

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FORD MOTOR COMPANY
Petitioner,

v.

AUTOCONNECT HOLDINGS LLC
Patent Owner.

U.S. Patent No. 9,147,296 to Ricci

Case No.: IPR2026-00002

**PETITION FOR *INTER PARTES* REVIEW
UNDER 35 U.S.C. § 311 *ET SEQ.* AND 37 C.F.R. § 42.100 *ET SEQ.*
(U.S. PATENT NO. 9,147,296)**

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List of Exhibits

Exhibit No.	Description
1001	U.S. Patent No. 9,147,296 (“the ’296 Patent”)
1002	U.S. Patent No. 9,147,296 Certified File History (“the ’296 Patent File History”)
1003	Expert Declaration of Dr. Scott Andrews
1004	Scott Andrews Curriculum Vitae
1005	<i>AutoConnect Holdings LLC v. Ford Motor Company</i> , Complaint, Case No. 1:24-cv-01327-JCG (D. Del.) Filed December 6, 2024 (“Complaint”)
1006-1009	<i>Intentionally left blank</i>
1010	U.S. Patent No. 8,768,539 B1 to Clement (“Clement”)
1011	U.S. Patent No. 7,388,466 B2 to Ghabra (“Ghabra”)
1012	U.S. Patent Application Pub. No. 2012/0092129 A1 to Lickfelt (“Lickfelt”)
1013	U.S. Patent Application Pub. No. 2011/0093153 A1 to Moinzadeh (“Moinzadeh”)
1014	<i>Intentionally left blank</i>
1015	U.S. Patent No. 7,783,699 B2 to Rasin (“Rasin”)
1016-1023	<i>Intentionally left blank</i>
1024	Certified Translation and Original Copy of Japanese Patent Application Pub. No. 2010-163092 A to Endo (“Endo”)
1025	U.S. Patent Application Pub. No. 2007/0238491 A1 to He (“He”)
1026	Certified Translation and Original Copy of Japanese Patent Application Pub. No. 2009/262654 A to Suzuki (“Suzuki”)
1027-1049	<i>Intentionally left blank</i>
1050	Bosch Automotive Handbook, 6 th Ed., (Robert Bosch GmbH – October 2004) (“Bosch”)
1051	IEEE Dictionary, (IEEE 100 The Authoritative Dictionary of IEEE Standards Terms 2000 7 th Edition) (“IEEE Dictionary”)
1052	“Specification of The Bluetooth System” (June 30, 2010). Version 4.0 (Volumes 0-6) Available at https://www.bluetooth.com/specifications/specs/core-specification-4-0/ (Accessed June 27, 2025) (“Bluetooth Specification”)
1053	Hossain et al., “A Comprehensive Study of Bluetooth Signal Parameters for Localization,” 2007 IEEE 18 th International Symposium on Person, Indoor and Mobile Radio Communications Available at

Exhibit No.	Description
	https://www.ieeexplore.ieee.org/document/4394215 (“Hossain”)
1054-1056	<i>Intentionally left blank</i>
1057	Allen, Leslie “Ford launches parental control technologies,” October 7, 2008. Available at https://www.autonews.com/article/20081007/ZZZ_SPECIAL/310079921/ford-launches-parental-control-technologies/ (Accessed June 24, 2025) (“Auto News”)
1058-1062	<i>Intentionally left blank</i>
1063	Saltzstein, William E. “Bluetooth: The Future of Wireless Medical Technology?” February 1, 2002. Available at https://www.mddionline.com/new-technologies/bluetooth-the-future-of-wireless-medical-technology- (Accessed June 30, 2025) (“MDDI”)
1064	<i>Intentionally left blank</i>
1065	SUSE LINUX – Administration Guide. Published by SUSE LINUX AG, 2004. (“Linux”)
1066-1074	<i>Intentionally left blank</i>
1075	Turing, A. M. “On Computable Numbers with an Application to the Entscheidungsproblem” November 12, 1936. (“Turing”)
1076	Ganesan, Deepak “Chapter 4, The Von Neumann Model” April 25, 2012. Available at https://web.archive.org/web/20120425083227/http://none.cs.umass.edu/~dganesan/courses/fall09/handouts/Chapter4.pdf (Accessed September 15, 2025) (“Ganesan”)
1077	Von Neumann, John “First Draft of a Report on the EDVAC” June 30, 1945. (“Von Neumann”)
1078	Intel “The Story of the Intel 4004.” Available at https://web.archive.org/web/20121003001757/https://www.intel.com/content/www/us/en/history/museum-story-of-intel-4004.html (Accessed September 22, 2025) (“Intel 4004”)
1079	Intel MCS-4 Micro Computer Set Data Sheet, November 1971. (“MCS-4”)
1080	Erickson, Kelvin T. “Programmable logic controllers,” <i>IEEE Potentials</i> , Institute of Electrical and Electronics Engineers (IEEE), February/March 1996. (“Erickson”)
1081-1100	<i>Intentionally left blank</i>
1101	United States District Courts – National Judicial Caseload Profile, June 2025

Mandatory Notices under 37 C.F.R. § 42.8

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

Petitioner certifies that Ford Motor Company (“Petitioner”) is the real party-in-interest. No unnamed entity is funding, controlling, or directing this Petition or could control or direct this Petition or Petitioner’s participation.

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

Petitioner identifies the following related judicial matter: *AutoConnect Holdings, LLC v. Ford Motor Company*, 1:24-cv-01327-JCG (D. Del) (pending) served December 6, 2024. U.S. Patent No. 9,147,296 is being asserted in this proceeding, along with twelve other patents: U.S. 9,020,491; U.S. 9,020,697; U.S. 9,082,239; U.S. 9,098,367; U.S. 9,116,786; U.S. 9,123,186; U.S. 9,140,560; U.S. 9,147,297; U.S. 9,173,100; U.S. 9,290,153; U.S. 10,862,764; and U.S. 11,163,931.

Petitioner is also aware that U.S. Patent No. 9,147,296 is being asserted in *AutoConnect Holdings LLC v. Toyota Motor Corporation et al.* 2-24-cv-00802 (EDTX) (pending) filed October 3, 2024. *Toyota Motor Corporation* filed IPR2025-00891 challenging U.S. Patent No. 9,147,296 (institution denied, September 19, 2025).

Petitioner filed IPR2025-01342 challenging U.S. 9,020,697, IPR2025-01383 challenging U.S. 9,290,153 Patent, and IPR2025-01524 challenging U.S. 9,123, 186.

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

Petitioner identifies the following lead and back-up counsel:

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Pursuant to 37 C.F.R. § 42.10(b), an appropriate Power of Attorney is filed concurrently herewith.

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

Service information for lead and back-up counsel is provided in the designation of lead and back-up counsel above. Petitioner Ford Motor Company hereby consents to service by email at the following email address: FPGP0153IPR@brookskushman.com.

Fees - 37 C.F.R. § 42.15(a)

The filing fees associated with this Petition are being charged to Deposit Account 06-1510. The Board is authorized to charge any additional fees or credit any refunds pertaining to this Petition to Deposit Account 06-1510.

I. Introduction

Petitioner Ford Motor Company (“Ford”) respectfully requests *inter partes* review (“IPR”) of claims 1-20 (the “Challenged Claims”) of U.S. Patent No. 9,147,296 (“the ’296 Patent”; attached as Ex. 1001) in accordance with 35 U.S.C. §§ 311-319 and 37 C.F.R. § 42.100 *et seq.* The Declaration of Scott Andrews is filed in support as Ex. 1003.

The ’296 Patent is directed to customization of vehicle controls based on user profiles. (Ex. 1001.) Prior to the earliest priority date of the ’296 Patent, however, vehicles were well-known to include systems that could detect the location of users in the vehicle and apply vehicle settings to those locations to match user profiles. (Exs. 1024-1026.) The underlying technology for implementing such systems was similarly well-known. (Ex. 1003, ¶¶92-119; Exs. 1010-1013, 1015, 1050-1053, 1057, 1063, 1065, 1075-1080.) Grounds 1-4 below establish that prior art published **3-6 years before** the earliest priority date described these concepts in detail. The claims of the ’296 Patent are neither novel nor non-obvious and should be deemed unpatentable.

Additionally, the litigation filed by Patent Owner (AutoConnect Holdings, LLC or “AutoConnect”) is in its early pleadings stage, and trial will likely occur (if at all) in late 2027, long after the projected final decision here. (Ex. 1101, 14.) Additionally, although the ’296 Patent issued over nine years ago, Petitioner had

settled expectations it would not be asserted against Petitioner because, inter alia, since acquiring the '296 Patent in 2015, Patent Owner made no use of the '296 Patent before contacting Petitioner in December 2023. (Ex. 1005, 9.)

II. Grounds for Standing Requirements under 37 C.F.R. § 42.104

A. Grounds for Standing - 37 C.F.R. § 42.104(a)

Pursuant to 37 C.F.R. § 42.104(a), Petitioner certifies the '296 Patent is available for IPR and Petitioner is not barred or estopped from requesting IPR.

B. Challenged Claims - 37 C.F.R. § 42.104(b)(1)

Petitioner requests IPR for claims 1-20 of the '296 Patent and requests the Patent Trial and Appeal Board cancel those claims as unpatentable.

C. Prior Art Relied Upon

The '296 Patent was filed after March 16, 2013; thus, AIA applies. (Ex. 1002, 1, 525.) The following patent and patent-publication references were published prior to the earliest claimed priority date of the '296 Patent (April 15, 2013¹).

- Endo – Certified Translation of Japanese Patent Application Publication No. JP 2010-163092 A, filed on January 16, 2009, and published on July 29, 2010 (Ex. 1024, Cover) (AIA §102(a)(1)).
- Suzuki – Certified Translation of Japanese Patent Application No. JP

¹ Petitioner does **not** concede the '296 Patent is entitled to this priority date.

2009-262654 A, filed on April 23, 2008, and published on November 12, 2009 (Ex. 1026, Cover) (AIA §102(a)(1)).

- He – U.S. Patent Publication No. 2007/0238491 A1, filed on March 31, 2006, and published on October 11, 2007 (Ex. 1025, Cover) (AIA §102(a)(1)).

D. Grounds of Challenge – 37 C.F.R. § 42.104(b)(2)

The grounds of unpatentability presented are as follows:

Ground	Basis ²	References	Claims Challenged
1	§ 103	Endo	1-4, 6-11, 13-17, 19-20
2	§ 103	Endo + Suzuki	5, 12, 18
3	§ 103	He	1-4, 6-11, 13-17, 19-20
4	§ 103	He + Suzuki	5, 12, 18

There is a reasonable likelihood that at least one Challenged Claim is unpatentable as explained herein. Petitioner requests review of the Challenged Claims, and judgment finding them unpatentable.

III. Person Having Ordinary Skill in the Art (PHOSITA)

² Post-AIA Sections 102, 103 and 112 apply.

A person having ordinary skill in the art (PHOSITA) of the '296 Patent would have had, as of April 15, 2013, a Bachelor's degree in Electrical Engineering, Mechanical Engineering, or an equivalent degree with at least two years of experience in communication systems, vehicle sensor systems, electronic user interface systems, or related technologies. Additional industry experience could make up for less education and vice versa. (Ex. 1003, ¶¶42-44.) Petitioner's expert, Scott Andrews, qualifies as a PHOSITA for the '296 Patent. (*Id.*, ¶¶6-24, 45-46; Ex. 1004.)

IV. The Challenged '296 Patent

A. Priority Claim

The '296 Patent matured from U.S. Application 14/253,204 filed April 15, 2014, and claims priority to seven provisional patent applications including the earliest filed U.S. provisional patent application No. 61/811,981 filed April 15, 2013 (Ex. 1001, 1:8-24; Ex. 1003, ¶¶47-49.)

B. Overview of the '296 Patent

The '296 Patent relates to “[m]ethods and systems for a complete vehicle ecosystem ... [that] provide an individual or group of individuals with an intuitive and comfortable vehicular environment[,] ... includ[ing] comfort and interface settings that can be adjusted based on the user profile information,” and more specifically to match settings in a user profile or based on detecting a user device.

(Ex. 1001, Abstract, Claims 1-20.) The '296 Patent discloses:

The user profiles can act as a repository for user information. This user information can be used ... in tracking a user, providing an output, [and/or] manipulating controls of a vehicle The user profiles can provide adjustment information for a vehicle features position, sensitivity, and/or operational range.

(Ex. 1001, 8:55-62.)

Referring to Figure 5A, the '296 Patent addresses an interior zone of the vehicle and discloses “[a]n arrangement or configuration for sensors within a vehicle 104 ... [that] can include one or more areas 508 within the vehicle.” (Ex. 1001, 25:46-48.) The areas 508A, 508B, and 508N are locations in the vehicle 104 and are annotated in red below:

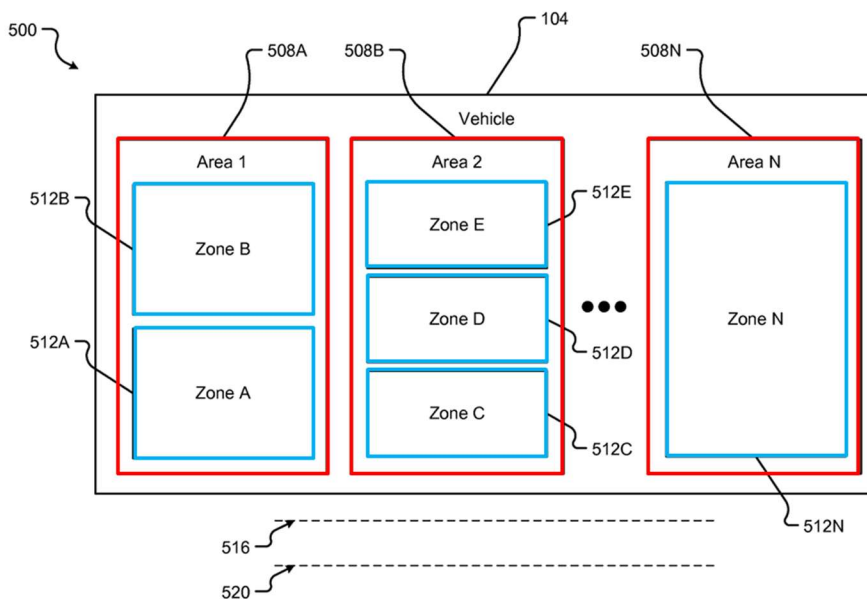


Fig. 5A

Ex. 1001, Fig. 5A (Annotated)

“Each area 508 may be further separated into one or more zones 512 within the area 508. For example, area 1 508A may be separated into zone A 512A, and zone B 512B.” (Ex. 1001, 25:64-66.) Accordingly, as annotated in blue above, “[e]ach zone 512 may be associated with a particular portion of the interior occupied by a passenger. For example, zone A 512A may be associated with a driver. Zone B 512B, may be associated with a front passenger.” (Ex. 1001, 25:66-26:3.)

The zones 512 “may comprise one or more sensors to determine a presence of a user 216 and/or device 212, 248 in and/or adjacent to each area 508 ... and/or zone 512.” (Ex. 1001, 26:22-25.) “Once the device is established within a zone 512, a profile associated with the vehicle 104 can store information identifying that device and/or a person” (Ex. 1001, 28:20-23.)

The '296 Patent explains a method 1400 that “can determine if a person is in a zone 512 or area 508, in step 1408 ... by receiving data from one or more sensors[,]” such as “facial recognition” or other sensors. (Ex. 1001, 64:40-45.)

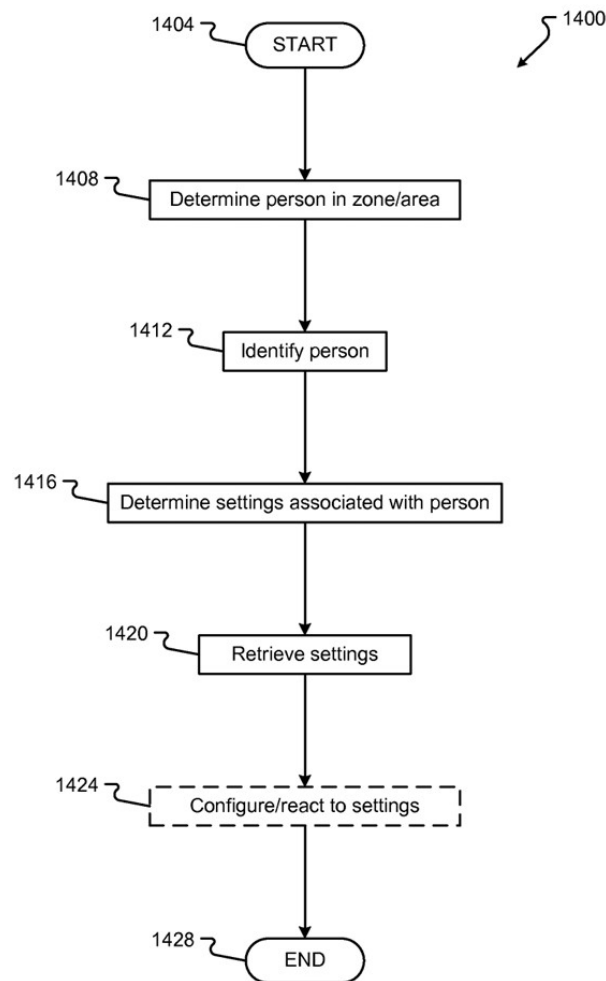


Fig. 14

Ex. 1001, Fig. 14

The system “can identify the person, in step 1412,” by “obtain[ing] characteristics for the user currently occupying the zone 512,” and vehicle control settings “may be retrieved by identifying the correct zone 512, area 508, and characteristics for the user.” (Ex. 1001, 64:47-53.)

If there are settings, then the vehicle control system 204 can make the determination that there are settings ... and the vehicle control system 204 may then read and retrieve those settings, in step 1420. The settings

may be then used to configure or react to the presence of the user, in step 1424.

(Ex. 1001, 64:60-65; Ex. 1003, ¶¶50-79.)

C. Prosecution History of the '296 Patent

The '296 Patent issued from Application No. 14/253,204 on April 15, 2014, to Flextronics AP, LLC, with twenty claims, including independent claims 1, 7, 8, and 14. (Ex. 1002, 181-184.) In the only Office Action, the examiner found determining the presence of the user by detecting an associated device in the vehicle and adjusting vehicle controls to match settings in a user profile memory constituted allowable subject matter, which Patentee incorporated into independent claims.³ (*Id.*, 182, 184, 523-526.)

The references forming the basis of Grounds 1-4 were neither considered during examination nor cited on the '296 Patent. (*See*, Ex. 1001, 1-5; Ex. 1003, ¶¶80-90.)

V. Claim Construction — 37 C.F.R. § 42.104(B)(3)

³ The U.S. Patent and Trademark Office issued a certificate of correction replacing “*leasst*” with “*least*” in claim 14. (Ex. 1002, 97.) This correction is noted in Appendix A using brackets (“[]”). Quotes from claim 14 in the body of the petition are shown in corrected form.

Petitioner applies the plain and ordinary meaning of the Challenged Claims to the asserted prior art references in support of all grounds herein.

VI. Unpatentability Grounds

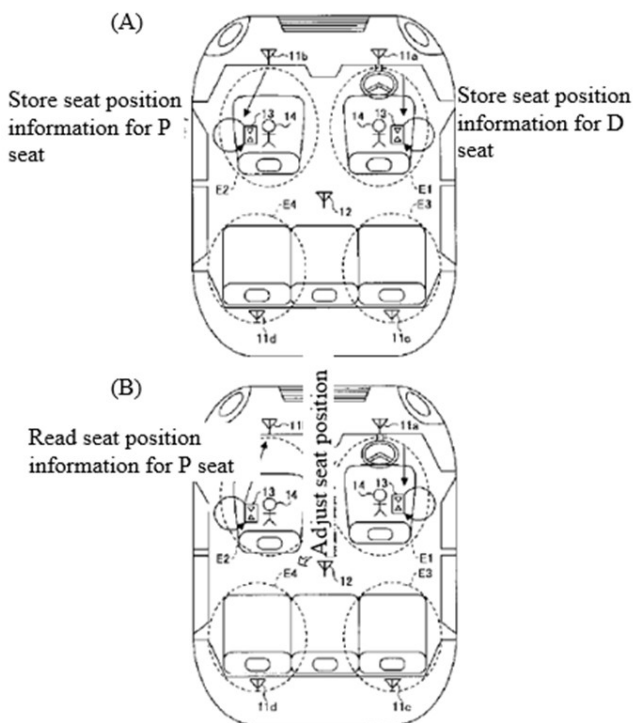
The references below render the claimed subject matter unpatentable under 35 U.S.C. §103; Petitioner therefore has a reasonable likelihood of prevailing as to each of the following grounds. 35 U.S.C. § 314(a); 37 C.F.R. § 42.104(b)(4).

A. Ground 1: Claims 1-4, 6-11, 13-17, and 19-20 Are Unpatentable as Obvious over Endo

1. Overview of Endo

Endo discloses an “automatic setting system 100” that “detects the seat (... ‘electronic key existence seat’) where the occupant 14 carrying the electronic key 13 is located.” (Ex. 1024, [0012].) The system “stores the seat position information set by occupant 14 for each electronic key existence seat.” (Ex. 1024, [0015].)

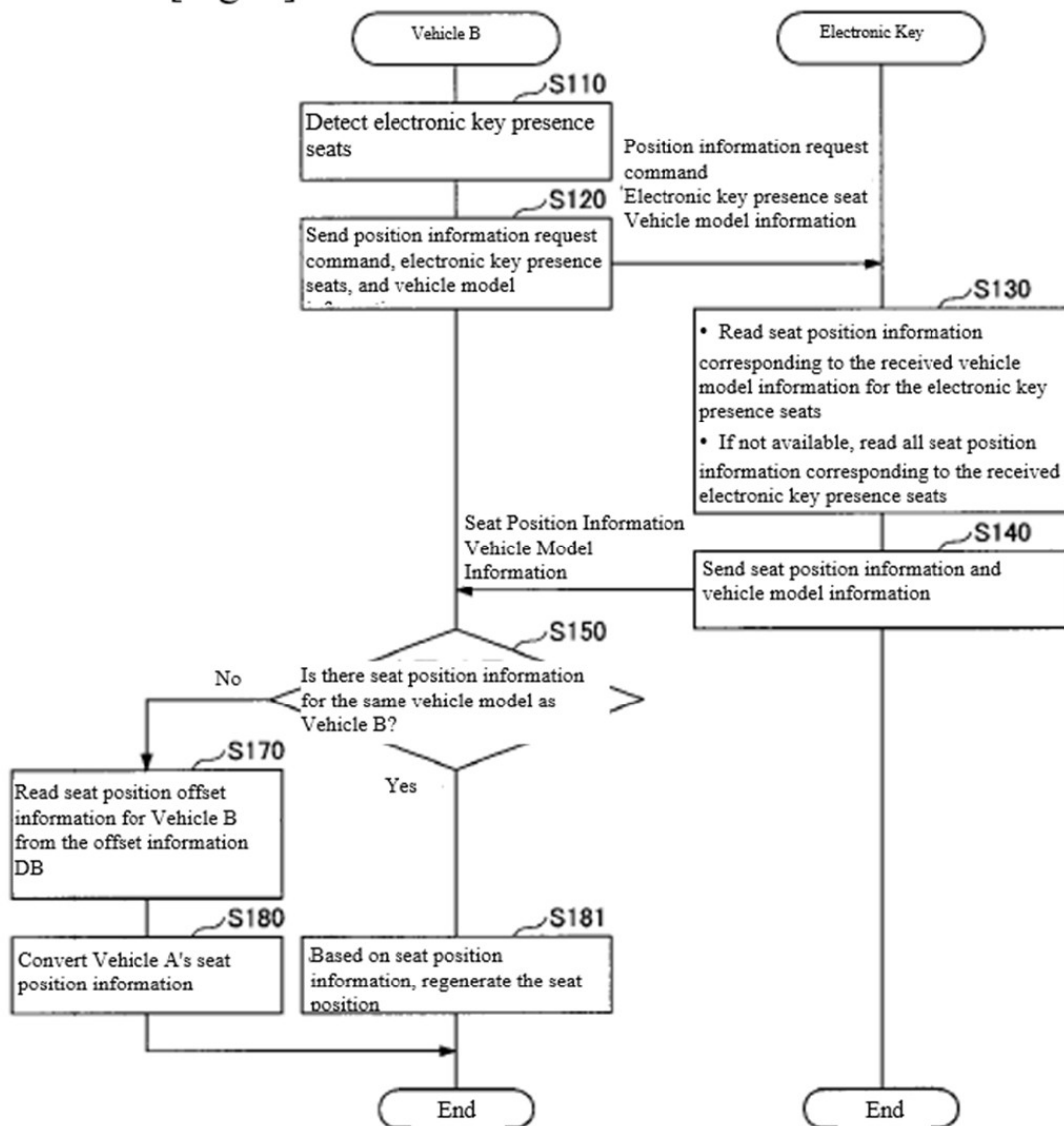
[Fig. 1]



Ex. 1024, Fig. 1

Endo explains “the procedure for reproducing the seat position based on the seat position information stored in the electronic key 13” begins with “detect[ing] the electronic key presence seat (S110),” followed by requesting seat information from the electronic key. (Ex. 1024, [0057]-[0059].) The electronic key 13 sends seat position information and vehicle model information to the system (S140), which determines whether there is seat position information for the instant vehicle type (S150) and regenerates the seat position stored in the electronic key 13 (S181). (Ex. 1024, [0059]-[0060], Fig. 7; Ex. 1003, ¶¶120-128.)

[Fig. 7]



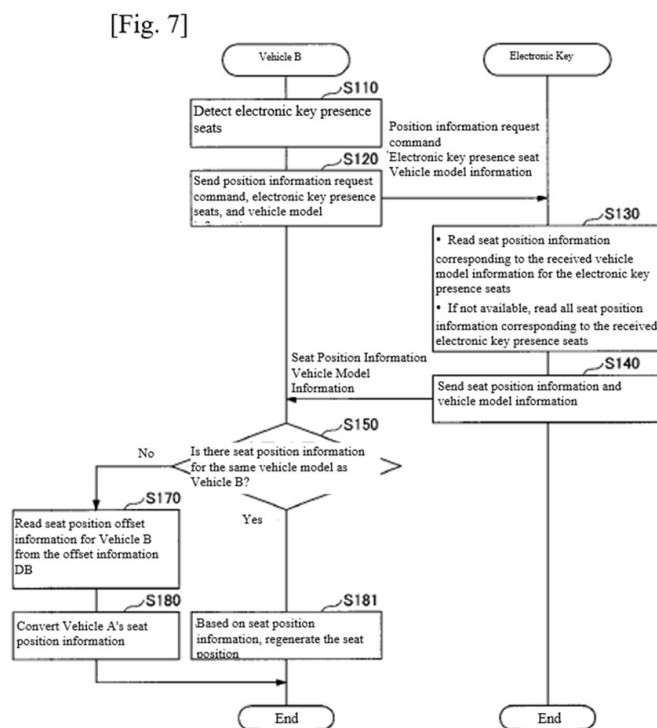
Ex. 1024, Fig. 7

2. Independent Claims 1, 7, 8 and 14⁴

⁴ Appendix A lists all challenged claims and Appendix B compares claims treated together. Where there is substantive overlap in claim limitations, Petitioner has grouped analysis for efficiency and to avoid duplicity.

1[pre]/7[pre] A method, comprising:

Endo discloses “an automatic setting device for a vehicle...as well as...an automatic setting **method**⁵ for a vehicle.” (Ex. 1024, [0001].) In Figure 7, Endo discloses a flowchart for a method to reproduce seat position information based on information stored on a user’s electronic key. (*Id.*, [0057], Fig. 7.)



Ex. 1024, Fig. 7

Therefore, Endo discloses the claimed “*method*”⁶ of elements 1[pre] and 7[pre]. (Ex. 1003, ¶¶143-147, 217-219.)

⁵ Emphasis added by Petitioner unless noted otherwise.

⁶ Italics indicates claim language.

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

As discussed above for elements 1[pre]/7[pre], Endo discloses a method for setting seat position based on information stored in a user's electronic key. Additionally, in Figure 3, Endo discloses "an **example** of a functional block diagram of the automatic setting system 100." (Ex. 1024, [0042].) Endo explains "[t]hese functional blocks are executed by the **CPU** of matching ECU 21 or seat ECU 22, or by the microcontroller 28 of electronic key 13 executing the program **stored in non-volatile memory**." (*Id.*) A PHOSITA would have understood a central processing unit (CPU) of Endo includes a processor, and non-volatile memory is non-transitory. (Ex. 1003, ¶¶113-116, 233.)

Therefore, Endo discloses the claimed "*method*" of element 8[pre] performed by a "*processor*" executing instructions stored on a "*non-transitory computer readable medium*." (Ex. 1003, ¶¶230-236.)

14[pre] A vehicle control system, comprising:

Endo discloses a vehicle automatic setting system 100, which includes a vehicle side setting device 40 and an electronic key 13, to control a vehicle's ability to set seat positions based on information included in an electronic key and thus discloses the claimed "*vehicle control system*" of element 14[pre]. (Ex. 1024, [0042],

[0017]; Ex. 1003, ¶¶271-275.)

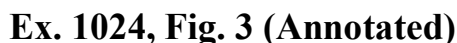
[14a] a profile identification module contained in a memory and executed by a processor of the vehicle control system, the profile identification module configured to

Endo discloses an “example of a functional block diagram of the automatic setting system 100.” (Ex. 1024, [0042].) Endo explains “[t]hese functional blocks are executed by the CPU of matching ECU 21 or seat ECU 22, or by the microcontroller 28 of electronic key 13 executing the program stored in non-volatile memory.” (*Id.*)

Endo teaches the vehicle side setting device 40, via the position information request unit 44, retrieves information from the memory 27 of the electronic key 13. (Ex. 1024, [0047]-[0048].) A PHOSTIA would have understood the memory 27 is a “*user profile memory*” because it is a repository for information defined by and associated with the electronic key 13’s user. (Ex. 1003, ¶277.)

A PHOSITA would have thus understood Endo teaches that the vehicle side setting device 40 includes a processor that executes a program stored in memory to request information from the memory 27. (Ex. 1003, ¶¶113-116, 278; *see* Exs. 1050, 1075-1079.) Such a program or instructions therein represents “*a profile identification module*.” Indeed, the ’296 Patent explains “the profile identification module 848 may request profile information from ... a device ... to access a profile”

[Fig. 3]

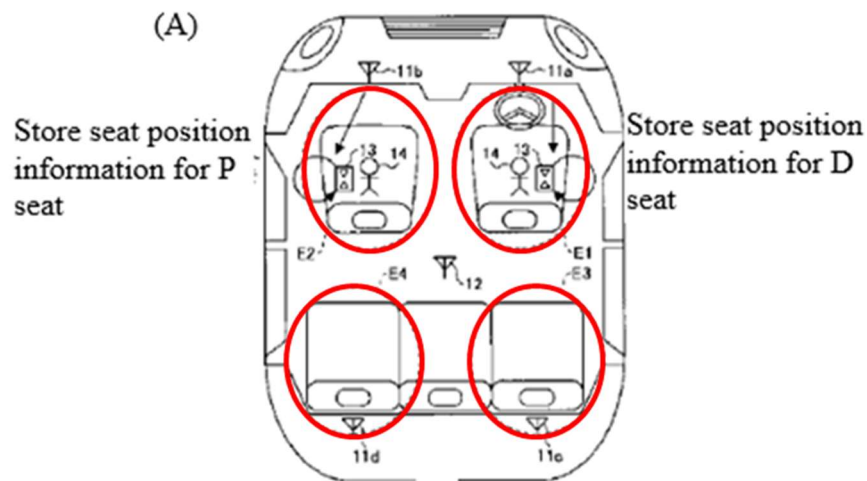


[1a]/[7a]/[8a]/[14b] determin[ing] a location inside a vehicle associated with a user

15

in red below] corresponding to each antenna 11a to 11b.” (Ex. 1024, [0024]-[0025].)

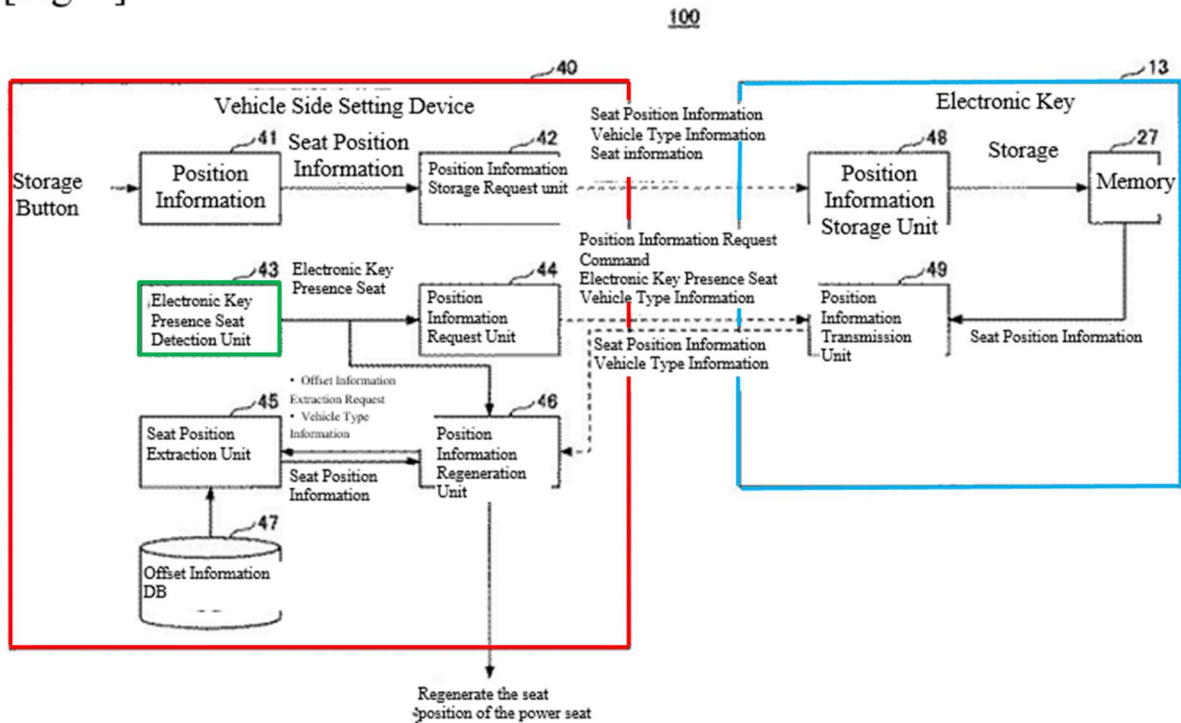
[Fig. 1]



Ex. 1024, Fig. 1A (Annotated)

As shown in Figure 3 below, Endo discloses the vehicle side setting device 40 (annotated in red) includes an electronic key presence seat detection unit 43 (annotated in green). (Ex. 1024, Fig. 3.)

[Fig. 3]



Ex. 1024, Fig. 3 (Annotated)

Endo explains, in response to a courtesy switch signal indicating a door unlocking and opening, the vehicle side setting device 40 sends signals from the antennas 11a-11d “intermittently” and the electronic key 13 responds by sending its stored ID, which is received by antenna 12. (Ex. 1024, [0026]-[0028].) Endo then explains the seat detection unit 43 detects “the seats corresponding to the detected areas E1 to E4 where ID code signals are returned.” (Ex. 1024, [0046]; Ex. 1003, ¶¶150-151.)

A PHOSITA would have understood the electronic key 13 is associated with the user for which it stores specific setting information. (Ex. 1003, ¶152.) Indeed,

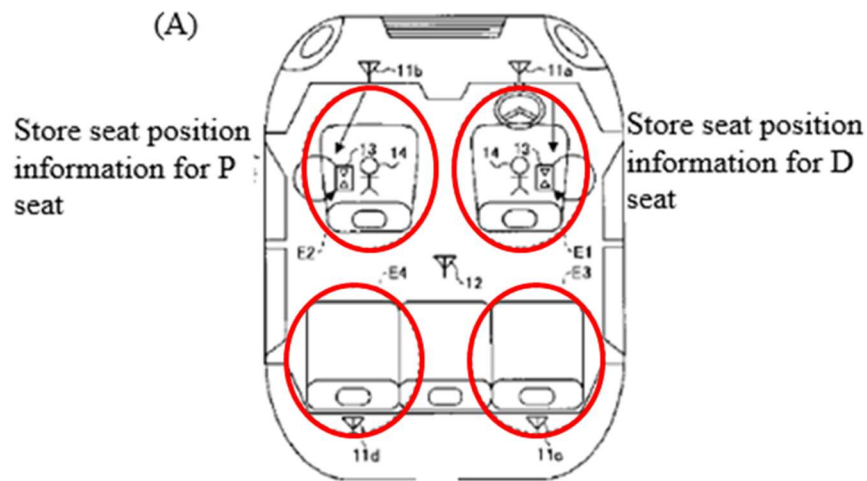
Endo discloses the system 100 “stores the seat position information” and/or “preferred air conditioning settings” associated with a user of “each electronic key existence seat.” (Ex. 1024, [0015], [0096].) Additionally, sensed locations represent different vehicle seating locations. Therefore, a PHOSITA would have understood that when a particular seat is occupied by a user with their electronic key, each detected area E1-E4 will represent a “*location inside a vehicle associated with a user.*” (Ex. 1003, ¶152.)

Therefore, Endo renders elements [1a]/[7a]/[8a]/[14b] obvious. (Ex. 1003, ¶¶148-154, 220, 237, 281.)

***[1b]/[7b]/[8b]/[14c] determin[ing] at least one vehicle control
associated with the location inside the vehicle***

As shown below in Figure 1, Endo teaches an automatic setting system 100, which utilizes detection areas E1 to E4 (annotated in red) “for each seat position that can be adjusted, not only for the driver’s seat (hereinafter referred to as ‘D seat’) but also for the [passenger] seat (hereinafter referred to as ‘P seat’), rear right seat, or rear left seat.” (Ex. 1024, [0012].)

[Fig. 1]

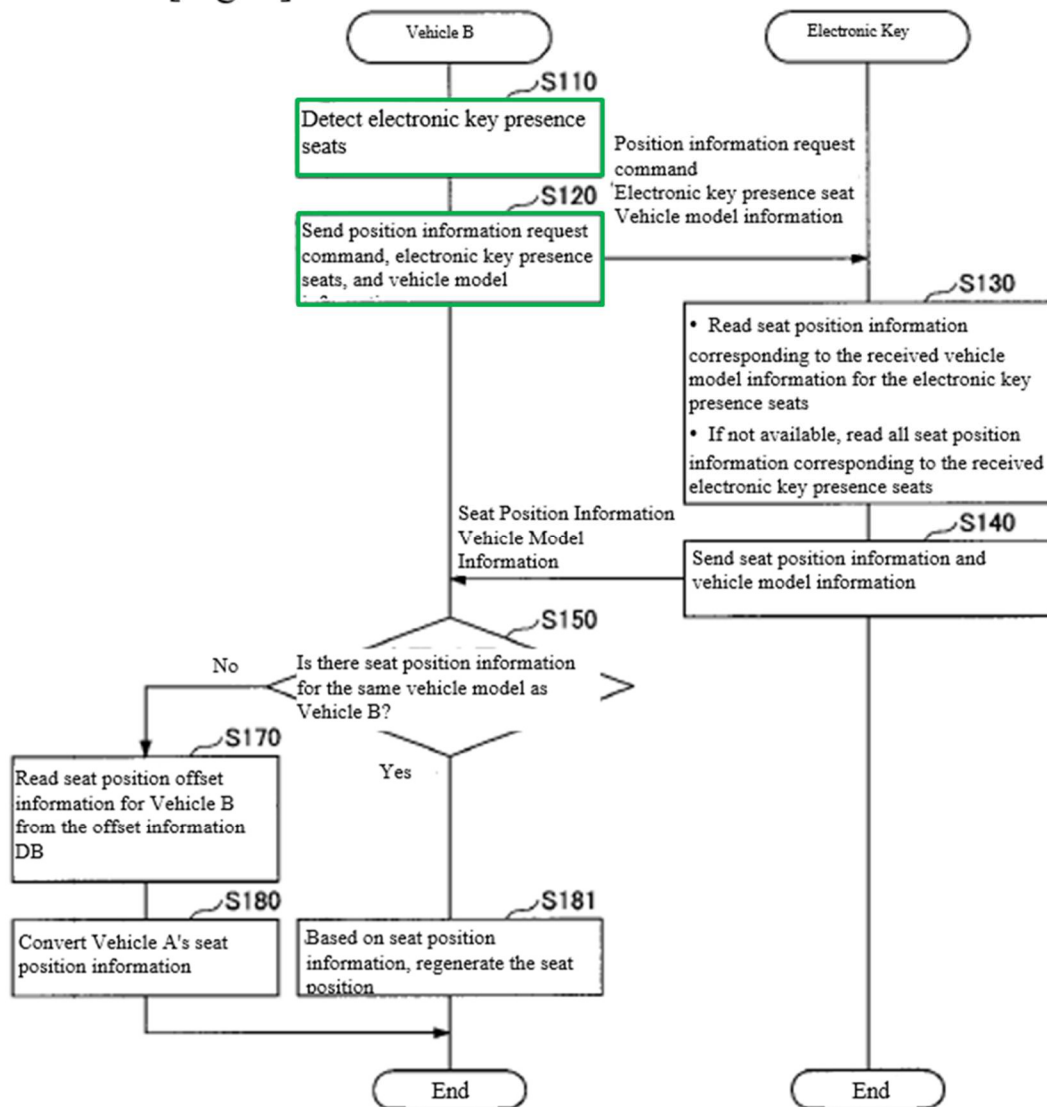


Ex. 1024, Fig. 1 (Annotated)

Endo further discloses the automatic setting system 100 “stores [] seat position information” and/or “preferred air conditioning settings” for “each electronic key existence seat.” (Ex. 1024, [0015], [0096].) The “electronic key existence seat” is the seat, located in an area E1 to E4, where an occupant 14 is detected carrying an electronic key 13. (Ex. 1024, [0012]; Ex. 1003, ¶156.)

Figure 7 of Endo shows the steps of (1) detecting electronic key presence (S110), and (2) sending position information and key presence to the vehicle side setting device (S120) (both annotated in green below). (Ex. 1024, [0058], Fig. 7.)

[Fig. 7]



Ex. 1024, Fig. 7 (Annotated)

A PHOSITA would have understood that Endo teaches the vehicle side setting device 40, via the seat detection unit 43 and position information request unit 44, first detects the electronic key presence seat [*“a location inside a vehicle associated with a user”*] and then requests seat position information and/or air conditioning settings [*“vehicle control”*] *“associated”* with the electronic presence of the key in a

particular seat [*“location inside the vehicle”*]. (Ex. 1024, [0058]-[0059]; Ex. 1003, ¶158.)

Therefore, Endo renders elements [1b]/[7b]/[8b]/[14c] obvious. (Ex. 1003, ¶¶155-159, 221, 238, 282.)

[1c] 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

Endo discloses “the matching ECU 21 sends a request signal to the transmission circuit 23” which “transmits the request signal from antennas 11a to 11d” to discover the electronic key 13 in response to a courtesy switch signal indicating a door unlocking and opening. (Ex. 1024, [0026]-[0027].) Endo describes initiating device discovery in response to a trigger event, *e.g.*, a courtesy switch signal indicating the presence of a user within the interior of the vehicle. Then, as described with reference to claim elements [1a]/[7a]/[8a]/[14a] above, the vehicle side setting device 40 sends signals from the antennas 11a-11d “intermittently” and the electronic key 13 responds by sending its stored ID, which is received by antenna 12. (Ex. 1024, [0026]-[0028].) Then the seat detection unit 43 detects “the seats corresponding to the detected areas E1 to E4 where ID code signals are returned.” (Ex. 1024, [0046].)

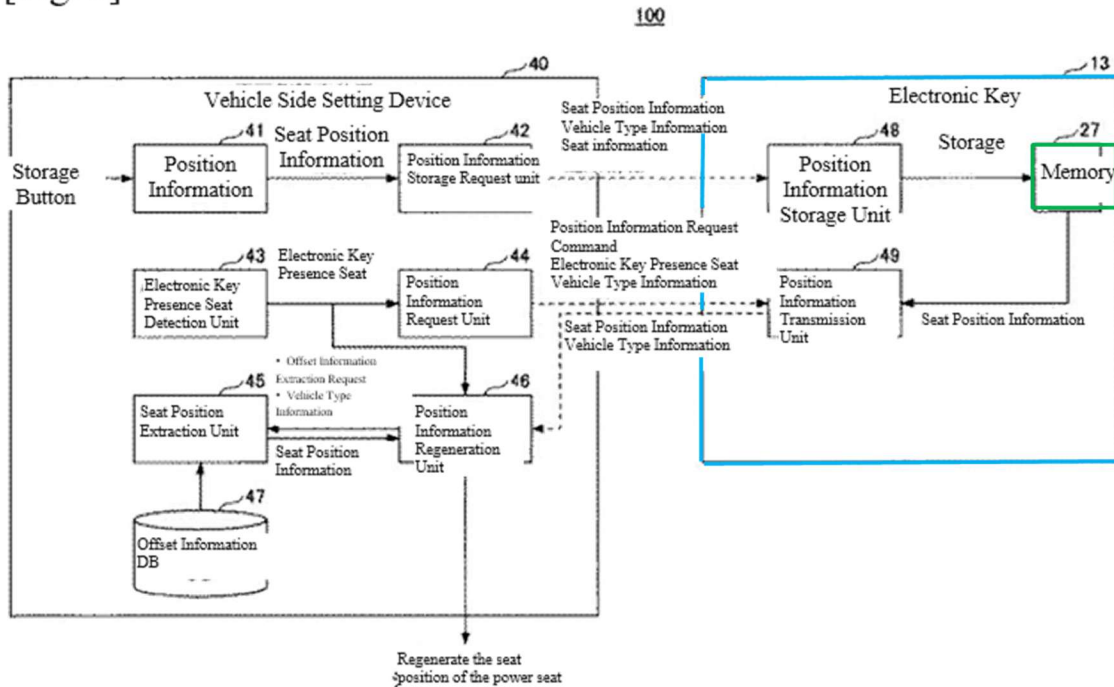
Based on these teachings, a PHOSITA would have understood Endo teaches “*determining the presence of the user inside the vehicle* [in response to a courtesy signal indicative of a user entering the vehicle, then initiating device discovery to determine a specific location of the key 13, *i.e.*, electronic key presence seat], *wherein determining the presence of the user comprises detecting a device associated with the user* [detecting electronic key 13].” (Ex. 1003, ¶163.)

Therefore, Endo renders element [1c] obvious. (Ex. 1003, ¶¶160-163.)

[1d]/[7c]/[8c]/[14d] refer[ring] to a user profile memory associated with the user for vehicle control settings

As shown in Figure 3 below, the electronic key 13 (annotated in blue) of Endo includes memory 27 (annotated in green).

[Fig. 3]



Ex. 1024, Fig. 3 (Annotated)

Endo explains “[t]he electronic key 13 ... stores the seat position information ... in memory 27.” (Ex. 1024, [0035].) Indeed, Endo teaches there is a “storage button for users to save the seat position information to the electronic key 13 and as a regeneration button 38 to send the seat position information to the automatic setting system 100.” (Ex. 1024, [0034].) A PHOTISA would have understood Endo teaches storing seat position information for a particular user, *i.e.*, the user utilizing the storage button to save their seat position. (Ex. 1003, ¶165.)

Endo further explains that after “the electronic key presence seat detection unit 43 of the vehicle-side setting device 40 detects the seat where [the] electronic key 13 is present,” “[t]he position information request unit 44 sends [from the

vehicle side setting device 40] ... a position information request command, the electronic key presence seat, and vehicle model information” to the electronic key 13. (Ex. 1024, [0046]-[0047].) The command causes the electronic key 13 to “read[] the seat position information associated with the received vehicle model information for the electronic key presence seat” and then transmit that information to the vehicle side setting device 40 as shown in Figure 3 above. (Ex. 1024, [0047]-[0048].)

A PHOSITA would have understood that Endo’s memory 27, where the occupant 14’s seat position information is stored, is “*user profile memory*” because it is a repository of vehicle feature information defined by and associated with a user. Additionally, because the memory 27 is stored in the occupant 14’s electronic key 13, the memory 27 is “*associated with the user.*” Further, seat position information is a “*vehicle control setting[].*” (Ex. 1003, ¶167.)

Therefore, Endo’s disclosure of retrieving information, *e.g.*, seat position information, from the electronic key 13 renders elements [1d]/[7c]/[8c]/[14d] obvious. (Ex. 1003, ¶¶164-169, 222, 239, 283.)

[1e]/ [7d]/[8d]/[14e] determin[ing], based at least partially on the vehicle control settings, to adjust the at least one vehicle control associated with the location inside the vehicle

Endo explains, in some instances, the memory 27 of the electronic key 13 may not have stored seat position information for the same vehicle type the occupant 14

is riding. (Ex. 1024, [0048].) Endo also explains “if the electronic key presence seat is seat P and multiple vehicle model information entries correspond to the seat position information of seat P, all such seat position information and vehicle model information are read from memory 27” and transmitted to the vehicle side setting device 40. (*Id.*)

Endo further discloses “[t]he position information reproduction unit 46 refers to the vehicle model information [from the memory 27 of the electronic key 13 held by occupant 14] and determines whether the seat position information transmitted corresponds to the same vehicle model.” (Ex. 1024, [0049].) By referring to the vehicle model information and determining whether the seat position information is for the same vehicle model, a PHOSITA would have understood that Endo’s automatic setting system 100 determines whether to adjust the seat position. (Ex. 1003, ¶174.)

Therefore, Endo renders elements [1e]/[7d]/[8d]/[14e] obvious. (Ex. 1003, ¶¶170-175, 223, 240, 284.)

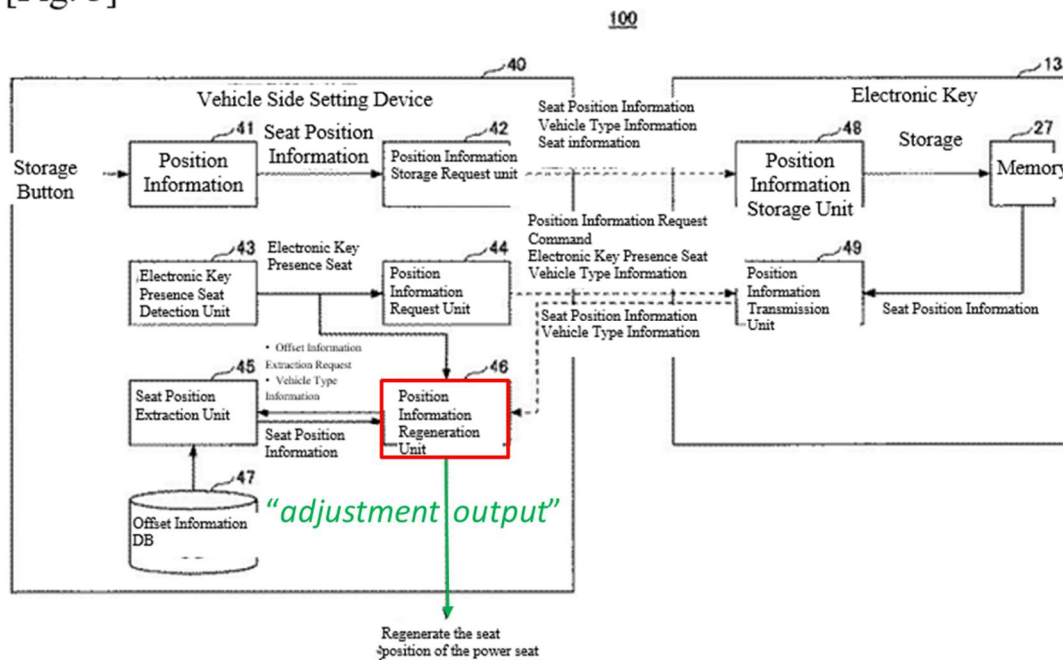
[1f]/[7e]/[8e]/[14f] provid[ing] an adjustment output to a vehicle control system,

Endo discloses “the position information transmission unit 49 sends the combination of seat position information and vehicle model information to the vehicle side setting device 40 (S140).” (Ex. 1024, [0059].) Endo further discloses

“[t]he position information reproduction unit 46” (annotated in red below)
“determines whether the seat position information transmitted corresponds to the same vehicle model as vehicle B” and if so, “it regenerates the seat position based on the received seat position information.” (*Id.*, [0049].)

Figure 3 of Endo below (annotated), shows the regenerated seat position (“*adjustment output*”). (Ex. 1003, ¶176.)

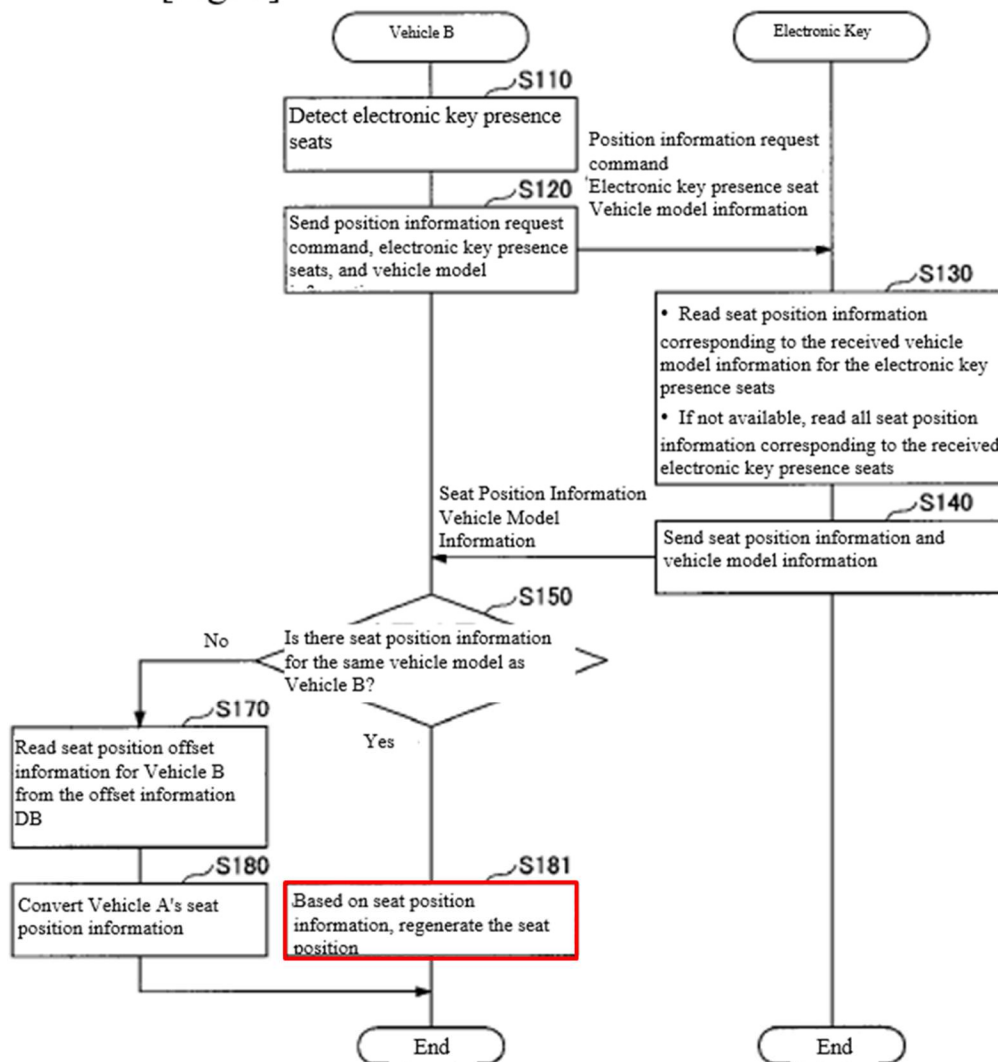
[Fig. 3]



Ex. 1024, Fig. 3 (Annotated)

A PHOSITA would have understood regenerating the seat position would include providing an “*adjustment output*” to a vehicle control system to control seat adjustment. This corresponds with step S181, annotated in red in the method depicted in Figure 7 below. (Ex. 1003, ¶178.)

[Fig. 7]



Ex. 1024, Fig. 7 (Annotated)

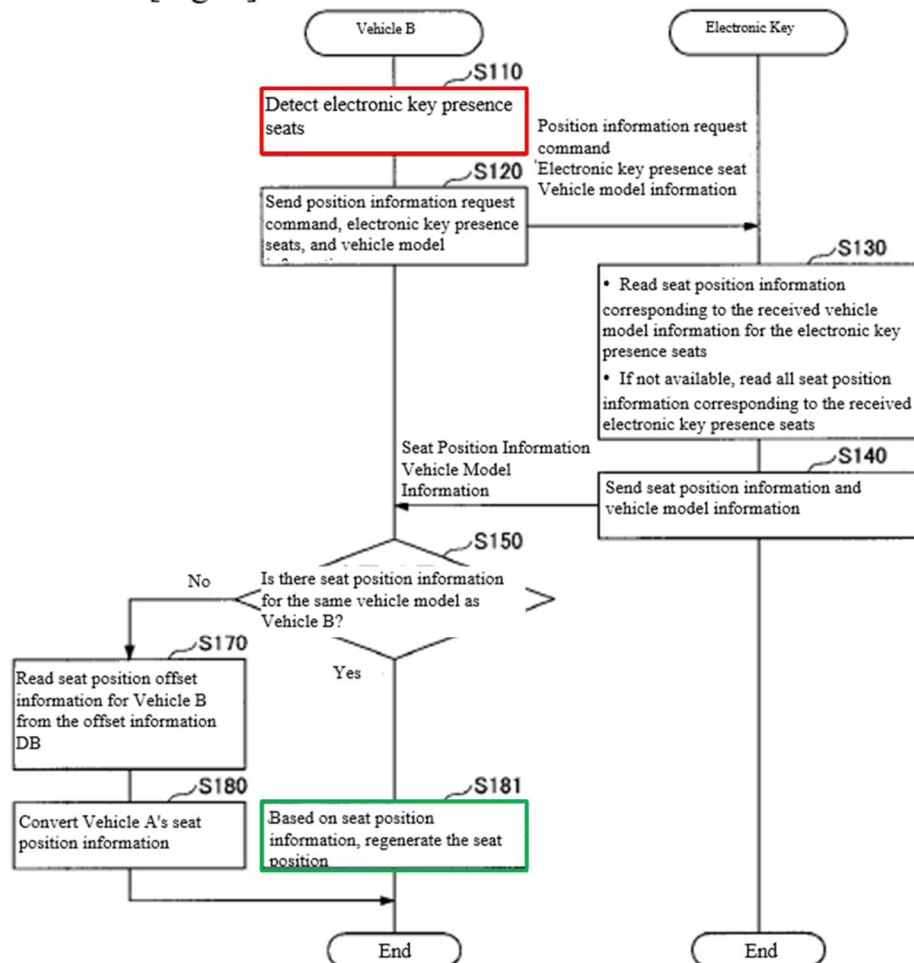
Therefore, Endo renders elements [1f]/[7e]/[8e]/[14f] obvious. (Ex. 1003, ¶¶176-179, 224, 241, 285.)

[1g] wherein the adjustment output is provided based at least partially on determining the user is present in the location inside the vehicle,

Endo discloses that the automatic setting system 100 “regenerates the seat

position based on the received seat position information” (Ex. 1024, [0049]), which a PHOSITA would have understood involves providing an adjustment output to the seat for adjustment. (Ex. 1003, ¶180.) Endo further discloses “the electronic key presence seat detection unit 43 detects the electronic key presence seat (S110).” (Ex. 1024, [0058].) These steps correspond with steps S110 and S181, annotated in red and green (respectively) in the method depicted by the flowchart of Figure 7 below.

[Fig. 7]



Ex. 1024, Fig. 7 (Annotated)

Thus, the seat position is regenerated based on (1) seat position

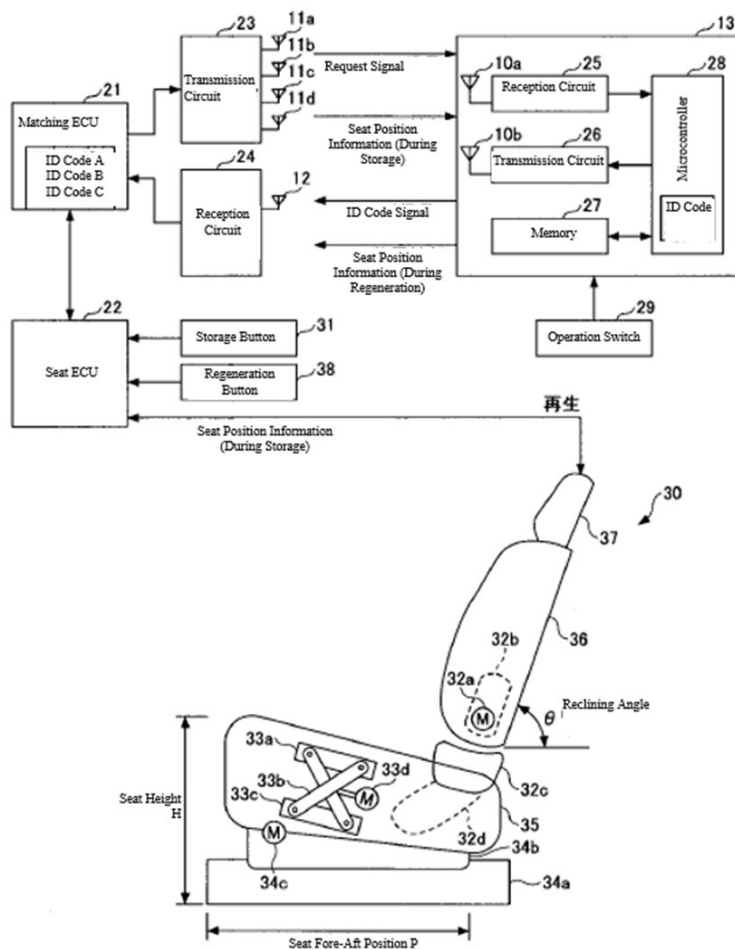
information/vehicle control settings as shown in S181 of Figure 7 above, and (2) determining that the user is present in that seat. (Ex. 1003, ¶181.) Indeed, Endo discloses “[w]hen occupant 14 boards, for example, the P seat of vehicle B, ... the automatic setting system 100 **detects the electronic key existence** seat according to the seating position of occupant 14 **and reads out the seat position information corresponding to the electronic key existence seat to regenerate the seat position.**” (Ex. 1024, [0016], [0062].)

Therefore, Endo renders element [1g] obvious. (Ex. 1003, ¶¶180-183.)

[1h]/[7f]/[8f]/[14g] wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle

Endo discloses the seat ECU 22 of the system 100 (“*vehicle control system*”) “regenerates the seat position where occupant 14 is seated based on [the] seat position information” that is received from the electronic key 13. (Ex. 1024, [0035].) With reference to Figure 2 below, Endo discloses ECU 22 controls the “position P,” “reclining angle θ ,” and “height H” of the seat, and the position of the headrest.” (Ex. 1024, [0036].)

[Fig. 2]



Ex. 1024, Fig. 2

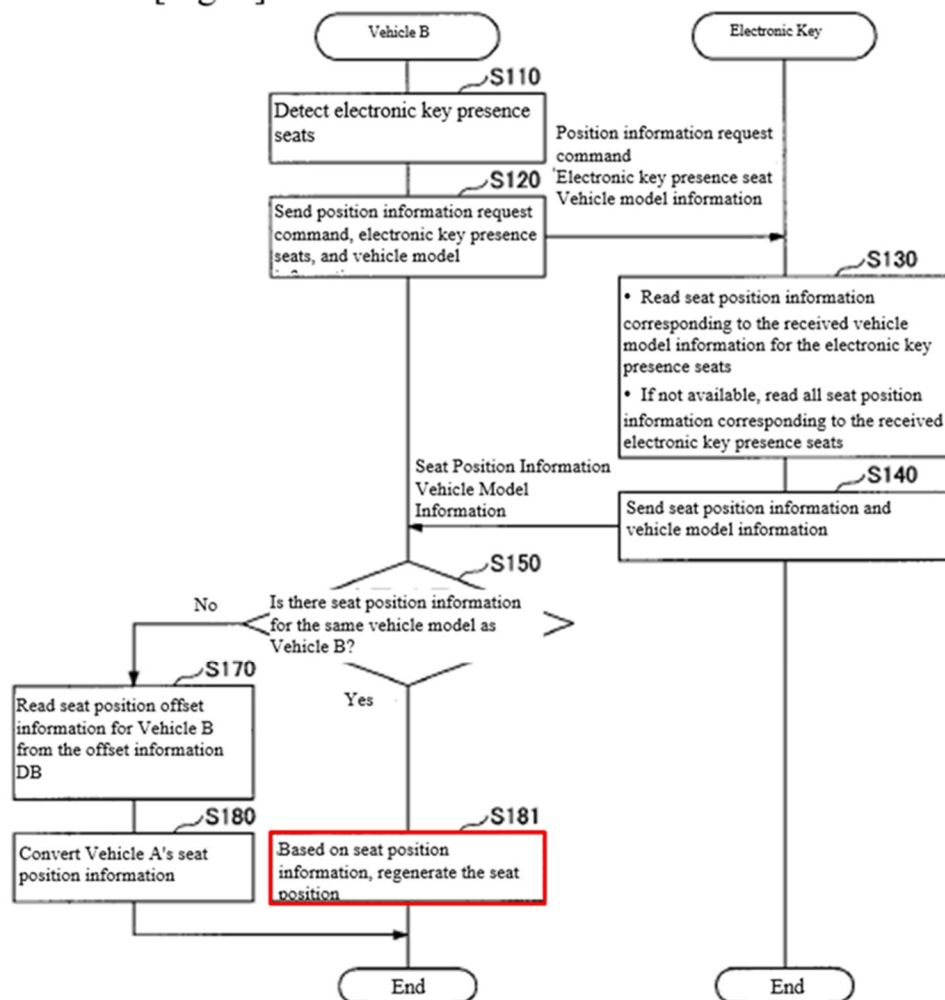
Therefore, Endo renders elements [1h]/[7f]/[8f]/[14g] obvious. (Ex. 1003, ¶¶184-186, 225, 242, 286.)

[7g]/[8g]/[14h] wherein the at least one vehicle control is adjusted via the adjustment output to match the vehicle control settings in the user profile memory.

Endo discloses “[t]he position information reproduction unit 46 refers to the vehicle model information [from the memory 27 of the electronic key 13 held by

occupant 14] and determines whether the seat position information transmitted corresponds to the same vehicle model.” (Ex. 1024, [0049].) “If seat position information for the same vehicle model has been received, it **regenerates the seat position based on the received seat position information.**” (*Id.*) This corresponds with step S181 in Figure 7 of Endo (annotated in red below).

[Fig. 7]



Ex. 1024, Fig. 7 (Annotated)

A PHOSITA would have understood that, by teaching “regenerat[ing]” the seat position stored in the memory 27 (“*user profile memory*”), Endo teaches the seat

position is adjusted from the then-current position to match the stored seat position information—“*vehicle control settings.*” (Ex. 1003, ¶228.)

Therefore, Endo renders elements [7g]/[8g]/[14h] obvious. (Ex. 1003, ¶¶226-229, 243, 287.)

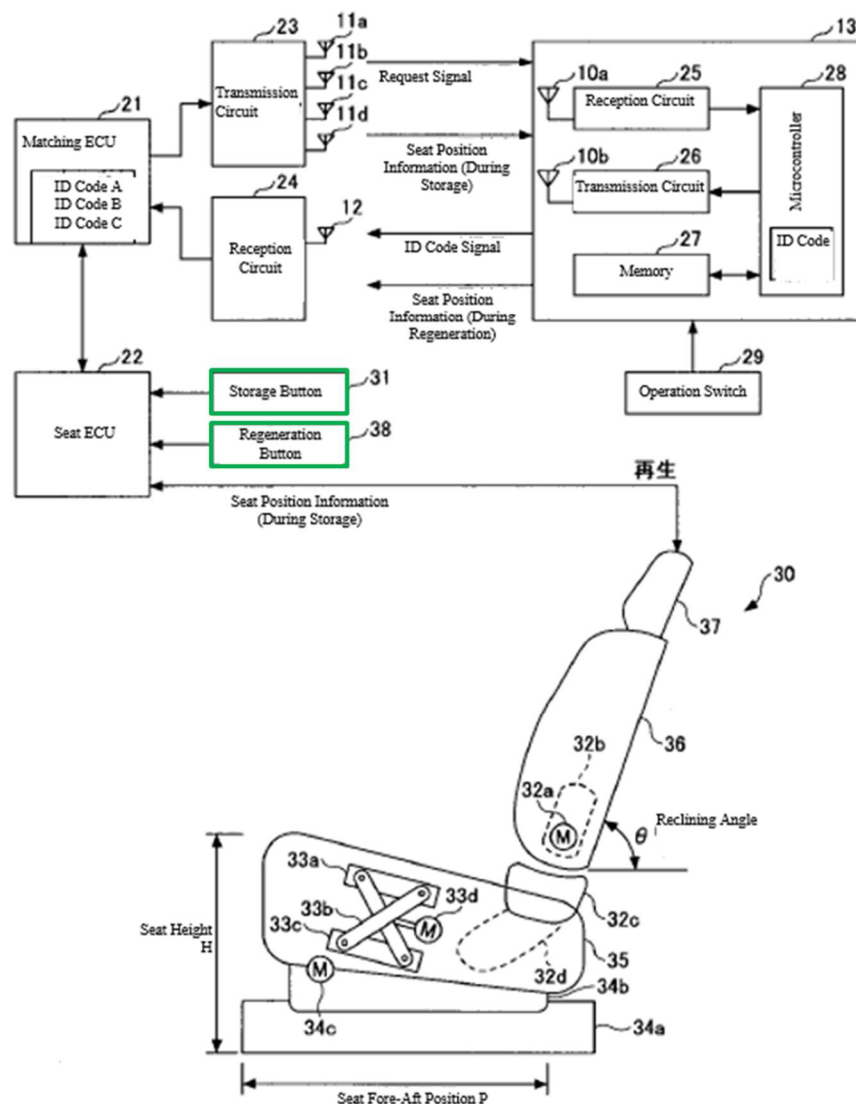
3. Dependent Claims 2-4, 6, 9-11, 13, 15-17 and 19-20

a. Dependent Claims 2, 10 and 16

2[pre-a]/10[pre-a]/16[pre-a] prior to determining the location inside the vehicle associated with the user ... stor[ing], in the user profile memory, information corresponding to locations inside the vehicle occupied by the user

Endo discloses, with reference to Figure 2 below, a power seat 30 that includes a storage button 31 and a regeneration button 38 (both annotated in green below) that may be “placed on components such as the seat back.” (Ex. 1024, [0040].)

[Fig. 2]

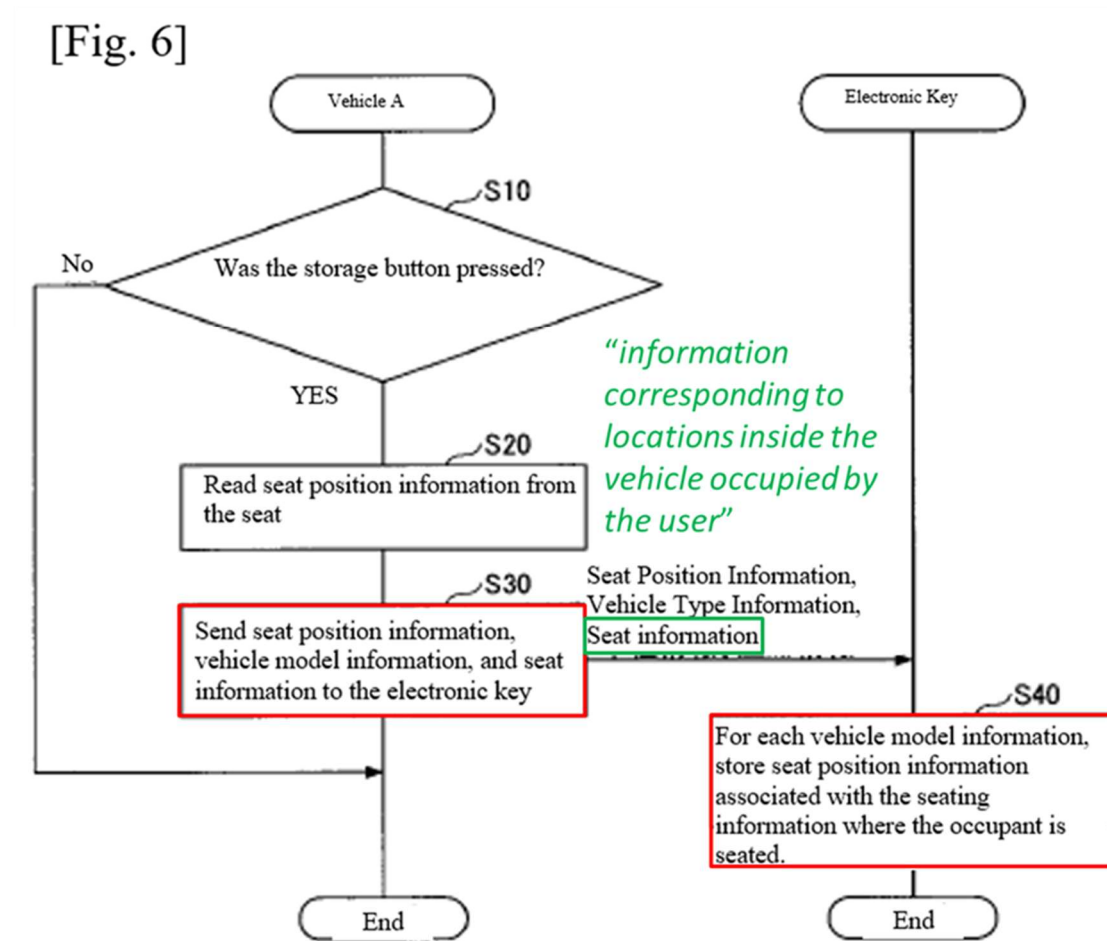


Ex. 1024, Fig. 2 (Annotated)

Endo discloses, when the occupant 14 presses the storage button 31, “[t]he position information storage request unit 42 sends the seat position information, vehicle model information, and seat information” to the electronic key 13. (Ex. 1024, [0043].) Endo explains “the seat information indicates the seat where the storage button 31 was pressed.” (*Id.*) A PHOSITA would have understood that this means

the position information storage request unit 42 sends “*information*” (seat information) corresponding to the seat in which the occupant 14 is sitting, *i.e.*, a “*location[] inside the vehicle occupied by the user.*” (Ex. 1003, ¶190.)

Endo explains, “[w]hen the position information storage unit 48 [of the electronic key 13] is requested to store the seat position information, it **stores** the received seat position information, vehicle model information, and seat information in memory 27.” (Ex. 1024, [0045].) Endo further explains “the position information storage unit 48 also correlates the seat position information with the seat information of the seat where the storage button 31 was pressed.” (*Id.*) This method corresponds to steps S30 and S40 (annotated in red below) in the flowchart of Figure 6. (Ex. 1024, [0054]-[0055].)



Ex. 1024, Fig. 6 (Annotated)

As discussed above for elements [1a]/[7a]/[8a]/[14b], Endo discloses “determining a location inside a vehicle associated with a user.” (Ex. 1003, ¶¶148-154, 220, 237, 281.) A PHOSITA would have understood that Endo teaches the method of storing the seat position information in the electronic key 13 occurs “prior to determining the location inside the vehicle associated with the user” (determining the electronic key presence seat) because the system would have been unable to regenerate seat information stored in the electronic key 13 unless seat position

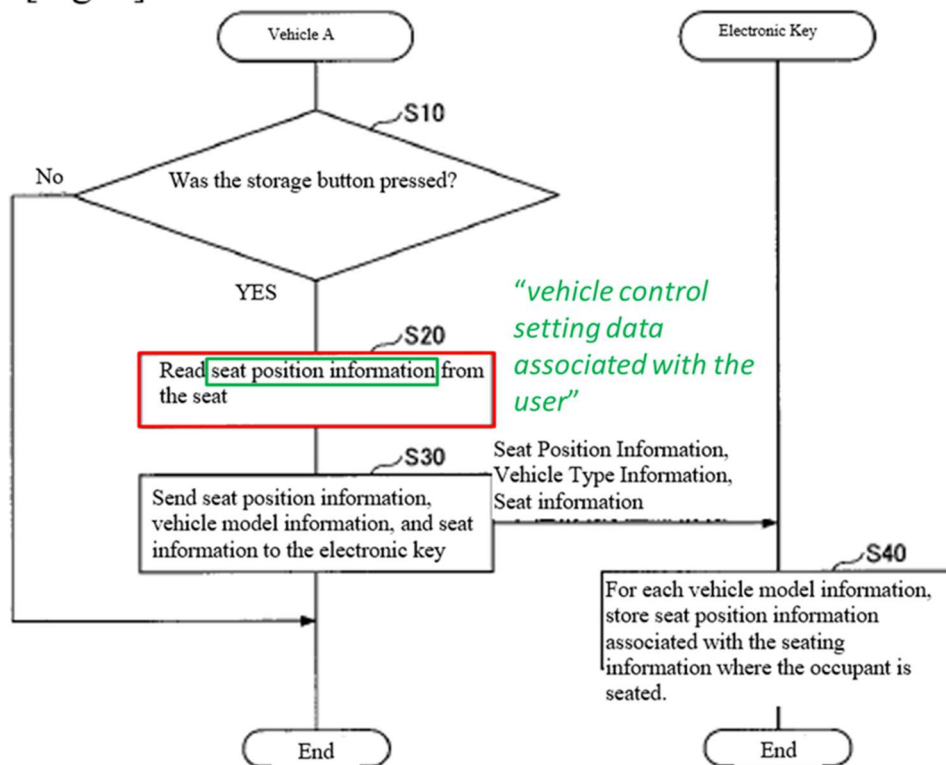
information was already stored in the electronic key 13. (Ex. 1003, ¶194.)

Therefore, Endo renders elements 2[pre-a]/10[pre-a]/16[pre-a] obvious. (Ex. 1003, ¶¶187-195, 255-258, 292-295.)

[2b]/[10b]/[16b] collect[ing] 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

Endo teaches step S20 (annotated in red below) is “[r]ead[ing] seat position information from the seat” after the occupant 14 sets the seat to their desired position and then presses the storage button 31. (Ex. 1024, [0053]; Ex. 1003, ¶196.)

[Fig. 6]



Ex. 1024, Fig. 6 (Annotated)

Endo discloses “[t]he position information acquisition unit 41 detects that the storage button 31 has been pressed and reads the seat position information from power seat 30, [before] sending it to the position information storage request unit 42.” (Ex. 1024, [0042].) A PHOSITA would have understood that this step of reading the seat position information in order to send it corresponds to “*collecting vehicle control setting data*,” and based on Endo teaching that the user is to set their preferred seat position before pressing the storage button 31, the vehicle control setting was “*made by the user in at least one of the locations inside the vehicle*.” (Ex. 1003, ¶¶197-199.)

Therefore, Endo renders elements [2b]/[10b]/[16b] obvious. (Ex. 1003, ¶¶196-200, 259, 296.)

[2c]/[10c]/[16c] stor[ing] the vehicle control setting data in the user profile memory.

Endo discloses, “[w]hen the position information storage unit 48 [of the electronic key 13] is requested to store the seat position information, it **stores** the received seat position information, vehicle model information, and seat information in memory 27.” (Ex. 1024, [0045].) A PHOSITA would have understood that Endo teaches the memory 27 in the electronic key 13 is a “*user profile memory*” by acting as a repository of the electronic key 13’s user’s information. (Ex. 1024, [0054]-[0055]; Ex. 1003, ¶202.)

Therefore, Endo renders elements [2c]/[10c]/[16c] obvious. (Ex. 1003, ¶¶201-203, 260, 297.)

b. Dependent Claims 3, 4, 11 and 17

[3]/[11a]/[17a] 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

Endo teaches the automatic setting system 100 “determines whether the seat position information transmitted [from the electronic key’s memory] corresponds to the same vehicle model” and, if so, “it regenerates the seat position,” (Ex. 1024, [0049],) which corresponds to “*determining ... to adjust the at least one vehicle control ...*.” A PHOSITA would have understood Endo teaches a “*vehicle control*” that included adjustments to seat positions in a “*seat system*.” (Ex. 1024, Fig. 2; Ex. 1003, ¶205.)

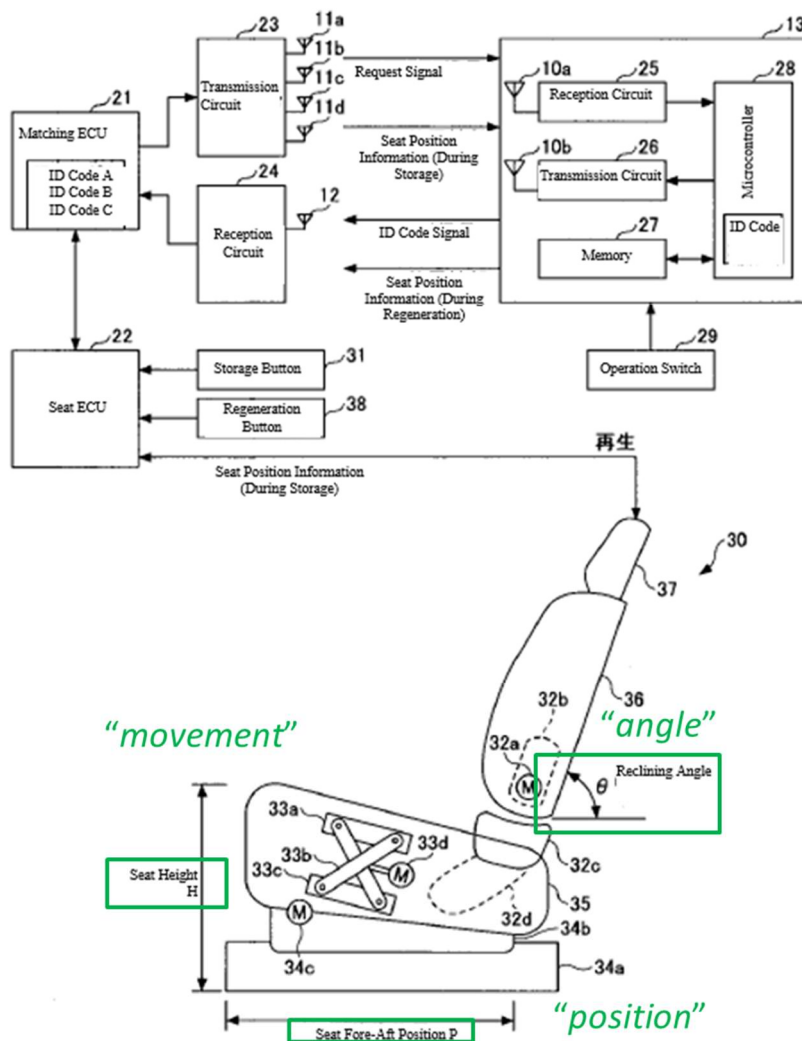
Therefore, Endo renders claim/elements [3]/[11a]/[17a] obvious. (Ex. 1003, ¶¶204-206, 261-264, 298-301.)

[4]/[11b]/[17b] 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.

As discussed above, Endo discloses the “*vehicle control setting*” of a seat position of a seat system in the vehicle, which are associated with one or more “*vehicle features*,” namely the feature of the vehicle’s seat system. With reference

to Figure 2 below, Endo discloses “[t]he seat ECU 22 controls the front and rear position P of the power seat 30, the reclining angle θ , and the height H of the seat.” (Ex. 1024, [0036].) Thus, Endo teaches the seat position information—or “*vehicle control settings*”—include “*a position*,” “*an angle*,” and “*a movement*.” (Ex. 1024, [0036], Fig. 2; Ex. 1003, ¶208.)

[Fig. 2]



Ex. 1024, Fig. 2 (Annotated)

Therefore, Endo renders claim/elements [4]/[11b]/[17b] obvious. (Ex. 1003,

c. Dependent Claims 6, 13 and 19

Endo discloses the vehicle side setting device 40, via the position information storage request unit 42 (annotated in red below), stores the seat position information in the memory 27 (annotated in blue below) of the electronic key 13. (Ex. 1024, [0043], [0045].) The memory 27 is “*user profile memory*” because it serves as a repository of information about the electronic key 13’s user, namely the user’s vehicle settings. (Ex. 1003, ¶211.)

Figure 100 is a block diagram of a vehicle seat position control system. The system is divided into two main sections: the Vehicle Side Setting Device (40) and the Electronic Key (13).

Vehicle Side Setting Device (40):

- Position Information (41):** Receives input from a **Storage Button** and sends data to the **Position Information Storage Request unit (42)**.
- Position Information Storage Request unit (42):** Sends a request to the **Position Information Request unit (44)** and the **Position Information Regeneration unit (46)**.
- Electronic Key Presence Seat (43):** Sends data to the **Position Information Request unit (44)**.
- Position Information Request unit (44):** Sends a request to the **Position Information Regeneration unit (46)**.
- Position Information Regeneration unit (46):** Sends data to the **Seat Position Extraction unit (45)** and the **Position Information Storage unit (48)**.
- Seat Position Extraction unit (45):** Sends data to the **Offset Information DB (47)**.
- Offset Information DB (47):** Provides **Offset Information** to the **Seat Position Extraction unit (45)**.

Electronic Key (13):

- Position Information Storage unit (48):** Receives data from the **Position Information Regeneration unit (46)** and sends data to the **Memory (27)**.
- Memory (27):** Stores **Seat Position Information** and sends it to the **Position Information Transmission unit (49)**.
- Position Information Transmission unit (49):** Sends data to the **Position Information Request unit (44)**.

Data Flow and Labels:

- Position Information Request Command:** Sent from the **Position Information Request unit (44)** to the **Position Information Storage unit (48)**.
- Electronic Key Presence Seat Vehicle Type Information:** Sent from the **Electronic Key Presence Seat (43)** to the **Position Information Request unit (44)**.
- Seat Position Information Vehicle Type Information:** Sent from the **Position Information Regeneration unit (46)** to the **Position Information Request unit (44)**.
- Seat Position Information:** Sent from the **Memory (27)** to the **Position Information Transmission unit (49)**.

Regeneration of the seat position of the power seat: This process is initiated by the **Position Information Regeneration unit (46)**.

40

Endo further discloses “that even if the storage button 31 is not pressed, the seat position information may still be stored in [the memory 27 of the] electronic key 13.” (Ex. 1024, [0044].) Endo explains there may be predetermined conditions under which the system automatically stores the seat position information in the memory 27 such as “a certain time has elapsed after driving or that the seat position was manually adjusted.” (Ex. 1024, [0044].) A PHOSITA would have understood that Endo’s disclosure of the system 100 automatically saving seat information in response to the user manually adjusting the seat position teaches “*determin[ing] that the user made a change to the adjusted at least one vehicle control.*” (Ex. 1003, ¶213.)

Therefore, Endo renders elements 6[pre-a]/13[pre-a]/19[pre-a] obvious. (Ex. 1003, ¶¶210-214, 266-269, 303-306.)

[6b]/[13b]/[19b] stor[ing] the change made to the adjusted at least one vehicle control in the user profile memory.

Endo discloses “the user can have their preferred seat position information ***stored*** in [the memory 27 of the] electronic key 13 without performing any operations of storing seat position information in electronic key 13,” *e.g.*, following a determination that “the seat position was manually adjusted.” (Ex. 1024, [0044]; Ex. 1003, ¶215.)

Therefore, Endo renders elements [6b]/[13b]/[19b] obvious. (Ex. 1003,

¶¶215-216, 270, 307.)

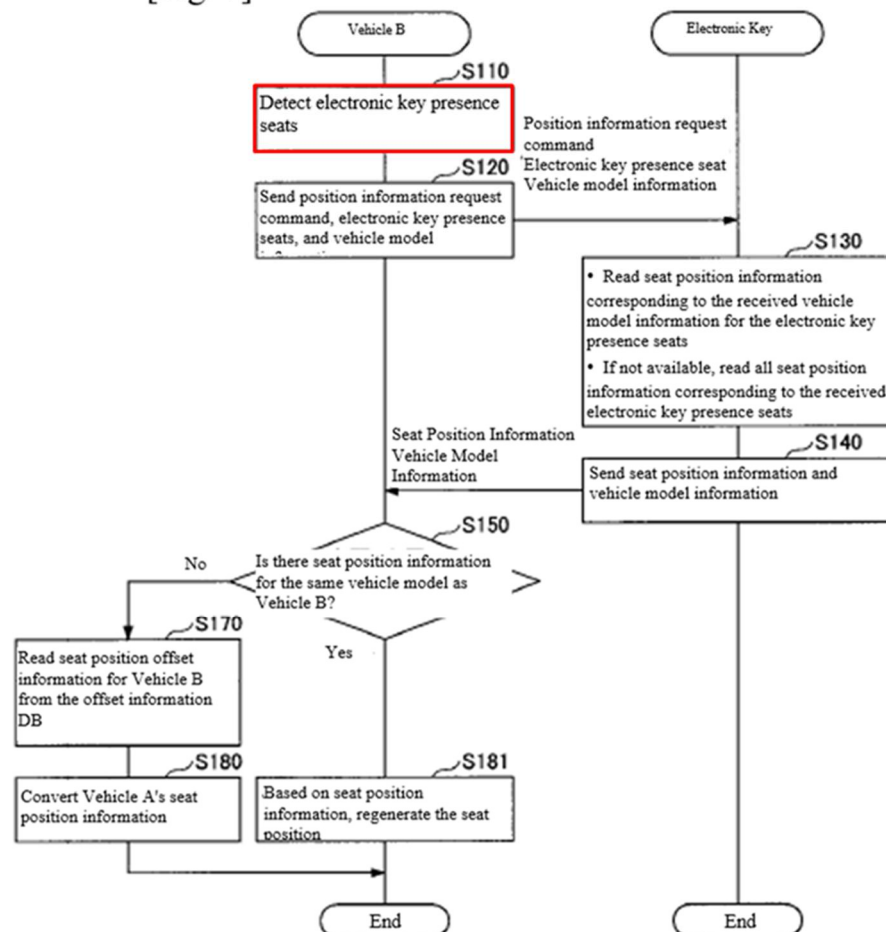
d. Dependent Claims 9 and 15

[9]/[15] prior to providing the adjustment output, ... determin[ing] 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.

Endo describes initiating device discovery in response to a trigger event, *e.g.*, a courtesy switch signal indicating the presence of a user within the interior of the vehicle. (Ex. 1024, [0026]-[0027].) And, as described above for elements [1a]/[7a]/[8a]/[14a], the vehicle side setting device 40 sends signals from the antennas 11a-11d “intermittently” and the electronic key 13 responds by sending its stored ID. (Ex. 1024, [0026]-[0028].) The seat detection unit 43 then detects “the seats corresponding to the detected areas E1 to E4 where ID code signals are returned.” (Ex. 1024, [0046].)

Endo discloses the first step S110 of Figure 7 (annotated in red below) as the detection of the electronic key presence seat—or detecting the occupant 14 is inside the vehicle based on detecting the where the electronic key 13 is held, which is performed by the vehicle side setting device 40. (Ex. 1024, [0058]; Ex. 1003, ¶249.)

[Fig. 7]



Ex. 1024, Fig. 7 (Annotated)

Endo discloses that while the seat position is regenerated based on determining the user is present in that seat. For example, Endo discloses, “[w]hen occupant 14 boards, for example, the P seat of vehicle B, ... the automatic setting system 100 detects the electronic key existence seat according to the seating position of occupant 14 and reads out the seat position information corresponding to the electronic key existence seat to regenerate the seat position.” (Ex. 1024, [0016], [0062].) A PHOSITA would have understood the user location, via the courtesy

switch signal and the user's electronic key 13, would have been detected and used to determine which seat (P seat in this example) to adjust. (Ex. 1003, ¶252.)

Therefore, Endo renders claims 9 and 15 obvious. (Ex. 1003, ¶¶244-254, 288-291.)

e. Dependent Claim 20

20[pre-a] 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

As discussed above in limitation [1c], Endo teaches determining that the user has entered the vehicle by “*detecting*” the courtesy switch signal and a user's electronic key “*device*” within the vehicle. (Ex. 1024, [0016]-[0017], [0026]-[0027], [0042], [0046], [0049], [0058].) Therefore, Endo renders this limitation obvious for the reasons discussed in element 14[pre] in conjunction with [1c]. (Ex. 1003, ¶¶160-163, 274-275, 308-311.)

[20b] wherein the adjustment output is provided based at least partially on determining the user is present in the location inside the vehicle.

As discussed above in limitation [1g], Endo provides an “*adjustment output*” after determining the user is “*present*” is the “*location*” of a particular seat. (Ex. 1024, [0016], [0049], [0058], [0062].) Therefore, Endo renders this limitation

obvious for reasons discussed in element [1g]. (Ex. 1003, ¶¶180-183, 312.)

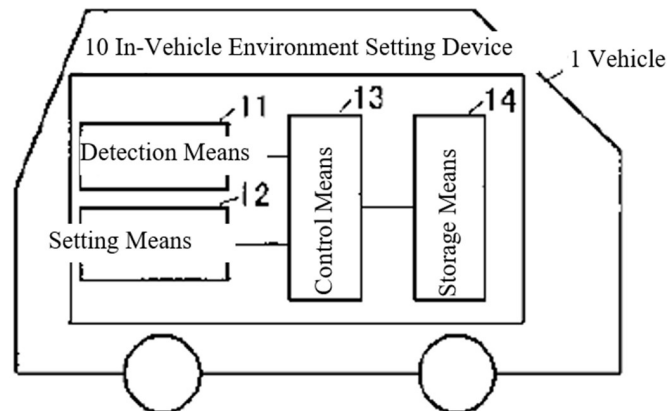
B. Ground 2: Claims 5, 12 and 18 Are Unpatentable as Obvious over Endo and Suzuki

1. Overview of Suzuki

Suzuki discloses a system that “automatically adjust[s] the in-vehicle environment settings, such as air conditioning temperature, seat angle, and seat belt height, according to the preferences of the passengers.” (Ex. 1026, [0004].) Suzuki explains, “[w]hen a passenger with stored identifying information boards the vehicle, the in-vehicle environment can be automatically adjusted based on the stored conditions.” (Ex. 1026, [0005].) Suzuki teaches the stored information may include “images of people’s faces” captured by “cameras.” (Ex. 1026, [0006].)

Suzuki also explains, “by associating the passenger identification information with the in-vehicle environment conditions set by the passengers and storing them, ... the detection means 11 detects the identification information for that person, the control means 13 compares the detected identification information with the passenger identification information stored in the storage means 14” and “the control means 13 reads the in-vehicle environment conditions associated with A and controls ... automatically setting the in-vehicle environment to conditions corresponding to A[.]” (Ex. 1026, [0010]; Ex. 1003, ¶¶136-142.)

[Fig. 1]



Ex. 1026, Fig. 1

2. Rationale to Combine Endo and Suzuki

It would have been obvious to a PHOSITA prior to the invention to combine the vehicle control system for detecting the presence of a user and automatically implementing that user's settings for various vehicle controls, as disclosed in Endo, with the known technique of detecting the presence of a specific user in a vehicle using data camera and facial characteristics as disclosed in Suzuki. This combination would have provided more consistent functionality and user convenience including improved accuracy and simplified storage. A PHOSITA would have understood Endo and Suzuki disclose complementary technologies that are combinable. (Ex. 1024, [0115]; Ex. 1003, ¶313.)

Endo and Suzuki are from the same field—vehicle control systems that automatically adjust vehicle controls to users' stored preferences. (Ex. 1024, [0009]; Ex. 1026, [0004]-[0005].) Endo and Suzuki both disclose vehicle control systems

that detect users to automatically adjust controls to stored preferences, facilitating user convenience. (Ex. 1024, [0002], [0007]; Ex. 1026, [0003]-[0004].) And Endo and Suzuki recognize the benefit of storing user settings in association with each of the different seats. (Ex. 1024, [0062]; Ex. 1026, [0010]; Ex. 1003, ¶¶314-316.)

Endo discloses a vehicle system that takes advantage of a “vehicle [that] is equipped with an Intelligent Key System” to detect passengers and load settings for specific passengers. (Ex. 1024, [0011].) Suzuki discloses various means of detection, including “cameras embedded in the front pillar, rearview mirror, headrest, etc., to capture images of people’s faces” (Ex. 1026, [0006].) Thus, as Suzuki explains, this vehicle system can accommodate situations where multiple people use the same key, for example, multiple people are traveling together and switch seats during the trip. (Ex. 1026, [0011]-[0014]; Ex. 1003, ¶¶317-320.)

A PHOSITA would have been motivated to combine the automatic user detection vehicle system disclosed in Endo with the known technique of facial recognition disclosed in the automatic vehicle system in Suzuki to yield predictable results, *e.g.*, to expand the automatic functionality of the vehicle system and the electronic key to allow users to share the electronic key with other drivers, thereby eliminating the need for every driver to possess their own personal electronic key. Removing the need for every driver to possess their own key provides the users with additional ease and convenience when multiple drivers operate the same car, which

is a clear benefit and improvement over Endo's disclosure alone. Similarly, eliminating the opportunity for the system to inadvertently update one user's settings when a key is borrowed would make the operation of Endo's system more reliable and predictable. (Ex. 1003, ¶¶321-323.) A PHOSITA would have also understood the combination would have allowed storing settings for multiple users on a single key, further facilitating sharing of keys among drivers. (*Id.*, ¶¶324-327.) Moreover, a PHOSITA would have understood this would have eliminated the need for every passenger to carry their own key as is required in Endo alone. (*Id.*, ¶¶328-331.)

A PHOSITA would have understood how to combine Endo and Suzuki, recognizing the integration would have primarily involved augmenting Endo's existing vehicle system with biometric identification capabilities using a camera or image sensor. In terms of hardware modifications, a PHOSITA would have modified Endo's system to include Suzuki's camera (detection means 11) for each seat in the vehicle positioned to capture the occupants' faces. Additionally, the key described in Endo would have been modified such that it could store more than one user profile to allow for the added benefit of users sharing a key while still having their personal settings without the concern of overwriting another user's settings and not requiring every passenger to carry their own key to have their settings implemented. (Ex. 1003, ¶332.)

Regarding software, a PHOSITA would have modified the software of Endo's

automatic setting system to include image processing software to permit capturing images, characterize faces, and compare facial characterizations with previously stored facial information, and to permit storing the facial information in association with the information already stored, namely, seat position information, seat information, and vehicle model information, so that the user of the electronic key 13 could be identified and the stored seat position information corresponding to the detected facial information could be retrieved. The software for saving data to the memory of the electronic key would have been updated to permit the storage of seat positions in association with facial characteristics of the present user and to allow storage of seat position information in association with a particular user. (Ex. 1003, ¶333.)

Several *KSR* factors also support combining the teachings of Suzuki with the teachings of Endo. First, as described above, combining the facial recognition detection functionality of Suzuki with Endo would have yielded the predictable result of the ability for multiple users to utilize the same key and be able to have the system store and implement their individual vehicle settings—improving the functionality of the system described in Endo. (*Id.*, ¶¶334-335.)

Second, it would have been obvious to try adding Suzuki’s facial recognition functionality to Endo’s system. Indeed, as described above, both systems have similar functionality and seek to detect users so that the user’s personal vehicle

settings can be applied. Including Suzuki’s facial recognition functionality would have merely provided Endo with an additional method of detecting a particular user—consistent with the detection functionality and goals of Endo. (Ex. 1003, ¶336.)

Third, there would have been a design incentive to add the facial detection functionality of Suzuki to Endo to limit the need for each unique user to have his or her own key. This would have saved on key costs and reduce system confusion when multiple keys are present in the vehicle at the same. (*Id.*, ¶337.)

Accordingly, a PHOSITA would have been motivated to combine the teachings of Endo with the teachings of Suzuki. (*Id.*, ¶¶313-337.)

3. Dependent Claims 5, 12 and 18

5[pre]/12[pre] wherein determining the presence of the user inside the vehicle further comprises:

Endo discloses a method with a step of determining the presence of a user inside a vehicle. Specifically, Endo discloses “**the matching ECU 21 sends a request signal** to the transmission circuit 23” which “transmits the request signal from antennas 11a to 11d” to discover the electronic key 13 in response to a courtesy switch signal indicating a door unlocking and opening. (Ex. 1024, [0026]-[0027].) Therefore, Endo in combination with Suzuki renders this limitation obvious. (Ex. 1003, ¶¶338-339, 354-357.)

18[pre] wherein, in determining the presence of the user inside the vehicle, the user the profile identification module is further configured to

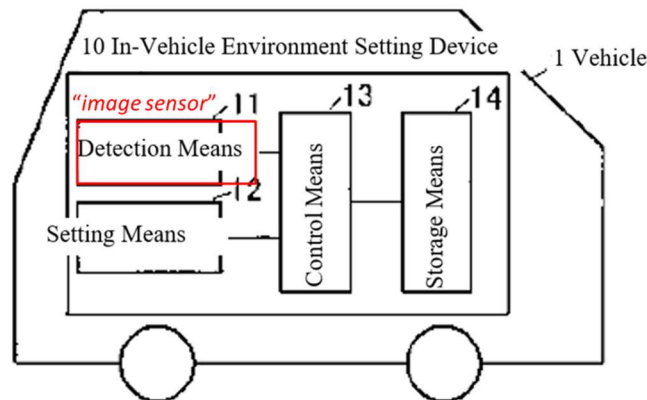
Claim limitation 18[pre] is substantially similar to claim limitation 5[pre] and 12[pre] but claim 18[pre] requires the method step of “*determining the presence of the user*” to be realized through execution by a processor of a “*profile identification module*” contained in a memory. Because element 18[pre] depends from Claim 15, Endo in combination with Suzuki renders element 18[pre] obvious for the same reasons discusses for Claim 15. (Ex. 1003, ¶¶244-254, 288-291, 361-365.)

[5a]/[12a]/[18a] detect[ing] a person via at least one image sensor associated with the vehicle

Suzuki explains the effect of the invention is that “[w]hen a passenger with stored identifying information boards the vehicle, the in-vehicle environment can be automatically adjusted based on the stored conditions.” (Ex. 1026, [0005].)

Figure 1 of Suzuki (annotated below), discloses a vehicle equipped with a setting device 10 that includes a “detection means 11 for identifying the passengers” (annotated in red), a “setting means 12 ... designed to set conditions for the in-vehicle environment,” a “control means 13 ... that controls both the detection means 11 and setting means 12,” and a “storage means 14” for associating the set environment conditions with the passengers and storing them. (*Id.*, [0006], [0008]-[0009]; Ex. 1003, ¶341.)

[Fig. 1]



Ex. 1026, Fig. 1 (Annotated)

Suzuki explains detection means 11 can take many forms, such as “**cameras** ... to capture images of people’s faces.” (Ex. 1026, [0006].) A PHOSITA would have understood the camera described in Suzuki is an “*image sensor*” as the device functions to capture images of a person’s face to detect identification information, i.e., sense facial characteristics. (*Id.*, [0006]; Ex. 1003, ¶343.) This is consistent with the ’296 Patent, which states “the sensors may include one or more of optical, or **image, sensors** ... (e.g., **cameras**, etc.).” (Ex. 1001, 33:50-51.) Suzuki further claims a “program for controlling an in-vehicle environment setting device...comprising: **a step of detecting** information that specifies the passenger **using the detection means**” (Ex. 1026, claim 2, [0004].)

Therefore, Endo in combination with Suzuki renders elements [5a]/[12a]/[18a] obvious. (Ex. 1003, ¶¶340-346, 358, 366.)

[5b]/[12b]/[18b] identify[ing] facial features associated with the person detected via the at least one image sensor

Suzuki explains the detection means 11 can take many forms, such as “cameras ... to capture images of people’s faces” and more. (Ex. 1026, [0006].) Suzuki further describes in its claims a “program for controlling an in-vehicle environment setting device...comprising: a step of **detecting information that specifies the passenger** using the detection means” (Ex. 1026, claim 2, [0004].) A PHOSITA would have understood Suzuki teaches that the information specifying the passenger, detected by the detection means 11 (camera), includes “*facial features*,” specifically when the camera (“*image sensor*”) takes images of people’s faces. (Ex. 1003, ¶349.)

Therefore, Endo in combination with Suzuki renders elements [5b]/[12b]/[18b] obvious. (Ex. 1003, ¶¶347-350, 359, 367.)

[5c]/[12c]/[18c] determin[ing] whether the identified facial features associated with the person match user characteristics stored in a memory.

Suzuki explains that if the identifying information captured by the detection means 11 (a camera) is the specified information for person A, that “information is linked to the environmental conditions set by A, ... which [is] then stored in the storage means 14.” (Ex. 1026, [0006], [0009].)

Suzuki explains further that “by associating the passenger identification

information with the in-vehicle environment conditions set by the passengers and storing them, when a person boards the vehicle and the detection means 11 detects the identification information for that person, the control means 13 **compares the detected identification information with the passenger identification information stored in the storage means 14.**” (Ex. 1026, [0010].) Suzuki’s claimed program includes “a step of comparing the information specifying the detected passengers with the information stored in the storage means.” (Ex. 1026, claim 2, [0004].)

Therefore, Endo in combination with Suzuki renders elements [5c]/[12c]/[18c] obvious. (Ex. 1003, ¶¶351-353, 360, 368.)

C. Ground 3: Claims 1-4, 6-11, 13-17, and 19-20 Are Unpatentable as Obvious over He

1. Overview of He

He discloses a vehicle system 100 including “a controller 110, a profile selector ... 140, a wireless vehicle system 150, and vehicle components 160.” (Ex. 1025, [0015], Fig. 1.) The system 100 may be “an integrated unit such that the controller 110 is integrally part of the user interface 140 and the wireless vehicle system 150[,]” or can be “an added component to the vehicle 102 ... separate from the user interface 140 and the wireless vehicle system 150, which may already be part of the vehicle 102.” (Ex. 1025, [0016].)

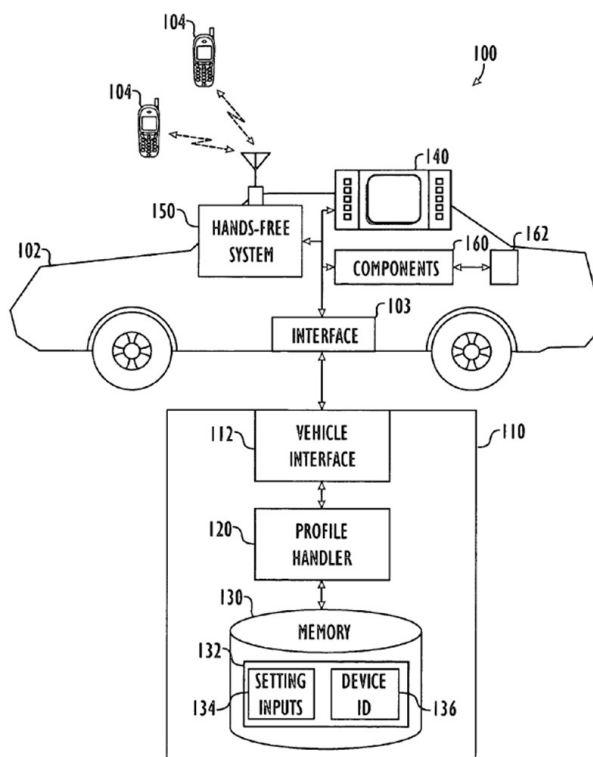


FIG. 1

Ex. 1025, Fig. 1

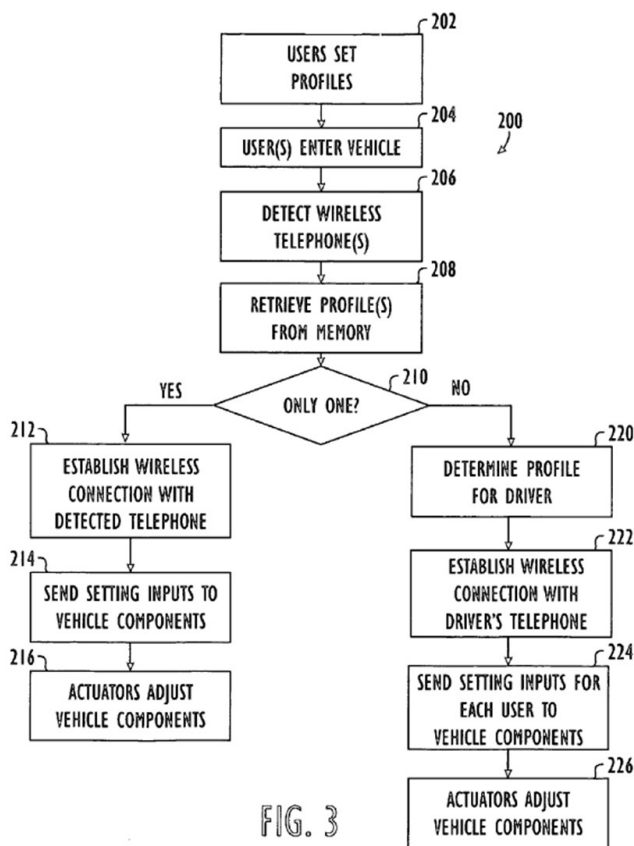
He explains “the user adjusts the vehicle components, such as seats and mirrors ... to her preferred position or setting, the user then presses buttons located on the user interface 140 to set the settings, and the controller 110 stores the setting inputs in the user’s profile.” (Ex. 1025, [0021].) “[T]he vehicle system 100 automatically detects which recognized wireless telephones 104 are active in range of the hands-free system 150, and the controller 110 ... obtain[s] associated user profiles 132 from memory 130.” (Ex. 1025, [0025].) “[T]he controller 110 uses information from the user profiles 132 to determine automatically which user of a detected telephone 104 is the current driver of the vehicle 102.” (Ex. 1025, [0025].)

Using information associated with the user's telephone, "the profile handler 120 at the controller 110 accesses the user profiles 132 stored in memory 130" (Ex. 1025, [0026].) For example, if only one telephone 104 is detected, "the profile handler 120 may assume that the user of the detected wireless telephone 104 is the current driver of the vehicle 102" and "the controller 110 sends the driver's preferred setting inputs 134 to the vehicle components 160 appropriate for the driver ... and the actuators and other controls 162 adjust the vehicle components 160 accordingly[.]" (Ex. 1025, [0027]; Ex. 1003, ¶¶129-135.)

2. Independent Claims 1, 7, 8 and 14

1[pre]/7[pre] A method, comprising:

He discloses a vehicle system that "allows users to set and select preferred settings for vehicle components." (Ex. 1025, [0018], [0025]-[0026].) In Figure 3, He discloses a flowchart setting forth a method to automatically determine user profiles and implement users' preferred settings stored therein for various vehicle components. (Ex. 1025, [0026], Fig. 3; Ex. 1003, ¶¶371-372.)



Ex. 1025, Fig. 3

He also claims a “method, comprising: ... retrieving the user profile for one of the users; [and] initiating one or more commands to vehicle components having settings inputs in the retrieved user profile[.]” (Ex. 1025, Claim 1.)

Therefore, He discloses the claimed “method” of elements 1[pre] and 7[pre]. (Ex. 1003, ¶¶369-374, 449-452.)

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

As discussed above for elements 1[pre]/7[pre], He discloses a method for

implementing users' preferred settings based on information stored in a user profile. Additionally, He discloses the system includes a "controller 110 [that] has a control unit or profile handler 120 and memory 130[,]" which may be "integrally part of" the other components and "can automatically determine which user is the driver" and "retrieve the user profile for the driver." (Ex. 1025, [0012], [0015], [0016].) A PHOSITA would have understood He's controller would have been implemented using a programmed microcontroller or microprocessor operated by executing instructions stored on a non-transitory memory as it would have been easier, lower cost, and more efficient than a discrete logic machine. (Ex. 1003, ¶¶117-119, 467-469; Exs. 1050-1051, 1080.) This is supported by the '296 Patent, which states **"[t]he processor 304 may comprise a general purpose programmable processor or controller** for executing application programming or instructions." (Ex. 1001, 20:51-53.)

Therefore, He discloses the claimed "*method*" of element 8[pre] performed by a "*processor*" executing instructions stored on a "*non-transitory computer readable medium*." (Ex. 1003, ¶¶462-473.)

14[pre] A vehicle control system, comprising:

He discloses a vehicle system 100, which includes a controller 110 and a hands-free system 150, allowing a user to "have the seat, mirrors, and other vehicle components 160 moved or set to her preferred settings." (Ex. 1025, [0015], [0019].)

Therefore, He discloses the claimed “*vehicle control system*” of element 14

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[pre]. (Ex. 1003, ¶¶504-508.)
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[14a] a profile identification module contained in a memory and executed by a processor of the vehicle control system, the profile identification module configured to

He discloses a vehicle system 100 comprising a controller 110 (annotated in red) and a wireless vehicle/hands-free system 150 (annotated in blue). The controller 110 also includes a memory 130 (annotated in green). (Ex. 1003, ¶509.)

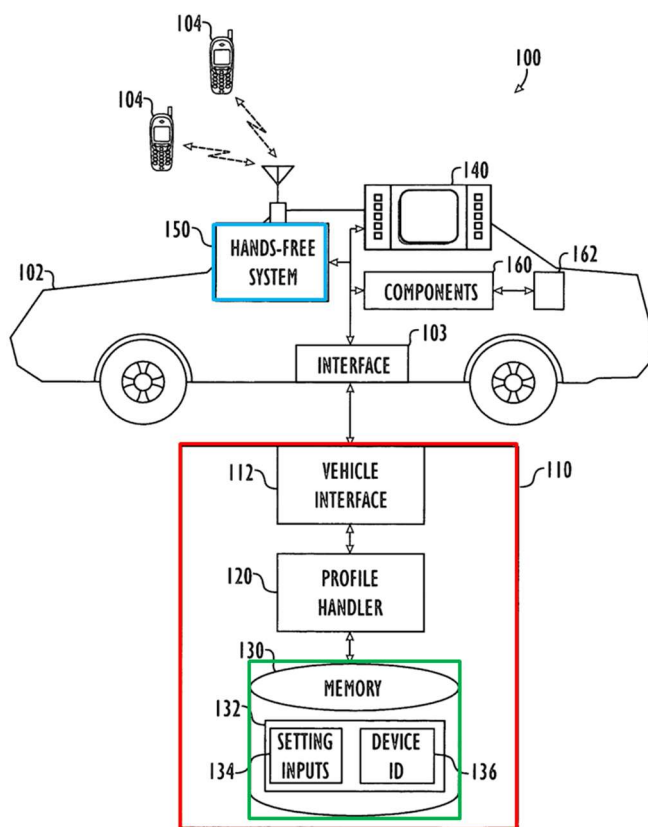


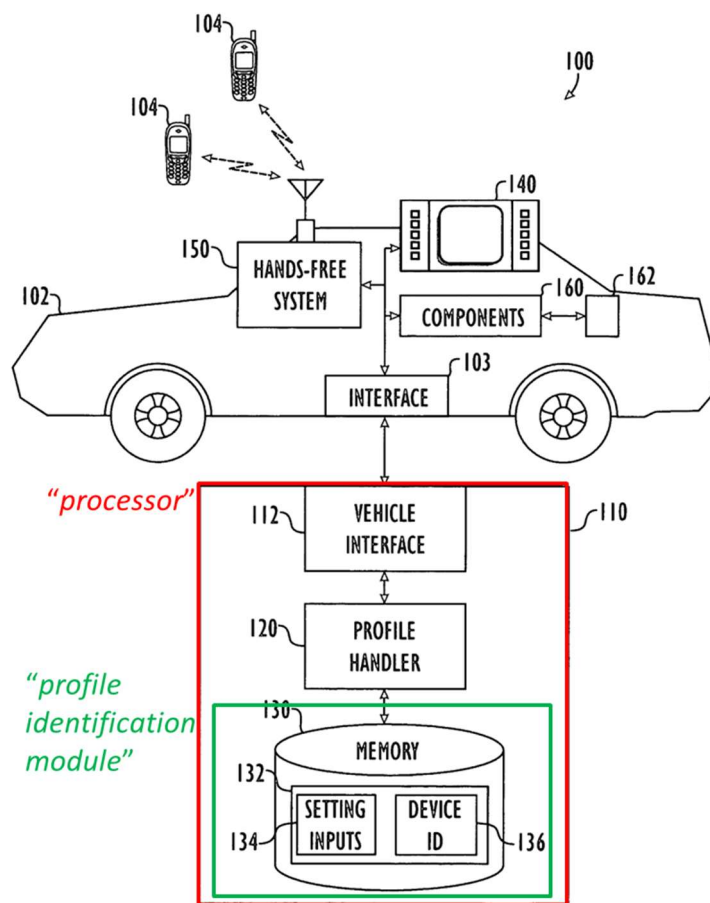
FIG. 1

Ex. 1025, Fig. 1 (Annotated)

He teaches “[t]he controller is communicatively coupled to the memory, the

one or more vehicle components, and a wireless vehicle system” and, in one example, “the controller can automatically determine which user is the driver of the vehicle, and the controller can retrieve the user profile for the driver from memory.” (Ex. 1025, [0012].) He also teaches “the profile handler 120 at the controller 110” can access and retrieve the user profiles. (Ex. 1025, [0026].) He also teaches the controller 110 can be “integrally part of” the other components of the vehicle system. (Ex. 1025, [0016].) A PHOSITA would have thus understood that He teaches the controller 110 can perform functions of the profile handler 120 and wireless hands-free system 150. (Ex. 1003, ¶¶510-511.)

A PHOSITA would have also understood the controller of He would have been implemented using a programmed microcontroller or microprocessor operated by executing instructions stored on a non-transitory memory as it would have been easier, lower cost, and more efficient than a discrete logic machine. (Ex. 1003, ¶511.) A PHOSITA would therefore have understood He teaches the controller 110 may be or include a processor and include a profile identification module programmed instructions in the memory 130. (*Id.*, ¶512.) Such a program represents “*a profile identification module.*” (*Id.*) Indeed, the ’296 Patent explains “the profile identification module 848 may request profile information from ... a device ... to access a profile” and “may be configured to create, modify, retrieve, and/or store user profiles[.]” (Ex. 1001, 42:4-10.)



Ex. 1025, Fig. 1 (Annotated)

Therefore, He renders element [14a] obvious. (Ex. 1003, ¶¶509-513.)

[1a]/[7a]/[8a]/[14b] determin[ing] a location inside a vehicle associated with a user

He discloses an embodiment wherein “[t]he controller 110 ... retrieves the setting inputs 134” associated with each detected passenger “and sends the setting inputs 134 for each of the users to the appropriate vehicle components 160[.]” (Ex. 1025, [0033].) He explains further that “the setting inputs 134 for the determined

driver are sent to those vehicle components 160 appropriate for the driver, such as **the driver's seat**, steering wheel tilt mechanism, hands-free system, []etc. [and t]he setting inputs 134 for the other users are sent to those vehicle components 160 appropriate for passengers.” (Ex. 1025, [0033].)

He teaches that to make the above distinctions, “the controller 110 determines which user profile 132 belongs to the current driver” versus the other passengers. (Ex. 1025, [0029].) When one or more phones are detected in the vehicle, He teaches the controller 110 considers information such as the number of phones detected, the number of passengers and which seats are occupied based on signals from seat sensors, “stored histories [that] may indicate which user is most likely to be the current driver of the vehicle[,],” or a manual indication from the users. (*Id.*, [0028], [0030]-[0031], [0033].) A PHOSITA would have understood determining which user profiles belong to passengers versus the driver requires determining which user is located in the driver's seat of the vehicle—a location associated with the user who is determined to be the driver. (Ex. 1003, ¶¶377-383.)

Therefore, He renders elements [1a]/[7a]/[8a]/[14b] obvious. (Ex. 1003, ¶¶375-384, 453, 474, 514.)

***[1b]/[7b]/[8b]/[14c] determin[ing] at least one vehicle control
associated with the location inside the vehicle***

He teaches “the controller 110 determines which user profile 132 belongs to

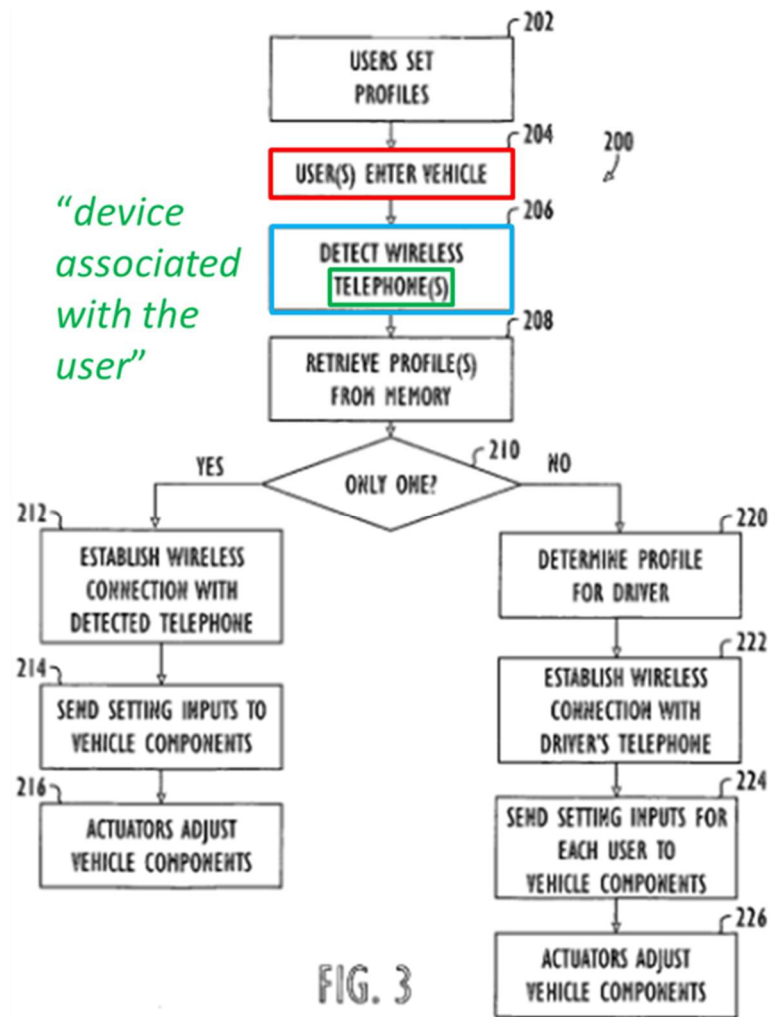
the current driver” versus the other passengers by considering information such as the number of phones detected, the number of passengers and which seats are occupied, “stored histories [that] may indicate which user is most likely to be the current driver of the vehicle,” or a manual indication from the users. (Ex. 1025, [0028], [0030]-[0031], [0033].) The controller 110 then sends “the setting inputs 134 for the determined driver ... to **those vehicle components 160 appropriate for the driver, such as the driver’s seat, steering wheel tilt mechanism, hands-free system,** []etc. [and t]he setting inputs 134 for the other users ... to those **vehicle components 160 appropriate for passengers.**” (Ex. 1025, [0033].) A PHOSITA would have understood that in order to send these settings to the specific vehicle components appropriate for the driver or passenger, the system would first determine the vehicle controls that are available for each potential seat. (Ex. 1003, ¶387.)

Therefore, He renders elements [1b]/[7b]/[8b]/[14c] obvious. (Ex. 1003, ¶¶385-388, 454, 475, 515.)

[1c] 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;

In Figure 3, He discloses a method of “automated operation” of the vehicle system 100 wherein block 204 (annotated in red) corresponds to “when one or more users ... **enter the vehicle** 102 with active wireless telephones 104” and block 206

(annotated in blue) corresponds to when “the hands-free system 150 detects the unique device IDs (e.g., unique Bluetooth™ IDs or other wireless identifiers) of the wireless telephones 104 within range and sends that information to the controller 110[.]” (Ex. 1025, [0026]; Ex. 1003, ¶389.)



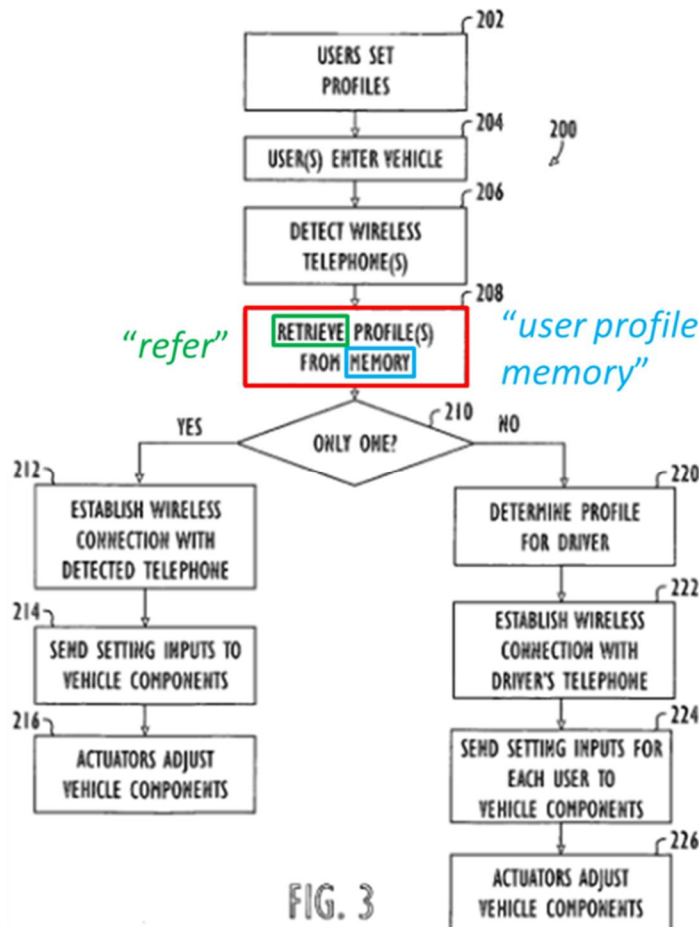
Ex. 1025, Fig. 3 (Annotated)

A PHOSITA would have understood “within range” means “*in an area of the vehicle*” because He teaches the step of detecting “the wireless telephones 104 within range” as a step subsequent to the user entering the vehicle. (Ex. 1003, ¶390.)

Therefore, He renders element [1c] obvious. (Ex. 1003, ¶¶389-391.)

[1d]/[7c]/[8c]/[14d] refer[ring] to a user profile memory associated with the user for vehicle control settings

He discloses, at block 208 of the method of automated operation in Figure 3 (annotated below), “the controller 110 accesses the user profiles 132 stored in memory 130 based on the detected device IDs 136[.]” (Ex. 1025, [0026]; Ex. 1003, ¶392.)



Ex. 1025, Fig. 3 (Annotated)

A PHOSITA would have understood that by accessing and retrieving the user

profiles 132, the controller 110, via the profile handler 120, “*refer[s]*” to the user profiles 132 because the controller then uses the information stored in the user profiles 132. (Ex. 1003, ¶393.) The memory 130 is a “*user profile memory*” because it is a memory that contains the user profiles 132 that comprise data associated with the user. (*Id.*)

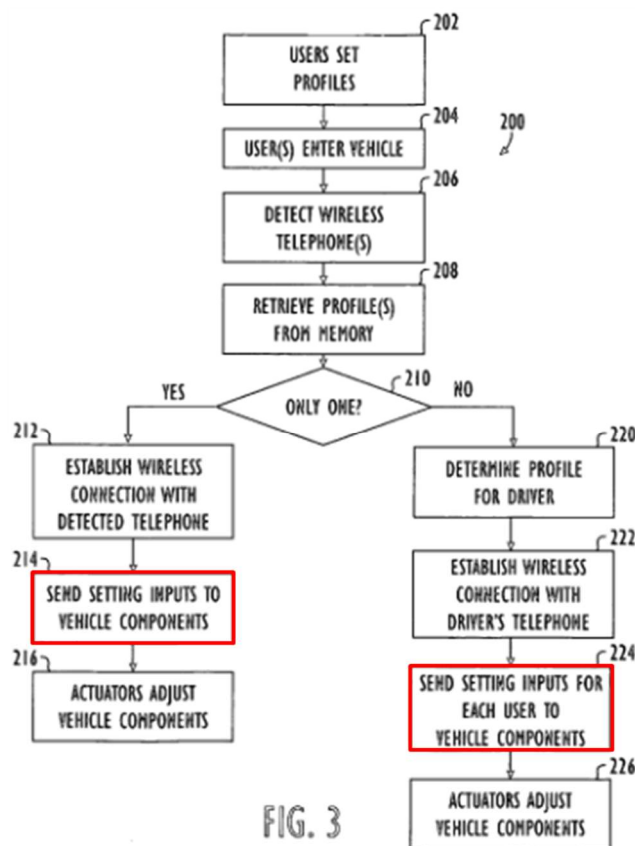
He teaches “preferred settings for the vehicle components 160 are stored in memory 130 as setting inputs 134 that form part of a user profile 132.” (Ex. 1025, [0018].) He explains, “[a]fter the user profile is retrieved, one or more commands are initiated to vehicle components having setting inputs in the retrieved user profile.” (*Id.*, [0010].) A PHOSITA would have understood that He teaches the settings inputs 134 are “*vehicle control settings*” because they are settings that correspond to vehicle components or controls. (Ex. 1003, ¶394.)

Therefore, He renders elements [1d]/[7c]/[8c]/[14d] obvious. (Ex. 1003, ¶¶392-395, 455, 476, 516.)

[1e]/[7d]/[8d]/[14e] determin[ing], based at least partially on the vehicle control settings, to adjust the at least one vehicle control associated with the location inside the vehicle

He explains that in the situation where only one wireless telephone 104 is detected, “the controller 110 sends the driver’s preferred setting inputs 134 to the vehicle components 160 appropriate for the driver” at blocks 214 and 224 of Figure

3 (annotated below). (Ex. 1025, [0027], [0033].)



Ex. 1025, Fig. 3 (Annotated)

He teaches, “[a]fter the user profile is retrieved, one or more commands are initiated to vehicle components having setting inputs in the retrieved user profile.” (Ex. 1025, [0010].) A PHOSITA would have thus understood He teaches the vehicle system 100 makes a determination to adjust the vehicle components 160 based on whether the user profile 132 contained setting inputs 134 corresponding to those vehicle components 160. (Ex. 1003, ¶399.)

Therefore, He renders elements [1e]/[7d]/[8d]/[14e] obvious. (Ex. 1003, ¶¶396-400, 456, 477, 517.)

[1f]/[7e]/[8e]/[14f] provid[ing] an adjustment output to [a] vehicle control system,

He teaches that, after retrieving settings from the user profile, “the controller 110 sends the driver’s preferred setting inputs 134 to the vehicle components 160 appropriate for the driver ... and the actuators and other controls 162 adjust the vehicle components 160 accordingly.” (Ex. 1025, [0027].) He further teaches, “[a]fter the user profile is retrieved, one or more commands are initiated to vehicle components having setting inputs in the retrieved user profile. In turn, the vehicle components implement those settings based on the commands.” (Ex. 1025, [0010].)

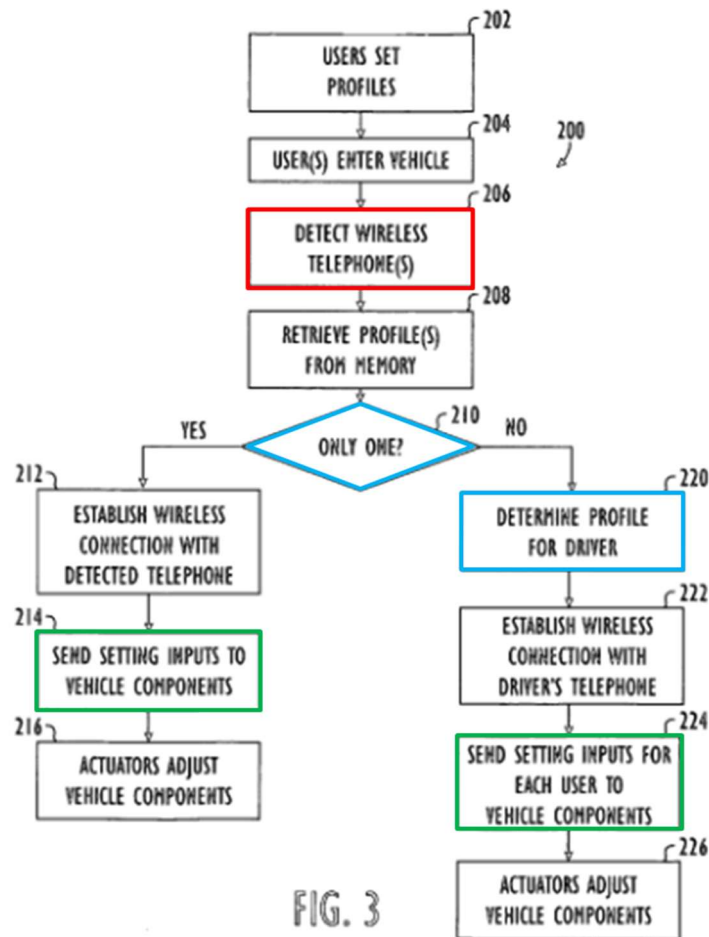
A PHOSITA would have understood that He teaches these “commands” are “*adjustment output[s]*” because they are signals output from the controller 110 to the components 160, which in turn causes the components to be adjusted to implement the settings. (Ex. 1003, ¶404.)

Therefore, He renders elements [1f]/[7e]/[8e]/[14f] obvious. (*Id.*, ¶¶401-405, 457, 478, 518.)

[1g] wherein the adjustment output is provided based at least partially on determining the user is present in the location inside the vehicle,

As shown in Figure 3 below, He teaches detecting a user is present in the vehicle by detecting the user’s wireless telephone in the vehicle, corresponding to block 206 (annotated in red), determining where detected users are located in part

by determining which detected user is in driver's seat at blocks 210 or 220 (annotated in blue), and sending the user's setting inputs to certain vehicle components, corresponding to blocks 214 and 224 (annotated in green).



Ex. 1025, Fig. 3 (Annotated)

He teaches that when a single phone is detected, the system assumes the phone belongs to the driver and thus determines the phone's user is located in the driver's seat. (Ex. 1025, [0012], [0027].) With multiple phones detected, He teaches using seat sensors and other means, such as stored histories or manual verification, to determine which detected user is in the driver's seat or front passenger seat. (*Id.*,

[0028], [0033].) In the example where the system determines a user is in the front passenger seat, the controller 110 sends the retrieved settings and commands, i.e., the user's "preferred seat settings to the actuators 162 for the passenger seat[.]" (*Id.*, [0033].)

A PHOSITA would have understood He teaches the adjustment output/command is provided to vehicle components appropriate for the driver "based at least partially on determining the user is present in the location" because the commands are initiated after determining in which seats the detected users are located. (Ex. 1003, ¶409.)

Therefore, He renders element [1g] obvious. (*Id.*, ¶¶406-410.)

[1h]/[7f]/[8f]/[14g] wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle

He teaches "the controller 110 sends the driver's preferred setting inputs 134 to the vehicle components 160 appropriate for the driver" at block 214, after which "the actuators and other controls 162 adjust the vehicle components 160 accordingly" at block 216, as shown in Figure 3 (annotated). (Ex. 1025, [0027]; Ex. 1003, ¶411.)

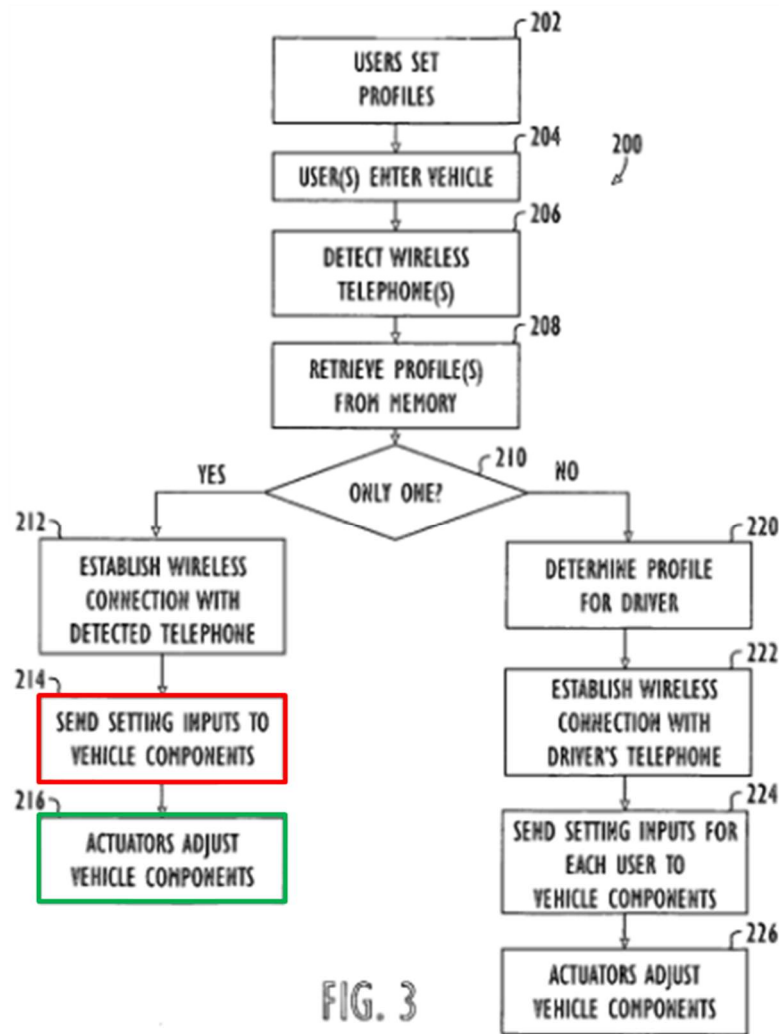


FIG. 3

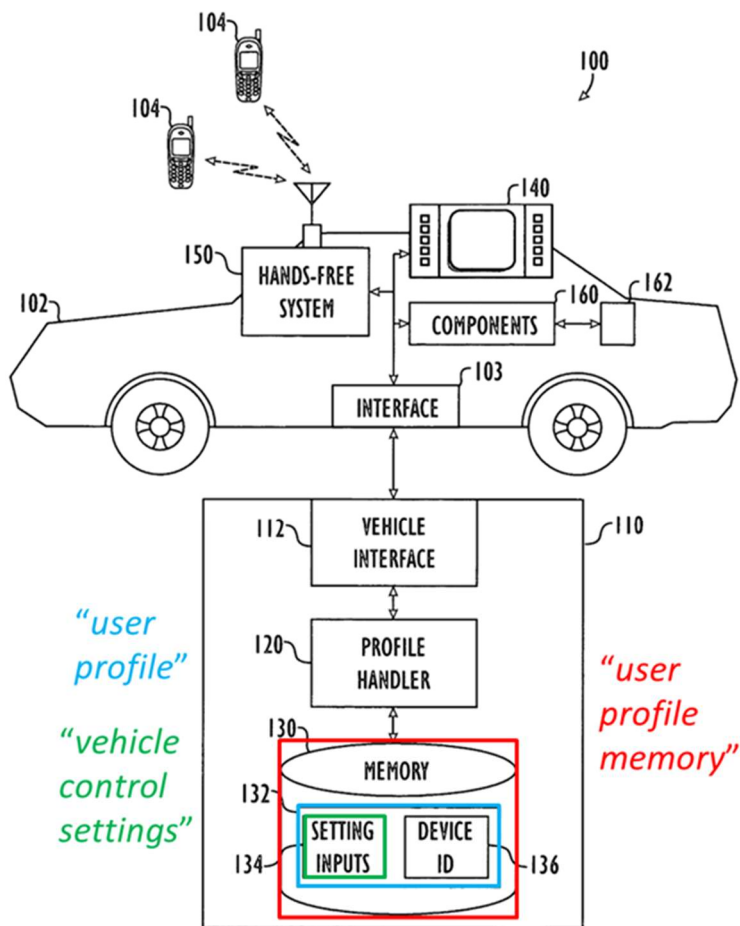
Ex. 1025, Fig. 3 (Annotated)

Therefore, He renders elements [1h]/[7f]/[8f]/[14g] obvious. (*Id.*, ¶¶411-413, 458, 479, 519.)

[7g]/[8g]/[14h] wherein the at least one vehicle control is adjusted via the adjustment output to match the vehicle control settings in the user profile memory.

He discloses the controller 110, via the profile handler 120, “obtains the setting inputs 134 from the associated user profile 132 stored in memory 130”

and then “initiates one or more commands to the vehicle components 160 **to implement the setting inputs 134.**” (Ex. 1025, [0019].) The memory 130 is “*user profile memory*” because it contains the user profiles. (Ex. 1003, ¶460.)



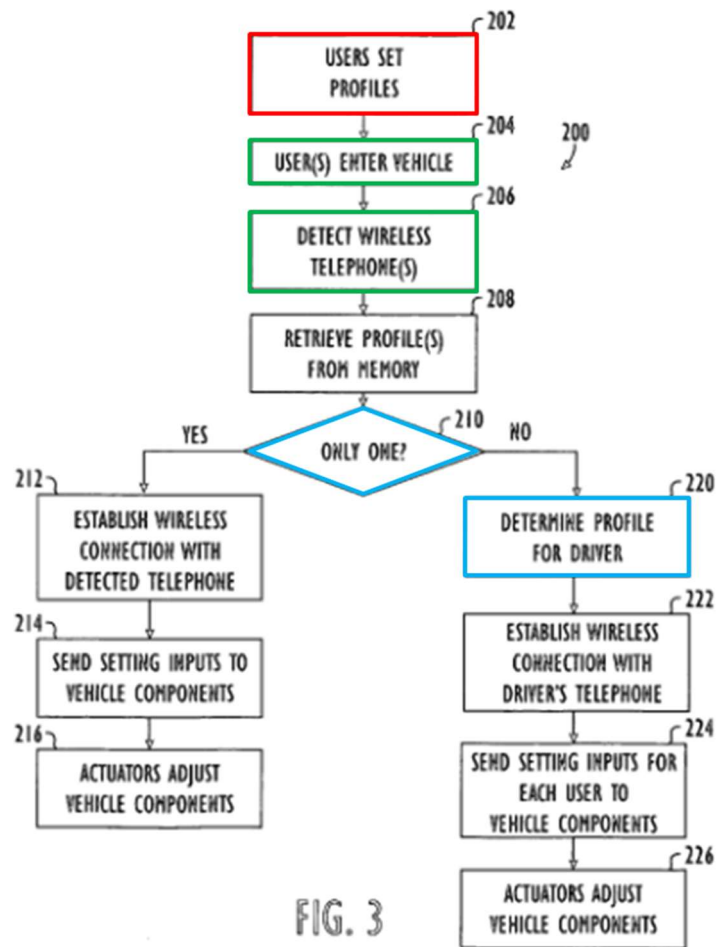
Therefore, He renders elements [7g]/[8g]/[14h] obvious. (*Id.*, ¶¶459-461, 480, 520.)

3. Dependent Claims 2-4, 6, 9-11, 13, 15-17 and 19-20

a. Dependent Claims 2, 10 and 16

2[pre-a]/10[pre-a]/16[pre-a] prior to determining the location inside the vehicle associated with the user ... stor[ing], in the user profile memory, information corresponding to locations inside the vehicle occupied by the user

He discloses a method of automated operation performed by vehicle system 100. (Ex. 1025, [0026].) Shown in Figure 3 below, the method begins at block 202 (annotated in red) with users setting up profiles, after which the system detects when users enter the vehicle in block 204 (annotated in green), detects the users' phones in block 206 (annotated in green), and determines which users are the driver and thus located in the driver's seat in blocks 210 and 220 (annotated in blue). Accordingly, users' profiles are created prior to any "*determin[ation of] the location inside the vehicle associated with the user.*" (Ex. 1003, ¶¶415-421.)



Ex. 1025, Fig. 3 (Annotated)

In the situation where the system 100 detects more than one wireless telephone 104, He teaches manners in which the system may determine which phone belongs to the driver at block 220. He discloses a particular embodiment that “can access stored histories about the users in the user profiles 132” that “may indicate which user is most likely to be the current driver of the vehicle 102.” (Ex. 1025, [0030].) He provides an example wherein “the stored history for one of the user profiles 132 may indicate the associated user has been the driver of the vehicle 102 for a higher

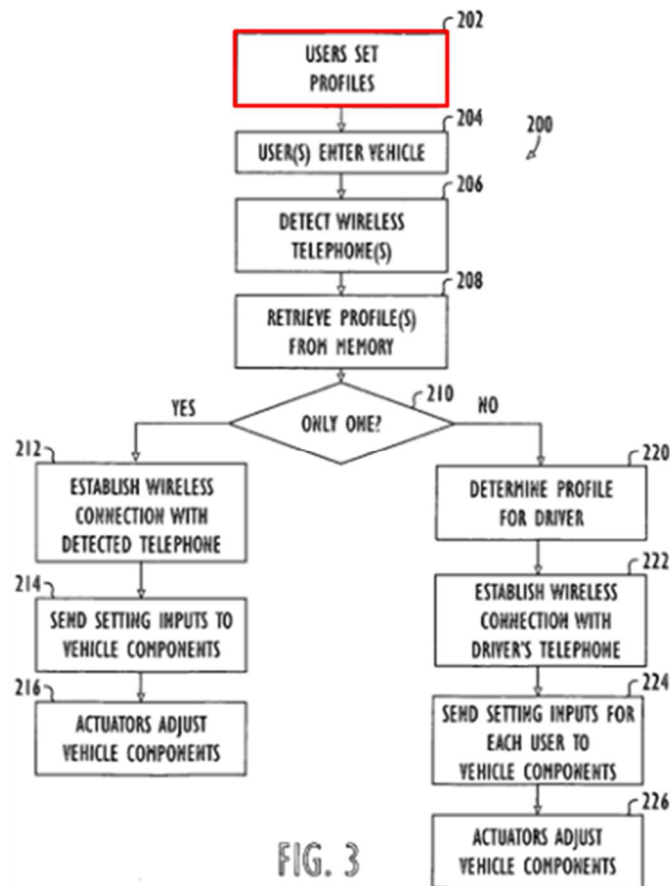
percentage of times than the other users having detected telephones 104.” (*Id.*)

He further discloses several examples of vehicle controls that can be adjusted based on location in the vehicle, at least some of which are associated with locations in the vehicle, such as seats, steering and mirrors. (Ex. 1025, [0018].) A PHOSITA would have understood He teaches the system 100 stores how often the user occupies the driver’s seat by storing a history of how often the user has been the driver of the vehicle, which is “*information corresponding to locations inside the vehicle occupied by the user[.]*” (Ex. 1003, ¶¶417-418.)

Therefore, He renders elements 2[pre-a]/10[pre-a]/16[pre-a] obvious. (Ex. 1003, ¶¶414-422, 488-491, 525-528.)

[2b]/[10b]/[16b] collect[ing] 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

He discloses a method of automated operation performed by a vehicle system 100. (Ex. 1025, [0026].) He explains, “[f]irst, users set their profiles 132” at block 202 (annotated in red below). (Ex. 1025, [0026]; Ex. 1003, ¶423.)



Ex. 1025, Fig. 3 (Annotated)

He explains one way for a user to set their preferred settings is through a user interface 140:

[T]he user adjusts the vehicle components, such as seats and mirrors ..., to her preferred position or setting, the user then presses buttons located on the user interface 140 to set the settings, and the controller 110 stores the setting inputs in the user's profile.

(Ex. 1025, [0021].)

He illustrates the user interface 140 in Figure 2:

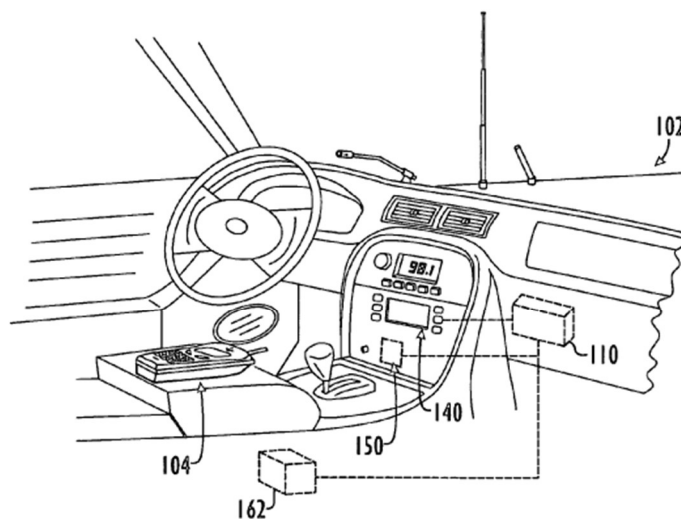


FIG. 2

Ex. 1025, Fig. 2

A PHOSITA would have understood He teaches the settings are first collected for the controller 110 to store the setting inputs in the user's profile, otherwise the controller would not have access to settings to later store in the memory. A PHOSITA would have also understood He teaches the collected settings were made by a user while located in one of the locations in the car by teaching that the user "adjusts the vehicle components[] ... to her preferred ... setting[s]," indicating the user is physically present in the seat and adjusting the corresponding components. (Ex. 1003, ¶426.)

Therefore, He renders elements [2b]/[10b]/[16b] obvious. (Ex. 1003, ¶¶423-427, 492, 529.)

[2c]/[10c]/[16c] stor[ing] the vehicle control setting data in the user profile memory.

He discloses “[t]o set the preferred settings, the user adjusts the vehicle components, such as seats and mirrors ..., to her preferred position or setting, the user then presses buttons located on the user interface 140 to set the settings, and **the controller 110 stores the setting inputs in the user’s profile.**” (Ex. 1025, [0021].)

Therefore, He renders elements [2c]/[10c]/[16c] obvious. (Ex. 1003, ¶¶428-430, 493, 530.)

b. Dependent Claims 3, 4, 11 and 17

[3]/[11a]/[17a] 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]

He discloses system 100 that automatically determines the driver or passenger of the vehicle and implements those users’ preferred settings for vehicle components 160. (Ex. 1025, [0033].) He explains “[s]ome examples of vehicle components 160 include **power seats**, automated **mirrors**, [an] automated **steering wheel** tilt mechanism, ... a **user interface**, and other components in the vehicle 102.” (Ex. 1025, [0018].) He further discloses adjusting a seat position based on stored seat settings for a detected user, e.g., “[i]f a seat sensor detects a front seat passenger ... the controller 110 can send **that user’s** preferred seat settings to the actuators 162 for the passenger seat[.]” (Ex. 1025, [0033].)

Therefore, He renders claim/elements [3]/[11a]/[17a] obvious. (Ex. 1003,

¶¶431-434, 494-497, 531-534.)

[4]/[11b]/[17b] 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.

He discloses “[s]ome examples of vehicle components 160 include power seats, automated mirrors, automated steering wheel tilt mechanism, an entertainment system, a hands-free system, a navigation system, a user interface, and other components in the vehicle 102.” (Ex. 1025, [0018].) He explains further “various actuators ... or controls 162 can control the position of vehicle components 160, such as automated mirrors and seats.” (*Id.*) A PHOSITA would have understood “automated mirrors” and a “steering wheel tilt mechanism” as disclosed by He would have settings for “*an angle*” as those are the typical parameters of mirror position that can be adjusted on vehicles, and seat actuators 162 would have settings for a “*position*.” (Ex. 1003, ¶¶437-438.)

Therefore, He renders claim/elements [4]/[11b]/[17b] obvious. (Ex. 1003, ¶¶435-439, 498, 535.)

c. Dependent Claims 6, 13 and 19

6[pre-a]/13[pre-a]/19[pre-a] determin[ing] that the user made a change to the adjusted at least one vehicle control

He discloses a user can set their preferred settings through a user interface 140 by “adjust[ing] the vehicle components ... to her preferred position or setting [and]

then press[ing] buttons located on the user interface 140 [so that] the controller 110 stores the setting inputs in the user's profile." (Ex. 1025, [0021].) A PHOSITA would have understood if the user "adjusts the vehicle components" subsequent to the system implementing settings stored in a user's profile, the act of adjusting the vehicle components corresponds to having "*made a change to the adjusted ... vehicle control.*" (Ex. 1003, ¶442.)

A PHOSITA would have understood He teaches the controller thus carries out a method with a step of "*determining*" when the user presses a button on the user interface 140 to store her settings. (*Id.*, ¶443.)

Therefore, He renders elements 6[pre-a]/13[pre-a]/19[pre-a] obvious. (*Id.*, ¶¶440-444, 499-502, 536-539.)

[6b]/[13b]/[19b] stor[ing] the change made to the adjusted at least one vehicle control in the user profile memory.

As discussed above, He explains that a user can interact with the user interface 140 so that "the controller 110 **stores the setting inputs in the user's profile.**" (Ex. 1025, [0021].) If this action occurs subsequent to the vehicle component being automatically adjusted according to a profile, the setting inputs being stored are a "*change made to the adjusted ... vehicle control.*" (Ex. 1003, ¶446.)

He further discloses the setting inputs 134 (annotated in green below) are located in the user profile 132 (annotated in blue) that is contained in the memory

130 (annotated in red) such that the memory 130 corresponds to a “*user profile memory*.” (Ex. 1003, ¶447.)

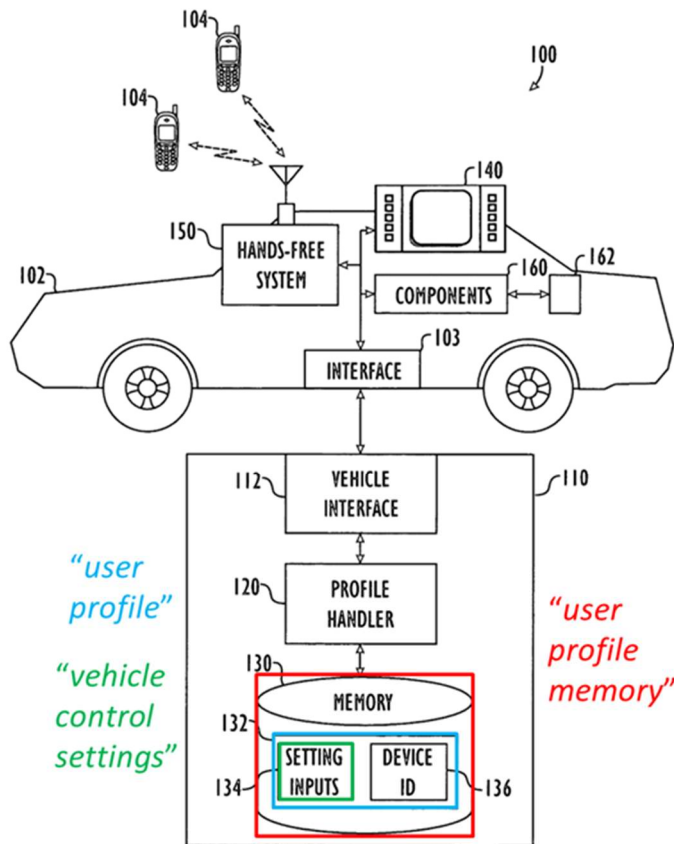


FIG. 1

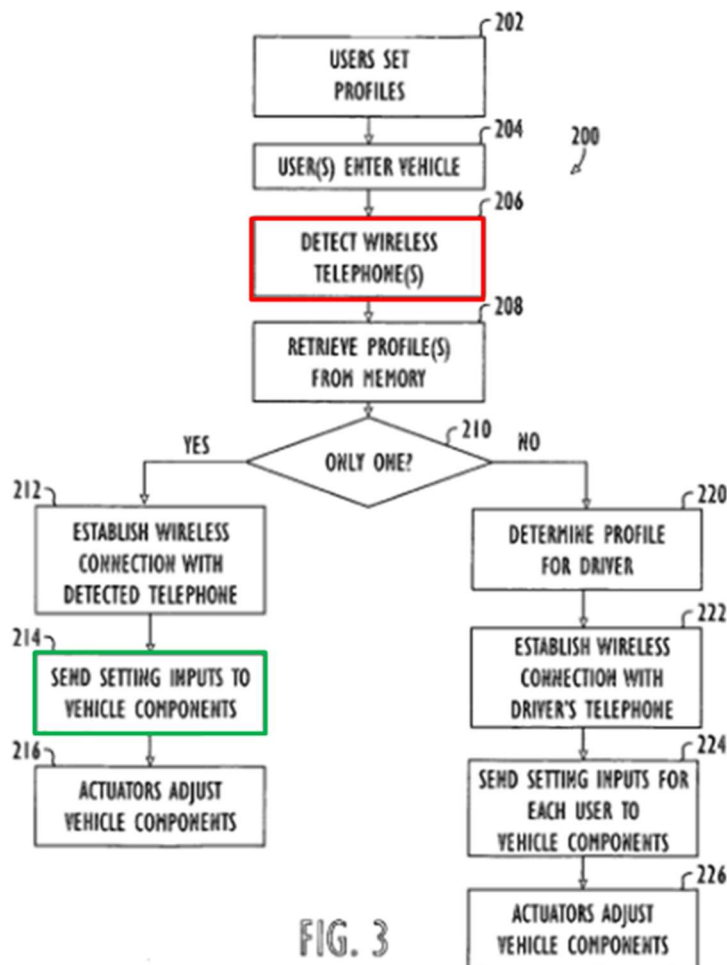
Ex. 1025, Fig. 1 (Annotated)

Therefore, He renders elements [6b]/[13b]/[19b] obvious. (Ex. 1003, ¶¶445-448, 503, 540.)

d. Dependent Claims 9 and 15

[9]/[15] prior to providing the adjustment output, ... determin[ing] 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.

He teaches “[w]hen one or more users subsequently enter the vehicle 102 with active wireless telephones 104 (Block 204), the hands-free system 150 detects the unique device IDs (e.g., unique Bluetooth™ IDs or other wireless identifiers) of the wireless telephones 104 within range and sends that information to the controller 110 (Block 206).” (Ex. 1025, [0026].) The latter is annotated in red below. (Ex. 1003, ¶483.)



Ex. 1025, Fig. 3 (Annotated)

As discussed above for limitation 8

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[pre]
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, the controller 110 of He contains a

processor and non-transitory computer readable medium. He thus discloses this action is performed by the execution of instructions by a processor [controller 110 of therein] stored on a “*non-transitory computer readable medium* [non-volatile memory of controller 110]” “*prior to providing the adjustment output.*” (Ex. 1003, ¶484-485.)

Further, He discloses that when one wireless telephone 104 is detected, the controller 110 makes a determination that the user is the driver, which may include using seat sensors to determine the phone’s user is present in the driver’s seat. (Ex. 1025, [0027]-[0028].) Then, “the controller 110 sends the driver’s preferred setting inputs 134 to the vehicle components 160 appropriate for the driver[.]” (Ex. 1025, [0027].)

Therefore, He renders claims 9 and 15 obvious. (Ex. 1003, ¶¶481-487, 521-524.)

e. Dependent Claim 20

20[pre-a] 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

As discussed above in limitation [1c], He teaches determining the user has entered the vehicle and is thus “*in an area of the vehicle*” by “*detecting*” a user’s phone (“*device*”) within the vehicle and in a specific location such as the driver’s

seat. (Ex. 1025, [0015]-[0016], [0019], [0026]-[0028].) Therefore, He renders this limitation obvious for reasons discussed in element 14[pre] in conjunction with [1c]. (Ex. 1003, ¶¶389-391, 507-508, 541-544.)

[20b] wherein the adjustment output is provided based at least partially on determining the user is present in the location inside the vehicle.

As discussed above in limitation [1g], He provides an adjustment output after determining the user is “*present*” in the “*location*” of the driver’s seat. (Ex. 1025, [0010], [0012], [0026]-[0028], [0033].) Therefore, He renders element [20b] obvious for the reasons discussed in element [1g]. (Ex. 1003, ¶¶406-410, 545.)

D. Ground 4: Claims 5, 12 and 18 are Unpatentable as Obvious over He and Suzuki.

1. Rationale to Combine He and Suzuki

It would have been obvious to a PHOSITA at the time of the invention to combine the vehicle control system that detects a user by detecting the presence of a remote device and automatically implementing that user’s settings for various vehicle controls, as disclosed in He, with the known technique of detecting the presence of a specific user in a vehicle using sensor data as disclosed in Suzuki to provide more consistent functionality and user convenience improvements including improved accuracy and simplified storage. A PHOSITA would have understood He and Suzuki are complementary technologies that are combinable. For example, He

discloses “the subject matter of the present disclosure is susceptible to various modifications and alternative forms, [and] specific embodiments thereof have been shown by way of example in the drawings and are herein described in detail.” (Ex. 1025, [0008]; Ex. 1003, ¶546.)

He and Suzuki are from the same field—vehicle control systems that automatically adjust vehicle controls to a user’s stored preferences. (Ex. 1025, [0009]-[0010]; Ex. 1026, [0004]-[0005].) He and Suzuki both disclose vehicle control systems that detect users to automatically adjust controls to stored preferences, facilitating user convenience. (Ex. 1025, [0025]; Ex. 1026, [0003]-[0004].) And, He and Suzuki recognize the benefit of storing different settings for different seats. (Ex. 1025, [0033]; Ex. 1026, [0010]; Ex. 1003, ¶¶547-549.)

He discloses a vehicle system that “allows users to set and select preferred settings for vehicle components,” which are then linked to the user via a device ID associated with the user’s wireless device and automatically implemented after detecting that device. (Ex. 1025, [0017], [0020].) In some instances, He’s system determines the seats in which users are located by making assumptions and therefore includes a mechanism of manual verification or override to account for the potential of error. (*Id.*, [0028].) Suzuki discloses various means of detection, including “cameras embedded in the front pillar, rearview mirror, headrest, etc., to capture images of people’s faces” (Ex. 1026, [0006].) Thus, as Suzuki explains, this

vehicle system can accommodate situations where multiple people use the same key, for example, multiple people are traveling together and switch seats during the trip. (Ex. 1026, [0011]-[0014]; Ex. 1003, ¶¶550-552.)

A PHOSITA would have been motivated to combine the known technique of facial recognition disclosed in the automatic vehicle system in Suzuki with the automatic user detection vehicle system disclosed in He to yield predictable results, *e.g.*, to add automated verification of assumptions made about passenger locations, thereby eliminating the need for passengers to manually verify or override such assumptions. Removing the need for manual verification provides the users with additional ease and convenience, which is a clear benefit and improvement over He's disclosure alone. Similarly, the verification provided by facial recognition functionality would make the operation of He's system more accurate and reliable. (Ex. 1003, ¶¶553-558.)

A PHOSITA would have understood how to combine the teachings of Suzuki with He, recognizing that the integration would have primarily involved augmenting He's existing vehicle system with biometric identification capabilities using a camera or image sensor. In terms of hardware modifications, a PHOSITA would have modified He's system to include Suzuki's camera (detection means 11) for each seat in the vehicle positioned to capture the occupants' faces. (*Id.*, ¶559.)

Regarding software, a PHOSITA would have modified the software of He's

vehicle system to include image processing software to permit capturing images, characterize faces, and compare facial characterizations with previously stored facial information, and to permit storing the facial information in association with the information already stored, namely the vehicle component settings and device ID. The software for saving data to the memory of the controller would also be updated to permit the storage of device IDs in association with facial characteristics. This integration would have been straightforward for a PHOSITA familiar with embedded systems and automotive software architectures. (*Id.*, 559-560.)

Several *KSR* factors also support combining the teachings of Suzuki with the teachings of He. First, as described above, He would have yielded the predictable result of verifying the location of detected users rather than making potentially incorrect assumptions—improving the functionality of He’s system. (Ex. 1003, ¶¶561-562.)

Second, it would have been obvious to try adding Suzuki’s facial recognition system to He’s system. As discussed above, both systems have similar functionality to detect users and automatically implement those users’ settings. Including Suzuki’s functionality would have provided He with an additional method of determining the location of a particular user—consistent with the functionality and goals of He. (*Id.*, ¶563.)

Third, there would have been a design incentive to add the facial recognition

of Suzuki to He to eliminate the need for the user's to manually verify or override assumptions made by He's system. This would have improved the accuracy of the system's functionality, making it more reliable and desirable for users. (Ex. 1003, ¶564.)

Fourth, the teachings of He and Suzuki fit together like pieces of a puzzle. He discloses a system that makes educated assumptions about the seats occupied by the detected users, while Suzuki discloses a system that precisely determines the identity of every occupant without the need to make any assumptions in the first place. Thus, He effectively describes how its teachings would have fit together with the teachings of Suzuki like a puzzle to form a combination consisting of He's vehicle system with the facial recognition functionality taught in Suzuki. (Ex. 1003, ¶565.)

Accordingly, a PHOSITA would have been motivated to combine the teachings of He with the teachings of Suzuki. (Ex. 1003, ¶¶546-565.)

2. Dependent Claims 5, 12 and 18

5[pre]/12[pre] wherein determining the presence of the user inside the vehicle further comprises:

He discloses a method with a step of determining the presence of a user inside a vehicle by detecting the user's phone: "[w]hen one or more users ... enter the vehicle 102 ... the hands free system 150 detects ... the wireless telephones 104 within range." (Ex. 1025, [0026].) Therefore, He in combination with Suzuki renders

this limitation obvious. (Ex. 1003, ¶¶566-567, 583-585.)

18[pre] wherein, in determining the presence of the user inside the vehicle, the user the profile identification module is further configured to

Limitation 18[pre] is substantially similar to limitations 5[pre]/12[pre] but Claim 18[pre] requires the method step of “*determining the presence of the user*” to be realized through execution by a processor of a “*profile identification module*” contained in a memory. Because element 18[pre] depends from Claim 15, He in combination with Suzuki renders element 18[pre] obvious for the same reasons discussed for Claim 15. (Ex. 1003, ¶¶481-487, 521-524, 589-592.)

[5a]/[12a]/[18a] detect[ing] a person via at least one image sensor associated with the vehicle

For elements [5a]/[12a]/[18a], Petitioner relies on the teachings of Suzuki in the combination of He and Suzuki for the same reasons as it does for the combination of Endo and Suzuki in Ground 2 above. Thus, He in combination with Suzuki renders elements [5a]/[12a]/[18a] obvious for the same reasons the combination of Endo and Suzuki renders those limitations obvious in Ground 2 above. (Ex. 1003, ¶¶568-574, 586, 593.)

[5b]/[12b]/[18b] identify[ing] facial features associated with the person detected via the at least one image sensor

For elements [5b]/[12b]/[18b], Petitioner relies on the teachings of Suzuki in

the combination of He and Suzuki for the same reasons as it does for the combination of Endo and Suzuki in Ground 2 above. Thus, He in combination with Suzuki renders elements [5b]/[12b]/[18b] obvious for the same reasons the combination of Endo and Suzuki renders those limitations obvious in Ground 2 above. (Ex. 1003, ¶¶575-578, 587, 594.)

[5c]/[12c]/[18c] determin[ing] whether the identified facial features associated with the person match user characteristics stored in a memory.

For elements [5c]/[12c]/[18c], Petitioner relies on the teachings of Suzuki in the combination of He and Suzuki for the same reasons as it does for the combination of Endo and Suzuki in Ground 2 above. Thus, He in combination with Suzuki renders elements [5c]/[12c]/[18c] obvious for the same reasons the combination of Endo and Suzuki renders those limitations obvious in Ground 2 above. (Ex. 1003, ¶¶579-582, 588, 595.)

VII. Objective Indicia of Nonobviousness

Petitioner is not aware of any evidence of alleged secondary considerations of non-obviousness having nexus to the challenged claims. (Ex. 1003, ¶596.)

VIII. Conclusion

For the foregoing reasons, the Board should grant institution. (*Id.*, ¶597.)

Respectfully submitted,

Dated: October 2, 2025

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Certificate of Service

The undersigned hereby certifies that the foregoing **PETITION FOR *INTER PARTES* REVIEW UNDER 35 U.S.C. § 311 *ET SEQ.* AND 37 C.F.R. § 42.100 *ET SEQ.* (U.S. PATENT NO. 9,147,296)**, including all exhibits and supporting evidence, was served by overnight courier in its entirety on October 2, 2025, upon the following correspondence address as shown for the '296 Patent:

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--

Respectfully submitted,

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Certificate of Compliance Pursuant to 37 C.F.R. § 42.24

This paper complies with the type-volume limitation of 37 C.F.R. § 42.24. The paper contains 13,787 words, excluding the parts of the paper exempted by §42.24(a).

This paper also complies with the typeface requirements of 37 C.F.R. § 42.6(a)(ii) and the type style requirements of § 42.6(a)(iii)&(iv).

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Appendix A

A. Listing of All Challenged Claims

1[pre]	A method, comprising:
[1a]	determining a location inside a vehicle associated with a user;
[1b]	determining at least one vehicle control associated with the location inside the vehicle;
[1c]	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;
[1d]	referring to a user profile memory associated with the user for vehicle control settings;
[1e]	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
[1f]	providing an adjustment output to a vehicle control system,
[1g]	wherein the adjustment output is provided based at least partially on determining the user is present in the location inside the vehicle,
[1h]	wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle.
2[pre-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;
[2b]	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
[2c]	storing the vehicle control setting data in the user profile memory.
[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.
[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.
5[pre]	The method of claim 1, wherein determining the presence of the user inside the vehicle further comprises:
[5a]	detecting a person via at least one image sensor associated with the vehicle;
[5b]	identifying facial features associated with the person detected via the at least one image sensor; and
[5c]	determining whether the identified facial features associated with the person match user characteristics stored in a memory.
6[pre-a]	The method of claim 1, further comprising: determining that the user made a change to the adjusted at least one vehicle control; and
[6b]	storing the change made to the adjusted at least one vehicle control in the user profile memory.
7[pre]	A method, comprising:
[7a]	determining a location inside a vehicle associated with a user;
[7b]	determining at least one vehicle control associated with the location inside the vehicle;

[7c]	referring to a user profile memory associated with the user for vehicle control settings;
[7d]	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
[7e]	providing an adjustment output to a vehicle control system,
[7f]	wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle,
[7g]	wherein the at least one vehicle control is adjusted via the adjustment output to match the vehicle control settings in the user profile memory.
8[pre]	A non-transitory computer readable medium having instructions stored thereon that, when executed by a processor, perform a method comprising:
[8a]	determining a location inside a vehicle associated with a user;
[8b]	determining at least one vehicle control associated with the location inside the vehicle;
[8c]	referring to a user profile memory associated with the user for vehicle control settings;
[8d]	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
[8e]	providing an adjustment output to a vehicle control system,
[8f]	wherein the vehicle control system is adapted to control the at least

	one vehicle control associated with the location inside the vehicle,
[8g]	wherein the at least one vehicle control is adjusted via the adjustment output to match the vehicle control settings in the user profile memory.
[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.
10[pre-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;
[10b]	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
[10c]	storing the vehicle control setting data in the user profile memory.
[11a]	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

[11b]	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.
12[pre]	The non-transitory computer readable medium of claim 9, wherein determining the presence of the user inside the vehicle further comprises:
[12a]	detecting a person via at least one image sensor associated with the vehicle;
[12b]	identifying facial features associated with the person detected via the at least one image sensor; and
[12c]	determining whether the identified facial features associated with the person match user characteristics stored in a memory.
13[pre-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
[13b]	storing the change made to the adjusted at least one vehicle control in the user profile memory.
14[pre]	A vehicle control system, comprising:
[14a]	a profile identification module contained in a memory and executed by a processor of the vehicle control system, the profile identification module configured to
[14b]	determine a location inside a vehicle associated with a user,
[14c]	determine at least one vehicle control associated with the location inside the vehicle,

[14d]	refer to a user profile memory associated with the user for vehicle control settings, and
[14e]	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,
[14f]	provide an adjustment output to the vehicle control system,
[14g]	wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle,
[14h]	wherein the at least one vehicle control is adjusted via the adjustment output to match the vehicle control settings in the user profile memory.
[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.
16[pre-a]	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,
[16b]	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

[16c]	store the vehicle control setting data in the user profile memory.
[17a]	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
[17b]	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.
18[pre]	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
[18a]	detect a person via at least one image sensor associated with the vehicle,
[18b]	identify facial features associated with the person detected via the at least one image sensor, and
[18c]	determine whether the identified facial features associated with the person match user characteristics stored in a memory.
19[pre-a]	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
[19b]	store the change made to the adjusted at least one vehicle control in the user profile memory.
20[pre-a]	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
[20b]	wherein the adjustment output is provided based at least partially on determining the user is present in the location inside the vehicle.

Appendix B

A. Comparison of Independent Claims

Ind. Claim 1	Ind. Claim 7	Ind. Claim 8	Ind. Claim 14
1[pre] A method, comprising:	7[pre] A method, comprising:	8[pre] A non-transitory computer readable medium having instructions stored thereon that, when executed by a processor, perform a method comprising:	14[pre] A vehicle control system, comprising:
			[14a] a profile identification module contained in a memory and executed by a processor of the vehicle control system, the profile identification module configured to
[1a] determining a location inside a vehicle associated with a user;	[7a] determining a location inside a vehicle associated with a user;	[8a] determining a location inside a vehicle associated with a user;	[14b] determine a location inside a vehicle associated with a user,
[1b] determining at least one vehicle control associated with the location inside the vehicle;	[7b] determining at least one vehicle control associated with the location inside the vehicle;	[8b] determining at least one vehicle control associated with the location inside the vehicle;	[14c] determine at least one vehicle control associated with the location inside the vehicle,
[1c] 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;			
[1d] referring to a user profile memory associated with the user for vehicle control settings;	[7c] referring to a user profile memory associated with the user for vehicle control settings;	[8c] referring to a user profile memory associated with the user for vehicle control settings;	[14d] refer to a user profile memory associated with the user for vehicle control settings, and
[1e] 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	[7d] 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	[8d] 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	[14e] 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,
[1f] providing an adjustment output to a vehicle control system,	[7e] providing an adjustment output to a vehicle control system,	[8e] providing an adjustment output to a vehicle control system,	[14f] provide an adjustment output to the vehicle control system,
[1g] wherein the adjustment output is provided based at least partially on determining the user is present in the location inside the vehicle,			
[1h] wherein the vehicle control system is adapted to control the at	[7f] wherein the vehicle control system is adapted to control the at	[8f] wherein the vehicle control system is adapted to control the at	[14g] wherein the vehicle control system is adapted to control the at

least one vehicle control associated with the location inside the vehicle.	least one vehicle control associated with the location inside the vehicle,	least one vehicle control associated with the location inside the vehicle,	least one vehicle control associated with the location inside the vehicle,
	[7g] wherein the at least one vehicle control is adjusted via the adjustment output to match the vehicle control settings in the user profile memory.	[8g] wherein the at least one vehicle control is adjusted via the adjustment output to match the vehicle control settings in the user profile memory.	[14h] wherein the at least one vehicle control is adjusted via the adjustment output to match the vehicle control settings in the user profile memory.

B. Comparison of Dependent Claims

Depend from Ind. Claim 1	Depend from Ind. Claim 7	Depend from Ind. Claim 8	Depend from Ind. Claim 14
	N/A	[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	[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.	based at least partially on determining the user is present in the location of the vehicle.
2[pre-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;		10[pre-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;	16[pre-a] 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,
[2b] collecting vehicle control setting data associated with the user, wherein the vehicle control setting data includes at least one vehicle		[10b] collecting vehicle control setting data associated with the user, wherein the vehicle control setting data includes at least one vehicle	[16b] 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		control setting made by the user in at least one of the locations inside the vehicle; and	control setting made by the user in at least one of the locations inside the vehicle, and
[2c] storing the vehicle control setting data in the user profile memory.		[10c] storing the vehicle control setting data in the user profile memory.	[16c] store the vehicle control setting data in the user profile memory.
[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.		[11a] 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	[17a] 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
[4] The method of claim 3, wherein the vehicle control settings include at least one of a position, a sensitivity, an angle, and a		[11b] wherein the vehicle control settings include at least one of a position, a sensitivity, an angle, and a	[17b] 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.		movement, associated with the one or more vehicle features.	movement, associated with the one or more vehicle features.
5[pre] The method of claim 1, wherein determining the presence of the user inside the vehicle further comprises:		12[pre] The non-transitory computer readable medium of claim 9, wherein determining the presence of the user inside the vehicle further comprises:	[18pre] 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
[5a] detecting a person via at least one image sensor associated with the vehicle;		[12a] detecting a person via at least one image sensor associated with the vehicle;	[18a] detect a person via at least one image sensor associated with the vehicle,
[5b] identifying facial features associated with the person detected via the at least one image sensor; and		[12b] identifying facial features associated with the person detected via the at least one image sensor; and	[18b] identify facial features associated with the person detected via the at least one image sensor, and
[5c] determining whether the identified facial features associated with the person match user characteristics		[12c] determining whether the identified facial features associated with the person match user characteristics	[18c] determine whether the identified facial features associated with the person match user characteristics

stored in a memory.		stored in a memory.	stored in a memory.
6[pre-a] The method of claim 1, further comprising: determining that the user made a change to the adjusted at least one vehicle control; and		13[pre-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	19[pre-a] 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
[6b] storing the change made to the adjusted at least one vehicle control in the user profile memory.		[13b] storing the change made to the adjusted at least one vehicle control in the user profile memory.	[19b] store the change made to the adjusted at least one vehicle control in the user profile memory.
			20[pre-a] 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
			[20b] wherein the adjustment output is provided based at least partially on determining the user is present in the location inside the vehicle.