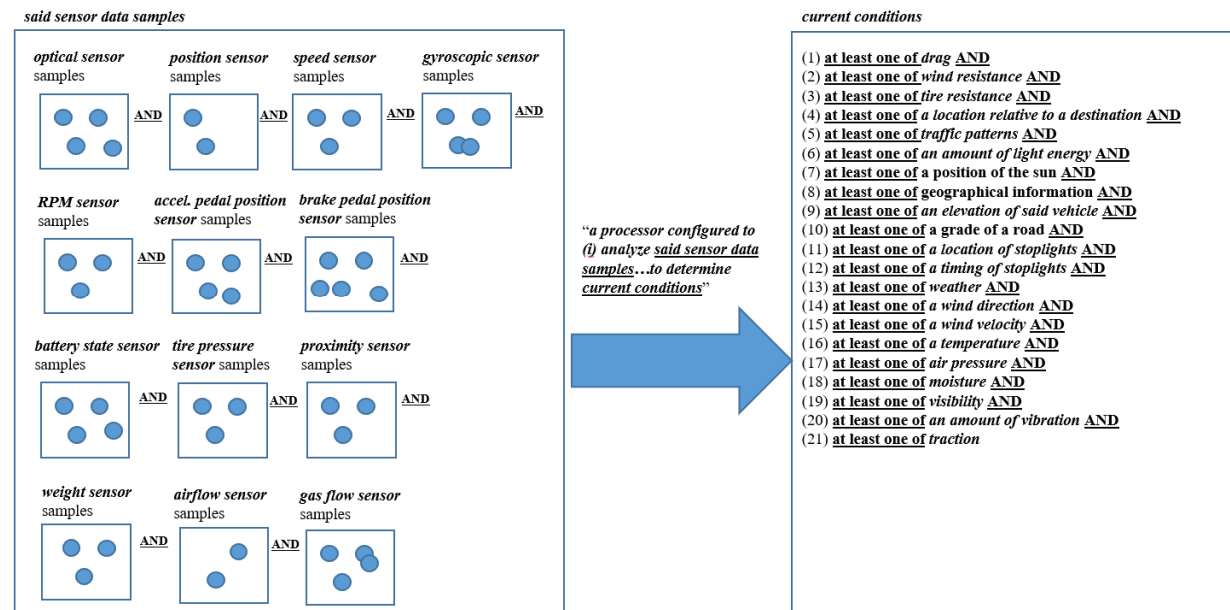
⁷ For claims 1 and 15, this limitation is the ***processor*** limitation ([1c-1], [15e-1]). For claim 16, the corresponding limitation is [16e], which recites the ***analyzing*** step.

DISJUNCTIVE READ



In contrast, the conjunctive read is shown below:

CONJUNCTIVE READ



In the counterpart litigation, iQar has not advanced any contention regarding the proper interpretation of *at least one of...and* phrase. Regardless, as explained in §VI, *infra*, because the asserted prior art satisfies the Challenged Claims under

both disjunctive and conjunctive reads, no formal claim construction is required.

TESLA-1003, ¶¶55-56.

D. Priority Date

Amongst the twenty-one Enumerated Current Conditions, Koebler650 fails to provide sufficient written description support for determination of the following ten *current conditions*.⁸ As shown below, the Enumerated Current Conditions therefore include 11 current conditions that are supported by Koebler650 (“Supported Current Conditions”) and 10 current conditions that are not supported by Koebler650 (“Unsupported Current Conditions”):

⁸ Koebler650 fails to provide sufficient written description support for the Challenged Claims regardless of whether a disjunctive or conjunctive read is applied to the limitations reciting the phrase *at least one...and*. See §III.C.1.

Supported Current Conditions	Unsupported Current Conditions
<i>drag</i>	<i>location of stoplights</i>
<i>wind resistance</i>	<i>timing of stoplights</i>
<i>tire resistance</i>	<i>weather</i>
<i>location relative to a destination</i>	<i>wind direction</i>
<i>traffic patterns</i>	<i>wind velocity</i>
<i>amount of light energy</i>	<i>temperature</i>
<i>position of the sun</i>	<i>air pressure</i>
<i>geographical information</i>	<i>moisture</i>
<i>elevation of said vehicle</i>	<i>amount of vibration</i>
<i>grade of a road</i>	<i>traction</i>
<i>visibility</i>	

Amongst the Unsupported Current Conditions, the lack of written description for *moisture*, *amount of vibration*, and *traction* is particularly egregious since Koebler650 fails to even mention these conditions, let alone how they are determined in the context of its vehicle system. As to the seven other conditions, even if iQar attempts to characterize the disclosure of Koebler650 as rendering their determination obvious, Koebler650 fails to disclose how these conditions are specifically determined based on *sensor data samples* collected by at least one of the Enumerated Sensors. TESLA-1003, ¶61.

The Unsupported Current Conditions were therefore introduced for the first time in the filing of U.S. App. No. 15/693,899 on 9/1/2017— several years after the earliest claimed priority date,⁹ and over three years after the 4/29/2014 publication date of Koebler650. Because a lack of sufficient written description support, the earliest priority date of the '616 patent is 9/1/2017. TESLA-1003, ¶¶57-61.

1. Legal Standard

Under 35 U.S.C. § 120, a proper priority claim to an earlier-filed application requires compliance the written description requirement of 35 U.S.C. § 112. *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1564, 1571-72 (Fed. Cir. 1997).¹⁰ This requires the specification to sufficiently convey “to a person of skill in the art that the patentee **had possession** of the claimed invention at the time of the application, i.e., that the patentee invented what is claimed.” *Lizardtech, Inc. v. Earth Res. Mapping Inc.*, 424 F.3d 1336, 1345 (Fed. Cir. 2005); *Purdue Pharma L.P. v. Faulding Inc.*, 230 F.3d 1320, 1323 (Fed. Circ. 2000). “Entitlement to a filing date extends only to the subject matter that is disclosed; **not** to that which is

⁹ Koebler650 was filed on 4/8/2011 as a continuation-in-part of U.S. Pat. No. 7,925,426 (filed 11/17/2005).

¹⁰ See IPR2014-00414, Pap. 11, 11-14 (PTAB Aug. 18, 2014)

obvious....” *Research Corp. Techs., Inc. v. Microsoft Corp.*, 627 F.3d 859, 870

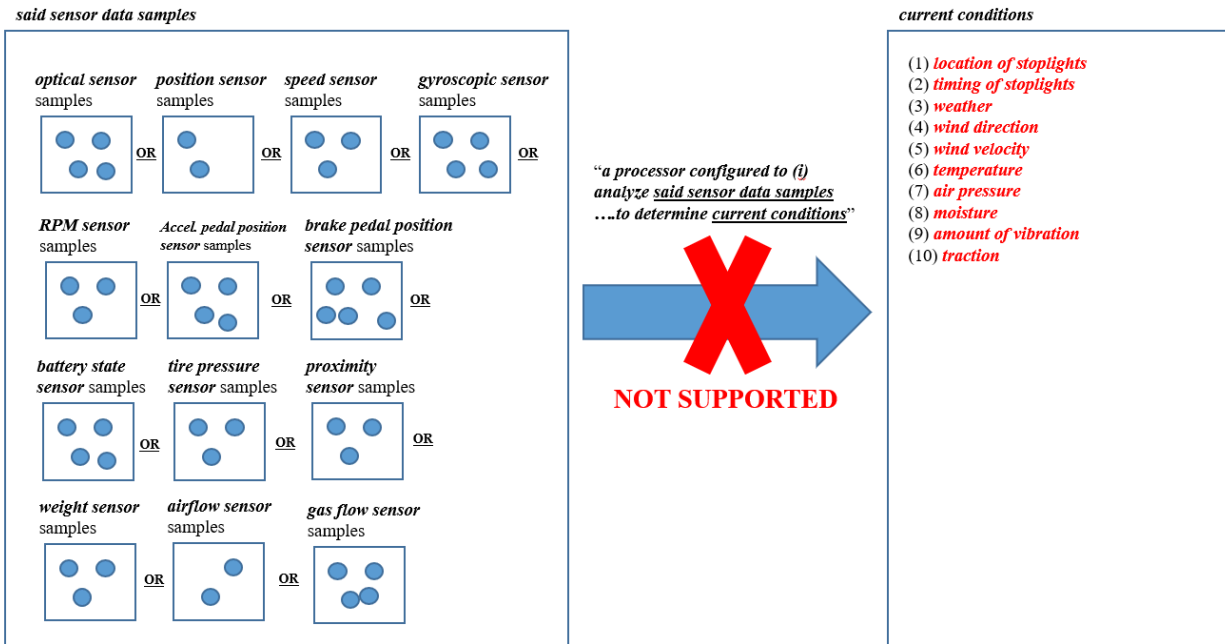
(Fed. Cir. 2010) (internal citations omitted).

The facts here are similar to prior cases where the Board has found challenged claims unpatentable based on the disclosure of a priority document failing to provide sufficient written description support. *See, e.g.*, IPR2019-00329, Pap. 49, 82, 79-82 (PTAB June 2, 2020); *see also* IPR2023-00319, Pap. 10, 10-14 (PTAB July 12, 2023) (instituting IPR based on a similar type of lack of written description analysis).

2. Analysis

Koebler650 fails to provide sufficient written description support for 10 of the 21 Enumerated Current Conditions. As discussed in §III.C, this requirement is based on antecedent basis and visualized below¹¹. TESLA-1003, ¶¶62-64.

¹¹ Similarly, as to claim 16, the ***current conditions*** are required to be determined from ***sensor data*** collected generated by ***a plurality of sensors*** comprised of several sensing elements enumerated in [16a]. Limitations [1d], [15f], and [16a] each list the same enumerated sensing elements, and thus, for simplicity, the analysis below addresses the requirements of ***current conditions*** in relation to ***sensor data samples*** (though the same principles apply to a ***plurality of sensors***).



(a) Enumerated Sensors

The table below shows written description support for the Enumerated Sensors in Koebler650 that generate *sensor data/sensor data samples* for determining the Enumerated Current Conditions. TESLA-1003, ¶¶65-78.

Enumerated Sensor	Supporting Disclosure
<i>Optical Sensor</i>	TESLA-1004, 4:19-21, 8:12-31, 21:29-62
<i>Position Sensor</i>	<i>Id.</i> , 7:32-44, 11:20-23, 13:41-45, 13:59-63, 14:1-23, 17:52-56, 21:29-62
<i>Speed Sensor</i>	<i>Id.</i> , 3:41-67, 4:1-18, 8:41-51, 11:64-12:3, 19:47-20:6, 21:29-62
<i>Gyroscopic Sensor</i>	<i>Id.</i> , 21:29-62

<i>Revolutions-Per-Minute Sensor</i>	<i>Id.</i> , 4:1-18, 8:12-31, 8:41-51, 21:29-62
<i>Accelerator Position Sensor</i>	<i>Id.</i> , 21:29-62
<i>Brake Pedal Position Sensor</i>	<i>Id.</i> , 21:29-62
<i>Battery State Sensor</i>	<i>Id.</i> , 8:41-51, 21:29-62
<i>Tire Pressure Sensor</i>	<i>Id.</i> , 22:29-62
<i>Proximity Sensor</i>	<i>Id.</i> , 7:32-44, 8:41-51, 22:29-62, 23:19-30
<i>Weight Sensor</i>	<i>Id.</i> , 4:1-18, 8:41-51, 8:61-64, 21:29-62
<i>Airflow Sensor</i>	<i>Id.</i> , 21:29-62
<i>Gas Flow Sensor</i>	<i>Id.</i> , 21:29-62

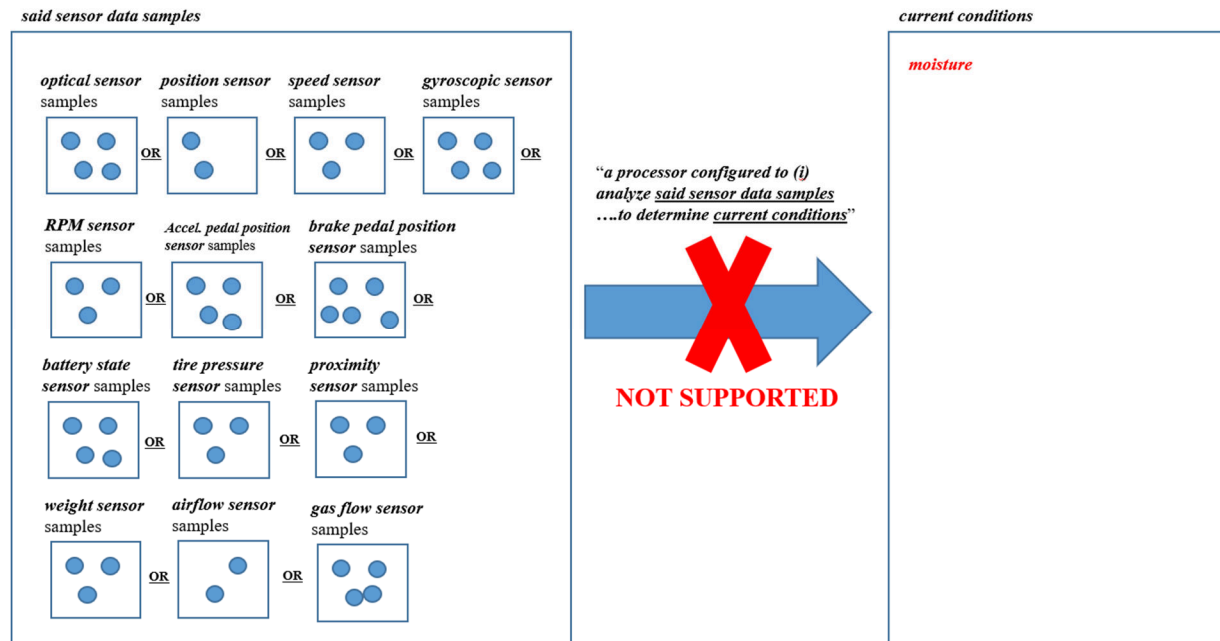
(b) Lack of Written Description Support

(i) ***Moisture***

Nothing in Koebler⁶⁵⁰ would have led a person of ordinary skill in the art (“POSITA”)¹² to discern that patentee had possession of a system that determines ***moisture*** in the manner required by the claims. TESLA-1003, ¶¶79-80. The word “moisture” is absent. TESLA-1004. Nor is there any disclosure of any synonym

¹² TESLA-1003, ¶¶28-29 (defining “POSITA”)

for “moisture,” much less any teaching or suggestion of using sensor data from the Enumerated Sensors to determine *moisture*. Written description support fails under even the most generous read (disjunctive read).



While the ‘616 patent describes configurations of a “power management system may communicate with a weather service,” it fails to describe the type of weather service, the type of information provided by the weather service, and how that information is received by the vehicle. APPLE-1001, 8:23-35.

There is also no inherent disclosure that data collected by the Enumerated Sensors is used to determine *moisture*. Moisture may be determined by analyzing sensor data samples received from a moisture sensor, but a moisture sensor is not one of the Enumerated Sensors. TESLA-1003, ¶81. Relevant disclosures of receiving weather information in Koebler650, e.g., from “weather sensors” or a

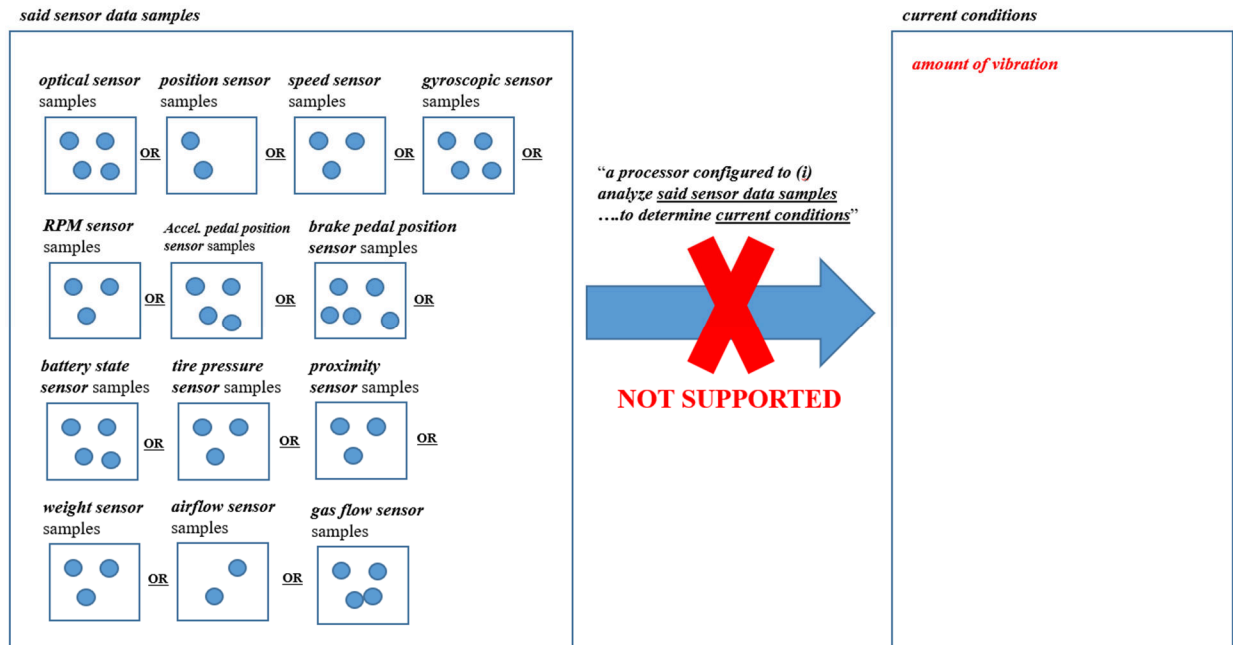
“weather service,” also do not inherently disclose determining *moisture* in the required manner. TESLA-1004, 8:12-24; TESLA-1003, ¶¶82-83 (citing TESLA-1010, 3:39-44.; TESLA-1018, 3:44-4:4; TESLA-1021, 1:31-39).¹³

(ii) *Amount of Vibration*

Nothing in Koebler650 would have led a POSITA to discern that patentee had possession of a system that determines *amount of vibration* in the manner required by the claims. TESLA-1003, ¶¶84-85. The word “vibration” is absent. TESLA-1004. Nor is there any disclosure of any synonym for “vibration,” much less any teaching or suggestion of using sensor data from the Enumerated Sensors to determine *amount of vibration*. Written description support fails even under the

¹³ Koebler650’s failure in disclosing determination of *moisture* demonstrates lack of possession of at least [1c-1] and [1c-3]. Koebler650’s disclosure of a weather service is also insufficient for possession of determining a current moisture condition from obtained sensor data such that the current moisture conditions are associated with a route segment (or are uploaded to a remote database). TESLA-1003, ¶83. This same deficiency is true for other current conditions, such as *amount of vibration* and *traction*.

most generous read (disjunctive read).

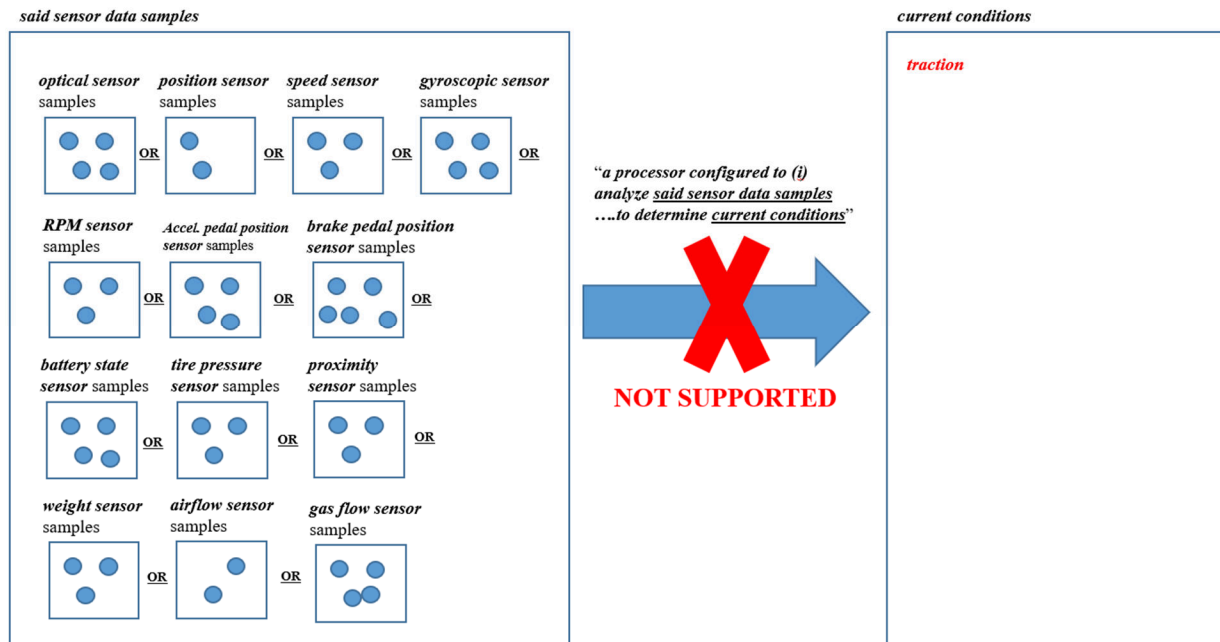


There is also no inherent disclosure that data collected by the Enumerated Sensors are used to determine *amount of vibration*. For example, an amount of vibration may be determined by analyzing sensor data samples received from a vibration sensor and/or accelerometer (or sensor data generated by a vibration sensor and/or an accelerometer), which are not one of the Enumerated Sensors. TESLA-1003, ¶86.

(iii) *Traction*

Nothing in Koebler650 would have led a POSITA to discern that patentee had possession of a system that determines *traction* in the manner required by the claims. TESLA-1003, ¶¶87-88. The word "traction" is absent. TESLA-1004. Nor is there any disclosure of any synonym for "traction," much less any teaching

or suggestion of using sensor data from the Enumerated Sensors to determine ***traction***. Written description support fails under even the most generous read (disjunctive read).

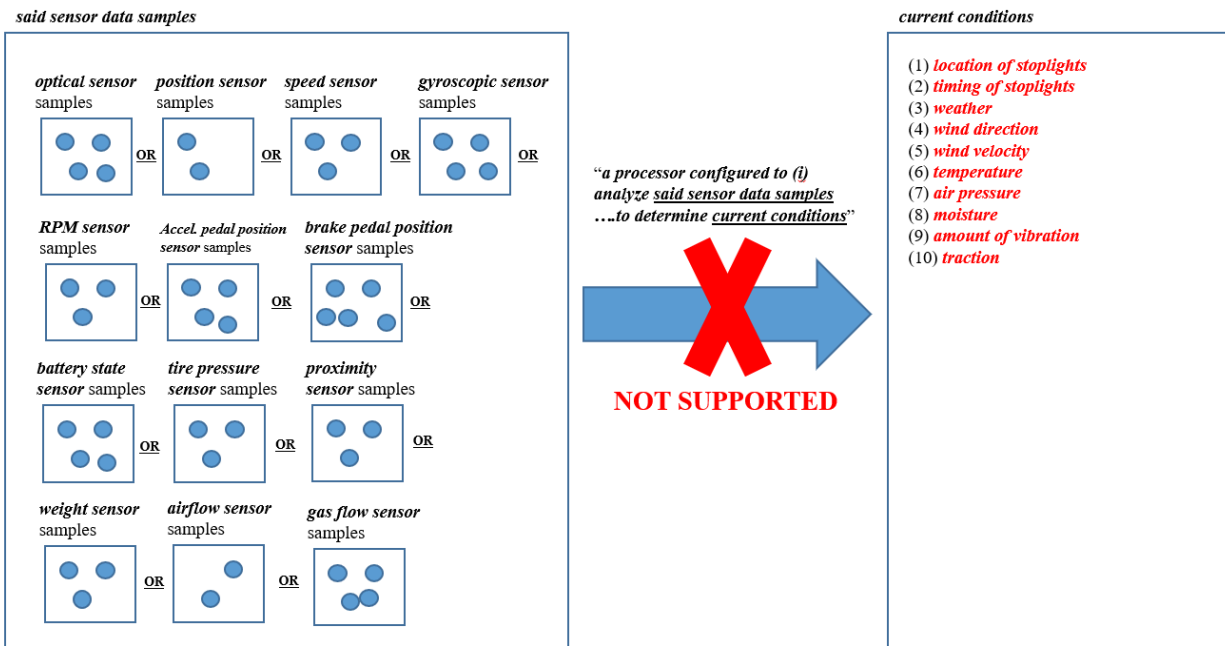


There is also no inherent disclosure that data collected by the Enumerated Sensors are used to determine ***traction***. For example, traction may be determined by analyzing sensor data samples received from a friction sensor, which is not one of the Enumerated Sensors. TESLA-1003, ¶89.

(iv) Other Unsupported Current Conditions

Koebler650 also fails to provide sufficient written description of analyzing data collected by the Enumerated Sensors to determine ***temperature, weather, wind direction, wind velocity, air pressure, location of stoplights, and timing of stoplights***. TESLA-1003, ¶90. There is also no teaching or suggestion that data

collected by the Enumerated Sensors are used to determine these *current conditions*. Written description support fails under even the most generous read (disjunctive read).



There is also no inherent disclosure that data collected by the Enumerated Sensors are used to determine *temperature, weather, wind direction, wind velocity, air pressure, location of stoplights, and timing of stoplights*. TESLA-1003, ¶91.

Rather, as discussed in §IV.B, the detection of these current conditions are obvious over other prior art.

IV. THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. Ground 1: Claims 1-16 are Anticipated And/or Rendered Obvious By Koebler650

1. Koebler650

Koebler650 and the '616 patent share the same specification. In

Koebler650, a vehicle has a “power management device” that uses “historical route information” to determine a “probable optimal speed” for a “route segment,” e.g., a traveling vehicle speed that optimizes fuel efficiency along the route segment.

TESLA-1004, 16:65-17:17, 17:30-18:56, FIG. 5. In determining the probable optimal speed, the power management device accesses database records with historical route information for a particular route segment that further specify *conditions* under which those records were generated during past trips. TESLA-1004, FIG. 5 (steps 511, 513); *see also id.*, 8:19-24, 16:66-17:17, 18:51-56, 21:11-18, 22:11-18, 23:62- 24:5; TESLA-1003, ¶92.

Further, “the more closely identifying information in the record matches the information about the current route (e.g., driver, weather conditions, traffic, etc.), the higher the setting of the reliability estimate [assigned to the determined probable optimal speed],” and “[i]n one variation, only the previous trips along the segment under approximately similar conditions are considered (e.g., similar cargo weight, headwinds, etc.).” TESLA-1004, 17:46-49, 18:51-56, FIG. 5 (steps 511, 513). Koebler650 thereby contemplates embodiments where the process for identifying a matching record for a route segment involves identifying a record that has *conditions* that are the same as or similar to the *current conditions* detected for the current trip. TESLA-1003, ¶93.

A number of operations facilitate the aforementioned matching process. To enable such a matching process, the vehicle processes sensor data to **determine the current conditions** for the segment on which it is currently traveling in order to identify a record that most closely matches the conditions (e.g., “driver, weather conditions, traffic, etc.” and “cargo weight, headwinds”) of the current trip. TESLA-1004, 18:51-56, 17:46-49, 19:52-54, 19:61-65, 20:39-39-50, FIG. 6 (element 607); TESLA-1003, ¶94. A POSITA would have understood that, in some variations where the historical database is remote from the vehicle, the vehicle would upload this **current condition** data for storage in records of the remote historical record database for later access to determine probable optimal speeds for future trips. TESLA-1004, 18:51-56; *see id.*, 16:66-17:17 (“The memory may comprise **a database**, ... In some variations, a power management system communicates with a memory or other data structure that is located **remotely**. The record of historical route information may include...”); *see also id.*, 8:19-24, 23:62- 24:5, 21:11-18, 22:11-18.

In these variations, the power management device of the vehicle determines a probable optimal speed for the vehicle to travel over a given route segment by using, for example, the process of Figure 5, which includes identifying a corresponding record in the historical database for that route segment having conditions that most closely match the **current conditions** detected by the vehicle

(by analyzing sensor data) for the current trip over that segment. TESLA-1004, 18:51-56, 3:63-67, 21:29-51, 8:14-18, 17:6-10, 17:46-18:14, 18:15-19:36, FIG. 5 (steps 511, 513); TESLA-1003, ¶95. This record will provide a speed/energy used in the past to travel that segment under those conditions and from which a probable optimal speed/energy can be determined for traveling over that segment during the current trip. *Id.*

2. Analysis

(a) Claim 1

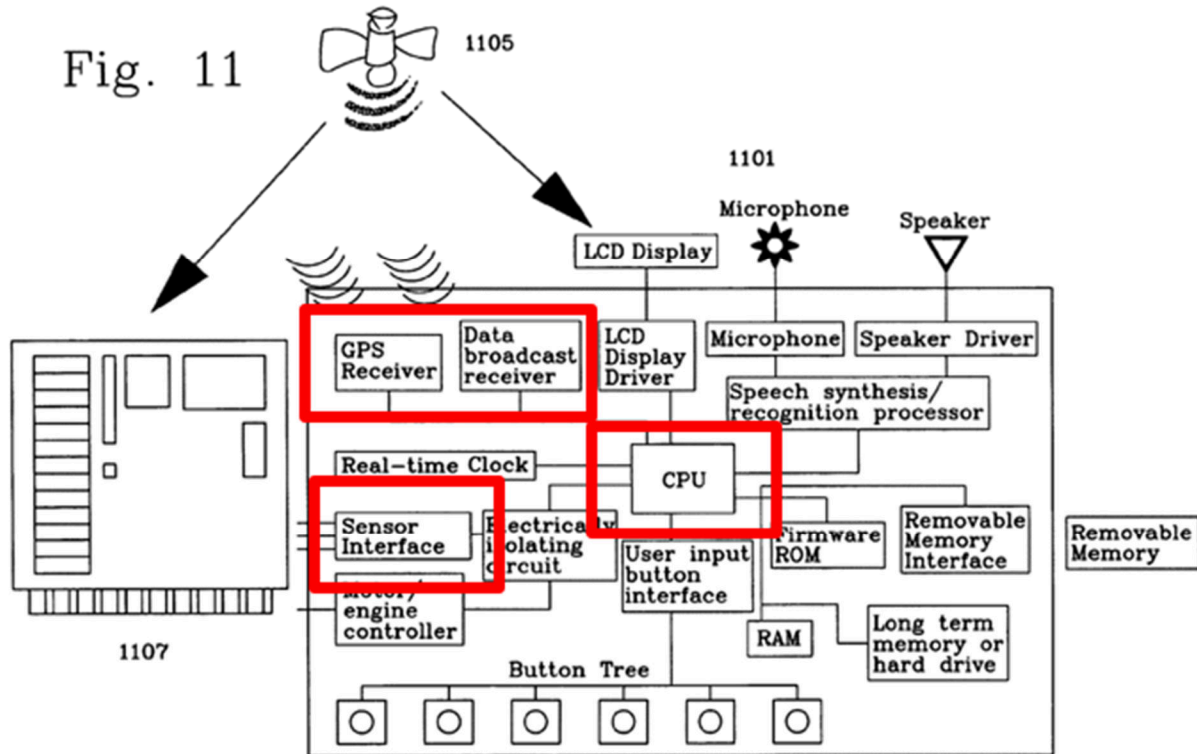
[1pre]

To the extent the preamble is limiting, Koebler650 discloses 1[pre] because a “power management device” (*apparatus*) includes “power management logic” for calculating “an applied power for [a] vehicle engine based on information provided from the external environment of the vehicle.” TESLA-1004, 2:18-25, 10:4-7, 16:64-65, 3:30-40. The provided information includes “data from inputs (e.g., sensors, telemetries, etc.).” TESLA-1004, 2:27-30; TESLA-1003, ¶96.

[1a-1]

A CPU (below) of a “power management device” uses “control logic for acquiring information inputs” from a sensor interface and a GPS receiver or telemetry data receiver (also referred to a data broadcast receiver). TESLA-1004, 5:64-67, 19:38-65, 20:39-50, 21:29-62, 23:40-61, FIG. 6 (element 607), FIG. 10 (elements 1005, 1001, 1007, 1009). The CPU also executes control logic functions

by receiving sensor data samples during operation of a vehicle and data from a telemetry system. *Id.*; TESLA-1003, ¶97.



TESLA-1004, FIG. 11 (annotated)

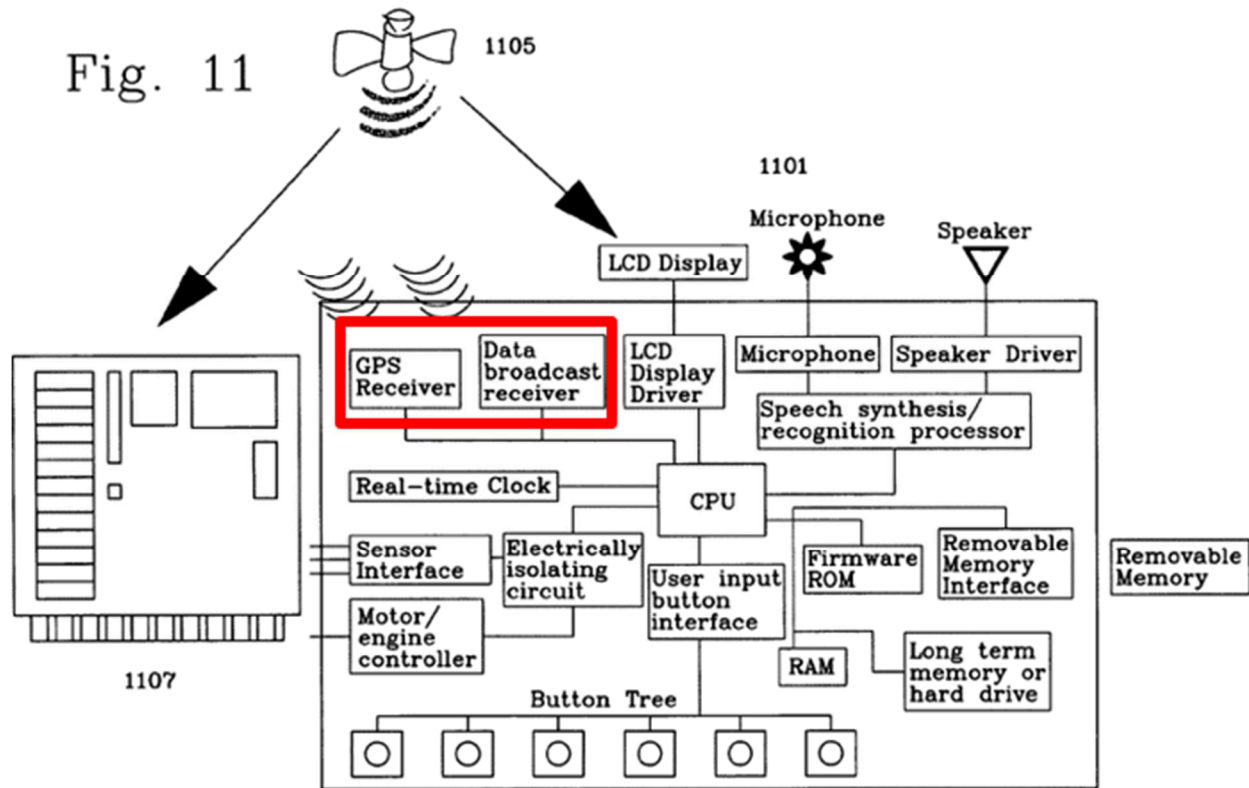
The control logic includes “polling logic for acquiring information inputs.” TESLA-1004, 19:50-52. The polling logic “continuously poll[s] data from external environmental sensors (e.g., detecting location, direction, elevation, traffic, weather, etc.) and operational status detectors (e.g., detecting vehicle speed, wheel velocity, motor speed etc.).” *Id.*, 19:61-65; *see id.*, 19:38-54. The polling logic (and/or compute elements used to implement the polling logic) thereby acts as an *interface* by being configured to receive sensor data. TESLA-1003, ¶98.

As to the interface configuration for *receiv[ing] (i) sensor data samples during operation of a vehicle*, the polling logic obtains sensor data from various sensors, e.g., a “vehicle’s current speed” from a speed sensor (speedometer), “RPM” data of the vehicle, “pressure applied” to an accelerator/brake, “tire pressure” from a tire pressure sensor, or data from optical sensors to determine “visibility.” TESLA-1004, 8:52-64, 21:29-62; TESLA-1003, ¶99. Moreover, the polling logic monitors, polls, or obtains sensor data during operation of the vehicle. Examples include “recording decisions made at intersections” and “recording optimal speed or energy used to traverse a segment or other portion of a route.” *Id.*, 19:66-20:6. Thus, the polling logic (and/or compute elements used to implement the polling logic) acts as an *interface* by being configured to receive *sensor data samples* from at least one of the elements identified in [1d] (e.g., *position sensor, speed sensor, tire pressure sensor, optical sensor*), thereby satisfying the construction discussed in §III.C.1. TESLA-1003, ¶99. Koebler650 also discloses each of the other sensors identified in [1d]. *See* §III.D.2(a).

As to the interface configuration for *receiv[ing]...(ii) data from a telemetry system*, Koebler650 teaches a “telemetry data receiver 1009.” TESLA-1004, 23:50-57, 24:6-7 (“FIG. 11 shows a schematic illustrating the use of telemetry by the motor control system.”), FIG. 11 (data broadcast receiver) (reproduced below), FIG. 10 (element 1009). A POSITA would have understood that a “telemetry data

receiver 1009” has an *interface* that *receives data from a telemetry system*.

TESLA-1003, ¶100.



TESLA-1004, FIG. 11 (annotated)

In some implementations, *data from said telemetry system* comprises a Global Positioning System (GPS) signal, e.g., wireless communications regarding a vehicle’s locations sent by a satellite that are obtained by a GPS receiver.

TESLA-1004, 2:63-3:4, 7:64-8:1, 8:19-22, 8:41-67, 11:45-57, 13:41-45, 17:52-58, 23:9-15, 23:25-30, 23:40-57, 23:62-65, 24:6-24, 24:32-39, 26:10-14, 27:27-30, 28:29-32, FIG. 3B, 307, FIGS. 10, 11. For example, “polling logic” provides “continuous or periodic polling of Global Position System (GPS) information (e.g.,

giving information on the vehicle's current location, current elevation, upcoming elevations, upcoming terrain, vehicle's destination, etc. (*receiv[ing]... data from a telemetry system*). *Id.*, 21:29-39; TESLA-1003, ¶101.

[1a-2]

A “power management device” accesses “a record of historical route information” as part of determining a probable optimal speed for a vehicle to travel over a route segment. *See* §IV.A.1; TESLA-1004, 5:50-52, 8:5-11, 8:19-24, 10:15-19, 12:48-50, 13:38-40, 16:65-17:17, 17:50-58, 17:62-18:14, 19:54-57, 21:11-18, 22:11-19, 23:40-60, 23:66-24:14, FIG. 3B (element 309), FIG. 6 (element 605), FIG. 11 (elements 1101, which comprises CPU executing control logic, and element 1107). The historical route information may be held in a memory comprising “a database, register, or the like.” TESLA-1004, 17:3-4, 23:62-24:2. In some implementations, the “power management system communicates with a memory or other data structure that is located remotely” and the connection can be made using telemetry, e.g., using an interface of “telemetry data receiver 1009” (*interface configured to connect to a remote database*). TESLA-1004, 8:19-24, 17:3-6, 23:50-57. Further, in some implementations, historical route information from multiple vehicles may be “uploaded to, e.g., a centralized server where optimized speeds for [road] segments could be calculated.” *Id.*, 26:14-37; TESLA-1003, ¶102. A POSITA would have found it

obvious that such a centralized server could store such information in a database, given that Koebler⁶⁵⁰ discloses storage of historical route information in database records. *See* §IV.A.1.

[1b]

Storage configurations involve polled data (including sensor data and GPS signal data) being stored by the “polling logic” in memory (*memory*). TESLA-104, 19:52-57. As to the storage configuration for *stor[ing]...said sensor data samples for different points in time along a route segment travelled by said vehicle*, “polling logic” stores “poll data from sensors, inputs, memories, or any other source of information data” (including *sensor data samples*) in memory. TESLA-1004, 19:52-54, 19:61-65, 20:39-39-50, FIG. 6 (element 607). Further, records of “historical route information” that include “information[] from information inputs” are stored in association with “segments of a route.” TESLA-1004, 17:6-17. The “information inputs” (also *sensor data samples*) include information from sensors, e.g., an optical sensor, a tire pressure sensor. TESLA-1004, 21:29-61, 8:8-19, 8:19-24, 18:51-56, 19:61-65; TESLA-1003, ¶103.

Further, because the polled data stored by “polling logic” includes data from at least one of the elements identified in [1d] (e.g., *optical sensor, tire pressure sensor*) and are associated with different points along a route segment traveled by said vehicle (*for different points in time along a route segment*), such a

configuration satisfies the construction discussed in §III.C.2. TESLA-1004, 17:6-17, 21:29-61; TESLA-1003, ¶104. Koebler650 also discloses each of the other sensing elements identified in [1d]. *See* §III.D.2(a).

As to the storage configuration for *stor[ing]...said data from said telemetry system*, data polled by “polling logic” includes data representing GPS signals sent by satellites (*said data from said telemetry system*). TESLA-1004, 21:29-62, 8:19-24, 19:61-65. As previously noted, GPS signal data received from a satellite represents data from a *telemetry system* because GPS is a system that transmits measurement data from a remote source. TESLA-1004, 8:19-24; TESLA-1003, ¶105.

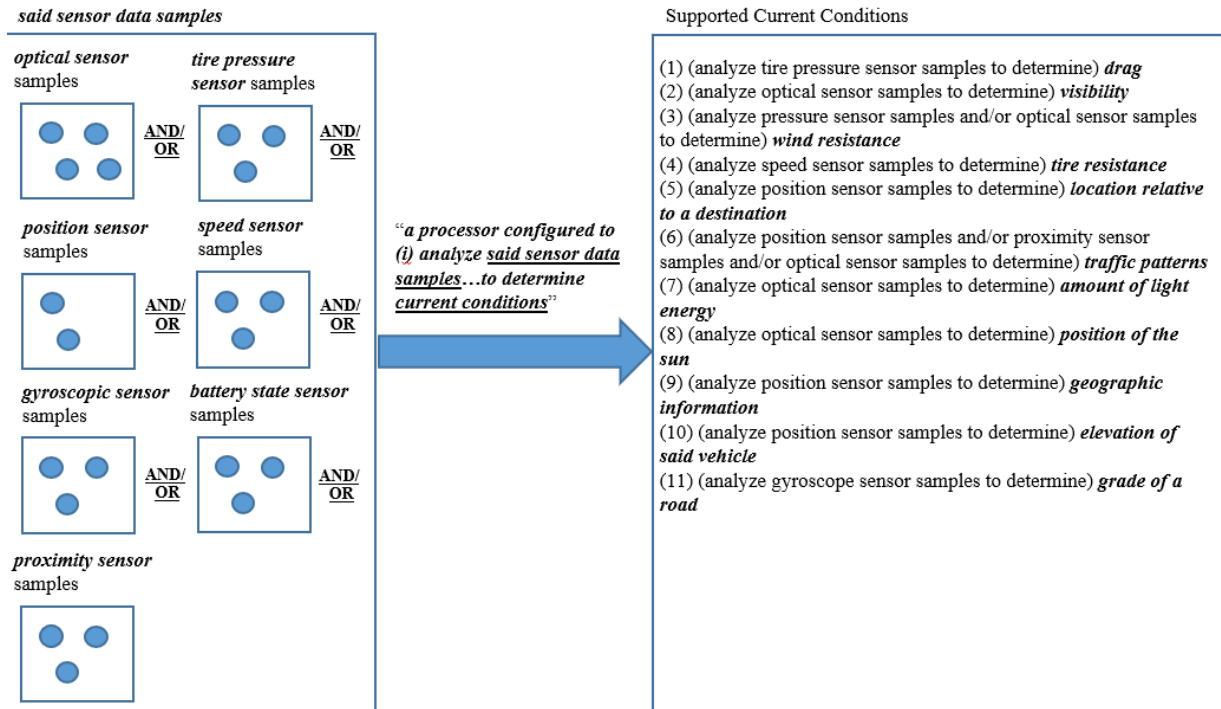
To the extent that Koebler650 is deemed insufficient to disclose the storage configurations of [1b], Koebler650 renders them obvious. A POSITA would have found it obvious that sensor data is polled by Koebler650’s “power management device” and stored in a memory for each segment. TESLA-1003, ¶106. Indeed, historical records include sensor information and are generated for each segment of a route. TESLA-1004, 17:10-14, 10:15-17; 18:51-56 (“Generally, ... the more closely the identifying information in the record matches the information about the current route (e.g., driver, weather conditions, traffic, etc.), the higher the reliability estimate.”). Multiple historical records may also be generated for each segment. *Id.* Thus, where multiple records of historical route information are

stored for each route segment, each record includes “information input” (e.g., optical sensor data, tire pressure sensor data, and GPS data) from sensor data. TESLA-1004, 17:6-17, 18:51-56, 21:29-61, 23:62-24:5. This results in sensor data samples being stored for different points along the route. *Id.*; *see* §IV.A.1.

[1c-1]

Koebler650 discloses [1c-1] through various configurations, such as “power management logic (*processor*), which derives “information about the external environment of the vehicle.” TESLA-1004, 3:63-67, 18:51-56, 23:62-24:5. As to the processor configuration for *analyz[ing] said sensor data samples stored in said memory to determine current conditions*, Koebler650 generally contemplates analyzing sensor data samples to determine the Supported Current Conditions. TESLA-1004, 3:63-67, 18:51-56, 23:62-24:5; *see* §III.D (identifying Supported Current Conditions). For example, sensor data samples may be obtained from an *optical sensor* and *tire pressure sensor* and analyzed to determine *drag* and *visibility (determin[ing] current conditions)*. TESLA-1004, 21:29-62; *see id.*, 8:14-18; TESLA-1003, ¶107; *see* §III.D.2(a). More examples of the Supported Current Conditions that are determined by *analyz[ing] ...said sensor data samples* are listed in the figure below. The determination of any one of these conditions satisfies this limitation under a disjunctive read of [1d] and [1e] as discussed in §III.C.3.

DISJUNCTIVE READ



As to the processor configuration for *associating said current conditions with the route segment*, sensor data is stored in association with a vehicle route, e.g., in a "record of historical route information." TESLA-1004, 17:6-10; 18:51-56, 23:62-24:5; *see* §IV.A.1. For example, information is stored in a record such that the Supported Current Conditions (e.g., *visibility* and *drag*) (*said current conditions*) are *associated with* a route segment (*said route segment*). TESLA-1004, 8:14-18, 16:66:17:17, 18:51-56, 21:29-51, 23:62-24:5; TESLA-1003, ¶113. The record includes "information about the time of day, weather conditions, road conditions, driver, etc." (e.g., current conditions information), "route information (e.g., starting location and any intermediate locations" (e.g., route segment information), as well as other types of information, such as "information about the

actual or optimized velocities,” “information[] from information inputs,” among others. *Id.*, 16:66-17:17, 22:8-19; TESLA-1003, ¶108.

Given the various types of information stored in records of “historical route information,” it would have been obvious that the information stored in the records, in some instances, includes current condition information (e.g., relating to **visibility** and **drag**). TESLA-1003, ¶109. This is because current condition information is related and derived from external environmental information inputs, which are similarly described as being represented in the “historical route information.” TESLA-1004, 16:66-17:17 (“The record of historical route information may include any information from information inputs...”), 22:8-19. The current condition information would have also been understood to be stored in the records in association with route segment information. *Id.* 8:14-18, 16:66:17:17, 18:51-56, 21:29-51, 23:62-24:5. Thus, in these instances, “power management logic” (**processor**) is configured to associate the Supported Current Conditions (e.g., **visibility** and **drag**) (**said current conditions**) with a route segment (**said route segment**) in records of “historical route information.” *Id.*; TESLA-1003, ¶¶109-110; *see* §IV.A.2(a)(fn 13).

[1c-2]

Information about “current location of the vehicle” can be detected, or input via “telemetry” (**said telemetry system**). TESLA-1004, 3:41-67, 17:59-19:36. The

information input via telemetry includes GPS signal data received from a satellite and may be used to identify a route segment. TESLA-1004, FIG. 5 (steps 501, 503), 17:50-58 (“...FIG. 5 shows that the location of the vehicle is periodically determined (e.g., via GPS, manual entry, etc.) and this location can then be used to determine a historical segment corresponding to the current location...”), 7:64-8:1, 23:40-57, 23:62-65, 24:6-24, 8:41-67, FIGS. 10, 11. Specifically, “polling logic may coordinate continuous or periodic polling of ... (GPS) information” that gives the vehicle’s “current location, current elevations, upcoming elevations, upcoming terrain, and vehicle’s destination.” TESLA-1004, 21:29-40. This GPS signal data is data from a telemetry system because, for example, in some implementations, wireless communications regarding a vehicle’s locations are obtained from a satellite 1105 of Figure 11 using a GPS receiver. TESLA-1004, 24:6-24, 8:41-67, FIGS. 10, 11; TESLA-1003, ¶111.

Moreover, a “record of historical route information” can include “information inputs” and derived conditions based on those information inputs “for ... segments of a route.” TESLA-1004, 16:66-17:17. The power management device has access to map data of the vehicle’s navigation system that includes route segments. TESLA-1004, 11:39-40. Likewise, generation of a record of historical route information for a particular route segment would have involved identifying a vehicle’s location (*said route segment is identified*). This can be

accomplished using GPS signals received from a satellite or other telemetry-based system and using that location to select the route segment with which the “information input” or derived condition is to be associated therewith (*said route segment is identified according to said data from said telemetry system*).

TESLA-1004, 17:50-58; 3:41-67; 8:41-67, 18:51-56, 21:29-40, 24:6-24, FIG. 5 (steps 501, 503), FIGS. 10, 11; TESLA-1003, ¶112.

[1c-3]

As discussed for [1c-1] and in §IV.A.1, records of “historical route information” are configured to store various types of information. In some implementations, it would have been understood to store information, such that the Supported Current Conditions (e.g., *visibility* and *drag*) (*said current conditions*) are *associated with* a route segment (*said route segment*). TESLA-1004, 8:14-18, 16:66:17:17, 18:51-56, 21:29-51, 23:62-24:5; TESLA-1003, ¶113; *see* §IV.A.2(a)(fn 13).

Further, records of “historical route information” may be stored in a variety of storage configurations, including within a “memory or a data structure” of the “power management device,” and/or within “a memory or other data structure that is located remotely” from the power management device, such as a remote database. TESLA-1004, 16:66:17:17 (“The memory may comprise a database, ... In some variations, a power management system communicates with a memory or

other data structure that is located remotely. The record of historical route information may include...”). Thus, Koebler650 teaches information specified within a record of historical route information (*said current conditions associated with said route segment*) being *uploaded to a remote database*, which creates records (*create historical route information*) for storage in the remote database. Because these records are stored in association with particular route segments and would have been understood to be accumulated over time for different routes with different route segments, Koebler650 teaches the uploading of current conditions to create historical route information *for a plurality of route segments*. TESLA-1004, 18:51-56, 16:66-17:17, 8:19-24, 23:62- 24:5, 21:11-18, 22:11-18 (“the memory may comprise a database for holding any of the route information (including historical route information) about the segments traveled, ...external environmental conditions while driving the route...”), FIG. 5 (steps 511, 513); TESLA-1003, ¶114.

Koebler650 further discloses variations of its system where records are “uploaded to, e.g., a centralized server.” *Id.*, 26:14-37. In this example, a POSITA would have understood that the “centralized server” is associated with “a memory or other data structure that is located remotely” from the power management device. *Id.*, 16:66:17:17, 26:14-37; TESLA-1003, ¶115. A POSITA would have found it obvious that such a centralized server could store such information in a

database, given that Koebler650 discloses storage of historical route information in database records. *See* §IV.A.1 Thus, in this example, information specified within a record of historical route information (*said current conditions associated with said route segment*) is *uploaded* to a centralized server, which creates records (*create historical route information*) in an associated remote database (*said remote database*). TESLA-1004, 16:66-17:6. Further, because the remote database associated with the centralized server may store information of multiple vehicles (e.g., “vehicles travelling overlapping route segments”), the remote database may store records for *a plurality of route segments*. *Id.*, 26:22-37.

[1d]

As discussed in §III.C.6, the *at least one...and* phrase within [1d] may be interpreted under conjunctive or disjunctive reads. Under a disjunctive read, [1d] is satisfied by receipt of *sensor data samples* from one of the Enumerated Sensors.

Koebler650 discloses [1d] under a disjunctive read.¹⁴ For example, “polling logic” is used to “poll data from sensors, inputs, memories, or any other source of

¹⁴ Ground 1A applies a disjunctive read of the *at least one...and* phrase, while Ground 1B addresses the conjunctive read. As explained in §IV.B.3, Koebler650 also satisfies [1d] under a conjunctive read, and thus, the disclosures of Koebler650 referenced in that section are incorporated by reference.

information data.” TESLA-1004, 18:51-56, 19:52-54, 19:61-65, 19:52-54, 20:39-39-50, FIG. 6 (element 607). Sensors that are polled for information input using “polling logic” include an “optical” sensor and a “tire pressure” sensor. TESLA-1004, 21:29-62; *see id.*, 19:61-65, 8:8-19. This satisfies the disjunctive read of [1d] because *sensor data samples* are received from various sensors (e.g., the *optical sensor* and the *tire pressure sensor*), as shown in [1c-1] with respect to the Supported Current Conditions. TESLA-1003, ¶¶116-117. Koebler650 also discloses each of the other Enumerated Sensors.¹⁵ *See* §III.D.2(a).

[1e]

As discussed in §III.C.6, the *at least one...and* phrase within [1e] may be interpreted under conjunctive or disjunctive reads. Under a disjunctive read, [1e] is satisfied by determination of one of twenty-one current conditions based on analysis of *sensor data samples* from one of the thirteen Enumerated Sensors.

Koebler650 discloses [1e] under a disjunctive read. For example, “power management logic” derives “information about the external environment of the vehicle” based on other information. TESLA-1004, 3:63-67; TESLA-1003, ¶¶118-

¹⁵ The Enumerated Sensors are also recited in claims 15 ([15f]) and 16 ([16a]).

Koebler650’s disclosure of several examples of sensors (*See* §III.D.2(a)) are incorporated by reference to mappings to each of these claim limitations.

119. As described in [1c-1], each of the Supported Current Conditions is determined by analyzing sensor data samples received from one or more of the Enumerated Sensors. For example, Koebler650 discloses determining a current drag condition by “calculating the drag force due to rolling resistance” by processing sensor data samples from a tire pressure sensor and determining a current visibility condition from sensor data samples from an optical sensor. TESLA-1004, 21:29-51; 8:14-18. This satisfies the disjunctive read of [1e] because *current conditions* (comprised of *drag* and *visibility*) are determined by “power management logic” (*processor*) based on analyzing data received from an optical sensor (*sensor data samples* received from *optical sensor*). TESLA-1004, 21:29-51, 19:61-65, 8:8-19. Koebler650 also discloses determining the other Supported Current Conditions (i.e., *drag*, *wind resistance*, *tire resistance*, *location relative to a destination*, *traffic patterns*, *amount of light energy*, *position of the sun*, *geographic information*, *elevation of said vehicle*, *grade of a road*, and *visibility*) based on analysis of sensor data samples from at least one of the Enumerated Sensors. See §IV.B.3(a)(i).¹⁶

¹⁶ The *current conditions* feature is relevant to several limitations of independent claim 1 ([1d], [1e]), claim 15 ([15e-1], [15e-3]), and claim 16 ([16a], [16e]), and

(b) Claim 2

As discussed for [1c-1] and [1c-3], a determined current condition (e.g., velocity, drag, visibility) is associated with a route segment. *See* §IV.A.1. A remote database where the current conditions associated with said route segment are stored (as discussed for [1c-1] and [1c-3]) includes other historical records related to the driver’s driving habit. TESLA-1004, 17:6-24, 18:51-56, 23:62-24:5. The derived current condition for each record of historical route information is also a ***previously stored condition*** associated with a route segment by the record of “historical route information.” TESLA-1004, 17:6-17 (“Multiple records for the same route segment (or segments of a route) may be included as part of the record of historical information.”). *Id.*, 22:8-19. The ***current condition associated with a route segment*** (e.g., drag associated with a route segment or visibility associated with a route segment) is associated with these other historical records of the driver because they are stored in the same remote database for the same driver. *Id.*, 17:6-17, 18:51-56; 26:14-37; TESLA-1003, ¶¶120-121; *see* §IV.A.2(a)(fn 13).

(c) Claim 3

See [1c-1], [1c-3], [2]; *see* §IV.A.1; TESLA-1004, 18:51-56, 23:62-24:5,

claims 2, 3, 6-8, and 14. Koebler650’s disclosure of several examples of ***current conditions*** are incorporated by reference to mappings to each of these claims.

26:14-37; TESLA-1003, ¶¶122-123; *see also* §IV.A.2(a)(fn 13).

(d) Claim 4

See [1c-1], [1c-2] (discussing Koebler650’s disclosure of receiving GPS signal data from a remote satellite); *see also* §IV.A.1; TESLA-1004, 2:63-3:4, 7:64-8:1, 8:41-67, 11:45-57, 13:41-45, 17:52-58, 23:9-15, 23:25-30, 23:40-57, 23:62-65, 24:6-24, 24:32-39, 26:10-14, 27:27-30, 28:29-32, FIG. 3B (element 307), FIG. 5 (501 element), FIGS. 10, 11; TESLA-1003, ¶¶124-125.

(e) Claim 5

In Koebler650, “the power management system receives Information by telemetry...” TESLA-1004, 8:19-22. Examples of receiving information by telemetry include “the power management system...communicat[ing] with a weather service, **map service, [and] a traffic service.**” TESLA-1004, 8:22-24; TESLA-1003, ¶¶126-127.

(f) Claim 6

See [1e]. The Supported Current Conditions include ***visibility***, which is determined by analyzing sensor data samples from an ***optical sensor*** and comprises information about an ***environment surrounding the vehicle***. TESLA-1004, 21:29-51, 8:14-18, 8:51-56, 23:62-24:5; TESLA-1003, ¶¶128-129; *see also* §IV.A.1. Further, the ***current condition*** of a ***drag force*** is determined by analyzing sensor data samples from a ***tire pressure sensor*** and comprises information about an ***environment acting on said vehicle***. *See* §IV.A.2(a)(fn 13).

(g) Claim 7

See [1c-1], [1d], [1e]. The Supported Current Conditions include **visibility**, is determined by deriving inferences from sensor data samples of an **optical sensor**. Further, **drag force** is determined by deriving inferences from sensor data samples of a **tire pressure sensor**. TESLA-1004, 3:41-67, 4:1-18, 8:14-18, 8:53-64, 21:29-51; TESLA-1003, ¶¶130-131; *see* §IV.A.2(a)(fn 13).

(h) Claim 8

As discussed for [1c-1] and [1c-3], in some implementations, records of “historical route information” (**said historical route information**) would have been understood to store information relating to the Supported Current Conditions (e.g., **visibility** and **drag**) (**said current conditions**) that are associated with a route segment. TESLA-1004, 8:14-18, 16:66:17:17, 18:51-56, 21:29-51, 23:62-24:5. Further, in one example of a remote storage configuration, records are “uploaded to, e.g., a centralized server.” *Id.*, 16:66:17:17, 26:14-37; TESLA-1003, ¶132. A POSITA would have found it obvious that such a centralized server could store such information in a database, given that Koebler⁶⁵⁰ discloses storage of historical route information in database records. *See* §IV.A.1.

Further, because the centralized server may obtain information of multiple vehicles (e.g., “vehicles travelling overlapping route segments”), the remote database, in some examples, stores records with historical route information for

multiple overlapping route segments (*plurality of route segments*). For example, “[i]f many cars drive along overlapping route segments, their energy usage for those segments could be uploaded to, e.g., a centralized server where optimized speeds for those segments could be calculated.” TESLA-1004, 26:14-37. In such implementations, a POSITA would have found it obvious to further configure the remote database to store historical information representing the Supported Current Conditions (e.g., visibility and drag) associated with vehicles traveling along overlapping route segments. TESLA-1003, ¶¶133-134. This configuration would have been advantageous as it would have enabled the historical information to include “identifying information” that “more closely” matches “the information about the current route (e.g., the driver, weather conditions, traffic, etc.), which enables a “higher setting of the reliability estimate” assigned to calculations of “probable optimal speed.” TESLA-1004, 18:45-56. Thus, in such implementations, the Supported Current Conditions (e.g., visibility and drag) (*said current conditions*) are received from different vehicles driving along overlapping route segments (*plurality of vehicle using one of said apparatuses*). *Id.*; see §IV.A.2(a)(fn 13).

(i) Claim 9

As discussed for [1c-1] and [1c-3], in some implementations, records of “historical route information” (*said historical route information*) would have been

understood to upload information relating to the current conditions that are associated with a route segment to a remote database. TESLA-1004, 8:14-18, 16:66-17:17, 18:51-56, 21:29-51, 23:62-24:5. In the technique shown in Figure 5, the “power management device” (*said apparatus*) determines a “probable optimal speed” “as the current segment changes (e.g., as the vehicle moves)” where the “probable optimal speed is [also] identified from the historical route information.” *Id.*, 18:15-25. For example, the historical route information may be “queried,” e.g., by a “database [being] examined [by the power management device] to find the historical information about [a] segment.” *Id.*, 17:50-14. In this example, a POSITA would have understood that the power management device is configured to query records of “historical route information” that were previously created and stored in the remote database (*receive said historical route information*). TESLA-1004, 3:63-67, 8:14-18, 17:6-21, 18:51-56, 21:29-51, 23:62-24:5, 26:14-37. Further, as discussed for [1c-3], because these records are stored in association with particular route segments and would have been understood to be accumulated over time for different routes with different route segments, Koebler⁶⁵⁰ teaches the uploading of current conditions to create historical route information *for a plurality of route segments*. TESLA-1004, 8:19-24, 16:66-17:17, 18:51-56, 23:62- 24:5, 21:11-18, 22:11-18, FIG. 5 (steps 511, 513); TESLA-1003, ¶135.

Moreover, because the Figure 5 technique is “most accurate when there are many similar previous trips in the database,” a POSITA would have recognized and/or found obvious certain scenarios in which the historical route information discussed in [1c-1] and [1c-3] and previously uploaded by the power management device to the remote database is the same historical route information that is later queried by that same power management device in determining a probable optimal speed condition (*apparatus is configured to receive said historical route information*). *Id.*, 17:50-18:14; TESLA-1003, ¶136. For example, when the power management device is determining a driver-specific probable optimal speed, the power management device may receive driver-specific historical route information that was previously uploaded by that same power management device because drivers typically drive the same vehicle (having the same power management device) multiple times. *Id.*, 17:30-49 (“...For example, in the past, a driver may have driven a particular segment 1000 times....the power may be estimated by taking an average of all of the previous times the driver drove that segment....”).

(j) Claim 10

As discussed for [1c-1] and [1c-3], in some implementations, records of “historical route information” (*said historical route information*) would have been understood and/or found obvious to upload information relating to the current

conditions that are associated with a route segment to a remote database. TESLA-1004, 8:14-18, 16:66:17:17, 18:51-56, 21:29-51, 23:62-24:5. Further, “operational parameters” may be used to determine the optimal power to apply to the vehicle.” TESLA-1004, 9:65-67, 4:31-42, 1:58-63. Examples of operational parameters include “aerodynamic parameters (CDA), rolling resistance parameters (Crr1 and Crr2), drive train efficiency parameters, motor efficiency parameters, battery model parameters, battery charge and discharge relationships, type of battery.” *Id.* Moreover, a vehicle speed would have been understood to represent another example of an operational parameter, e.g., by being used to identify the probable optimal speed to apply to the vehicle. TESLA-1003, ¶137.

Operational parameters may also be “changed,” i.e., *adjust[ed]*. TESLA-1004, 10:13-15, 9:65-10:40. Further, the operational parameters “may be derived ... based on ... historical information” and can relate to “historical performance.” TESLA-1004, 4:31-42; TESLA-1004, 1:58-63, 15:7-16:50. Using Koebler650’s Figure 5 technique, for example, vehicle speeds for distinct drivers of a vehicle (*operational parameters*) would have been adjusted to driver-specific probable optimal speeds of the vehicle to thereby apply an optimal power. *Id.* The driver-specific probable optimal speeds are also identified based on the historical information discussed above, e.g., driver-specific route information that accounts for visibility and drag (*said historical route information*). *Id.*, 17:20-18:14; 18:45-

56; ; TESLA-1003, ¶¶138-139; *see* §IV.A.2(a)(fn 13).

Moreover, Koebler⁶⁵⁰ discloses the power management device discloses using environmental inputs, such as air resistance, to *adjust* a maximum fuel volume (*an operational parameter*) to prevent engine flooding through use of a “memory having a table of maximum fuel volume for a given velocity, resistance, and temperature.” TESLA-1004, 25:20-51. A POSITA would have found it obvious for such an adjustment to also factor in drag (*adjusting ... based on said historical route information*) because drag, like air resistance, impacts the fuel consumption of the vehicle. TESLA-1003, ¶140.

(k) Claim 11

As for [9] and [10], operational parameters may be adjusted, and such operational parameters include aerodynamic parameters (CDA), rolling resistance parameters (Crr1 and Crr2), drive train efficiency parameters, motor efficiency parameters, battery model parameters, battery charge and discharge relationships, type of battery. TESLA-1004, 9:65-67, 4:31-42, 1:60-63. A vehicle speed would have been understood to represent another example of an operational parameter, e.g., by being used to identify the probable optimal speed to apply to the vehicle. TESLA-1003, ¶141.

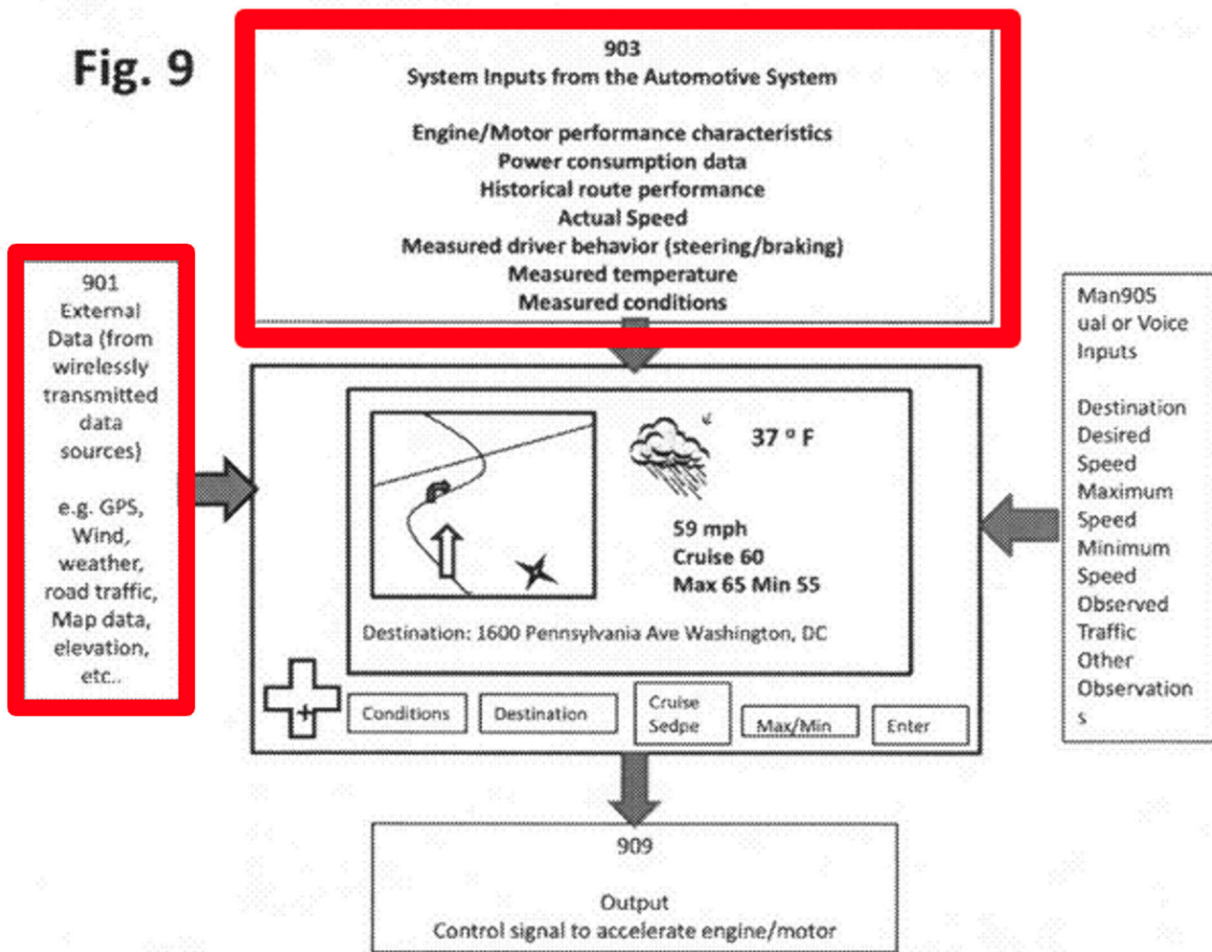
Operational parameters may also “be used to determine the optimal power to apply to the vehicle.” TESLA-1004, 9:65-67, 1:60-63. In some implementations,

operational parameters “may be derived (e.g., based on other information including historical information or other operational parameter information).” TESLA-1004, 31-42. For example, in the Figure 5 technique, vehicle speeds for distinct drivers of the vehicle would have been adjusted to driver-specific probable optimal speeds of the vehicle to thereby apply an optimal power (*optimize power consumption of said vehicle*). *Id.*, 18:15-19:36. The probable optimal speed may also identified based on historical information, e.g., driver-specific route information that accounts for visibility and drag (*adjusting ... based on said historical information*). *Id.*, 17:20-18:14; 18:45-56; TESLA-1003, ¶¶142-143; *see* §IV.A.2(a)(fn 13).

Moreover, Koebler⁶⁵⁰ discloses the power management device discloses using environmental inputs, such as air resistance, to *adjust* a maximum fuel volume (*an operational parameter*) to prevent engine flooding through use of a “memory having a table of maximum fuel volume for a given velocity, resistance, and temperature.” TESLA-1004, 25:20-51. A POSITA would have found it obvious for such an adjustment to also factor in drag (*adjusting ... based on said historical route information*) because drag, like air resistance, impacts the fuel consumption of the vehicle. A POSITA would have understood that reducing engine flooding *optimizes power consumption of the vehicle*. TESLA-1003, ¶144.

(l) Claim 12

In Figure 9 (below), sensor data samples are received from a bus of the vehicle. TESLA-1004, FIG. 9 (element 903). Certain system inputs such, as sensor data (e.g., power consumption, actual speed, steering / braking, temperatures, etc.), are received from an automotive system, which would result in the values being delivered via some form of local bus. TESLA-1003, ¶145.

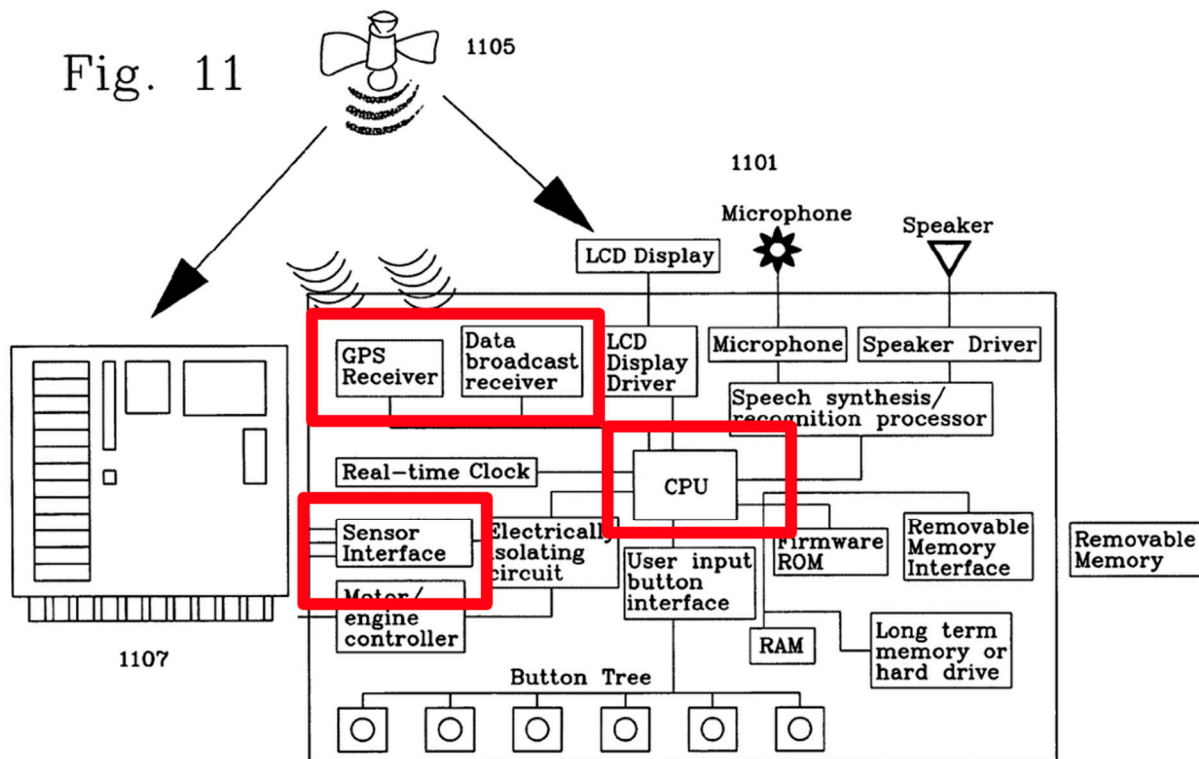


TESLA-1004, FIG. 9 (annotated)

A POSITA would have understood that the technique shown above would be implemented using a power management system, as shown in Figures 10 and 11.

TESLA-1004, 23:40-24:14, FIGS. 10, 11. As shown in these figures (Figure 11 is reproduced below), the CPU executing control logic can receive sensor data from a “sensor interface” and telemetry data from a “GPS receiver” or “telemetry data receiver.” *Id.* These figures show that each of these components is connected via a bus (e.g., the line connecting each component in the schematic drawings).

TESLA-1003, ¶146.

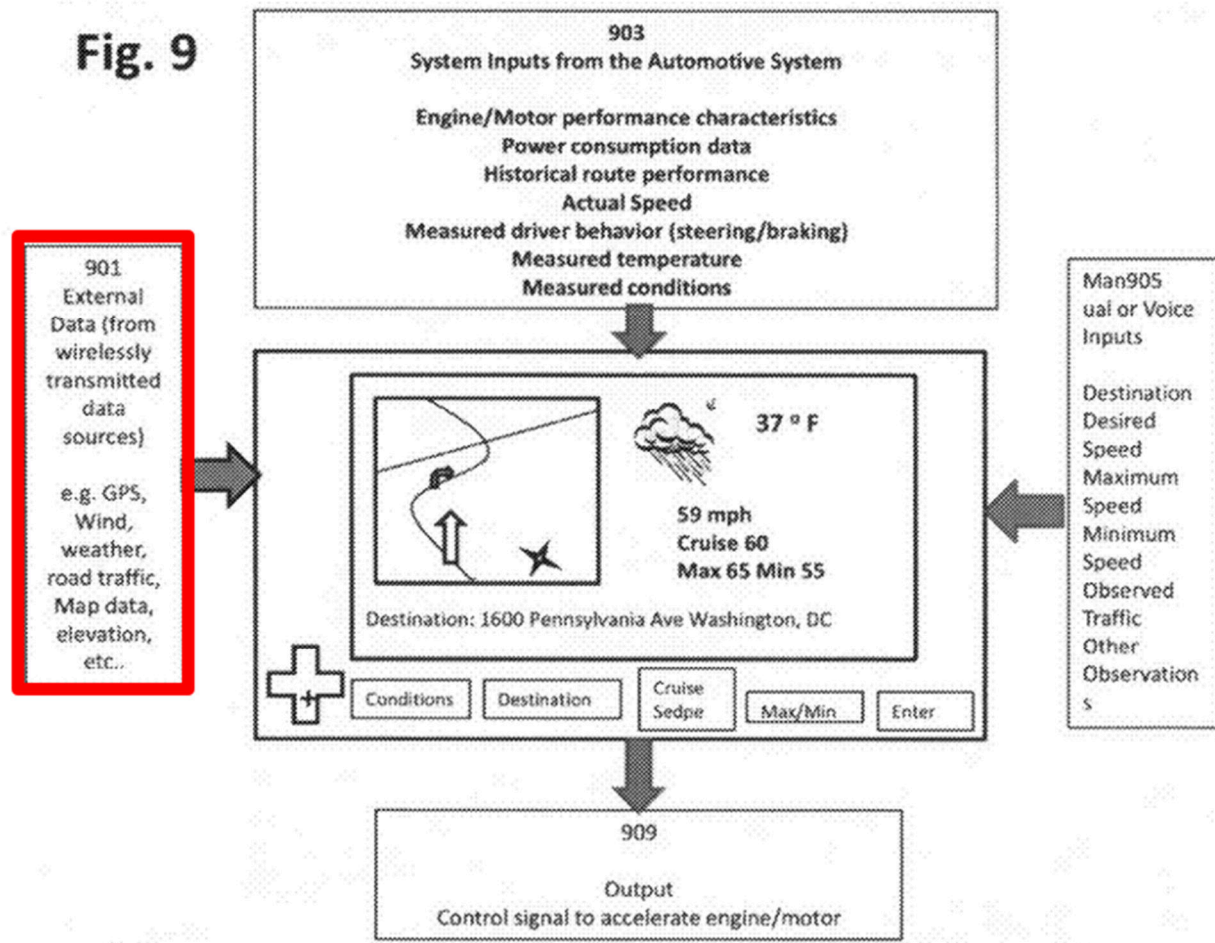


TESLA-1004, FIG. 11 (annotated)

(m) Claim 13

In Figure 9 (below), a power management system receives “external information inputs 901” from an *external device*. TESLA-1004, 22:63-23:18,

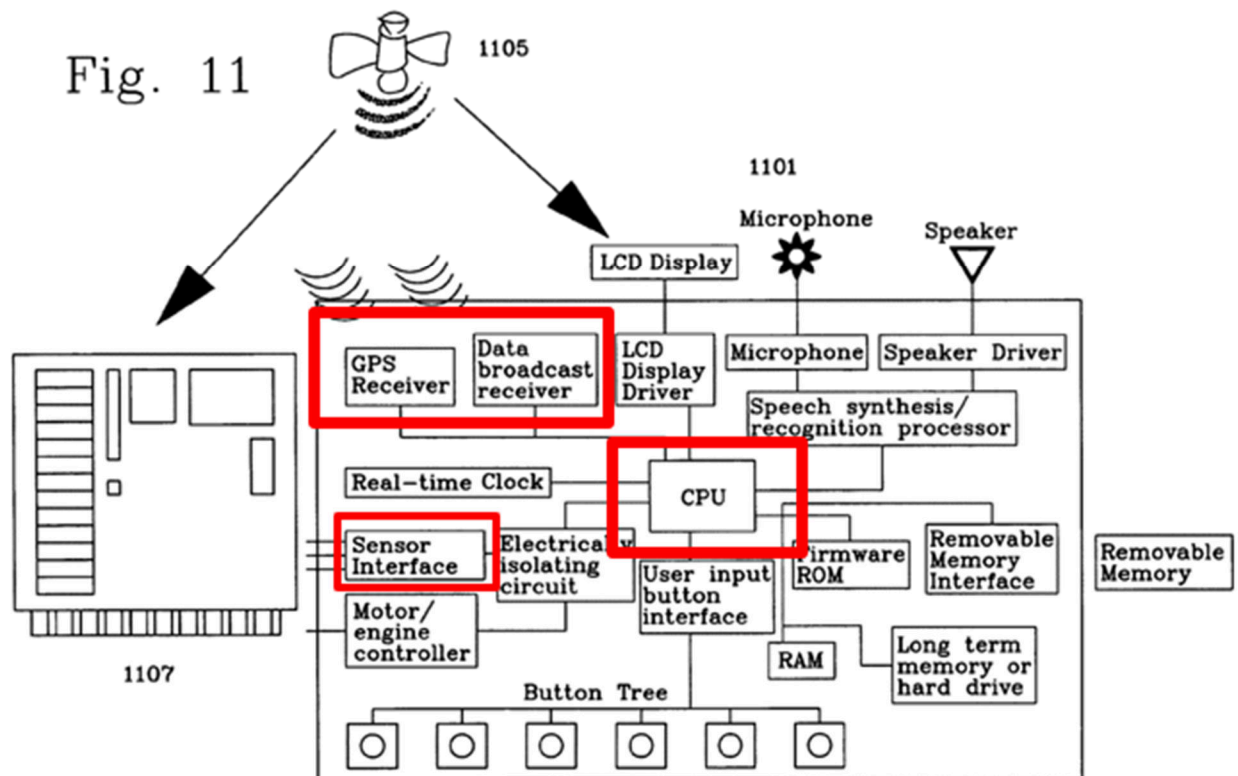
23:40-24:14. The inputs 901 include data, e.g., GPS data signals, wind, weather, road traffic, map data, elevation, etc. *Id.*



TESLA-1004, FIG. 9 (annotated). The “external information inputs 901” would have been understood to be received via wireless transmission using telemetry and thus represents *data from said telemetry system*. 8:19-24, 24:6-22, S11; TESLA-1003, ¶147.

In Figure 11 (below), a power management device 1101 receives telemetry data from an *external device*, i.e., a device external from the device 1101 and the

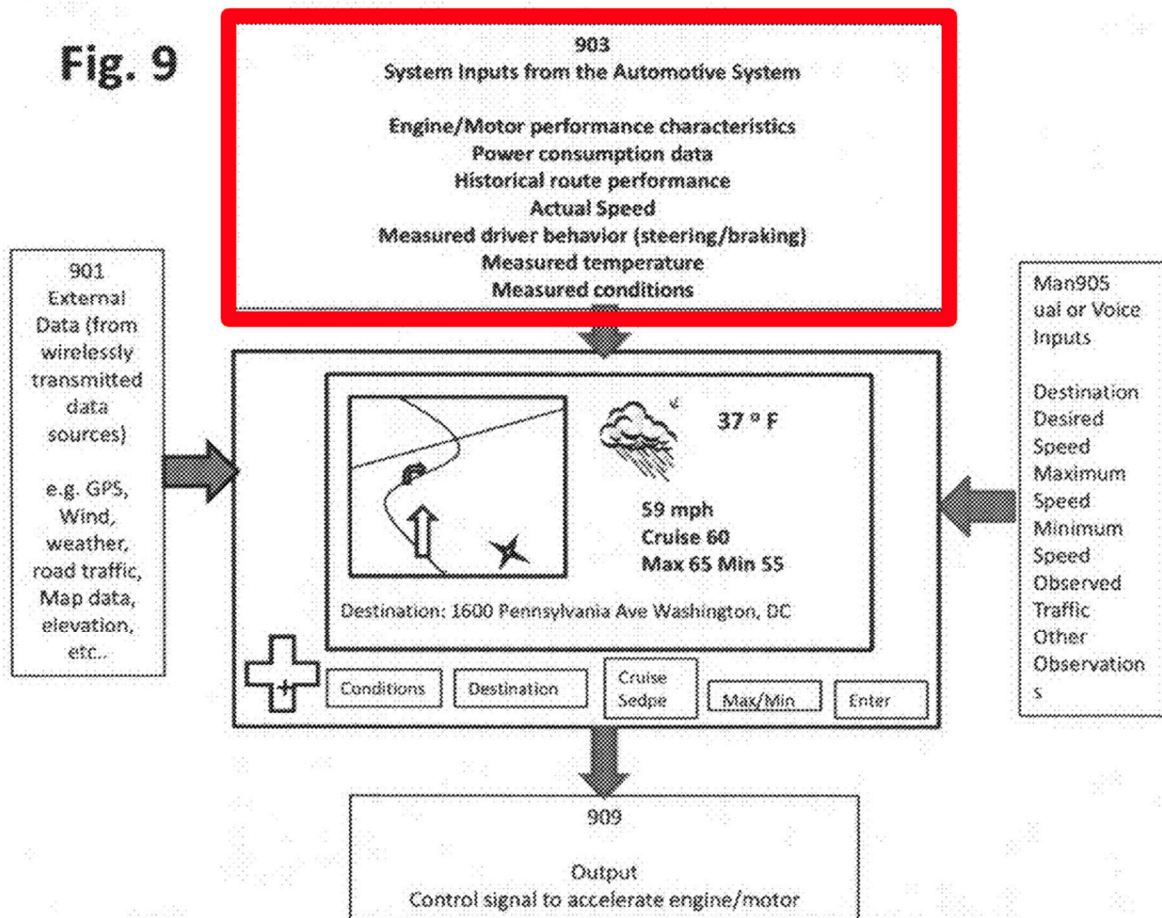
vehicle, using the “GPS receiver” or “data broadcast receiver” (each of which provide connectivity to a *telemetry system*). *Id.*, 24:6-22. Additionally, the device 1101 also receives sensor data from sensor devices external to the device 1101 (*external device*) via the sensor interface shown in Figure 11. TESLA-1003, ¶148.



TESLA-1004, FIG. 11 (annotated)

Further, in Figure 9 (below), the power management system receives “actual speed,” “measured driver behavior (steering/braking),” “measured temperature,” and “measured conditions” from “system inputs from the automotive system,” which a POSITA would understand would be received as *sensor data samples*

reflecting measurements from sensors external to the power management system
(*external device*) via, for example, the sensor interface of Figure 11. TESLA-
1003, ¶149.



TESLA-1004, FIG. 9 (annotated)

(n) Claim 14

As discussed for [1e], *current conditions* (Supported Current Conditions, e.g., *drag, visibility*) are determined by “power management logic” (*processor*) based on analyzing data from various sensors (e.g., an optical sensor and tire

pressure sensor) (*sensor data samples* received from an *optical sensor* and *tire pressure sensor*). TESLA-1004, 21:29-51, 19:61-65, 8:8-19. The Supported Current Conditions include examples (e.g., *visibility* and *drag*) of “present road conditions” (*road conditions*). *Id.*, 7:32-34, 7:46-62, 8:41-52, 18:51-56, 23:62-24:5. Further, the Koebler650 systems determines each of “amount of light energy” (*energy requirements*), “velocity” (*speed*), “traffic information data,” “traffic surrounding a vehicle,” the “location of stoplights” (*traffic*). *Id.*; TESLA-1003, ¶150; *see* §VI.A.1; *see also* §IV.A.2(a)(fn 13).

(o) Claims 15, 16

Koebler650 anticipates and/or renders claims 15 and 16 obvious in the same manner as explained above. TESLA-1003, ¶¶151, 155.

Claim 1	Claim 15	Claim 16
[1a-1]	[15c-1]	[16b]
[1a-2]	[15c-2]	[16c]
[1b]	[15d]	[16d]
[1c-1]	[15e-1]	[16f-1]
[1c-2]	[15e-2]	[16f-2]
[1c-3]	[15e-3]	[16f-3]
[1d]	[15f]	
[1e]	[15g]	

[15pre]

To the extent the preamble is limiting, Koebler650 discloses [15pre] because “[t]he devices and systems described herein” are used with “any appropriate vehicle (*vehicle*). TESLA-1004, 4:49-55, 18:51-56, 23:62-24:5; TESLA-1003, ¶152.

[15a], [15b]

A vehicle may include an “internal combustion engine,” a “hybrid internal combustion/electric vehicle[],” an “electric vehicle[],” or a “hydrogen fuel cell vehicle[]. TESLA-1004, 4:49-55. A POSITA would have understood that these types of vehicles include a *power train* and a *drive train*. TESLA-1004, 6:21-25; TESLA-1003, ¶¶153, 154.

[16pre]

To the extent the preamble is limiting, Koebler650 discloses [16pre] because “a memory” or other “data structure” stores “a record of historical information.” TESLA-1004, 17:3-6. These “record[s] of historical information” include conditions, such as “optimized velocities” and/or “applied power” as well as “information inputs” (e.g., sensor data) corresponding to vehicle use during a route segment. TESLA-1004, 17:6-17, 18:51-56, 23:62-24:5; *see* §IV.A.1. These descriptions relate contents of a data record with an associated database, which would have been understood to involve *creating a database of route conditions*. TESLA-1003, ¶156.

[16a]

See [1a-1], [1d]. Further, as discussed in §III.C.6, the *at least one...and* phrase of [16a] may be interpreted under conjunctive or disjunctive reads within the construction of the *monitoring* step requiring “monitoring a plurality of sensors that comprise at least one of the sensors enumerated in [16a]” (discussed in §III.C.4). Under a disjunctive read, [16a] is satisfied by monitoring *a plurality of sensors* that includes one of the Enumerated Sensors. Koebler⁶⁵⁰ discloses the *monitoring* step under the disjunctive read through disclosure of monitoring various sensors (e.g., an *optical sensor* and a *tire pressure sensor*) to determine the Supported Current Conditions. TESLA-1004, 8:8-19, 19:61-65, 19:47-20:6, 21:29-51 (“Sensors may be monitored (e.g., polled) in real time,” e.g., through “the polling logic may coordinate continuous or periodic polling of ... tire pressure ...”); TESLA-1003, ¶¶157-158; see §IV.B.3(c).

[16e]

See [1c-1], [1e]. Further, as discussed in §III.C.6, the *at least one...and* phrase of [16e] may be interpreted under conjunctive or disjunctive reads within the construction of *analyzing* step requiring “analyzing sensor data generated by monitoring at least one of the Enumerated Sensors to determine at least one of the current conditions enumerated in [16e]” (discussed in §III.C.5). Under a disjunctive read, [16e] is satisfied by analyzing sensor data generated by

monitoring one Enumerated Sensor to determine one current condition.

Koebler650 discloses the *analyzing* step as construed. Koebler650 discloses the *analyzing* under the disjunctive read through sensor data being generated and monitored by various of the Enumerated Sensors (e.g., *optical sensor*) to determine the Supported Current Conditions (e.g., *visibility*) (*current condition*). TESLA-1004, 19:52-54, 19:61-65, 8:14-18. Another example involves monitoring sensor data generated by a monitored *tire pressure sensor* to determine the *current condition* of *drag*. TESLA-1004, 19:52-54, 19:61-65, 21:29-51; TESLA-1003, ¶¶159-161; *see* §IV.A.2(a)(fn 13).

B. Ground 2: Claims 1-16 are rendered obvious over Koebler650, Kabel, Lagerstedt, Okano, Kirkwood, and Breed

1. References

(a) Kabel

Kabel describes systems and techniques for acquiring “[r]eal-time weather information” for presentation and display within a vehicle display. TESLA-1010, Abstract. A vehicle includes a navigation device on which a “real-time weather interface service is loaded and processed.” *Id.*, 3:4-11. The navigation device is a device “capable of acquiring current positioning information for itself and capable of providing route guidance from a given start position to a desired position.” *Id.*, 3:4-11. The navigation device is “interfaced to a positioning system, such as a Global Positioning Satellite (GPS) service.” *Id.*, 3:12-23; TESLA-1003, ¶162.

Further, the real-time weather interface “communicates with [a] real-time weather service for the purposes of acquiring real-time weather characteristics for given geographic locations.” TESLA-1010, 3:12-23. Thus, in the Kabel system, position information of a vehicle (e.g., GPS coordinates) is determined by the positioning system and provided to the real-time weather service through the real-time weather interface of the navigation device. *Id.* The real-time weather service uses the position information to identify real-time weather characteristics for a geographic location associated with the position information. *Id.* The real-time weather characteristics associated with the geographic location are then provided for output to navigation system (e.g., “presented on a display associated with the navigation device”). *Id.*, 3:45-59. The “real-time weather information” includes a “variety of weather characteristics,” such as “temperature, wind speed, wind direction, water temperature, wave periods, wave directions, wave height, barometric pressure, lightening, rain, hail, snow, front information, and others.” *Id.*, 3:39-44; TESLA-1003, ¶163.

Kabel is analogous art to the ’616 patent because it is from the same field of endeavor (e.g., vehicle systems) and is reasonably pertinent to a problem the ’616 patent was trying to solve (e.g., inefficiencies associated with information acquisition by a vehicle). TESLA-1003, ¶163; *see* TESLA-1001, 1:20-2:15.

(b) Lagerstedt

Lagerstedt describes techniques for obtaining weather information for software applications, e.g., a calendar application. TESLA-1014, 5:3-15. In one example, “weather information 160” may be provided on a “user device 110” as, for instance, “a visual, audio, and/or textual representation of the weather.” *Id.*, 6:3-20. In Lagerstedt’s systems, weather information is provided by a “weather module” and examples of the provided weather information include “sun, rain, showers, drizzle, cloudy, partly cloudy, snow, sleet, freezing rain, flurries, barometric pressure, temperature..., wind chill, dewpoint, humidity, heat index, and/or any other information associated with weather.” *Id.*, 9:23-37; TESLA-1003, ¶164.

Lagerstedt is analogous art to the ’616 patent because it is from the same field of endeavor (e.g., information retrieval) and is reasonably pertinent to a problem the ’616 patent was trying to solve (e.g., inefficiencies associated with information acquisition). TESLA-1003, ¶164; *see* TESLA-1001, 1:20-2:15.

(c) Breed

Breed generally relates to “systems and methods for timely conveying information from or about traffic control devices, such as stoplights and stop signs, to vehicles, e.g., as the vehicle approaches the traffic control device.” TESLA-1013, 2:16-20. Specifically, a “vehicle control arrangement” includes “at least one traffic control device and a communication system arranged in a vehicle and

communicating with each traffic control device,” e.g., by enabling the vehicle to “receive information about a status of the traffic control device(s).” *Id.*, 2:47-56. One example involves “establishing communications between the traffic control devices and vehicles approaching the traffic control devices, and providing information about travel of the vehicle to the traffic control devices to operation based on the provided information and/or providing information about a status of the traffic control device to the vehicles to enable the vehicles to operate based on the provided information.” *Id.*, 3:12-31. Breed also contemplates a “traffic control device” being a “stoplight” with a transmitter capable of providing status information relating to the stoplight, such as “how much time remains before the stoplight changes color” (*id.*; 3:1-11) and “the color” of the stop light (*id.*, 2:47-56). Thus, in the Breed system, position information of a vehicle (e.g., travel information) is provided to a traffic control device (e.g., stoplight). *Id.*, 2:47-56. The traffic control device uses the position information to identify status information for a geographic location associated with the position information. *Id.* The status information is then provided to the vehicle, e.g., providing a warning that the vehicle will be running a stoplight). *Id.*, 3:12-31, 77:8-26; TESLA-1003, ¶165.

One exemplary system in Breed (shown in Figure 4) includes a “map database 48” and a “navigation system 46 [] coupled to [a] GPS and DGPS

processing system 42.” TESLA-1004, 77:8-26. Map database 38 works in conjunction with navigation system 46 to provide information, e.g., warnings, to a driver of a vehicle. *Id.* Map database 48 stores “location of all stop signs and stop lights and other traffic control devices, such as other types of road signs.” *Id.* In this system, a sensor “provides input to [a] vehicle indicating that an approaching stoplight is red, yellow or green[,]” and a “navigation system 46” coupled to a “GPS and DGPS processing system 42.” *Id.*; *see id.*, 77:27-58, 79:17-28; TESLA-1003, ¶166.

Breed is analogous art to the ’616 patent because it is from the same field of endeavor (e.g., vehicle systems) and is reasonably pertinent to a problem the ’616 patent was trying to solve (e.g., inefficiencies associated with vehicle operation). TESLA-1003, ¶166; *see* TESLA-1001, 1:20-2:15.

(d) Okano

Okano relates to “a controller for controlling a motor operated actuator device.” TESLA-1011, 1:13-16. The controller “improves the silence and comfort in the vehicle.” *Id.*, 1:54-2:2. In some embodiments, an “electronic control unit” 100 is “sectioned into four principal sections,” including “an information input section 150, a pump-device control section 152, a brake control section 154 and data storage section 156.” *Id.*, 23:10-31. The brake control section 154 executes the “anti-lock brake (ABS) control, traction control (TRC) and vehicle stability

control (VSC).” *Id.* A vehicle motor is controlled based on “a target number r^* of revolutions of the motor,” which is determined based on a “acoustic wave intensity characteristic” and a “vibrational wave intensity characteristic.” *Id.*, 23:36-55.

Further, “intensity of [a] acoustic or vibrational wave can be measured...by using a sensor (e.g., a device capable of measuring an acoustic pressure level, and a vibrometer capable of measuring a vibrational amplitude)...” *Id.*, 15:16-40; TESLA-1003, ¶167.

Okano is analogous art to the ’616 patent because it is from the same field of endeavor (e.g., vehicle systems) and is reasonably pertinent to a problem the ’616 patent was trying to solve (e.g., inefficiencies associated with vehicle operation). TESLA-1003, ¶167; *see* TESLA-1001, 1:20-2:15.

(e) Kirkwood

Kirkwood generally relates to “power transfer systems for controlling the distribution of drive torque between the front and rear drivelines of a four-wheel drive vehicle and/or the left and right wheels of an axle assembly.” TESLA-1012, 1:15-24. For example, in Figure 11, a “four-wheel drive vehicle 10” includes a “power transfer unit 560” and a “torque distribution mechanism 566.” *Id.*, 16:40-56. The “torque distribution mechanism 566” is “operably associated with traction control system 416 for providing [an] adaptive traction control feature.” *Id.* For example, a “front-rear drive torque distribution ratio” may be varied based on

“tractive needs of the front and rear wheels as detected by [] various sensors.” *Id.*, 17:19-27; TESLA-1003, ¶168.

Okano is analogous art to the ’616 patent because it is from the same field of endeavor (e.g., vehicle systems) and is reasonably pertinent to a problem the ’616 patent was trying to solve (e.g., inefficiencies associated with vehicle operation). TESLA-1003, ¶168; *see* TESLA-1001, 1:20-2:15.

2. Proposed Combination

As discussed in §IV.A.1, Koebler650 teaches techniques for calculating a “probable optimal speed” based on matching records of “historical record information.” TESLA-1004, 18:45-56; *see also* §III.D.2(a). The “historical record information” includes “information about the time of day, weather conditions, road conditions, driver, etc.” (e.g., current conditions information), “route information (e.g., starting location and any intermediate locations)” (e.g., route segment information), and other types of information, such as “information about the actual or optimized velocities,” “information[] from information inputs,” among others. *Id.*, 16:66-17:17, 22:8-19; TESLA-1003, ¶169.

A POSITA looking to implement the teachings of Koebler650 would have sought to implement a wide variety of current conditions to be captured in the “historical record information” because this would have increased the “identifying information” that “more closely” matches “the information about the current route

(e.g., the driver, weather conditions, traffic, etc.), which enables a “higher setting of the reliability estimate” assigned to calculations of “probable optimal speed.”

TESLA-1004, 18:45-56. In doing so, the POSITA would have recognized that Koebler650 fails to provide details regarding how various of these current conditions are determined from particular sensors or the output of such sensors.

TESLA-1003, ¶170.

A POSITA would have therefore turned to disclosures beyond Koebler650, that describe examples of techniques of detecting current conditions using disclosed sensors. *See* TESLA-1004, 21:29-62; *see* §III.D.2(a). In doing so, the POSITA would have recognized that these teachings would have improved Koebler650, e.g., by increasing the types of current conditions that are uploaded to a remote database as “historical route information,” and thereby available to be used to improve the reliability of calculating a “probable optimal speed.” TESLA-1003, ¶171.

(a) Koebler650-Kabel-Lagerstedt

As noted above, a POSITA would have recognized that Koebler650 fails to provide details regarding how weather-related current conditions are determined from analysis of data samples collected by disclosed sensors. TESLA-1003, ¶172. For example, while “the power management system may communicate with a weather service” such that the “weather service” may be a source of weather-

related current condition information to a vehicle, Koebler650 fails to describe or suggest what type of information is obtained from the “weather service,” how the “weather service” is configured to collect weather-related condition information and provide it to the vehicle, or how the vehicle determines current conditions based on information received from the “weather service.” *Id.*, 8:12-24.

A POSITA would have therefore turned to Kabel, which describes examples of techniques of detecting the current conditions of weather, wind direction, wind velocity, and air pressure using a position sensor. TESLA-1012, Abstract, 3:4-44. Kabel teaches examples of weather information (e.g., ***temperature, weather, wind direction, wind velocity, air pressure, moisture***), such as “temperature, wind speed, wind direction, water temperature, wave periods, wave directions, wave height, barometric pressure, lightening, rain, hail, snow, front information, and others.” *Id.* Beyond these examples, Kabel teaches that its weather information “includes a variety of real-time weather characteristics” and therefore is “not limited to” the identified examples. *Id.*, 3:39-44. For instance, while Kabel describes identifying “dewpoint” within weather information, it does not specifically indicate that the weather information includes moisture information relating to dewpoint. *See id.*, 15:41-40, FIG. 23. Weather information in Lagerstedt also includes moisture information, such as humidity and dew point.

TESLA-1003, ¶¶173-174; TESLA-1014, 10:10-35, 16:20-34; *see also* TESLA-1019, [0110], Table 7.

A POSITA would have recognized that the teachings of Kabel and Lagerstedt would have improved Koebler650, e.g., by increasing the types of current conditions that are uploaded to a remote database as “historical route information,” and thereby available to be used to improve the reliability of calculating a “probable optimal speed.” TESLA-1003, ¶175. A POSITA would have also found it beneficial to incorporate functionality relating to determining the current conditions of moisture information (humidity, dew point) by the Koebler650-Combination since moisture information was known to impact aspects of vehicle operation relating to fuel efficiency (e.g., engine burn rate characteristics impacting thermal efficiency). TESLA-1003 (citing TESLA-1020, Abstract). By using moisture information in determining a probable optimal speed, the Koebler650-Combination would have thereby advanced Koebler650’s overall objective of improving fuel efficiency through use of probable optimal speed determinations. *Id.*; *see* TESLA-1004, 1:63-2:9.

Such a combination would have involved incorporating prior art elements according to known methods in a vehicle to yield predictable results. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 415-421, 82 USPQ2d 1385, 1395-97 (2007). A POSITA would have also reasonably expected to succeed in combining the

teachings of Koebler650, Kabel, and Lagerstedt. TESLA-1003, ¶175.

Implementation of the combination would have required only routine knowledge because the addition of Kabel’s weather service to Koebler650’s vehicle would have involved modifications of software well within the POSITA’s skill. *Id.*

(b) Koebler650-Breed

As noted above, a POSITA would have recognized that Koebler650 fails to provide details regarding how traffic-related current conditions are determined from analysis of data samples collected by disclosed sensors. TESLA-1003, ¶176. For example, while “the power management system” may communicate with a “map service” or a “traffic service” such that either of these services may be a source of traffic-related current condition information (e.g., *location of stoplights, timing of stoplights*) to a vehicle, Koebler650 fails to describe or suggest what type of information is obtained from the services, how the services are configured to collect traffic-related condition information and provide it to the vehicle, or how the vehicle determines current conditions based on information received from the services. *Id.*, 8:12-24; TESLA-1003, ¶176.

A POSITA would have therefore turned to Breed, which describes examples of techniques of detecting traffic-related current conditions, such as the location of stoplights and the timing of stoplights using a positioning system arranged within a vehicle. TESLA-1013, 2:16-20, 2:47-56, 3:1-11, 3:32-42, 77:8-26, 79:17-28. In

doing so, the POSITA would have recognized that the teachings of Breed would have improved Koebler650, e.g., by increasing the types of current conditions that are uploaded to a remote database as “historical route information,” and thereby available to be used to improve the reliability of calculating a “probable optimal speed.” TESLA-1003, ¶177.

Such a combination would have involved incorporating prior art elements according to known methods in a vehicle to yield predictable results. *KSR*, 550 U.S. at 415-421. A POSITA would have also reasonably expected to succeed in combining the teachings of Koebler650 and Breed. TESLA-1003, ¶177.

Implementation of the combination would have required only routine knowledge because the addition of Breed’s traffic service to Koebler650’s vehicle would have involved modifications of software well within the POSITA’s skill. *Id.*

(c) Koebler650-Okano

As noted above, a POSITA would have recognized that Koebler650 fails to provide details regarding how current conditions related to the external factors of a vehicle are determined from analysis of data samples collected by disclosed sensors. TESLA-1003, ¶178. For example, Koebler650 recognizes that “[m]any parameters may impact the optimal power consumption of a vehicle, including external factors (e.g., forces and conditions that act on the vehicle” and “current status of the vehicle and it’s [sic] component parts).…” TESLA-1004, 1:53-62.

However, Koebler650 fails to describe or suggest how external factor information (e.g., vibrations caused by forces and conditions acting on a vehicle) is determined based on information received from the sensors. *Id.*, 8:12-24; TESLA-1003, ¶178.

A POSITA would have therefore turned to Okano, which describes examples of techniques of detecting intensity of acoustic or vibrational waves (e.g., ***amount of vibration***) by a vehicle stability control system, which would have been understood to include a rotational speed sensor. TESLA-1011, 15:16-39. In doing so, the POSITA would have recognized that the teachings of Okano would have improved Koebler650, e.g., by increasing the types of current conditions that are uploaded to a remote database as “historical route information,” and thereby available to be used to improve the reliability of calculating a “probable optimal speed.” Further, because vibration information is an example of “operational status information” that “impact the optimal power consumption of a vehicle,” this information is useful to improve the calculation of the “probable optimal speed.” TESLA-1004, 4:31-42. TESLA-1003, ¶179.

Such a combination would have involved incorporating prior art elements according to known methods in a vehicle to yield predictable results. *KSR*, 550 U.S. at 415-421. A POSITA would have also reasonably expected to succeed in combining the teachings of Koebler650 and Okano. TESLA-1003, ¶179. Implementation of the combination would have required only routine knowledge

because adding aspects of Okano's control systems to Koebler650's vehicle would have involved modifications of software well within the POSITA's skill. *Id.*

(d) Koebler650-Kirkwood

As noted above, a POSITA would have recognized that Koebler650 fails to provide details regarding how current conditions related to the external factors of a vehicle are determined from analysis of data samples collected by disclosed sensors. TESLA-1003, ¶180. For example, Koebler650 recognizes that “[m]any parameters may impact the optimal power consumption of a vehicle, including external factors (e.g., forces and conditions that act on the vehicle” and “current status of the vehicle and it’s [sic] component parts)...” TESLA-1004, 1:53-62. However, Koebler650 fails to describe or suggest how external factor information (e.g., traction) is determined based on information received from the services. *Id.*, 8:12-24; TESLA-1003, ¶180.

A POSITA would have therefore turned to Kirkwood, which describes examples of techniques of detecting parameters relating to traction by a traction control system of a vehicle (e.g., ***traction***), which would have been understood to further include a rotational speed sensor. TESLA-1012, 16:40-56, 17:19-27; *see* TESLA-1015, 1:30-54. In doing so, the POSITA would have recognized that the teachings of Kirkwood would have improved Koebler650, e.g., by increasing the types of current conditions that are uploaded to a remote database as “historical

route information,” and thereby available to be used to improve the reliability of calculating a “probable optimal speed.” Further, because traction is an example of “operational status information” that “impact the optimal power consumption of a vehicle,” this information is useful to improve the calculation of the “probable optimal speed” and associated fuel efficiency. After all, a vehicle having less traction may consume more fuel to move the same distance than a vehicle having more traction. TESLA-1004, 4:31-42. TESLA-1003, ¶181.

Such a combination would have involved incorporating prior art elements according to known methods in a vehicle to yield predictable results. *KSR*, 550 U.S. at 415-421. A POSITA would have also reasonably expected to succeed in combining the teachings of Koebler650 and Kirkwood. TESLA-1003, ¶181. Implementation of the combination would have required only routine knowledge because adding aspects of Kirkwood’s control systems to Koebler650’s vehicle would have involved modifications of software well within the POSITA’s skill. *Id.*

3. Analysis

(a) Claim 1

The Koebler650-Combination incorporates the teachings of Koebler650 and therefore discloses the following limitations of claim 1 in the same manner as discussed above in Ground 1A. TESLA-1003, ¶182.

Claim 1 Limitation	Corresponding Section
[1pre]	§IV.A.2(a) (addressing [1pre])
[1a-2]	§IV.A.2(a) (addressing [1a-2])
[1c-2]	§IV.A.2(a) (addressing [1c-2])

[1a-1], [1b], [1c-1]

As discussed in §§III.C.1-3, these limitations recite configurations of an *interface*, *memory*, and *processor* that, through antecedent basis, are further limited by each of the *sensor data samples* recited in [1d] and the *current conditions* recited in [1e]. Further, as discussed below, because the Koebler650-Combination satisfy each of [1d] and [1e] under a conjunctive read, the Koebler650-Combination similarly satisfies [1a-1], [1b], and [1c-1] under a conjunctive read. TESLA-1003, ¶183.

[1d]

The Koebler650-Combination discloses [1d] under a conjunctive read because, as discussed in §III.D.2(a), Koebler650 expressly discloses each of the Enumerated Sensors. TESLA-1003, ¶184.

[1e]

The Koebler650-Combination discloses and/or renders obvious [1e] under a conjunctive read. As discussed in §III.C, because [1c-1] recites *analyzing said*

sensor data samples...to determine current conditions,¹⁷ a conjunctive read of [1e] requires each of the twenty-one current conditions to be determined from *sensor data samples* from the Enumerated Sensors. In the Koebler650-Combination, each of twenty-one current conditions are determined from sensor data samples from at least one of thirteen Enumerated Sensors. TESLA-1003, ¶185.

(i) Expressly Disclosed *Current Conditions*

The table below shows the Supported Current Conditions determined based on analyzing *sensor data samples* from one of the Enumerated Sensors.

Supported Current Condition	Sensor Data Samples	Evidence
<i>drag</i>	<i>tire pressure sensor</i>	TESLA-1004, 7:32-44, 8:41-51, 21:29-62; TESLA-1003, ¶¶186-187
<i>visibility</i>	<i>optical sensor</i>	TESLA-1004, 7:45-62, 8:12-31; TESLA-1003, ¶188; <i>see also</i> §IV.A.2 (addressing [1e])
<i>wind resistance</i>	<i>speed sensor</i>	TESLA-1004, 16:13-26, 21:29-62, FIG. 4B; TELSA-1003, ¶189

¹⁷ For claims 1 and 15, this is the *processor* limitation ([1c-1], [15e-1]). For claim 16, the corresponding limitation is [16e], which recites the *analyzing* step.

<i>tire resistance</i>	<i>tire pressure sensor</i>	TESLA-1004, 7:32-44, 21:29-62; TESLA-1003, ¶190; <i>see</i> §IV.A.2 (addressing [1e])
<i>location relative to a destination</i>	<i>position sensor</i>	TESLA-1004, 3:41-67, 7:32-44, 21:29-62; TESLA-1003, ¶191
<i>traffic patterns</i>	<i>position sensor</i>	TESLA-1004, 3:41-67, 7:32-44, 7:63-8:11, 8:12-31, 19:47-20:6, 23:19-30; TESLA-1003, ¶192
<i>amount of light energy</i>	<i>optical sensor</i>	TESLA-1004, 7:32-44, 8:12-31; TESLA-1003, ¶193
<i>position of the sun</i>	<i>optical sensor</i>	TESLA-1004, 3:41-67, 7:32-62, 8:12-31; TESLA-1003, ¶194
<i>geographic information</i>	<i>position sensor</i>	TESLA-1004, 7:45-8:11; TESLA- 1003, ¶195
<i>elevation of said vehicle</i>	<i>position sensor</i>	TESLA-1004, 3:41-67, 7:45-8:11, 19:47-20:6, 21:29-62; TESLA-1003, ¶196

<i>grade of a road</i>	<i>gyroscope sensor</i>	TESLA-1004, 21:29-62; TESLA-1003, ¶197
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(ii) ***Current Conditions*** Rendered Obvious

The table below shows Unsupported Current Conditions rendered obvious to be determined based on analyzing *sensor data samples* one of the Enumerated Sensors.

Unsupported Current Condition	Sensor Data Samples from Enumerated Sensor	Evidence
<i>temperature</i>	Kabel's GPS service <i>(position sensor)</i>	TESLA-1004, 3:41-67, 7:45-62, 8:12-31, 21:29-62; TESLA-1010, Abstract, 3:4-44, 3:12-23; TELSA-1003, ¶¶198-199
<i>weather</i>	Kabel's GPS service <i>(position sensor)</i>	TESLA-1004, 3:41-67, 7:45-62, 8:12-31, 21:29-62; TESLA-1010, Abstract, 3:4-44; §IV.B.1(a); TELSA-1003, ¶¶200-201
<i>wind direction</i>	Kabel's GPS service <i>(position sensor)</i>	TESLA-1004, 3:41-67, 7:45-62, 8:12-31, 21:29-62; TESLA-1010, Abstract, 3:4-44; 3:39-44;

		§IV.B.1(a); TELS-1003, ¶¶202-203
<i>wind velocity</i>	Kabel's GPS service (<i>position sensor</i>)	TESLA-1004, 3:41-67, 7:45-62, 8:12-31, 21:29-62; TESLA-1010, Abstract, 3:4-44; TESLA-1016, 6:30-57; §IV.B.1(a); TELS-1003, ¶¶204-205
<i>air pressure</i>	Kabel's GPS service (<i>position sensor</i>)	TESLA-1004, 3:41-67, 7:45-62, 8:12-31, 21:29-62; TESLA-1010, Abstract, 3:4-44; TELS-1003, ¶¶206-207
<i>moisture</i>	Kabel's GPS service (<i>position sensor</i>)	TESLA-1004, 3:41-67, 7:45-62, 8:12-31, 21:29-62; TESLA-1010, Abstract, 3:12-23, 3:39-44; TESLA-1014, 9:23-37; TELS-1003, ¶¶208-209
<i>amount of vibration</i>	Rotational speed sensor in Okano's vehicle stability	TESLA-1004, 3:30-40, 4:56-5:3, 20:30-60, 21:7-28, 23:31-39; TESLA-1011, 15:16-40, 23:10-31,

	control system <i>(RPM sensor)</i>	23:36-55; TESLA-1017, 8:17-31; TELSA-1003, ¶¶210-211
<i>traction</i>	Rotational speed sensor in Kirkwood's traction control system <i>(RPM sensor)</i>	TESLA-1004, 6:59-7:11, 13:52-58, 16:25-35; TESLA-1012, 1:15-24, 16:40-56, 17:19-27; TESLA-1015, 1:30-54; TESLA-1017, 8:17-31; TELSA-1003, ¶¶212-213
<i>location of stoplights</i>	Breed's GPS positioning system <i>(position sensor)</i>	TESLA-1004, 3:41-67, 7:45-8:11; TESLA-1013, 2:16-20, 2:47-56, 3:1- 31, 77:8-26, 79:17-28; TESLA-1003, ¶¶214-215
<i>timing of stoplights</i>	Breed's GPS positioning system <i>(position sensor)</i>	TESLA-1004, 3:41-67, 7:45-62, 8:12-31, 21:29-62; TESLA-1013, 2:16-20, 2:47-56, 3:1-31, 77:8-26, 79:17-28; §IV.B.1(b); TELSA-1003, ¶¶216-217

(b) Claims 2-14

The Koebler650-Combination incorporates the teachings of Koebler650 and therefore discloses claims 2-14 in the same manner as discussed in Ground 1A.

TESLA-1003, ¶218.

(c) Claims 15, 16

The Koebler650-Combination renders the following limitations obvious in the same manner as explained above. TESLA-1003, ¶219, 221.

Claim 1	Claim 15	Claim 16
[1a-1]	[15c-1]	[16b]
[1a-2]	[15c-2]	[16c]
[1b]	[15d]	[16d]
[1c-1]	[15e-1]	[16f-1]
[1c-2]	[15e-2]	[16f-2]
[1c-3]	[15e-3]	[16f-3]
[1d]	[15f]	
[1e]	[15g]	

[15pre], [15a], [15b]

The Koebler650-Combination incorporates the teachings of Koebler650 and therefore discloses these limitations in the same manner as discussed in Ground 1A. TESLA-1003, ¶220.

[16pre], [16a]

The Koebler650-Combination discloses [16a] under a conjunctive read because, as discussed in §III.D.2(a), Koebler650 expressly discloses each of the thirteen Enumerated Sensors that generate *sensor data*. TESLA-1003, ¶222.

[16e]

The Koebler650-Combination discloses and/or renders obvious [16e] under a conjunctive read. As discussed in §III.C, because [16a] recites *analyzing said sensor data samples...to determine current conditions*,¹⁸ a conjunctive read of [16e] requires each of the twenty-one current conditions to be determined from *sensor data* from thirteen Enumerated Sensors. As discussed for [1e], in the Koebler650-Combination, each of twenty-one current conditions are determined from sensor data from one of the thirteen Enumerated Sensors. TESLA-1003, ¶223.

V. PTAB DISCRETION SHOULD NOT PRECLUDE INSTITUTION

A. 35 U.S.C. §325(d)

Discretionary denial under the Board's §325(d) *Advanced Bionics* analysis is not warranted. See IPR2019-01469, Paper 6, 8-9 (PTAB Feb. 13, 2020)(“*Advanced Bionics*”)(precedential).

Koebler650 was not previously considered by the Office, and thus, the same or substantially the same arguments were not previously presented during prosecution. See TESLA-1002. To the extent the Examiner evaluated the merits

¹⁸ For claims 1 and 15, this is the *processor* limitation ([1c-1], [15e-1]). For claim 16, the corresponding limitation is [16e], which recites the *analyzing* step.

of the '616 patent's priority claim, the Examiner erred for the reasons discussed in §II.D. There is no overlap between the asserted grounds and the prior art applied during prosecution because the Examiner did not consider the Koebler-Priority-Documents as available prior art. This Petition thereby raises new invalidity theories never were before the Office.

The second prong of the *Advanced Bionics* test is also not met. The Examiner erred in entitling the '616 patent to the benefit of its priority claim. Tesla has also shown a reasonable likelihood that it would prevail because at least one of the Challenged Claims is unpatentable over the asserted prior art and thereby demonstrated material error in doing so. §§III.A-D, IV.A; PGR2022-00010, Pap. 9, 8-9 (PTAB June 6, 2022).

B. 35 U.S.C. §314(a)

Consistent with Congressional intent, the goals of *Fintiv*, and the interim guidance issued by Director Vidal on June 21, 2022 ("Director's Guidance" or TESLA-1050), Tesla asks the Board to consider the challenges raised in this Petition. IPR2020-00019, Pap. 11, at 6 (PTAB Mar. 20,

2020)(“*Fintiv*”)(precedential). For the reasons noted below, a holistic analysis of the *Fintiv* factors favors institution.¹⁹

1. Factor 1

Factor 1 is currently neutral because neither Tesla nor iQar have requested a stay in co-pending litigation in the Northern District of California (*iQar Inc. v. Tesla, Inc.*, 4-24-cv-01337, (N.D. Cal.)) (“NDCA Litigation”). The case was recently transferred from WDTX and have not yet begun proceedings in NDCA. If A stay of the NDCA Litigation, if requested by Tesla, would likely be granted since Tesla has petitioned for IPR against all patents asserted in the NDCA Litigation. Regardless, the Board does “not attempt to predict” how an appeals or district court might adjudicate a future motion to stay. *Fintiv*, 12; IPR2019-01393, Pap. 24, at 7 (PTAB June 16, 2020) (informative); IPR2020-01019, Pap. 12, at 14 (PTAB Dec. 1, 2020)(precedential).

2. Factor 2

¹⁹ Apart from Tesla’s showing that *Fintiv* favors institution, the *Fintiv* framework should not be followed because it is legally invalid. The framework (1) exceeds the Director’s authority, (2) is arbitrary and capricious, and (3) was adopted without notice-and-comment rulemaking.

Factor 2 favors institution because no trial date is set in the NDCA

Litigation, and in any event, any scheduled trial date is speculative since “scheduled trial dates are unreliable and often change.” TESLA-1050, 8. Further, the median time-to-trial for NDCA is currently 37.1 months,^{20,21} and a likely trial date is uncertain since the case was recently transferred from WDTX. *See also* TESLA-1052, 5. In contrast, if this proceeding is instituted, the Board will likely issue its Final Written Decision around September 2025.

3. Factor 3

By any objective standard, this Petition is being filed at an early stage of the NDCA Litigation, which “has weighed against exercising the authority to deny institution[.]” IPR2020-00156, Pap. 10, 9 & n.8 (June 15, 2020)(“*Seven*”), 11-12 (quoting *Fintiv*, 11). NDCA has yet to expend significant resources on this case given the recent transfer from WDTX. *Seven*, 10-13; IPR2020-01019, Pap. 12, 14 (PTAB Dec. 1, 2020), 16-17; IPR2020- 00820, Pap. 15, 11-13 (Oct. 21, 2020). Even before the transfer, the parties had not submitted any substantive contentions or engaged in claim construction exchanges or briefing in WDTX. Tesla has also

²⁰ Over the past year, according to Docket Navigator.

²¹ The case has not been assigned a judge, and has therefore, no trial date has been set.

been diligent in filing this Petition several months ahead of the one-year time bar, all while the NDCA Litigation has been in its early stages.

4. Factor 4

The NDCA Litigation is still in its infancy, with case management conference scheduled for June 7, 2024 and no scheduling order even proposed. Thus, at present, there is no overlap between issues between the NDCA Litigation and any IPR resulting from this Petition. This lack of overlap “has tended to weigh against exercising discretion to deny institution.” *Fintiv*, 12-14. iQar has also yet to identify asserted claims, while this Petition addresses all claims.

5. Factor 5

Tesla’s status as a defendant in the NDCA Litigation is at worst neutral under Factor 5. Indeed, the *Fintiv* decision “says nothing about situations in which the petitioner is the same as, or is related to, the district court defendant.” IPR2020-00122, Pap. 15, at 10 (*Cisco Systems*)(Crumbley, dissenting); *Fintiv*, 13-14. At worst, where the parties are the same, Factor 5 is neutral. *Id.*

6. Factor 6

Neither Tesla nor any other party has previously challenged the ’616 patent in a PTAB post-issuance proceeding. Further, the Board has not previously considered the grounds set forth in this petition or substantively similar grounds. Director Vidal has also explained that “the PTAB will not deny institution...under

Fintiv...when a petition presents compelling evidence of unpatentability....”

TESLA-1050, 3-5, 9; *see also Fintiv*, 14-15.

The merits of this Petition are compelling since patentee’s application—Koebler⁶⁵⁰—lacks sufficient written description support for the Challenged Claims. *See* §III.D. Institution would thereby result in an unpatentability finding that is materially different from those considered during prosecution. *See generally* TESLA-1003.

Even if the NDCA Litigation may be relevant, the strength of the merits alone is enough to outweigh any inefficiencies born of parallel litigation. TESLA-1050, 3-5, 9; *Fintiv*, 14-15 (“if the merits of a ground raised in the petition seem particularly strong...institution of a trial may serve...overall system efficiency and integrity”). Accordingly, Factor 6 strongly favors institution.

VI. PAYMENT OF FEES – 37 C.F.R. § 42.103

Tesla authorizes the Patent and Trademark Office to charge any fees to Deposit Account No. 06-1050.

VII. CONCLUSION

The cited prior art references identified in this Petition contain pertinent technological teachings (both cited and uncited), either explicitly or inherently disclosed, which were not previously considered in the manner presented herein, or relied upon on the record during original examination of the ‘616 patent. In sum,

these references provide new, non-cumulative technological teachings which indicate a reasonable likelihood of success as to Tesla's assertion that the Challenged Claims of the '616 patent are not patentable pursuant to the grounds presented in this Petition.

VIII. MANDATORY NOTICES UNDER 37 C.F.R § 42.8(a)(1)

A. Real Party-In-Interest Under 37 C.F.R. § 42.8(b)(1)

Tesla Inc. is the real party-in-interest.

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

The '616 patent is the subject of a civil action, *iQar Inc. v. Tesla, Inc.*, 4-24-cv-01337, NDCA, which was transferred from WDTX (which has now been terminated). Tesla is not aware of any other disclaimers, reexamination certificates, or IPR petitions addressing the '616 patent.

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

Tesla provides the following designation of counsel.

Lead Counsel	Backup counsel
W. Karl Renner, Reg. No. 41,265 Fish & Richardson P.C. 60 South Sixth Street Minneapolis, MN 55402 Tel: 202-783-5070 Fax: 877-769-7945 Email: IPR49649-0021IP1@fr.com	Roberto Devoto, Reg. No. 55,108 Ryan Chowdhury, Reg. No. 74,466 Patrick Darno, Reg. No. 69,205 Fish & Richardson P.C. 60 South Sixth Street Minneapolis, MN 55402 Tel: 202-783-5070 Fax: 877-769-7945 Email: IPR49649-0021IP1@fr.com

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D. Service Information

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

Tesla consents to electronic service by email at IPR49649-0021IP1@fr.com and afawzy@tesla.com.

Respectfully submitted,

Dated 4-5-24

/Roberto J. Devoto/

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Attorneys for Petitioner

CERTIFICATION UNDER 37 CFR § 42.24

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petition for *Inter Partes* Review totals 13,896 words, which is less than the 14,000 allowed under 37 CFR § 42.24.

Dated: 4-5-24

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(4)(i) *et seq.* and 42.105(b), the undersigned certifies that on April 5, 2024, a complete and entire copy of this Petition for *Inter Partes* Review and all supporting exhibits were provided via Federal Express, to the Patent Owner by serving the correspondence address of record as follows:

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