

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TOYOTA MOTOR CORP.,
Petitioner,

v.

AUTOCONNECT HOLDINGS, LLC,
Patent Owner.

Case No. IPR2025-00891
U.S. Patent No. 9,147,296

PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 9,147,296

TABLE OF CONTENTS

I.	Preliminary Statement	1
II.	Precise Relief Requested	1
III.	The '296 Patent.....	2
A.	Disclosure.....	2
B.	File History.....	6
IV.	The Prior Art.....	7
A.	Ikeda	7
B.	Hendry	12
V.	Level of Ordinary Skill.....	14
VI.	Claim Construction.....	14
VII.	Claims 1-20 Are Unpatentable Over the Prior Art.....	15
A.	Grounds 1a/1b: <i>Ikeda</i> anticipates claims 1, 3-9, 11-12, 14-15, 17-18, and 20 (Ground 1a) and <i>Ikeda</i> renders obvious claims 2, 6, 10, 13, 16, and 19 (Ground 1b).	15
1.	Independent Claim 1	15
1[a]:	A method, comprising: determining a location inside a vehicle associated with a user;.....	15
1[b]:	determining at least one vehicle control associated with the location inside the vehicle;	16
1[c]:	determining a presence of the user inside the vehicle, wherein determining the presence of the user comprises detecting a device associated with the user in an area of the vehicle;	18
1[d]:	referring to a user profile memory associated with the user for vehicle control settings;.....	20

1[e]: determining, based at least partially on the vehicle control settings, to adjust the at least one vehicle control associated with the location inside the vehicle; and.....	22
1[f]: providing an adjustment output to a vehicle control system, wherein the adjustment output is provided based at least partially on determining the user is present in the location inside the vehicle, wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle.	23
2. Claim 2.....	26
2[a]: The method of claim 1, wherein prior to determining the location inside the vehicle associated with the user the method further comprises: storing, in the user profile memory, information corresponding to locations inside the vehicle occupied by the user;	26
2[b]: collecting vehicle control setting data associated with the user, wherein the vehicle control setting data includes at least one vehicle control setting made by the user in at least one of the locations inside the vehicle; and.....	28
2[c]: storing the vehicle control setting data in the user profile memory.	28
3. Claim 3: The method of claim 1, wherein the at least one vehicle control includes one or more vehicle features such as a seat system, a steering control, a foot pedal control, a mirror position, and a display device.....	29
4. Claim 4: The method of claim 3, wherein the vehicle control settings include at least one of a position, a sensitivity, an angle, and a movement, associated with the one or more vehicle features.	29
5. Claim 5.....	30

5[a]:	The method of claim 1, wherein determining the presence of the user inside the vehicle further comprises: detecting a person via at least one image sensor associated with the vehicle;.....	31
5[b]:	identifying facial features associated with the person detected via the at least one image sensor; and.....	31
5[c]:	determining whether the identified facial features associated with the person match user characteristics stored in a memory.	32
6.	Claim 6.....	33
6[a]:	The method of claim 1, further comprising: determining that the user made a change to the adjusted at least one vehicle control; and.....	34
6[b]:	storing the change made to the adjusted at least one vehicle control in the user profile memory.....	37
7.	Claim 7.....	38
7[a]:	A method, comprising: determining a location inside a vehicle associated with a user;.....	38
7[b]:	determining at least one vehicle control associated with the location inside the vehicle;	38
7[c]:	referring to a user profile memory associated with the user for vehicle control settings;.....	38
7[d]:	determining, based at least partially on the vehicle control settings, to adjust the at least one vehicle control associated with the location inside the vehicle; and.....	38
7[e]:	providing an adjustment output to a vehicle control system, wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle, wherein the at least one vehicle control is adjusted	

	via the adjustment output to match the vehicle control settings in the user profile memory.....	39
8.	Claim 8.....	40
	8[a]: A non-transitory computer readable medium having instructions stored thereon that, when executed by a processor, perform a method comprising:.....	40
	8[b]: determining a location inside a vehicle associated with a user;.....	41
	8[c]: determining at least one vehicle control associated with the location inside the vehicle;	42
	8[d]: referring to a user profile memory associated with the user for vehicle control settings;.....	43
	8[e]: determining, based at least partially on the vehicle control settings, to adjust the at least one vehicle control associated with the location inside the vehicle; and.....	44
	8[f]: providing an adjustment output to a vehicle control system, wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle, wherein the at least one vehicle control is adjusted via the adjustment output to match the vehicle control settings in the user profile memory.....	45
9.	Claim 9: The non-transitory computer readable medium of claim 8, wherein prior to providing the adjustment output, the method further comprises: determining a presence of the user inside the vehicle, wherein the adjustment output is provided based at least partially on determining the user is present in the location of the vehicle.....	46
10.	Claim 10.....	47
	10[a]: The non-transitory computer readable medium of claim 8, wherein prior to determining the location	

	inside the vehicle associated with the user the method further comprises: storing, in the user profile memory, information corresponding to locations inside the vehicle occupied by the user;	48
10[b]:	collecting vehicle control setting data associated with the user, wherein the vehicle control setting data includes at least one vehicle control setting made by the user in at least one of the locations inside the vehicle; and	48
10[c]:	storing the vehicle control setting data in the user profile memory.	48
11.	Claim 11: The non-transitory computer readable medium of claim 8, wherein the at least one vehicle control includes one or more vehicle features such as a seat system, a steering control, a foot pedal control, a mirror position, and a display device, and wherein the vehicle control settings include at least one of a position, a sensitivity, an angle, and a movement, associated with the one or more vehicle features.	49
12.	Claim 12.....	49
12[a]:	The non-transitory computer readable medium of claim 9, wherein determining the presence of the user inside the vehicle further comprises: detecting a person via at least one image sensor associated with the vehicle;.....	49
12[b]:	identifying facial features associated with the person detected via the at least one image sensor; and.....	50
12[c]:	determining whether the identified facial features associated with the person match user characteristics stored in a memory.	51
13.	Claim 13.....	52

- 13[a]: The non-transitory computer readable medium of claim 8, wherein the method further comprises: determining that the user made a change to the adjusted at least one vehicle control; and 52
- 13[b]: storing the change made to the adjusted at least one vehicle control in the user profile memory.....53
- 14. Claim 14.....54
 - 14[a]: A vehicle control system, comprising: a profile identification module contained in a memory and executed by a processor of the vehicle control system, ...54
 - 14[b]: the profile identification module configured to determine a location inside a vehicle associated with a user,.....55
 - 14[c]: determine at least one vehicle control associated with the location inside the vehicle, ...55
 - 14[d]: refer to a user profile memory associated with the user for vehicle control settings, and.....56
 - 14[e]: determine, based at least partially on the vehicle control settings, to adjust the at least one vehicle control associated with the location inside the vehicle, provide an adjustment output to the vehicle control system, wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle, wherein the at least one vehicle control is adjusted via the adjustment output to match the vehicle control settings in the user profile memory.....56
- 15. Claim 15: The vehicle control system of claim 14, wherein prior to providing the adjustment output, the profile identification module is further configured to determine a presence of the user inside the vehicle, wherein the adjustment output is provided based at least partially on

determining the user is present in the location of the vehicle.	56
16. Claim 16: The vehicle control system of claim 14, wherein prior to determining the location inside the vehicle associated with the user the profile identification module is further configured to store, in the user profile memory, information corresponding to locations inside the vehicle occupied by the user, collect vehicle control setting data associated with the user, wherein the vehicle control setting data includes at least one vehicle control setting made by the user in at least one of the locations inside the vehicle, and store the vehicle control setting data in the user profile memory.	57
17. Claim 17: The vehicle control system of claim 14, wherein the at least one vehicle control includes one or more vehicle features such as a seat system, a steering control, a foot pedal control, a mirror position, and a display device, and wherein the vehicle control settings include at least one of a position, a sensitivity, an angle, and a movement, associated with the one or more vehicle features.	57
18. Claim 18: The vehicle control system of claim 15, wherein, in determining the presence of the user inside the vehicle, the user the profile identification module is further configured to detect a person via at least one image sensor associated with the vehicle, identify facial features associated with the person detected via the at least one image sensor, and determine whether the identified facial features associated with the person match user characteristics stored in a memory.	57
19. Claim 19: The vehicle control system of claim 14, wherein the profile identification module is further configured to determine that the user made a change to the adjusted at least one vehicle control, and store the change made to the adjusted at least one vehicle control in the user profile memory.	58

20.	Claim 20: The vehicle control system of claim 14, wherein the profile identification module is further configured to determine a presence of the user inside the vehicle based at least partially on detecting a device associated with the user in an area of the vehicle, and wherein the adjustment output is provided based at least partially on determining the user is present in the location inside the vehicle.....	58
B.	Ground 2: <i>Ikeda</i> in view of <i>Hendry</i> renders obvious claims 6, 13, and 19 under Section 103.....	58
1.	Claim 6.....	58
	6[a]: The method of claim 1, further comprising: determining that the user made a change to the adjusted at least one vehicle control; and.....	59
	6[b]: storing the change made to the adjusted at least one vehicle control in the user profile memory.....	62
2.	Claim 13	64
	13[a]: The non-transitory computer readable medium of claim 8, wherein the method further comprises: determining that the user made a change to the adjusted at least one vehicle control; and.....	64
	13[b]: storing the change made to the adjusted at least one vehicle control in the user profile memory.....	65
3.	Claim 19: The vehicle control system of claim 14, wherein the profile identification module is further configured to determine that the user made a change to the adjusted at least one vehicle control, and store the change made to the adjusted at least one vehicle control in the user profile memory.	66
VIII.	Grounds for Standing.....	66
IX.	Mandatory Notices.....	66
A.	Real Party-in-Interest Under 37 C.F.R. § 42.8(b)(1)	66

B.	Related Matters Under 37 C.F.R. § 42.8(b)(2)	66
C.	Lead and Back-Up Counsel Under 37 C.F.R. § 42.8(b)(3)	67
D.	Service Information Under 37 C.F.R. § 42.8(b)(4).....	67
X.	Conclusion	67

LIST OF EXHIBITS

Exhibit	Description
Ex. 1001	U.S. Patent No. 9,147,296 to <i>Ricci</i> .
Ex. 1002	Prosecution File History for U.S. Patent No. 9,147,296.
Ex. 1003	Curriculum Vitae of Mr. Scott Denning.
Ex. 1004	Declaration of Mr. Scott Denning
Ex. 1005	U.S. Patent Pub. No. 2008/0215209 to Ikeda et al. (“ <i>Ikeda</i> ”)
Ex. 1006	U.S. Patent Pub. No. 2012/0303178 to Hendry et al. (“ <i>Hendry</i> ”)
Ex. 1007	U.S. Patent Pub. No. 2007/0238491 to He (“ <i>He</i> ”)
Ex. 1008	U.S. Patent No. 8,977,408 to Cazanas et al. (“ <i>Cazanas</i> ”)

I. Preliminary Statement

Petitioner Toyota Motor Corporation requests IPR of claims 1-20 of U.S. Patent No. 9,147,296, purportedly assigned to AutoConnect Holdings LLC.

The '296 patent discloses detecting a user in a zone of the vehicle. '296 patent, 64:40-45. After detecting a user, the specification describes accessing the user's profile with the user's saved settings, determining whether to adjust the control units, and then providing an adjustment output to the control units to match the user's saved settings. '296 patent, 64:46-65:3.

But such systems and methods were well-known prior the earliest possible priority date for the '296 patent, April 15, 2013. For example, *Ikeda*, published more than five years earlier on September 4, 2008, disclosed the same concept of configuring a zone to match a detected user's saved settings. Accordingly, the Board should institute IPR and cancel the challenged claims.

II. Precise Relief Requested

Petitioner requests review and cancellation of the challenged claims based on the following prior art and grounds.

Prior Art References
<i>Ikeda</i> (Ex. 1005), U.S. Patent Pub. No. 2008/0215209, filed February 28, 2008, and published September 4, 2008 (AIA §§ 102(a)(1) and 102(a)(2)).

Prior Art References	
<i>Hendry</i> (Ex. 1006), U.S. Patent Pub. No. 2012/0303178, filed May 26, 2011, and published November 29, 2012 (AIA 35 U.S.C. §§ 102(a)(1) and 102(a)(2)).	

Grounds of Unpatentability	
1a	<i>Ikeda</i> anticipates claims 1, 3-9, 11-12, 14-15, and 17-18, 20 under Section 102.
1b	<i>Ikeda</i> renders obvious claims 2, 6, 10, 13, 16, and 19 under Section 103.
2	<i>Ikeda</i> in view of <i>Hendry</i> renders obvious claims 6, 13, and 19 under Section 103.

III. The '296 Patent

A. Disclosure

The '296 patent claims systems and methods relating to detecting a user in a location in a vehicle and configuring the location to match the user's settings.

The specification describes “**determining a location**” in a vehicle associated with a user. '296 patent, 5:21-32. Figure 5A illustrates **locations in a vehicle**:

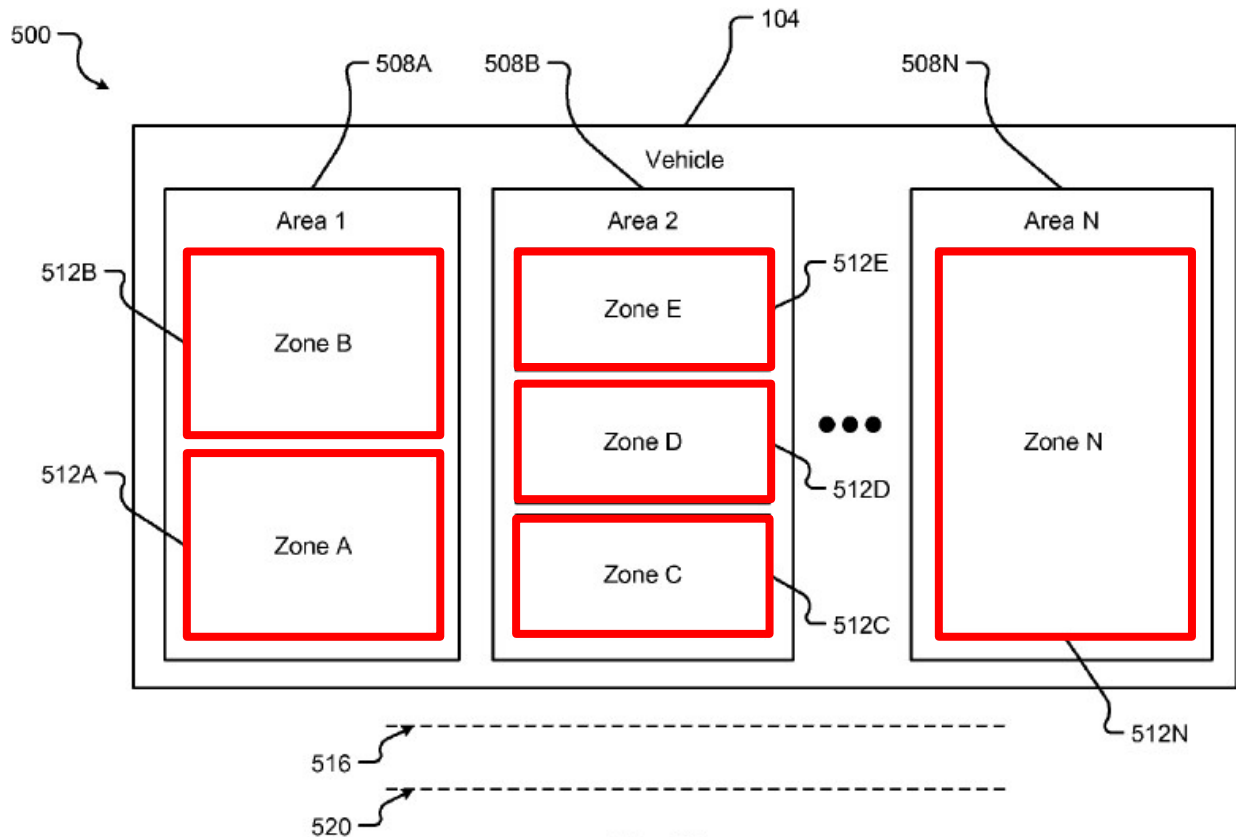
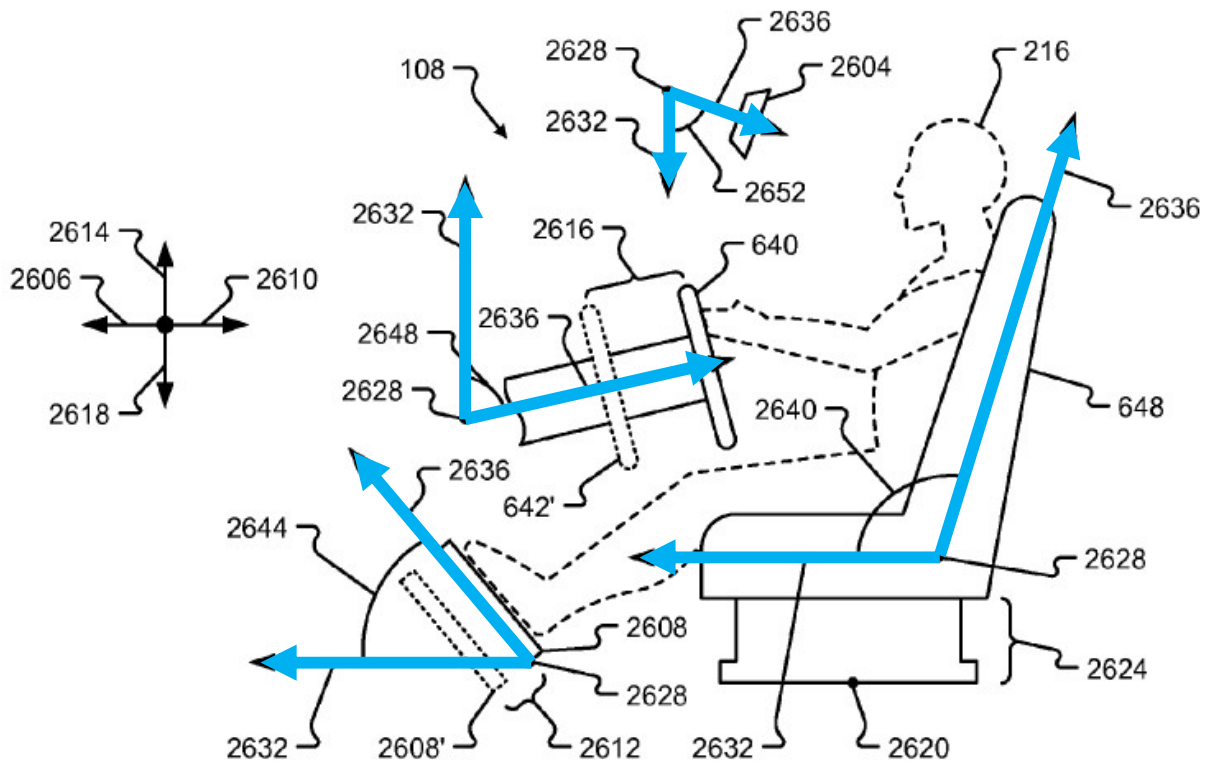


Fig. 5A

'296 patent, Fig. 5A (annotated). The '296 patent specification further explains that Zone A is “associated with a driver,” Zone B is “associated with a front passenger,” and Zones C-E are “associated with three passenger seats typically found in the rear passenger area of a vehicle.” '296 patent, 25:64-26:20.

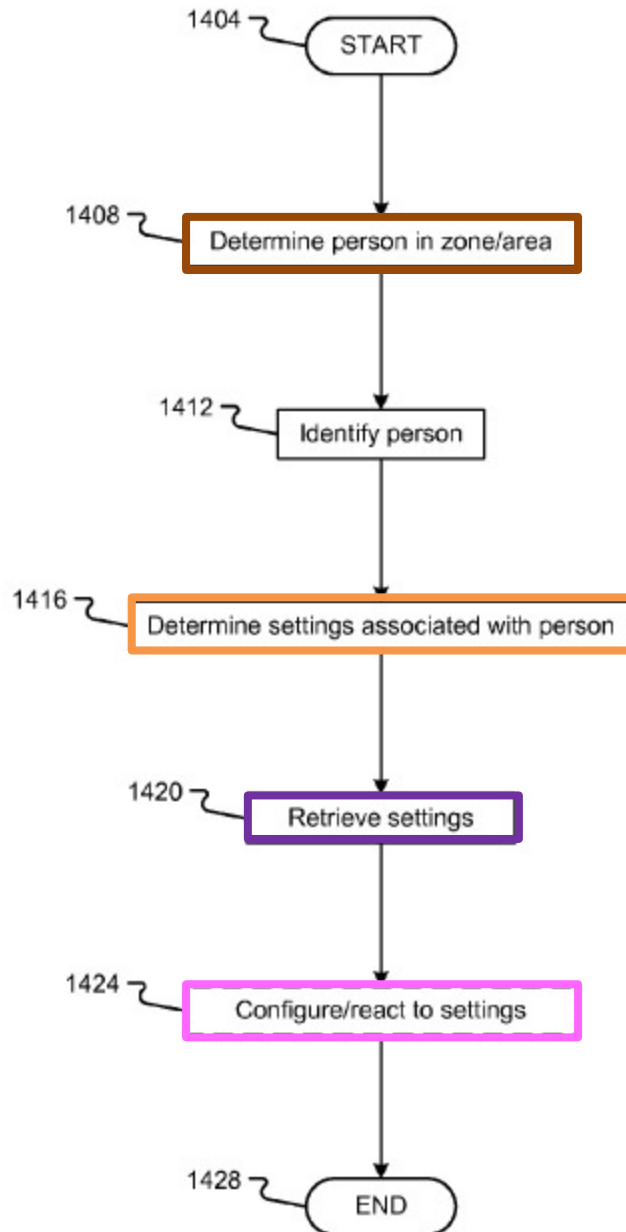
The specification further describes “[determining at least one vehicle control](#) associated with the location inside the vehicle.” '296 patent, 5:21-32. Figure 26 illustrates [vehicle controls](#):



'296 patent, Fig. 26 (annotated). The '296 specification explains that this figure illustrates “one or more controls, actuators, systems, and components,” including “a speed control pedal 2608,” “steering wheel 640,” and “occupant seating system 648.” '296 patent, 83:7-12. The specification further explains that these features can be “moved, and/or positioned, in one or more directions” or “according to angular adjustments.” '296 patent, 83:13-60.

Figure 14 of the '296 patent, as annotated below, illustrates **detecting a user's presence**, **accessing the user's profile (including saved settings)**, **reading and retrieving a user's settings to determine whether vehicle controls need to be adjusted to match the saved settings**, and **adjusting the vehicle controls to match**

the saved settings:



'296 patent, Fig. 14 (annotated).

In step 1408, the '296 patent's system “**can determine if a person is in a zone** . . . **in step 1408.**” '296 patent, 64:40-45. Specifically, the specification explains that the system uses “facial recognition, weight sensors, heat sensors, or other sensors to determine whether a person is occupying a certain zone 512.” '296

patent, 64:40-45.

After detecting a user's presence, the system identifies the person (in step 1412). The specification discloses that this identification step can involve the system "obtain[ing] characteristics for the user currently occupying the zone 512 and compar[ing] those characteristics to the identifying features in portion 1212 of data structure 1204." '296 patent, 64:46-53. The system then determines "if there are settings associated with the identified person for that zone . . . in step 1416." '296 patent, 64:54-60.

The specification explains that after referring to the user's settings in step 1416, the system can then "read and retrieve those settings, in step 1420." '296 patent, 64:60-65:3.

Finally, the retrieved settings are used "to change the configuration of the vehicle" to match the user's preferences. '296 patent, 64:60-65:3.

B. File History

During prosecution, the examiner rejected all pending claims as anticipated by U.S. Patent Publication 2014/0028542 (*Lovitt*). Ex. 1002, 387. The examiner noted that certain pending claims would be allowable if rewritten in independent form. Ex. 1002, 387-388. The applicant amended the pending claims as suggested, adding the following limitations:

- “wherein determining the presence of the user comprises detecting a device associated with the user in an area of the vehicle” (pending claim 8; issued claim 1)
- “wherein the at least one vehicle control is adjusted via the adjustment output to match the vehicle control settings in the user profile memory” (pending claims 10, 18, 19; issued claims 7, 8, 14)

Ex. 1002, 397, 400-405. After this amendment, the examiner issued a Notice of Allowance. Ex. 1002, 455. The Notice of Allowance did not list reasons for allowance. And the Examiner did not have *Ikeda*, which discloses the features leading to allowance.

IV. The Prior Art

A. Ikeda

Ikeda was filed in the United States on February 28, 2008, and published September 4, 2008, and is, therefore, prior art under AIA 35 U.S.C. §§ 102(a)(1) and 102(a)(2). *Ikeda* was not considered during the '296 patent's prosecution.

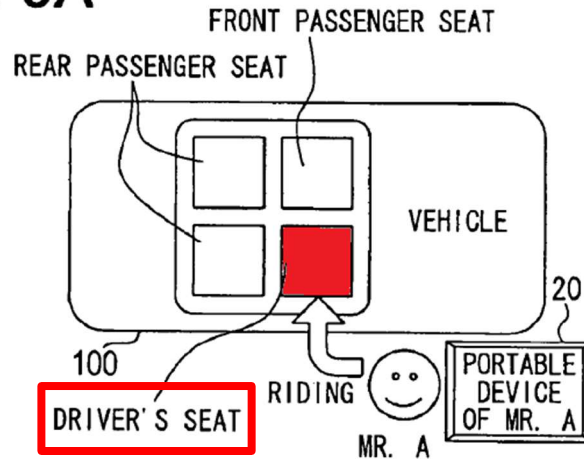
Ikeda is from the same field of endeavor as the '296 patent, which is vehicle control systems. Denning, ¶48; '296 patent, 2:66-3:7 (“There is a need for a vehicle ecosystem, which can integrate both physical and mental comforts, while seamlessly communicating with current electronic devices to result in a totally intuitive and immersive user experience.”); *Ikeda*, [0003] (“The present invention relate[s] to a driving-environment setup system which sets up a driving

environment of a vehicle.”). Further, *Ikeda* is reasonably pertinent to the problem faced by the inventor of the ’296 patent, namely, determining whether a recognized user has setting preferences and customizing a vehicle to match the recognized user’s preferences. Denning, ¶48; ’296 patent, 2:66-3:7 (“There is a need for a vehicle ecosystem, which can integrate both physical and mental comforts, while seamlessly communicating with current electronic devices to result in a totally intuitive and immersive user experience.”); *Ikeda*, [0009] (“[I]t is an object of the present invention to provide a driving-environment setup system which can set the driving environment of a vehicle as a driving environment for a driver[.]”).

Specifically, *Ikeda* discloses a system for detecting a user in a vehicle location, accessing the user’s settings, and configuring the location to match the user’s settings.

Ikeda discloses a location in a vehicle associated with a user. For example, *Ikeda* discloses “the in-vehicle device 10 detects the fact that the driver rides the vehicle 100 with the aid of the seat sensor provided in the driver's seat.” *Ikeda*, [0409].

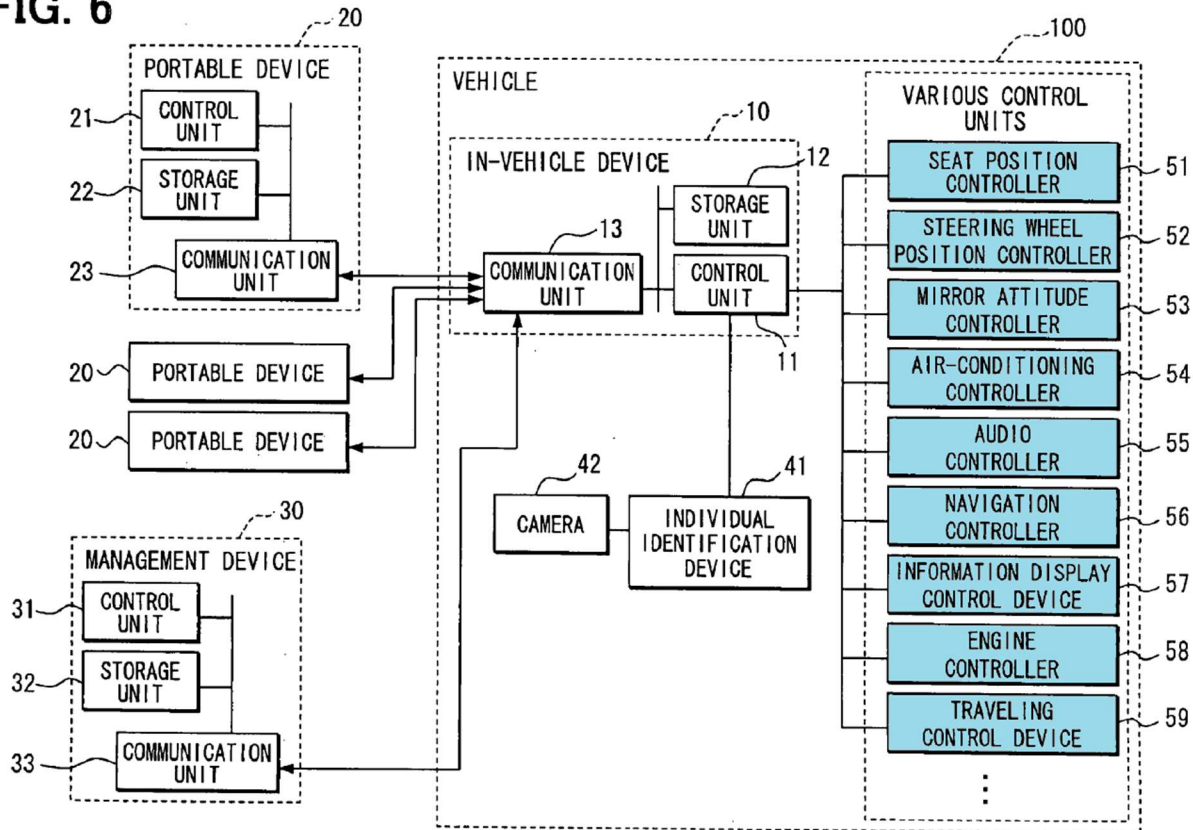
FIG. 5A



Ikeda, Fig. 5A (annotated).

Ikeda further discloses **determining vehicle controls** associated with the location in the vehicle. For example, *Ikeda* discloses “**control units**” that “enable a setup (change) of the driving environment according to a driver’s liking.” *Ikeda*, [0063]. The determined vehicle controls include drivers-seat location controls such as seat position, steering wheel position, mirror attitude, etc.

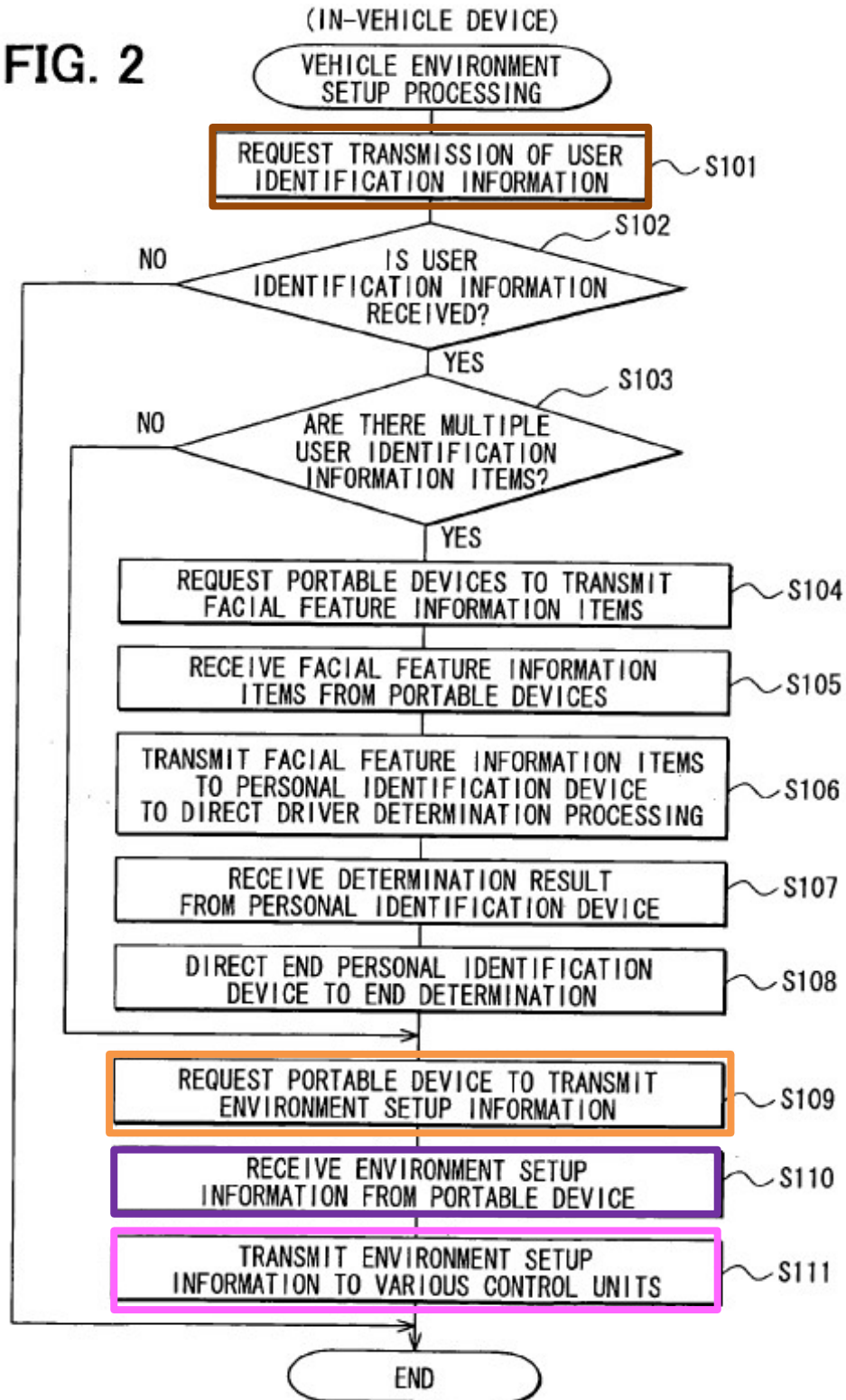
FIG. 6



Ikeda, Fig. 6 (annotated).

Ikeda's figure 2, as annotated below, illustrates that its system **requests transmission of user identification information (S101)**, whereby the system detects a user's presence; **requests transmission of environment setup information (S109)**, whereby the system accesses a user's profile; **receives environment setup information (S110)**; and **transmits environment setup information to control units (S111)**:

FIG. 2



Ikeda, Fig. 2 (annotated).

Ikeda discloses transmitting “an identification information-sending request” in step S101. *Ikeda*, [0080]. *Ikeda* discloses that this request is used “to detect that the user is in a state of riding the vehicle.” *Ikeda*, [0080].

Ikeda further discloses sending, in step S109, a “setup information-sending request” to obtain the “environment setup information item” corresponding to the user detected in step S101. *Ikeda*, [0091]. The “environment setup information item” is data regarding a user’s setting preferences. *Ikeda*, [0013], [0064].

Ikeda further discloses receiving, in response to the “setup information-sending request,” the “environment setup information item” in step 110. *Ikeda*, [0092].

Finally, after receiving the “environment setup information item,” *Ikeda* discloses transmitting this information “to various control units” which “reproduce the driving environment indicated by the environment setup information item.” *Ikeda*, [0093], [0064].

B. Hendry

Hendry was filed in the United States on May 26, 2011, and published November 29, 2012, and is, therefore, prior art under AIA 35 U.S.C. §§ 102(a)(1) and 102(a)(2). *Hendry* was not considered during the ’296 patent’s prosecution.

Hendry is from the same field of endeavor as the ’296 patent, which is vehicle control systems. *Compare* ’296 patent, 2:66-3:7 (“There is a need for a vehicle ecosystem, which can integrate both physical and mental comforts, while

seamlessly communicating with current electronic devices to result in a totally intuitive and immersive user experience.”), *with Hendry*, [0001] (“The present disclosure relates generally to a method and system for establishing user settings of vehicle components of a vehicle.”). Further, both address the same problem: determining whether a recognized user has setting preferences and customizing a vehicle to match the recognized user’s preferences. Denning, ¶60; ’296 patent, 2:66-3:7 (“There is a need for a vehicle ecosystem, which can integrate both physical and mental comforts, while seamlessly communicating with current electronic devices to result in a totally intuitive and immersive user experience.”); *Hendry*, [0027] (“Once a vehicle component has received the personal settings, the vehicle component module will adjust the settings of the vehicle component in accordance with the personal settings associated with the device[.]”).

Specifically, *Hendry* discloses a system that “**can detect a discoverable external device**” and “**will retrieve the personal settings associated with the device identifier from an associated datastore,**” including settings for “**the height of the seat,**” “**the firmness of the seat,**” “**the angle of the seat [] back,**” “**the angle of the seat [] back,**” and “**the distance of the seat 50 from the steering wheel.**” *Hendry*, [0022], [0027]. Upon “**receiv[ing] the personal settings,**” “**the vehicle component module will adjust the settings of the vehicle component in accordance with the personal settings associated with the device.**” *Hendry*, [0027].

Hendry further discloses a process for determining that a user makes a change to an adjusted component's setting and then storing that change. *Hendry* discloses that "if a user changes the settings of the seat 50, the user interface 122 displays a screen to the user asking whether the user would like the vehicle 10 to remember the seat settings." *Hendry*, [0026]. If "the user responds affirmatively, the adjusted settings are saved in a datastore associated with the vehicle component." *Hendry*, [0031].

V. Level of Ordinary Skill

A skilled artisan would have had at least a four-year undergraduate degree in computer science, electrical engineering, automotive engineering, or a closely related field and at least two years of experience in the field of vehicle control systems. Denning, ¶63. More education can supplement practical experience and vice versa. Denning, ¶63. Petitioner's expert exceeded this by 2011. Denning, ¶63; *see* Denning, ¶¶4-13.

VI. Claim Construction

The phrase "at least one" should be understood as defined in the '296 patent's specification: "The phrases 'at least one,' [is] both conjunctive and disjunctive in operation." '296 patent, 8:64-9:4. Thus, the phrase "at least one of A, B, and C," in the context of the '296 patent, "means A alone, B alone, C alone,

A and B together, A and C together, B and C together, or A, B and C together.”

’296 patent, 8:64-9:4; Denning, ¶¶64.

VII. Claims 1-20 Are Unpatentable Over the Prior Art

A. Grounds 1a/1b:

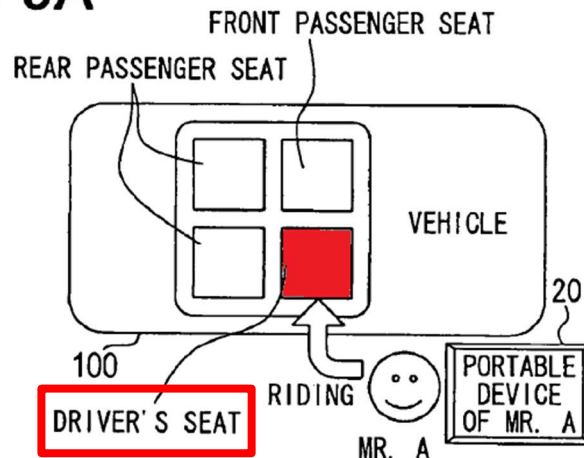
Ikeda anticipates claims 1, 3-9, 11-12, 14-15, 17-18, and 20 (Ground 1a) and *Ikeda* renders obvious claims 2, 6, 10, 13, 16, and 19 (Ground 1b).

1. Independent Claim 1

1[a]: A method, comprising: **determining a location inside a vehicle associated with a user;**

Ikeda discloses *determining a location inside a vehicle associated with a user*. Denning, ¶¶65-67. For example, *Ikeda* discloses “the in-vehicle device 10 detects the fact that the driver rides the vehicle 100 with the aid of the seat sensor provided in the driver's seat.” *Ikeda*, [0409].

FIG. 5A



Ikeda, Fig. 5A (annotated).

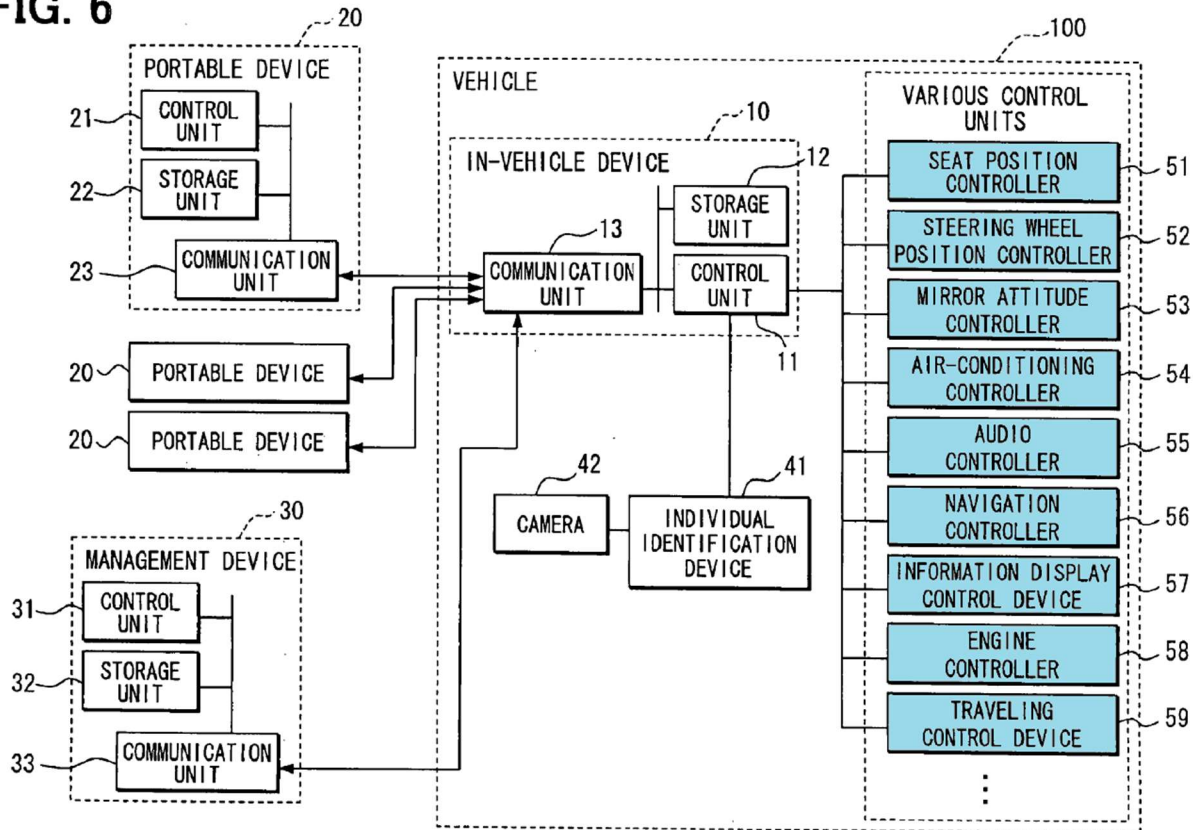
Ikeda specifically discloses that “the driver’s seat” is determined to be a location associated with a user, namely the driver. Denning, ¶¶66. For example,

Ikeda discloses that “[d]etection of the driver to ride in the vehicle 100 can be performed by, for example, detecting a user's seating with a sitting sensor provided in the driver's seat.” *Ikeda*, [0079]; *see also Ikeda*, [0080]. *Ikeda* also discloses 1[a] for the reasons discussed for claim 5. Denning, ¶¶66.

**1[b]: determining at least one vehicle control
associated with the location inside the vehicle;**

Ikeda discloses *determining at least one vehicle control associated with the location inside the vehicle*. Denning, ¶¶68-70. For example, *Ikeda* discloses “control units” that “enable a setup (change) of the driving environment according to a driver's liking.” *Ikeda*, [0063]. The vehicle controls identified include drivers-seat location controls such as seat position, steering wheel position, mirror attitude, etc. and they are therefore determined to be associated with a location inside the vehicle, namely the drivers-side seat position. *Ikeda*, Fig. 6.

FIG. 6



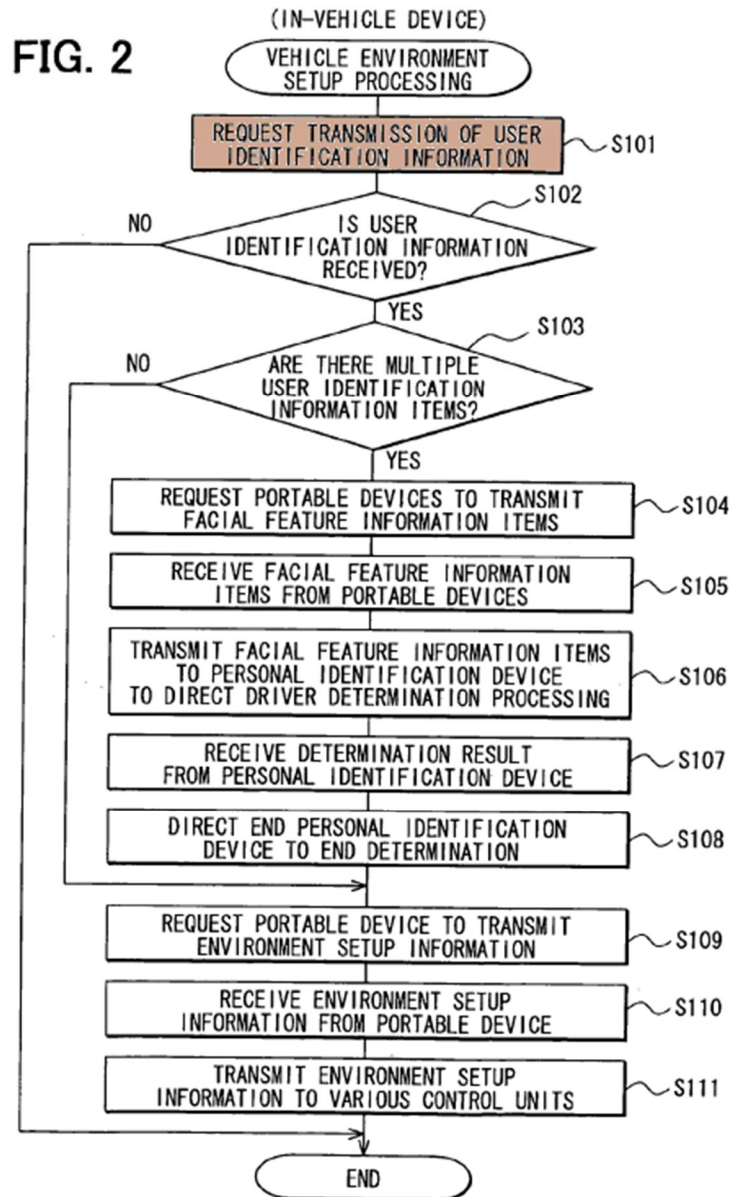
Ikeda, Fig. 6 (annotated).

Ikeda discloses that its “control units 51-59 enable a setup (change) of the driving environment according to a driver’s liking,” including by adjusting “seat position,” “steering wheel position,” “mirror attitude,” “air-conditioning,” “audio,” “navigation,” and the “information display.” *Ikeda*, [0063]. The “control units” can be controlled manually (“according to the external operation by the user who rides the vehicle”) or automatically (“to reproduce the driving environment indicated by the environment setup information item, when the environment setup information item is inputted”). *Ikeda*, [0064]-[0065]. All of these vehicle controls are

determined to be associated with the driver's seat location in the vehicle. Denning, ¶69.

1[c]: determining a presence of the user inside the vehicle, wherein determining the presence of the user comprises detecting a device associated with the user in an area of the vehicle;

Ikeda discloses *determining a presence of the user inside the vehicle, wherein determining the presence of the user comprises detecting a device associated with the user in an area of the vehicle*. Denning, ¶¶71-74; *infra* § VII.A.5 (claim 5). For example, *Ikeda* discloses transmitting “an identification information-sending request” to a user's device “to detect that the user is in a state of riding the vehicle.” *Ikeda*, [0080]. This detection is a determination that a user is in the vehicle.



Ikeda, Fig. 2 (annotated).

In Step S101 of Fig. 2 shown above, *Ikeda* specifically discloses that “the control unit 11 transmits an identification information-sending request which is a request to the user’s portable device 20 for the transmission of the user identification information.” *Ikeda*, [0080]. *Ikeda* discloses that the purpose of this

request is “to **detect that the user is in a state of riding the vehicle 100,**” which is *determining a presence of the user inside the vehicle. Ikeda, [0080]; Denning, ¶72.*

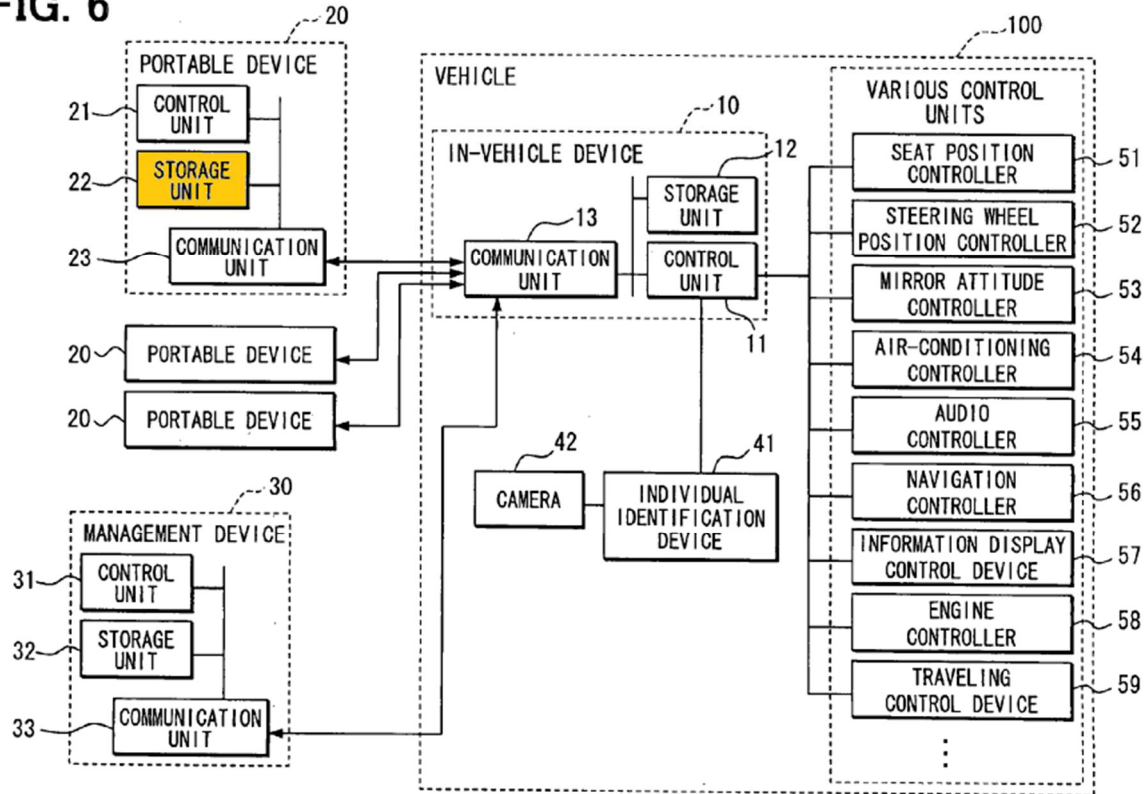
Ikeda further discloses that “when the portable device 20 exists in the communications area (when a user who possesses the portable device 20 has ridden the vehicle 100), the user information stored in the portable device 20 is transmitted to the in-vehicle device.” *Ikeda, [0080].* Thus, *Ikeda* is designed to *determine the presence of the user by detecting a device (portable device 20) associated with the user in an area of the vehicle. Denning, ¶73.*

1[d]: referring to a user profile memory associated with the user for vehicle control settings;

Ikeda discloses *referring to a user profile memory associated with the user for vehicle control settings. Denning, ¶¶75-77.* For example, *Ikeda* discloses obtaining “**the environment setup information item indicative of the driving environment for the driver**” (*vehicle control settings*) which is stored in the “**storage unit 22**” of portable device 20 (*user profile memory*). *Ikeda, [0091]; see also Ikeda, [0073].* It does so by sending a “**setup information-sending request**” “to the portable device 20 of the driver.” *Ikeda, [0091]; see also Ikeda, [0246].* This “**setup information-sending request requests the portable device 20 of the driver to send the environment setup information item.**” *Ikeda, [0091]; see also Ikeda, [0246].* Thus, “the environment setup information stored in the portable device 20 of the driver or the environment setup information item indicative of the driving

environment for the driver is transmitted from the portable device 20 to the in-vehicle device 10.” *Ikeda*, [0091]; *see also Ikeda*, [0246].

FIG. 6



Ikeda, Fig. 6 (annotated).

Ikeda further discloses storing in the “storage unit 22” the “environment setup information item,” which is data “indicative of a driving environment of the associated user.” *Ikeda*, [0013]. For example, of the “control units 51-59,” “the seat position controller 51 adjusts the position of the driver’s electric seat.” *Ikeda*, [0064]. A user’s preferential setting for the “seat position controller 51” is stored as part of the “environment setup information item” and can be recalled so that

“the driving environment can be reproduced correctly, without performing fine tuning by the external operation” (i.e., manually). *Ikeda*, [0064]. Denning, ¶76.

1[e]: determining, based at least partially on the vehicle control settings, to adjust the at least one vehicle control associated with the location inside the vehicle; and

Ikeda discloses *determining, based at least partially on the vehicle control settings, to adjust the at least one vehicle control associated with the location inside the vehicle*. Denning, ¶¶78-81. For example, *Ikeda* discloses that its “control units” operate “to reproduce the driving environment indicated by the environment setup information item.” *Ikeda*, [0064].

After receiving the “setup information-sending request,” the “environment setup information item stored in the portable device 20 . . . is transmitted from the portable device 20 to the in-vehicle device 10.” *Ikeda*, [0091]-[0092]; *see also Ikeda*, [0246]. As explained previously, the “environment setup information item” includes a user’s preferred settings (*vehicle control settings*). *Supra* § VII.A.1 (element 1[d]); Denning, ¶79. Specifically, *Ikeda* describes the “environment setup information item” as “indicative of a driving environment of the associated user.” *Ikeda*, [0013]. For example, of the “control units 51-59,” “the seat position controller 51 adjusts the position of the driver’s electric seat.” *Ikeda*, [0064]. Thus, a user’s preferential setting for the “seat position controller 51” is stored as part of the “environment setup information item” and can be recalled so that “the driving

environment can be reproduced correctly, without performing fine tuning by the external operation” (i.e., manually). *Ikeda*, [0064].

Once the “in-vehicle device 10” receives the “environment setup information item” (*vehicle control settings*), it determines, based on the “environment setup information item” (*based at least partially on the vehicle control settings*) to transmit adjustment instructions to “various” (i.e., one or more) “control units 51-59” (*determining to adjust the at least one vehicle control associated with the location inside the vehicle*). Denning, ¶80. Specifically, after the “in-vehicle device 10” receives the “environment setup information item,” it transmits data to “various” (i.e., one or more) “control units 51-59” for the purpose of “set[ting]” “the driving environment of the vehicle 100 . . . as the driving environment for the driver.” *Ikeda*, [0092]-[0093]; *see Ikeda*, [0251].

1[f]: providing an adjustment output to a vehicle control system, wherein the adjustment output is provided based at least partially on determining the user is present in the location inside the vehicle, wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle.

Ikeda discloses *providing an adjustment output to a vehicle control system, wherein the adjustment output is provided based at least partially on determining the user is present in the location inside the vehicle, wherein the vehicle control system is adapted to control the at least one vehicle control associated with the*

location inside the vehicle. Denning, ¶¶82-87; *infra* § VII.A.5 (claim 5). For example, *Ikeda* discloses transmitting “the environment setup information item” to “control units” (*providing an adjustment output to a vehicle control system*) only after “detect[ing] that the user is in a state of riding the vehicle 100” (*based at least partially on determining the user is present in the location inside the vehicle*). *Ikeda*, [0080], [0087], [0093]; Denning, ¶82.

Ikeda discloses *providing an adjustment output to a vehicle control system*. Denning, ¶83. For example, *Ikeda* discloses transmitting “the environment setup information item . . . to various control units.” *Ikeda*, [0093], [0080], [0087]; *see also Ikeda*, Figs. 14, 18A, and 18B, [0233], [0236], [0244], [0251], [0267]-[0269], [0272]. Thus “the driving environment of the vehicle [] is set as the driving environment for the driver.” *Ikeda*, [0093].

Ikeda further discloses that *the vehicle control system is adapted to control the at least one vehicle control*. Denning, ¶84. The “control units” work together (as a *vehicle control system*) to “enable a setup (change) of the driving environment according to a driver’s liking.” *Ikeda*, [0063].

Ikeda additionally discloses that *the vehicle control that the vehicle control system is adapted to control is associated with the location inside the vehicle*. For example, *Ikeda* discloses vehicle controls associated with the driver’s seat. Specifically, the “control units 51-59 enable a setup (change) of the driving

environment according to a driver's liking,” thus indicating that the control units are associated with the driver's seat location. *Ikeda*, [0063]; Denning, ¶85. Further, *Ikeda* discloses vehicle controls that are associated directly with the driver's seat location, including at least the “steering wheel position” and “seat position” controllers. *Ikeda*, [0063].

Ikeda discloses that *providing the adjustment output is based at least partially on determining the user is present in the location inside the vehicle.* Denning, ¶86. For example, *Ikeda* discloses only transmitting “the environment setup information item” after determining that the user is present in the location inside the vehicle. As illustrated in Figure 2, transmitting the “environment setup information item” (*providing the adjustment output*) occurs in Step S111 of the “vehicle environment setup processing.” *Ikeda*, [0093], [0079]-[0080]; *see also Ikeda* Figs. 14, 18A, and 18B and [0236], [0244], [0272]. But the “vehicle environment setup processing” would not proceed to Step S111 unless *Ikeda's* system first “detect[s] that the user is in a state of riding the vehicle” in Step S101. *Ikeda*, [0079]-[0080]. This detection can be “performed by, for example, detecting a user's seating with a sitting sensor provided in the driver's seat” (*determining the user is present in the location inside the vehicle*). *Ikeda*, [0079]. Thus, *Ikeda* discloses that *providing the adjustment output is based at least partially on determining the user is present in the location inside the vehicle.*

2. Claim 2

2[a]: The method of claim 1, wherein prior to determining the location inside the vehicle associated with the user the method further comprises: storing, in the user profile memory, information corresponding to locations inside the vehicle occupied by the user;

Ikeda further renders obvious *wherein prior to determining the location inside the vehicle associated with the user the method further comprises: storing, in the user profile memory, information corresponding to locations inside the vehicle occupied by the user*. Denning, ¶¶88-92. For example, *Ikeda* discloses that the “environment setup information is stored” in the “storage unit 22” (*user profile memory*) before the “vehicle environment setup processing.” *Ikeda*, [0073], [0080]; Denning, ¶88; *see supra* § VII.A.1 (element 1[d]).

It would have been obvious to a skilled artisan at the time of the alleged invention to modify *Ikeda* based on its own teachings and the knowledge of a skilled artisan to store, *in the user profile memory, information corresponding to locations inside the vehicle occupied by the user*. Denning, ¶89. *Ikeda* acknowledges that a known user—with settings saved for the driver’s seat—may sit “in any seat except the driver’s seat.” *Ikeda*, [0115]. Thus, a skilled artisan would have been motivated to store information corresponding to the adjustable components of multiple seats (such as adjustable seats, temperature settings, etc.)

in a vehicle for registered users so that a user's preferences can be applied regardless of where the user sits. Denning, ¶89.

A skilled artisan would have considered such modifications to *Ikeda* because they involved (A) combining prior-art elements according to known methods to yield predictable results (e.g., applying *Ikeda*'s hardware and software to identify a user and to save location-specific settings, simply extended to include an additional seat); (B) use of a known technique (e.g., *Ikeda*'s user identification and location-specific setting storage techniques) to improve similar devices in the same way (e.g., "any seat except the driver's seat"); (C) applying a known technique (e.g., *Ikeda*'s user identification and location-specific setting storage techniques) to a known device (e.g., "any seat except the driver's seat") ready for improvement to yield predictable results (the same result, except extended to the passenger seat). Denning, ¶90.

A skilled artisan would have had a reasonable expectation of success in extending *Ikeda*'s disclosure to store user settings for more than one location inside the vehicle. Denning, ¶91. For example, *Ikeda*'s disclosure of storing settings corresponding to the driver's seat is equally applicable to store settings corresponding to the passenger seats. Denning, ¶91.

2[b]: collecting vehicle control setting data associated with the user, wherein the vehicle control setting data includes at least one vehicle control setting made by the user in at least one of the locations inside the vehicle; and

Ikeda discloses *collecting vehicle control setting data associated with the user, wherein the vehicle control setting data includes at least one vehicle control setting made by the user in at least one of the locations inside the vehicle*. Denning, ¶¶93-95. For example, *Ikeda* discloses obtaining “the environment setup information item indicative of the current driving environment of the vehicle.” *Ikeda*, [0073].

Ikeda discloses that the user sets the “driving environment . . . by the user’s external operation.” *Ikeda*, [0073]. *Ikeda* uses the term “external operation” to refer to a user’s manual adjustment of the “control units” such as seat position. *Ikeda*, [0064]; Denning, ¶94. Ultimately, “the portable device 20 stores the received environment setup information item in the storage unit 22.” *Ikeda*, [0073].

2[c]: storing the vehicle control setting data in the user profile memory.

Ikeda discloses *storing the vehicle control setting data in the user profile memory*. Denning, ¶¶96-97. For example, *Ikeda* discloses storing the “environment setup information item” (*vehicle control setting data*) “in the storage unit 22 of the portable device 20” (*user profile memory*). *Ikeda*, [0073], Fig. 6; *see supra* § VII.A.1 (element 1[d]).

3. Claim 3: The method of claim 1, wherein the at least one vehicle control includes one or more vehicle features such as a seat system, a steering control, a foot pedal control, a mirror position, and a display device.

Ikeda further discloses *wherein the at least one vehicle control includes one or more vehicle features such as a seat system, a steering control, a foot pedal control, a mirror position, and a display device.* Denning, ¶¶98-100. For example, *Ikeda* discloses that the “control units 51-59 enable a setup (change) of the driving environment,” including “a seat position controller 51, a steering wheel position controller 52, a mirror attitude controller 53, an air-conditioning controller 54, an audio controller 55, a navigation controller 56, an information display control device 57, an engine controller 58, and a traveling control device 59.” *Ikeda*, [0063].

Ikeda’s “seat position controller 51” is *a seat system*; its “steering wheel position controller 52” is *a steering control*; its “mirror attitude controller 53” is *a mirror position*; and its “information display control device 57” is *a display device*. Denning, ¶99.

4. Claim 4: The method of claim 3, wherein the vehicle control settings include at least one of a position, a sensitivity, an angle, and a movement, associated with the one or more vehicle features.

Ikeda further discloses *wherein the vehicle control settings include at least one of a position, a sensitivity, an angle, and a movement, associated with the one or more vehicle features.* Denning, ¶¶101-105. For example, *Ikeda* discloses “a

seat position controller 51, a steering wheel position controller 52,” and “a mirror attitude controller 53.” *Ikeda*, [0063].

Ikeda’s “environment setup information” item is a *vehicle control setting*. Denning, ¶102. For example, the “seat position controller 51” setting is saved as an “environment setup information item.” *Ikeda*, [0064]. Thus, the settings for the various “control units 51-59” are “environment setup information items” or *vehicle control settings*. Denning, ¶102.

Ikeda’s “environment setup information” items for its “seat position controller 51” and “steering wheel position controller 52” are *vehicle control settings* that include at least *a position associated with the one or more vehicle features*. Denning, ¶103. For example, the “seat position controller 51 adjusts the position of the driver’s electric seat (the height of the seat surface, the positioning the back-and-forth direction, etc.).” *Ikeda*, [0064].

Ikeda’s “environment setup information item” for its “mirror attitude controller 53” is a *vehicle control setting* that includes at least *an angle associated with the one or more vehicle features*. Denning, ¶104. The term “attitude” refers to the angle of the mirrors. Denning, ¶104. Further, *Ikeda* refers to being able to set “angles of various mirrors.” *Ikeda*, [0005].

5. Claim 5

5[a]: The method of claim 1, wherein determining the presence of the user inside the vehicle further comprises: detecting a person via at least one image sensor associated with the vehicle;

Ikeda further discloses *wherein determining the presence of a user inside the vehicle further comprises: detecting a person via at least one image sensor associated with the vehicle*. Denning, ¶¶106-108. For example, *Ikeda* discloses “detect[ing] the fact that the driver rides the vehicle 100” by “us[ing] the taken image of the camera 42.” *Ikeda*, [0409].

Ikeda specifically discloses that “the in-vehicle device 10 detects the fact that the driver rides the vehicle 100 with the aid of the seat sensor provided in the driver’s seat.” *Ikeda*, [0409]. *Ikeda* clarifies that the invention “is not limited” to using the seat sensor because “it may be possible to detect the fact that the driver rides the vehicle 100, through the detection of opening, closing, and unlocking of the door of the driver’s seat side, or in use of the taken image of the camera 42[.]” *Ikeda*, [0409]; *see* [0122] (disclosing that the “in-vehicle device 10” can process signals from “camera 42”). Denning, ¶107.

5[b]: identifying facial features associated with the person detected via the at least one image sensor; and

Ikeda discloses *identifying facial features associated with the person detected via the at least one image sensor*. Denning, ¶¶109-111. For example,

Ikeda discloses “detecting a facial feature point from the taken image of the camera 42.” *Ikeda*, [0062].

Ikeda specifically discloses that “the personal identification device 41 is for authenticating a user sitting in the driver’s seat based on his or her physical feature.” *Ikeda*, [0062]. *Ikeda* further discloses *at least one image sensor*. Denning, ¶110. For example, *Ikeda* discloses that “a camera 42 is installed ahead of the driver’s seat inside the vehicle 100, and can take an image of a face of a user sitting in the driver’s seat.” *Ikeda*, [0062]. *Ikeda* discloses *identifying facial features associated with the person detected*. Denning, ¶110. For example, *Ikeda* discloses that the “personal identification device 41 performs authentication by detecting a facial feature point from the taken image of the camera 42 as the driver's physical feature.” *Ikeda*, [0062].

5[c]: determining whether the identified facial features associated with the person match user characteristics stored in a memory.

Ikeda discloses *determining whether the identified facial features associated with the person match user characteristics stored in a memory*. Denning, ¶¶112-116. For example, *Ikeda* discloses “template matching of the facial feature information items received from the in-vehicle device 10 with the image taken with the camera 42.” *Ikeda*, [0097].

Ikeda discloses sending a “feature information-sending request . . . to request the portable device 20 to send facial feature information.” *Ikeda*, [0085]. In response to this request, “the facial feature information . . . stored in the portable device 20 is transmitted to the in-vehicle device 10.” *Ikeda*, [0085]. The “facial feature information . . . stored in the portable device 20” is *user characteristics stored in a memory*. Denning, ¶113. *Ikeda* discloses that the “in-vehicle device 10 transmits [] facial feature information items . . . to the personal identification device 41” to initiate “driver determination processing.” *Ikeda*, [0087].

Ikeda discloses that during “driver determination processing,” “the personal identification device 41 identifies the driver’s facial feature information item out of the facial feature information items received from the in-vehicle device 10, by template matching of the facial feature information items received from the in-vehicle device 10 with the image taken with the camera 42” (*identified facial features*). *Ikeda*, [0097]; Denning, ¶114.

Ikeda discloses that, in this way, “the facial feature information item that belongs to the driver is certainly identified or selected among the multiple facial feature information items received from the in-vehicle device 10.” *Ikeda*, [0097]. Thus, *Ikeda* discloses *determining whether the identified facial features associated with the person match user characteristics stored in a memory*.

6. Claim 6

**6[a]: The method of claim 1, further comprising:
determining that the user made a change to the
adjusted at least one vehicle control; and**

Ikeda further discloses or renders obvious *determining that the user made a change to the adjusted at least one vehicle control*. Denning, ¶¶117-126. For example, *Ikeda* discloses that “the driving environment for the user is set up by the user’s external operation in the vehicle.” *Ikeda*, [0073].

Ikeda specifically discloses *determining that the user made a change*. Denning, ¶118. For example, *Ikeda* discloses that “after the driving environment for the user is set up by the user’s external operation,” the “in-vehicle device 10 . . . transmits the environment setup information item indicative of the current driving environment of vehicle 100 to the portable device.” *Ikeda*, [0073]. The “environment setup information item” consists of data that indicates a user’s preferences for the settings of specific “control units.” *Ikeda*, [0064]. Denning, ¶119.

To the extent it is argued that *Ikeda* does not explicitly disclose this limitation, it would have been obvious to a skilled artisan at the time of the alleged invention to modify *Ikeda* based on its own teachings and the knowledge of a skilled artisan to *determine that the user made a change to the adjusted at least one vehicle control*. Denning, ¶120. A skilled artisan would have recognized that *Ikeda* discloses the hardware and software necessary to *determine that a user has made a*

change to at least one vehicle control. Denning, ¶120. For example, *Ikeda* describes a specific action that the “in-vehicle device 10” performs after a user makes a change: the “in-vehicle device 10 . . . transmits the environment setup information item indicative of the current driving environment of vehicle 100 to the portable device.” *Ikeda*, [0073]. Further, *Ikeda* discloses that its system has the ability to “determine[] whether the driving environment is adjusted by the external operation of the driver who rides the vehicle.” *Ikeda*, [0254].

A skilled artisan would have been motivated to use this disclosed hardware and software to *determine that the user made a change to the adjusted at least one vehicle control*. Denning, ¶122. For example, a skilled artisan would have recognized that a user might not want to keep the same setting saved for the entire time that the driver owns the vehicle. *Id.* At certain times, due to health, age, or simply changed preferences, a user may, for example, want the seat positioned at a slightly different angle. *Id.* In such cases, a skilled artisan would have been motivated to ensure that the system could detect that the user made changes to the adjusted vehicle control so that they could be stored for future use. *Id.*

A skilled artisan would have been aware of several well-known techniques for determining that the user has made a change to a setting, including having the user press a button to save new settings or causing the vehicle control unit to send a signal when it has been adjusted. Denning, ¶123; *see, e.g., He*, [0021] (“To set

the preferred settings, the user adjusts the vehicle components, such as seats and mirror . . . to her preferred position or setting, the user then presses buttons located on the user interface [] to set the settings, and the controller [] stores the setting inputs in the user's profile."); *Cazanas*, 14:28-45 ("Once the adjustable elements on the vehicle [] are set and the settings are detected by the vehicle, the user may save a user profile on the vehicle For instance, the vehicle [] may have a user interface [] that allows a user to store the settings as a user profile. For instance, a touch screen on a navigation system may allow a user to access a menu that contains a button, or virtual button, that a user may depress to indicate to the vehicle that the current positions of the adjustable elements should be saved as a user profile.").

A variety of rationales show why a skilled artisan would have applied techniques for determining when adjustments to vehicle controls had been made, to *Ikeda's* disclosure. For example, such modifications would have merely involved (A) combining prior-art elements according to known methods to yield predictable results (e.g., applying *Ikeda's* hardware and software to determine changes made to vehicle control units); (B) use of a known technique (e.g., *Ikeda's* determining changes made to vehicle control units) to improve similar devices in the same way (e.g., determining changes made to adjusted vehicle controls); (C) applying a known technique (e.g., *Ikeda's* determining changes made to vehicle control units)

to a known device (e.g., determining changes made to adjusted vehicle controls) ready for improvement to yield predictable results. Denning, ¶124.

A skilled artisan would have had a reasonable expectation of success in extending *Ikeda*'s disclosure to determine changes made to adjusted vehicle controls. Denning, ¶125. For example, *Ikeda*'s disclosure of determining that a user has made changes to vehicle control settings generally would be applicable to determining that a user has made changes to adjusted vehicle controls. Denning, ¶125.

6[b]: storing the change made to the adjusted at least one vehicle control in the user profile memory.

Ikeda discloses *storing the change made to the adjusted at least one vehicle control in the user profile memory*. Denning, ¶¶127-131. For example, *Ikeda* discloses that the “environment setup information is stored in the storage unit.” *Ikeda*, [0073].

Ikeda's “storage unit 22” is a *user profile memory*. Denning, ¶128.

Ikeda's “environment setup information item” consists of data that captures “the user's external operation in the vehicle 100,” which is *the change made to the adjusted at least one vehicle control*. Denning, ¶129.

Thus, *Ikeda* discloses *storing the change made to the adjusted at least one vehicle control in the user profile memory*. Denning, ¶130. For example, *Ikeda*

discloses that the “environment setup information is stored in the storage unit.”

Ikeda, [0073].

7. Claim 7

7[a]: A method, comprising: determining a location inside a vehicle associated with a user;

Ikeda discloses *determining a location inside a vehicle associated with a user*. Denning, ¶¶132-133; *supra* § VII.A.1 (element 1[a]).

7[b]: determining at least one vehicle control associated with the location inside the vehicle;

Ikeda discloses *determining at least one vehicle control associated with the location inside the vehicle*. Denning, ¶¶134-135; *supra* § VII.A.1 (element 1[b]).

7[c]: referring to a user profile memory associated with the user for vehicle control settings;

Ikeda discloses *referring to a user profile memory associated with the user for vehicle control settings*. Denning, ¶¶136-135; *supra* § VII.A.1 (element 1[d]).

7[d]: determining, based at least partially on the vehicle control settings, to adjust the at least one vehicle control associated with the location inside the vehicle; and

Ikeda discloses *determining, based at least partially on the vehicle control settings, to adjust the at least one vehicle control associated with the location inside the vehicle*. Denning, ¶¶138-139; *supra* § VII.A.1 (element 1[e]).

7[e]: providing an adjustment output to a vehicle control system, wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle, wherein the at least one vehicle control is adjusted via the adjustment output to match the vehicle control settings in the user profile memory.

Ikeda discloses providing an adjustment output to a vehicle control system, wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle, wherein the at least one vehicle control is adjusted via the adjustment output to match the vehicle control settings in the user profile memory. Denning, ¶¶140-145; *see supra* § VII.A.1 (element 1[f]). For example, *Ikeda* discloses transmitting “the environment setup information item” to “control units.” *Ikeda*, [0080], [0087], [0093]; *see also Ikeda*, [0233], [0251], [0267]-[0269].

Ikeda’s discloses that its “control units” are a vehicle control system adapted to control at least one vehicle control associated with the location inside the vehicle. Denning, ¶141. For example, for the “control units 51-59” “the seat position controller 51 adjusts the position of the driver’s electric seat.” *Ikeda*, [0064].

Ikeda discloses that its “environment setup information item[s]” are vehicle control settings. Denning, ¶142. For example, *Ikeda* discloses that its “environment

setup information item” is data “indicative of a driving environment of the associated user.” *Ikeda*, [0013]; Denning, ¶142.

Ikeda further discloses that its “environment setup information item” (*vehicle control settings*) is *in the user profile memory*. Denning, ¶143. For example, *Ikeda* discloses that the “environment setup information item” is “stored in the storage unit 22.” *Ikeda*, [0073].

Ikeda’s discloses that its “transmi[ssion]” of the “environment setup information item” is *an adjustment output* that instructs the “control units” to make adjustments to “set” the “driving environment for the driver.” *Ikeda*, [0093], [0013], [0079]-[0080]; Denning, ¶144.

8. Claim 8

8[a]: A non-transitory computer readable medium having instructions stored thereon that, when executed by a processor, perform a method comprising:

Ikeda discloses *a non-transitory computer readable medium having instructions stored thereon that, when executed by a processor, perform a method*. Denning, ¶¶146-150. For example, *Ikeda* discloses “the vehicle environment setup processing performed by the control unit 11 of the in-vehicle device 10.” *Ikeda*, [0079].

Ikeda discloses that its “in-vehicle device . . . includes a computer readable medium and program instructions.” *Ikeda*, [0015]. *Ikeda* further discloses that

these “program instructions . . . caus[e] the computer to serve as driver identifying means and driving-environment setup means.” *Ikeda*, [0015].

Additionally, *Ikeda* discloses that its “in-vehicle device 10 possesses or includes a control unit 11” and that the “control unit 11 includes as a main element a microcomputer having a CPU, a ROM, a RAM, and executes various processing.” *Ikeda*, [0060]-[0061].

Given these disclosures, a POSITA would have understood that the driver identifying and environment setup processing in *Ikeda*, including all the claimed processing discussed below, is carried out by control unit 11 based on instructions stored in a non-transitory computer readable medium. Denning, ¶149.

**8[b]: determining a location inside a vehicle
associated with a user;**

Ikeda discloses *determining a location inside a vehicle associated with a user*. Denning, ¶¶151-153; *supra* § VII.A.1 (element 1[a]).

Ikeda discloses that the “[d]etection of the driver to ride in the vehicle” is the first step of the “vehicle environment setup processing” as “performed by the control unit 11 of the in vehicle device 10,” acting via its CPU. *Ikeda*, [0079].

Again, the “in vehicle device includes a computer readable medium and program instructions” that “caus[e] the computer to serve as driver identifying means.” *Ikeda*, [0015]. A skilled artisan would have understood that the

“[d]etection of the driver to ride in the vehicle” (*determining a location inside a*

vehicle associated with a user) is the first step to identifying a driver. Denning,

¶152. A skilled artisan would further have understood that the “in vehicle device 10’s” “program instructions” included instructions to detect the driver riding in the vehicle. Denning, ¶152.

**8[c]: determining at least one vehicle control
associated with the location inside the vehicle;**

Ikeda discloses *determining at least one vehicle control associated with the location inside the vehicle*. Denning, ¶¶154-157; *supra* § VII.A.1 (element 1[b]).

Part of the “vehicle environment setup processing” (“performed by the control unit 11 of the in vehicle device 10”) is *determining at least one vehicle control* to adjust. *Ikeda*, [0079], [0093]. *Ikeda* discloses that its “control units 51-59 enable a setup (change) of the driving environment according to a driver’s liking,” including by adjusting “seat position,” “steering wheel position,” “mirror attitude,” “air-conditioning,” “audio,” “navigation,” and the “information display.” *Ikeda*, [0063]. *Ikeda*, thus, determines *at least one vehicle control* to adjust that is associated with the driver’s seat location in the vehicle. Denning, ¶155.

Again, the “in vehicle device includes a computer readable medium and program instructions” that “caus[e] the computer to serve as . . . driving-environment setup means.” *Ikeda*, [0015]. A skilled artisan would have understood that determining control units to adjust (*determining at least one vehicle control*) is part of setting up the driving-environment. Denning, ¶156. A skilled artisan would

further have understood that the “in vehicle device 10’s” “program instructions” included instructions to make this determination. Denning, ¶156.

**8[d]: referring to a user profile memory associated
with the user for vehicle control settings;**

Ikeda discloses *referring to a user profile memory associated with the user for vehicle control settings*. Denning, ¶¶158-161; *supra* § VII.A.1 (element 1[d]).

Ikeda further discloses that obtaining “the environment setup information indicative of the driving environment for the driver” is part of the “vehicle environment setup processing” (“performed by the control unit 11 of the in-vehicle device 10”). *Ikeda*, [0091], [0079], Fig. 2.

Again, the “in-vehicle device . . . includes a computer readable medium and program instructions” that “caus[e] the computer to serve as . . . driving-environment setup means.” *Ikeda*, [0015]. A skilled artisan would have understood that obtaining the “environment setup information” (*referring to a user profile memory associated with the user for vehicle control settings*) is part of setting up the driving-environment. Denning, ¶160. A skilled artisan would further have understood that the “in vehicle device 10’s” “program instructions” included instructions to make this determination. Denning, ¶160.

8[e]: determining, based at least partially on the vehicle control settings, to adjust the at least one vehicle control associated with the location inside the vehicle; and

Ikeda discloses *determining, based at least partially on the vehicle control settings, to adjust the at least one vehicle control associated with the location inside the vehicle*. Denning, ¶¶162-165; *supra* § VII.A.1 (element 1[e]).

Ikeda discloses that its “control units” operate “to reproduce the driving environment indicated by the environment setup information item” which is part of the “vehicle environment setup processing” (“performed by the control unit 11 of the in vehicle device 10”). *Ikeda*, [0064], [0093], [0079], Fig. 2.

Again, the “in vehicle device . . . includes a computer readable medium and program instructions” that “caus[e] the computer to serve as . . . driving-environment setup means.” *Ikeda*, [0015]. A skilled artisan would have understood that “reproduc[ing] the driving environment indicated by the environment information setup item” (*determining, based at least partially on the vehicle control settings, to adjust the at least one vehicle control associated with the location inside the vehicle*) is part of setting up the driving-environment. Denning, ¶164. A skilled artisan would further have understood that the “in vehicle device 10’s” “program instructions” included instructions to adjust the driving environment based on the “environment setup information item.” Denning, ¶164.

8[f]: providing an adjustment output to a vehicle control system, wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle, wherein the at least one vehicle control is adjusted via the adjustment output to match the vehicle control settings in the user profile memory.

Ikeda discloses *providing an adjustment output to a vehicle control system, wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle, wherein the at least one vehicle control is adjusted via the adjustment output to match the vehicle control settings in the user profile memory.* Denning, ¶¶166-169; *see supra* §§ VII.A.1, VII.A.7 (elements 1[f], 7[e]). For example, *Ikeda* discloses transmitting “the environment setup information item” to “control units.” *Ikeda*, [0080], [0087], [0093]; *see also Ikeda*, [0233], [0251], [0267]-[0269].

Ikeda discloses that transmitting “the environment setup information” “to various control units” is part of the “vehicle environment setup processing.” (“performed by the control unit 11 of the in vehicle device 10,” via its CPU). *Ikeda*, [0093], [0079], Fig. 2; *see also Ikeda*, [0233], [0251], [0267]-[0269].

Again, the “in vehicle device includes a computer readable medium and program instructions” that “caus[e] the computer to serve as . . . driving-environment setup means.” *Ikeda*, [0015]. A skilled artisan would have understood that transmitting “environment setup information item” to “various control units”

is part of setting up the driving-environment. Denning, ¶168. A skilled artisan would further have understood that the “in vehicle device 10’s” “program instructions” included instructions to transmit the “environment setup information item” to “various control units.” Denning, ¶168.

9. Claim 9: The non-transitory computer readable medium of claim 8, wherein prior to providing the adjustment output, the method further comprises: determining a presence of the user inside the vehicle, wherein the adjustment output is provided based at least partially on determining the user is present in the location of the vehicle.

Ikeda further discloses *wherein prior to providing the adjustment output, the method further comprises: determining a presence of the user inside the vehicle, wherein the adjustment output is provided based at least partially on determining the user is present in the location of the vehicle.* Denning, ¶¶170-173. For example, *Ikeda* discloses transmitting “an identification information-sending request” to a user’s device “to detect that the user is in a state of riding the vehicle” as part of the “vehicle environment setup processing,” which is “performed by the control unit 11.” *Ikeda*, [0079]-[0080]; Fig. 2; *see supra* § VII.A.1 (element 1[c]).

For example, in the first embodiment, *Ikeda* discloses transmitting the “identification information-sending request” (in, for example, Step S101) (*determining a presence of the user inside the vehicle*) prior to transmitting “the environment setup information item . . . to various control units” (in, for example, Step S111) (*providing the adjustment output*). *Ikeda*, [0080], [0093], Fig. 2. *Ikeda*

discloses that both these steps are part of the “vehicle environment setup processing,” which is “performed by the control unit 11.” *Ikeda*, [0093], [0079], Fig. 2.

Again, the “in-vehicle device . . . includes a computer readable medium and program instructions” that “caus[e] the computer to serve as . . . driving-environment setup means.” *Ikeda*, [0015]. A skilled artisan would have understood that transmitting the “identification information-sending request” (*determining a presence of the user inside the vehicle*) occurs *prior to* transmitting “the environment setup information item . . . to various control units” (*providing the adjustment output*). Denning, ¶172. A skilled artisan would further have understood that the “in vehicle device 10’s” “program instructions” included instructions to this effect. Denning, ¶172.

Ikeda discloses that its *providing the adjustment output* is based at least partially on *determining the user is present in the location inside the vehicle*. Denning, ¶172; *supra* § VII.A.1 (element 1[f]).

10. Claim 10

10[a]: The non-transitory computer readable medium of claim 8, wherein prior to determining the location inside the vehicle associated with the user the method further comprises: storing, in the user profile memory, information corresponding to locations inside the vehicle occupied by the user;

Ikeda further renders obvious *wherein prior to determining the location inside the vehicle associated with the user the method further comprises: storing, in the user profile memory, information corresponding to locations inside the vehicle occupied by the user*. Denning, ¶¶174-175; *supra* § VII.A.2 (element [2a]).

10[b]: collecting vehicle control setting data associated with the user, wherein the vehicle control setting data includes at least one vehicle control setting made by the user in at least one of the locations inside the vehicle; and

Ikeda further discloses these limitations. Denning, ¶¶176-177; *supra* § VII.A.2 (element 2[b]).

10[c]: storing the vehicle control setting data in the user profile memory.

Ikeda further discloses these limitations. Denning, ¶¶178-180; *supra* § VII.A.2 (element 2[c]).

Again, the “in vehicle device includes a computer readable medium and program instructions” that “caus[e] the computer to serve as . . . driving-environment setup means.” *Ikeda*, [0015]. A skilled artisan would have understood that the additional steps of claim 10 would have been part of setting up the driving-

environment. Denning, ¶179. A skilled artisan would further have thus further understood that the “in vehicle device 10’s” “program instructions” would have included instructions to perform the additional steps of claim 10. Denning, ¶179.

11. Claim 11: The non-transitory computer readable medium of claim 8, wherein the at least one vehicle control includes one or more vehicle features such as a seat system, a steering control, a foot pedal control, a mirror position, and a display device, and wherein the vehicle control settings include at least one of a position, a sensitivity, an angle, and a movement, associated with the one or more vehicle features.

Ikeda further discloses these limitations. Denning, ¶¶181-182; *supra* § VII.A.3-4 (claims 3 and 4).

12. Claim 12

12[a]: The non-transitory computer readable medium of claim 9, wherein determining the presence of the user inside the vehicle further comprises: detecting a person via at least one image sensor associated with the vehicle;

Ikeda further discloses *wherein determining the presence of the user inside the vehicle further comprises: detecting a person via at least one image sensor associated with the vehicle*. Denning, ¶¶183-185; *supra* § VII.A.5 (element 5[a]).

Ikeda discloses that “the in-vehicle device 10 detects the fact that the driver rides the vehicle 100.” *Ikeda*, [0409]. The “in-vehicle device 10” includes “a control unit 11,” and the “control unit 11” is the part of the “in-vehicle device 10”

that “executes various processing,” including “[d]etection of the driver.” *Ikeda*, [0060]-[0061], [0079]-[0080]. Denning, ¶184.

Ikeda discloses *at least one image sensor*. For example, *Ikeda* discloses “detecting a facial feature point from the taken image of the camera 42.” *Ikeda*, [0062]. Denning, ¶185.

12[b]: identifying facial features associated with the person detected via the at least one image sensor; and

Ikeda further discloses *identifying facial features associated with the person detected via the at least one image sensor*. Denning, ¶¶186-187. For example, *Ikeda* discloses the “personal identification device 41” “detecting a facial feature point from the taken image of the camera 42.” *Ikeda*, [0062]; Denning, ¶186; *see supra* § VII.A.5 (element 5[b]).

Ikeda further discloses that the “control unit 11 is . . . capable of communicating with a personal identification device” and that “the control unit 11” performs “the vehicle environment setup processing,” including using the “personal information device 41” “to perform the driver determination processing in order to identify or select a facial feature information item of the driver.” *Ikeda*, [0061], [0079], [0087]-[0088]. Denning, ¶187.

12[c]: determining whether the identified facial features associated with the person match user characteristics stored in a memory.

Ikeda further discloses *determining whether the identified facial features associated with the person match user characteristics stored in a memory.*

Denning, ¶¶188-190. For example, *Ikeda* discloses “template matching of the facial feature information items received from the in-vehicle device 10 with the image taken with the camera 42.” *Ikeda*, [0097]; Denning, ¶188; *see supra* § VII.A.5 (element 5[c]).

Ikeda discloses the “control unit 11,” which performs the “vehicle environment setup processing,” sending a “feature information-sending request . . . to request the portable device 20 to send facial feature information” (*user characteristics stored in a memory*). *Ikeda*, [0079], [0085]. Denning, ¶189.

Ikeda further discloses the “control unit 11” directing “the personal identification device 41” “to perform the driver determination processing.” *Ikeda*, [0079], [0087]. *Ikeda* specifically discloses that “the personal identification device 41 identifies the driver’s facial feature information item out of the facial feature information items received from the in-vehicle device 10, by template matching of the facial feature information items received from the in-vehicle device 10 [(*user characteristics stored in a memory*)] with the image taken with the camera 42 [(*identified facial features*)].” *Ikeda*, [0097]. Denning, ¶190.

Again, the “in vehicle device . . . includes a computer readable medium and program instructions” that “caus[e] the computer to serve as driver identifying means.” *Ikeda*, [0015]. A skilled artisan would have understood that the additional steps of claim 12 would have been part of setting up the driver identifying means. Denning, ¶190. A skilled artisan would further have thus further understood that the “in vehicle device 10’s” “program instructions” would have included instructions to perform the additional steps of claim 12. Denning, ¶190.

13. Claim 13

13[a]: The non-transitory computer readable medium of claim 8, wherein the method further comprises: determining that the user made a change to the adjusted at least one vehicle control; and

Ikeda further discloses or renders obvious *wherein the method further comprises: determining that the user made a change to the adjusted at least one vehicle control*. Denning, ¶¶191-194; *supra* § VII.A.6 (element 6[a]).

Regarding this additional aspect of the method being performed by the processor when the instructions stored on the computer readable medium are executed, as explained above, *Ikeda* discloses that its “in-vehicle device . . . includes a computer readable medium and program instructions.” *Ikeda*, [0015]. *Ikeda* further discloses that these “program instructions . . . caus[e] the computer to serve as driver identifying means and driving-environment setup means.” *Ikeda*, [0015], [0061]; *see supra* § VII.A.8 (element 8[a]).

Ikeda's "in-vehicle device 10 possesses or includes a control unit 11" and the "control unit 11 includes as a main element a microcomputer having a CPU, a ROM, a RAM, and executes various processing." *Ikeda*, [0060]-[0061].

Ikeda discloses that "control unit 11 of the in-vehicle device 10," acting via its CPU, performs the "vehicle environment setup processing" that includes "determin[ing] whether the driving environment is adjusted by the external operation of the driver who rides the vehicle," or this would have at least been obvious for the same reasons discussed for element 6[a]. *Ikeda*, [0254], Fig. 25B; Denning, ¶¶191-194; *supra* § VII.A.6 (element 6[a]).

13[b]: storing the change made to the adjusted at least one vehicle control in the user profile memory.

Ikeda further discloses *storing the change made to the adjusted at least one vehicle control in the user profile memory*. Denning, ¶¶195-197; *see supra* § VII.A.6 (element 6[b]).

Regarding this additional aspect of the method being performed by the processor when the instructions stored on the computer readable medium are executed, as explained above, *Ikeda* discloses that "the in-vehicle device 10," containing the "control unit 11," which acts via its CPU, "transmits the environment setup information item indicative of the current driving environment of the vehicle 100 [(change made to the adjusted at least one vehicle control)] to the portable device 10," where "the portable device 20 stores the received environment setup

information item in the storage unit 22” (*user profile memory*). Thus, based on the in-vehicle device 10’s transmission of “the environment setup information item . . . to the portable device 20,” “the portable device 20 stores the received environment setup information item in the storage unit 22.” *Ikeda*, [0073]. *Ikeda* thus discloses storing the change made to the adjusted at least one vehicle control in the user profile memory. Denning, ¶¶195-197.

14. Claim 14

14[a]: A vehicle control system, comprising: a profile identification module contained in a memory and executed by a processor of the vehicle control system,

Ikeda discloses a vehicle control system, comprising: a profile identification module contained in a memory and executed by a processor of the vehicle control system. Denning, ¶¶198-202; *see supra* § VII.A.8 (element 8[a]). For example, *Ikeda* discloses “the vehicle environment setup processing performed by the control unit 11 of the in-vehicle device 10.” *Ikeda*, [0079]; Fig. 2.

Ikeda discloses that its “in vehicle device . . . includes a computer readable medium and program instructions” (*profile identification module contained in a memory*). *Ikeda*, [0015]; Denning, ¶199. *Ikeda* further discloses that these “program instructions . . . caus[e] the computer to serve as driver identifying means and driving-environment setup means.” *Ikeda*, [0015].

Additionally, *Ikeda* discloses that its “in-vehicle device 10 possesses or includes a control unit 11” and that the “control unit 11 includes as a main element a microcomputer having a CPU, a ROM, a RAM, and executes various processing” (*executed by a processor of the vehicle control system*). *Ikeda*, [0060]-[0061].

Given these disclosures, a POSITA would have understood that the driver identifying and environment setup processing in *Ikeda*, including all the claimed processing discussed below, is carried out by a profile identification module contained in a memory and executed by a processor of the vehicle control system. Denning, ¶201.

14[b]: the profile identification module configured to determine a location inside a vehicle associated with a user,

Ikeda further discloses *the profile identification module configured to determine a location inside a vehicle associated with a user*. Denning, ¶¶203-204; *see supra* § VII.A.8 (element 8[b]).

14[c]: determine at least one vehicle control associated with the location inside the vehicle,

Ikeda further discloses *determine at least one vehicle control associated with the location inside the vehicle*. Denning, ¶205-206; *see supra* § VII.A.8 (element 8[c]).

14[d]: refer to a user profile memory associated with the user for vehicle control settings, and

Ikeda further discloses *refer to a user profile memory associated with the user for vehicle control settings*. Denning, ¶¶207-208; *see supra* § VII.A.1 (element 1[d]) and § VII.A.8 (element 8[d]).

14[e]: determine, based at least partially on the vehicle control settings, to adjust the at least one vehicle control associated with the location inside the vehicle, provide an adjustment output to the vehicle control system, wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle, wherein the at least one vehicle control is adjusted via the adjustment output to match the vehicle control settings in the user profile memory.

Ikeda further discloses *determine, based at least, partially on the vehicle control settings, to adjust the at least one vehicle control associated with the location inside the vehicle, provide an adjustment output to the vehicle control system, wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle, wherein the at least one vehicle control is adjusted via the adjustment output to match the vehicle control settings in the user profile memory*. Denning, ¶¶209-210; *see supra* §§ VII.A.1, VII.A.7, VII.A.8 (elements 1[e], 1[f], 7[e], 8[e] and 8[f]).

15. Claim 15: The vehicle control system of claim 14, wherein prior to providing the adjustment output, the profile identification module is further configured to determine a presence of the user inside the vehicle, wherein the adjustment

output is provided based at least partially on determining the user is present in the location of the vehicle.

Ikeda discloses these limitations. *See supra* § VII.A.1 (element 1[f]) and § VII.A.9 (claim 9); Denning, ¶¶211-212.

16. Claim 16: The vehicle control system of claim 14, wherein prior to determining the location inside the vehicle associated with the user the profile identification module is further configured to store, in the user profile memory, information corresponding to locations inside the vehicle occupied by the user, collect vehicle control setting data associated with the user, wherein the vehicle control setting data includes at least one vehicle control setting made by the user in at least one of the locations inside the vehicle, and store the vehicle control setting data in the user profile memory.

Ikeda renders obvious these limitations. *See supra* § VII.A.2 (claim 2) and § VII.A.10 (claim 10); Denning, ¶¶213-214.

17. Claim 17: The vehicle control system of claim 14, wherein the at least one vehicle control includes one or more vehicle features such as a seat system, a steering control, a foot pedal control, a mirror position, and a display device, and wherein the vehicle control settings include at least one of a position, a sensitivity, an angle, and a movement, associated with the one or more vehicle features.

Ikeda discloses these limitations. *See supra* § VII.A.3-4 (claims 3 and 4); Denning, ¶¶215-216.

18. Claim 18: The vehicle control system of claim 15, wherein, in determining the presence of the user inside the vehicle, the user the profile identification module is further configured to detect a person via at least one image sensor associated with the vehicle, identify facial features associated with the person detected via the at least one image sensor, and determine whether the identified

facial features associated with the person match user characteristics stored in a memory.

Ikeda discloses these limitations. *See supra* § VII.A.5 (elements 5[a]-[c]) and § VII.A.12 (elements 12[a]-[c]); Denning, ¶¶217-218.

19. Claim 19: The vehicle control system of claim 14, wherein the profile identification module is further configured to determine that the user made a change to the adjusted at least one vehicle control, and store the change made to the adjusted at least one vehicle control in the user profile memory.

Ikeda discloses or renders obvious these limitations. Denning, ¶¶219-220; *supra* §§ VII.A.6 (elements 6[a] and 6[b]), VII.A.13 (elements 13[a] and 13[b]), and VII.A.14 (element 14[a]).

20. Claim 20: The vehicle control system of claim 14, wherein the profile identification module is further configured to determine a presence of the user inside the vehicle based at least partially on detecting a device associated with the user in an area of the vehicle, and wherein the adjustment output is provided based at least partially on determining the user is present in the location inside the vehicle.

Ikeda discloses these limitations. *See supra* §§ VII.A.1 (elements 1[c] and 1[f]), § VII.A.9 (claim 9), and § VII.A.14 (claim 15); Denning, ¶¶221-222.

B. Ground 2: *Ikeda* in view of *Hendry* renders obvious claims 6, 13, and 19 under Section 103.

1. Claim 6

**6[a]: The method of claim 1, further comprising:
determining that the user made a change to the
adjusted at least one vehicle control; and**

Ikeda discloses or renders obvious these limitations, as described above in Ground 1. To the extent it is argued that *Ikeda* does not disclose or render obvious these limitations, they would have been obvious in further view of *Hendry*.

Hendry discloses *determining that the user made a change to the adjusted at least one vehicle control*. Denning, ¶¶223-231. For example, *Hendry* discloses that “a user may opt to change or add his or her personal settings after some time” and that if “the user does so, the user may be prompted by the user interface 122 to indicate if the adjusted settings of the one or more vehicle components are to be saved.” *Hendry*, [0031]. *Hendry* discloses that “if a user changes the settings of the seat 50, the user interface 122 displays a screen to the user asking whether the user would like the vehicle 10 to remember the seat settings.” *Hendry*, [0026]. Thus, *Hendry* discloses *determining that the user made a change to the adjusted at least one vehicle control*.

It would have been obvious to a skilled artisan to modify *Ikeda* to include *Hendry*’s teaching of determining that a user has made a change to an adjusted vehicle control. Denning, ¶225.

A skilled artisan would recognize that *Ikeda* and *Hendry* are complementary technologies that are combinable. Both references relate to vehicle control systems.

Denning, ¶226; *Ikeda*, [0003] (“The present invention relate[s] to a driving-environment setup system which sets up a driving environment of a vehicle.”); *Hendry*, [0001] (“The present disclosure relates generally to a method and system for establishing user settings of vehicle components of a vehicle.”). Further, both references address the same problem: determining whether a recognized user has setting preferences and customizing a vehicle to match the recognized user’s preferences. Denning, ¶217; *Ikeda*, [0009] (“[I]t is an object of the present invention to provide a driving-environment setup system which can set the driving environment of a vehicle as a driving environment for a driver[.]”); *Hendry*, [0027] (“Once a vehicle component has received the personal settings, the vehicle component module will adjust the settings of the vehicle component in accordance with the personal settings associated with the device[.]”).

It would have been obvious to a skilled artisan at the time of the alleged invention to modify *Ikeda* to incorporate *Hendry*’s teaching of determining that a user has made a change to an adjusted vehicle control. Denning, ¶227. For example, a skilled artisan would have recognized that a user might not want to keep the same setting saved for the entire time that the driver owns the vehicle. Denning, ¶227. At certain times, due to health, age, or simply changed preferences, a user may, for example, want the seat positioned at a slightly different angle. Denning, ¶227. In such cases, a skilled artisan would have been motivated to

ensure that the system could detect that the user made changes to the adjusted vehicle control so that they could be stored for future use. Denning, ¶227. In such cases, a skilled artisan would have been motivated to ensure that its system could detect that the user made changes to the adjusted vehicle control. Denning, ¶227. *Hendry* discloses that just such a motivation was known in the art. For example, *Hendry* notes that it “can be appreciated” that “a user may opt to change or add his or her personal settings after some time.” *Hendry*, [0031]. A skilled artisan would further have known that determining changes have been made to a user’s preferred vehicle settings was well known in the art. *See, e.g., Cazanas*, claim 16 (“receiving, from the vehicle unit, a revised vehicle user profile based on adjustments made by the user while in the vehicle; and storing the revised vehicle user profile in association with the user’s account”).

Combining *Hendry*’s teaching with *Ikeda* would have been routine and conventional to a skilled artisan. Denning, ¶228. A skilled artisan would have considered modifying *Ikeda* with the teaching of *Hendry* to be an example of (A) combining prior-art elements according to known methods to yield predictable results (e.g., *Ikeda*’s vehicle setting system with *Hendry*’s teaching of determining that a user made a change to an adjusted vehicle control); (B) use of a known technique (e.g., *Hendry*’s teaching of determining that a user makes a change to an adjusted vehicle control) to improve similar devices in the same way (e.g., *Ikeda*’s

vehicle setting system); (C) applying a known technique (e.g., *Hendry*'s teaching of determining that a user makes a change to an adjusted vehicle control) to a known device (e.g., *Ikeda*'s vehicle setting system) ready for improvement to yield predictable results. Denning, ¶228.

A skilled artisan would have had a reasonable expectation of success in combining *Hendry*'s teaching of determining that a user has made a change to an adjusted vehicle control with *Ikeda*'s vehicle setting system. Denning, ¶229. As explained above, *Ikeda* itself discloses the functionality and information necessary to determine that a user has made a change to an adjusted vehicle control. Denning, ¶229. Further *Hendry* notes that, in the context of a vehicle setting system, “a user may opt to change or add his or her personal settings after some time.” *Hendry*, [0031]. Thus, a skilled artisan would have found it obvious to incorporate *Hendry*'s teaching with *Ikeda*'s system. Denning, ¶230.

6[b]: storing the change made to the adjusted at least one vehicle control in the user profile memory.

Ikeda discloses these limitations, as fully described above in Ground 1. To the extent that the Board finds that *Ikeda* does not disclose these limitations, they would have been obvious in further view of *Hendry*.

Hendry discloses *storing the change made to the adjusted at least one vehicle control in the user profile memory*. Denning, ¶¶232-237. For example, *Hendry* discloses that when the user changes an adjusted vehicle control, “the user

may be prompted by the user interface 1221 to indicate if the adjusted settings of the one or more vehicle components are to be saved” and, if “the user responds affirmatively, the adjusted settings are saved in a datastore associated with the vehicle component.” *Hendry*, [0031].

It would have been obvious to a skilled artisan to modify *Ikeda* to include *Hendry*’s teaching of storing the change made to the adjusted vehicle control in a user profile memory for all the same reasons it would have been obvious for element 6[a]. Denning, ¶234.

Further, combining *Hendry*’s teaching with *Ikeda* would have been routine and conventional to a skilled artisan. Denning, ¶235. A skilled artisan would have considered modifying *Ikeda* with the teaching of *Hendry* to be an example of (A) combining prior-art elements according to known methods to yield predictable results (e.g., *Ikeda*’s vehicle setting system with *Hendry*’s teaching of storing a change to an adjusted vehicle control); (B) use of a known technique (e.g., *Hendry*’s teaching of storing a change to an adjusted vehicle control) to improve similar devices in the same way (e.g., *Ikeda*’s vehicle setting system); (C) applying a known technique (e.g., *Hendry*’s teaching of storing a change to an adjusted vehicle control) to a known device (e.g., *Ikeda*’s vehicle setting system) ready for improvement to yield predictable results. Denning, ¶235.

A skilled artisan would have had a reasonable expectation of success in combining *Hendry*'s teaching of storing a change to an adjusted vehicle control with *Ikeda*'s vehicle setting system. Denning, ¶236. As explained above, *Ikeda* itself discloses the functionality and information necessary to store a change to an adjusted vehicle control. Denning, ¶236. Thus, a skilled artisan would have been found it obvious to incorporate *Hendry*'s teaching with *Ikeda*'s system. Denning, ¶236.

2. Claim 13

13[a]: The non-transitory computer readable medium of claim 8, wherein the method further comprises: determining that the user made a change to the adjusted at least one vehicle control; and

Ikeda discloses or renders obvious, alone or in further view of *Hendry*, wherein the method further comprises: determining that the user made a change to the adjusted at least one vehicle control. Denning, ¶¶238-241; *supra* §§ VII.A.6 (element 6[a]) and VII.A.13 (element 13[a]).

Hendry notes that the “apparatuses and methods described herein may be implemented by one or more applications executed by one or more processors.” *Hendry*, [0038]. Specifically, *Hendry* notes that its “applications include processor-executable instructions that are stored on a non-transitory tangible computer readable medium.” *Hendry*, [0038]; *see Hendry*, [0037]. Thus, to the extent it is necessary to look to *Hendry* for determining that the user made a change to the

adjusted at least one vehicle control, *Hendry* discloses this limitation as executed by a processor. Denning, ¶239.

Thus, since both *Ikeda* and *Hendry* disclose using a processor for operations involving determining that a user made a change to a vehicle control setting, a skilled artisan would have had a reasonable expectation of success in making this combination and would have been motivated to do so for all the reasons explained above. Denning, ¶240.

13[b]: storing the change made to the adjusted at least one vehicle control in the user profile memory.

Ikeda discloses or renders obvious, alone or in further view of *Hendry*, *storing the change made to the adjusted at least one vehicle control in the user profile memory*. Denning, ¶¶242-245; *see supra* §§ VII.A.6 (element 6[b]) and VII.A.13 (element 13[b]).

Again, *Hendry* notes that its teachings are implemented using “one or more processors” that execute “instructions that are stored on a non-transitory tangible computer readable medium.” *Hendry*, [0038]; *see Hendry*, [0037]. Thus, to the extent it is necessary to look to *Hendry* for *storing the change made to the adjusted at least one vehicle control in the user profile memory*, *Hendry* discloses this limitation as executed by a processor. Denning, ¶243.

Thus, since both *Ikeda* and *Hendry* disclose using a processor for operations involving storing a change made to an adjusted vehicle control in a user profile

memory, a skilled artisan would have had a reasonable expectation of success in making this combination—and would have been motivated to do so for all the reasons explained above. Denning, ¶244.

3. Claim 19: The vehicle control system of claim 14, wherein the profile identification module is further configured to determine that the user made a change to the adjusted at least one vehicle control, and store the change made to the adjusted at least one vehicle control in the user profile memory.

Ikeda discloses or renders obvious these limitations. Denning, ¶¶246-247-249; *supra* §§ VII.B.1 (elements 6[a] and 6[b]), VII.B.2 (elements 13[a] and 13[b]), and VII.A.14 (element 14[a]).

VIII. Grounds for Standing

Petitioner certifies that the '296 patent is available for IPR and that Petitioner is not barred or estopped from requesting IPR challenging the patent claims on the grounds herein.

IX. Mandatory Notices

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

The real parties-in-interest are Toyota Motor Corporation, Toyota Motor North America, Inc., Toyota Motor Engineering & Manufacturing North America, Inc., and Toyota Motor Sales, U.S.A., Inc.

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

To the best of Petitioner's knowledge, the '296 patent is, or has been, involved in the following district court litigations.

Name	Number	Court	Filed
<i>AutoConnect Holdings LLC v. Toyota Motor Corp. et al.</i>	2:24-cv-00802	EDTX	Oct. 3, 2024
<i>AutoConnect Holdings LLC v. Ford Motor Company</i>	1:24-cv-01327	DDE	Dec. 6, 2024

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

Lead Counsel	Back-Up Counsel
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D. Service Information Under 37 C.F.R. § 42.8(b)(4)

Please address all correspondence to counsel at the addresses above.

Petitioners consent to service by email at the above addresses.

X. Conclusion

Petitioner requests that the Board institute *IPR* and cancel each challenged claim.

Respectfully submitted,

Dated: April 29, 2025

By: /Joshua L. Goldberg/
Joshua L. Goldberg, Reg. No. 59,369

CERTIFICATION UNDER 37 C.F.R. § 42.24(d)

Pursuant to 37 C.F.R. § 42.24(d), the undersigned hereby certifies that the foregoing Petition contains 12,874 words, excluding parts of this Petition exempted under § 42.24(a), as measured by the word-processing system used to prepare this paper.

Respectfully submitted,

Dated: April 29, 2025

By: /Joshua L. Goldberg/
Joshua L. Goldberg, Reg. No. 59,369

CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing Petition for *Inter Partes* Review, the associated Power of Attorney, and Exhibits 1001-1008 were served on April 29, 2025, on counsel of record for the subject patent by FedEx Priority Overnight at the addresses below.

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Dated: April 29, 2025

By: Daniel E. Doku/

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