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

Case No.: IPR2026-00002

DECLARATION OF MR. SCOTT ANDREWS

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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
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")
1015	U.S. Patent No. 7,783,699 B2 to Rasin ("Rasin")
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")
1050	Bosch Automotive Handbook, 6th Ed., (Robert Bosch GmbH – October 2004) ("Bosch")
1051	IEEE Dictionary, (IEEE 100 The Authoritative Dictionary of IEEE Standards Terms 2000 7th 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 18th International Symposium on Person, Indoor and Mobile Radio Communications Available at https://www.ieeexplore.ieee.org/document/4394215 ("Hossain")
1057	Allen, Leslie "Ford launches parental control technologies," October 7, 2008. Available at

Exhibit No.	Description
	https://www.autonews.com/article/20081007/ZZZ_SPECIAL/310079921/ford-launches-parental-control-technologies/ (Accessed June 24, 2025) ("Auto News")
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")
1065	SUSE LINUX – Administration Guide. Published by SUSE LINUX AG, 2004. ("Linux")
1075	Turing, A. M. "On Computable Numbers with an Application to the Entscheidungsproblem," *Proceedings of the London Mathematical Society*, 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," *IEEE Potentials*, Institute of Electrical and Electronics Engineers (IEEE), February/March 1996. ("Erickson")

I, Scott Andrews, hereby declare as follows:

1. I am making this declaration at the request of Ford Motor Company in the matter of *inter partes* review of U.S. Patent No. 9,147,296 ("the '296 Patent") to Christopher Ricci. (Ex. 1001.)

2. I am being compensated at an hourly consulting rate of $600 for time spent reviewing materials and performing my analysis of the technical issues relevant to this matter. My compensation is not contingent on the outcome of this proceeding or the content of my opinions.

3. This declaration is based on the information currently available to me. If additional information becomes available, I may continue my investigation and study, which may include a review of documents and information that may be produced, as well as testimony from depositions that have not yet been taken.

4. In preparation of this declaration, I have studied the exhibits as listed in the Exhibit List shown above in my report.

5. In forming the opinions expressed below, I have considered:

   a. The documents listed above as well as additional patents and documents referenced herein;

   b. The relevant legal standards, including the standard for obviousness provided in *KSR International Co. v. Teleflex, Inc*.,

550 U.S. 398 (2007), and any additional documents cited in the body of this declaration; and

c. My knowledge and experience based upon my work and study in this area as described below.

I. Qualifications and Professional Experience

6. I have provided my full background in the curriculum vitae that is attached as Ex. 1004.

7. I have over 30 years of professional experience in the automotive and transportation industry, including in intelligent transportation systems, vehicle electrical and electronics systems, vehicle information systems, and navigation systems.

8. I received an undergraduate Bachelor of Science degree in Electrical Engineering from the University of California, Irvine, in 1977. I received a Master's of Science degree in Electrical Engineering from Stanford University in 1982.

9. From 1977 to 1983, I held engineering positions at Ford Aerospace and Teledyne Microwave, working on, among other things, transmitter-receiver systems for guided missile systems and other related military electronics.

10. From 1983 to 1993, I worked at TRW, Inc. ("TRW") in the Space & Electronics Group, where I served as a project manager, a department manager, and as an assistant program manager on a variety of spacecraft communications systems

projects. My last position at TRW Space & Electronics was as the manager of the MMIC Products Organization, which was directed toward monolithic microwave integrated circuits. In that role, I developed TRW's commercial GaAs MMIC business. My responsibilities included development of a business strategy and business plan, and overall management of customer and research and development programs for my department. During my time in the MMIC Products Organization I also developed the first single chip 94 GHz radar, intended for use in automotive adaptive cruise control systems. While I was at TRW Space & Electronics, I received several awards for outstanding performance on Independent Research and Development projects.

11. In 1993, while still at TRW, I moved to the Automotive Electronics and Group and became the Director of Systems Engineering and Advanced Products. In this role, I was responsible for the overall management of TRW's advanced development programs in the automotive electronics space. These programs included, among other things, wireless remote keyless entry systems, vehicle tracking and location systems (e.g., roadside assistance and emergency response systems), emergency vehicle warning systems (e.g., transmitter-receiver systems that would provide a warning inside the user's vehicle when an active emergency vehicle was in the vicinity), automotive collision avoidance radar, and other types of vehicle information systems. I served in this role until 1996.

12. From 1996 to 2000, I worked at Toyota Motor Corporation as a Project General Manager in the R&D Management Division. My responsibilities there included the conceptualization and development of multimedia systems and new technology products and services for Toyota's future generations of passenger vehicles. My work at Toyota included the development of adaptive cruise control systems based on radar and lidar sensors. For example, I evaluated a variety of sensors and subsystems in Europe and Japan specifically to support Toyota's development of adaptive cruise control and forward collision avoidance systems. In this capacity I also interacted extensively with the Collision Avoidance Metrics Partnership (CAMP), a joint venture between Ford Motor Company and General Motors.

13. While at Toyota, I was responsible for a variety of research collaborations, including, for example, a collaboration with Dr. Paul Green at the University of Michigan Transportation Research Institute (UMTRI) wherein we studied the distraction created by different map displays for navigation systems, and identified various rules for the display of map information based on the speed of the vehicle. This included readability studies for how street names were displayed, and what level of map detail should be displayed as a function of vehicle speed.

14. In 1999, I founded Cogenia, Inc. to develop an enterprise-class data management software system. While at Cogenia, I developed and oversaw the

company's business concept and strategic plan and led the executive team in the development of an enterprise data system for managing data between multiple user endpoints or devices. This included home and work computing environments, as well as multiple mobile devices. In each case, key data useful to the user was prepositioned so that it could be easily accessed when and where the user needed it the most. Cogenia, Inc. ceased operations in December 2000.

15. I founded Cogenia Partners, LLC as an independent consultant in the intelligent vehicles and mobile systems industry in January 2001. My primary clients have been automotive manufacturers, various navigation and mobile device makers, and the U.S. Department of Transportation.

16. Between January 2001 and June 2003, I was engaged as a consultant to Toyota serving as a key member of the AMI-C technical team. At the conclusion of the AMI-C Release II specifications, I transitioned the AMI-C specifications to the International Organization for Standardization (or ISO) and the Open Services Gateway initiative (or OSGi) as part of the Connected Vehicle Trade Association, for which I currently serve as the Vice President of Technology.

17. My consulting experience includes serving between 2005 and 2010 as the Chief System Architect for the Vehicle Infrastructure Integration ("VII") program. This was a cooperative research project sponsored by the Federal Highway Administration ("FHWA") and a group of automakers who had formed the VII

Consortium (or VIIC). In this role, I was responsible for developing the system architecture, defining requirements, and leading the development and testing of a system for communicating between the roadway and the car, and between cars.

18. My consulting experience also includes serving as technical consultant to the American Association of State Highway Transportation Officials (or AASHTO) for connected vehicle deployment analysis and strategy; technical consultant to Booz Allen for connected vehicle security credential communications systems analysis, for the FHWA; and technical consultant to ARINC for the development of an advanced connected vehicle test facility for the FHWA Turner Fairbank Highway Research Center. I recently completed a project as co-principal investigator for Integrated Advanced Transportation System (a research program funded by FHWA).

19. Currently, I consult with the U.S. Department of Transportation, major carmakers, and suppliers on vehicle information systems, safety systems, and communication systems. In the various positions mentioned above, I was responsible for the research and development of projects relating to numerous vehicle information systems, user interface systems, sensory systems, control systems, and safety systems, and I also had the opportunity to collaborate with numerous researchers and suppliers to the auto industry. I am a member of the Institute of Electrical and Electronics Engineers (or IEEE), the IEEE Standards Association, the

Society of Automotive Engineers (or SAE), the Institute of Navigation (or ION), and the International Council on Systems Engineering (or INCOSE).

20. I have authored numerous technical papers. My publications include papers on topics related to telematics, software and network architecture, and vehicle infrastructure, including integration of vehicle systems. I have attached to my curriculum vitae a list of all publications I have authored in the last 10 years.

21. Additionally, I am the named inventor of twenty-five U.S., Japanese and European patents, including patents related to controlling a mobile device based on contextual information from sensors. I have attached a complete list of my issued patents to my curriculum vitae.

22. I am familiar with the subject matter of this case, and consider myself an expert in, among other things, intelligent transportation systems, vehicle information and communications systems, and navigation systems.

23. I am familiar with the subject matter of this case, and consider myself an expert in, among other things, intelligent transportation systems, vehicle information and communications systems, and navigation systems.

24. I have previously prepared expert reports and testified in a number of cases concerning related systems.

II. Relevant Legal Standards

A. General

25. I have been asked to provide opinions on the claims of the ’296 Patent in light of the prior art.

26. It is my understanding that a claimed invention is unpatentable under 35 USC § 102 if a prior art reference teaches every element of the claim. Further, it is my understanding that a claimed invention is unpatentable under 35 U.S.C. § 103 if the differences between the invention and the prior art are such that the subject matter as a whole would have been obvious at the time the alleged invention was made to a person having ordinary skill in the art to which the subject matter pertains. I also understand that an obviousness analysis takes into account factual inquiries including the level of ordinary skill in the art, the scope and content of the prior art, and the differences between the prior art and the claimed subject matter.

27. It is my understanding that the Supreme Court has recognized several rationales for combining references or modifying a reference to show obviousness of the claimed subject matter. Some of these rationales include the following: combining prior art elements according to known methods to yield predictable results; simple substitution of one known element for another to obtain predictable results; a predictable use of prior art elements according to their established functions; applying a known technique to a known device to yield predictable

results; choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; and some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

B. Priority Dates for Claimed Subject Matter

28. I understand that in order to be considered "prior art," patents or printed publications must predate the pertinent priority dates for the subject matter claimed in the '296 Patent.

29. I have been informed that a patent is only entitled to a priority date based on an earlier filed application if the earlier filed application meets the requirements of 35 U.S.C. § 112. Specifically, I have been informed that 35 U.S.C. § 112 (a) requires that the specification of a patent or patent application must "contain a written description of the invention, and the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the [invention] . . . ." I understand that the requirements of this provision are commonly called the written description requirement and the enablement requirement.

30. I have been informed that compliance with both the written description requirement and enablement requirement must be determined as of the effective filing date of the application for which priority is sought.

31. I have been informed that to satisfy the written description requirement a patent's specification should reasonably convey to a person of skill in the art that the inventor had possession of the claimed invention as of the effective filing date of the application.

C. Claim Construction Standard

32. In order to properly evaluate these claims, I understand that the terms of the claims must first be construed.

33. I understand that in this proceeding, the claims are construed consistent with the specification and using the same construction as that used in litigation. I have been informed that the claims, after being construed in this manner, are then to be compared to the information in the prior art, which for this proceeding is limited to patents and printed publications. I also understand that, at the same time, absent some reason to the contrary, claim terms are typically given their ordinary and accustomed meaning as would be understood by one of ordinary skill in the art.

34. I understand that an apparatus claim limitation that includes functional language without reciting the structure limitations for performing the claimed function may be construed as a "means for" or "means plus" claim, even if the claim

limitation does not expressly use the term "means." Such a claim limitation is interpreted to cover the structure disclosed in the specification for performing the claimed function and equivalents thereof.

D. Obviousness

35. I understand that for a single reference or a combination of references to render obvious a claimed invention, a person of ordinary skill in the art must have been able to arrive at the claimed invention by altering or combining the applied references.

36. I have been informed that a patent claim can be found unpatentable as obvious where the differences between the subject matter taught to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person of ordinary skill in the relevant field. Specifically, I understand that the obviousness question involves a consideration of:

a) the scope and content of the prior art;

b) the differences between the prior art and the claims at issue;

c) the knowledge of a person of ordinary skill in the pertinent art; and

d) whatever objective factors indicating obviousness or non-obviousness may be present in any particular case – referred to as "secondary considerations."

37. I have been informed that such secondary considerations include: (a) commercial success of a product due to the merits of the claimed invention; (b) a long-felt, but unmet need for the invention; (c) failure of others to find the solution provided by the claimed invention; (d) deliberate copying of the invention by others; (e) unexpected results achieved by the invention; (f) praise of the invention by others skilled in the art; (g) the taking of licenses under the patent by others and (h) the patentee proceeded contrary to the accepted wisdom of the prior art. I understand that secondary considerations are relevant where there is a connection, or nexus, between the evidence and the claimed invention.

38. In addition, I understand that the obviousness inquiry should not be done in hindsight, but must be done using the perspective of a person of ordinary skill in the relevant art as of the effective filing date of the patent claim.

39. I understand that in order for a claimed invention to be considered obvious, there must be some rationale in the prior art, or the knowledge of a person of ordinary skill in the relevant art at the time of the invention, for combining cited references as proposed.

40. I understand that obviousness may also be shown by demonstrating that it would have been obvious to modify what is taught in a single piece of prior art to create the patented invention. I understand that obviousness may be shown by establishing that it would have been obvious at the time of the purported invention

to combine the teachings of more than one item of prior art. In determining whether a piece of prior art could have been combined with other prior art or with other information within the knowledge of one of ordinary skill in the art, I have been informed the following are examples of approaches and rationales that may be considered, sometimes referred to as *KSR* factors:

a) Combining prior art elements according to known methods to yield predictable results;

b) Simple substitution of one known element for another to obtain predictable results;

c) Use of a known technique to improve similar devices (methods, or products) in the same way;

d) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;

e) Applying a technique or approach that would have been "obvious to try" (i.e., choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success);

f) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations would have been predictable to one of ordinary skill in the art; or

g) Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention. I also understand that this suggestion or motivation may come from such sources as explicit statements in the prior art, or from the knowledge or common sense of one of ordinary skill in the art.

41. I understand that an invention that might be considered an obvious variation or modification of the prior art may be considered non-obvious if one or more prior art references discourages or lead away from the line of inquiry disclosed in the reference(s). I understand a reference does not "teach away" from an invention simply because the reference suggests that another embodiment of the invention is better or preferred. My understanding of the doctrine of teaching away requires a clear indication that the combination should not be attempted (e.g., because it would not work or explicit statement saying the combination should not be made).

III. Qualifications of Person Having Ordinary Skill in the Art

42. Based on my review of these materials, I believe that the relevant field for purposes of the '296 Patent includes vehicle control systems and loading users' saved settings for vehicle features. (*See* the '296 Patent, Ex. 1001, Abstract.)

43. I have been asked to provide my opinion as to the level of skill of a person having ordinary skill in the art ("PHOSITA" or "ordinary artisan") of the '296 Patent at the time of the claimed invention, which I have been instructed to assume is April 15, 2013. In determining the characteristics of a hypothetical person of ordinary skill in the art of the '296 Patent at the time of the claimed invention, I was told to consider several factors, including the type of problems encountered in the art, the solutions to those problems, the rapidity with which innovations are made in the field, the sophistication of the technology, and the education level of active workers in the field. I also placed myself back in the time frame of the claimed invention and considered the colleagues with whom I had worked at that time.

44. In my opinion, a person having ordinary skill in the art of the '296 Patent at the time of its filing would have been a person having, 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. Such a person of ordinary skill in the art would have been capable of understanding the '296 Patent and the prior art references discussed herein.

45. Based on my education, training, and professional experience in the field of the claimed invention, I am familiar with the level and abilities of a person

of ordinary skill in the art at the time of the claimed invention. Additionally, I met at least these minimum qualifications to be a person having ordinary skill in the art at least as of April 15, 2013.

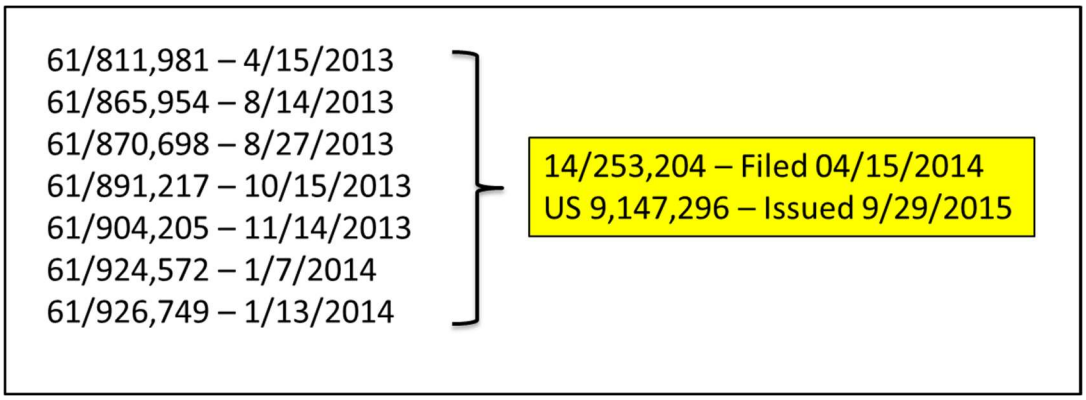
46. Further, although my qualifications may exceed those of the hypothetical person having ordinary skill in the art defined above, my analysis and opinions regarding the '296 Patent have been rendered from the perspective of a person having ordinary skill in the art at the time of the invention.

IV. U.S. Patent No. 9,147,296 to Ricci (Challenged Patent)

A. Priority Claim

47. U.S. Patent No. 9,147,296 claims priority to a series of provisional patent applications: Application No. 61/811,981 filed on April 15, 2013, Application No. 61/865,954 filed on August 14, 2013, Application No. 61/870,698 filed on August 27, 2013, Application No. 61/891,217 filed on October 15, 2013, Application No. 61/904,205 filed on November 14, 2013, Application No. 61/924,572 filed on January 7, 2014, and Application No. 61/926,749 filed on January 13, 2014. ('296 Patent, Ex. 1001, Cover.)

48. U.S. Application No. 14/253,204 was filed on April 15, 2014, and issued on September 29, 2015 as U.S. Patent No. 9,147,296. A graphic of the '296 Patent Family is provided below, with the '296 Patent highlighted in yellow:



The ’296 Patent Family

49. I have been informed by Counsel that all of the prior art references applied in the below Grounds predate April 15, 2013 (the earliest claimed priority date of the ’296 Patent), and that I do not need to analyze priority at this time. Therefore, I take no opinion of whether the claims of the ’296 Patent are entitled to any of the claimed priority dates. I reserve the right to opine on the priority date of the claims of the ’296 Patent should it become an issue.

B. Overview of the ’296 Patent

50. The ’296 Patent titled “Customization of Vehicle Controls and Settings Based on User Profile Data” was filed on April 15, 2014 and issued on September 29, 2015. (’296 Patent, Ex. 1001, Cover.)

51. The ’296 Patent relates to “[m]ethods and systems for a complete vehicle ecosystem . . . [that] provide[s] 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." ('296 Patent, Ex. 1001, Abstract.)

52. The '296 Patent discloses that "[t]he user profiles can act as a repository for user information. This user information can be used by any number of entities and/or devices 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." ('296 Patent, Ex. 1001, 8:55-62.) The '296 Patent further explains that "[t]he term 'profile,' as used herein, can refer to any data structure, data store, and/or database that includes one or more items of information associated with a vehicle, a vehicle system, a device (e.g., a mobile device, laptop, mobile phone, etc.), or a person." ('296 Patent, Ex. 1001, 13:35-39.)

53. The '296 Patent seeks to improve vehicle comfort: "Several manufacturers have added comfort features in vehicles . . . [h]owever, because these manufacturers have added features to a conveyance, they have built comfort around a vehicle and failed to build a vehicle around comfort." ('296 Patent, Ex. 1001, 2:55-62.)

54. The ’296 Patent also seeks to provide “a vehicle ecosystem . . . [that] seamlessly communicat[es] with current electronic devices to result in a totally intuitive and immersive user experience.” (’296 Patent, Ex. 1001, 2:66-3:2.)[1]

55. With reference to Figure 1, the ’296 Patent discloses a vehicle environment 100 with internal and external areas associated with a vehicle 104, including a first “interior zone 108”; a second zone 112 that “is exemplary of the range of those [vehicle] sensors and what can be detected by those sensors associated with the vehicle 104”; and a third “area 116 that includes all areas beyond the sensor range 112.” (’296 Patent, Ex. 1001, 16:7-32.)

[1] Unless I indicate otherwise, all underlining and emphasis used in my declaration has been added.

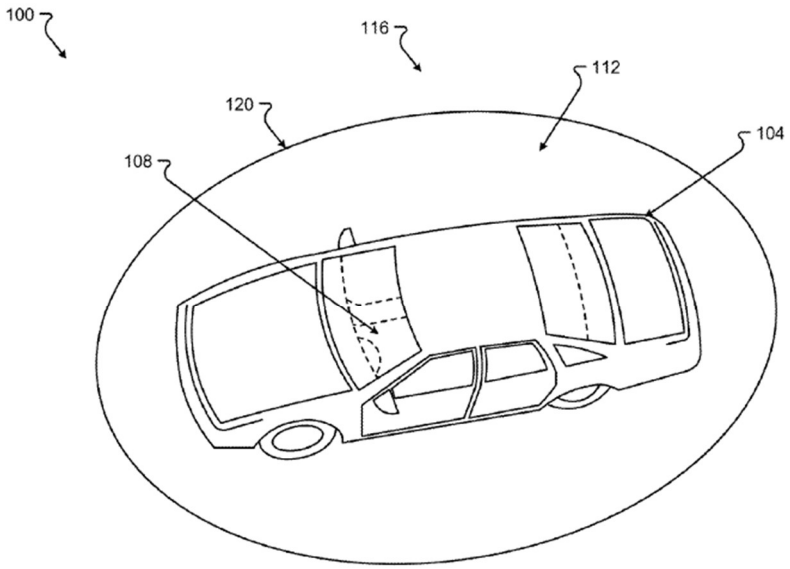


Fig. 1

'296 Patent, Ex. 1001, Fig. 1

56. Referring to Figure 2, the '296 Patent discloses a "vehicle control system 204 [that] may communicate with a device or user interface 212, 248" that "may include or have access to device data 220 and/or profile data 252." ('296 Patent, Ex. 1001, 16:53-54, 17:6-8.)

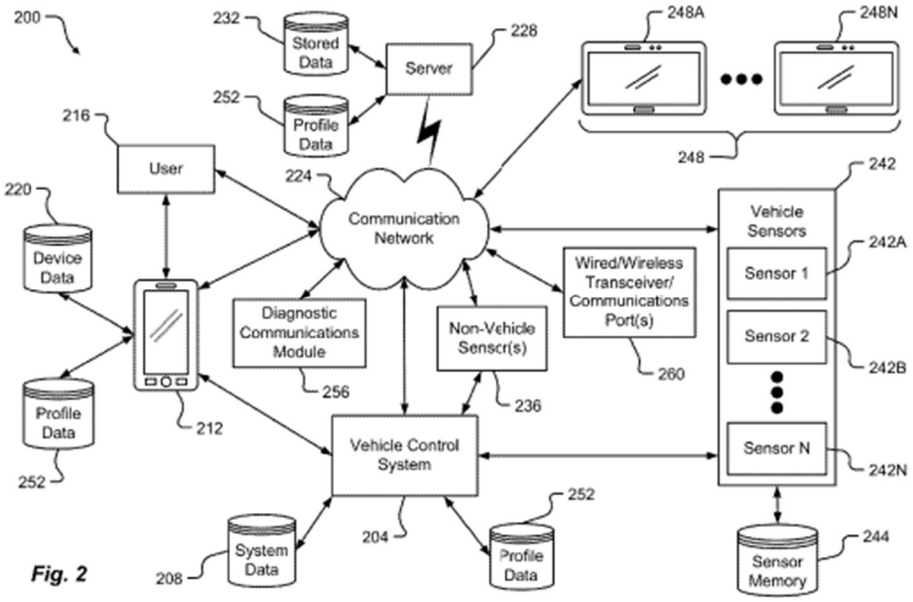


Fig. 2

'296 Patent, Ex. 1001, Fig. 2

57. The '296 Patent explains:

> The profile data 252 can be any type of data associated with at least one user 216 including, but in no way limited to, bioinformatics, medical information, driving history, personal information (e.g., home physical address, business physical address, contact addresses, likes, dislikes, hobbies, size, weight, occupation, business contacts—including physical and/or electronic addresses, personal contacts—including physical and/or electronic addresses, family members, and personal information related thereto, etc.), other user characteristics, advertising information, user settings and feature preferences, travel information, associated vehicle preferences, communication preferences, historical information (e.g., including historical, current, and/or future travel destinations), Internet browsing history, or other types of data.

('296 Patent, Ex. 1001, 17:11-25.)

58. "The device 212, 248 can be a mobile device . . . that is either permanently located in or temporarily associated with . . . the vehicle 104" and "the vehicle control system 204 can interface with the device 212, 248 and leverage the device's computing capability to provide one or more of the features or functions." ('296 Patent, Ex. 1001, 16:61-17:2.) The '296 Patent explains that the device 212 can be "a mobile telephone" or "mobile computer." ('296 Patent, Ex. 1001, 16:3.)

59. The '296 Patent broadly explains that "[t]he vehicle control system 204 can be any type of computing system operable to conduct the operations as described" in the patent. ('296 Patent, Ex. 1001, 16:40-42.) With reference to Figure 3, the '296 Patent further explains that "the vehicle control system 204 [annotated in red] may be a computer system, which can comprise hardware elements that may be electrically coupled" such as "one or more central processing units (CPUs) 304" (annotated in blue) ('296 Patent, Ex. 1001, 20:44-47.)

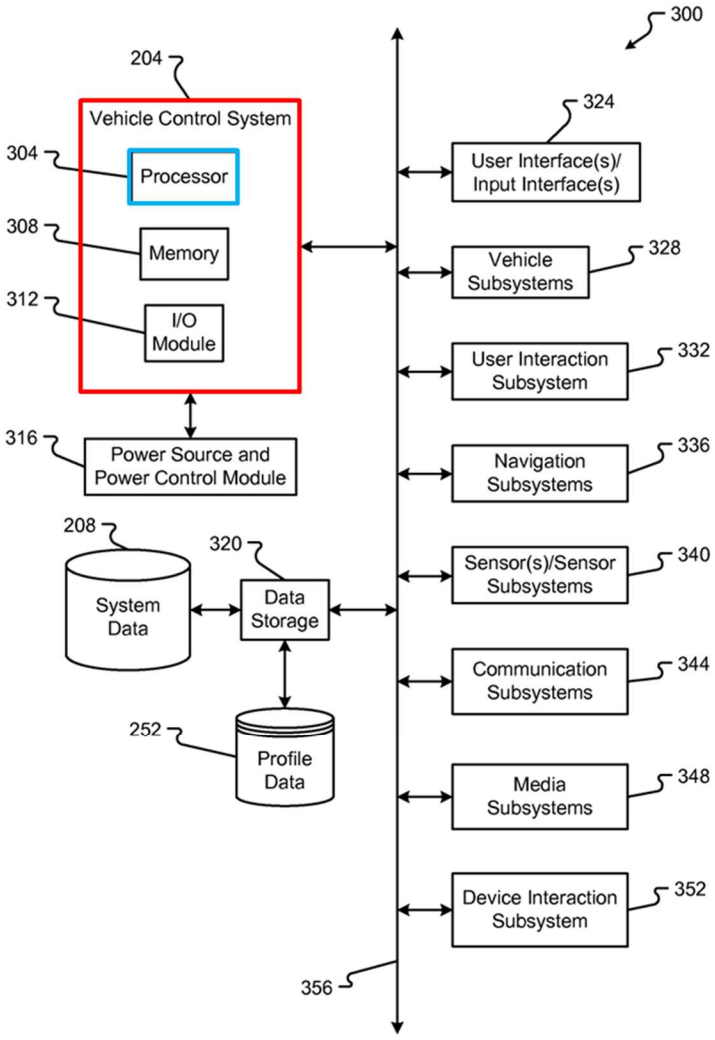


Fig. 3

'296 Patent, Ex. 1001, Fig. 3 (Annotated)

60. The '296 Patent explains further:

The processor 304 may comprise a general purpose programmable processor or controller for executing application programming or instructions. . . . Additionally or alternatively, the processor 304 may include multiple physical processors. As a particular example, the processor 304 may comprise a specially configured application specific integrated circuit (ASIC) or other integrated circuit, a digital signal

> processor, a controller, a hardwired electronic or logic circuit, a programmable logic device or gate array, a special purpose computer, or the like. The processor 304 generally functions to run programming code or instructions implementing various functions of the vehicle control system 204.

('296 Patent, Ex. 1001, 20:51-64.)

61. Notwithstanding, the '296 Patent also states: "It should be appreciated that alternates to the vehicle control system 204 may have numerous variations from that described herein." ('296 Patent, Ex. 1001, 20:37-39.)

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

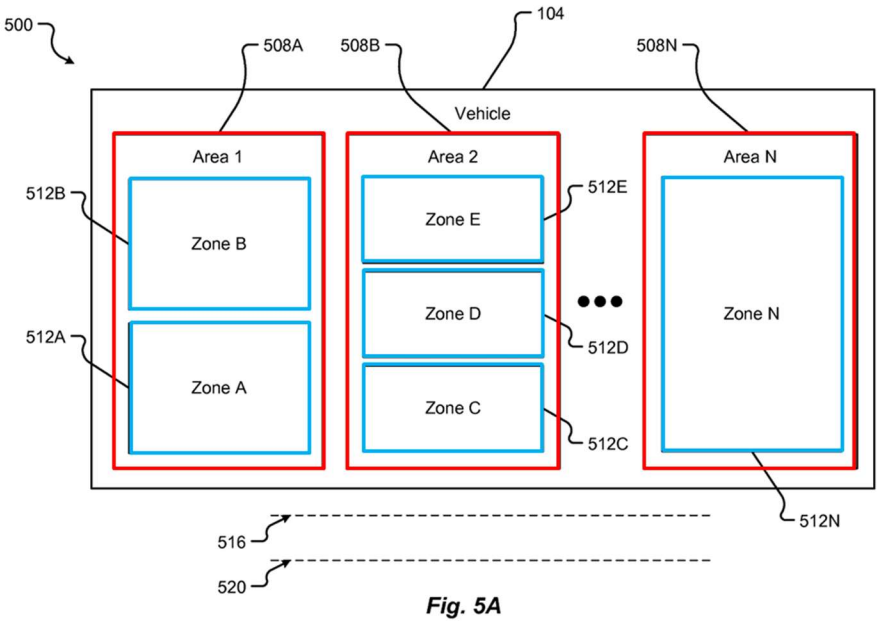


Fig. 5A

'296 Patent, Ex. 1001, Fig. 5A (Annotated)

63. "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." ('296 Patent, Ex. 1001, 25:64-66.) Accordingly, "[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." ('296 Patent, Ex. 1001, 25:66-26:3.) Zones A 512A, B 512B, C 512C, D 512D, E 512E thus may be locations in a vehicle associated with a user of the vehicle 104 and are annotated in blue in the above figure.

64. 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." ('296 Patent, Ex. 1001, 26:22-25.) "To assist with identifying a location of a device within a zone 512, a number of different techniques can be utilized" such as "vehicle sensors detecting the presence of an individual within one of the zones 512." ('296 Patent, Ex. 1001, 28:11-15.) "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 and optionally associating it with a particular zone 512 as a default." ('296 Patent, Ex. 1001, 28:20-23.)

65. The '296 Patent further explains that, "[o]ptionally, a user's device, such as a SmartPhone, can store in, for example a profile, with which zone 512 the user's device is associated." ('296 Patent, Ex. 1001, 29:37-39.)

66. With reference to Figure 26, the '296 Patent discloses "an embodiment of a vehicle control setup for at least one zone 512 of a vehicle 104." ('296 Patent, Ex. 1001, 82:64-66.) The Figure depicts "the interior space 108 of a vehicle 104 having one or more controls actuators, systems, and components, etc. For example, the vehicle 104 may include at least one feature of vehicle 104 including, but not limited to, a speed control pedal 2608, steering wheel 640, [and] occupant seating system 648 . . ." which are annotated in red below. ('296 Patent, Ex. 1001, 83:7-12.) The '296 Patent further discloses that the "vehicle controls may be adjusted according to a preference and/or ability of a user 216" and "that vehicle control functionality (e.g., including sensitivity, and/or placement, etc.) may be adjusted and

stored with a user profile . . . [that] can follow a user 216 from one vehicle 104 to another vehicle 104." ('296 Patent, Ex. 1001, 82:67-83:6.)

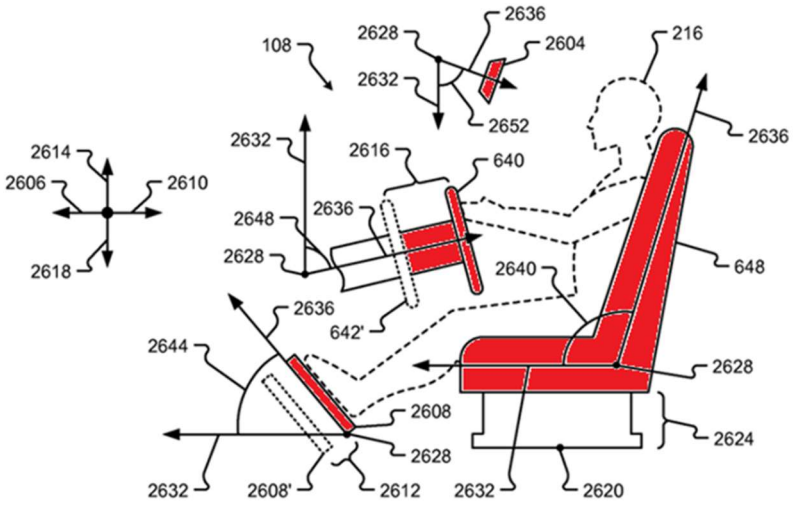


Fig. 26

'296 Patent, Ex. 1001, Fig. 26 (Annotated)

67. The vehicle controls associated with zone 512 may be adjusted in various manners:

> At least one feature may be moved, and/or positioned, in one or more directions including, but not limited to, a forward direction 2606 (e.g., away from a user 216 in some cases), a backward direction 2610 (e.g., toward a user 216 in some cases), an upward direction 2614 (e.g., away from the base origin 2620), and/or a downward direction 2618 (e.g., toward the base origin 2620). The directions may include side-to-side positioning (e.g., leftward direction and rightward direction, with reference to a user 216 and/or the base origin 2620)."

('296 Patent, Ex. 1001, 83:22-30.)

The controls also "may be adjusted according to angular measurements." ('296 Patent, Ex. 1001, 83:31-32.)

68. With reference to Figure 14, the '296 Patent discloses "a method 1400 to configure the vehicle 104 based on stored settings." ('296 Patent, Ex. 1001, 64:27-33.)

69. The '296 Patent explains that a vehicle control system performing method 1400 "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, weight sensors, heat sensors, or other sensors to determine whether a person is occupying a certain zone 512." ('296 Patent, Ex. 1001, 64:40-45.)

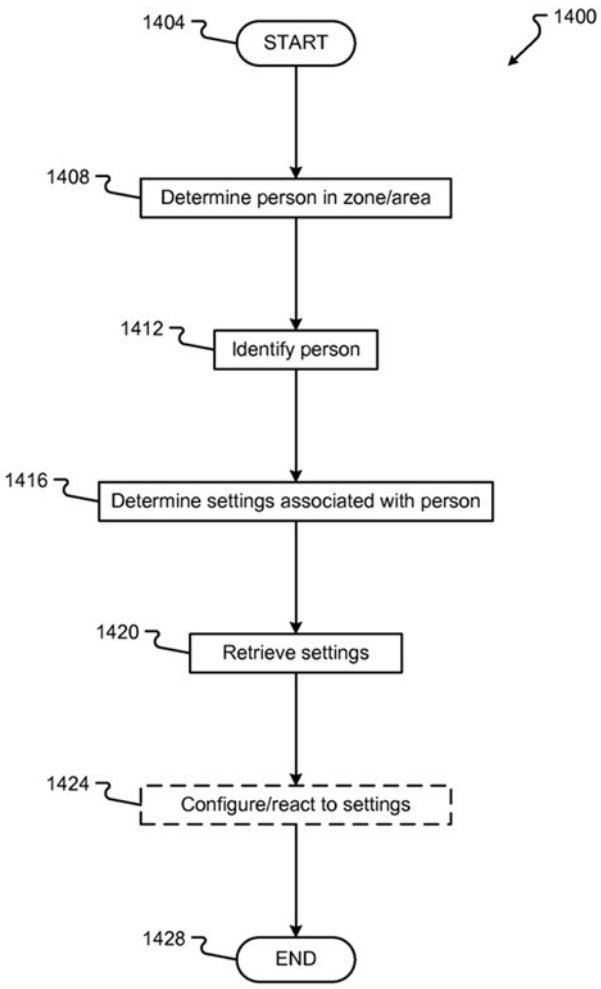


Fig. 14

'296 Patent, Ex. 1001, Fig. 14 (Annotated)

70. The system "can identify the person, in step 1412," by "obtain[ing] characteristics for the user currently occupying the zone 512," and the vehicle control settings "may be retrieved by identifying the correct zone 512, area 508, and characteristics for the user." ('296 Patent, Ex. 1001, 64:47-53.)

71. "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." ('296 Patent, Ex. 1001, 64:60-65.)

72. "Thus, these settings may be obtained to change the configuration of the vehicle 104, for example, how the position of the seats or mirrors are set, how the dash, console, or heads up display is configured, how the heat or cooling is configured, how the radio is configured, or how other different configurations are made." ('296 Patent, Ex. 1001, 64:65-65:3.)

73. With reference to Figure 8A, the '296 Patent discloses:

> The system 800 may include a profile identification module 848 to determine whether a user profile is associated with the vehicle 104. Among other things, the profile identification module 848 may receive requests from a user 216, or device . . . to access a profile stored in a profile database 856 or profile data 252. Additionally or alternatively, the profile identification module 848 may request profile information from a user 216 and/or a device 212, 228, 248, to access a profile stored in a profile database 856 or profile data 252. In any event, the profile identification module 848 may be configured to create, modify, retrieve, and/or store user profiles in the profile database 856 and/or profile data 252. The profile identification module 848 may include rules for profile identification, profile information retrieval, creation, modification, and/or control of components in the system 800.
>
> ('296 Patent, Ex. 1001, 41:66-42:14.)

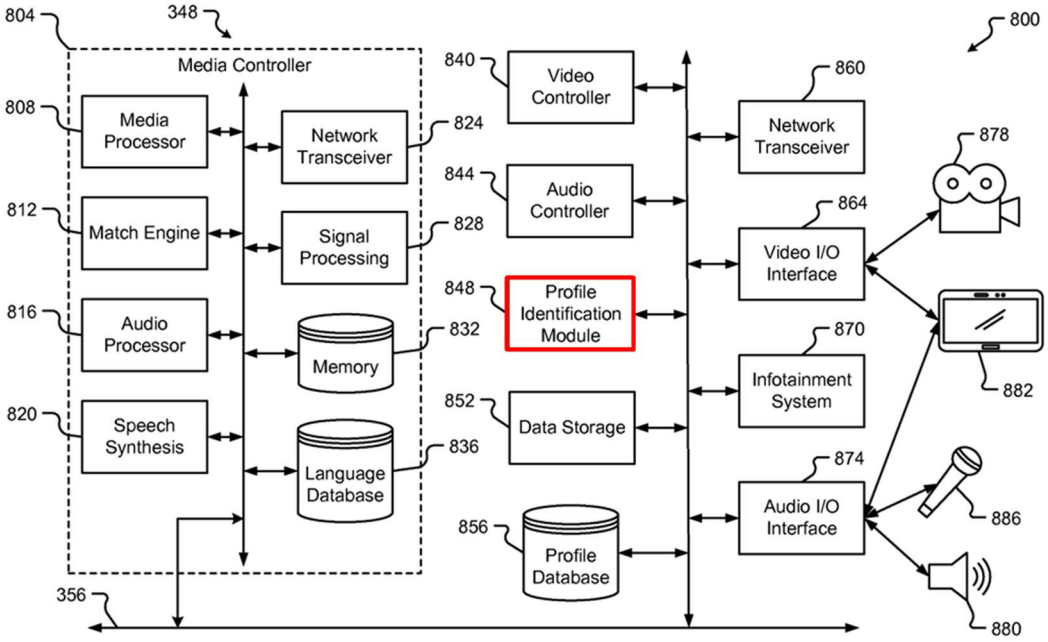


Fig. 8A

'296 Patent, Ex. 1001, Fig. 8A (Annotated)

74. The '296 Patent further explains:

[A] user 216 may enter the vehicle 104 with a smart phone or other device 212. In response to determining that a user 216 is inside the vehicle 104, the profile identification module 848 may determine that a user profile is associated with the user's smart phone 212. . . . [T]he profile identification module 848 may refer to the profile database 856 to determine whether [received] user information matches a user profile stored in the database 856. It is anticipated that the profile identification module 848 may communicate with the other components of the system to load one or more preferences, settings, and/or conditions based on the user profile. Further, the profile identification module 848 may be configured to control components of the system 800 based on user profile information.

('296 Patent, Ex. 1001, 42:15-31.)

75. Regarding the profile identification module 848, the '296 Patent discloses that the term "module" "refers to any known or later developed hardware, software, firmware, artificial intelligence, fuzzy logic, or combination of hardware and software that is capable of performing the functionality associated with that element." ('296 Patent, Ex. 1001, 11:3-7.)

76. Independent claims 1, 7, 8, and 14 are directed to vehicle control systems and methods for adjusting vehicle controls based on vehicle control settings in a "*user profile memory*." Independent claim 7 is representative of claims 8 and 14 and reproduced below:

> 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, wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle,

[7f] wherein the at least one vehicle control is adjusted via the adjustment output to match the vehicle control settings in the user profile memory.

77. Independent claim 1 recites largely the same method as independent claim 7, save for including an additional step of "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" and wherein "the adjustment output is provided based at least partially on determining the user is present in the location inside the vehicle."

78. In my opinion, the technology of the challenged independent claims of the '296 Patent was old and well-known in the art by April 15, 2013. (*See* ¶¶ 143–595.)

79. The dependent claims of the '296 Patent add common features, e.g., storing information in the user profile memory (claims 2, 10, 16), determining the presence of a user in the vehicle and updating control setting based thereon (claims 9, 15), determining the presence of a user via an image sensor (claims 5, 12, 18) specific vehicle control settings (claims 3, 4, 11, 17), determining that the user changed a vehicle control and storing that change in the user profile memory (claims 6, 13, 19), and determining the user is inside the vehicle based on detecting a device and adjusting vehicle controls based thereon (claim 20).

C. The '296 Patent File History

80. Flextronics AP, LLC filed U.S. Patent Application No. 14/253,204 on April 15, 2014, with twenty claims, including independent claims 1, 11, and 19. ('296 Patent File History, Ex. 1002 at 1-6, 181-184.)

81. Patentee filed an information disclosure statement ("IDS") on November 25, 2014, listing over 200 references. ('296 Patent File History, Ex. 1002 at 207-214.)

82. On January 26, 2015, the Examiner issued the first Office Action, a non-final rejection in which claims 1–7, 9, 11–17, 19, and 20 were rejected over a single prior art reference to Lovitt. ('296 Patent File History, Ex. 1002 at 523-524.) The Examiner identified allowable subject matter in claims 8, 10, and 18 if rewritten in independent form, but objected to them for depending on rejected claims. ('296 Patent File History, Ex. 1002 at 526.)

83. The allowable subject matter identified in originally filed claim 8 was: "wherein determining the presence of the user inside the vehicle further comprises: detecting a device associated with the user in an area of the vehicle." ('296 Patent File History, Ex. 1002 at 182.)

84. The allowable subject matter identified in originally filed claims 10 and 18 was: "wherein the at least one vehicle control is adjusted via the adjustment

output to match the vehicle control settings in the user profile memory." ('296 Patent File History, Ex. 1002 at 182, 184.)

85. On April 27, 2015, Patentee filed amended claims wherein the originally filed claims 8, 10, and 18 were amended to include all limitations of the base and intervening claims. ('296 Patent File History, Ex. 1002 at 551-553, 556.) Patentee also amended originally filed independent claim 19 to include "wherein the at least one vehicle control is adjusted via the adjustment output to match the vehicle control settings in the user profile memory" and added six new claims depending therefrom. ('296 Patent File History, Ex. 1002 at 553-555.)

86. On May 7, 2015, Patentee filed another IDS with over 200 references. ('296 Patent File History, Ex. 1002 at 575-582.)

87. On May 11, 2015, the Examiner issued a Notice of Allowability without providing reasons for allowance. ('296 Patent File History, Ex. 1002 at 562.) More than a month later, on June 24, 2015, the Examiner issued a Corrected Notice of Allowability to consider the May 7 IDS. ('296 Patent File History, Ex. 1002 at 898-900.)

88. The application issued to Flextronics AP, LLC as the '296 Patent on September 29, 2015. ('296 Patent, Ex. 1001, Cover.) The U.S. Patent and Trademark

Office issued a certificate of correction to correct a typo in claim 14, i.e., to replace "*leasst*" with "*least*."[2] ('296 Patent File History, Ex. 1002, at 97.)

89. On September 1, 2019, the '296 Patent lapsed for failure to pay the 3.5-year maintenance fee. ('296 Patent File History, Ex. 1002, at 1065.) A petition requesting reinstatement was not filed until August 2, 2022. ('296 Patent File History, Ex. 1002, at 1065.) The U.S. Patent and Trademark Office granted a Renewed Petition seeking reinstatement of the '296 Patent on April 13, 2023, at which point the window for timely submission of the 7.5-year maintenance fee had already been open for more than six months since September 29, 2022. ('296 Patent File History, Ex. 1002, at 1086-1087.)

90. On April 29, 2025, Toyota Motor Corp. filed a petition for *Inter Partes* Review of the '296 Patent challenging claims 1–20 in view of prior art references Ikeda (U.S. Patent Pub. No. 2008/0215209) and Hendry (U.S. Patent Pub. No. 2012/0303178). (IPR2025-00891, Paper 1.)

V. Claim Construction

[2] The revision made to claim 14 pursuant to the certificate of correction is shown in brackets the first time the applicable language from the claim is quoted. In all subsequent quotations, the claim is presented in its corrected form without brackets.

91. In order to properly evaluate these claims, I understand that the terms of the claims must first be construed. I also understand that, at the same time, absent some reason to the contrary, claim terms are typically given their ordinary and accustomed meaning as would be understood by one of ordinary skill in the art.

VI. State of the Art

92. As mentioned above, the ’296 Patent relates to “methods and systems for a complete vehicle ecosystem … [that] provide[s] 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.” (’296 Patent, Ex. 1001, Abstract.) The ’296 Patent explains that doing so helps provide a vehicle ecosystem with “a totally intuitive and immersive user experience.” (’296 Patent, Ex. 1001, 3:1-2.) As such, the ’296 Patent relates to vehicle control systems having user profile functionality for storing users’ preferred settings for various vehicle ecosystem features.

A. Vehicle Communication Systems

93. Vehicle systems communicate with portable devices located within the vehicle, and external to the vehicle, through wired and wireless communication. A remote keyless entry system is able to communicate with a portable device (e.g., key fob) that may be located outside of the vehicle, and a vehicle infotainment system

may communicate with a portable device (e.g., a smart phone or tablet) located inside of the vehicle.

1. Passive Entry and Passive Start (PEPS) Systems

94. A remote keyless entry system includes a door module that communicates wirelessly, typically using radio frequency (RF) communication, with a remote key fob to control a door lock to lock and unlock. Key fobs include buttons that a user manually actuates to send a lock/unlock signal to a door module.

95. Passive systems were developed in which a key fob and vehicle system communicated with each other without manual activation by the user to provide passive entry to a vehicle and also passive starting of the vehicle. (*See* Ghabra, Ex. 1011, 4:57-63.)

96. PEPS systems initiate communication with the key fob by being either "triggered" (where the user initiates the process by touching something on the car, e.g., a door handle or engine start button) or through "polling" (where the system continuously or periodically scans for the key fob within range). (Ghabra, Ex. 1011, 4:57-63.)

B. User Convenience

97. Mobile phones may be connected to infotainment systems by wired (e.g., USB) communications or wireless connections. Bluetooth is a wireless technology that enables short-range communication between devices. Bluetooth was

released in 1999 (*see* Bluetooth Specification, Ex. 1052[3], Vol. 0, p. 62) and became a ubiquitously available protocol that vehicle infotainment systems have been using to connect and exchange data with other devices (i.e. mobile phones) due to its low power consumption, cost, and ease of use.

2. Device Discovery

98. Bluetooth is a short-range wireless protocol operating in the unlicensed 2.4 GHz band, located within the ultra-High-Frequency (UHF) band between 300 MHz and 3 GHz. A Bluetooth device can be in one of three main states (Standby, Connection, Park); and within those states there are various substates. "The Standby State is the default state in the device. In this state, the device may be in a low-power mode." (Bluetooth Specification, Ex. 1052, Vol. 2, p. 151.) For the specific purpose of device discovery, the two critical substates are the Inquiry Substate and the Inquiry Scan Substate. (Bluetooth Specification, Ex. 1052, Vol. 2, pp. 160-163.)

[3] Bluetooth Specification, Ex. 1052, is a true and accurate copy of the Bluetooth 4.0 specification, that was published by the Bluetooth Special Interest Group, Inc. in 2010. Bluetooth Specification, Ex. 1052, is available at https://www.bluetooth.com/specifications/specs/core-specification-4-0/, accessed on June 27, 2025.

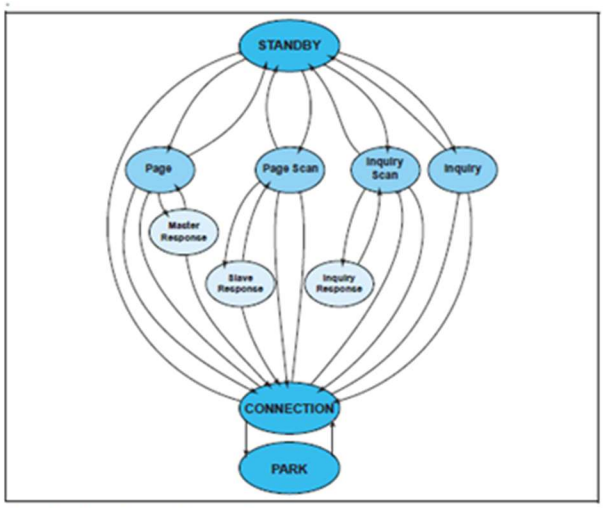


Figure 8.1: State diagram of link controller.

Bluetooth Specification, Ex. 1052, Vol. 2, p. 150, Figure 8.1

99. Bluetooth is far more than a radio. At the time of the invention, it was known that certain protocols that are part of Bluetooth can run in the background. Generally, an application that "runs in the background" has the following characteristics:

- operates continuously even when the vehicle is parked;
- not started and terminated by user commands but may be configured for background operation;

100. At the time of the invention, background operation was well known. Further, it was known that certain protocols that are part of the Bluetooth specification can run in the background. Bluetooth depends on "[a]t least two background daemons…hcid (*host controller interface*), which serves as an interface for the Bluetooth device and controls it, and sdpd (*service discovery protocol*)."

(Linux, Ex. 1065[4], p. 207.) Common protocols like SDP enabled this functionality by allowing "for automatic recognition and configuration between two devices of different types and from different manufacturers." (MDDI, Ex. 1063[5], p. 7.) I note that a PHOSITA would have known that Bluetooth includes both device discovery and service discovery protocols. Device discovery involves scanning for nearby Bluetooth devices, while service discovery involves identifying specific capabilities or functionalities offered by these devices.

101. Such background apps in vehicles play a crucial role in providing seamless connectivity between the vehicle and a user device, without requiring manual setup each time a user enters the vehicle. For example, Bluetooth devices can remember previously connected devices and automatically re-establish the connection when the devices are in range, eliminating the need for repeated pairing. In essence, a vehicle's "device discovery" must run in the background to facilitate

[4] Linux, Ex. 1065, is a true and accurate copy of an administration guide that I understand was published by Suse Linux AG in 2004.

[5] MDDI, Ex. 1063, is a true and accurate copy of an article that I understand was published by Medical Device and Diagnostic Industry on February 1, 2002, and is available at https://www.mddionline.com/new-technologies/bluetooth-the-future-of-wireless-medical-technology-, accessed on June 30, 2025.

seamless integration and functionality between the car's infotainment system and various other devices, enhancing the overall driving and connectivity experience.

102. An infotainment system may include a program that runs in the background. For example, Clement discloses an infotainment system with receivers 610 that take signal strength measurements continuously to detect the location of a portable device within a vehicle, enabling the location system 330 to run in the background, without being turned on by a user. (Clement, Ex. 1010, 7:23-32.)

103. Passive entry systems may also include programs that run in the background to detect a user approaching a vehicle. Such systems include transmitters and receivers that communicate with each other to detect and authenticate an approaching user. (*See e.g.*, Lickfelt, Ex. 1012, ¶ 5; Ghabra, Ex. 1011, 2:21-41.)

104. However, even with Bluetooth's automatic connectivity, the ability for a device to enter the standby state allows for a reduction in power consumption. A device/controller may leave the standby state and enter into a substate in response to a trigger event:

> To move from one state or substate to another, either commands from the link manager are used, or internal signals in the link controller are used (such as the trigger signal from the correlator and the timeout signals).

(Bluetooth Specification, Ex. 1052, Vol. 2, p. 150.)

105. To discover other devices, the device enters the Inquiry Substate:

> In [the inquiry] substate, it shall repeatedly transmit the inquiry message (ID packet . . .) at different hop frequencies. The inquiry hop sequence is derived from the LAP [Lower Address Part] of the GIAC [General Inquiry Access Code]. … A device that allows itself to be discovered, shall regularly enter the inquiry scan substate to respond to inquiry messages.

(Bluetooth Specification, Ex. 1052, Vol. 2, p. 160.)

106. During the Inquiry Substate, "the discovering device collects the Bluetooth device addresses and clocks of all devices that respond to the inquiry message…. It can then, if desired, make a connection to any one of the discovered devices…." (Bluetooth Specification, Ex. 1052, Vol. 2, p. 160.)

107. Bluetooth devices assume the roles of master and slave depending on their behavior in the inquiry procedure. The master transmits inquiry messages, and the slave responds with an inquiry response packet:

> Although master and slave roles are not defined prior to a connection, the term master is used for the inquiring device and slave is used for the inquiry scanning device. . . . During the inquiry procedure, the master shall transmit inquiry messages with the general or dedicated inquiry access code. . . . An inquiry response packet is transmitted from the slave to the master after the slave has received an inquiry message (see Table 8.5 on page 165).

(Bluetooth Specification, Ex. 1052, Vol. 2, p. 81.)

108. Once the proper inquiry access code is received, the device will enter the Connection State, where a "connection has been established, and packets can be sent back and forth." (Bluetooth Specification, Ex. 1052, Vol. 2, p. 165.) "The first information packets [in this state] contain control messages that characterize the link and give more details regarding the devices." (Bluetooth Specification, Ex. 1052, Vol. 2, p. 165.) Once the proper response packets are retrieved, the device enters an active mode where the Bluetooth pairing is finalized, at which point the controller and devices can enter and/or complete differing functions based upon a given device need or request.

3. Customization

109. Infotainment system customization allows drivers to personalize their in-car experience by adjusting various settings, apps, and visual elements. This can include rearranging home screen icons, setting up user profiles, adjusting navigation preferences, and customizing visual appearance like color schemes. (Auto News, Ex. 1057[6], 1-6; Moinzadeh, Ex. 1013, [0084]; Rasin, Ex. 1015.)

[6] Auto News, Ex. 1057, is a true and accurate copy of an article that I understand was published by Automotive News on October 7, 2008 and is available athttps://www.autonews.com/article/20081007/ZZZ_SPECIAL/310079921/ford-launches-parental-control-technologies/, accessed on June 24, 2025.

110. Ford's MyKey system also adds an additional layer of vehicle personalization but focuses on safe driving habits. For example, vehicle owners can program specific restrictions for designated keys, including setting maximum speed limits, disabling the ability to deactivate traction control, limiting audio system volume, early low-fuel warnings, etc. (Auto News, Ex. 1057, pp. 1-6.)

4. Positioning Methods

111. At the time of the invention, wireless positioning techniques, both outdoor and indoor, had become very popular. For example, just Bluetooth provides multiple signal parameters that may be used for determining the location of a mobile device, including: Link Quality, Received Signal Strength (RSSI), Transmit Power Level (TPL), and Inquiry Result with RSSI. (Hossain, Ex. 1053[7] at 1-2.) RSSI was a well-known technique at the time. Because generally signal strength decreases as distance increases, signal strength is an indication of distance. However, just a single signal strength value does not lead to a very accurate position determination.

[7] Hossain, Ex. 1053, is a true and accurate copy of an article that I understand was published by IEEE 18th International Symposium on Person, Indoor and Mobile Radio Communications in 2007. Hossain is available at https://www.ieeexplore.ieee.org/document/4394215.

(Hossain, Ex. 1053 at 4-5.) More accurate methods such as based on multiple signal strength values or triangulation were also known.

112. Vehicle systems utilized wireless position techniques to limit driver distraction and to restrict access to certain functions to the driver. Systems were developed to limit access to certain vehicle systems from a mobile device based on the location of the mobile device within the vehicle. For example, U.S. Patent No. 8,768,539 (Clement, Ex. 1010) describes restricting manual control of safety-critical systems to the driver's seat. (Clement, Ex. 1010, 10:14-26.)

5. Computers, Processors, and Controllers

113. Computer systems of various types have been in existence for thousands of years. An abacus is a rudimentary computer that is used to count and perform simple arithmetic operations. There is historical evidence that the abacus and related devices may date back as far as 2400 BC. In 1936, British mathematician Alan Turing wrote a paper titled "On Computable Numbers, with an Application to the Entscheidunsproblem." (Turing, Ex. 1075[8].) The paper described what is known as the "Turing machine," which is a mathematically defined processor that performs

[8] Turing, Ex. 1075, is a true and accurate copy of a paper that I understand was published by the London Mathematical Society in 1937 and is available online at https://doi.org/10.1112/plms/s2-42.1.230.

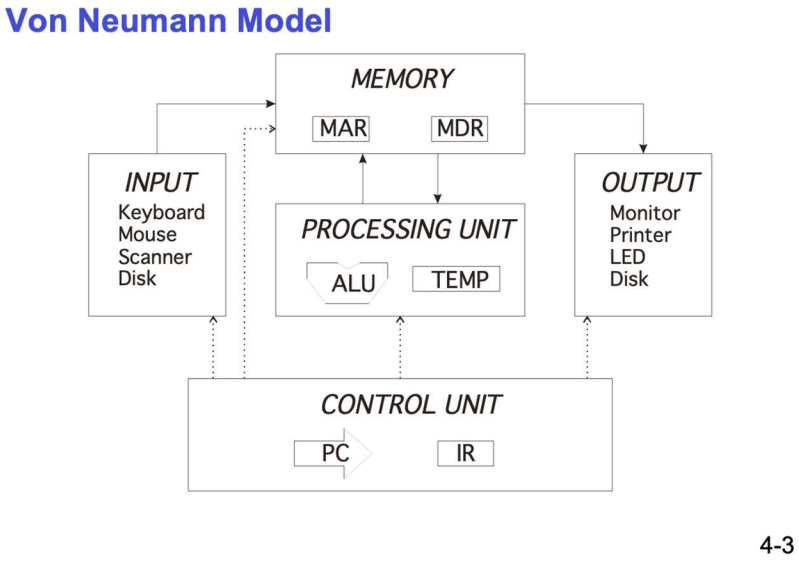
operations based on instructions that are stored on a scannable "tape" (for example, a paper tape with perforations representing the instructions). (Turing, Ex. 1075, 231-232.)

114. In 1945, Hungarian mathematician John von Neumann conceived of an electronic implementation of a computing machine (mathematically similar to the Turing machine) that used a processor comprised of an arithmetic logic unit (ALU) and a control unit. (Ganesan, Ex. 1076[9], slides 4-3–4-6 at 2-3; Von Neumann, Ex. 1077[10].) The ALU was a logic device that would, based on binary controls, add and subtract binary numbers, and/or perform various logical operations (AND, OR, NOT, etc.). (Ganesan, Ex. 1076, slide 4-6 at 3.) The binary controls were logic signals derived from data stored in a memory. (Ganesan, Ex. 1076, slides 4-3-4-6 at

[9] Ganesan, Ex. 1076, is a true and accurate copy of a presentation that I understand was published by Deepak Ganesan by April 25, 2012 and is accessible at https://web.archive.org/web/20120425083227/http://none.cs.umass.edu/~dganesan/courses/fall09/handouts/Chapter4.pdf.

[10] Von Neumann, Ex. 1077, is a true and accurate copy of a 1945 paper by John von Neumann that was corrected for typographical errors and republished by IEEE Annals of the History of Computing, Vol. 15, No. 4, in 1993, and updated again for minor errors on January 10, 2011 (current version).

2-3.) This concept, illustrated below, became known as the "von Neumann Machine."



Ganesan, Ex. 1076, slide 4-3 at 2

115. It is the functional core that resides in nearly every modern day computing device. A key concept for the von Neumann was to store the data that was to be operated on (the binary numbers to be added, subtracted or logically processed) in the same memory as the instructions. (Ganesan, Ex. 1076, slides 4-11-4-12 at 6.) Thus, the memory would hold a sequence of binary instructions that would be used to direct the ALU to perform an operation. The control unit would read an instruction from memory together with the data representing the numbers, and apply these to the ALU which would then perform the specified operation, the result could be output from the computer, or stored back in the memory, where it

could be used in subsequent processing steps. (Ganesan, Ex. 1076, slides 4-3-4-10 at 2-5.)

116. This concept was reduced to practice in the 1940's primarily in support of the Allied war effort. Because the electronic technology at the time was fairly primitive, these computers were physically very large (hundreds of square feet). Following the invention of the transistor in 1947, and subsequent development of integrated circuit technology, the size of computing machines dropped dramatically. For example, rapid technological developments occurred during the 1960s, and by 1971, Intel released a set of four integrated circuits, known as the MCS-4 that collectively implemented the processing unit (ALU and control unit), program memory, working memory and I/O of a von Neumann machine. (Intel 4004, Ex. 1078[11]; MCS-4, Ex. 1079[12].) The 4001 was a Read Only Memory (non-volatile memory) for storing program instructions; the 4002 was a random access memory

[11] Intel 4004, Ex. 1078, is a true and accurate copy of an article that I understand was published by Intel October 3, 2012 and is accessible at https://web.archive.org/web/20121003001757/https://www.intel.com/content/www/us/en/history/museum-story-of-intel-4004.html.

[12] MCS-4, Ex. 1079, is a true and accurate copy of a data sheet for Intel's MCS-4 that I understand was published by Intel in November 1971.

(RAM) used to store intermediate results; the 4003 was a serial in, parallel out shift register that was used to input and output data; and the 4004 was central processing unit (CPU) that implemented a processor along with various support and I/O circuitry. (MCS-4, Ex. 1079, 1-3.) The 4004 became known as the first general purpose microprocessor. (Intel 4004, Ex. 1078, 2.) Thus by at least 1971 it was well-known that a central processing unit included a processor that executed instructions stored in a non-volatile memory (non-transitory) medium. A non-volatile memory is also referred to as a long-term memory; such memories retain their data even when the power supply is switched off. (Bosch, Ex. 1050[13], 94.)

117. Similarly, it was well-known at the time of the ’296 Patent that vehicle systems included electronic control units (controllers) for controlling vehicle functions by processing input signals and generating appropriate output signals. Initially, controllers consisted of hard-wired relay panels that were exceedingly time-consuming and costly to debug or change functionality by modifying the sequence of operations. (Erickson, Ex. 1080[14], 14.) In the 1960s, programmable

[13] Bosch, Ex. 1050, is a true and accurate copy of a book that I understand was published by Robert Bosch GmbH in October 2004.

[14] Erickson, Ex. 1080, is a true and accurate copy of an article that I understand was published by IEEE in February/March 1996.

logic controllers were developed out of the need to replace these cumbersome hard-wired controllers. (Erickson, Ex. 1080, 14.) In 1968, General Motors specified design criteria for the first programmable logic controller that included easy programmability and re-programmability, easy maintenance and repair, and comparable or lower cost to then-used hard-wired logic systems. (Erickson, Ex. 1080, 14.) Indeed, the Intel 4004 mentioned above was one of the first programmable logic microchips, which simultaneously made computing cheaper and more powerful. (Intel 4004, Ex. 1078, 2.) Today, many manufacturers use programmable logic controllers to cut production costs and increase quality. (Erickson, Ex. 1080, 14.)

118. Such automotive controllers included a microprocessor, input and output units (I/O), and memory. (Bosch, Ex. 1050, 94, 96.) A "microprocessor," is a specific type of processor that "contains the logic elements for manipulating data and for making decisions[,]" and is implemented on a single silicon chip. (IEEE Dictionary, Ex. 1051[15], 693, 872; *see also* Bosch, Ex. 1050, 94, "The microprocessor represents the integration of a computers central processing unit on a single chip.")

[15] IEEE Dictionary, Ex. 1051, is a true and accurate copy of a dictionary that I understand was published by IEEE in December 2000.

119. The controllers also included software code that was stored in the memory and executed by the microprocessor to perform a series of operations. Semiconductor memories are divided into two main categories: volatile (short-term) memory (*e.g.*, RAM) and non-volatile (long-term) memory (*e.g.*, ROM). (Bosch, Ex. 1050, 94-95.) A PHOSITA would have understood that a transitory medium is temporary, such as a signal, whereas a non-transitory medium is a physical object where data can be stored, like a hard drive, Random Access Memory (RAM), Read-Only Memory (ROM), CD-ROM storage, Flash, or memory card. (Bosch, Ex. 1050, 95; IEEE Dictionary, Ex. 1051, 152.)

VII. Overview of the Key Prior Art References Relied Upon

A. JP Pub. No. 2010/163092 A ("Endo" Ex. 1024)[16]

120. Endo is a Japanese patent publication that was filed on January 16, 2009, and published on July 29, 2010. (Endo, Ex. 1024, Cover.) I understand that Endo is prior art to all claims of the '296 Patent under 35 U.S.C. § 102(a)(1) because it was published before the earliest claimed priority date of the '296 Patent.

121. Endo is directed to "an automatic setting device for a vehicle capable of setting the [vehicle] setting information for each occupant." (Endo, Ex. 1024,

[16] This exhibit comprises a certified translation along with the original Japanese publication. Citations are directed to the certified translation.

[0001].) Endo seeks to "reduce[] the workload of occupants" by automatically adjusting seat position settings for whichever seat the user occupies, regardless of vehicle. (Endo, Ex. 1024, [0009], [0012].)

122. Endo discloses a vehicle equipped with an Intelligent Key System (IKS) that provides passive-entry passive-start functionality based on the location of an electronic key 13:

> Fig. 1 shows an example of a diagram explaining the outline of the automatic setting system 100 of this embodiment. This vehicle is equipped with an Intelligent Key System (hereinafter referred to as "IKS"). With IKS, the occupant 14 can unlock and lock the doors simply by carrying a smart key (registered trademark; hereinafter referred to as "electronic key"). Also, in IKS, when an electronic key 13 is detected near the driver's seat, it allows the starting of the engine (or the main system in the case of electric or hybrid vehicles) by a predetermined ECU.

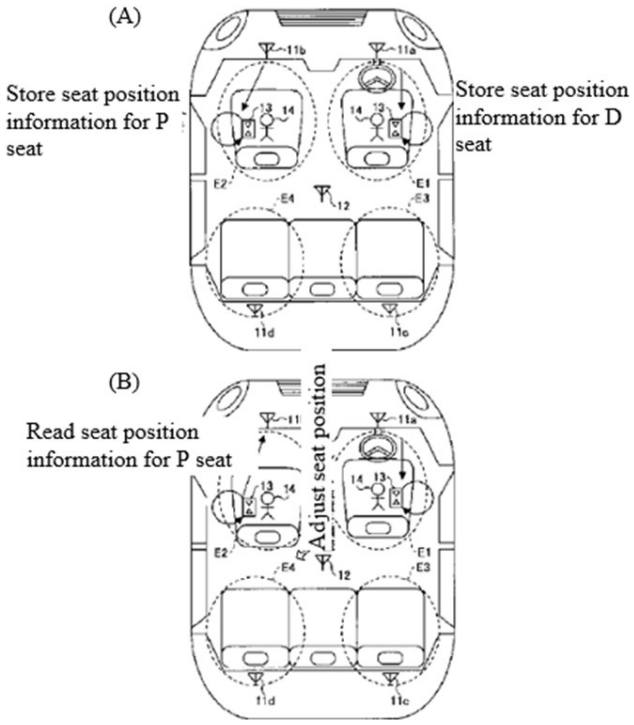
(Endo, Ex. 1024, [0011].)

123. Endo also discloses an automatic setting device or "automatic setting system 100 [that] utilizes IKS to detect whether the electronic key 13 exists for each seat position that can be adjusted." (Endo, Ex. 1024, [0012].)

124. Endo discloses an "automatic setting system 100" that "detects the seat (hereinafter referred to as 'electronic key existence seat') where the occupant 14 carrying the electronic key 13 is located." (Endo, Ex. 1024, [0012].) Endo further

discloses that the system "stores the seat position information set by occupant 14 for each electronic key existence seat." (Endo, Ex. 1024, [0015].) This system and functionality is illustrated in Figure 1, reproduced below.

[Fig. 1]

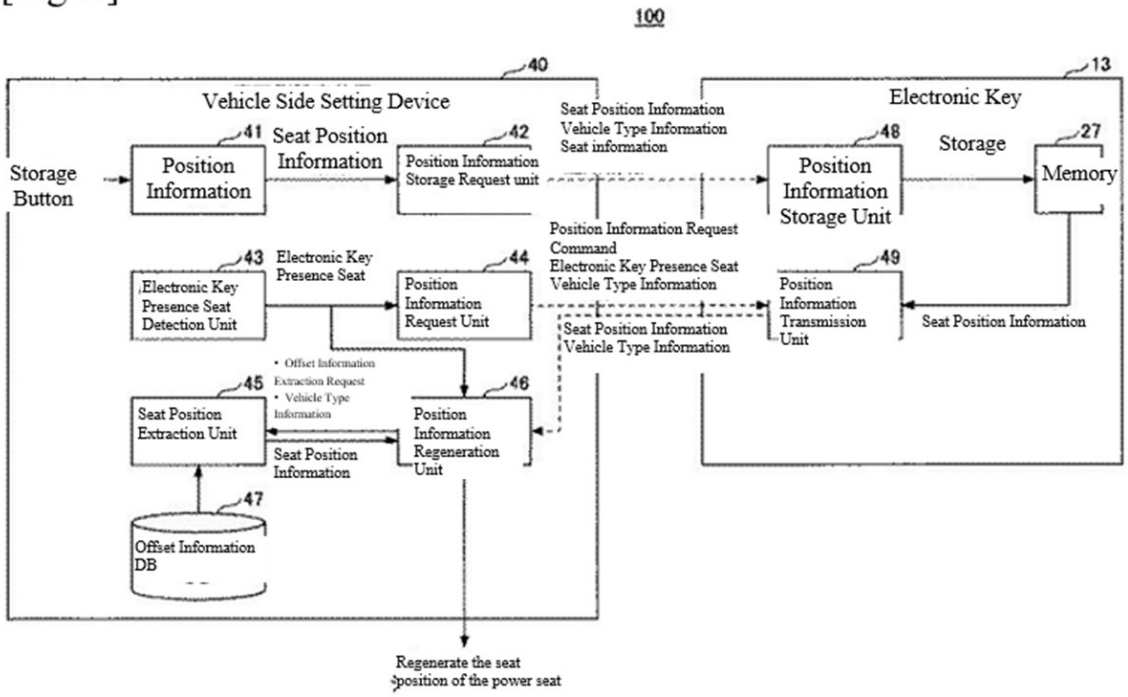


Endo, Ex. 1024, Fig. 1

125. Endo explains that "having the electronic key 13 store the seat position information, . . . [the system] allow[s] occupant 14 to automatically regenerate the [optimal] seat position" for the electronic key existence seat without requiring the occupant 14 to manually adjust the position. (Endo, Ex. 1024, [0017].)

126. Endo further explains that the system 100 comprises electronic control units ("matching ECU 21 and seat ECU 22") that "are embodied as computers equipped with a CPU, RAM, ROM, non-volatile memory 27, CAN communication section, input/output interface, and ASIC (Application Specific Integrated Circuit)." (Endo, Ex. 1024, [0022]-[0023].) With reference to Figure 3, Endo explains that the CPU of one or both of these ECUs may realize the functions of a vehicle side setting device 40. (*See* Endo, Ex. 1024, [0042], Fig. 3.)

[Fig. 3]



Endo, Ex. 1024, Fig. 3

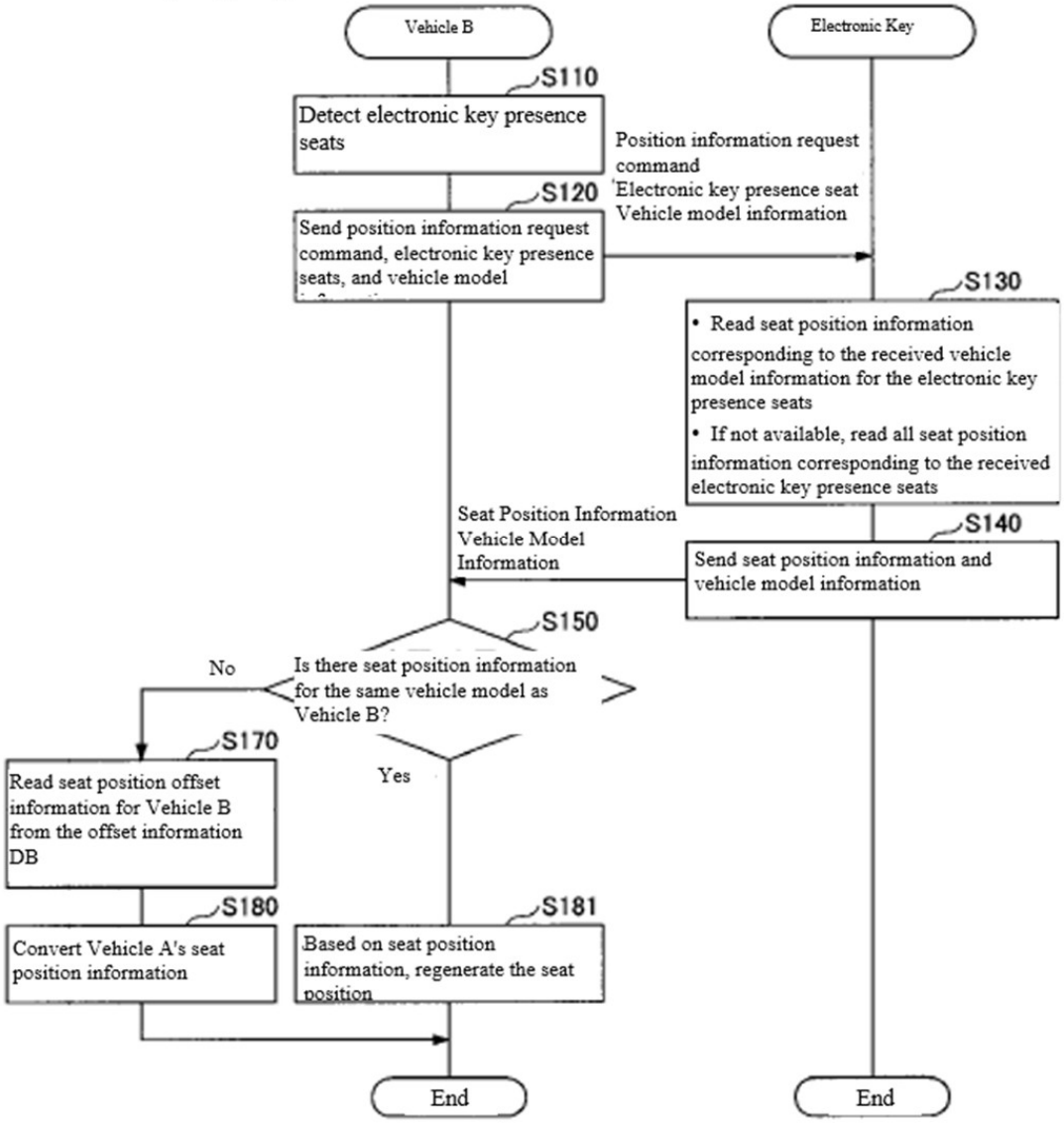
127. Endo discloses that the electronic key 13 stores the seat position information in the memory 27, which is a non-volatile memory such as flash memory: "The electronic key 13 in this embodiment stores the seat position

information, which will be described later, in memory 27. Memory 27 is a non-volatile memory such as flash memory." (Endo, Ex. 1024, [0035].) Endo explains that when the occupant 14 initiates saving the seat position, the seat position information is sent to the electronic key 13 with a command to store the information: "When occupant 14 saves the seat position information to the electronic key 13, the matching ECU 21 sends the seat position information to the electronic key 13 within the detection areas E1 to E4. The microcontroller 28 of the electronic key 13 determines from the received command that it is a command to store the seat position information, allowing the electronic key 13 to save the seat position information in memory 27." (Endo, Ex. 1024, [0035].) When the seat position information is to be regenerated, the electronic key 13 receives a command to send the seat position information: "the seat ECU 22 regenerates the seat position where occupant 14 is seated based on this seat position information. In addition, if the microcontroller 28 of the electronic key 13 determines that the received command is a command to send the seat position information, or if the operation switch 29 for sending the seat position information is activated, the electronic key 13 sends the seat position information to the matching ECU 21." (Endo, Ex. 1024, [0035].)

128. Endo explains that "the procedure for reproducing seat position based on the seat position information stored in the electronic key 13" begins with "detect[ing] the electronic key presence seat (S110)." (Endo, Ex. 1024, [0057]-

[0058].) Next, the system requests information specific to the electronic key existence seat from the memory 27 of the electronic key 13 (S120). (Endo, Ex. 1024, [0058]-[0059].) The electronic key 13 then sends seat position information and vehicle model information to the system (S140) which then determines whether there is seat position information for the instant vehicle type (S150). (Endo, Ex. 1024, [0059]-[0060].) If there is seat position information for the instant vehicle type, the system then regenerates the seat position based on the seat position information stored in the electronic key 13 (S181). (Endo, Ex. 1024, [0060], Fig. 7.)

[Fig. 7]



Endo, Ex. 1024, Fig. 7

B. U.S. Pub. No. 2007/0238491 A1 ("He" Ex. 1025)

129. He is a U.S. Patent Publication that was filed on March 31, 2006, and was published on October 11, 2007. (He, Ex. 1025, Cover.) I understand that He is prior art to all claims of the '296 Patent under 35 U.S.C. § 102(a)(1) because it published before the earliest claimed priority date of the '296 Patent.

130. He is directed to hands-free systems in vehicles that automatically establish connection between a wireless user device and a wireless vehicle system. (He, Ex. 1025, [0009].) He seeks to improve the operation of hands-free systems by receiving and handling "preferred settings of several users in a vehicle [in addition to] handl[ing] wireless connection with the wireless telephones for those users when in the vehicle." (He, Ex. 1025, [0003].)

131. With reference to Figure 1, He discloses a vehicle system 100 that includes "a controller 110, a profile selector . . . 140, a wireless vehicle system 150, and vehicle components 160." (He, Ex. 1025, [0015].) He explains that 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." (He, Ex. 1025, [0016].)

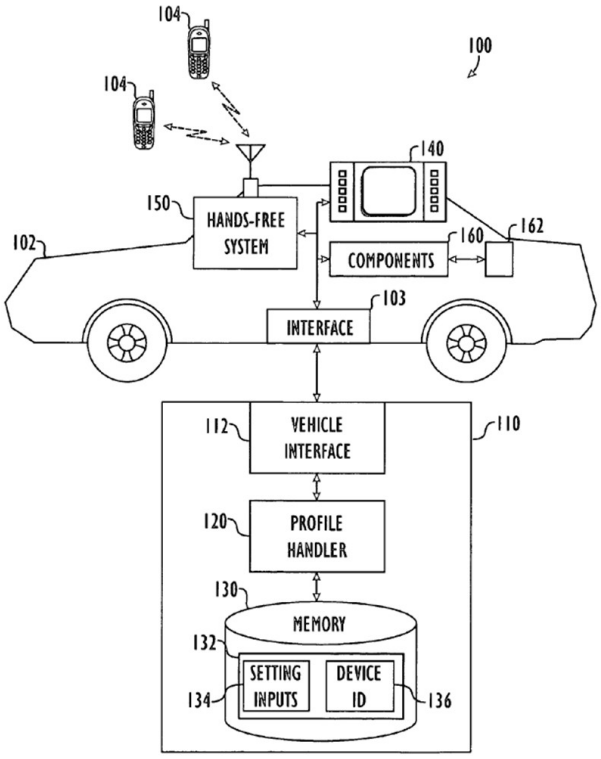


FIG. 1

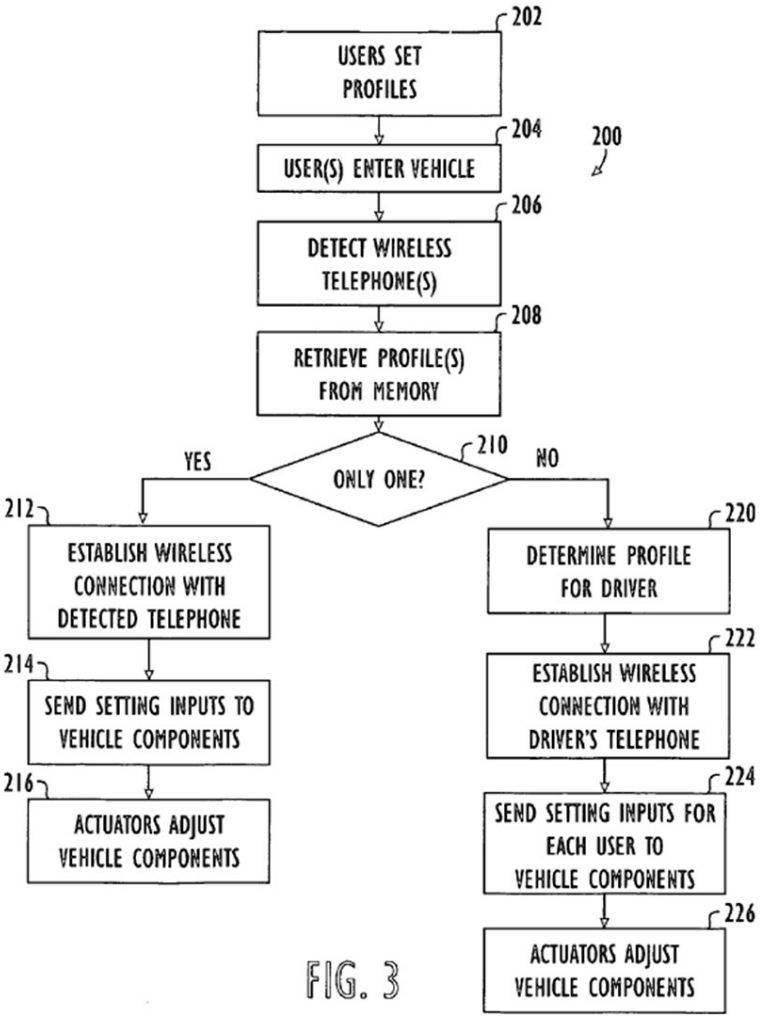
He, Ex. 1025, Fig. 1

132. For the user to set their preferred settings, He explains that "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." (He, Ex. 1025, [0021].)

133. He discloses the system may "use[] automated forms of operation rather than depending on manual selection by users with the user profile interface 140." (He, Ex. 1025, [0025].) He explains that "the vehicle system 100 automatically detects which recognized wireless telephones 104 are active in range of the hands-

free system 150, and the controller 110 uses the device IDs 134 from the detected telephones 104 to obtain associated user profiles 132 from memory 130." (He, Ex. 1025, [0025].) He further explains that "the 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." (He, Ex. 1025, [0025].)

134. With reference to Figure 3, He explains the automated operation steps beginning with "users set[ting] their profiles 132 by entering preferred setting inputs 134 and setting the device IDs 136." (He, Ex. 1025, [0026].) Then, when a user enters the vehicle 102 with an active telephone 104, "the hands-free system 150 detects the unique device IDs . . . and sends that information to the controller 110." (He, Ex. 1025, [0026].) Based on the information associated with the user's telephone 104, "the profile handler 120 at the controller 110 accesses the user profiles 132 stored in memory 130." (He, Ex. 1025, [0026].) 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." (He, Ex. 1025, [0027].)



He, Ex. 1025, Fig. 3

135. He clarifies that its disclosure may be modified and combined with other features, e.g., other prior art, disclosing that "the subject matter of the present disclosure is susceptible to various modifications and alternative forms." (He, Ex. 1025, [0008].) For example, He explains that, "[i]n addition to wireless telephones 104, it will be appreciated . . . that the vehicle system 100 can be used with other wireless user devices 104" and, "[i]n addition to hands-free systems 150, it will also

be appreciated that the vehicle system 100 can also be used with other wireless vehicle systems 150." (He, Ex. 1025, [0034].)

C. JP Pub. No. 2009/262654 A ("Suzuki" Ex. 1026)[17]

136. Suzuki is a Japanese patent publication that was filed on April 23, 2008, and published on November 12, 2009. (Suzuki, Ex. 1026, Cover.) I understand that Suzuki is prior art to all claims of the '296 Patent under 35 U.S.C. § 102(a)(1) because it was published before the earliest claimed priority date of the '296 Patent.

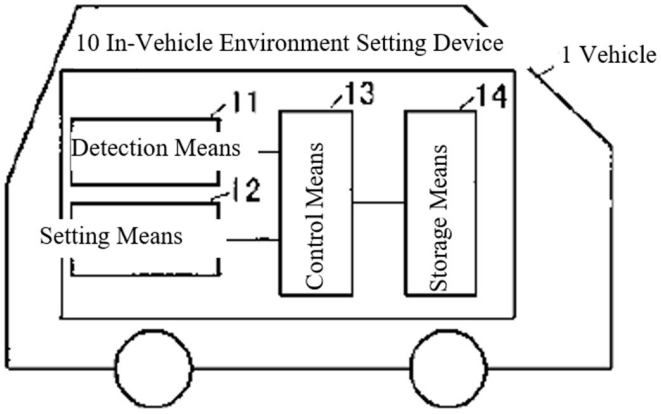
137. Suzuki is directed to a vehicle environment setting system. Specifically, Suzuki seeks to solve the issue with other vehicle systems that do not account for setting preferences differing among passengers and the fact that passengers may move to different seats: "when moving to a different seat after a break at a drive-in, the settings must be adjusted again." (Suzuki, Ex. 1026, [0003].) As such, 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." (Suzuki, Ex. 1026, [0004].) Suzuki explains that the effect of the invention is that "[w]hen a passenger with stored identifying

[17] This exhibit comprises a certified translation along with the original Japanese publication. Citations are directed to the certified translation.

information boards the vehicle, the in-vehicle environment can be automatically adjusted based on the stored conditions." (Suzuki, Ex. 1026, [0005].)

138. With reference to Figure 1, Suzuki discloses a vehicle equipped with a setting device 10 that includes a "detection means 11 for identifying the passengers," 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. (Suzuki, Ex. 1026, [0006], [0008]-[0009].)

[Fig. 1]



Suzuki, Ex. 1026, Fig. 1

139. Suzuki explains that the detection means 11 can take many forms, such as "load cells installed under each seat to measure the weight of a person sitting in the seat, cameras . . . to capture images of people's faces or corneas, thermography to measure body temperature . . ., body shape sensors," and more. (Suzuki, Ex. 1026, [0006].) Suzuki clarifies that "[t]hese multiple means of detection identify

information related to the passengers who have boarded the vehicle." (Suzuki, Ex. 1026, [0006].)

140. Suzuki further explains that if the identifying information 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." (Suzuki, Ex. 1026, [0009].)

141. Suzuki also explains:

> [B]y 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. For example, if the identification information for person A matches, it recognizes that the person who boarded is A. At the same time, the control means 13 reads the in-vehicle environment conditions associated with A and controls the setting means 12 based on these conditions, automatically setting the in-vehicle environment to conditions corresponding to A without any action required from A.

(Suzuki, Ex. 1026, [0010].)

142. In the situation where the environment is automatically set, Suzuki discloses that, "if the passenger re-adjusts the automatically set conditions, the data

in the storage means will be overwritten with the newly set conditions to ensure the latest settings are recorded." (Suzuki, Ex. 1026, [0010].)

VIII. Grounds for Challenge

A. Ground 1 – Endo Renders All Limitations of Claims 1–4, 6–11, 13–17, and 19–20 Obvious

1. Independent Claim 1

143. I have given each of the limitations of claim 1 a unique numerical identifier, as shown in the chart below:

U.S. Patent No. 9,147,296
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;

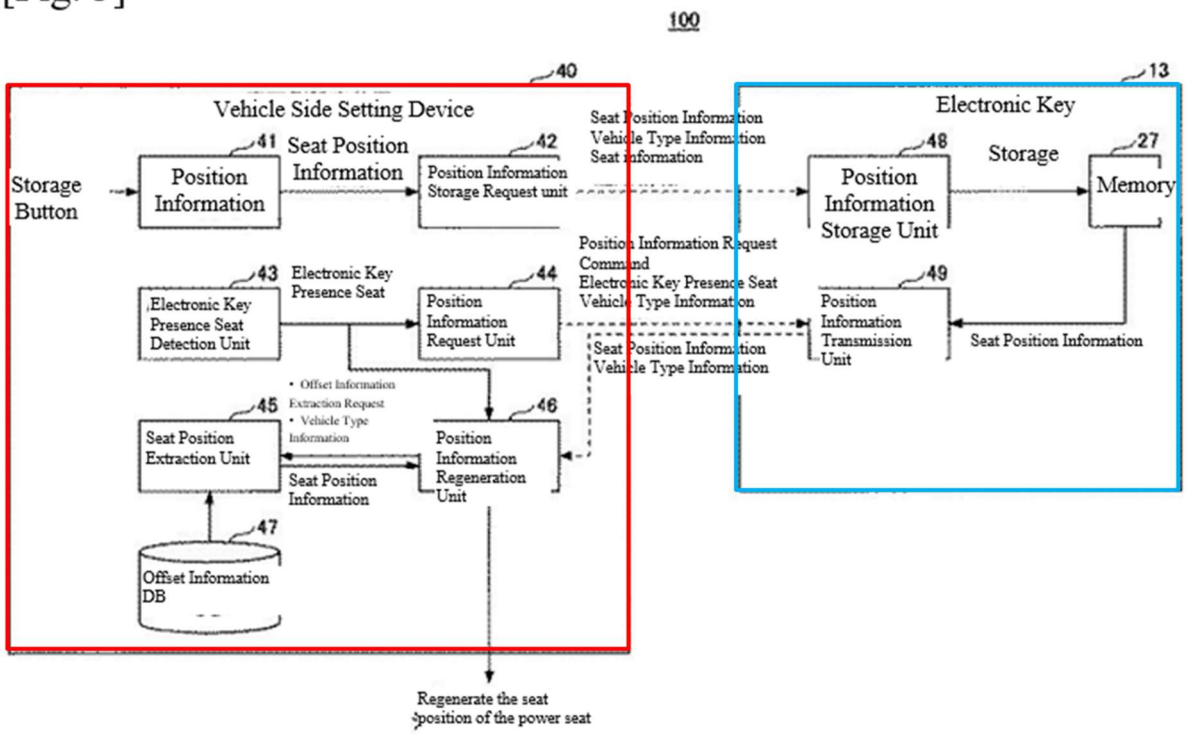
[1e] determining, based at least partially on the vehicle control settings, to adjust the at least one vehicle control associated with the location inside the vehicle; and
[1f] providing an adjustment output to a vehicle control system,
[1g] wherein the adjustment output is provided based at least partially 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.

1[pre] A method, comprising:

144. Endo discloses "an automatic setting device for a vehicle capable of setting the setting information for each occupant, as well as . . . an automatic setting method for a vehicle." (Endo, Ex. 1024, [0001].)

145. With reference to Figure 3 below, Endo discloses a vehicle automatic setting system 100, which includes a vehicle side setting device 40 (annotated in red) and an electronic key 13 (annotated in blue). (Endo, Ex. 1024, [0042].)

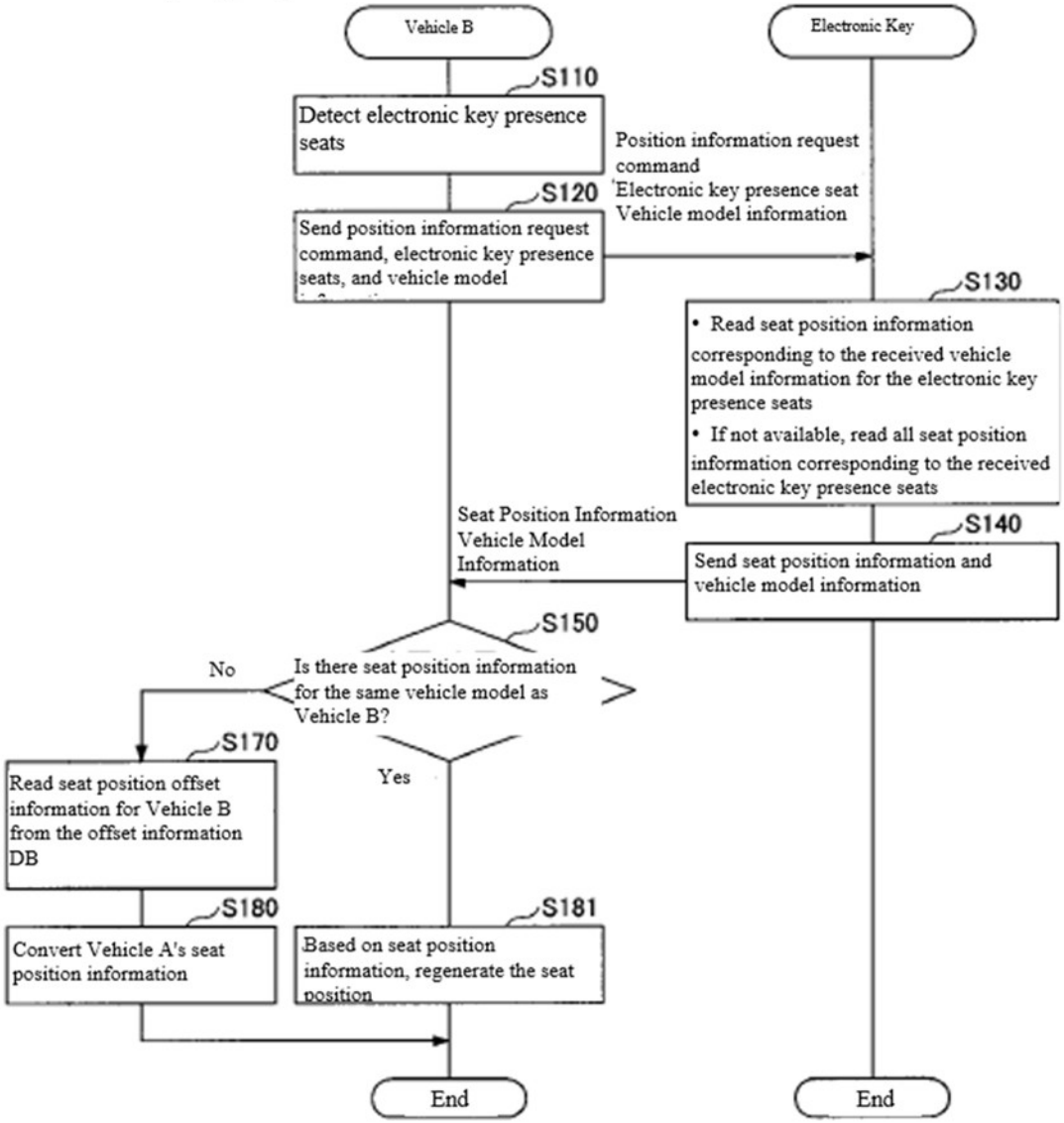
[Fig. 3]



Endo, Ex. 1024, Fig. 3 (Annotated)

146. With reference to Figure 7 below, Endo discloses a "flowchart of the procedure for reproducing the seat position based on the seat position information" stored in a user's electronic key 13. (Endo, Ex. 1024, [0057].) The procedure includes multiple steps S110–S181 that describe Endo's automatic setting method.

[Fig. 7]



Endo, Ex. 1024, Fig. 7

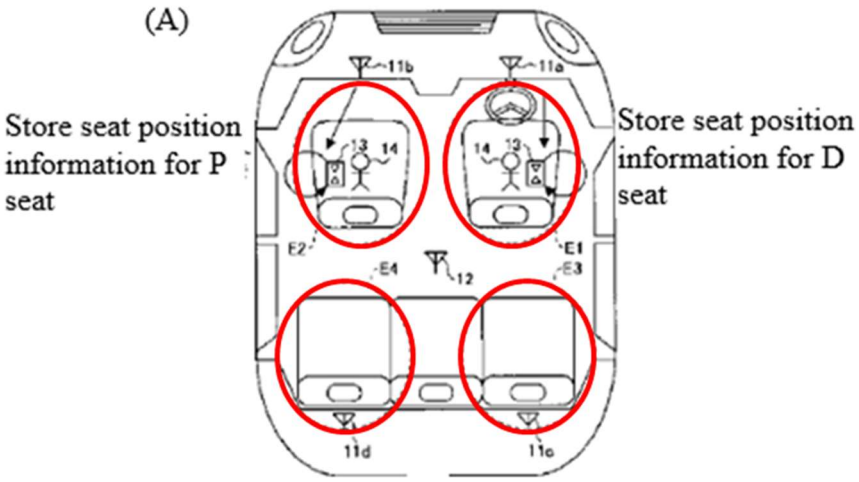
147. Thus, it is my opinion that Endo discloses a "*method*."

[1a] determining a location inside a vehicle associated with a user;

148. Endo discloses a hardware configuration of an automatic setting system 100 in a vehicle that includes antennas 11a to 11d, which are shown in Figure 1. (Endo, Ex. 1024, [0024].) With reference to Figure 1 below, each antenna 11 is

located near a seat in the vehicle and "[t]he automatic setting system 100 forms detection areas E1 to E4 corresponding to each antenna 11a to 11b." (Endo, Ex. 1024, [0024]-[0025].) Detection areas E1 to E4 are annotated in red below.

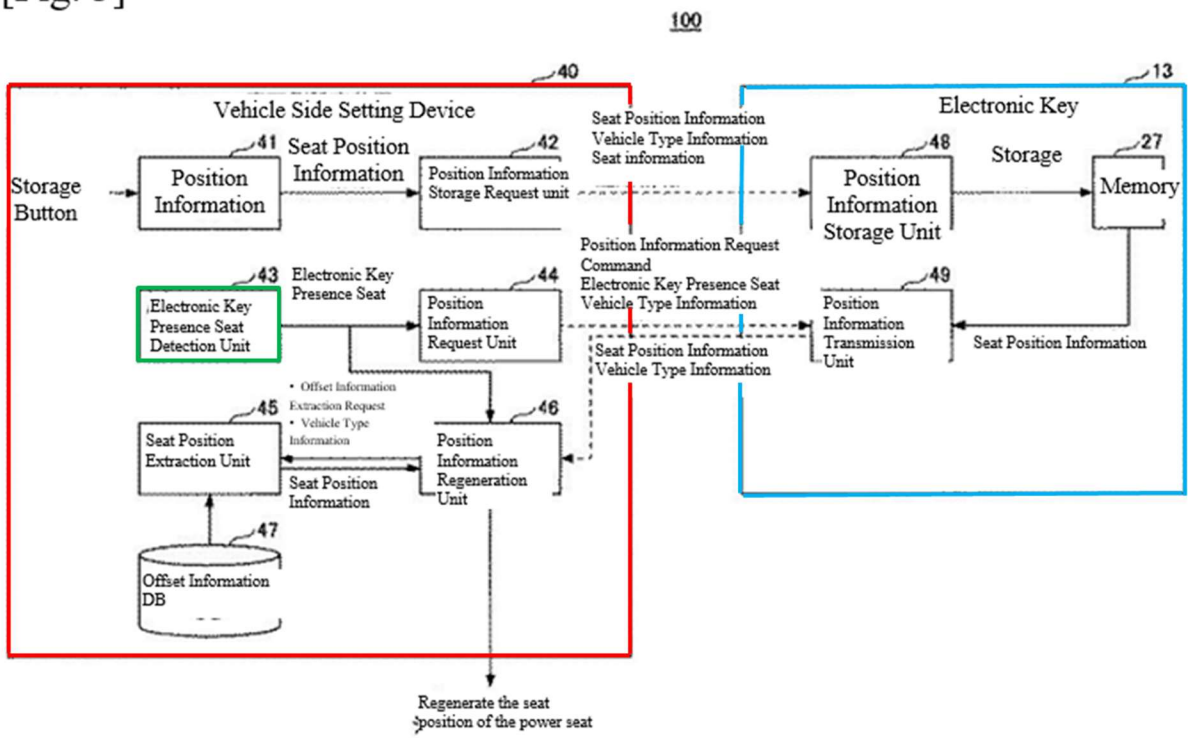
[Fig. 1]



Endo, Ex. 1024, Fig. 1A (Annotated)

149. With reference to Figure 3 below, Endo discloses that the vehicle side setting device 40 (annotated in red) includes an electronic key presence seat detection unit 43 (annotated in green).

[Fig. 3]



Endo, Ex. 1024, Fig. 3 (Annotated)

150. Endo explains that 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:

> For example, when the door is unlocked and the door opening is detected by the courtesy switch, the matching ECU 21 sends a request signal to the transmission circuit 23, and the transmission circuit 23 amplifies the carrier wave modulated by the request signal and intermittently transmits the request signal from antennas 11a to 11d. The reach of the request signal becomes the detection areas E1 to E4. "Intermittently" means that detection areas E1 to E4 are formed not simultaneously but by time-shifting each detection area E1 to E4.

> When the electronic key 13 exists in the detection areas E1 to E4, the electronic key 13 responds to the request signal by sending its stored ID code A.
>
> The reception circuit 24 is connected to antenna 12. Antenna 12 is a common receiving antenna for the ID code signals transmitted by the electronic key 13 in each detection area E1 to E4.

(Endo, Ex. 1024, [0026]-[0028].)

151. Then the seat detection unit 43 detects "the seats corresponding to the detected areas E1 to E4 where ID code signals are returned:"

> [T]he electronic key presence seat detection unit 43 of the vehicle-side setting device 40 detects the seat where electronic key 13 is present. As described above, the electronic key presence seat detection unit 43 sends request signals in order from antennas 11a to 11d and detects the seats corresponding to the detected areas E1 to E4 where ID code signals are returned as electronic key presence seats. The timing for detecting the electronic key presence seat might be when occupant 14 enters the vehicle and closes the door.

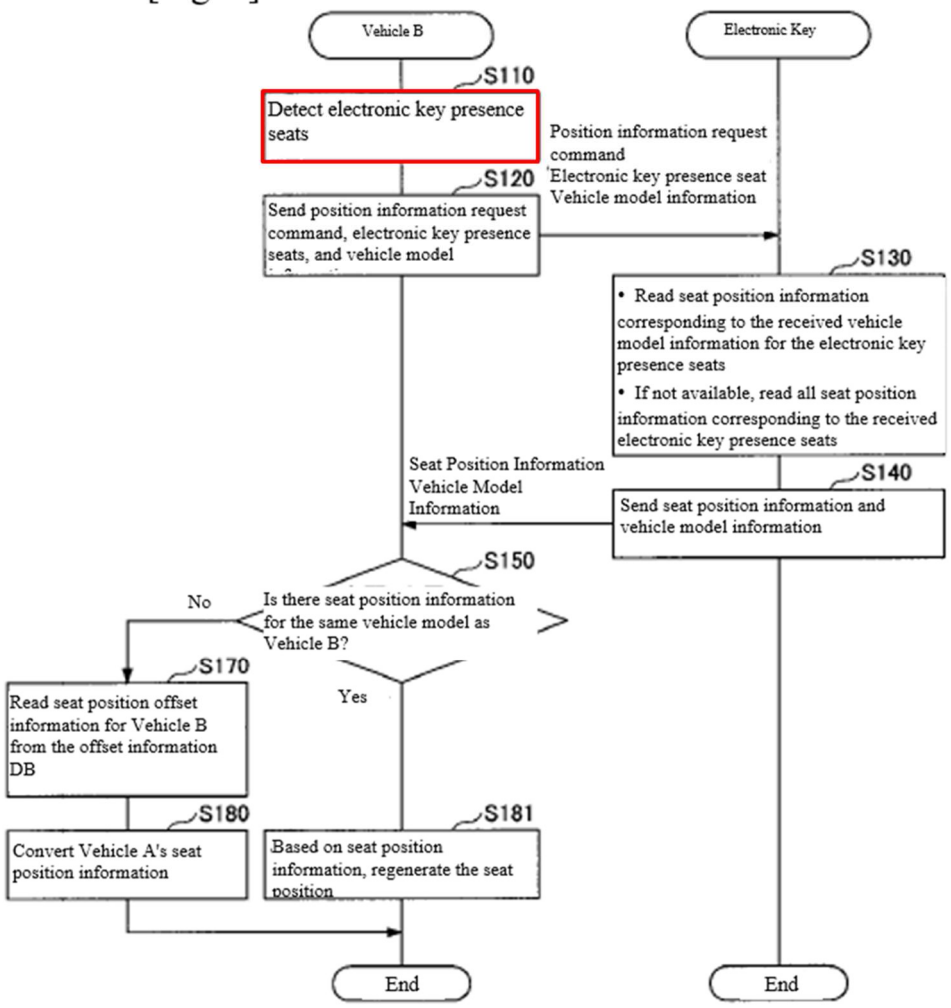
(Endo, Ex. 1024, [0046].)

152. Endo thus describes determining a location of the electronic key 13 within a distinct location (E1–E4) of the vehicle. A PHOSITA would have understood that the electronic key 13 is associated with the user for which it stores specific setting information. Indeed, Endo discloses that the automatic setting system 100 "stores the seat position information" and/or "preferred air conditioning

settings" associated with a user of "each electronic key existence seat." (Endo, Ex. 1024, [0015], [0096], [0104].) Additionally, the sensed locations represent different seating locations within the vehicle. Therefore, a PHOSITA would have understood that when a particular seat is occupied by a user with that user's electronic key, each detected area E1-E4 will represent a "*location inside a vehicle associated with a user.*"

153. Endo describes this determination with reference to S110 of Figure 7 annotated in red below, e.g., "[f]irst, the electronic key presence seat detection unit 43 detects the electronic key presence seat (S110)." (Endo, Ex. 1024, [0058].)

[Fig. 7]



Endo, Ex. 1024, Fig. 3 (Annotated)

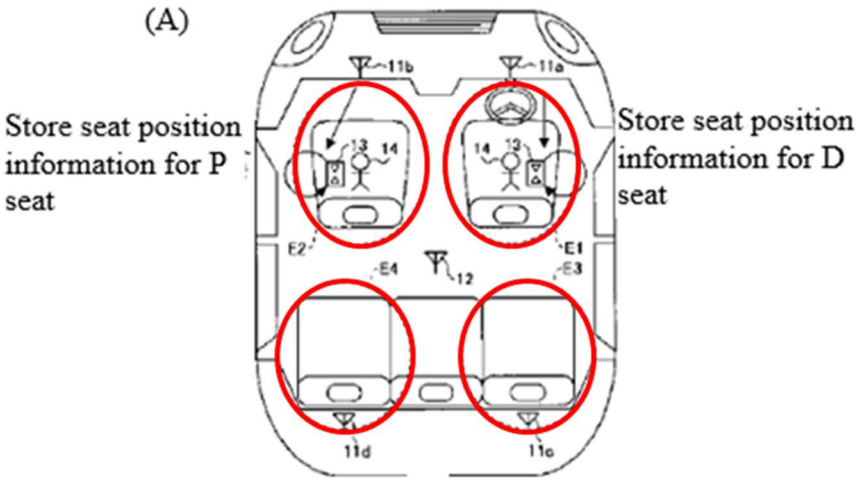
154. Thus, it is my opinion that Endo renders the limitation "*determining a location inside a vehicle associated with a user* [areas E1 to E4 where the electronic key 14 is present]" of claim 1 obvious.

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

155. With reference to Figure 1, Endo explains that the automatic setting system 100 utilizes these detection areas E1 to E4 "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." (Endo, Ex. 1024, [0012].)

[Fig. 1]



Endo, Ex. 1024, Fig. 1 (Annotated)

156. Endo further discloses that the automatic setting system 100 "stores the seat position information" and/or "preferred air conditioning settings" for "each electronic key existence seat." (Endo, Ex. 1024, [0015], [0096], [0104].) 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. (Endo, Ex. 1024, [0012].)

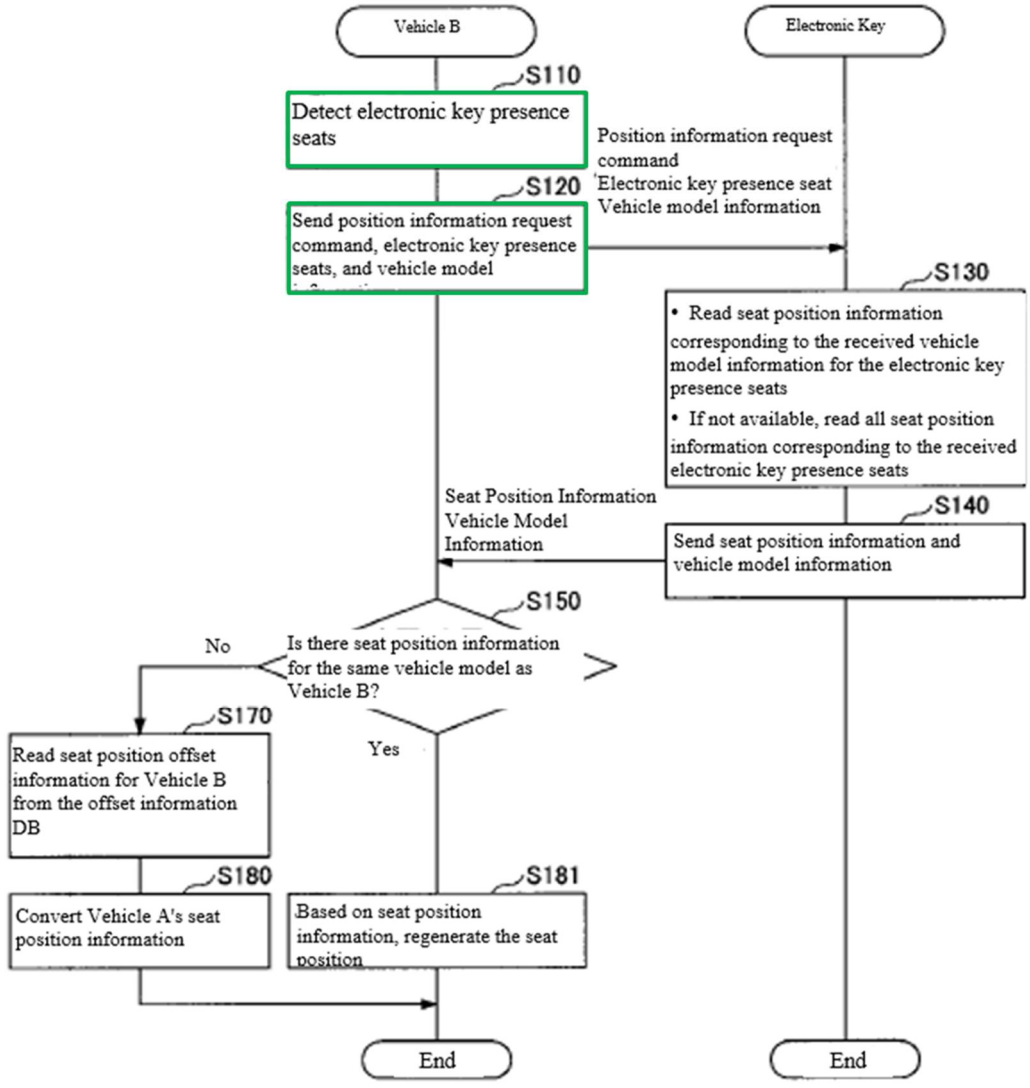
157. With reference to the method depicted in Figure 7, Endo discloses:

First, the electronic key presence seat detection unit 43 detects the electronic key presence seat (S110). The position information request unit 44 sends the position information request command, electronic key presence seat, and vehicle model information to electronic key 13 (S120).

(Endo, Ex. 1024, [0058].)

These two steps are annotated in green below.

[Fig. 7]



Endo, Ex. 1024, Fig. 7 (Annotated)

158. Thus, a PHOSITA would have understood that Endo teaches that 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 [a vehicle control] "associated" with the electronic presence of the key in a particular seat [location inside the vehicle]. (Endo, Ex. 1024, [0058]-[0059].) In view of these teachings, a PHOSITA would have understood that Endo teaches the automatic setting system 100 makes a determination that there are vehicle controls for adjusting the seat position associated with the electronic key existence seat immediately upon determining the electronic key presence seat.

159. Thus, it is my opinion that Endo renders the limitation "*determining at least one vehicle control* [controls for seat position] *associated with the location inside the vehicle* [electronic key presence seat]" of claim 1 obvious.

[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;

160. Endo discloses that "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:

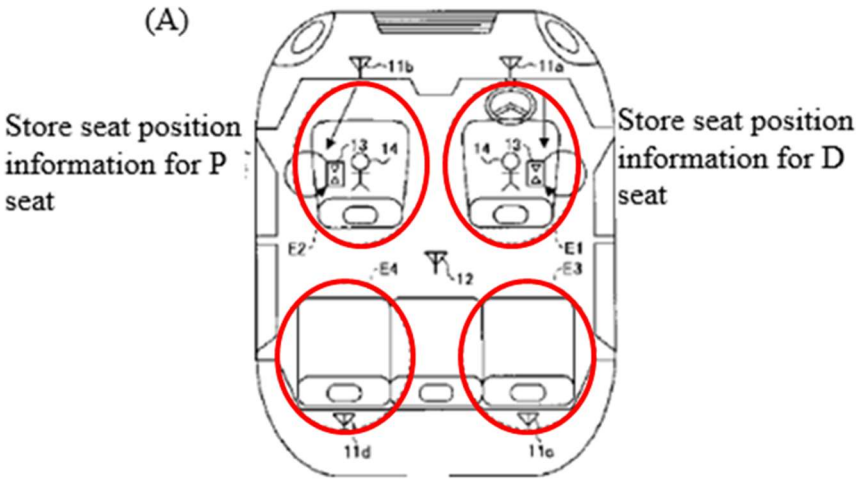
> For example, when the door is unlocked and the door opening is detected by the courtesy switch, the matching ECU 21 sends a request signal to the transmission circuit 23, and the transmission circuit 23 amplifies the carrier wave modulated by the request signal and intermittently transmits the request signal from antennas 11a to 11d. The reach of the request signal becomes the detection areas E1 to E4. "Intermittently" means that detection areas E1 to E4 are formed not simultaneously but by time-shifting each detection area E1 to E4.
>
> When the electronic key 13 exists in the detection areas E1 to E4, the electronic key 13 responds to the request signal by sending its stored ID code A.

(Endo, Ex. 1024, [0026]-[0027].)

161. Endo describes initiating device discovery in response to a trigger event, e.g., a courtesy switch signal that indicates the presence of a user within the interior of the vehicle. Then, as I described with reference to claim [1a], 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. (Endo, 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." (Endo, Ex. 1024, [0046].)

162. As shown below, the seating and detected key is disclosed as being located inside the vehicle at the areas E1, E2, E3 or E4.

[Fig. 1]



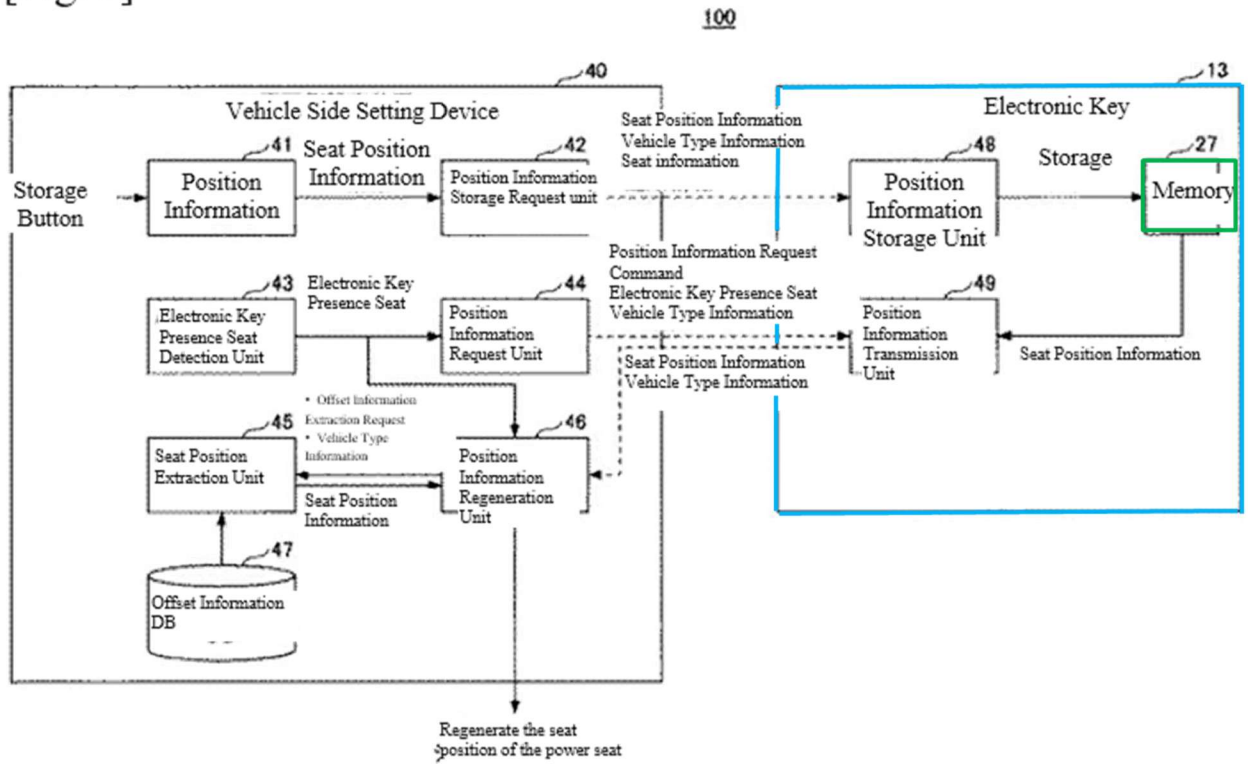
Endo, Ex. 1024, Fig. 1 (Annotated)

163. Thus, it is my opinion that Endo renders the limitation "*determining a 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* [electronic key 13] *in an area of the vehicle* [the interior of the vehicle, including areas E1 to E4]" of claim 1 obvious.

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

164. As previously mentioned, Endo discloses that the automatic setting system 100 includes two primary components: the vehicle side setting device 40 and the electronic key 13. As shown in Figure 3 below, the electronic key 13 (annotated in blue) includes memory 27 (annotated in green). Also shown is that the vehicle side setting device 40 includes a position information request unit 44 and a position information regeneration unit 46.

[Fig. 3]



Endo, Ex. 1024, Fig. 3 (Annotated)

165. Endo explains that "[t]he electronic key 13 . . . stores the seat position information . . . in [the] memory 27." (Endo, Ex. 1024, [0035].) Indeed, Endo teaches

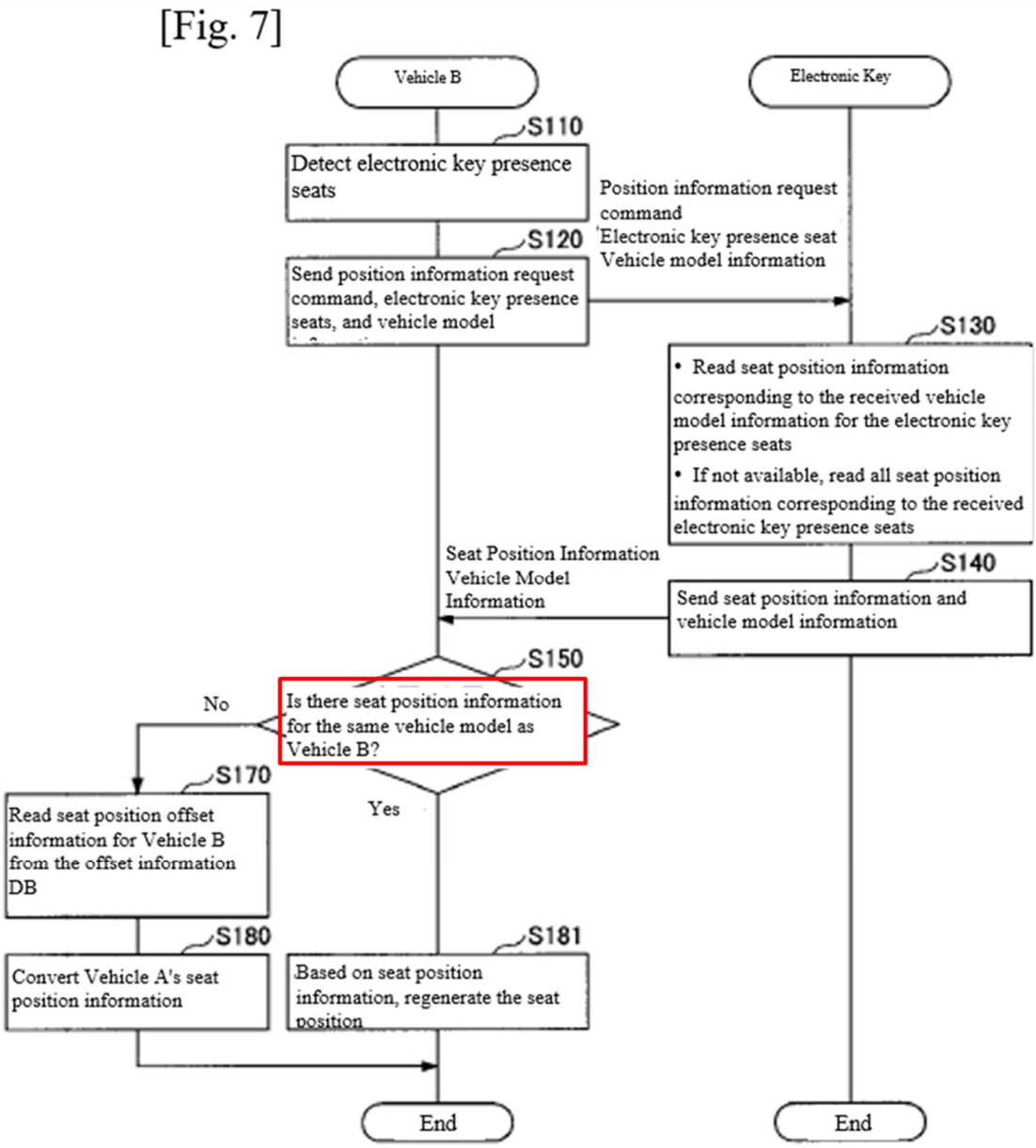
that there is a "storage button for ***users to save the seat position information*** to the electronic key 13 and as a regeneration button 38 to send the seat position information to the automatic setting system 100." (Endo, Ex. 1024, [0034].) Thus, a PHOSITA would have understood that Endo teaches storing seat position information (a vehicle control setting) for a particular user, i.e., the user utilizing the storage button to save their seat position.

166. Endo further explains that after "the electronic key presence seat detection unit 43 of the vehicle-side setting device 40 detects the seat where 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. (Endo, 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. (Endo, Ex. 1024, [0047]-[0048].)

167. A PHOSITA would have understood that Endo's memory 27, where the occupant 14's seat position information is stored, is a "*user profile memory*" because it is a repository of information associated with a user that can provide adjustment information for vehicle features. 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*[]."

168. Next, Endo explains that "[t]he position information reproduction unit 46 refers to the vehicle model information [from the memory 27] and determines whether the seat position information transmitted corresponds to the same vehicle model." (Endo, Ex. 1024, [0049].) Therefore, a PHOSITA would have understood that step S150 of the method depicted in Figure 7 (annotated in red below) includes referring to the user's seat position settings stored in the memory 27 of the user's electronic key 13.



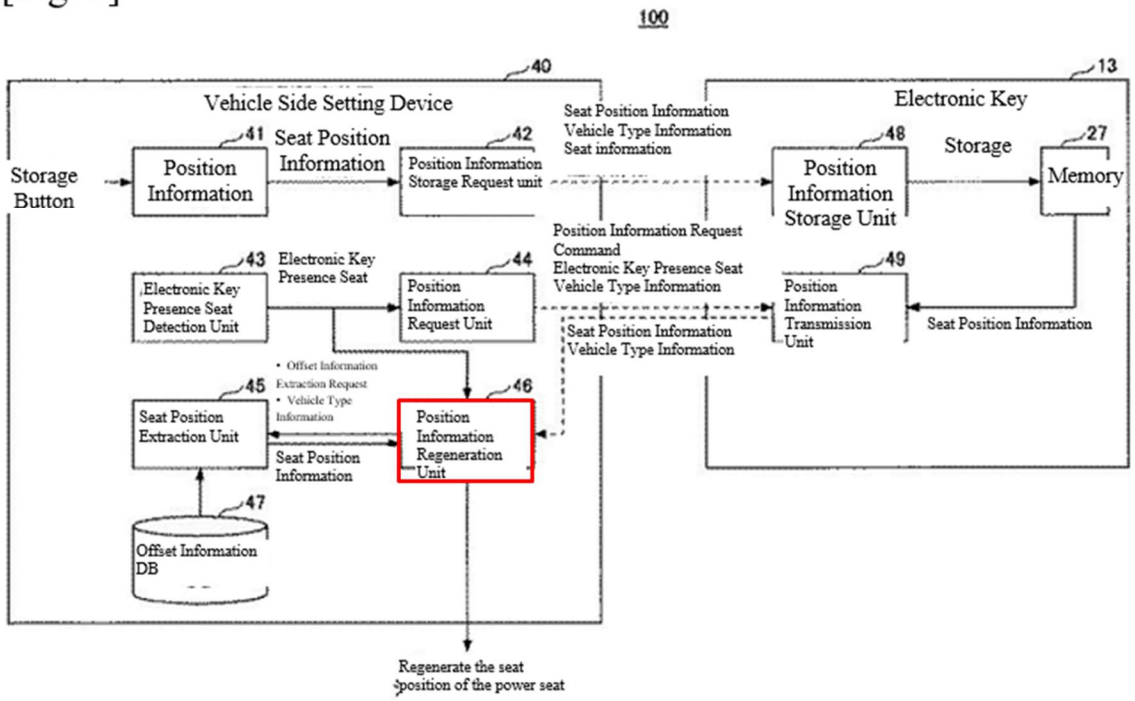
Endo, Ex. 1024, Fig. 7 (Annotated)

169. Thus, it is my opinion that Endo renders the limitation "*referring to a user profile memory associated with the user* [the memory 27 in occupant 14's electronic key 13] *for vehicle control settings* [e.g., seat position information]" of claim 1 obvious.

[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

170. As I previously explained and with reference to Figure 3 below, Endo discloses that the vehicle side setting device 40 of the automatic setting system 100 includes a position information regeneration unit 46 (annotated in red).

[Fig. 3]



Endo, Ex. 1024, Fig. 3 (Annotated)

171. Endo explains that in some instances, the memory 27 of the electronic key 13 may not have stored seat position information for the same vehicle type that the occupant 14 is riding. (Endo, Ex. 1024, [0048].) Endo also explains that "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. (Endo, Ex. 1024, [0048].)

172. As previously mentioned, Endo discloses that "[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." (Endo, Ex. 1024, [0049].)

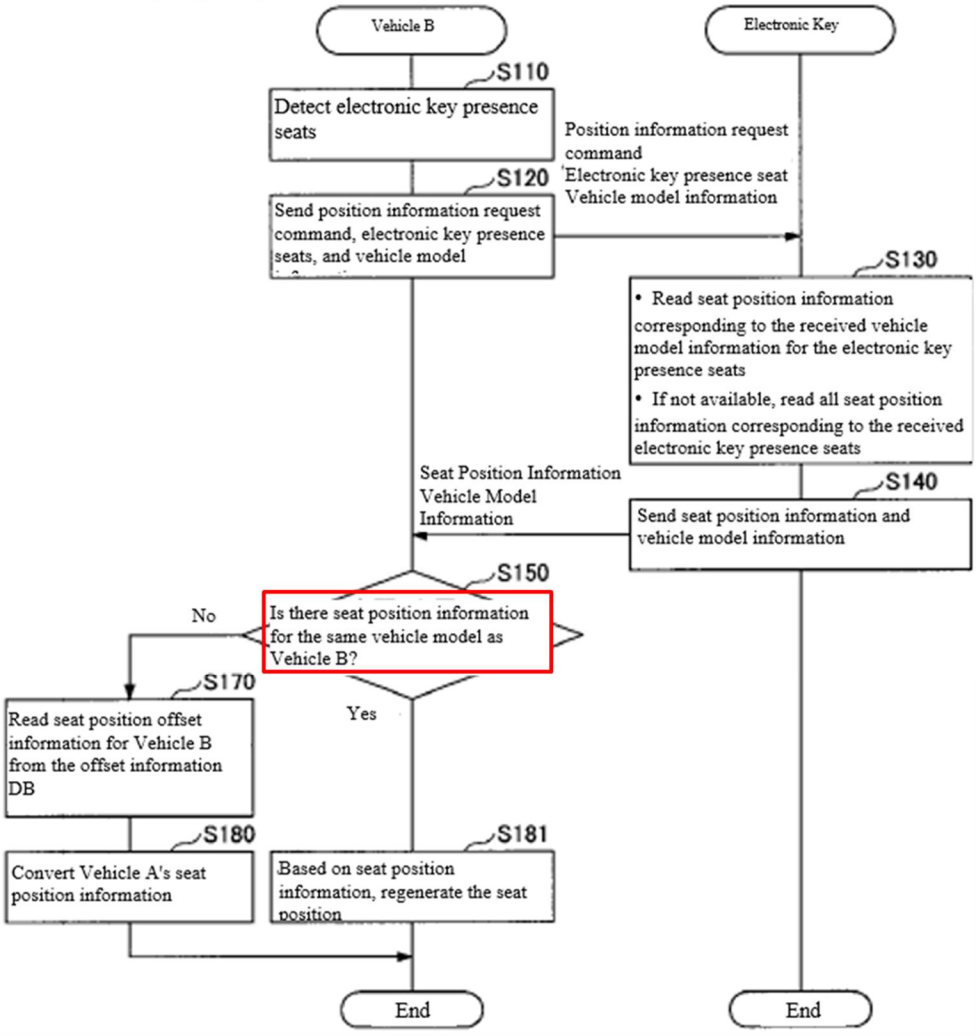
173. Endo further discloses regenerating a seat position based on the location of the seat in the vehicle:

> As described above, the automatic setting system 100 of this embodiment **can regenerate the seat position according to the seated position by storing the seat position information corresponding to the seat information in electronic key 13, even when occupant 14 is seated in the P seat of vehicle B**. In addition, **by storing the seat position information in electronic key 13, it is possible to regenerate the seat position according to the seated position even in vehicle B**, which the occupant has never ridden, as long as the vehicle model is the same. Furthermore, even when riding a vehicle B of a type that the occupant has never been in, the seat position can be regenerated according to the seated position by converting the seat position information.

(Endo, Ex. 1024, [0062].)

174. 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 makes a determination of whether to adjust the seat position. This determination occurs at step S150, annotated in red in the method depicted in Figure 7 below.

[Fig. 7]



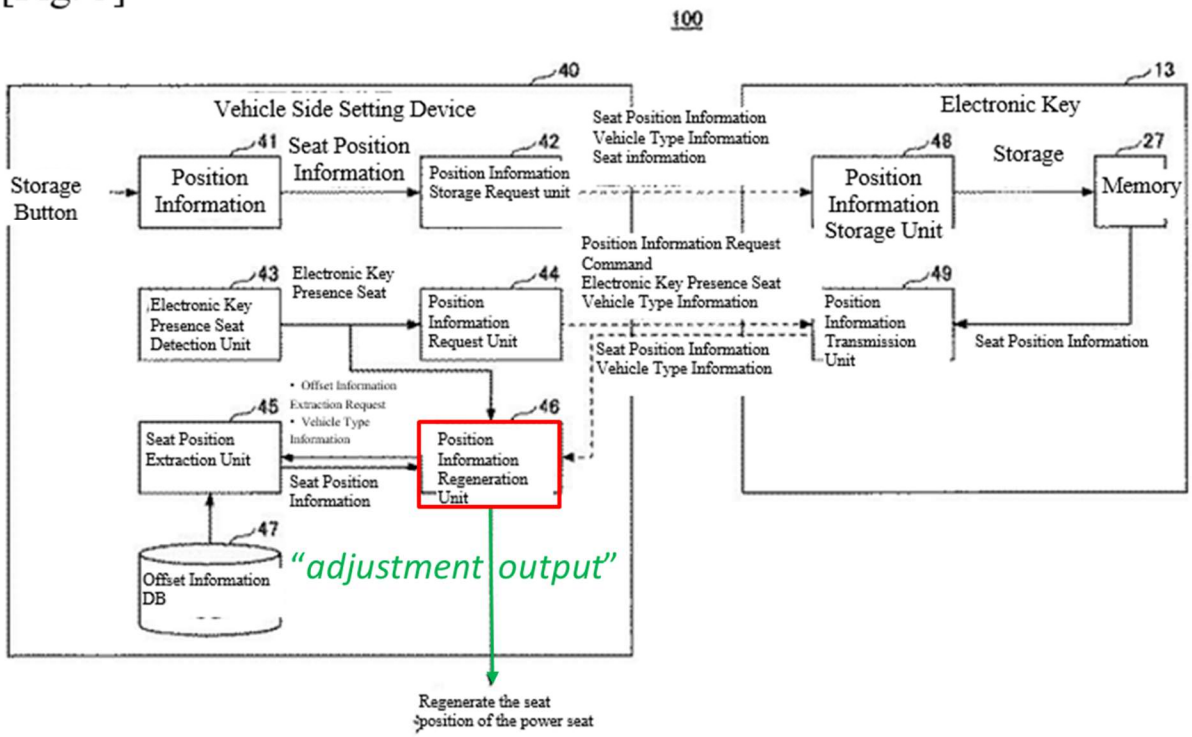
Endo, Ex. 1024, Fig. 7 (Annotated)

175. Thus, it is my opinion that Endo renders the limitation "*determining, based at least partially on the vehicle control settings* [seat position information and associated vehicle model information]*, to adjust the at least one vehicle control* [seat position] *associated with the location inside the vehicle* [electronic key presence seat at a particular seat]" of claim 1 obvious.

[1f] providing an adjustment output to a vehicle control system,

176. As previously mentioned and with reference to Figure 3, Endo discloses that "[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." (Endo, 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." (Endo, Ex. 1024, [0049].)

[Fig. 3]



Endo, Ex. 1024, Fig. 3 (Annotated)

177. Endo further discloses transmitting seat position information to vehicle control system:

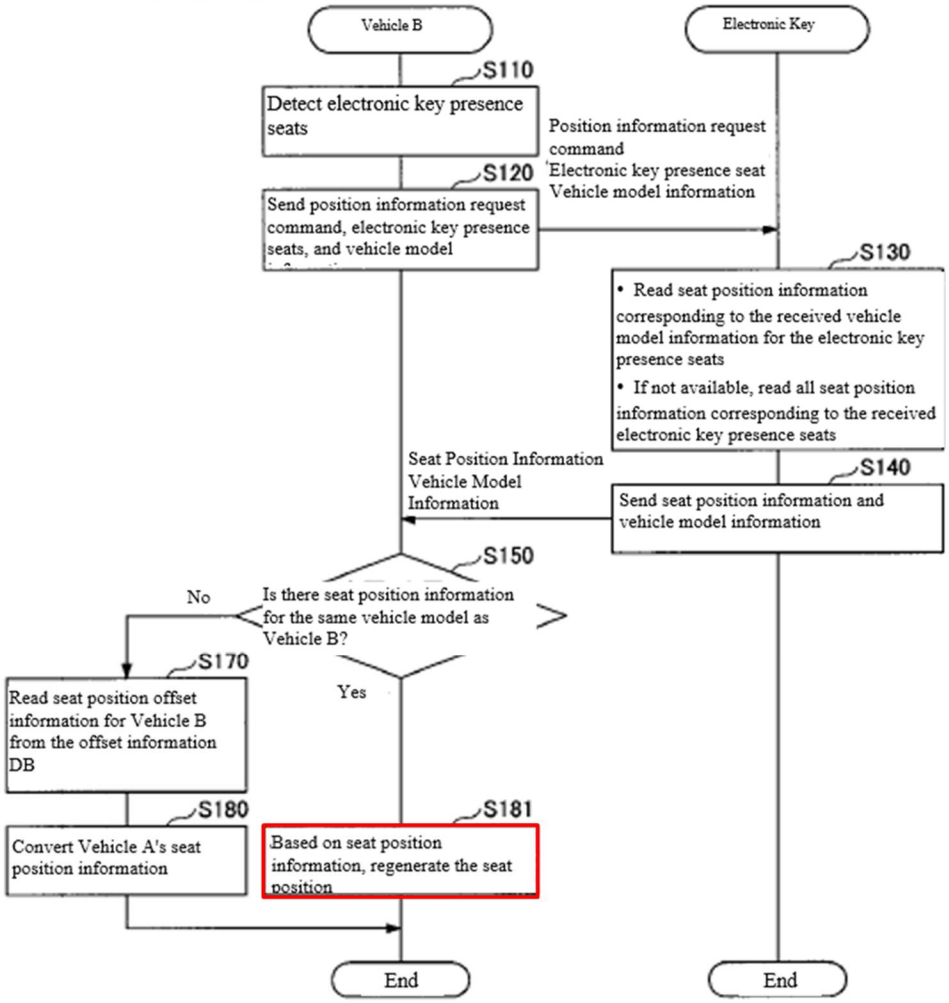
> The position information transmission unit 49 of electronic key 13 reads the seat position information corresponding to the received vehicle model information and electronic key presence seat from memory 27 (S130). If memory 27 does not store the seat position information associated with the received vehicle model information, specifically the vehicle model information of vehicle B corresponding to the electronic key presence seat, the position information transmission unit 49 reads all (or one or more) seat position information associated with the received electronic key presence seat. Then, **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).

(Endo, Ex. 1024, [0059].)

178. A PHOSITA would have understood that regenerating the seat position would include "*providing an adjustment output to a vehicle control system*" to signal the seat for adjustment. This corresponds with step S181, annotated in red in the method depicted by the flowchart of Figure 7 below.

[Fig. 7]



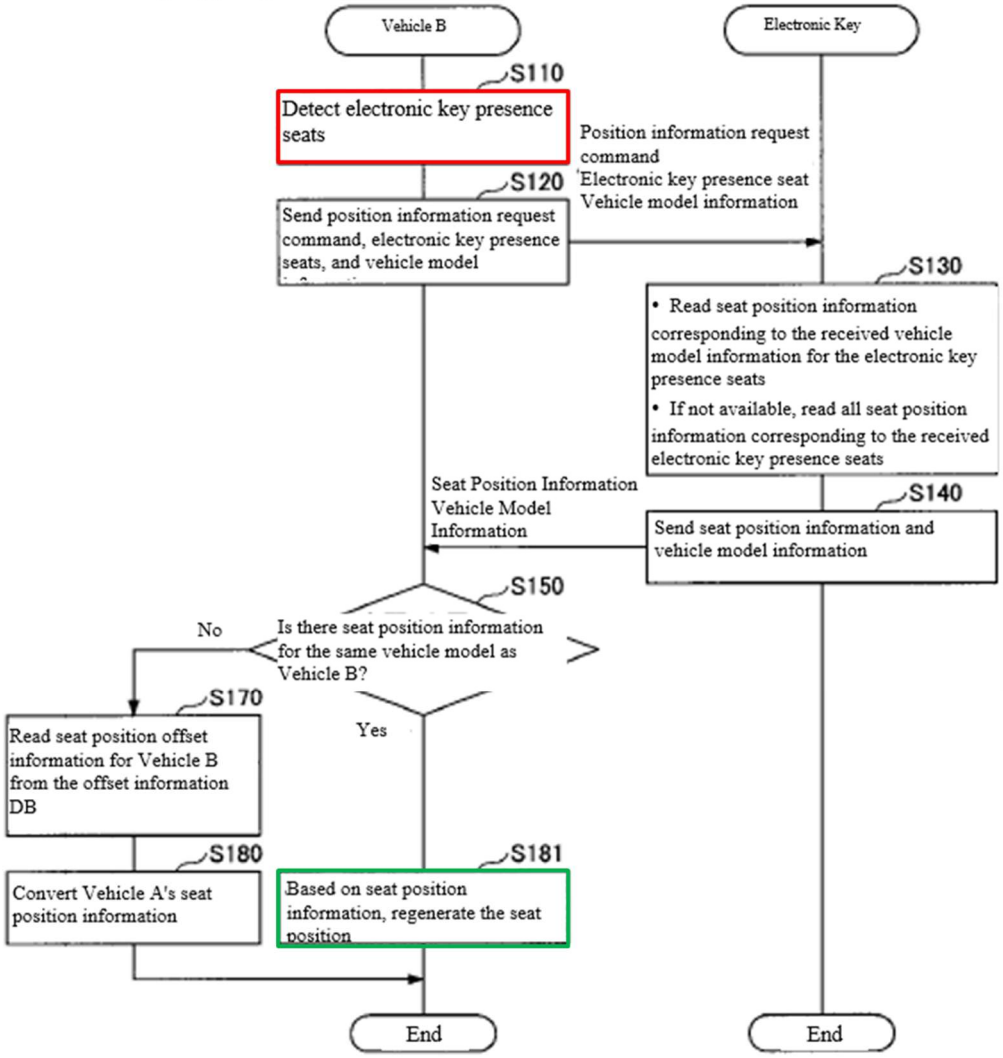
Endo, Ex. 1024, Fig. 7 (Annotated)

179. Thus, it is my opinion that Endo renders the limitation "*providing an adjustment output to a vehicle control system*" of claim 1 obvious.

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

180. As I mentioned in my analysis of limitation [1f] above, Endo discloses that the automatic setting system 100 "regenerates the seat position based on the received seat position information" (Endo, Ex. 1024, [0049],) which a PHOSITA would have understood involves providing an adjustment output to the seat for adjustment. Endo further discloses "the electronic key presence seat detection unit 43 detects the electronic key presence seat (S110)." (Endo, 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]



Endo, Ex. 1024, Fig. 7 (Annotated)

181. While the seat position is regenerated based partially on the seat position information/vehicle control settings as shown in S181 of Figure 7 above, it is also regenerated based on determining that the user is present in that seat. Endo discloses an exemplary scenario: "When 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." (Endo, Ex. 1024, [0016], *see also* Endo, Ex. 1024, [0062].)

182. Endo further discloses regenerating a seat position based on a stored seat location of the seat in the vehicle:

> As described above, the automatic setting system 100 of this embodiment **can regenerate the seat position according to the seated position by storing the seat position information corresponding to the seat information in electronic key 13, even when occupant 14 is seated in the P seat of vehicle B**. In addition, **by storing the seat position information in electronic key 13, it is possible to regenerate the seat position according to the seated position even in vehicle B**, which the occupant has never ridden, as long as the vehicle model is the same. Furthermore, even when riding a vehicle B of a type that the occupant has never been in, the seat position can be regenerated according to the seated position by converting the seat position information.

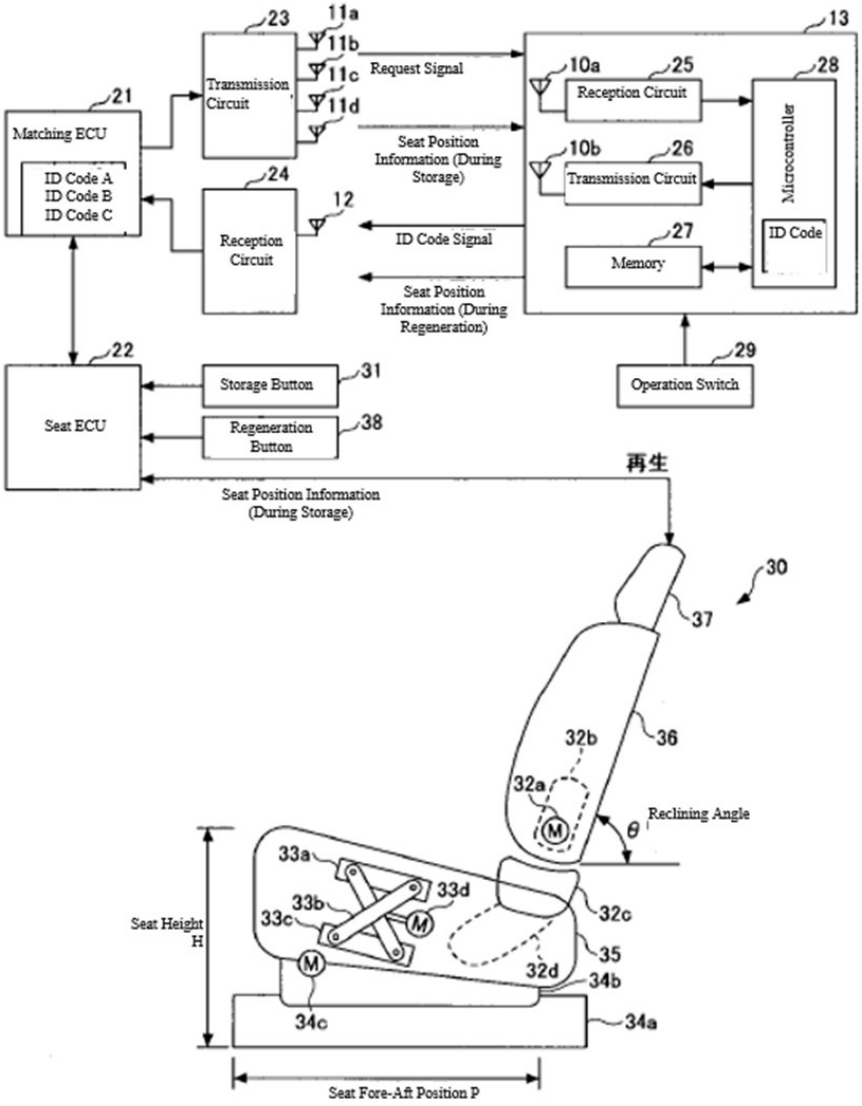
(Endo, Ex. 1024, [0062].)

183. Thus, it is my opinion that Endo renders the limitation "*providing an adjustment output to a vehicle control system, wherein the adjustment output is provided based at least partially on determining the user is present in the location inside the vehicle* [detecting the electronic key existence seat according to the seating position of occupant 14]" of claim 1 obvious.

[1h] wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle.

184. Endo discloses that the seat ECU 22 of the vehicle control system 100 "regenerates the seat position where occupant 14 is seated based on this seat position information" that is received form the electronic key 13. (Endo, Ex. 1024, [0035].) With reference to Figure 2 below, Endo discloses that "[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. In addition, it may also control the position of the headrest." (Endo, Ex. 1024, [0036].)

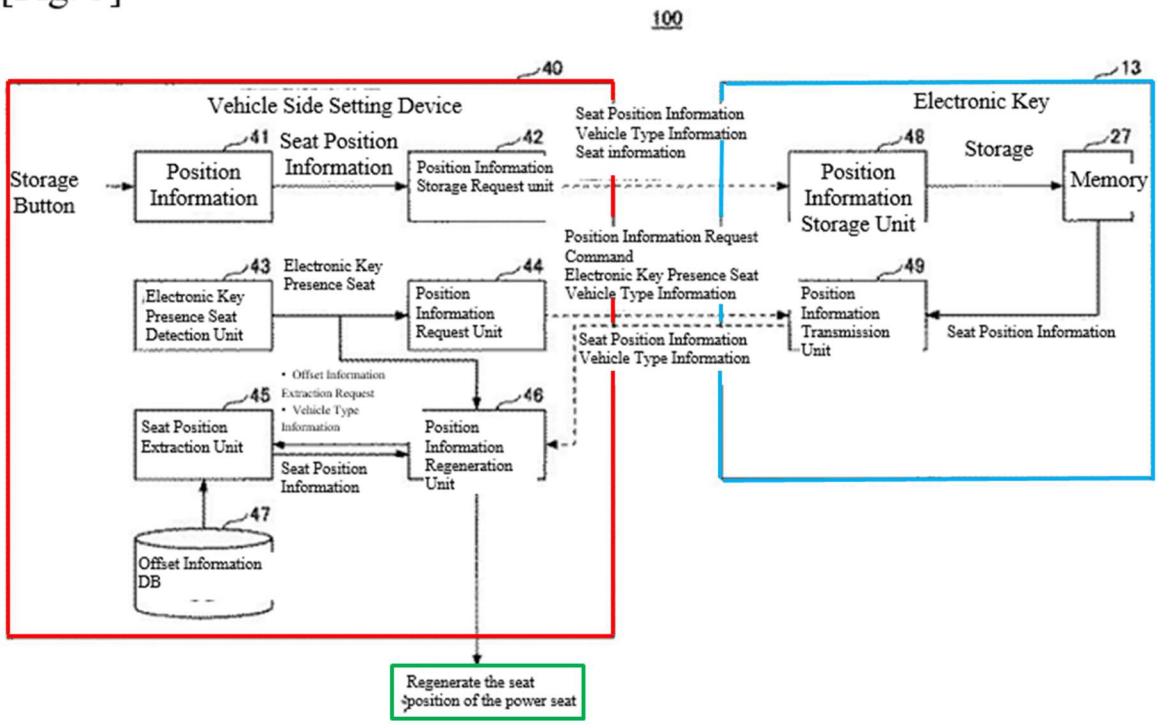
[Fig. 2]



Endo, Ex. 1024, Fig. 2

185. Endo further discloses "[r]egenerat[ing] the seat position of the power seat" with reference to Figure 3 as annotated in green below:

[Fig. 3]



Endo, Ex. 1024, Fig. 3 (Annotated)

186. Thus, it is my opinion that Endo renders the limitation "*wherein the vehicle control system is adapted to control the at least one vehicle control* [seat position] *associated with the location inside the vehicle* [electronic key existence seat]" of claim 1 obvious.

2. Dependent Claims 2–4, and 6

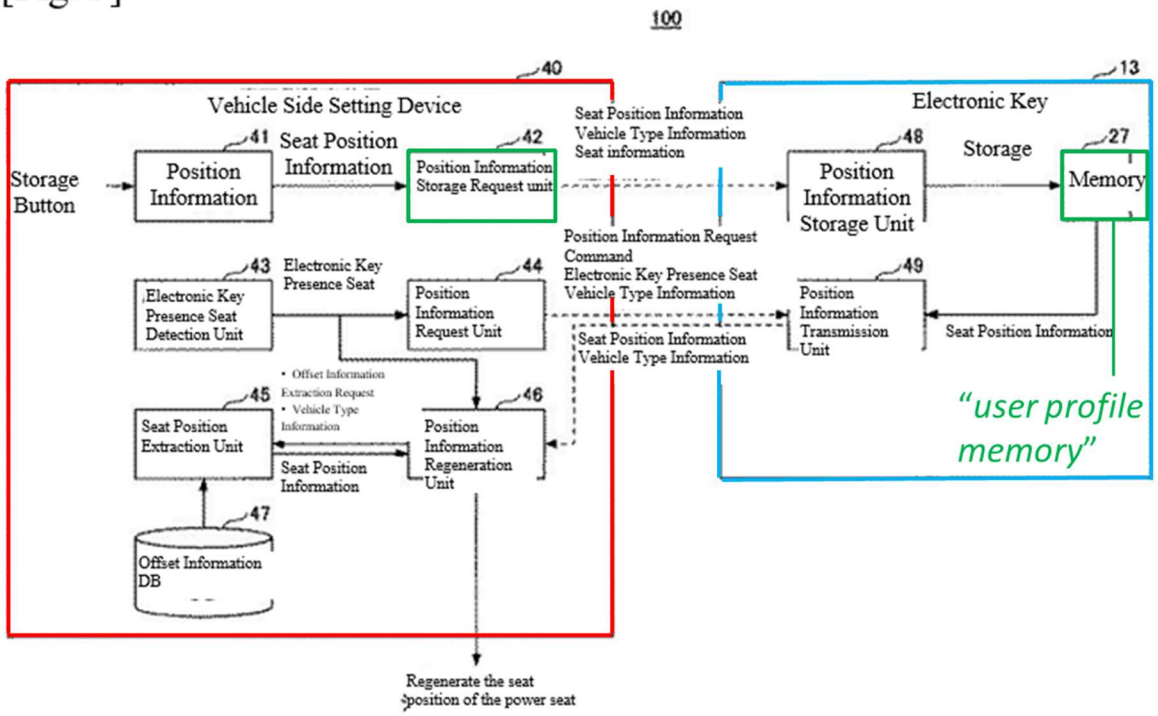
a. Claim 2

187. Claim 2 depends from claim 1, which I understand means that claim 2 adds further limitations to all of the limitations of claim 1. As described above, Endo discloses all of the limitations of claim 1, and I incorporate my analysis of claim 1 into this analysis of claim 2.

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;

188. As previously explained, Endo discloses an "automatic setting system 100 . . . [that] stores the seat position information set by occupant 14 for each electronic key existence seat." (Endo, Ex. 1024, [0015].) With reference to Figure 3 below, Endo discloses that the automatic setting system 100 includes two primary components: the vehicle side setting device 40 (annotated in red) and the electronic key 13 (annotated in blue). The electronic key 13 includes a memory 27 (annotated in green), and the vehicle side setting device includes a position information storage request unit 42 (annotated in green).

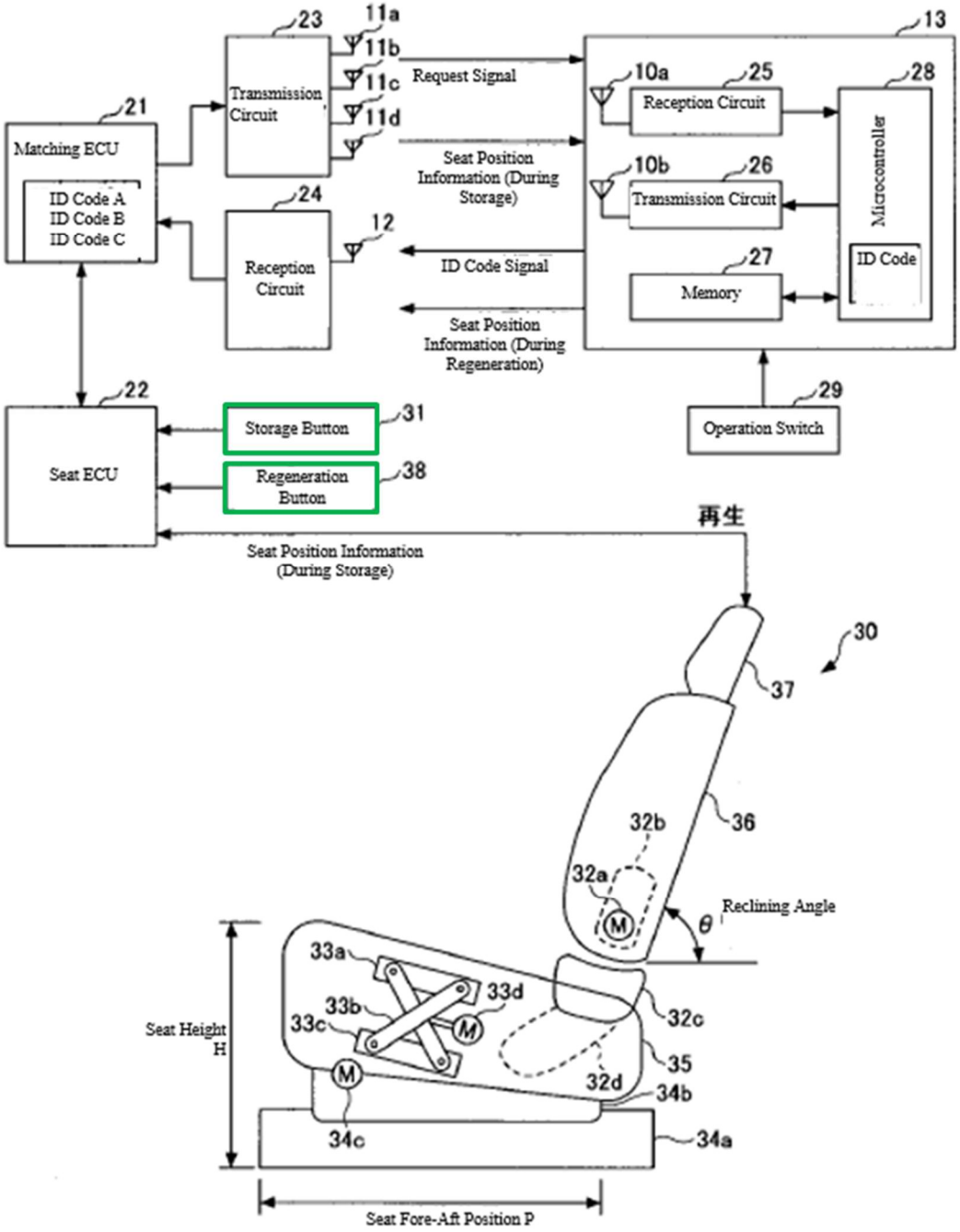
[Fig. 3]



Endo, Ex. 1024, Fig. 3 (Annotated)

189. 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) that may be "placed on components such as the seat back." (Endo, Ex. 1024, [0040].)

[Fig. 2]

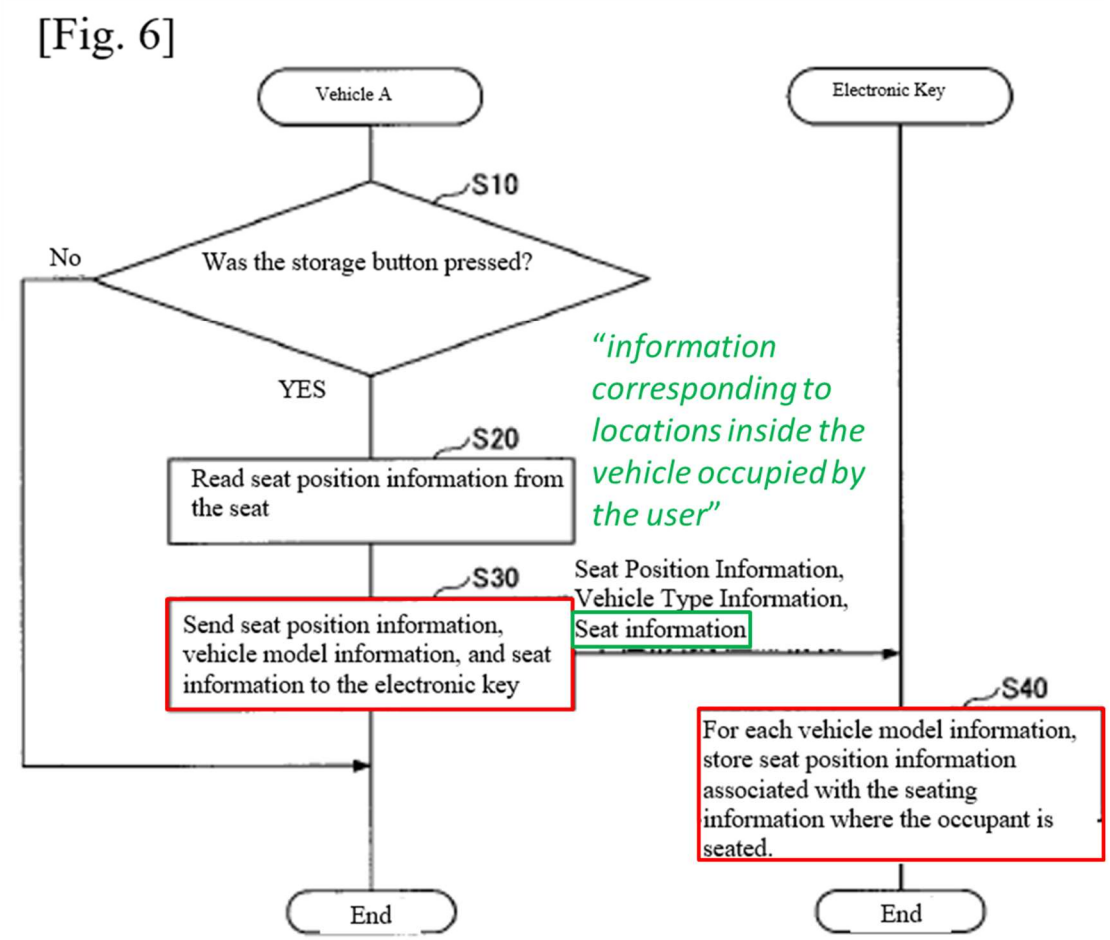


Endo, Ex. 1024, Fig. 2 (Annotated)

190. Endo discloses that, 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. (Endo, Ex. 1024, [0043].) Endo explains that "the seat information indicates the seat where the storage button 31 was pressed." (Endo, Ex. 1024, [0044].) In other words, the position information storage request unit 42 sends "*information*"—"seat information"—corresponding to the seat in which the occupant 14 is sitting—a "*location*[] *inside the vehicle occupied by the user*."

191. Endo explains that "[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." (Endo, Ex. 1024, [0045].) Endo further explains that "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." (Endo, Ex. 1024, [0045].) This method corresponds to steps S30 and S40 (annotated in red below) in the flowchart of Figure 6. (Endo, Ex. 1024, [0054]-[0055].)



Endo, Ex. 1024, Fig. 6 (Annotated)

192. As I previously explained, a PHOSITA would have understood Endo as teaching that the memory 27 is a "*user profile memory*" because the memory acts as a repository of information about the user. (*See* ¶ 167.) Thus, it is my opinion that Endo renders the limitation "*storing, in the user profile memory* [memory 27], *information corresponding to locations inside the vehicle occupied by the user* [seat information indicating the seat where the occupant 14 pressed storage button 31]" of claim 2 obvious.

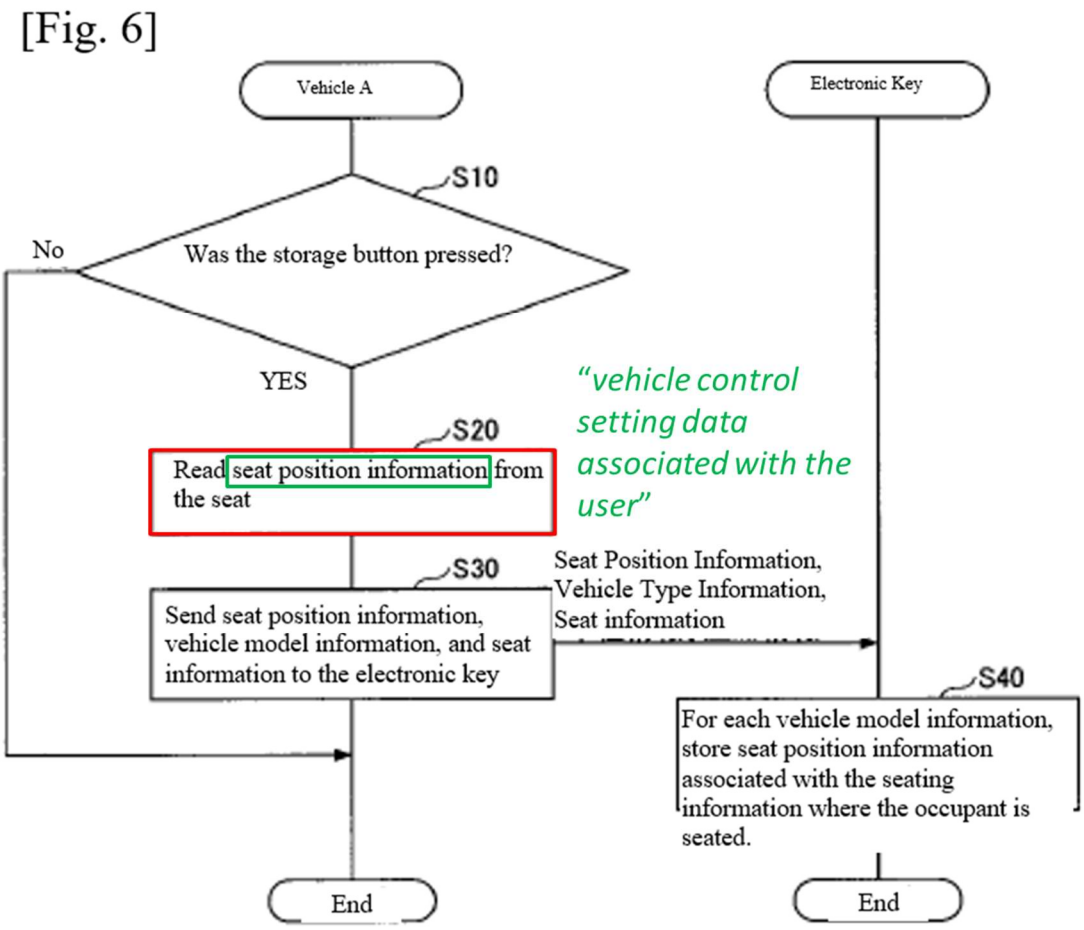
193. Endo explains that Figure 6 above is "an example flowchart of the procedure for electronic key 13 to store seat position information." (Endo, Ex. 1024, [0052].) Endo subsequently introduces Figure 7 as "an example flowchart of the procedure for reproducing the seat position based on the seat position information stored in electronic key 13." (Endo, Ex. 1024, [0057].) As explained in my analysis of claim limitation [1a], the method of Figure 7 includes "*determining a location inside a vehicle associated with a user*." (*See* ¶¶ 148–154.)

194. A PHOSITA would have understood that Endo teaches the method of storing the seat position information in the electronic key 13 occurs prior to the method of reproducing the seat information based on information stored in the electronic key 13 because the system would be unable to reproduce seat information stored in the electronic key 13 unless seat position information was already stored in the electronic key 13.

195. Accordingly, it is my opinion Endo discloses "*storing, in the user profile memory* [memory 27], *information corresponding to locations inside the vehicle occupied by the user* [seat information indicating the seat where the occupant 14 pressed storage button 31]" as occurring "*prior to determining the location inside the vehicle associated with the user*," and thus renders these limitations of claim 2 obvious.

[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

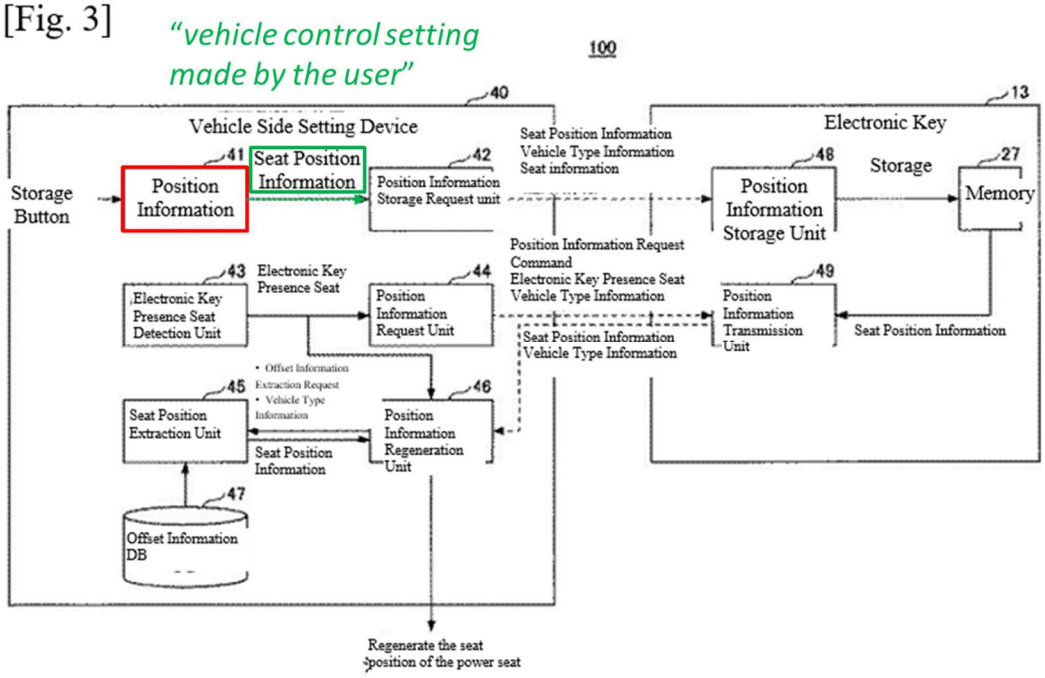
196. As I mentioned above and with reference to Figure 6 below, Endo discloses a method of storing information in the memory 27 of the occupant 14's electronic key 13. Endo teaches that step S20 (annotated in red) is "[r]ead[ing] seat position information from the seat" after the occupant 14 sets the seat to their desired position and then presses the storage button 31. (Endo, Ex. 1024, [0053].)



Endo, Ex. 1024, Fig. 6 (Annotated)

197. The seat position information corresponds to "the user['s] . . . preferred seat position information" that was chosen before pressing the storage button 31. (Endo, Ex. 1024, [0044].) A PHOSITA would have understood Endo to teach that the "seat position information" is "*vehicle control setting data associated with the user*."

198. With reference to Figure 3, Endo explains that step S20 is accomplished by the vehicle side setting device 40 via a "position information acquisition unit 41" (annotated in red below). (Endo, Ex. 1024, [0042].)



Endo, Ex. 1024, Fig. 3 (Annotated)

199. Specifically, Endo discloses that "[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." (Endo, 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*."

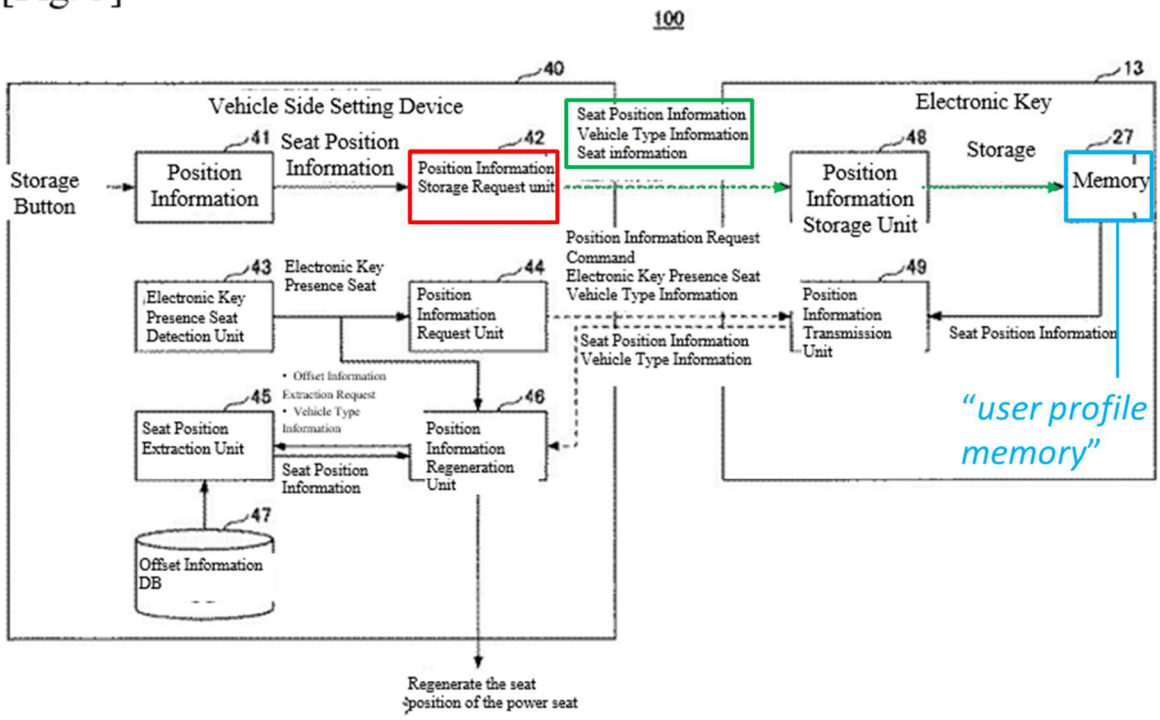
200. Thus, it is my opinion that Endo renders the limitation "*collecting vehicle control setting data associated with the user* [seat position information],

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 [preferred seat position set by the occupant 14 in the seat before pressing the storage button 31]" of claim 2 obvious.

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

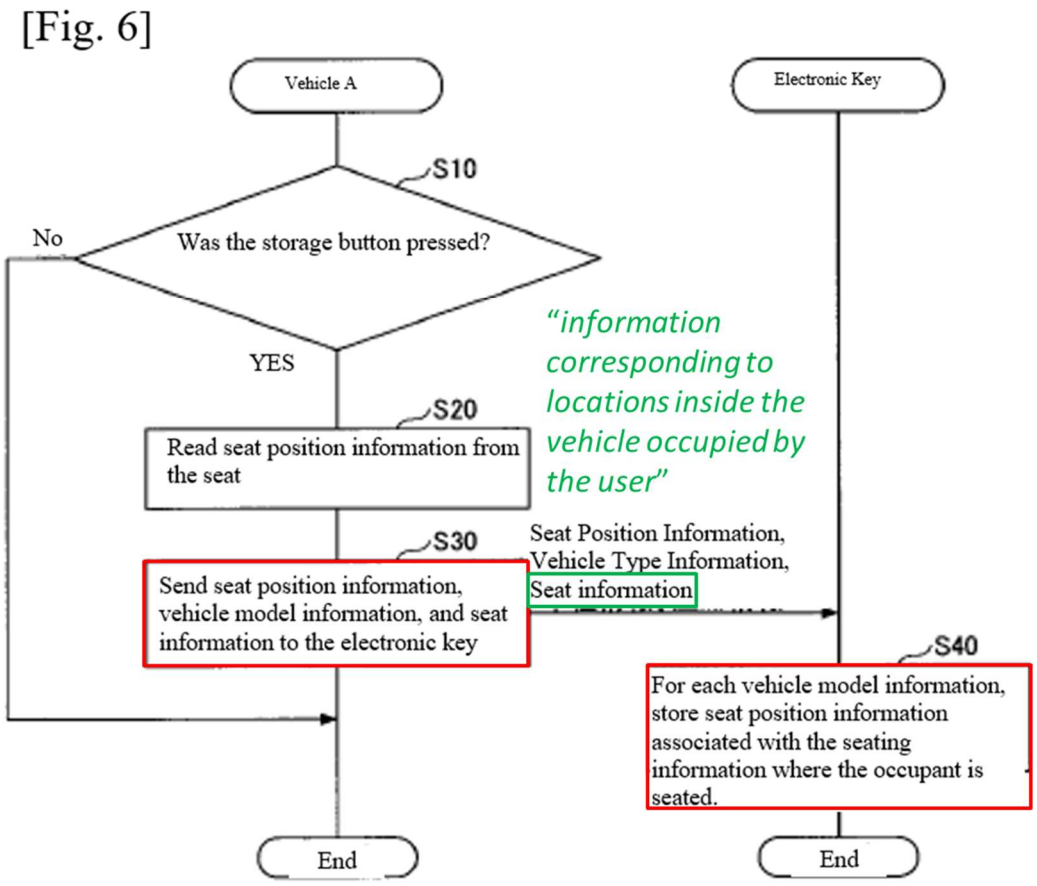
201. As I previously mentioned in my analysis of claim limitations 2[pre-a] and with reference to Figure 3, Endo discloses that "[t]he position information storage request unit 42 sends the seat position information, vehicle model information, and seat information" to the electronic key 13. (Endo, Ex. 1024, [0043].) And the seat position information is "*vehicle control setting data*."

[Fig. 3]



Endo, Ex. 1024, Fig. 3 (Annotated)

202. Endo explains that "[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." (Endo, Ex. 1024, [0045].) As I have also previously discussed, 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. This method corresponds to steps S30 and S40 (annotated in red) in the flowchart of Figure 6 below. (Endo, Ex. 1024, [0054]-[0055].)



Endo, Ex. 1024, Fig. 6 (Annotated)

203. Thus, it is my opinion that Endo renders the limitation "*storing the vehicle control setting data* [seat position information] *in the user profile memory* [memory 27 of the electronic key 13]" of claim 2 obvious.

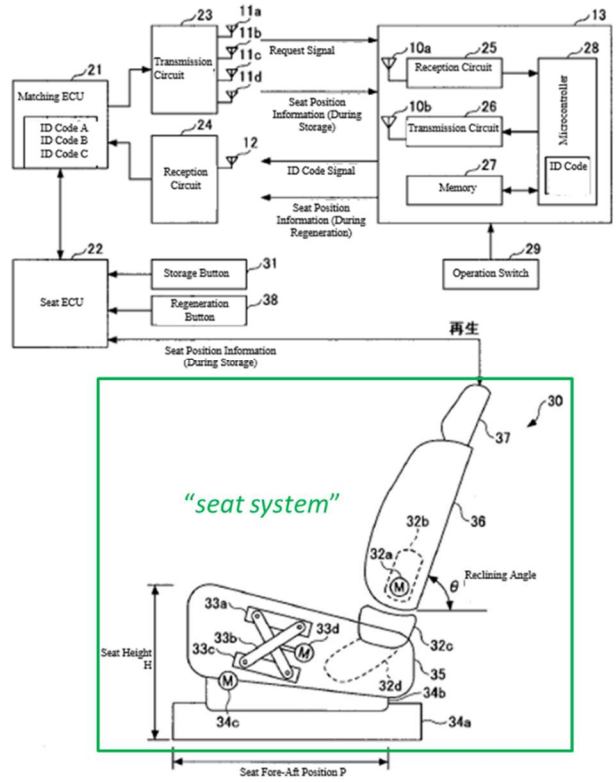
b. Claim 3

204. Claim 3 depends from claim 1, which I understand means that claim 3 adds further limitations to all of the limitations of claim 1. As described above, Endo discloses all of the limitations of claim 1, and I incorporate my analysis of claim 1 into this analysis of claim 3.

[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.

205. As mentioned in my analysis of claim limitation [1e], Endo teaches that the automatic setting system 100 makes a determination of whether to adjust the seat position, which corresponds to "*determining . . . to adjust the at least one vehicle control . . .*" (Endo, Ex. 1024, [0049]; *see* ¶¶ 170–175.) A PHOSITA would have understood that Endo teaches a "*vehicle control*" that included a "*seat system*" (annotated in green) as shown in Figure 2 below.

[Fig. 2]



Endo, Ex. 1024, Fig. 2 (Annotated)

206. Thus, it is my opinion that Endo renders the limitation "*the at least one vehicle control includes one or more vehicle features such as a seat system . . .*" of claim 3 obvious.

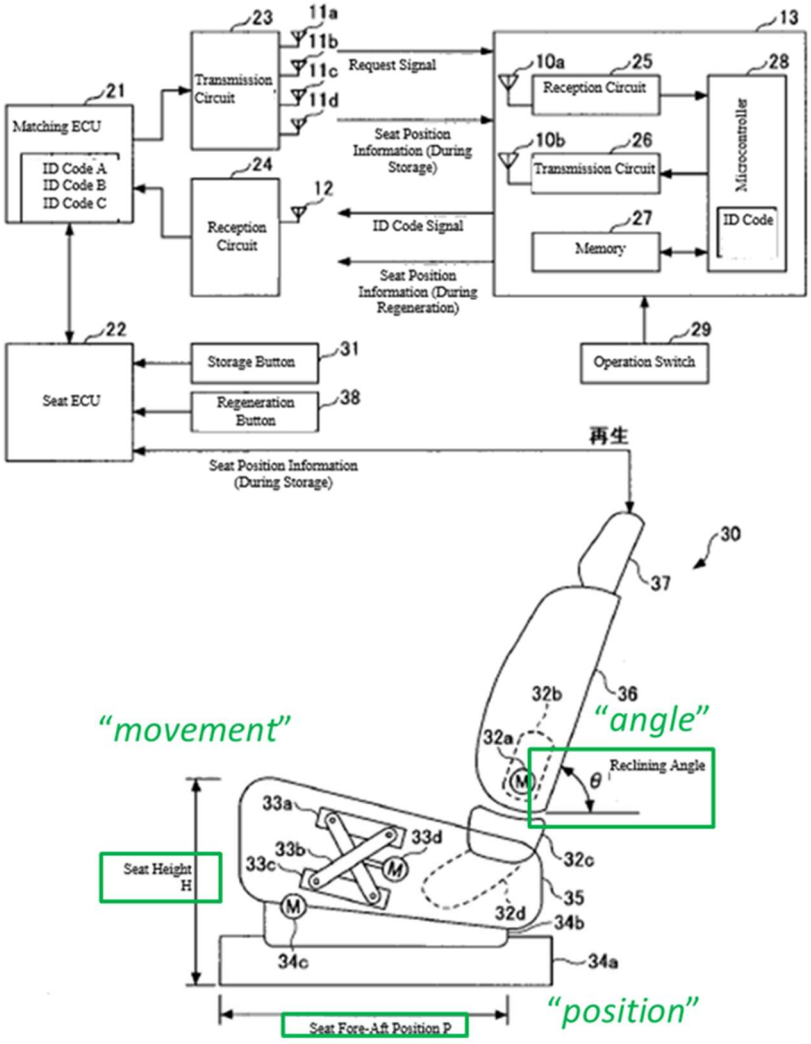
c. Claim 4

207. Claim 4 depends from claim 3, which I understand means that this claim adds further limitations to all of the limitations of claim 3 in addition to its own limitations. Endo teaches all limitations of claim 3 as described above, and I incorporate my analysis of claim 4.

[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.

208. As I explained in my analysis of claim 3 and with reference to Figure 2, Endo discloses the "*vehicle control settings*" of seat positions 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 that "[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" (annotated in green below), which are features of the seat system. (Endo, Ex. 1024, [0036].) Thus Endo teaches that the seat position information—or "*vehicle control settings*"—include "*a position*," "*an angle*," and "*a movement*."

[Fig. 2]



Endo, Ex. 1024, Fig. 2 (Annotated)

209. Thus, it is my opinion that Endo renders the limitation "*the vehicle control settings include at least one of a position, . . . an angle, and a movement, associated with the one or more vehicle features* [seat system]" of claim 4 obvious.

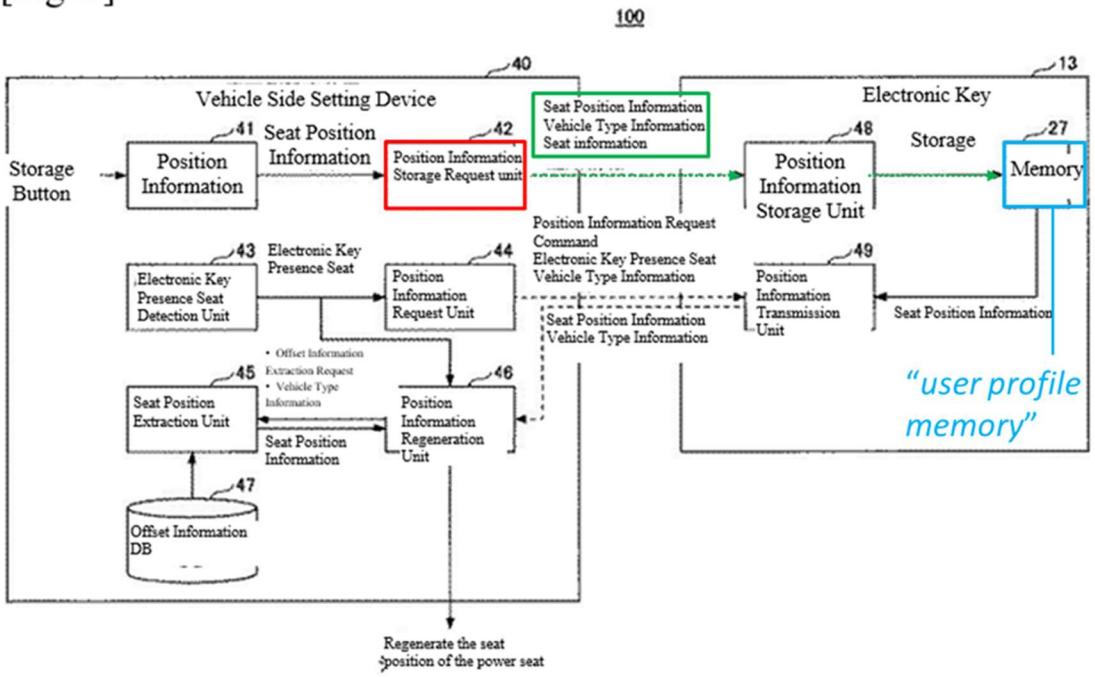
d. Claim 6

210. Claim 6 depends from claim 1, which I understand means that claim 6 adds further limitations to all of the limitations of claim 1 as described above, and I incorporate my analysis of claim 1 into this analysis of claim 6.

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

211. As I discussed in my analysis of claim 2, Endo discloses a method wherein seat position—the "*at least one vehicle control*"—is stored as seat position information based on the occupant 14 pressing the storage button 31. (*See* ¶¶ 190–191.) Specifically, Endo discloses that 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. (Endo, Ex. 1024, [0043], [0045].) As I discussed previously, the memory 27 is a "*user profile memory*" because memory 27 serves as a repository of information about the electronic key 13's user, namely the user's vehicle settings. (*See* ¶ 167.)

[Fig. 3]



Endo, Ex. 1024, Fig. 3 (Annotated)

212. Endo also discloses that "[i]t should be noted 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." (Endo, Ex. 1024, [0044].) Endo explains that there may be predetermined conditions under which the system automatically stores the seat position information in the memory 27. (Endo, Ex. 1024, [0044].) Endo further explains:

> The predetermined conditions could be, for example, that a certain time has elapsed after driving or that the seat position was manually adjusted. By doing this, the user can have their preferred seat position information stored in electronic key 13 without performing any

> operations of storing seat position information in [the memory 27 of the] electronic key 13.

(Endo, Ex. 1024, [0044].)

213. A PHOSITA would have understood that Endo teaches that the automatic setting system 100 determines whether the user manually adjusted the seat position because if the system has a predetermined condition of the user manually adjusting the seat position as a trigger to perform a subsequent action, then the system would have been configured to determine whether that condition was met to trigger the action. A PHOSITA would also have understood that this determination could occur after the system initially regenerated the seat position that was previously stored in the memory 27 because Endo does not teach anything to the contrary and because it would have been plausible that the user may make further refinements to the seat position after the stored seat position is regenerated and automatically storing those refinements would reduce the workload of the occupant which is a primary objective of Endo.

214. Thus, it is my opinion that Endo renders the limitation "*determining* [determining whether a predetermined condition was met] *that the user made a change* [manually adjusted] *to the adjusted at least one vehicle control* [seat position]" of claim 6 obvious.

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

215. As I mentioned in the above analysis of claim limitation 6[pre-a], Endo discloses that "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" following a determination that "the seat position was manually adjusted." (Endo, Ex. 1024, [0044].) Further, as also previously explained, Endo teaches that the memory 27 is a "*user profile memory*" because it stores the electronic key 13's user's information.

216. Thus, it is my opinion that Endo renders the limitation "*storing the change made to the adjusted at least one vehicle control* [seat position] *in the user profile memory* [memory 27 of the electronic key 13]" of claim 6 obvious.

3. Independent Claim 7

217. Independent claim 7 is largely duplicative of independent claim 1. To illustrate their similarities, the table below shows a side-by-side comparison of claims 1 and 7. I have annotated (in red) the text of Claim 7 that is different from claim 1.

Independent Claim 1	Independent Claim 7
1[pre]. A method, comprising:	**7[pre].** A method, comprising:

[1a] determining a location inside a vehicle associated with a user;	**[7a]** determining 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;
[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;
[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

[1f] providing an adjustment output to a vehicle control system,	**[7e]** 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.	**[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.

218. As illustrated above, claims limitations [7a]–[7f] are nearly identical to corresponding limitations of claim 1. The only substantial modification to claim 7 is the absence of limitations [1c] and [1g] and the addition of limitation [7g].

7 [pre] A method, comprising:

219. Due to the similarities between element 7[pre] and element 1[pre], it is my opinion that Endo renders 7[pre] obvious for the same reasons it is my opinion that Endo renders limitation 1[pre] obvious.

[7a] determining a location inside a vehicle associated with a user;

220. Due to the similarities between element [7a] and element [1a], it is my opinion that Endo renders limitation [7a] obvious for the same reasons it is my opinion that Endo renders element [1a] obvious.

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

221. Due to the similarities between element [7b] and element [1b], it is my opinion that Endo renders limitation [7b] obvious for the same reasons it is my opinion that Endo renders element [1b] obvious.

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

222. Due to the similarities between element [7c] and element [1d], it is my opinion that Endo renders limitation [7c] obvious for the same reasons it is my opinion that Endo renders element [1d] obvious.

[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

223. Due to the similarities between element [7d] and element [1e], it is my opinion that Endo renders limitation [7d] obvious for the same reasons it is my opinion that Endo renders element [1e] obvious.

[7e] providing an adjustment output to a vehicle control system,

224. Due to the similarities between element [7e] and element [1f], it is my opinion that Endo renders limitation [7e] obvious for the same reasons it is my opinion that Endo renders element [1f] obvious.

[7f] wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle,

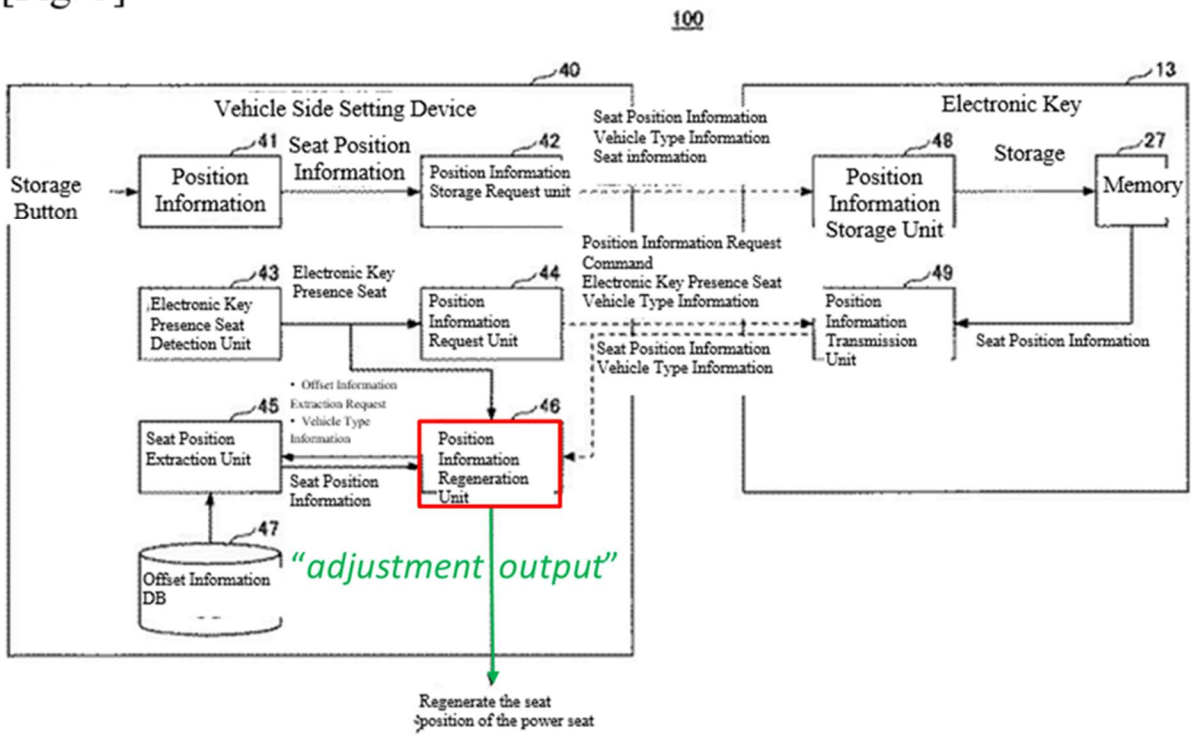
225. Due to the similarities between element [7f] and element [1h], it is my opinion that Endo renders element [7f] obvious for the same reasons it is my opinion that Endo renders element [1h] obvious.

[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.

226. As I mentioned in my analysis of claim limitation [1f]–[1g] and with reference to Figure 3, Endo discloses that "[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." (Endo, Ex. 1024, [0049].) "If

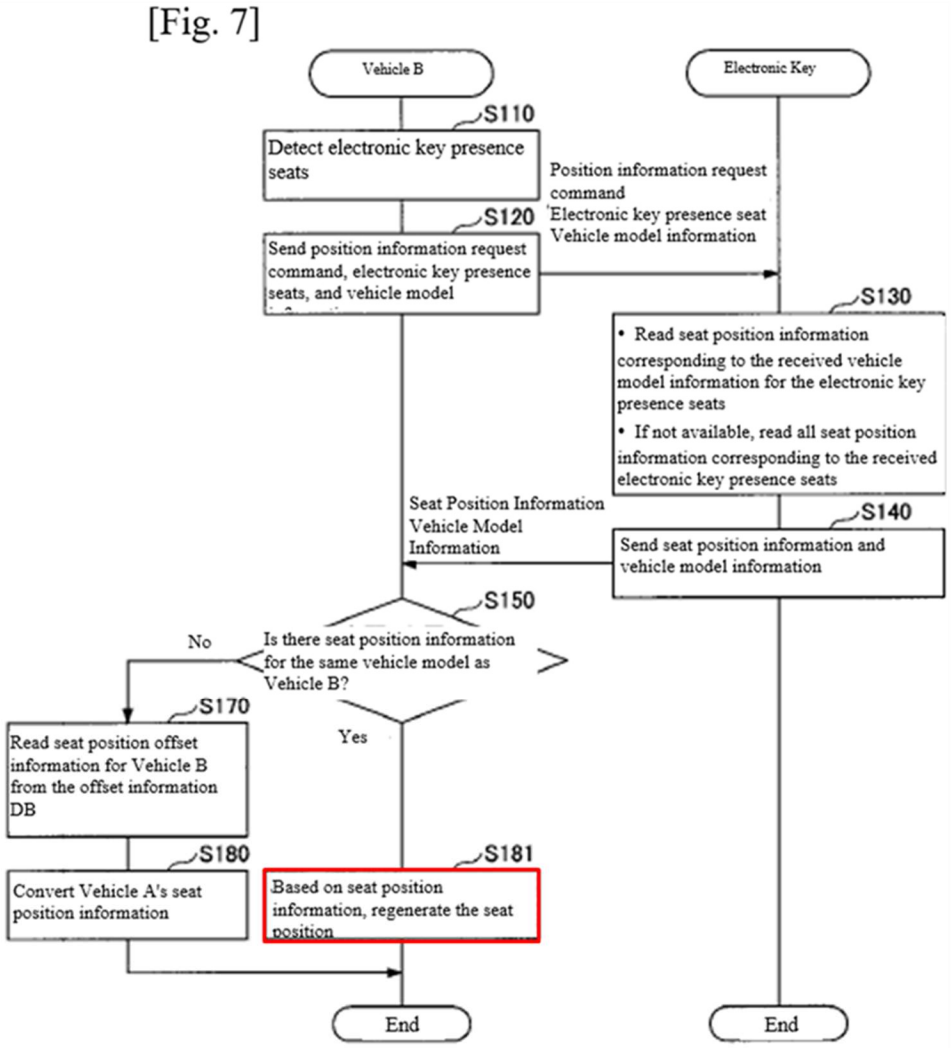
seat position information for the same vehicle model has been received, it regenerates the seat position based on the received seat position information." (Endo, Ex. 1024, [0049].)

[Fig. 3]



Endo, Ex. 1024, Fig. 3 (Annotated)

227. As I also explained, this corresponds with step S181 (annotated in red) in the method depicted by the flowchart of Figure 7 below.



Endo, Ex. 1024, Fig. 7 (Annotated)

228. As shown in Figure 7 above, Endo teaches a method wherein the seat position—a "*vehicle control*"—is adjusted "based on [the] seat position information" such that the seat position is "regenerated." A PHOSITA would have understood that, by teaching "regenerat[ing]" the seat position stored in the memory 27 (the "*user profile memory*"), Endo teaches the seat position is adjusted from in the then-current position to match the stored seat position information—"*vehicle control settings*."

229. Thus, it is my opinion that Endo renders the limitation "*wherein the at least one vehicle control* [seat position] *is adjusted via the adjustment output to match the vehicle control settings* [seat position information] *in the user profile memory* [memory 27 in the electronic key 13]" of claim 7 obvious.

4. Independent Claim 8

230. Independent claim 8 is largely duplicative of independent claim 1 in addition to claim [7g]. To illustrate their similarities, the table below shows a side-by-side comparison of claims 1 and [7g] to claim 8. I have annotated (in red) the text of Claim 8 that is different from claims 1 and [7g].

Independent Claim 1 and [7g]	**Independent Claim 8**
1[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:
[1a] determining a location inside a vehicle associated with a user;	**[8a]** determining a location inside a vehicle associated with a user;

[1b] 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;
[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;	**[8c]** 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	**[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
[1f] providing an adjustment output to a vehicle control system,	**[8e]** providing an adjustment output to a vehicle control system,

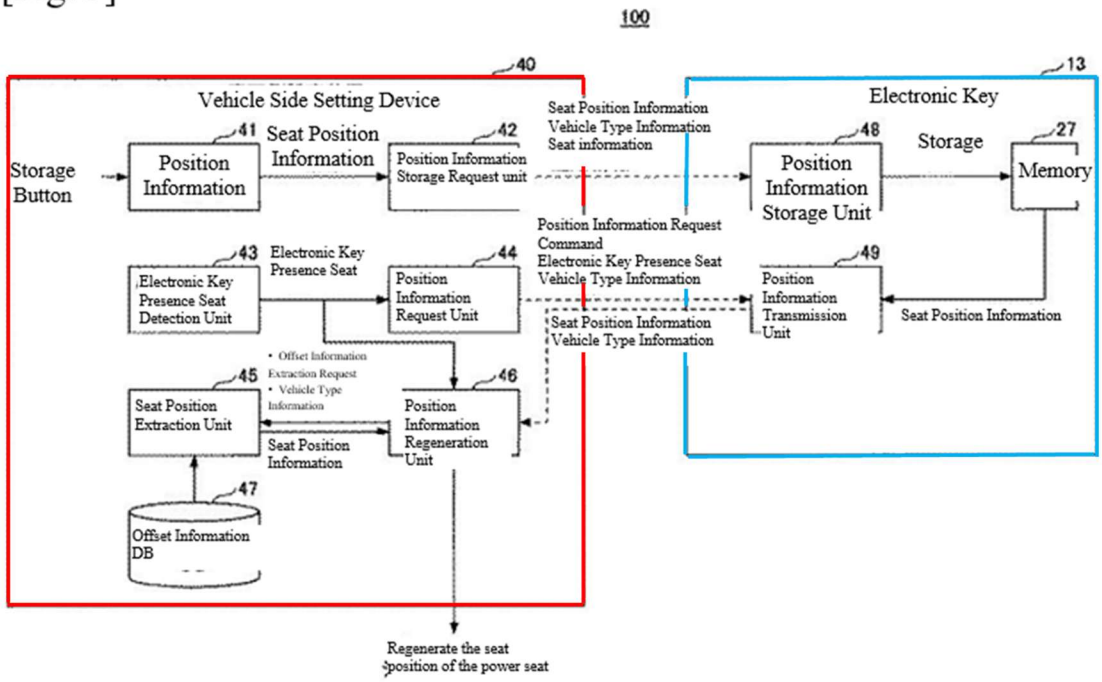
[1g] wherein the adjustment output is provided based at least partially on determining the user is present in the location inside the vehicle	
[1h] wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle.	**[8f]** wherein 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.	**[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.

231. As illustrated above, claim limitations [8a]–[8g] are nearly identical to corresponding limitations of claim 1 and claim [7g]. The only substantial modification to claim 8 is the absence of limitations [1c] and [1g] and the addition of the "*non-transitory computer readable medium*" that performs the method in the preamble (8[pre]).

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

232. As I discussed in my analysis of claim limitation 1[pre], Endo discloses "an automatic setting device for a vehicle that sets setting information in onboard devices, particularly an automatic setting device for a vehicle capable of setting the setting information for each occupant, as well as . . . an automatic setting method for a vehicle." (Endo, Ex. 1024, [0001]; *see* ¶¶ 144–147.) With reference to Figure 3, Endo discloses a vehicle automatic setting system 100, which includes a vehicle side setting device 40 (annotated in red) and an electronic key 13 (annotated in blue). (Endo, Ex. 1024, [0042].)

[Fig. 3]

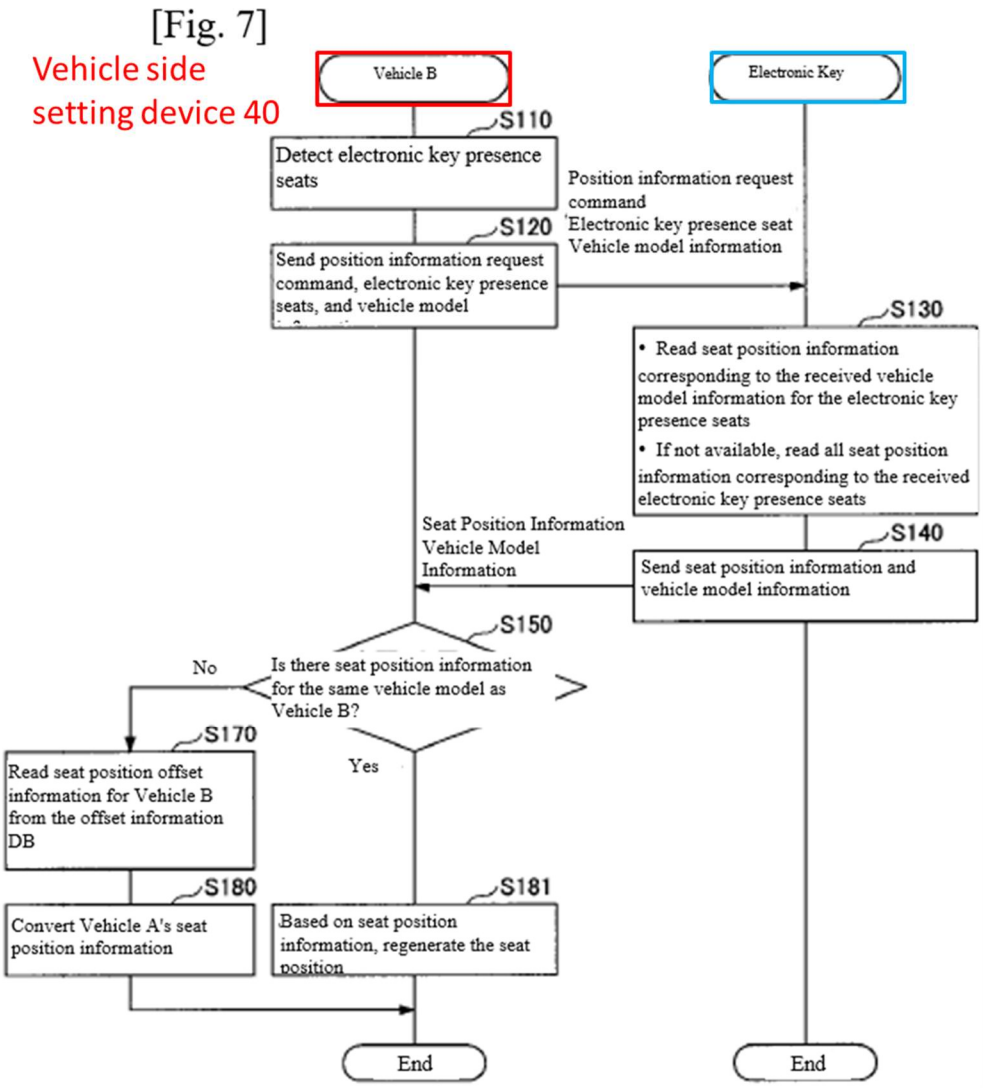


Endo, Ex. 1024, Fig. 3 (Annotated)

233. Endo explains that Figure 3 is merely "an example of a functional block diagram of the automatic setting system 100." (Endo, Ex. 1024, [0042].) Endo explains that "[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." (Endo, Ex. 1024, [0042].) A PHOSITA would have understood that a central processing unit (CPU) of Endo includes a processor, and non-volatile memory is non-transitory. As described in the State of the Art, a central processing unit is a term used to describe the logic unit that carries out logical binary operations according to instructions stored in a non-volatile memory. (*See* ¶¶ 113–116.) Therefore, a PHOSITA would have understood that

Endo's disclosure of a CPU executing a program stored in non-volatile memory to perform the functions of the vehicle side setting device 40 teaches that the functions of the vehicle side setting device 40 are accomplished by the vehicle side setting device 40 having a processor that executes a program, which consists of set of instructions or commands stored on a non-transitory computer readable medium that are executed to perform a specific task or achieve a desired outcome. (*See* ¶¶ 113–116.)

234. With reference to Figure 7 below, Endo discloses a "flowchart of the procedure for reproducing the seat position based on the seat position information" stored in a user's electronic key 13. (Endo, Ex. 1024, [0057].) The procedure includes multiple steps S110–S181 that describe Endo's automatic setting method. Endo then explains the steps of the method depicted in this flowchart with reference to the components and reference numerals of the vehicle side setting device 40 in the functional block diagram of Figure 3, such that all but steps S130 and S140 are performed by the vehicle side setting device 40. (*See* Endo, Ex. 1024, [0057]–[0061].)



Endo, Ex. 1024, Fig. 7 (Annotated)

235. A PHOSITA would have understood that the vehicle side setting device 40 of Endo would include a processor for executing instructions stored on a computer readable medium, namely for translating and providing control signals for adjustment of the seats as set forth in the steps of the method annotated in Figure 7 corresponding to the vehicle side device annotated in red. (*See* ¶¶ 113–116.)

236. Thus, it is my opinion that Endo renders the limitation "*[a] non-transitory computer readable medium having instructions stored thereon that, when executed by a processor, perform a method*" of claim 8 obvious.

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

237. Due to the similarities between element [8a] and element [1a], it is my opinion that Endo renders limitation [8a] obvious for the same reasons it is my opinion that Endo renders element [1a] obvious.

[8b] determining at least one vehicle control associated with the location inside the vehicle;

238. Due to the similarities between element [8b] and element [1b], it is my opinion that Endo renders limitation [8b] obvious for the same reasons it is my opinion that Endo renders element [1b] obvious.

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

239. Due to the similarities between element [8c] and element [1d], it is my opinion that Endo renders limitation [8c] obvious for the same reasons it is my opinion that Endo renders element [1d] obvious.

[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

240. Due to the similarities between element [8d] and element [1e], it is my opinion that Endo renders limitation [8d] obvious for the same reasons it is my opinion that Endo renders element [1e] obvious.

[8e] providing an adjustment output to a vehicle control system,

241. Due to the similarities between element [8e] and element [1f], it is my opinion that Endo renders limitation [8e] obvious for the same reasons it is my opinion that Endo renders element [1f] obvious.

[8f] wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle,

242. Due to the similarities between element [8f] and element [1h], it is my opinion that Endo renders limitation [8f] obvious for the same reasons it is my opinion that Endo renders element [1h] obvious.

[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.

243. Due to the similarities between element [8g] and element [7g], it is my opinion that Endo renders limitation [8g] obvious for the same reasons it is my opinion that Endo renders element [7g] obvious.

5. Dependent Claims 9–11 and 13

e. Claim 9

244. Claim 9 depends from claim 8, which I understand means that claim 9 adds further limitations to all limitations of claim 8. As described above, Endo discloses all of the limitations of claim 8, and I incorporate my analysis of claim 8 into this analysis of claim 9.

> ***[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.***

245. Claim 9 adds method step limitations that are similar to the limitations of claims [1c] and [1g] as illustrated in the following table:

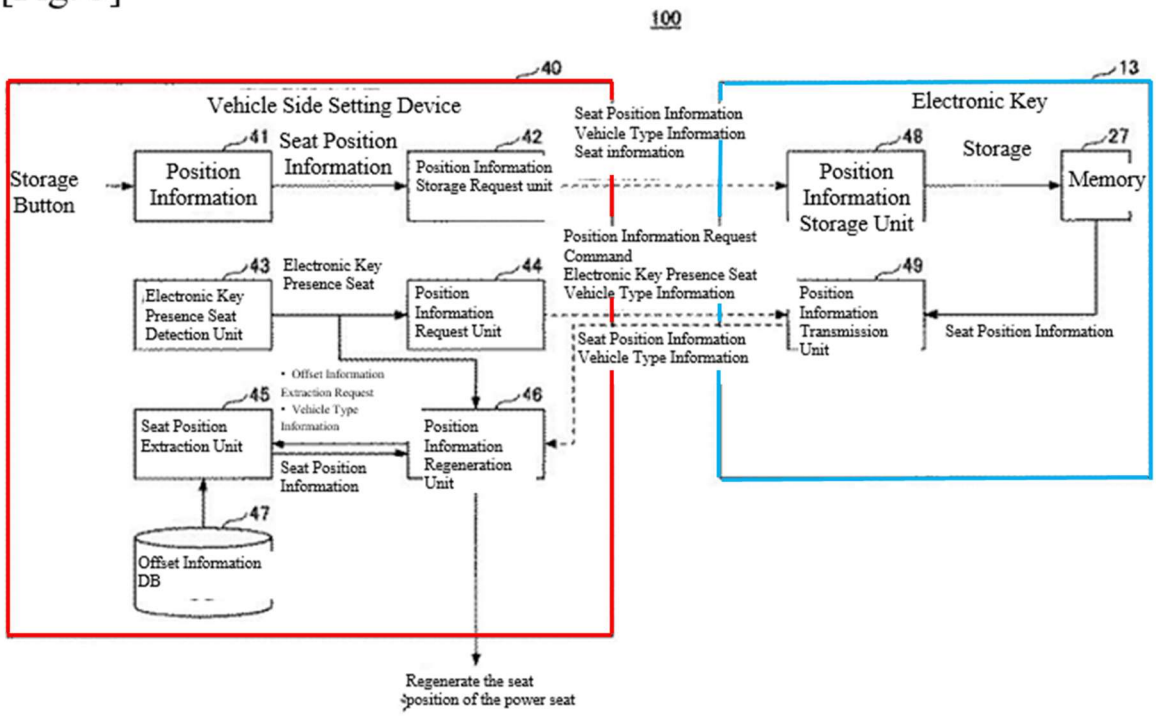
Independent Claim [1c] and [1g]	**Claim 9**
[1c] determining a presence of the user inside the vehicle,	**[9]** The non-transitory computer readable medium of claim 8, wherein prior to providing the adjustment output, the method further comprises: determining a presence of the user inside the vehicle,

wherein determining the presence of the user comprises detecting a device associated with the user in an area of the vehicle;	
[1g] wherein the adjustment output is provided based at least partially on determining the user is present in the location 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.

246. As I explained in my analysis of limitation [1c], Endo discloses that "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. (Endo, Ex. 1024, [0026]-[0027].) Therefore, Endo describes initiating device discovery in response to a trigger event, *e.g.*, a courtesy switch signal that indicates the presence of a user within the interior of the vehicle.

247. Endo further discloses a vehicle automatic setting system 100, which includes a vehicle side setting device 40 (annotated in red below) and an electronic key 13 (annotated in blue below). (Endo, Ex. 1024, [0042].)

[Fig. 3]

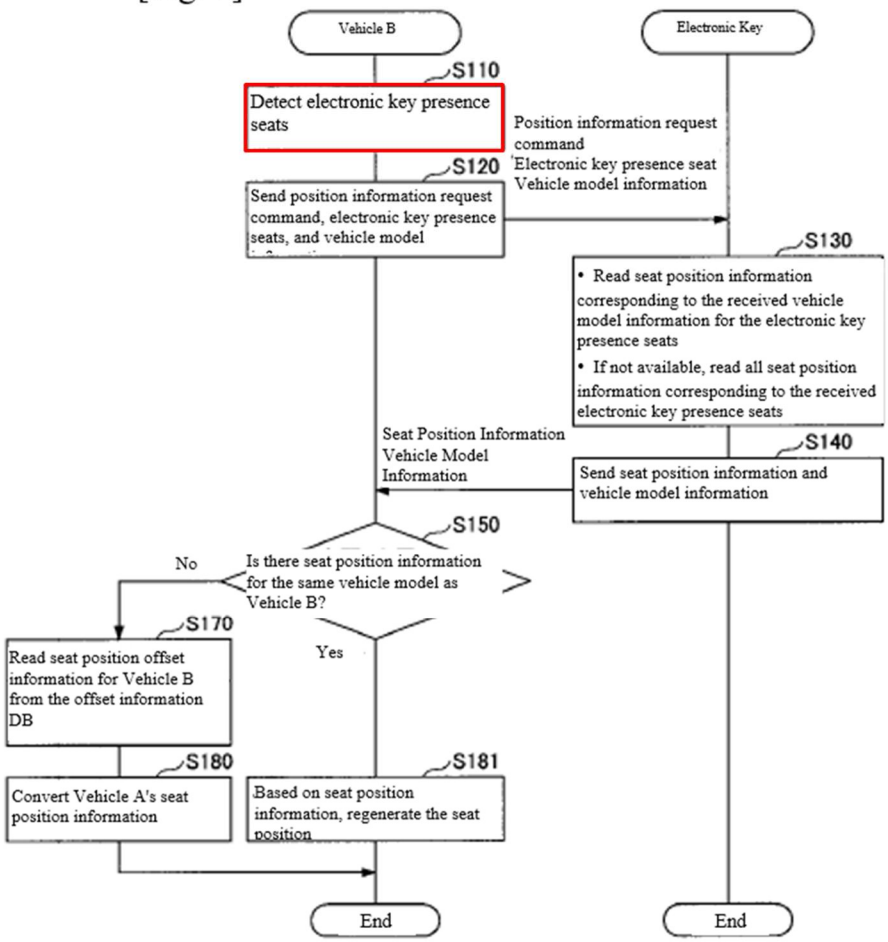


Endo, Ex. 1024, Fig. 3 (Annotated)

248. Endo explains that the vehicle side setting device 40, through seat detection unit 43, "sends request signals . . . from antennas 11a to 11d and detects the seats corresponding to the detected areas E1 to E4 where ID code signals are returned as electronic key presence seats." (Endo, Ex. 1024, [0046].)

249. With reference to the method depicted as a flowchart in Figure 7 below, Endo discloses that the first step S110 (annotated in red) is the detection of the electronic key presence seat—or detecting that 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. (*See* Endo, Ex. 1024, [0058].)

[Fig. 7]



Endo, Ex. 1024, Fig. 7 (Annotated)

250. Therefore, with reference to my analysis of claim limitation [1c] where I explained how Endo teaches "*determining a presence of the user inside the vehicle* [electronic presence seat]," Endo discloses that this action is performed by execution of instructions by a processor [vehicle side setting device 40 or therein] stored on a "*non-transitory computer readable medium* [non-volatile memory of vehicle side setting device 40]" "*prior to providing the adjustment output*."

251. Further, as I explained in my analyses of limitation [1f]–[1g], Endo discloses that the vehicle side setting device 40, via the position information reproduction unit 46, "regenerates the seat position based on the received seat position information." (Endo, Ex. 1024, [0049].)

252. As I also explained, Endo discloses that while the seat position is regenerated based partially on the seat position information/vehicle control settings, it is also regenerated based on determining that the user is present in that seat. Endo discloses an exemplary scenario: "When 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." (Endo, Ex. 1024, [0016].) Indeed, in this example, a PHOSITA would have understood that the user location, via the courtesy switch signal and the user's electronic key 13, would be detected and used to determine which seat (in this case the P seat) to adjust.

253. Accordingly, with reference to my analysis of limitations [1f]–[1g] where I explained how Endo teaches "*providing an adjustment output to a vehicle control system, wherein the adjustment output is provided based at least partially on determining the user is present in the location inside the vehicle* [detecting the electronic key existence seat according to the seating position of occupant 14 in

response to a courtesy signal indicative of a user entering the vehicle]," Endo discloses that this action is performed by execution of instructions by a processor [vehicle side setting device 40 or therein] stored on a "*non-transitory computer readable medium* [non-volatile memory of vehicle side setting device 40]."

254. As such, it is my opinion that Endo renders claim 9 obvious.

f. Claim 10

255. Claim 10 depends from claim 8, which I understand means that claim 10 adds further limitations to all of the limitations of claim 8. As described above, Endo discloses all of the limitations of claim 8, and I incorporate my analysis of claim 8 into this analysis of claim 10.

256. Claim 10 is largely duplicative of claim 2. To illustrate their similarities, the table below shows a side-by-side comparison of claims 2 and 10. I have annotated (in red) the text of Claim 10 that is different from claim 2.

Claim 2	**Claim 10**
2[pre-a] The method of claim 1,	**10[pre-a]** The non-transitory computer readable medium of claim 8,
wherein prior to determining the location inside the vehicle associated	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;	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	**[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
[2c] storing the vehicle control setting data in the user profile memory.	**[10c]** storing the vehicle control setting data in the user profile memory.

257. As illustrated in the table above, the only difference between claims 2 and 10 is in the preamble, *i.e.*, claim 2 is directed to a "*method*" and claim 10 is directed to a "*non-transitory computer readable medium.*"

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;

258. Claim limitations 10[pre-a] are substantively identical to limitation 8[pre] for "*non-transitory computer readable medium*" and elements 2[pre-a] for the remaining limitations. I therefore refer back to my analysis of limitations 8[pre] and 2[pre-a] for the limitations of 10[pre-a].

[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

259. Due to the similarities between element [10b] and element [2b], it is my opinion that Endo renders limitation [10b] obvious for substantially the same reasons it is my opinion that Endo renders element [2b] obvious.

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

260. Due to the similarities between element [10c] and element [2c], it is my opinion that Endo renders limitation [10c] obvious for substantially the same reasons it is my opinion that Endo renders element [2c] obvious.

g. Claim 11

261. Claim 11 depends from claim 8, which I understand means that claim 11 adds further limitations to all of the limitations of claim 8. As described above, Endo discloses all of the limitations of claim 8, and I incorporate my analysis of claim 8 into this analysis of claim 11.

262. Claim 11 is largely duplicative of claims 3 and 4. To illustrate their similarities, the table below shows a side-by-side comparison of claim 11 to claims 3 and 4. I have annotated (in red) the text of claim 11 that is different from claims 3 and 4.

Claims 3 and 4	Claim 11
[3] The method of claim 1,	**[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	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.	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 movement, associated with the one or more vehicle features.	**[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.

263. As illustrated in the table above, the only difference between claims 3, 4, and 11 is the preamble, i.e., claims 3 and 4 are directed to a "*method*" and claim 11 is directed to a "*non-transitory computer readable medium*."

[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

264. Claim limitation [11a]is substantively identical to limitation 8[pre] for "*non-transitory computer readable medium*" and claim 3 for the remaining limitations. I therefore repeat my discussion of limitation 8[pre] and claim 3 for this limitation [11a].

[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.

265. Due to the similarities between element [11b] and claim 4, it is my opinion that Endo renders limitation [11b] obvious for substantially the same reasons it is my opinion that Endo renders claim 4 obvious.

h. Claim 13

266. Claim 13 depends from claim 8, which I understand means that claim 13 adds further limitations to all of the limitations of claim 8. As described above, Endo discloses all of the limitations of claim 8, and I incorporate my analysis of claim 8 into this analysis of claim 13.

267. Claim 13 is largely duplicative of claim 6. To illustrate their similarities, the table below shows a side-by-side comparison of claim 13 to claim 6. I have annotated (in red) the text of Claim 13 that is different from claim 6.

Claim 6	Claim 13
6[pre-a] The method of claim 1, further comprising:	**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	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.	**[13b]** storing the change made to the adjusted at least one vehicle control in the user profile memory.

268. As illustrated in the table above, the only difference between claims 6 and 13 is the preamble, i.e., claim 6 is directed to a "method" and claim 13 is directed to a "*non-transitory computer readable medium*."

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

269. Claim limitations 13[pre-a] are substantively identical to limitation 8[pre] for "*non-transitory computer readable medium*" and element 6[pre-a] for the remaining limitations. I therefore refer back to my analysis of limitation 8[pre] and element 6[pre-a] for the limitations of 13[pre-a].

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

270. Due to the similarities between element [13b] and element [6b], it is my opinion that Endo renders limitation [13b] obvious for substantially the same reasons it is my opinion that Endo renders element [6b] obvious.

6. Independent Claim 14

271. Independent claim 14 is largely duplicative of independent claim 1 in addition to claim [7g]. To illustrate their similarities, the table below shows a side-by-side comparison of claims 1 and [7g] to claim 14. I have annotated (in red) the text of claim 14 that is different from claims 1 and [7g].

Independent Claim 1 and [7g]	Independent Claim 14
1[pre]. 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;	**[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;	**[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;	**[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	**[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,	**[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 least one vehicle control associated with the location inside the vehicle.	**[14g]** 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.	**[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.

272. As illustrated above, claims limitations [14b]–[14h] are nearly identical to corresponding limitations of claim 1 and claim [7g]. The only substantial modification to claim 14 is the addition of "[*a*] *vehicle control system*" in the preamble and the addition of the "*profile identification module contained in a memory*" that performs a method when executed by a processor in limitation [14a].

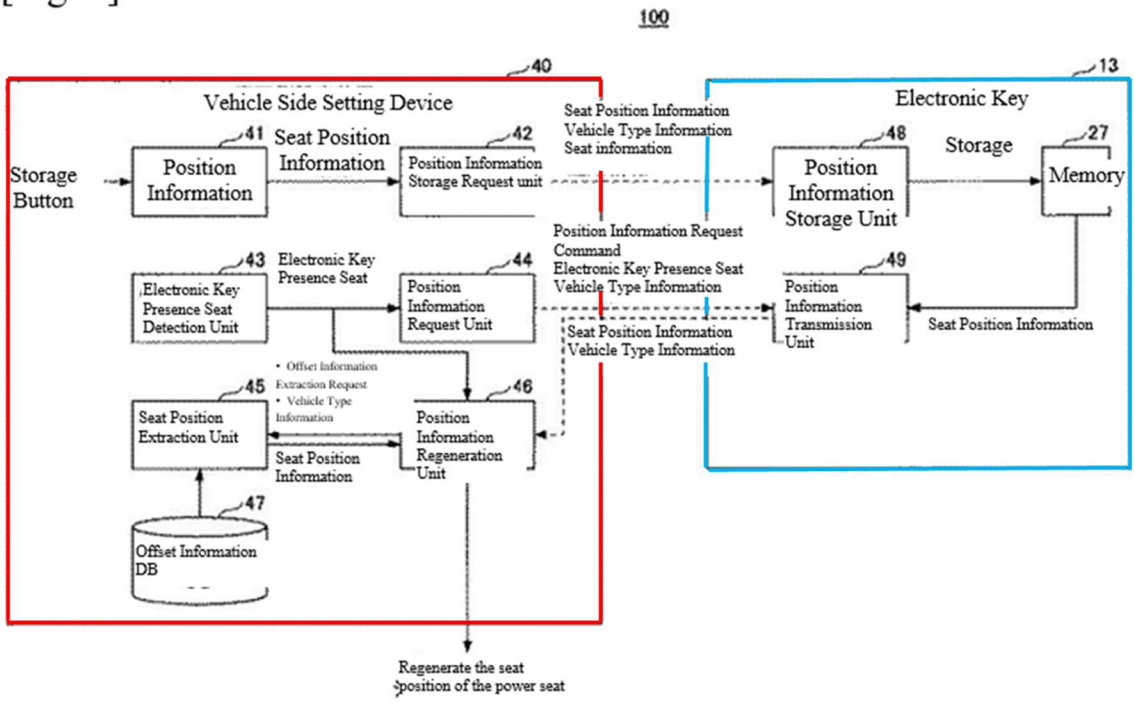
273. While these additions in limitation [14a] use different words, limitation [14a] is effectively the same as limitation 8[pre]. By claiming "*a profile*

identification module contained in a memory and executed by a processor" to perform a set of functions, [14a] effectively claims "*[a] non-transitory computer readable medium* [memory] *having instructions stored thereon* [profile identification module] *that, when executed by a processor, perform method*" as I will explain in more detail in my analysis of [14a] below. Accordingly, claim 14 simply claims the "*non-transitory computer readable medium*" of claim 8 as part of a "*vehicle control system*."

14[pre] A vehicle control system, comprising:

274. As I have explained with reference to Figure 3, Endo discloses a vehicle automatic setting system 100, which includes a vehicle side setting device 40 (annotated in red below) and an electronic key 13 (annotated in blue below). (Endo, Ex. 1024, [0042].) Endo explains that the automatic setting system 100 allows an "occupant 14 to automatically regenerate the seat position" in the vehicle. (Endo, Ex. 1024, [0017].)

[Fig. 3]



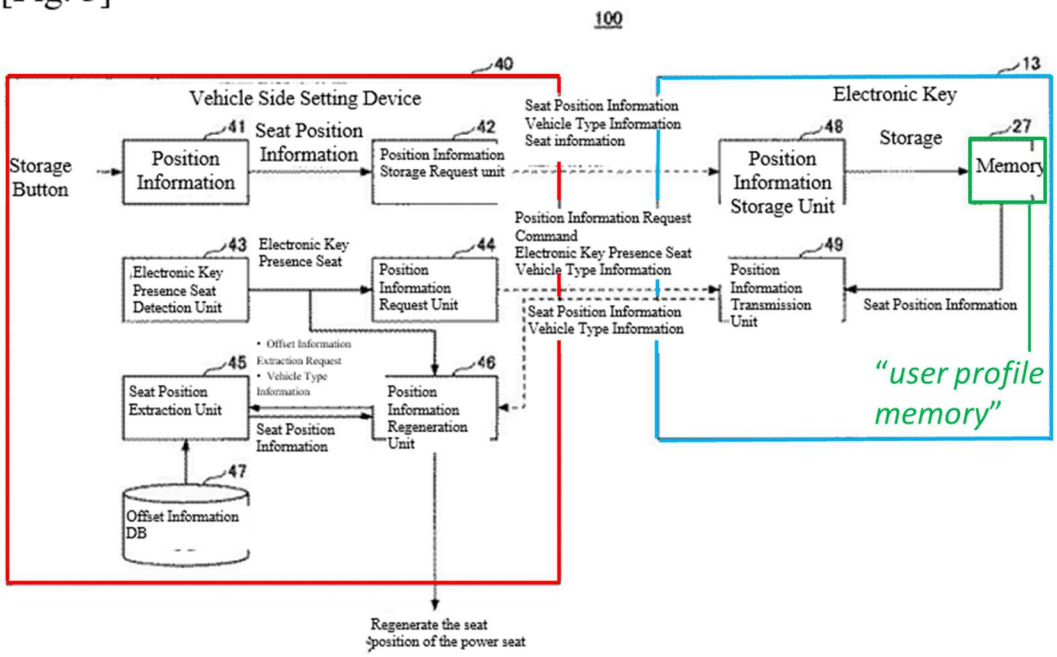
Endo, Ex. 1024, Fig. 3 (Annotated)

275. Thus, it is my opinion that Endo discloses a "*vehicle control system*."

[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

276. As I previously explained with reference to Figure 3, Endo discloses that the automatic vehicle setting system 100 comprises two main components: a vehicle side setting device 40 (annotated in red below) and an electronic key 13 (annotated in blue). The electronic key 13 contains the memory 27 (annotated in green), which I have explained is a "*user profile memory*" because it is a repository of information associated with the user of the electronic key 13. (*See* ¶ 167.)

[Fig. 3]



Endo, Ex. 1024, Fig. 3 (Annotated)

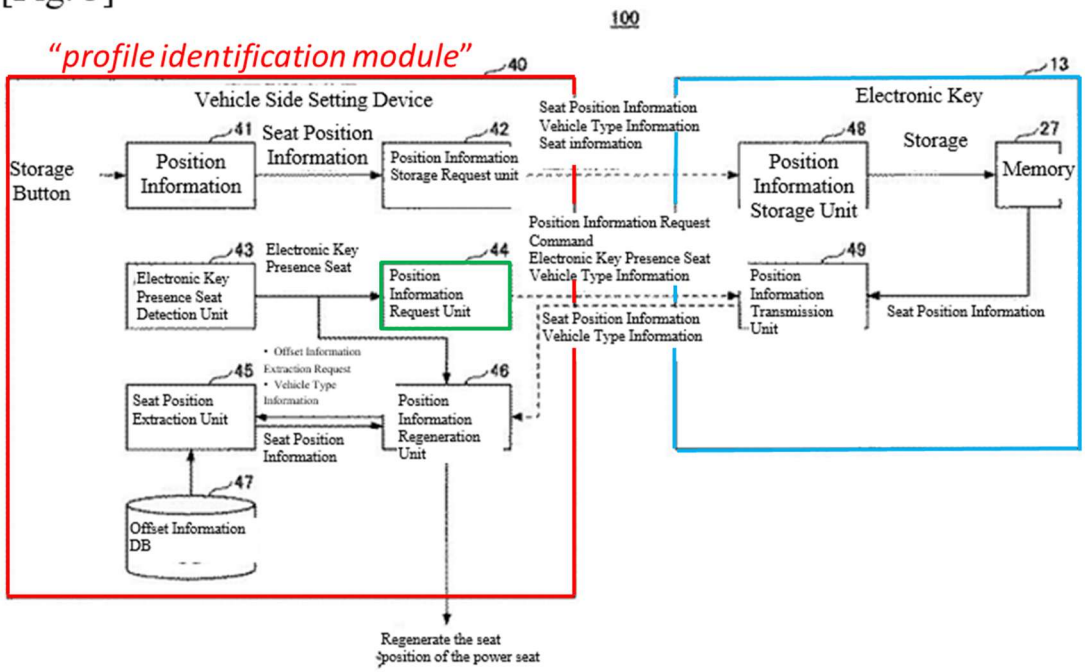
277. With reference to Figure 3, Endo discloses an "example of a functional block diagram of the automatic setting system 100." (Endo, Ex. 1024, [0042].) Endo explains that "[t]hese functional blocks are executed by the CPU of matching ECU 21 or seat ECU 22, or by the microcontroller 28 of electronic key 13 executing the program stored in non-volatile memory." (Endo, Ex. 1024, [0042].)

278. A PHOSITA would have understood that Endo teaches the functions of the vehicle side setting device 40 may be realized by the vehicle side setting device 40 having a processor that executes a program because of Endo's disclosure that the vehicle side setting device may be realized by a CPU of the ECU's executing a program in non-volatile memory. (*See* ¶¶ 113–116.) A PHOSITA would have also

understood that a program consists of instructions stored on a non-transitory computer readable medium. (*See* ¶¶ 113–116.)

279. With reference to Figure 3, Endo teaches that the vehicle side setting device 40, via the position information request unit 44, retrieves information from the memory 27 of the electronic key 13. (*See* Endo, Ex. 1024, [0047]-[0048].) As I have discussed, the memory 27 is a "*user profile memory*" because it is a repository for information of the electronic key 13's user. (*See* ¶ 167.) A PHOSITA would have thus understood that 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. Such a program or instructions therein represents "*a profile identification module*." Indeed, the '296 Patent explains that "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." ('296 Patent, Ex. 1001, 42:4-10.) Such a request is made by the system of Endo as shown in Box 44 of Figure 3 (annotated in green below).

[Fig. 3]



Endo, Ex. 1024, Fig. 3 (Annotated)

280. Thus, it is my opinion that Endo renders "*a profile identification module contained in a memory* ["the program stored in non-volatile memory"] *and executed by a processor* [vehicle side setting device 40 or a component therein] *of the vehicle control system* [automatic setting system 100]" of claim 14 obvious.

[14b] determine a location inside a vehicle associated with a user,

281. Due to the similarities between element [14b] and element [1a], it is my opinion that Endo renders limitation [14b] obvious for substantially the same reasons it is my opinion that Endo renders element [1a] obvious.

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

282. Due to the similarities between element [14c] and element [1b], it is my opinion that Endo renders limitation [14c] obvious for substantially the same reasons it is my opinion that Endo renders element [1b] obvious.

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

283. Due to the similarities between element [14d] and element [1d], it is my opinion that Endo renders limitation [14d] obvious for substantially the same reasons it is my opinion that Endo renders element [1d] obvious.

[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,

284. Due to the similarities between element [14e] and element [1e], it is my opinion that Endo renders limitation [14e] obvious for substantially the same reasons it is my opinion that Endo renders element [1e] obvious.

[14f] provide an adjustment output to the vehicle control system

285. Due to the similarities between element [14f] and element [1f], it is my opinion that Endo renders limitation [14f] obvious for substantially the same reasons it is my opinion that Endo renders element [1f] obvious.

[14g] wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle,

286. Due to the similarities between element [14g] and element [1h], it is my opinion that Endo renders limitation [14g] obvious for substantially the same reasons it is my opinion that Endo renders element [1h] obvious.

[14h] wherein the at lea[ ]st one vehicle control is adjusted via the adjustment output to match the vehicle control settings in the user profile memory.

287. Due to the similarities between element [14h] and element [7g], it is my opinion that Endo renders limitation [14h] obvious for substantially the same reasons it is my opinion that Endo renders element [7g] obvious.

7. Dependent Claims 15–17, and 19–20

i. Claim 15

288. Claim 15 depends from claim 14, which I understand means that claim 15 adds further limitations to all of the limitations of claim 14. As described above, Endo discloses all of the limitations of claim 14, and I incorporate my analysis of claim 14 into this analysis of claim 15.

289. Claim 15 is largely duplicative of claim 9. To illustrate their similarities, the table below shows a side-by-side comparison of claims 9 to 15. I have annotated (in red) the text of claim 15 that is different from claim 9.

Claim 9	Claim 15

[9] The non-transitory computer readable medium of claim 8, wherein prior to providing the adjustment output, the method further comprises:	**[15]** The vehicle control system of claim 14, wherein prior to providing the adjustment output, the profile identification module is further configured to
determining a presence of the user inside the vehicle,	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.	wherein the adjustment output is provided based at least partially on determining the user is present in the location of the vehicle.

290. As illustrated in the table above, the only difference between claims 9 and 15 is the preamble, *i.e.*, claim 9 is directed to a "*non-transitory computer readable medium*" and claim 15 is directed to a "*vehicle control system*."

> ***[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.***

291. This claim limitation is substantially identical to element 14[pre] for "*vehicle control system*" and claim 9 for the remaining limitations. I therefore repeat my discussion of element 14[pre] and claim 9 for the limitations of claim 15.

j. Claim 16

292. Claim 16 depends from claim 14, which I understand means that claim 16 adds further limitations to all of the limitations of claim 14. As described above, Endo discloses all limitations of claim 14, and I incorporate my analysis of claim 14 into this analysis of claim 16.

293. Claim 16 is largely duplicative of claim 2. To illustrate their similarities, the table shows a side-by-side comparison of claims 2 to claim 16. I have annotated (in red) the text of Claim 16 that is different from claim 2.

Claim 2	**Claim 16**
2[pre-a] The method of claim 1,	**16[pre-a]** The vehicle control system of claim 14,
wherein prior to determining the location inside the vehicle associated with the user the method further comprises:	wherein prior to determining the location inside the vehicle associated with the user the profile

	identification module is further configured to
storing, in the user profile memory, information corresponding to locations inside the vehicle occupied by the user;	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 control setting made by the user in at least one of the locations inside the vehicle; and	**[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
[2c] storing the vehicle control setting data in the user profile memory.	**[16c]** store the vehicle control setting data in the user profile memory.

294. As illustrated in the table above, the significant difference between claims 2 and 16 is the preamble, i.e., claim 2 is directed to a "*method*" and claim 16 is directed to a "*vehicle control system*."

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,

295. Claim limitations 16[pre-a] are substantively identical to element 14[pre] for "*vehicle control system*" and elements 2[pre-a] for the remaining limitations. I therefore refer back to my analysis of element 14[pre] and elements 2[pre-a] for the limitations of 16[pre-a].

[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

296. Due to the similarities between element [16b] and [2b], it is my opinion that Endo renders limitation [16b] obvious for substantially the same reasons it is my opinion that Endo renders element [2b] obvious.

[16c] store the vehicle control setting data in the user profile memory.

297. Due to the similarities between element [16c] and [2c], it is my opinion that Endo renders limitation [16c] obvious for substantially the same reasons it is my opinion that Endo renders element [2c] obvious.

k. Claim 17

298. Claim 17 depends from claim 14, which I understand means that claim 17 adds further limitations to all of the limitations of claim 14. As described above, Endo discloses all limitations of claim 14, and I incorporate my analysis of claim 14 into this analysis of claim 17.

299. Claim 17 is largely duplicative of claims 3 and 4. To illustrate their similarities, the table below shows a side-by-side comparison of claim 17 to claims 3 and 4. I have annotated (in red) the text of claim 17 that is different from claims 3 and 4.

Claims 3 and 4	Claim 17
[3] The method of claim 1,	**[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	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.	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 movement, associated with the one or more vehicle features.	**[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.

300. As illustrated in the table above, the only difference between claims 3, 4, and 17 is the preamble, i.e., claims 3 and 4 are directed to a "*method*" and claim 17 is directed to a "*vehicle control system*."

> ***[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***

301. This claim limitation is substantively identical to element 14[pre] for "*vehicle control system*" and claim 3 for the remaining limitations. I therefore repeat my discussion of element 14[pre] and claim 3 for this element [17a].

[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.

302. Due to the similarities between element [17b] and claim 4, it is my opinion that Endo renders element [17b] obvious for substantially the same reasons that Endo renders claim 4 obvious.

l. Claim 19

303. Claim 19 depends from claim 14, which I understand means that claim 19 add further limitations to all of the limitations of claim 14. As described above, Endo discloses all limitations of claim 14, and I incorporate my analysis of claim 14 into this analysis of claim 19.

304. Claim 19 is largely duplicative of claim 6. To illustrate their similarities, the table below shows a side-by-side comparison of claim 19 to claim 6. I have annotated (in red) the text of Claim that is different from claim 6.

Claim 6	Claim 19
6[pre-a] The method of claim 1,	**19[pre-a]** The vehicle control system of claim 14,
further comprising:	wherein the profile identification module is further configured to

determining that the user made a change to the adjusted at least one vehicle control; and	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.	**[19b]** store the change made to the adjusted at least one vehicle control in the user profile memory.

305. As illustrated in the table above, the only difference between claims 6 and 19 is the preamble, i.e., claim 6 is directed to a "*method*" and claim 19 is directed to a "*vehicle control system*."

> ***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***

306. Claim limitations 19[pre-a] are substantively identical to element 14[pre] for "*vehicle control system*" and element 6[pre-a] for the remaining limitations. I therefore repeat my discussion of elements 14[pre] and 6[pre-a] for the limitations of 19[pre-a].

[19b] store the change made to the adjusted at least one vehicle control in the user profile memory.

307. Due to the similarities between element [19b] and element [6b], it is my opinion that Endo renders element [19b] obvious for substantially the same reasons that it is my opinion Endo renders element [6b] obvious.

m. Claim 20

308. Claim 20 depends from claim 14, which I understand means that claim 20 adds further limitations to all of the limitations of claim 14. As described above, Endo discloses all limitations of claim 14, and I incorporate my analysis of claim 14 into this analysis of claim 20.

309. Claim 20 is largely duplicative of claim limitations [1c] and [1g]. To illustrate their similarities, the table below shows a side-by-side comparison of claim limitations [1c] and [1g] to claim 20. I have annotated (in red) the text of claim 20 that is different from [1c] and [1g].

Claims [1c] and [1g]	Claim 20
	20[pre-a] The vehicle control system of claim 14, wherein the profile identification module is further configured to

[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;	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
[1g] wherein the adjustment output is provided based at least partially on determining the user is present in the location inside the vehicle,	**[20b]** wherein the adjustment output is provided based at least partially on determining the user is present in the location inside the vehicle.

310. As illustrated above, claim limitations 20[pre-a]–[20b] are nearly identical to corresponding limitations of claim 1, namely [1c] and [1g]. The only substantial difference between claim limitations [1c], [1g] and 20 is that claim 1 is directed to a "*method*" and claim 20 is directed to a method performed by a "*vehicle control system*."

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

311. This claim limitation is substantively identical to element 14[pre] for "*vehicle control system*" and claim element [1c] for the remaining limitations. I therefore refer back to my analysis of elements 14[pre] and [1c] for the limitations of 20[pre-a].

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

312. Due to the similarities between element [20b] and element [1g], it is my opinion that Endo renders element [20b] obvious for substantially the same reasons it is my opinion that Endo renders element [1g] obvious.

B. Ground 2 – The Combination of Endo and Suzuki Renders all Limitations of Claims 5, 12, and 18 Obvious

8. Rationale to Combine

313. 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 Endo, with the known technique of detecting the presence of a specific user in a vehicle using sensor data, particularly cameras to capture images of passengers' faces, as disclosed in Suzuki to provide more

consistent functionality and user convenience improvements including improved accuracy and simplified storage. A PHOSITA would have understood that Endo and Suzuki are complementary technologies that are combinable. For example, Endo discloses that every embodiment disclosed therein is merely an "example" e.g., "an example of a hardware configuration," "an example of a functional block diagram," "an example of a flow chart diagram," etc., which indicates that other examples are available. (Endo, Ex. 1024, [0115].) Suzuki similarly discloses that the block diagram depicted in Figure 1 is "an example … according to this embodiment," which indicates other examples and embodiments are available. (Suzuki, Ex. 1026, [0006].)

314. Endo and Suzuki are from the same field – vehicle control systems that automatically adjust vehicle controls to a user's stored preferences:

> This provides an automatic setting device for vehicles, an automatic setting system, and an automatic setting method for vehicles that reduce the workload of occupants when providing services for each occupant.

(Endo, Ex. 1024, [0009].)

> This invention is an in-vehicle environment setting device that sets the environment for each seat in the vehicle . . .
>
> ***
>
> This invention allows for the automatic setting of the in-vehicle environment based on the environmental conditions set by passengers,

> by storing information that specifies the passengers and their corresponding vehicle environment conditions for each seat. When a passenger with stored identifying information boards the vehicle, the in-vehicle environment can be automatically adjusted based on the stored conditions.

(Suzuki, Ex. 1026, [0004]-[0005].)

315. Endo and Suzuki both disclose vehicle control systems that detect users to automatically adjust controls to stored preferences, facilitating user convenience:

> In order for the driver to drive in an appropriate driving position, the driver is enabled to adjust the front-back position of the seat, the reclining angle, and the height of the seat so that it reaches the desired seat position when getting into the vehicle. In cases where different drivers share the same vehicle, the driver must perform this adjustment work every time they get in . . . .
>
> ***
>
> This invention aims to provide an automatic setting device for a vehicle, an automatic setting system, and an automatic setting method for a vehicle that reduces the workload of occupants when providing services for each occupant, taking the above issues into consideration.

(Endo, Ex. 1024, [0002], [0007].)

> Even in vehicles that allow for setting air conditioning temperature, seat angle, and seat belt height for each seat, preferences for temperature settings differ among persons. Therefore, when moving to a different seat after a break at a drive-in, the settings must be adjusted again. This

> issue also applies when temperature adjustments can be made individually . . . This invention aims to solve the aforementioned problems by automatically adjusting the in-vehicle environment settings, such as air conditioning temperature, seat angle, and seat belt height, according to the preferences of the passengers.

(Suzuki, Ex. 1026, [0003]-[0004].)

316. Relatedly, both Endo and Suzuki recognize the benefit of storing user settings in association with each of the different seats in a vehicle:

> [T]he automatic setting system 100 of this embodiment can regenerate the seat position according to the seated position by storing the seat position information corresponding to the seat information [meaning a per seat basis] in electronic key 13. . . .

(Endo, Ex. 1024, [0062].)

> In addition, even for the same person, there may be different conditions for the front and rear seats; therefore, keeping separate in-vehicle environment conditions for each seat allows for more detailed customization of the in-vehicle environment.

(Suzuki, Ex. 1026, [0010].)

a. Improved Usability – Accommodating Sharing of a Key

317. As mentioned above, both Endo and Suzuki seek to improve comfort and user convenience of operating and riding in a vehicle. (*See, e.g.*, Endo, Ex. 1024, [0002], [0007]; Suzuki, Ex. 1026, [0003]-[0004].)

318. Endo discloses a vehicle automatic setting system 100, consisting of a vehicle-side setting device and an electronic key 13. (Endo, Ex. 1024, [0042].) More specifically, Endo discloses a vehicle system that takes advantage of a "vehicle [that] is equipped with an Intelligent Key System," hence the disclosure of an electronic key 13 as part of the system. (Endo, Ex. 1024, [0011].)

319. Suzuki similarly discloses a vehicle system that automatically loads a user's preferred settings, (Suzuki, Ex. 1026, [0004],) but Suzuki's system detects passengers of a vehicle through means other than a remote device carried by the user. Instead, Suzuki discloses various means of detection, including "cameras embedded in the front pillar, rearview mirror, headrest, etc., to capture images of people's faces . . . ." (Suzuki, 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. (Suzuki, Ex. 1026, [0011]-[0014].)

320. Endo discusses situations in which the occupant of a vehicle may be riding the vehicle as the driver, or other times as a passenger:

> [W]hen occupant 14 boards the D seat of vehicle A, the automatic setting system 100 detects that the electronic key existence seat is the D seat. If another family member drives vehicle A and occupant 14 boards the P seat, the automatic setting system 100 detects that the electronic key existence seat of the electronic key 13 is the P seat.

(Endo, Ex. 1024, [0013].)

(1) Sharing a key without overwriting primary user's stored settings

321. In a situation like that described above in Endo, when the occupant 14 is riding in the vehicle as a passenger while the other family member is driving, it is likely that the family member (driver) is the one with the electronic key 13. In turn, the family member would be subjected to the occupant 14's preferred seat settings rather than their own, causing them to manually adjust the settings. And because Endo discloses that the system overwrites the stored settings when the individual carrying the electronic key 13 adjusts the seat settings, (*See* Endo, Ex. 1024, [0044]), the occupant 14 would later be subjected to its family member's seat settings the next time they drove the vehicle.

322. Thus, the combination of Endo's system and key with Suzuki's camera and facial recognition teachings would have provided a first improvement in usability in the common situation where multiple users of a vehicle share a single key by allowing for the system to use facial recognition to verify that user of the detected key matches facial characteristics stored in the key.

323. Accordingly, 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 without the concern that the first user's stored settings would be overwritten when the second user borrows the first user's key, 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.

(2) Storage of multiple profiles on one key

324. The combination of Endo and Suzuki would have also provided an additional usability improvement in the common situation where multiple users of a car share a single key; namely, allowing for the storage of seat position information for multiple users on a single key.

325. Endo teaches that the electronic key 13 stores seat position information in association with multiple other pieces of information:

> When the position information storage unit 48 is requested to store seat position information, it stores the received seat position information, vehicle model information, and seat information in memory 27. Fig. 4(b) shows an example of various kinds of information stored in memory 27 of electronic key 13. As illustrated, the position information storage unit 48 stores the seat position information according to each type of vehicle. In addition, 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.

(Endo, Ex. 1024, [0045].)

As shown in Figure 4(b) below, Endo teaches that seat position information is stored according to the seat in the vehicle and the specific model of vehicle.

(b)

Vehicle Type Information	Seat information	
	D Seat	Seat Position Information
	P Seat	Seat Position Information
	Rear Left Seat	Seat Position Information
	Rear Right Seat	Seat Position Information

Endo, Ex. 1024, Fig. 4(b)

326. If the electronic key 13 stored facial feature information, as disclosed in Suzuki, a step above vehicle type information in Endo's data model disclosed above in Figure 4(b) and stored in the electronic key, then Endo's automatic setting system 100 could utilize Suzuki's cameras to check seat information against facial feature information in addition to checking against the vehicle model. In turn, the combination allows multiple users to share the same key but have their preferred driver settings implemented because the system would be able to store and distinguish between seat position settings stored for two distinct users.

327. Accordingly, PHOSITA would have understood that the combination of Endo and Suzuki would have yielded predictable results, e.g., providing data that allowed for the storage of multiple profiles on a single key, thereby facilitating the sharing of a single key among multiple users, which would be common in situations where a vehicle belongs to a family of drivers.

b. Improved Convenience – Passengers Would Not Each Need Their Own Key

328. Endo envisions every person in the car carrying a key:

> For example, as shown in Fig. 1(a), when occupant 14 boards the D seat of vehicle A, the automatic setting system 100 detects that the electronic key existence seat is the D seat. If another family member drives vehicle A and occupant 14 boards the P seat, the automatic setting system 100 detects that the electronic key existence seat of the electronic key 13 is the P seat.
>
> ***
>
> When occupant 14 boards, for example, the P seat of vehicle B, which belongs to another person, 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. When boarding another person's vehicle B, occupant 14 often sits in a seat other than the D seat, such as the P seat, but without adjusting the seat position, the automatic setting system 100 can regenerate the

> optimal seat position for the electronic key existence seat without adjusting the seat position by occupant 14.

(Endo, Ex. 1024, [0013], [0016].)

329. A PHOSITA would have understood that, typically, it is likely that only the driver of a given vehicle will be carrying a key because a key to a vehicle historically serves the purpose of starting the vehicle.

330. Endo is directed to "providing services for each occupant." (Endo, Ex. 1024, Abstract.) Yet, as mentioned above, Endo relies on every occupant in the vehicle actively holding separate electronic keys 13 in order to do so, which is not likely to occur as a matter of cost (multiple keys), and convenience (each user needing to remember to bring their key whether they are driving or not). By utilizing the data structure of the combination of Endo and Suzuki mentioned above and storing multiple profiles on a single key, the system would be able to adjust the seat position of each occupant even if only one electronic key 13 is held because it would have been able to detect the facial characteristics and location of each passenger and then retrieve and implement the stored settings for according to each user.

331. Accordingly, a PHOSITA would have been motivated to combine Endo and Suzuki to yield predictable results, e.g., eliminating the need for every passenger in the vehicle to carry their own electronic key for their preferred seat position

settings to be automatically regenerated, which is a clear benefit and improvement over Endo's disclosure alone.

c. A PHOSITA would have understood how to combine Endo and Suzuki

332. A PHOSITA would have understood how to combine Endo and Suzuki, recognizing that 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.

333. 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 also need to be 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. This integration would be straightforward for a PHOSITA familiar with embedded systems and automotive software architectures.

d. *KSR* Factors

334. Several *KSR* factors also support my opinion that a PHOSITA would have found it obvious to combine the teachings of Endo with the teachings of Suzuki.

335. First, as described above, combining the facial recognition detection functionality of Suzuki with Endo would have yielded predictable results. Endo envisions every passenger in the vehicle having their own key in order to automatically adjust the seat position of the seat the passenger is occupying, meaning that keys could not practicably be shared between users, particularly in light of the fact that Endo discusses updating stored seat position information when it is determined that the user of the key manually adjusted the seat. (*See* Endo, Ex. 1024, [0044].) The combination would have predictably permitted the use of as few as one key even with multiple passengers by providing the ability to distinguish between users using more than just which key is held. And by store seat position information in the key in association with the facial characteristics of a user, the combination predictably allows 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.

336. Second, it would have been obvious to try adding Suzuki's facial recognition functionality to Endo's system. Indeed, as described above both, systems detect users in each seat within the vehicles and then automatically apply the detected users' settings specific to the seat in which the user was detected. (*See* ¶¶ 314-316.) It would have been obvious try including Suzuki's facial recognition functionality as it would have merely been providing Endo with an additional method of detecting a particular user—consistent with the detection functionality and goals of Endo.

337. 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 by permitting multiple users to have their seat position information stored in a single key in association with those users' individual facial characteristics. This would have saved costs related to key production, reduce the possibility for system confusion or error when multiple keys are detected in the vehicle at the same time and/or same location, and improve the practicality of the system.

9. Dependent Claims 5, 12, and 18

e. Claim 5

338. Claim 5 depends from claim 1, which I understand means that claim 5 add further limitations to all of the limitations of claim 1. As described above, Endo

discloses all of the limitations of claim 1, and I incorporate my analysis of claim 1 into this analysis of claim 5.

5[pre] The method of claim 1, wherein determining the presence of the user inside the vehicle further comprises:

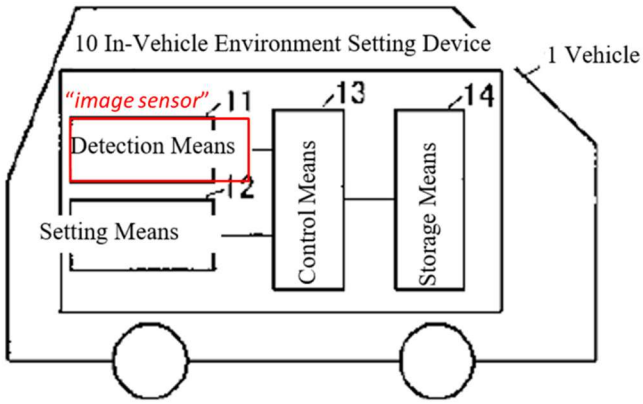
339. As explained for limitation [1c], Endo discloses a method that includes a step of determining the presence of a user inside a vehicle. Specifically, Endo discloses that "the matching ECU 21 sends a request signal to the transmission circuit 23" which "transmits the request signal from antennas 11a to 11d" to discover the electronic key 13 in response to a courtesy switch signal indicating a door unlocking and opening. (Endo, Ex. 1024, [0026]-[0027].) Thus Endo describes initiating device discovery in response to a trigger event, e.g., a courtesy switch signal that indicates the presence of a user within the interior of the vehicle. Then, as I described with reference to claim [1a], 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. (Endo, 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." (Endo, Ex. 1024, [0046].) It is thus my opinion that Endo in combination with Suzuki renders this limitation obvious.

[5a] detecting a person via at least one image sensor associated with the vehicle;

340. Suzuki discloses a vehicle environment setting 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." (Suzuki, Ex. 1026, [0004].) Suzuki explains that 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." (Suzuki, Ex. 1026, [0005].)

341. With reference to Figure 1 below, Suzuki 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. (Suzuki, Ex. 1026, [0006], [0008]-[0009].)

[Fig. 1]



Suzuki, Ex. 1026, Fig. 1 (Annotated)

342. Suzuki explains that the detection means 11 can take many forms, such as "cameras . . . to capture images of people's faces" and more. (Suzuki, Ex. 1026, [0006].) Suzuki teaches using cameras as a means of detecting identification information related to the passengers who have boarded the vehicle. (Suzuki, Ex. 1026, [0006].)

343. Based on Suzuki teaching that the cameras are used to detect or identification information of passengers, a PHOSITA would have understood that a camera is or includes an "*image sensor*."

344. Indeed, the '296 Patent even correlates image sensors to cameras—stating "the sensors may include one or more of optical, or ***image, sensors*** . . . (e.g., ***cameras***, etc.)." ('296 Patent, Ex. 1001, at 33:50-51.) The '296 Patent also explains that "camera sensors . . . may be similar to image sensors" and that "camera sensors may record still images, video, or combinations thereof." ('296 Patent, Ex. 1001, at

37:34-37.) Continuing further, the '296 Patent explains that "matching operations may be performed by . . . relating to video input received via one or more image sensors, cameras [], and the like. ('296 Patent, Ex. 1001, at 40:46-49.) The '296 Patent also explains that "the system 800 may receive information about a user 216 (e.g., from a camera . . .)." ('296 Patent, Ex. 1001, at 42:20-21.) These examples described in the '296 Patent further reinforce my opinion that a PHOSITA would have understood that the camera taught by Suzuki is an "*image sensor*."

345. 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. . ." (Suzuki, Ex. 1026, Claim 2, *see also* Suzuki, Ex. 1026, [0004].)

346. Thus, it is my opinion that Suzuki renders the limitation "*detecting a person via at least one image sensor* [detection means 11 as a camera] *associated with the vehicle*" of claim 5 obvious.

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

347. As I mentioned in my analysis of limitation [5b] above, Suzuki explains that the detection means 11 can take many forms, such as "cameras . . . to capture images of people's faces" and more. (Suzuki, Ex. 1026, [0006].)

348. As I also mentioned, Suzuki 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 . . ." (Suzuki, Ex. 1026, Claim 2, *see also* Suzuki, Ex. 1026, [0004].)

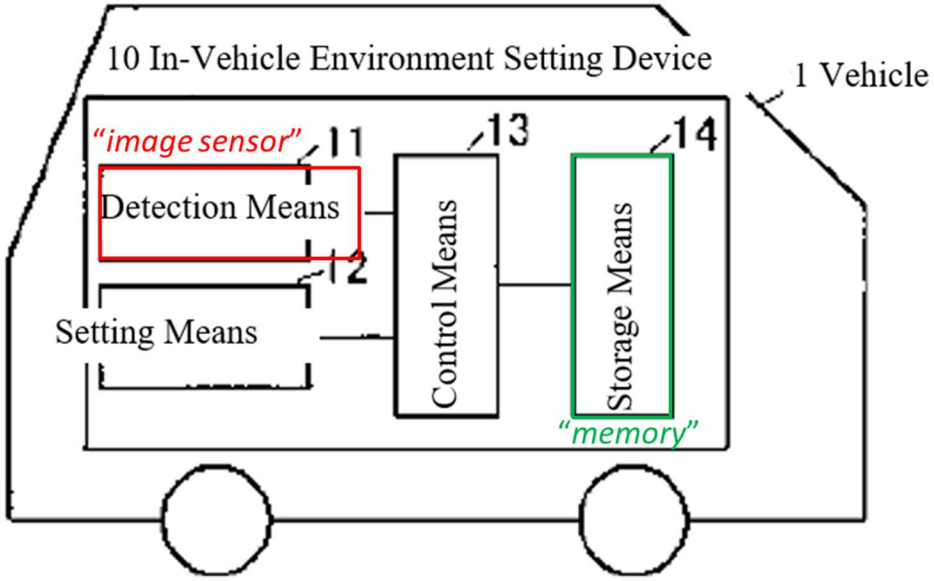
349. In light of Suzuki teaching that the detection means 11 may be a camera "to capture images of people's faces," a PHOSITA would have understood Suzuki teaches that the information that specifies the passenger, detected by the detection means 11 [camera], includes "*facial features*," specifically when the camera (image sensor) takes images of people's faces.

350. Thus, it is my opinion that Suzuki renders the limitation "*identifying facial features* [information that specifies the passenger which may be images of faces] *associated with the person detected via the at least one image sensor* [detection means 11 as a camera]" of claim 5 obvious.

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

351. Suzuki further explains that if the identifying information captured by the detection means 11 [a camera] (annotated in red below) 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" (annotated in green below). (Suzuki, Ex. 1026, [0009].)

[Fig. 1]



Suzuki, Ex. 1026, Fig. 1 (Annotated)

352. 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." (Suzuki, Ex. 1026, [0010].) Suzuki's claimed program therefore includes "a step of comparing the information specifying the detected passengers with the information stored in the storage means." (Suzuki, Ex. 1026, claim 2, [0004].)

353. Thus, it is my opinion Suzuki renders the limitation "*determining whether the identified facial features associated with the person* [detected

identification information] *match user characteristics* [passenger identification information] *stored in a memory* [storage means 11]" of claim 5 obvious.

f. Claim 12

354. Claim 12 depends from claim 9, which I understand means that claim 12 add further limitations to all of the limitations of claim 9.

355. As described above Endo discloses all of the limitations of claim 9, and I incorporate my analysis of claim 9 into this analysis of claim 12.

356. Claim 12 is largely duplicative of claim 5. To illustrate, the table below shows a side-by-side comparison of claims 5 and 12. I have annotated (in red) the text of claim 12 that is different from claim 5.

Claim 5	**Claim 12**
5[pre] The method of claim 1,	**12[pre]** The non-transitory computer readable medium of claim 9,
wherein determining the presence of the user inside the vehicle further comprises:	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;	**[12a]** 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	**[12b]** 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.	**[12c]** determining whether the identified facial features associated with the person match user characteristics stored in a memory.

12[pre] The non-transitory computer readable medium of claim 9, wherein determining the presence of the user inside the vehicle further comprises:

357. Claim limitation 12[pre] is substantially similar to limitation 5[pre]. Claim 12[pre] requires the method step of determining the presence of the user to be realized through execution of instructions contained on a non-transitory computer readable medium whereas claim 5[pre] claims only the method itself. Because claim 12 depends from claim 9 and my analysis for that claim explained how Endo discloses that "*determining the presence of the user inside the vehicle* [electronic presence seat]" is performed by execution of instructions by a processor [vehicle

side setting device 40 or therein] stored on a "*non-transitory computer readable medium* [non-volatile memory of vehicle side setting device 40]," I refer back to my analysis of claim 9 to establish that Endo discloses this limitation.

[12a] detecting a person via at least one image sensor associated with the vehicle;

358. Claim limitation [12a] is substantially identical to element [5a]. I therefore repeat my discussion of element [5a] for this element [12a].

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

359. Claim limitation [12b] is substantially identical to element [5b]. I therefore repeat my discussion of element [5b] for this element [12b].

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

360. Claim limitation [12c] is substantially identical to element [5c]. I therefore repeat my discussion of element [5c] for this element [12c].

g. Claim 18

361. Claim 18 depends from claim 15, which I understand means that claim 18 adds further limitations to all of the limitations of claim 15

362. As described above, Endo discloses all of the limitations of claim 15, and I refer back to my analysis of claim 15 into this analysis of claim 18.

363. Claim 18 is largely duplicative of claim 12. To illustrate, the table below shows a side-by-side comparison of claims 12 and 18. I have annotated (in red) the text of claim 18 that is different from claim 12.

Claim 12	Claim 18
12[pre] The non-transitory computer readable medium of claim 9, wherein determining the presence of the user inside the vehicle further comprises:	**18[pre]** The vehicle control system of claim 15, wherein, in determining the presence of the user inside the vehicle, the user [sic] the profile identification module is further configured to
[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,
[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
[12c] determining whether the identified facial features associated with the person match user characteristics stored in a memory.	**[18c]** determine whether the identified facial features associated with the person match user characteristics stored in a memory.

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

364. Limitation 18[pre] is substantially similar to limitation 5[pre] and 12[pre]. 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, whereas claim 12[pre] merely requires the method step to be realized through execution of instructions contained on "[*the*] *non-transitory computer readable medium*."

365. Because claim 18 depends from claim 15 and my analysis for that claim explained how Endo discloses a "*profile identification module* [executed by the vehicle side setting device 40 or a processor therein] *further configured to determine a presence of the user inside the vehicle* [electronic presence seat]," I refer back to my analysis of claim 15 to establish that Endo discloses this limitation.

[18a] detect a person via at least one image sensor associated with the vehicle,

366. Claim limitation [18a] is substantially identical to element [5a]. I therefore repeat my discussion of element [5a] for this element [18a].

[18b] identify facial features associated with the person detected via the at least one image sensor, and

367. Claim limitation [18b] is substantially identical to element [5b]. I therefore repeat my discussion of element [5b] for this element [18b].

[18c] determine whether the identified facial features associated with the person match user characteristics stored in a memory.

368. Claim limitation [18c] is substantially identical to element [5c]. I therefore repeat my discussion of element [5c] for this element [18c].

C. Ground 3 – He Renders All Limitations of Claims 1–4, 6–11, 13–17, and 19–20 Obvious

1. Independent Claim 1

369. I have given each of the limitations of claim 1 a unique numerical identifier, as shown in the chart below:

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

1[pre] A method, comprising:

370. He discloses a vehicle system 100 that includes "a controller 110, a profile selector . . . 140, a wireless vehicle system 150, and vehicle components 160." (He, Ex. 1025, [0015].) He explains that 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." (He, Ex. 1025, [0016].)

371. He discloses the vehicle system can store users' preferred settings for various vehicle controls in a user profile and implement those settings:

> [T]he vehicle system 100 allows users to set and select preferred settings for vehicle components 160. Some 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. For example, various actuators (e.g, motors, servos, etc.) or controls 162 can control the position of vehicle components 160, such as automated mirrors and seats. The preferred settings for the vehicle components 160 are stored in memory 130 as setting inputs 134 that form part of a user profile 132.

(He, Ex. 1025, [0018].)

372. With reference to Figure 3, He discloses the steps of a method of automated operation carried out by the vehicle system 100 as a flow chart. Further, He claims variations of this method in claims 1–10.

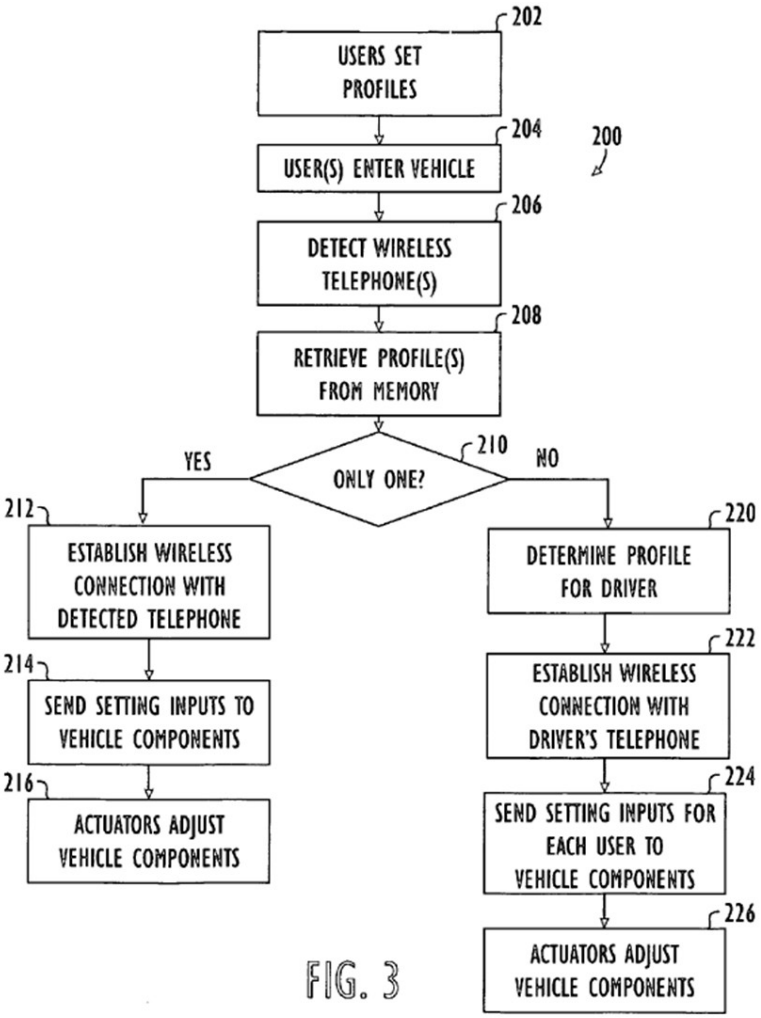


FIG. 3

He, Ex. 1025, Fig. 3

373. For example, He 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[.]" (He, Ex. 1025, Claim 1.) He further claims "wherein retrieving the user profile for one of the users comprises: automatically detecting a wireless user device within range of the wireless vehicle system, and retrieving the user profile having the wireless

connection identifier associated with the detected wireless user device" and "wherein retrieving the user profile for one of the users comprises: automatically determining a driver of the vehicle, and retrieving the user profile for the determined driver. (He, Ex. 1025, Claims 6–7.)

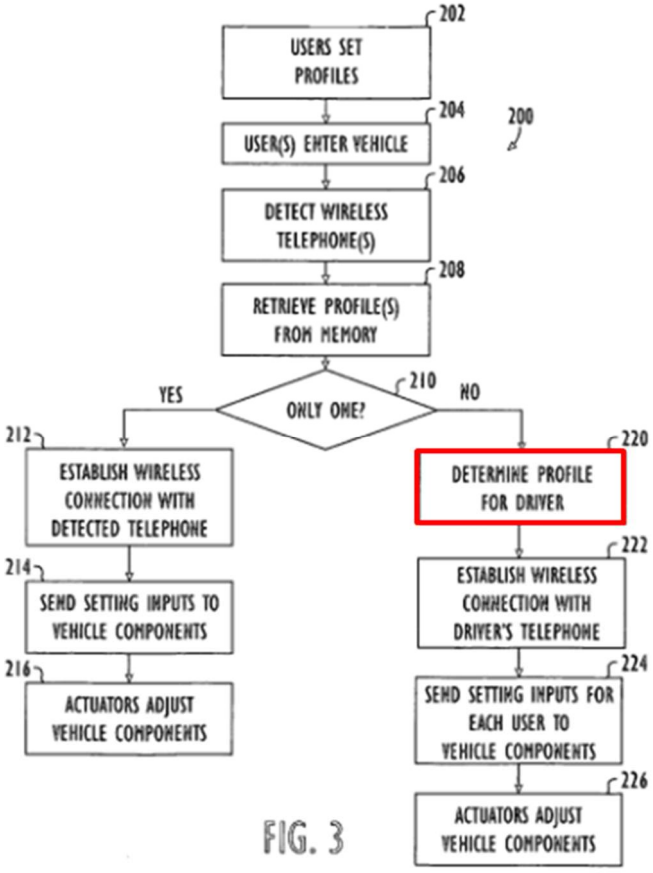
374. Thus, it is my opinion that He discloses a "*method*."

[1a] determining a location inside a vehicle associated with a user;

375. As explained above, He discloses a vehicle system 100 that performs a method using "a controller 110, a profile selector . . . 140, a wireless vehicle system 150, and vehicle components 160." (He, Ex. 1025, [0015].) In one disclosed embodiment, He explains that the vehicle system 100 allows "the user, who can be a driver or passenger, can have the seat, mirrors, and other vehicle components 160 moved or set to her preferred settings." (He, Ex. 1025, [0019].)

376. In another example, He explains that "[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[.]" (He, 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." (He, Ex. 1025, [0033].)

377. To accomplish the above, He teaches that "the controller 110 determines which user profile 132 belongs to the current driver[.]" corresponding to block 220 (annotated in red) in the method depicted in Figure 3. (He, Ex. 1025, [0029].) A PHOSITA would have thus understood that He teaches the controller makes a determination of which user, detected via their wireless telephone 104, is located in the driver's seat because the current driver of a vehicle occupies the driver's seat in a car.



He, Ex. 1025, Fig. 3 (Annotated)

378. He discloses using seat sensors to determine how many people are in a vehicle and where in the vehicle the users are located, *e.g.*, sitting in the driver or passenger seat. For example, He discloses detecting the location of a user associated with a wireless telephone at the driver seat of the of the vehicle:

> In one embodiment, the controller 110 may determine from seat sensors (not shown) how many people are sitting in the vehicle 102. If only one person is detected and only one wireless telephone 104 is detected, then that person is most likely the current driver of the vehicle 102.

(He, Ex. 1025, [0028].)

379. A PHOSITA would have understood that He's teaching of [1] use of a seat sensor to detect that only person is seated in the vehicle, coupled with [2] detection of only one wireless telephone in the vehicle, would have led to the correct [3] assumption that the phone is associated with the user driving the vehicle and sitting in the driver seat. This example demonstrates how He teaches determining location within the vehicle (driver seat) that is associated with a user (associated with the only wireless phone in the vehicle).

380. Similarly, He discloses detecting the location of a user associated with a wireless telephone at the front passenger seat of the vehicle:

> If a seat sensor detects a front seat passenger and there is only one other detected wireless telephone 104 besides that of the driver, for example, the controller 110 may assume that the

> associated user of the other detected telephone 104 is the front seat passenger. In this situation, the controller 110 can send that user's preferred seat settings to the actuators 162 for the passenger seat of the vehicle 102.

(He, Ex. 1025, [0033].)

381. He also describes an embodiment wherein the users' profiles include stored histories that are used to determine which user is seated in the driver's seat:

> In another embodiment to determine the driver at Block 220, the profile handler 120 can access stored histories about the users in the user profiles 132. The stored histories may indicate which user is most likely to be the current driver of the vehicle 102. For example, the stored history for one of the user profiles 132 may indicate that 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. Based on the determination from the histories, the profile handler 120 may assume that the wireless telephone 104 belonging to the more likely user is the current driver and can take the appropriate actions detailed below.

(He, Ex. 1025, [0030].)

382. He also describes that if there is any ambiguity about which of the multiple detected phones may be in which location, the user can use the user interface provided by the system to directly indicate which location they are in, and

the system can thus associate a given phone (and its stored profile) with a specific location in the vehicle:

> On the other hand, if seat sensors indicate that both the driver's seat and the front passenger's seat are occupied, then the need for manual verification or override with the user interface 140 may be necessary, especially if only one wireless telephone 104 is detected.
>
> * * *
>
> In yet another embodiment to determine the driver at Block 220, the profile handler 120 can require the users in the vehicle 102 to select which one of them is the current driver using the user interface 140.

(He, Ex. 1025, [0028], [0031].)

383. A PHOSITA would have understood that He teaches examples of determining a location within the vehicle (front passenger seat) that is associated with a user (associated with the wireless phone of the non-driver) by [1] use of a seat sensor to detect a front seat passenger coupled with [2] detection of a wireless telephone other than the driver, which would have led to the correct [3] assumption that the only other phone is associated with the user sensed to be sitting in the front passenger seat, or otherwise [4] using the user interface to further determine which users are associated with which locations in the vehicle when multiple users' devices are in the vehicle. These additional examples demonstrate how He teaches

determining location within the vehicle (passenger seat) that is associated with a user (associated with the non-driver wireless phone in the vehicle).

384. Thus, it is my opinion that He renders the limitation "*determining a location inside a vehicle* [driver's seat or passenger seats] *associated with a user* [that the current driver and passengers are occupying]" of claim 1 obvious.

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

385. As I explained in my above analysis of limitation [1a], He discloses that "the controller 110 determines which user profile 132 belongs to the current driver" versus other passengers using seat sensors:

> In one embodiment, the controller 110 may determine from seat sensors (not shown) how many people are sitting in the vehicle 102. If only one person is detected and only one wireless telephone 104 is detected, then that person is most likely the current driver of the vehicle 102.
>
> * * *
>
> If a seat sensor detects a front seat passenger and there is only one other detected wireless telephone 104 besides that of the driver, for example, the controller 110 may assume that the associated user of the other detected telephone 104 is the front seat passenger. In this situation, the controller 110 can send that user's preferred seat settings to the actuators 162 for the passenger seat of the vehicle 102.

(He, Ex. 1025, [0028], [0033].)

He also discloses using a manual override:

> On the other hand, if seat sensors indicate that both the driver's seat and the front passenger's seat are occupied, then the need for manual verification or override with the user interface 140 may be necessary, especially if only one wireless telephone 104 is detected.
>
> In yet another embodiment to determine the driver at Block 220, the profile handler 120 can require the users in the vehicle 102 to select which one of them is the current driver using the user interface 140.

(He, Ex. 1025, [0028], [0031].)

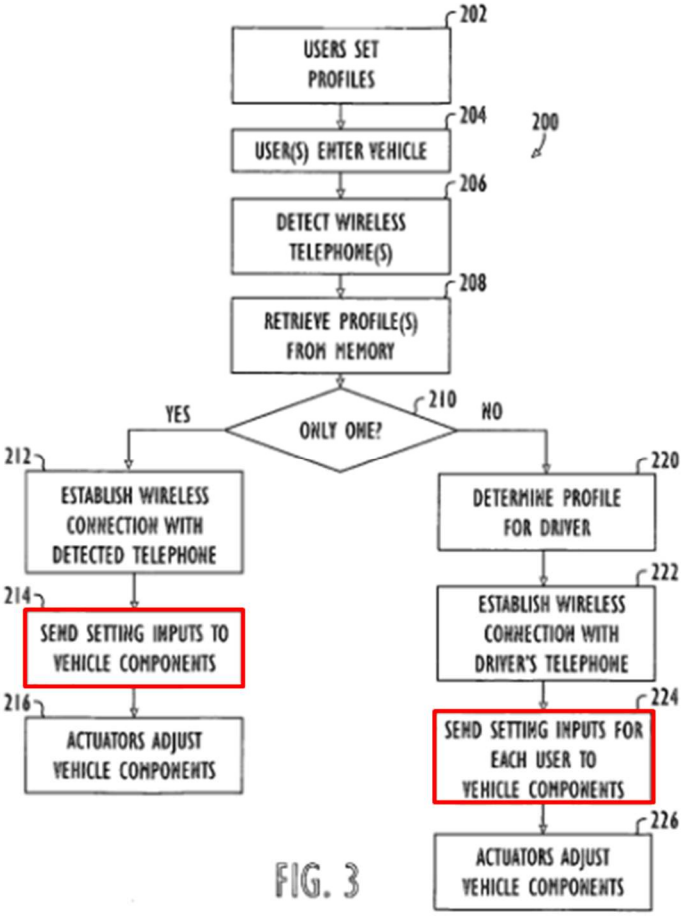
He further teaches determining what location is associated with a particular user by referencing stored histories:

> In another embodiment to determine the driver at Block 220, the profile handler 120 can access stored histories about the users in the user profiles 132. The stored histories may indicate which user is most likely to be the current driver of the vehicle 102. For example, the stored history for one of the user profiles 132 may indicate that 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. Based on the determination from the histories, the profile handler 120 may assume that the wireless telephone 104 belonging to the more likely user is the current driver and can take the appropriate actions detailed below.

(He, Ex. 1025, [0030].)

386. He teaches that the controller 110 of the vehicle system 100 then sends "the setting inputs 134 for the determined driver . . . to <u>those vehicle components</u>

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." (He, Ex. 1025, [0033].) This corresponds to blocks 214 and 224 (annotated in red) in the method depicted in Figure 3.



He, Ex. 1025, Fig. 3 (Annotated)

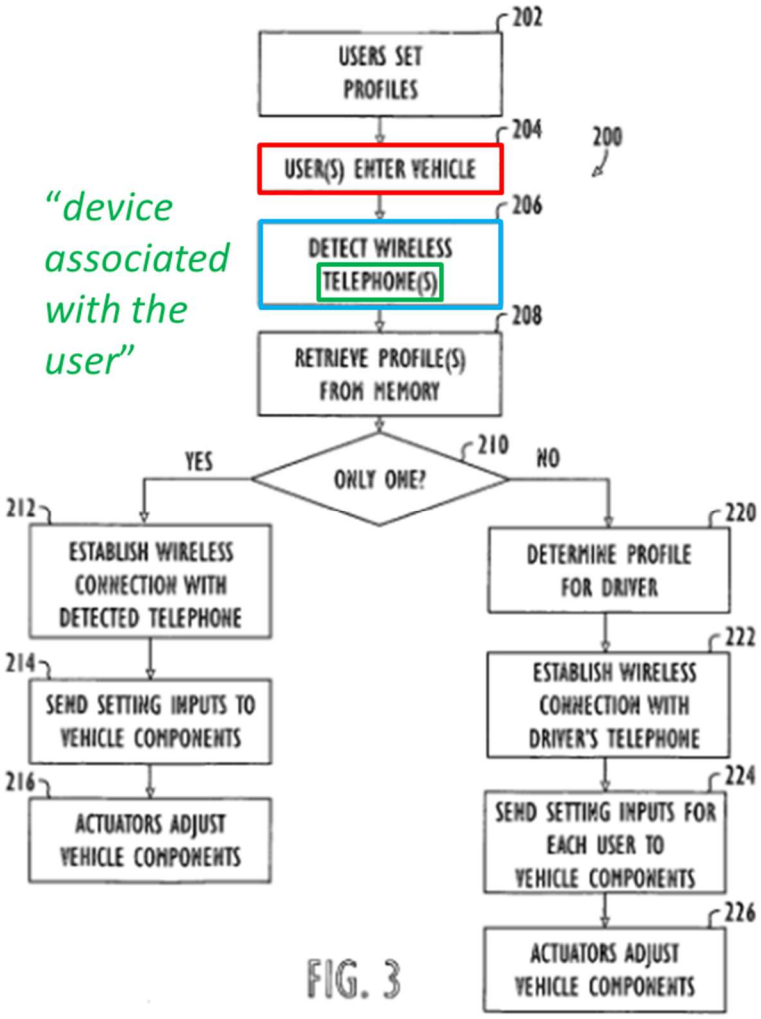
387. A PHOSITA would have understood that in order to send these settings to the specific vehicle components appropriate for the driver or passenger, the

system would first determine the vehicle controls that are available for each potential seat.

388. Thus, it is my opinion that He renders the limitation "*determining at least one vehicle control* [vehicle components 160 such as the driver's seat or steering wheel tilt mechanism] *associated with the location inside the vehicle* [driver's seat or passenger seat]" of claim 1 obvious.

[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;

389. With reference to Figure 3, He discloses a method depicted in flow chart form "of automated operation by the vehicle system 100 …." (He, Ex. 1025, [0026].) He explains that block 204 (annotated in red) corresponds to "[w]hen 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[.]" (He, Ex. 1025, [0026].)



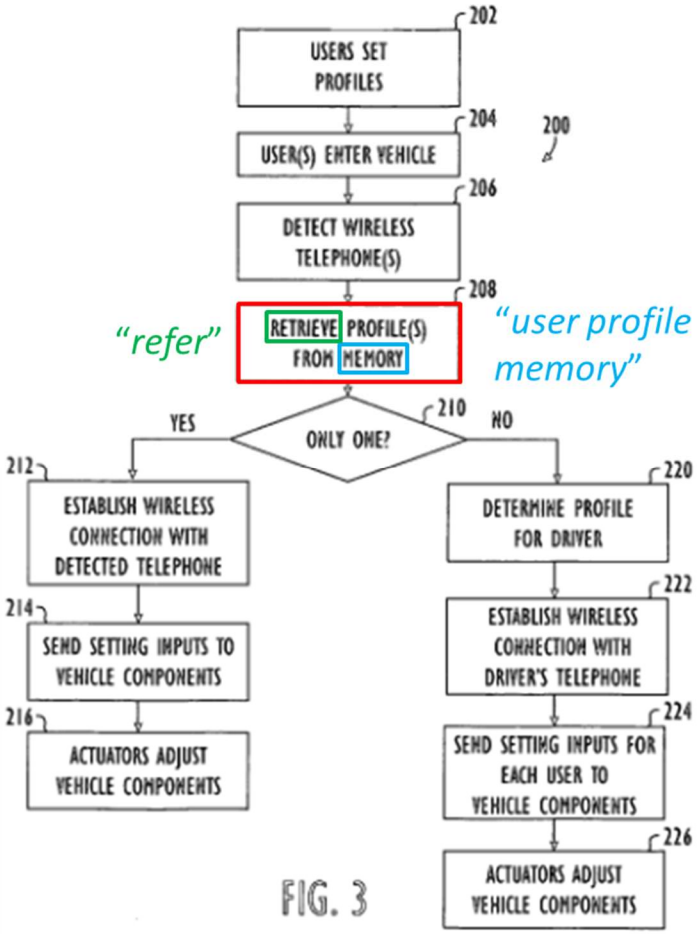
He, Ex. 1025, Fig. 3 (Annotated)

390. Because He discloses that this step of "detect[ing] . . . the wireless telephones 104 within range" at block 206 as a step subsequent to the user entering the vehicle at block 204, a PHOSITA would have understood that "within range" means "*in an area of the vehicle*." A PHOSITA would have thus understood that He teaches that by detecting a user's phone is "*in an area of the vehicle*," the vehicle system 100 determines that the user is in the vehicle.

391. Thus, it is my opinion that He renders the limitation "*determining a presence of the user inside the vehicle* [within range of the hands-free system 150]*, wherein determining the presence of the user comprises detecting a device associated with the user* [the user's wireless telephone 104] *in an area of the vehicle* [within range of the hands-free system 150]" of claim 1 obvious.

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

392. With reference to Figure 3, He discloses a method depicted in flow chart form "of automated operation by the vehicle system 100 …." (He, Ex. 1025, [0026].) He explains that block 208 (annotated in red) corresponds to "the profile handler 120 at the controller 110 access[ing] the user profiles 132 stored in memory 130" using the "unique device IDs . . . of the wireless telephones 104" that were detected. (He, Ex. 1025, [0026].)



He, Ex. 1025, Fig. 3 (Annotated)

393. 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. The memory 130 is a "*user profile memory*" because it contains the user profiles 132, which comprise data associated with the user. As shown in Figure 1 below, the controller 110 refers to the memory 130 (annotated in blue) for the user profile 132 (annotated in red) based on the device ID 136 of the user's wireless telephone 104 to retrieve setting inputs 134 (annotated in green).

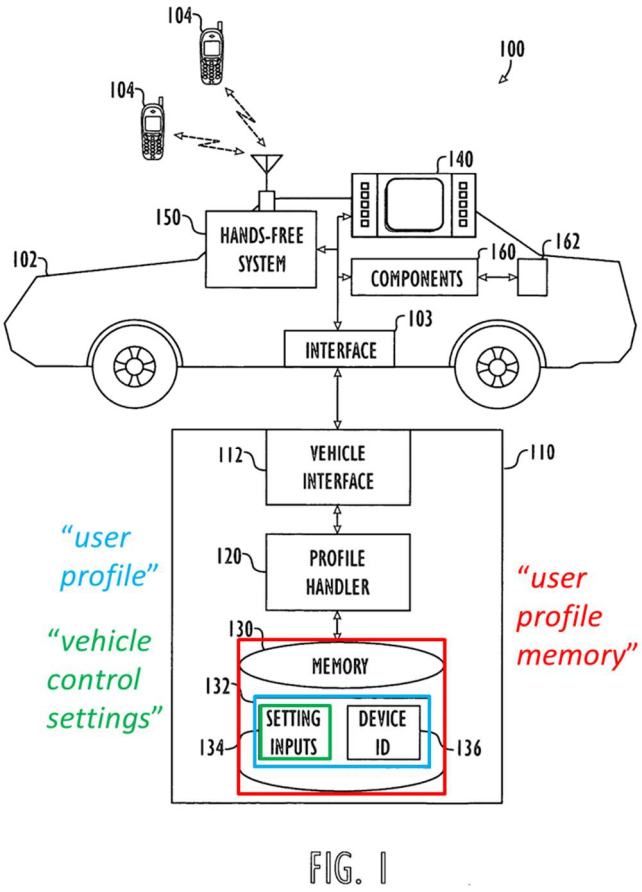


FIG. 1

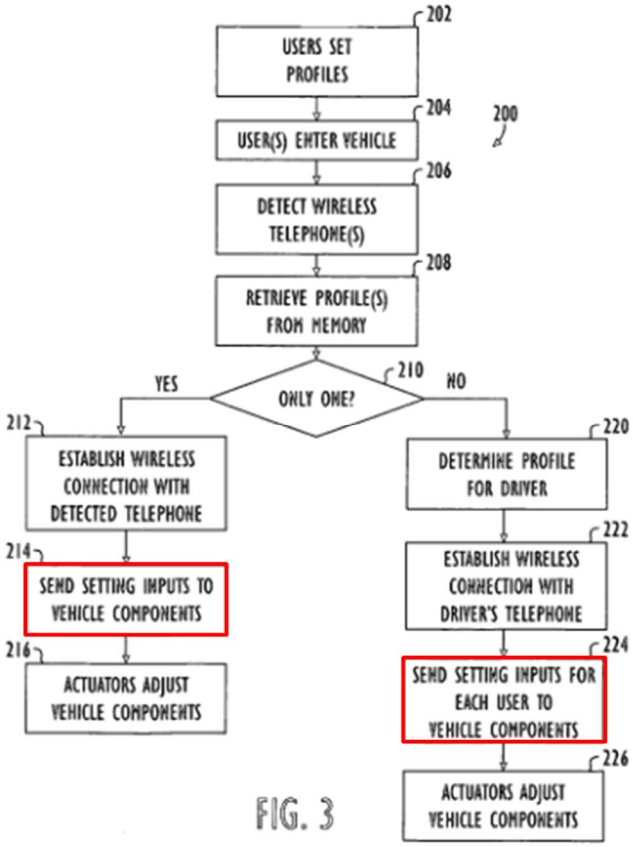
He, Ex. 1025, Fig. 1 (Annotated)

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

395. Thus, it is my opinion that He renders the limitation "*referring to a user profile memory* [memory 130] *associated with the user* [user profile 132 determined according to unique device ID of the user's wireless telephone 104] *for vehicle control settings* [setting inputs 134]" of claim 1 obvious.

[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

396. With reference to Figure 3, He discloses a method depicted in flow chart form "of automated operation by the vehicle system 100 …." (He, Ex. 1025, [0026].) 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" in block 214 (annotated in red). (He, Ex. 1025, [0027].) That is, He discloses sending preferred setting inputs to the components that would affect the driver, *e.g.*, setting inputs for the components at the location of the driver, such as the seat the driver is sitting in. He also discloses that the system 100 performs the same action when more than one wireless telephone is detected in block 224 (also annotated in red). (He, Ex. 1025, [0033].)



He, Ex. 1025, Fig. 3 (Annotated)

397. As I explained in my analysis of claim limitation [1d], He explains:

> After the user profile [132] is retrieved, one or more commands are initiated to vehicle components [160] having setting inputs [134] in the retrieved user profile [132]. In turn, the vehicle components implement those settings based on the commands.

(He, Ex. 1025, [0010].)

398. He discloses several examples of vehicle components that can be adjusted based on the setting inputs 134:

> As mentioned briefly above, the vehicle system 100 allows users to set and select preferred settings for vehicle components 160. **Some**

> **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**. For example, various actuators (e.g, motors, servos, etc.) or controls 162 can control the position of vehicle components 160, such as automated mirrors and seats. The preferred settings for the vehicle components 160 are stored in memory 130 as setting inputs 134 that form part of a user profile 132.

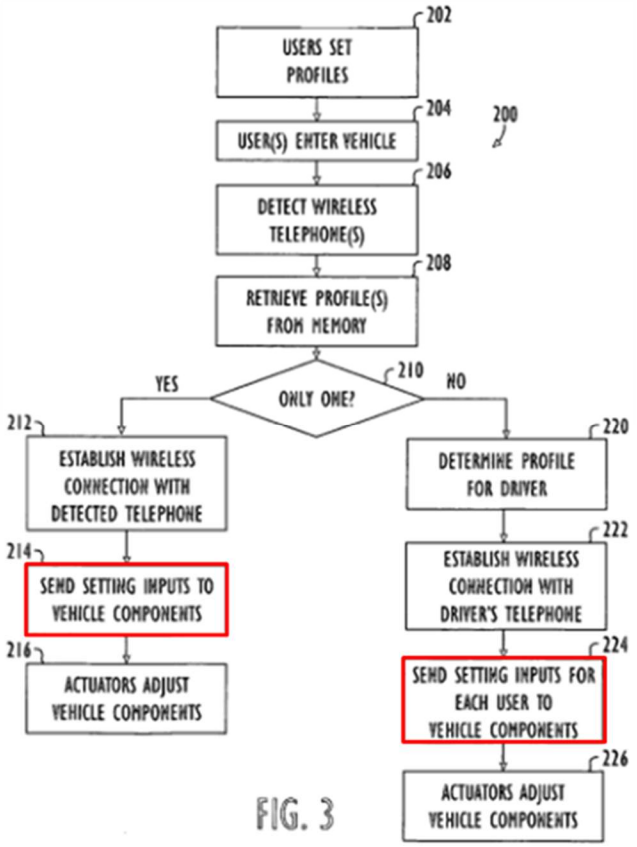
(He, Ex. 1025, [0018].)

399. By teaching that the commands are initiated "to vehicle components having setting inputs in the retrieved user profile[,]" a PHOSITA would have understood that He teaches the vehicle system 100 makes a determination to adjust the vehicle components 160 based on whether the user profile 132 contains setting inputs 134 corresponding to those vehicle components 160.

400. Thus, it is my opinion that He renders the limitation "*determining, based at least partially on the vehicle control settings* [setting inputs 134]*, to adjust the at least one vehicle control* [vehicle components 160] *associated with the location inside the vehicle* [vehicle components 160 appropriate for the driver]" of claim 1 obvious.

[1f] providing an adjustment output to a vehicle control system,

401. As previously mentioned, He discloses a method depicted in flow chart form "of automated operation by the vehicle system 100." (He, Ex. 1025, [0026].) As can be seen in the flow chart, the method includes retrieving user profiles, corresponding to block 208, and later sending the user's setting inputs to certain vehicle components, corresponding to blocks 214 and 224 (annotated in red).



He, Ex. 1025, Fig. 3 (Annotated)

402. He teaches that "the profile handler 120 at the controller 110 accesses the user profiles 132 stored in memory 130 based on the detected device IDs 136" at block 208. (He, Ex. 1025, [0026].) Then, at block 214, "the controller 110 sends the driver's preferred setting inputs 134 to the vehicle components 160 appropriate

for the driver (Block 214), and the actuators and other controls 162 adjust the vehicle components 160 accordingly (Block 216).” (He, Ex. 1025, [0027].)

403. He further discloses that “[a]fter the user profile [132] is retrieved, one or more commands are initiated to vehicle components [160] having setting inputs [134] in the retrieved user profile [132]. In turn, the vehicle components [160] implement those settings [134] based on the commands.” (He, Ex. 1025, [0010].)

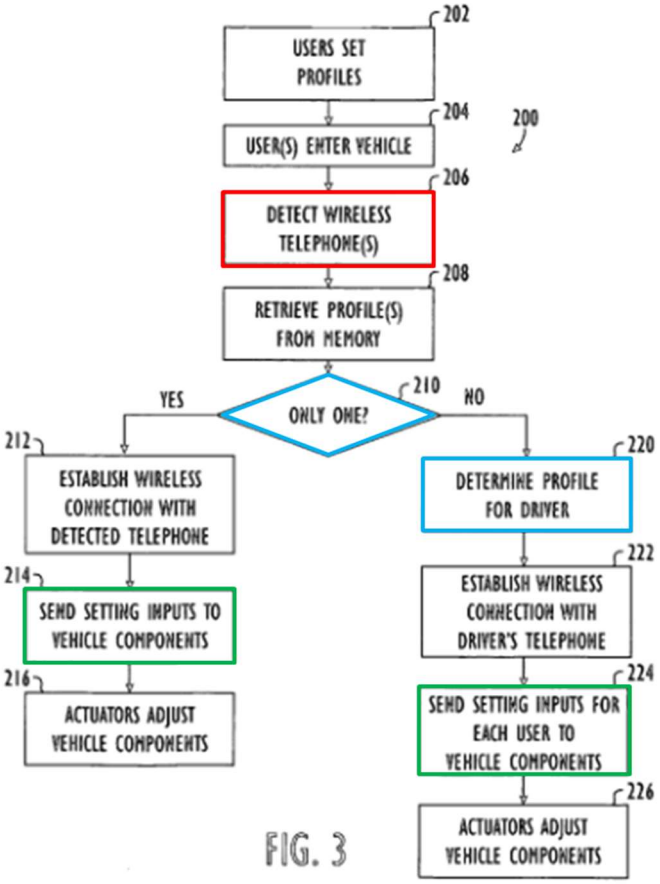
404. A PHOSITA would have understood that He teaches these “commands” are “*adjustment output*[*s*]” because they are signals output from the controller 110 to the components 160, which in turn causes the components to be adjusted to implement the settings 134.

405. Thus, it is my opinion that He renders the limitation “*providing an adjustment output to a vehicle control system* [implementing the settings 134 in the vehicle controls 160]” of claim 1 obvious.

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

406. As previously mentioned, He discloses a method depicted in flow chart form “of automated operation by the vehicle system 100.” (He, Ex. 1025, [0026].) As can be seen in the flow chart, the method includes detecting that 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 the 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).



He, Ex. 1025, Fig. 3 (Annotated)

407. He explains that "the hands-free system 150 detects the unique device IDs . . . of the wireless telephones 104 within range and sends that information to the controller 110[.]" (He, Ex. 1025, [0026].) When a single wireless telephone 104 (and thus a single user) is detected, the system 100, via the controller 110,

automatically determines that the user is the driver. (He, Ex. 1025, [0012], [0027].)

More specifically, He teaches:

> [T]he driver of the vehicle may be automatically determined, and the user profile [132] belonging to the driver of the vehicle may be retrieved. After the user profile [132] is retrieved, one or more commands are initiated to vehicle components [160] having setting inputs [134] in the retrieved user profile [132]. In turn, the vehicle components [160] implement those settings [134] based on the commands.

(He, Ex. 1025, [0010].)

408. As discussed above, He also discloses seat sensors that determine the user is present in the vehicle.

> In one embodiment, the controller 110 may determine from seat sensors (not shown) how many people are sitting in the vehicle 102. If only one person is detected and only one wireless telephone 104 is detected, then that person is most likely the current driver of the vehicle 102.

(He, Ex. 1025, [0028].)

> If a seat sensor detects a front seat passenger and there is only one other detected wireless telephone 104 besides that of the driver, for example, the controller 110 may assume that the associated user of the other detected telephone 104 is the front seat passenger. In this situation, the controller 110 can send that user's preferred seat settings to the actuators 162 for the passenger seat of the vehicle 102.

(He, Ex. 1025, [0033].)

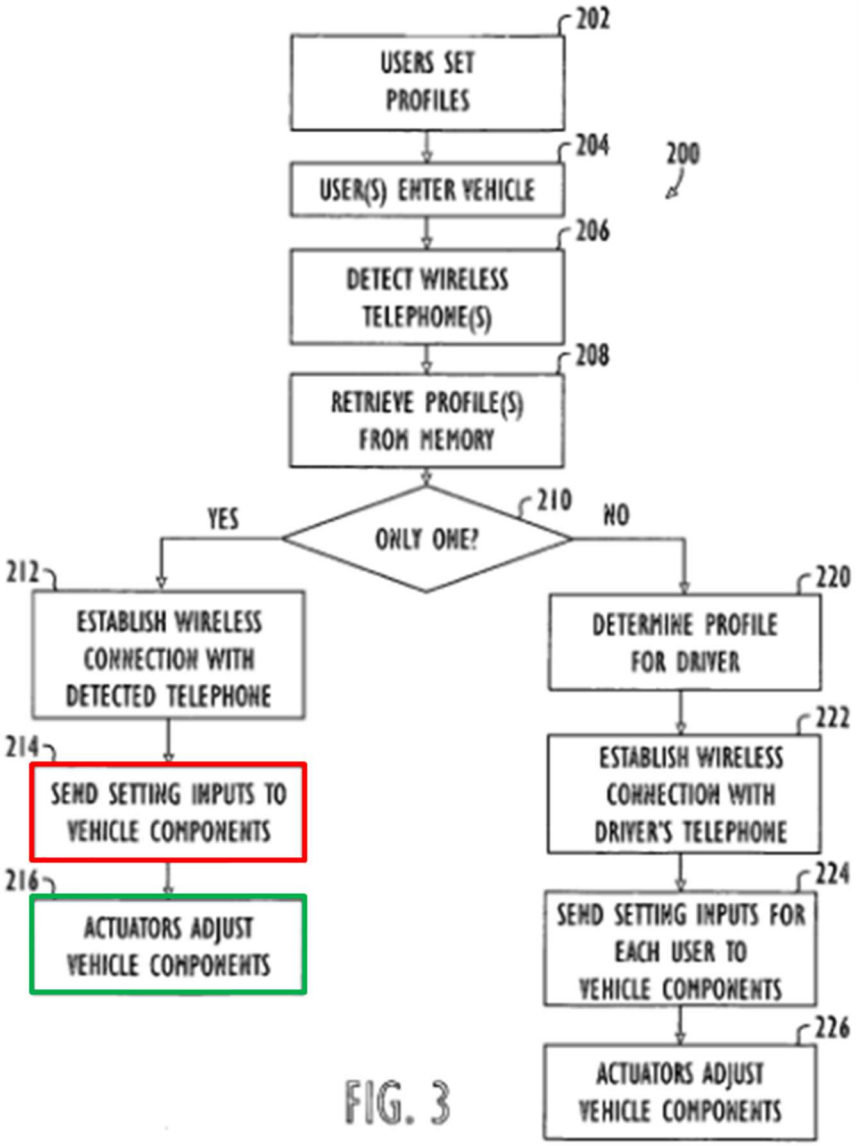
409. A PHOSITA would have understood that He teaches the "*adjustment output* [command]" is provided to vehicle components 160 appropriate for the driver "*based at least partially on determining the user is present in the location*" because the commands are initiated after determining in which seats the detected users are located, which can utilize signals from the wireless phone and seat sensors, to determine the user is the driver and thus in the driver's seat.

410. Thus, it is my opinion that He renders the limitation "*wherein the adjustment output* [command] *is provided based at least partially on determining the user is present* [the user's telephone 104 is detected] *in the location inside the vehicle* [detecting only one telephone 104 and thus making a determination that the user is the driver]" of claim 1 obvious.

[1h] wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle.

411. He discloses that the vehicle system 100, after determining that the user is the driver of the vehicle, sends commands to vehicle components to implement settings from the driver's user profile. (He, Ex. 1025, [0010], [0019], [0027].) With reference to Figure 3, He teaches that "the controller 110 sends the driver's preferred setting inputs 134 to the vehicle components 160 appropriate for the driver" at block 214 (annotated in red), after which "the actuators and other controls 162 adjust the

vehicle components 160 accordingly" at block 216 (annotated in green). (He, Ex. 1025, [0027].)



He, Ex. 1025, Fig. 3 (Annotated)

412. As discussed above, He discloses several examples of vehicle controls that can be adjusted based on location in the vehicle:

> As mentioned briefly above, the vehicle system 100 allows users to set and select preferred settings for vehicle components 160. **Some**

> **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.** For example, various actuators (e.g, motors, servos, etc.) or controls 162 can control the position of vehicle components 160, such as automated mirrors and seats. The preferred settings for the vehicle components 160 are stored in memory 130 as setting inputs 134 that form part of a user profile 132.

(He, Ex. 1025, [0018].)

413. Thus, it is my opinion that He renders the limitation "*wherein the vehicle control system* [controls or actuators 162] *is adapted to control the at least one vehicle control* [vehicle controls 160] *associated with the location inside the vehicle* [appropriate for the driver/associated with the driver's seat]" of claim 1 obvious.

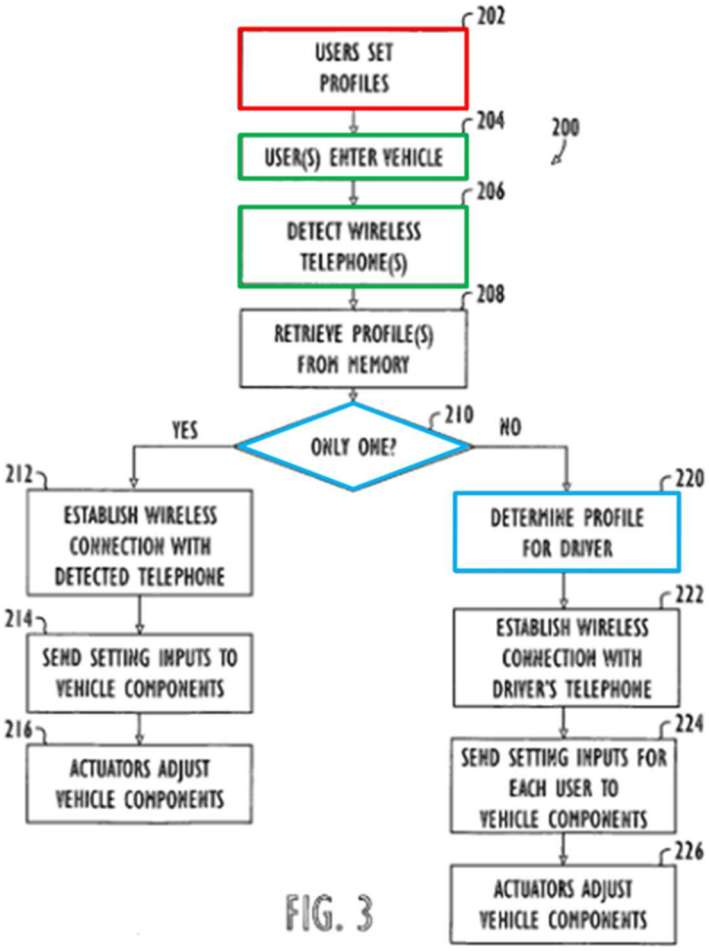
2. Dependent Claims 2–4, and 6

a. Claim 2

414. Claim 2 depends from claim 1, which I understand means that claim 2 adds further limitations to all of the limitations of claim 1. As described above, He discloses all of the limitations of claim 1, and I incorporate my analysis of claim 1 into this analysis of claim 2.

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;

415. With reference to Figure 3, He discloses a method of automated operation performed by a vehicle system 100. (He, Ex. 1025, [0026].) 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). 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, corresponding to block 220.



He, Ex. 1025, Fig. 3 (Annotated)

416. He discloses a particular embodiment that, at block 220, "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." (He, Ex. 1025, [0030].) He provides an example wherein "the stored history for one of the user profiles 132 may indicate that 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." (He, Ex. 1025, [0030].)

417. As discussed above, He 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.

> As mentioned briefly above, the vehicle system 100 allows users to set and select preferred settings for vehicle components 160. **Some 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**. For example, various actuators (e.g, motors, servos, etc.) or controls 162 can control the position of vehicle components 160, such as automated mirrors and seats. The preferred settings for the vehicle components 160 are stored in memory 130 as setting inputs 134 that form part of a user profile 132.

(He, Ex. 1025, [0018].)

418. A PHOSITA would have understood that 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*[.]"

419. A PHOSITA would have also understood that He teaches this history was already stored prior to the particular instance in which the user's telephone 104

was detected and the system 100 proceeded to block 220, otherwise there would be no history to read.

420. Further, He discloses that the system 100 distinguishes between settings for locations occupied by the driver and locations occupied by passengers. He explains that "the setting inputs 134 for the determined driver are sent to those vehicle components 160 appropriate for the driver" whereas "[t]he setting inputs 134 for the other users are sent to those vehicle components 160 appropriate for passengers." (He, Ex. 1025, [0033].) With reference to Figure 1, He teaches that the setting inputs 134 (annotated in green) are located in the user profiles 132 (annotated in blue).

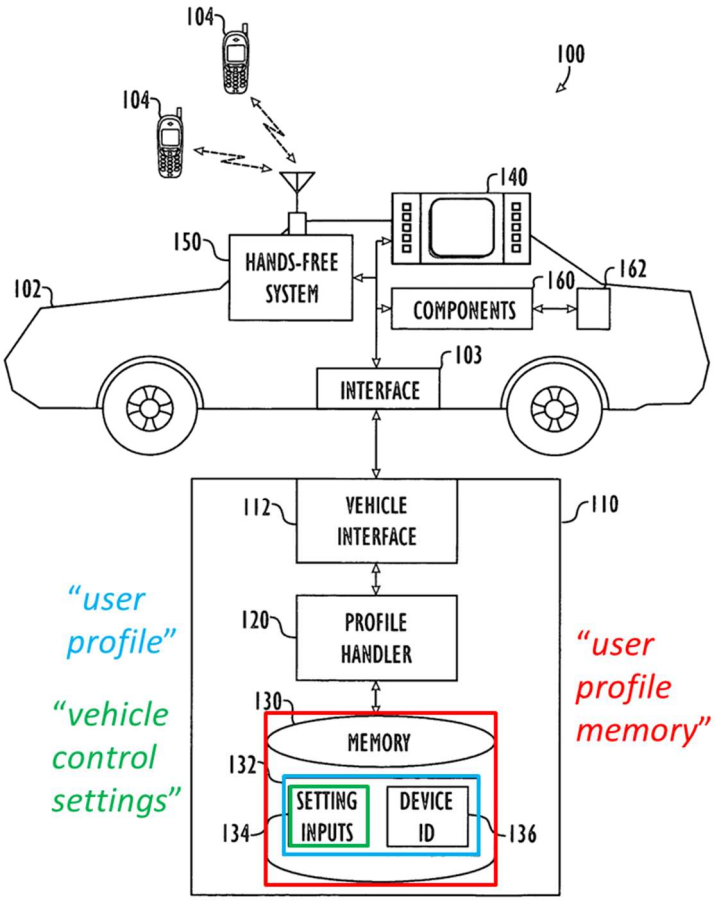


FIG. 1

He, Ex. 1025, Fig. 1 (Annotated)

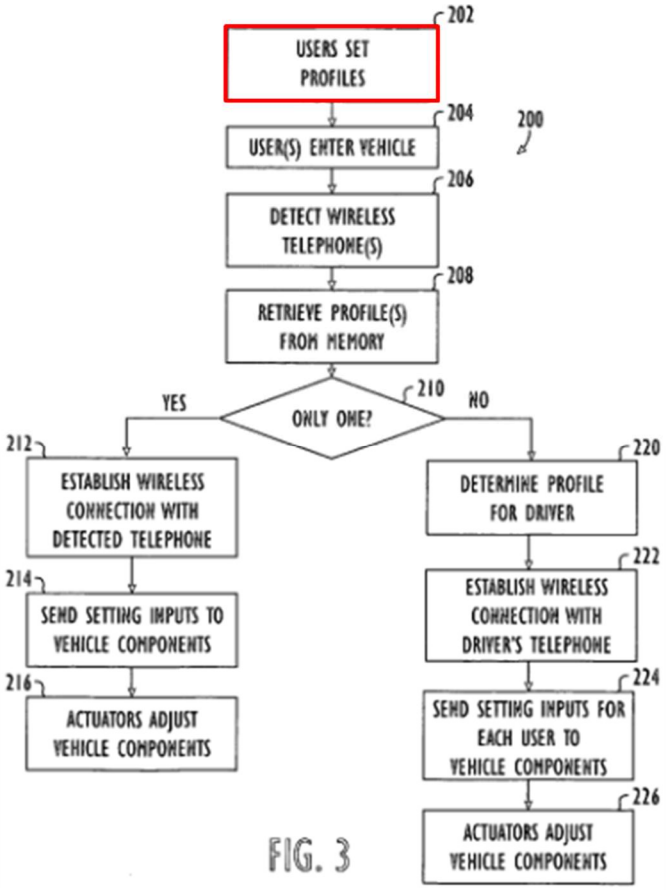
421. A PHOSITA would have understood that He teaches that in order to store setting inputs 134 and distinguish whether those setting inputs 134 are appropriate for a driver or a passenger, there is "*information corresponding to locations inside the vehicle occupied by the user*" stored in conjunction with the control settings themselves. And these settings would need to be stored in order for the vehicle system 100 to access them from the user profile 132 after detecting the user's telephone 104. Accordingly, a PHOSITA would have also understood that He

teaches the vehicle system 100 stores this information prior to determining the particular location associated with the user when the user's telephone 104 is detected.

422. Thus, it is my opinion that He renders the limitation "*prior to determining the location inside the vehicle associated with the user … storing, in the user profile memory* [memory 130], *information corresponding to locations inside the vehicle occupied by the user* [information to distinguish between settings for a driver and settings for a passenger]" of claim 2 obvious.

[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

423. With reference to Figure 3, He discloses a method of automated operation performed by a vehicle system 100. (He, Ex. 1025, [0026].) He explains that "[f]irst, users set their profiles 132" at block 202 (annotated in red). (He, Ex. 1025, [0026].)



He, Ex. 1025, Fig. 3 (Annotated)

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

> To 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.

(He, Ex. 1025, [0021].)

425. He illustrates the user interface 140 in Figure 2:

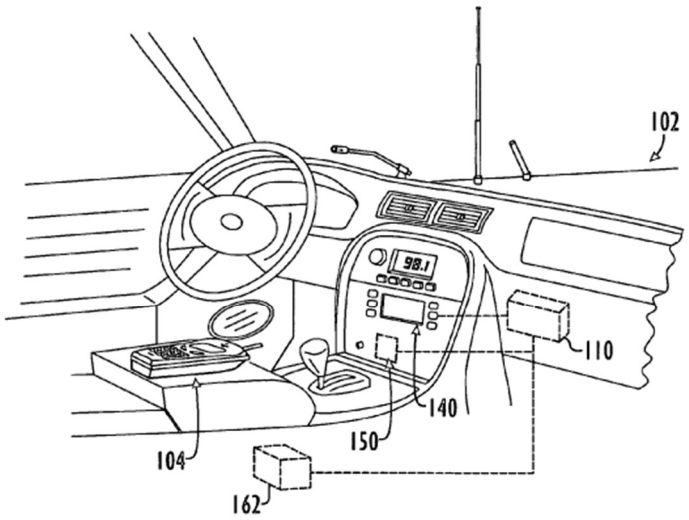


FIG. 2

He, Ex. 1025, Fig. 2

426. A PHOSITA would have understood that He teaches that 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 that 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 that the user is physically present in the seat and adjusting the corresponding components.

427. Thus, it is my opinion that He renders the limitation "*collecting vehicle control setting data associated with the user* [user's preferred settings]*, 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 [user set preferred settings in a location and then pressed a button on the user interface 140]" of claim 2 obvious.

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

428. As I mentioned above in my analysis of limitation [2b], He discloses that, "[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." (He, Ex. 1025, [0021].)

429. With reference to Figure 1, He discloses that the user profiles 132 are stored in the memory 130. As such, the memory 130 is a "*user profile memory*."

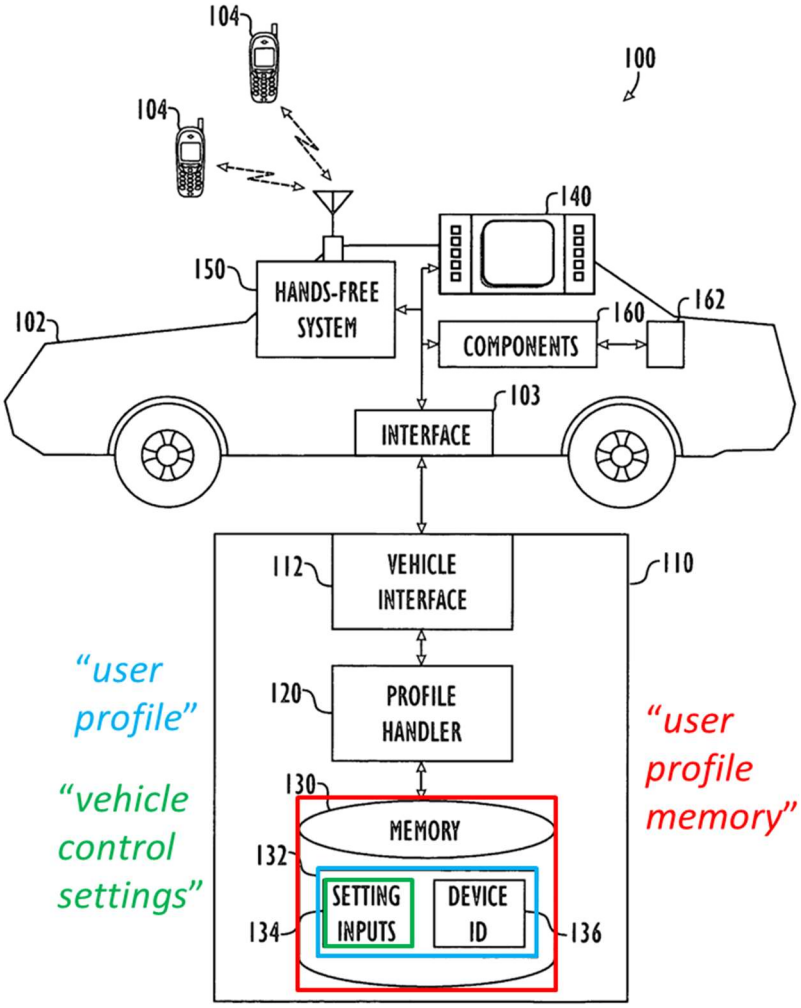


FIG. 1

He, Ex. 1025, Fig. 1 (Annotated)

430. Thus, it is my opinion that He renders the limitation "*storing the vehicle control setting data* [setting inputs 134] *in the user profile memory* [memory 130]" of claim 2 obvious.

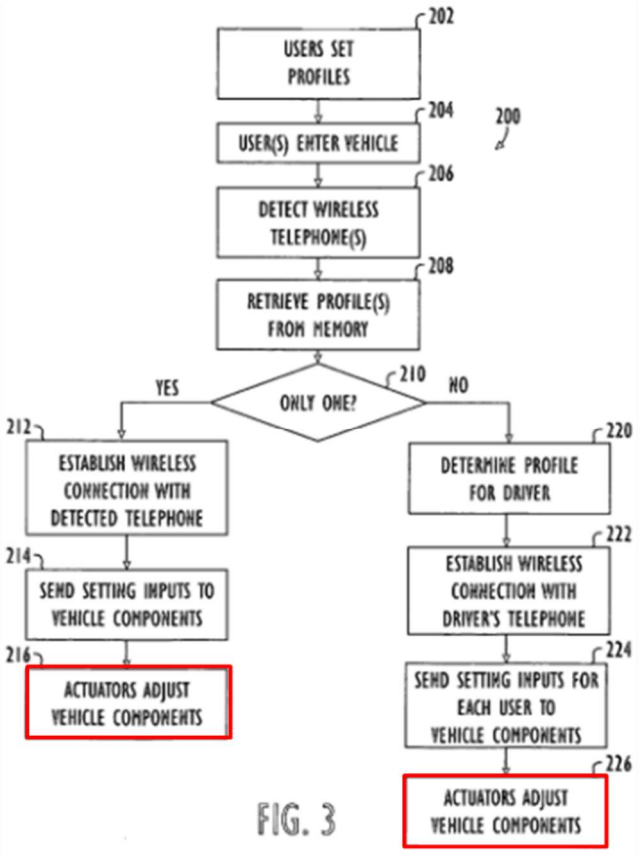
b. Claim 3

431. Claim 3 depends from claim 1, which I understand means that claim 3 adds further limitations to all limitations of claim 1. As described above, He

discloses all of the limitations of claim 1, and I incorporate my analysis of claim 1 into this analysis of claim 3.

[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.

432. As I have discussed, He discloses a vehicle system 100 that automatically determines the driver or passenger of the vehicle and implements those users' preferred settings for vehicle components 160. (He, Ex. 1025, [0033].) The method step of implementing those settings is disclosed as block 216 or 226 in the flow chart of Figure 3.



He, Ex. 1025, Fig. 3 (Annotated)

433. He explains that "[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." (He, Ex. 1025, [0018].)

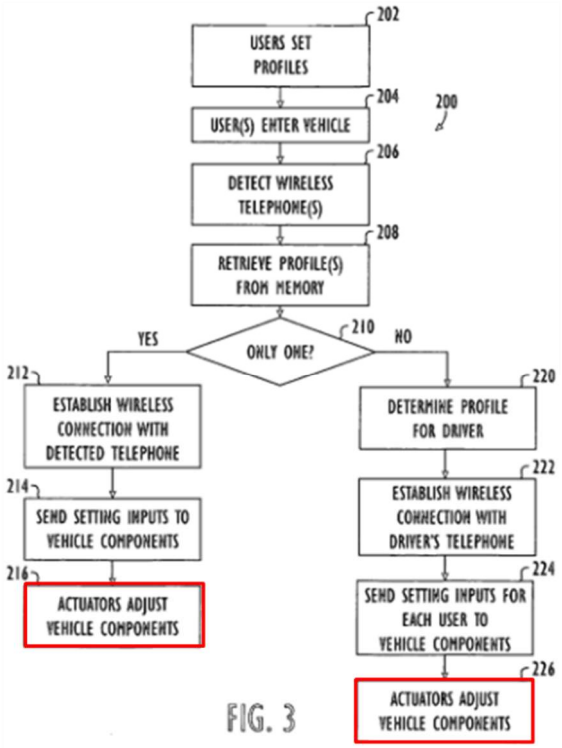
434. Thus, it is my opinion that He renders the limitation "*wherein the at least one vehicle control* [vehicle controls 160] *includes one or more vehicle features such as a seat system* [power seat], *a steering control* [automated steering wheel tilt mechanism], . . . *a mirror position* [automated mirrors], *and a display device* [user interface]" of claim 3 obvious.

c. Claim 4

435. Claim 4 depends from claim 3, which I understand means that this claim adds further limitations to all of the limitations of claim 3. As described above, He teaches all limitations of claim 3, and I incorporate my analysis of claim 1 into this analysis of claim 4.

> ***[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.***

436. As I explained in my analysis of claim 3, He discloses a vehicle system 100 that automatically determines the driver or passenger of the vehicle and implements those users' preferred settings for vehicle components 160. (He, Ex. 1025, [0033].) The method step of implementing those settings is disclosed as block 216 or 226 in the flow chart of Figure 3.



He, Ex. 1025, Fig. 3

437. He also explains that "[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." (He, Ex. 1025, [0018].) He explains further that "various actuators . . . or controls 162 can control the position of vehicle components 160, such as automated mirrors and seats." (He, Ex. 1025, [0018].)

438. Further, a PHOSITA would have understood that "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.

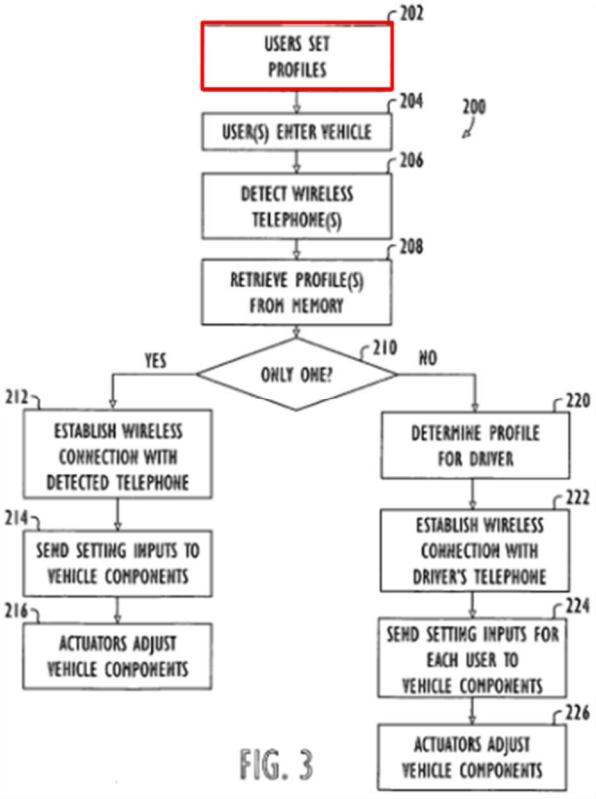
439. Thus, it is my opinion that He renders the limitation "*wherein the vehicle control settings* [setting inputs 134] *include at least one of a position, . . .* [and] *an angle, . . . associated with the one or more vehicle features* [vehicle components 160]" of claim 4 obvious.

d. Claim 6

440. Claim 6 depends from claim 1, which I understand means that claim 6 adds further limitations to all of the limitations of claim 1. As described above, He discloses all limitations of claim 1, and I incorporate my analysis of claim 1 into this analysis of claim 6.

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

441. With reference to Figure 3, He discloses a method of automated operation performed by a vehicle system 100. (He, Ex. 1025, [0026].) He explains that "[f]irst, users set their profiles 132" at block 202. (He, Ex. 1025, [0026].)



He, Ex. 1025, Fig. 3

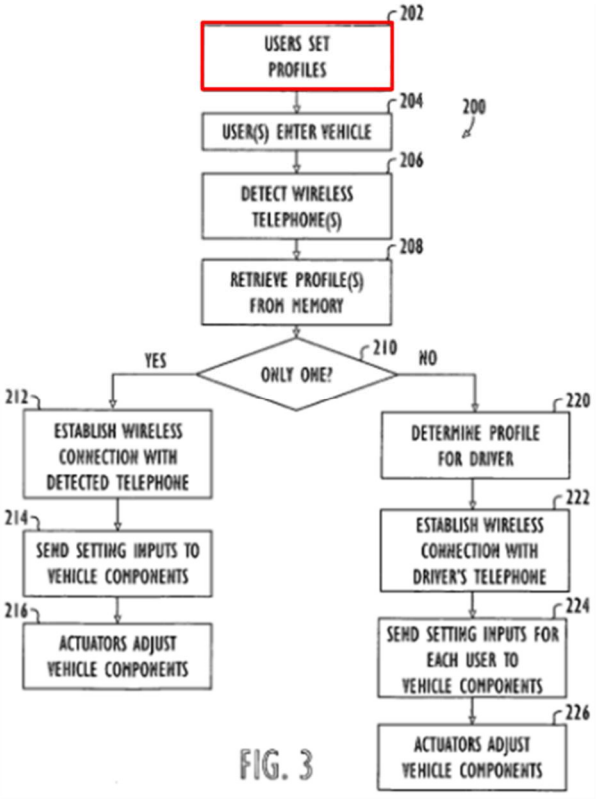
442. He explains that one way for a user to set their preferred settings is through a user interface 140. "To set the preferred settings, the user adjusts the vehicle components, such as seats and mirrors . . ., to her preferred position or setting, the user then presses buttons located on the user interface 140 to set the settings, and the controller 110 stores the setting inputs in the user's profile." (He, Ex. 1025, [0021].) A PHOSITA would have understood that 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*."

443. A PHOSITA would have understood that He teaches the controller thus carries out a method that includes a step of "*determining*" when the user presses a button on the user interface 140 to store her settings. Further, because the user sets their preferred settings prior to pressing the button in the user interface 140, He discloses that this step of "*determining*" whether the button was pressed corresponds to "*determining that the user made a change*."

444. Thus, it is my opinion that He renders the limitation "*determining that the user made a change to the adjusted at least one vehicle control* [determining that the user pressed a button on the user interface 140 after setting their preferred settings]" of claim 6 obvious.

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

445. As I mentioned in my analysis immediately above, He discloses a method of automated operation performed by a vehicle system 100. (He, Ex. 1025, [0026].) He explains that "[f]irst, users set their profiles 132" at block 202. (He, Ex. 1025, [0026].)



He, Ex. 1025, Fig. 3

446. He explains that one way for a user to set their preferred settings is through a user interface 140. "To 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." (He, Ex. 1025, [0021].) As I explained in my analysis of limitation 6[pre-a], the act of adjusting the vehicle components corresponds to making a change to the component settings if it occurs subsequent to the component being automatically adjusted.

447. As I have also explained, He discloses that the setting inputs 134 are located in the user profile 132 that is contained in the memory 130 such that the memory 130 corresponds to a "*user profile memory*."

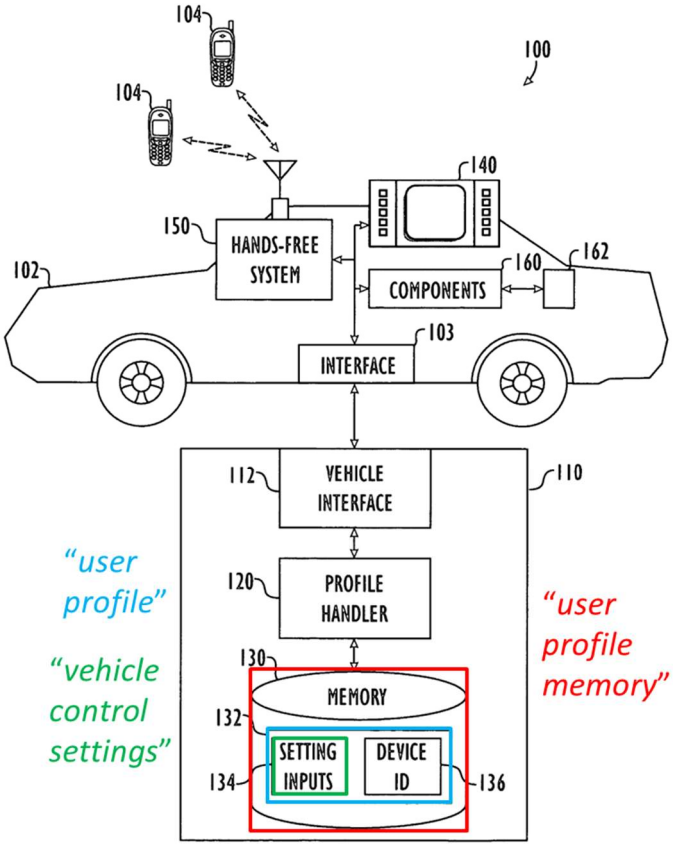


FIG. 1

He, Ex. 1025, Fig. 1 (Annotated)

448. Thus, it is my opinion that He renders the limitation "*storing the change* [adjustments to the vehicle components 160] *made to the adjusted at least one vehicle control* [vehicle components 160] *in the user profile memory* [memory 130]" of claim 6 obvious.

3. Independent Claim 7

449. Independent claim 7 is largely duplicative of independent claim 1. To illustrate their similarities, the table below shows a side-by-side comparison of claims 1 and 7. I have annotated (in red) the text of claim 7 that is different from claim 1.

Independent Claim 1	Independent Claim 7
1[pre]. A method, comprising:	**7[pre].** A method, comprising:
[1a] determining a location inside a vehicle associated with a user;	**[7a]** determining 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;
[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;
[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
[1f] providing an adjustment output to a vehicle control system,	**[7e]** 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.	**[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.

450. As illustrated above, claims limitations [7a]–[7f] are nearly identical to the corresponding limitations of claim 1.

451. The only substantial modification to claim 7 is the absence of limitations [1c] and [1g] and the addition of limitation [7g].

7 [pre]. A method, comprising:

452. Due to the similarities between element 7[pre] and element 1[pre], it is my opinion that He renders 7[pre] obvious for the same reasons it is my opinion that He renders limitation 1[pre] obvious.

[7a] determining a location inside a vehicle associated with a user;

453. Due to the similarities between element [7a] and element [1a], it is my opinion that He renders limitation [7a] obvious for the same reasons it is my opinion that He renders element [1a] obvious.

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

454. Due to the similarities between element [7b] and element [1b], it is my opinion that He renders limitation [7b] obvious for the same reasons it is my opinion that He renders element [1b] obvious.

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

455. Due to the similarities between element [7c] and element [1d], it is my opinion that He renders limitation [7c] obvious for the same reasons it is my opinion that He renders element [1d] obvious.

[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

456. Due to the similarities between element [7d] and element [1e], it is my opinion that He renders limitation [7d] obvious for the same reasons it is my opinion that He renders element [1e] obvious.

[7e] providing an adjustment output to a vehicle control system,

457. Due to the similarities between element [7e] and element [1f], it is my opinion that He renders limitation [7e] obvious for the same reasons it is my opinion that He renders element [1f] obvious.

[7f] wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle,

458. Due to the similarities between element [7f] and element [1h], it is my opinion that He renders element [7f] obvious for the same reasons it is my opinion that He renders element [1h] obvious.

[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.

459. As I mentioned in my analysis of claim limitations [1f], He discloses that "[a]fter the user profile [132] is retrieved, one or more commands are initiated to vehicle components [160] having setting inputs [134] in the retrieved user profile [132]. In turn, the vehicle components [160] implement those settings [134] based on the commands." (He, Ex. 1025, [0010].) More specifically, He discloses that 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." (He, Ex. 1025, [0019].) He explains that "[i]n this way, the user, who can be a driver or passenger, can have the seat, mirrors, and other vehicle components 160 moved or set to her preferred settings." (He, Ex. 1025, [0019].)

460. As I have explained, the user profiles 132 are stored in the memory 130, which is a "*user profile memory*" because memory 130 stores the user profiles containing data associated with the user.

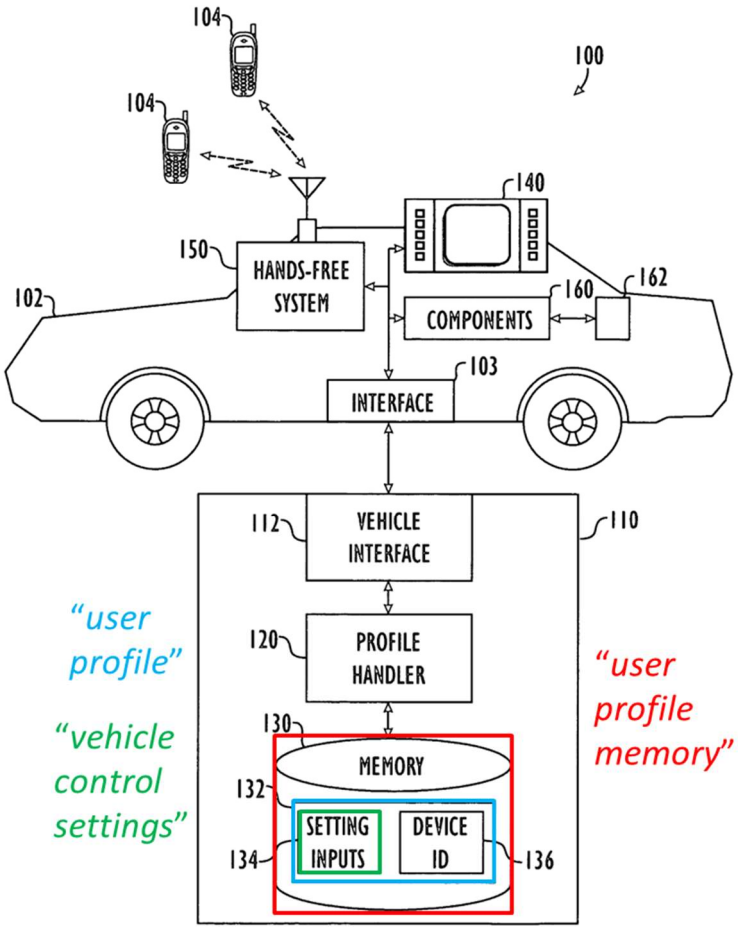


FIG. 1

He, Ex. 1025, Fig. 1 (Annotated)

461. Thus, it is my opinion that He renders the limitation "*wherein the at least one vehicle control* [vehicle control 160] *is adjusted via the adjustment output* [command] *to match the vehicle control settings* [setting inputs 134] *in the user profile memory* [memory 130]" of claim 7 obvious.

4. Independent Claim 8

462. Independent claim 8 is largely duplicative of independent claim 1 in addition to claim [7g]. To illustrate their similarities, the table below shows a side-

by-side comparison of claims 1 and [7g] to claim 8. I have annotated (in red) the text of claim 8 that is different from claims 1 and [7g].

Independent Claim 1 and [7g]	Independent Claim 8
1[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:
[1a] determining a location inside a vehicle associated with a user;	**[8a]** determining a location inside a vehicle associated with a user;
[1b] 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;
[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;	**[8c]** 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	**[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
[1f] providing an adjustment output to a vehicle control system,	**[8e]** 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.	**[8f]** 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.	**[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.

463. As illustrated above, claim limitations [8a]–[8g] are nearly identical to the corresponding limitations of claim 1 and claim [7g]. The only substantial modification to claim 8 is the absence of limitations [1c] and [1g] and the addition of the "*non-transitory computer readable medium*" that performs the method in the preamble (8[pre]).

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

464. Claim limitation 8[pre] is similar to limitation 1[pre]. While 1[pre] claims a method alone, this claim limitation claims a method that is performed by a processor executing instructions stored on a non-transitory computer readable medium.

465. As I explained in my analysis of limitation 1[pre], He discloses a vehicle system 100 that includes "a controller 110, a . . . user interface 140, a wireless vehicle system 150, and vehicle components 160. The controller 110 has a control unit or profile handler 120 and memory 130." (He, Ex. 1025, [0015].)

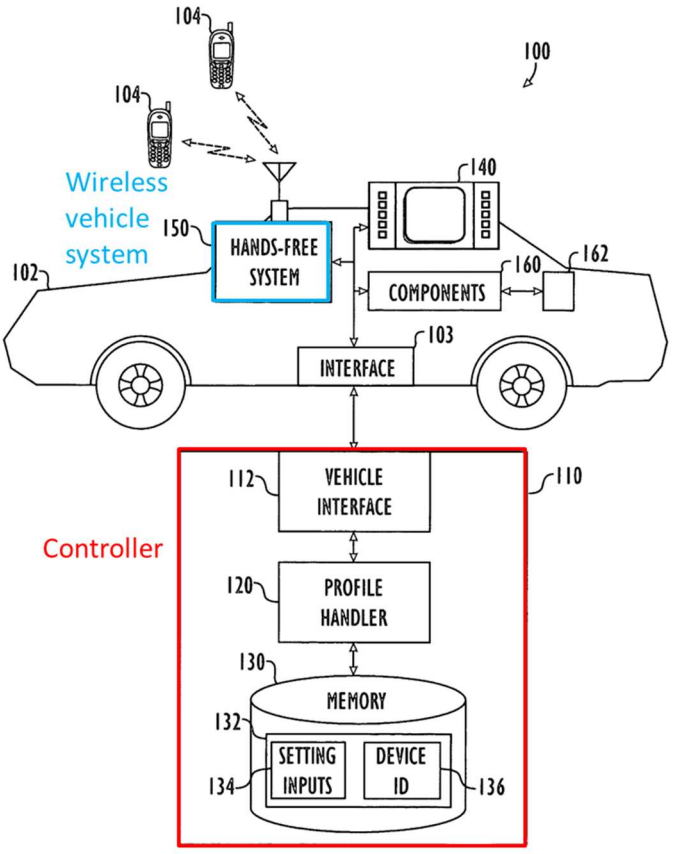


FIG. 1

He, Ex. 1025, Fig. 1 (Annotated)

466. He also teaches that "[t]he controller is communicatively coupled to the memory, the one or more vehicle components, and a wireless vehicle system." (He, Ex. 1025, [0012].) He explains that 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." (He, Ex. 1025, [0012].)

467. A PHOSITA would have understood that a controller would be implemented using a microcontroller or microprocessor. (*See* ¶¶ 117–119.) Moreover, the '296 Patent states that "[t]he **processor 304 may comprise a general**

purpose programmable processor or controller for executing application programming or instructions[,]" demonstrating the '296 Patent's use of the term "processor" includes a "controller" like what is described in He. ('296 Patent, Ex. 1001, 20:51-53.)

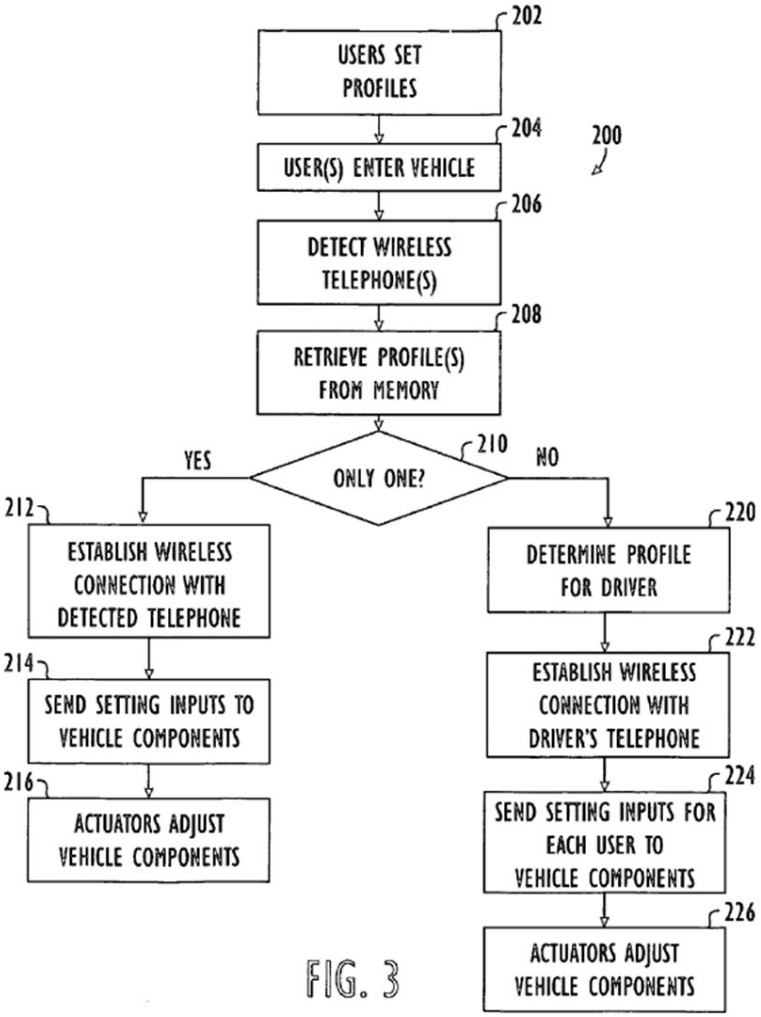
468. A PHOSITA would have also understood that that a microcontroller or microprocessor may operate by executing instructions stored on a non-transitory (i.e. persistent) memory. (*See* ¶¶ 117–119.) A PHOSITA would have preferred implementing He's controller using a programmed microprocessor or microcontroller as opposed to discrete logic (such as a hardwired state machine) because it was understood to be easier and require lower cost and lower power to implement. (*See* ¶¶ 117–119.)

469. A PHOSITA thus would have understood that He teaches the controller 110 can be implemented as or with a processor executing instructions stored on a "*non-transitory computer readable medium*" in order for the controller 110 to perform these actions. Further, based on He's disclosure that both the controller 110 and "the profile handler 120 at the controller 110" can retrieve the user profile, (He, Ex. 1025, [0026], *see also* [0012],) a PHOSITA would have understood He to teach that the controller 110 may perform any functions of the profile handler 120.

470. Further, He discloses that "[i]n one embodiment, the vehicle system 100 is an integrated unit such that the controller 110 is integrally part of the user

interface 140 and the wireless vehicle system 150." (He, Ex. 1025, [0016].) Based on this disclosure, a PHOSITA would have understood that He teaches that controller 110 may perform any and all functions of wireless vehicle/hands-free system 150.

471. As I mentioned in my analysis of limitation 1[pre], He discloses steps of an exemplary method carried out by the vehicle system 100 with reference to the flow chart of Figure 3.



He, Ex. 1025, Fig. 3

472. With reference to the flow chart, He discloses that the steps of the method depicted as blocks 206, 208, 210, 212, 214, 220, 222, and 224 are performed by the hands-free system 150, the controller 110, or the profile handler 120. (He, Ex. 1025, [0026]-[0033].) As I explained above, He discloses that the controller 110 can perform the functions of the hands-free system 150 and the profile handler 120 in certain embodiments. (*See* ¶¶ 466–469; He, Ex. 1025, [0012], [0026].) As such, the

steps at these blocks in the flowchart may be performed by the controller 110, which, as I explained in ¶¶ 467–469, would have been understood to include a processor executing instructions stored on a non-transitory computer readable medium. (*See also* ¶¶ 117–119.)

473. Thus, it is my opinion that He renders the limitation "*[a] non-transitory computer readable medium having instructions stored thereon* [within controller 110] *that, when executed by a processor* [within controller 110]*, perform a method*" of claim 8 obvious.

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

474. Due to the similarities between element [8a] and element [1a], it is my opinion that He renders limitation [8a] obvious for the same reasons it is my opinion that He renders element [1a] obvious.

[8b] determining at least one vehicle control associated with the location inside the vehicle;

475. Due to the similarities between element [8b] and element [1b], it is my opinion that He renders limitation [8b] obvious for the same reasons it is my opinion that He renders element [1b] obvious.

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

476. Due to the similarities between element [8c] and element [1d], it is my opinion that He renders limitation [8c] obvious for the same reasons it is my opinion that He renders element [1d] obvious.

[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

477. Due to the similarities between element [8d] and element [1e], it is my opinion that He renders limitation [8d] obvious for the same reasons it is my opinion that He renders element [1e] obvious.

[8e] providing an adjustment output to a vehicle control system,

478. Due to the similarities between element [8e] and element [1f], it is my opinion that He renders limitation [8e] obvious for the same reasons it is my opinion that He renders element [1f] obvious.

[8f] wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle,

479. Due to the similarities between element [8f] and element [1h], it is my opinion that He renders limitation [8f] obvious for the same reasons it is my opinion that He renders element [1h] obvious.

[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.

480. Due to the similarities between element [8g] and element [7g], it is my opinion that He renders limitation [8g] obvious for the same reasons it is my opinion that He renders element [7g] obvious.

5. Dependent Claims 9–11 and 13

e. Claim 9

481. Claim 9 depends from claim 8, which I understand means that claim 9 adds further limitations to all of the limitations of claim 8. As described above, He discloses all limitations of claim 8, and I incorporate my analysis of claim 8 into this analysis of claim 9.

[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.

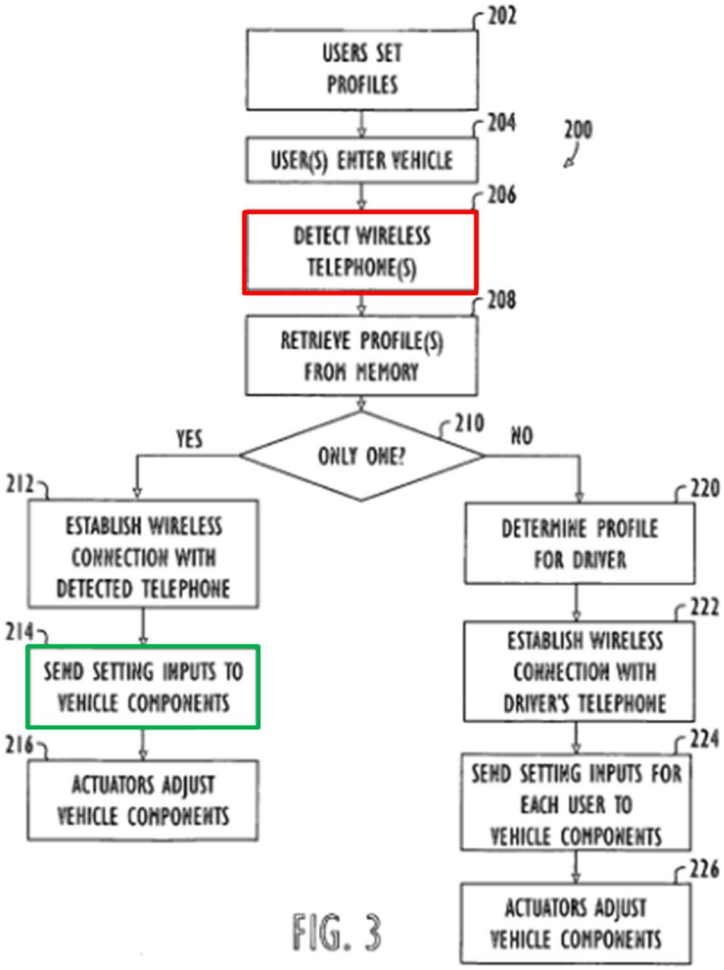
482. Claim 9 adds method step limitations that are similar to the limitations of [1c] and [1g] as illustrated in the following table:

Independent Claim [1c] and [1g]	Claim 9
	[9] The non-transitory computer readable medium of claim 8, wherein prior to providing the adjustment

	output, the method further comprises:
[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;	determining a presence of the user inside the vehicle,
[1g] wherein the adjustment output is provided based at least partially on determining the user is present in the location 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.

483. As I explained in my analysis of limitation [1c], with reference to Figure 3, He teaches that "[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)." (He, Ex. 1025, [0026].) Therefore, He describes the system as initiating device discovery once it is detected an occupant has entered the vehicle. Block 206, corresponding to the device discovery step, is annotated in red below.



He, Ex. 1025, Fig. 3 (Annotated)

484. As noted above, He discloses an embodiment of "the vehicle system 100 is an integrated unit such that the controller 110 is integrally part of the user interface 140 and the wireless vehicle system 150." (He, Ex. 1025, [0016].)

Therefore, a PHOSITA would have understood that He teaches the device discovery process may be performed by the controller 110 itself.

485. Therefore with reference to my analysis of claim limitation [1c] where I explained how He teaches "*determining a presence of the user inside the vehicle*" and limitation 8[pre] where I explained how the controller 110 contains a "*processor*" and "*non-transitory computer readable medium*," He thus discloses that 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*."

486. Further, as I explained in my analysis of limitations [1f]–[1g], 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. (He, 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[.]" (He, Ex. 1025, [0027].)

487. Accordingly, with reference to my analysis of limitations [1f]–[1g] where I explained how He teaches "*providing an adjustment output to a vehicle control system, wherein the adjustment output is provided based at least partially on determining the user is present in the location inside the vehicle* [detecting a single wireless telephone 104 and making a determination that the telephone 104's user is

the driver and therefore in the driver's seat]," He discloses that this action is performed by execution of instructions by a processor [controller 110 or therein] stored on a "*non-transitory computer readable medium* [non-volatile memory of controller 110]." It is thus my opinion that He renders claim 9 obvious.

f. Claim 10

488. Claim 10 depends from claim 8, which I understand means that claim 10 adds further limitations to all of the limitations of claim 8. As described above, He discloses all of the limitations of claim 8, and I incorporate my analysis of claim 8 into this analysis of claim 10.

489. Claim 10 is largely duplicative of claim 2. To illustrate their similarities, the table below shows a side-by-side comparison of claims 2 and 10. I have annotated (in red) the text of claim 10 that is different from claim 2.

Claim 2	Claim 10
2[pre-a] The method of claim 1,	**10[pre-a]** The non-transitory computer readable medium of claim 8,
wherein prior to determining the location inside the vehicle associated	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;	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	**[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
[2c] storing the vehicle control setting data in the user profile memory.	**[10c]** storing the vehicle control setting data in the user profile memory.

490. As illustrated in the table above, the only difference between claims 2 and 10 is in the preamble, i.e., claim 2 is directed to a "*method*" and claim 10 is directed to a "*non-transitory computer readable medium.*"

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;

491. Claim limitations 10[pre-a] are substantively identical to limitation 8[pre] for "*non-transitory computer readable medium*" and elements 2[pre-a] for the remaining limitations. I therefore refer back to my analysis of limitations 8[pre] and 2[pre-a] for the limitations of 10[pre-a].

[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

492. Due to the similarities between element [10b] and element [2b], it is my opinion that He renders limitation [10b] obvious for substantially the same reasons it is my opinion that He renders element [2b] obvious.

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

493. Due to the similarities between element [10c] and element [2c], it is my opinion that He renders limitation [10c] obvious for substantially the same reasons it is my opinion that He renders element [2c] obvious.

g. Claim 11

494. Claim 11 depends from claim 8, which I understand means that claim 11 adds further limitations to all of the limitations of claim 8. As described above, He discloses all of the limitations of claim 8, and I incorporate my analysis of claim 8 into this analysis of claim 11.

495. Claim 11 is largely duplicative of claims 3 and 4. To illustrate their similarities, the table below shows a side-by-side comparison of claim 11 to claims 3 and 4. I have annotated (in red) the text of claim 11 that is different from claims 3 and 4.

Claims 3 and 4	Claim 11
[3] The method of claim 1,	**11[a]** 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	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.	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 movement, associated with the one or more vehicle features.	**[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.

496. As illustrated in the table above, the only difference between claims 3, 4, and 11 is the preamble, i.e., claims 3 and 4 are directed to a "*method*" and claim 11 is directed to a "*non-transitory computer readable medium of claim*."

[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

497. This limitation is substantively identical to limitation 8[pre] for "*non-transitory computer readable medium*" and claim 3 for the remaining limitations. I therefore repeat my discussion of limitation 8[pre] and claim 3 for this limitation [11a].

[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.

498. Due to the similarities between element [11b] and claim 4, it is my opinion that He renders limitation [11b] obvious for substantially the same reasons it is my opinion that He renders claim 4 obvious.

h. Claim 13

499. Claim 13 depends from claim 8, which I understand means that claim 13 adds further limitations to all of the limitations of claim 8. As described above, He discloses all limitations of claim 8, and I incorporate my analysis of claim 8 into this analysis of claim 13.

500. Claim 13 is largely duplicative of claim 6. To illustrate their similarities, the table below shows a side-by-side comparison of claim 13 to claim 6. I have annotated (in red) the text of claim 13 that is different from claim 6.

Claim 6	Claim 13
6[pre-a] The method of claim 1, further comprising:	**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	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.	**[13b]** storing the change made to the adjusted at least one vehicle control in the user profile memory.

501. As illustrated in the table above, the only difference between claims 6 and 13 is the preamble, i.e., claim 6 is directed to a "*method*" and claim 13 is directed to a "*non-transitory computer readable medium*."

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

502. Claim limitations 13[pre-a] are substantively identical to limitation 8[pre] for "*non-transitory computer readable medium*" and element 6[pre-a] for the remaining limitations. I therefore refer back to my analysis of limitation 8[pre] and element 6[pre-a] for the limitations of 13[pre-a].

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

503. Due to the similarities between element [13b] and element [6b], it is my opinion that He renders limitation [13b] obvious for substantially the same reasons it is my opinion that He renders element [6b] obvious.

6. Independent Claim 14

504. Independent claim 14 is largely duplicative of independent claim 1 in addition to claim [7g]. To illustrate their similarities, the table below shows a side-by-side comparison of claims 1 and [7g] to claim 14. I have annotated (in red) the text of claim 14 that is different from claims 1 and [7g].

Independent Claim 1 and [7g]	**Independent Claim 14**
1[pre]. 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;	**[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;	**[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;	**[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	**[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,	**[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 least one vehicle control associated with the location inside the vehicle.	**[14g]** 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.	**[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.

505. As illustrated above, claims limitations [14b]–[14h] are nearly identical to corresponding limitations of claim 1 and claim [7g]. The only substantial modification to claim 14 is the addition of "*a vehicle control system*" in the preamble and the addition of the "*profile identification module contained in a memory*" that performs a method when executed by a processor in limitation [14a].

506. While these additions in limitation [14a] use different words, limitation [14a] is effectively the same as limitation 8[pre]. By claiming "*a profile*

identification module contained in a memory and executed by a processor" to perform a set of functions, [14a] effectively claims "*[a] non-transitory computer readable medium* [memory] *having instructions stored thereon* [profile identification module] *that, when executed by a processor, perform a method*" as I will explain in more detail in my analysis of [14a] below. Accordingly, claim 14 simply claims the "*non-transitory computer readable medium*" of claim 8 as part of a "*vehicle control system*."

14[pre] A vehicle control system, comprising:

507. As I have explained and with reference to Figure 1, He discloses a vehicle system 100, which includes a controller 110 (annotated in red) and a wireless vehicle/hands-free system 150 (annotated in blue). (He, Ex. 1025, [0015].) He explains that the vehicle system 100 allows a user to "have the seat, mirrors, and other vehicle components 160 moved or set to her preferred settings." (He, Ex. 1025, [0019].)

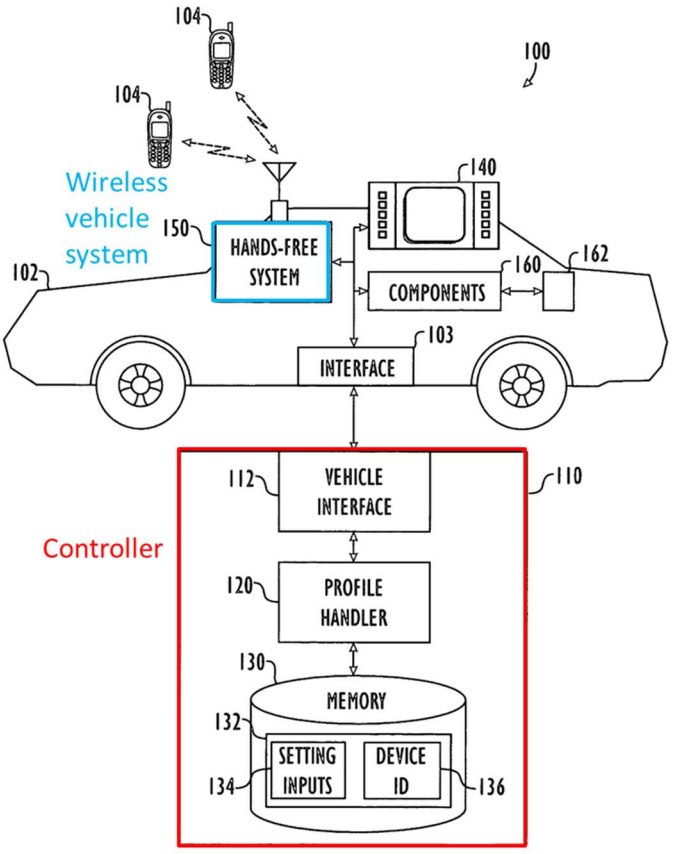


FIG. 1

He, Ex. 1025, Fig. 1 (Annotated)

508. Thus, it is my opinion that He discloses a "*vehicle control system*."

[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

509. As I previously explained and with reference to Figure 1, He discloses that the vehicle system 100 comprises two main components: 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).

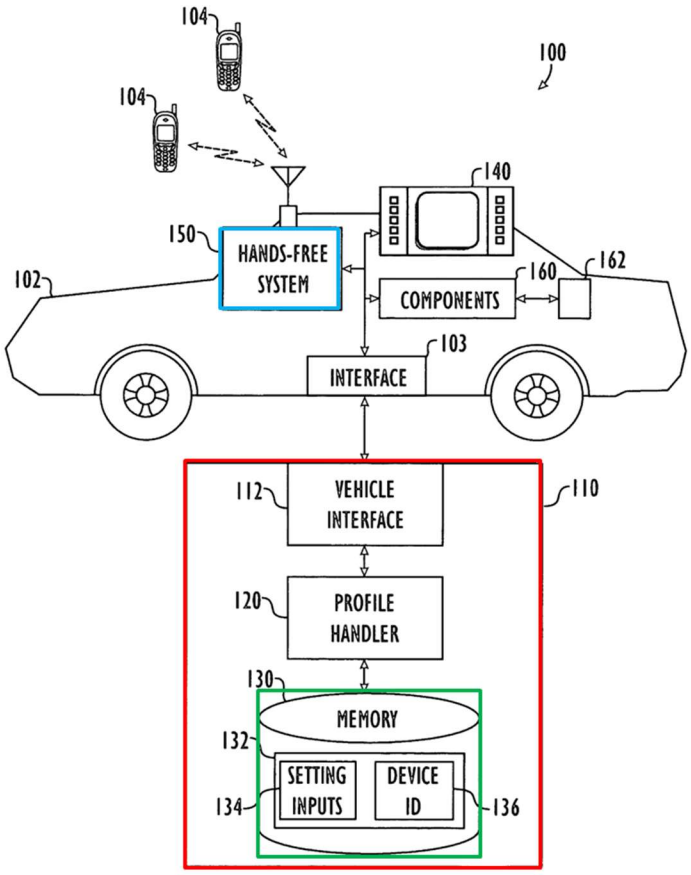


FIG. 1

He, Ex. 1025, Fig. 1 (Annotated)

510. He teaches that "[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." (He, Ex. 1025, [0012].) He also teaches that "the profile handler 120 at the controller 110" can access and retrieve the user profiles. (He, Ex. 1025, [0026].) Even further, He teaches that "[i]n one embodiment, the vehicle system 100 is an

integrated unit such that the controller 110 is integrally part of the user interface 140 and the wireless vehicle system 150." (He, Ex. 1025, [0016].)

511. A PHOSITA would have thus understood that He teaches the controller 110 can perform any and all functions of the profile handler 120 and the wireless vehicle/hands-free system 150. Additionally, a PHOSITA would have understood that a controller would likely be implemented using a microcontroller or microprocessor, or is otherwise equivalent to a processor. (*See* ¶¶ 117–119.) A PHOSITA would also have understood that a microcontroller or microprocessor may operate by executing instructions stored on a non-transitory memory. (*See* ¶¶ 117–119.) A PHOSITA would have preferred implementing He's controller using a programed microcontroller or microprocessor as opposed to discrete logic because it was understood to be easier, lower cost, and lower power to implement. (*See* ¶¶ 117–119.)

512. Accordingly, a PHOSITA would have understood that He teaches the controller 110 may contain or be a processor and include programed instructions in the memory 130. Such a program represents "*a profile identification module*." Indeed, the '296 Patent explains that "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[.]" ('296 Patent, Ex.

1001, 42:4-10.) Such a request is made by the controller 110 (annotated in red). (He, Ex. 1025, [0025].)

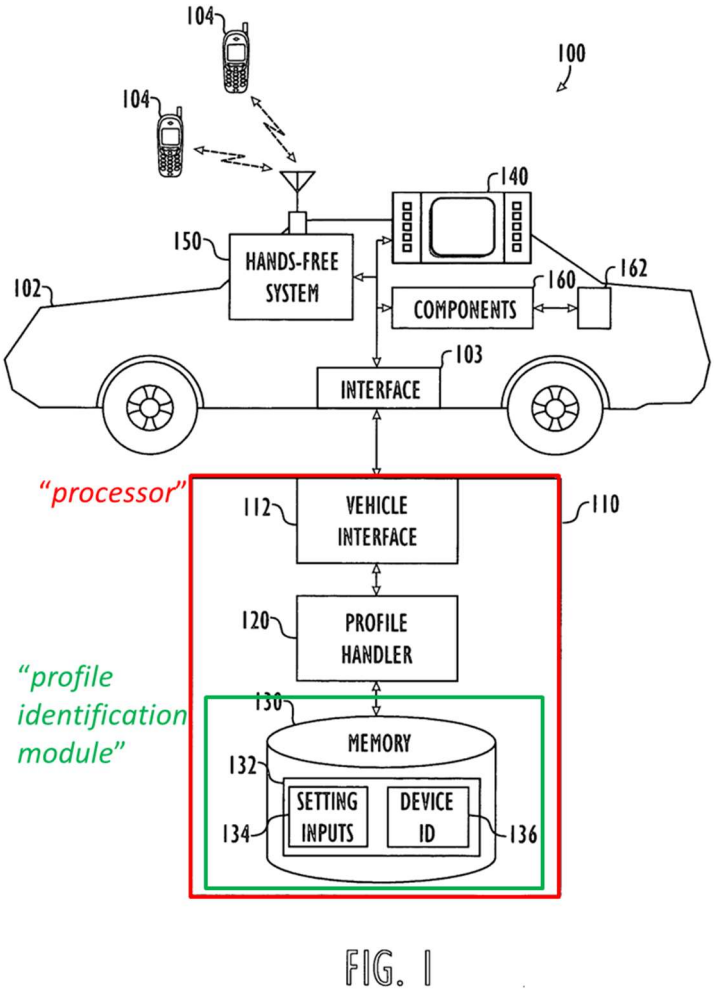


FIG. 1

He, Ex. 1025, Fig. 1 (Annotated)

513. Thus, He renders "*a profile identification module contained in a memory* [the memory 130] *and executed by a processor* [controller 110 or therein] *of the vehicle control system*" of claim 14 obvious.

[14b] determine a location inside a vehicle associated with a user,

514. Due to the similarities between element [14b] and element [1a], it is my opinion that He renders limitation [14b] obvious for substantially the same reasons it is my opinion that He renders element [1a] obvious.

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

515. Due to the similarities between element [14c] and element [1b], it is my opinion that He renders limitation [14c] obvious for substantially the same reasons it is my opinion that He renders element [1b] obvious.

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

516. Due to the similarities between element [14d] and element [1d], it is my opinion that He renders limitation [14d] obvious for substantially the same reasons it is my opinion that He renders element [1d] obvious.

[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,

517. Due to the similarities between element [14e] and element [1e], it is my opinion that He renders limitation [14e] obvious for substantially the same reasons it is my opinion that He renders element [1e] obvious.

[14f] provide an adjustment output to the vehicle control system,

518. Due to the similarities between element [14f] and element [1f], it is my opinion that He renders limitation [14f] obvious for substantially the same reasons it is my opinion that He renders element [1f] obvious.

[14g] wherein the vehicle control system is adapted to control the at least one vehicle control associated with the location inside the vehicle,

519. Due to the similarities between element [14g] and element [1h], it is my opinion that He renders limitation [14g] obvious for substantially the same reasons it is my opinion that He renders element [1h] obvious.

[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.

520. Due to the similarities between element [14h] and element [7g], it is my opinion that He renders limitation [14h] obvious for substantially the same reasons it is my opinion that He renders element [7g] obvious.

7. Dependent Claims 15–17, and 19–20

i. Claim 15

521. Claim 15 depends from claim 14, which I understand means that claim 15 adds further limitations to all of the limitations of claim 14. As described above, He discloses all of the limitations of claim 14, and I incorporate my analysis of claim 14 into this analysis of claim 15.

522. Claim 15 is largely duplicative of claim 9. To illustrate their similarities, the table below shows a side-by-side comparison of claim 9 to 15. I have annotated (in red) the text of claim 15 that is different from claim 9.

Claim 9	Claim 15
[9] The non-transitory computer readable medium of claim 8, wherein prior to providing the adjustment output, the method further comprises:	**[15]** The vehicle control system of claim 14, wherein prior to providing the adjustment output, the profile identification module is further configured to
determining a presence of the user inside the vehicle,	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.	wherein the adjustment output is provided based at least partially on determining the user is present in the location of the vehicle.

523. As illustrated in the table above, the only difference between claims 9 and 15 is the preamble, i.e., claim 9 is directed to a "*non-transitory computer readable medium*" and claim 15 is directed to a "*vehicle control system*."

[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.

524. This claim limitation is substantially identical to element 14[pre] for "*vehicle control system*" and claim 9 for the remaining limitations. I therefore repeat my discussion of element 14[pre] and claim 9 for the limitations of claim 15.

j. Claim 16

525. Claim 16 depends from claim 14, which I understand means that claim 16 adds further limitations to all of the limitations of claim 14. As described above, He discloses all limitations of claim 14, and I incorporate my analysis of claim 14 into this analysis of claim 16.

526. Claim 16 is largely duplicative of claim 2. To illustrate their similarities, the table shows a side-by-side comparison of claim 2 to claim 16. I have annotated (in red) the text of claim 16 that is different from claim 2.

Claim 2	Claim 16
2[pre-a] The method of claim 1,	**16[pre-a]** The vehicle control system of claim 14,

wherein prior to determining the location inside the vehicle associated with the user the method further comprises:	wherein prior to determining the location inside the vehicle associated with the user the profile identification module is further configured to
storing, in the user profile memory, information corresponding to locations inside the vehicle occupied by the user;	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 control setting made by the user in at least one of the locations inside the vehicle; and	**[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

[2c] storing the vehicle control setting data in the user profile memory.	**[16c]** store the vehicle control setting data in the user profile memory.

527. As illustrated in the table above, the significant difference between claims 2 and 16 is the preamble, i.e., claim 2 is directed to a "*method*" and claim 16 is directed to a "*vehicle control system*."

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,

528. Claim limitations 16[pre-a] are substantively identical to element 14[pre] for "*vehicle control system*" and elements 2[pre-a] for the remaining limitations. I therefore refer back to my analysis of element 14[pre] and elements 2[pre-a] for the limitations of 16[pre-a].

[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

529. Due to the similarities between element [16b] and [2b], it is my opinion that He renders limitation [16b] obvious for substantially the same reasons it is my opinion that He renders element [2b] obvious.

[16c] store the vehicle control setting data in the user profile memory.

530. Due to the similarities between element [16c] and [2c], it is my opinion that He renders limitation [16c] obvious for substantially the same reasons it is my opinion that He renders element [2c] obvious.

k. Claim 17

531. Claim 17 depends from claim 14, which I understand means that claim 17 adds further limitations to all of the limitations of claim 14. As described above, He discloses all limitations of claim 14, and I incorporate my analysis of claim 14 into this analysis of claim 17.

532. Claim 17 is largely duplicative of claims 3 and 4. To illustrate their similarities, the table below shows a side-by-side comparison of claim 17 to claims 3 and 4. I have annotated (in red) the text of claim 17 that is different from claims 3 and 4.

Claims 3 and 4	Claim 17
[3] The method of claim 1,	**[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.	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 movement, associated with the one or more vehicle features.	**[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.

533. As illustrated in the table above, the only difference between claims 3, 4, and 17 is the preamble, i.e., claims 3 and 4 are directed to a "*method*" and claim 17 is directed to a "*vehicle control system*."

[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

534. This claim limitation is substantively identical to element 14[pre] for "*vehicle control system*" and claim 3 for the remaining limitations. I therefore repeat my discussion of element 14[pre] and claim 3 for this element [17a].

[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.

535. Due to the similarities between element [17b] and claim 4, it is my opinion that He renders element [17b] obvious for substantially the same reasons that He renders claim 4 obvious.

l. Claim 19

536. Claim 19 depends from claim 14, which I understand means that claim 19 adds further limitations to all of the limitations of claim 14. As described above, He discloses all limitations of claim 14, and I incorporate my analysis of claim 14 into this analysis of claim 19.

537. Claim 19 is largely duplicative of claim 6. To illustrate their similarities, the table below shows a side-by-side comparison of claim 19 to claim 6. I have annotated (in red) the text of claim 19 that is different from claim 6.

Claim 6	Claim 19
6[pre-a] The method of claim 1, further comprising:	**19[pre-a]** The vehicle control system of claim 14, wherein the profile identification module is further configured to
determining that the user made a change to the adjusted at least one vehicle control; and	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.	**[19b]** store the change made to the adjusted at least one vehicle control in the user profile memory.

538. As illustrated in the table above, the only difference between claims 6 and 19 is the preamble, i.e., claim 6 is directed to a "*method*" and claim 19 is directed to a "*vehicle control system*."

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

539. Claim limitations 19[pre-a] are substantively identical to element 14[pre] for "*vehicle control system*" and element 6[pre-a] for the remaining

limitations. I therefore repeat my discussion of elements 14[pre] and 6[pre-a] for the limitations of 19[pre-a].

[19b] store the change made to the adjusted at least one vehicle control in the user profile memory.

540. Due to the similarities between element [19b] and element [6b], it is my opinion that He renders element [19b] obvious for substantially the same reasons that it is my opinion He renders element [6b] obvious.

m. Claim 20

541. Claim 20 depends from claim 14, which I understand means that claim 20 adds further limitations to all of the limitations of claim 14. As described above, He discloses all limitations of claim 14, and I incorporate my analysis of claim 14 into this analysis of claim 20.

542. Claim 20 is largely duplicative of claim limitations [1c] and [1g]. To illustrate their similarities, the table below shows a side-by-side comparison of claim limitations [1c] and [1g] to claim 20. I have annotated (in red) the text of claim 20 that is different from [1c] and [1g].

Claims [1c] and [1g]	Claim 20
	20[pre-a] The vehicle control system of claim 14, wherein the

	profile identification module is further configured to
[1c] determining a presence of the user inside the vehicle, wherein determining the presence of the user comprises	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;	detecting a device associated with the user in an area of the vehicle, and
[1g] wherein the adjustment output is provided based at least partially on determining the user is present in the location inside the vehicle,	**[20b]** wherein the adjustment output is provided based at least partially on determining the user is present in the location inside the vehicle.

543. As illustrated above, claim limitations 20[pre-a]–[20b] are nearly identical to corresponding limitations of claim 1, namely [1c] and [1g]. The only substantial difference between claim limitations [1c], [1g] and 20 is that claim 1 is directed to a "*method*" and claim 20 is directed to a method performed by a "*vehicle control system*."

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

544. This claim limitation is substantively identical to element 14[pre] for "*vehicle control system*" and claim element [1c] for the remaining limitations. I therefore refer back to my analysis of elements 14[pre] and [1c] for the limitations of 20[pre-a].

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

545. Due to the similarities between element [20b] and element [1g], it is my opinion that He renders element [20b] obvious for substantially the same reasons it is my opinion that He renders element [1g] obvious.

D. Ground 4 – The Combination of He and Suzuki Renders All Limitations of Claims 5, 12, and 18 Obvious

8. Rationale to Combine

546. 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 that He and Suzuki are complementary technologies that are combinable. For example, He discloses that "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." (He, Ex. 1025, [0008].) Suzuki similarly discloses that the block diagram depicted in Figure 1 is "an example . . . according to this embodiment[,]" which indicates other examples and embodiments are available. (Suzuki, Ex. 1026, [0006].)

547. He and Suzuki are from the same field – vehicle control systems that automatically adjust vehicle controls to a user's stored preferences:

> Systems and methods for establishing a wireless connection between a wireless user device and a wireless vehicle system are disclosed. In an embodiment of a wireless connection method, setting inputs for a plurality of users are received for components in the vehicle. Some examples of vehicle components include adjustable seats, adjustable mirrors, steering wheel tilt mechanism, and others. In addition, wireless connection identifiers are received for wireless user devices of the users . . . .
>
> The wireless connection identifiers and the setting inputs are then stored in user profiles for the user, and the user profile for one of the users is retrieved. To retrieve the profile, for example, a user can select

> her profile using a user interface. In another example, the driver of the vehicle may be automatically determined, and the user profile belonging to the driver of the vehicle may be retrieved. After 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 . . . .

(He, Ex. 1025, [0009], [0010].)

> This invention is an in-vehicle environment setting device that sets the environment for each seat in the vehicle[] . . . This invention allows for the automatic setting of the in-vehicle environment based on the environmental conditions set by passengers, by storing information that specifies the passengers and their corresponding vehicle environment conditions for each seat. When a passenger with stored identifying information boards the vehicle, the in-vehicle environment can be automatically adjusted based on the stored conditions.

(Suzuki, Ex. 1026, [0004]-[0005].)

548. He and Suzuki both disclose vehicle control systems that detect users to automatically adjust controls to stored preferences, facilitating user convenience:

> As noted previously, users can select which of them is the current driver of the vehicle 102 using the user interface 140. . . . In another embodiment, the vehicle system 110 uses automated forms of operation rather than depending on manual selection by users with the user interface 140. For example, the vehicle system 100 automatically

> detects which recognized wireless telephones 104 are active in range of the hands-free system 150, and the controller 110 uses the device IDs 134 from the detected telephones 104 to obtain associated user profiles 132 from memory 130. In addition, the 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.

(He, Ex. 1025, [0025].)

> Even in vehicles that allow for setting air conditioning temperature, seat angle, and seat belt height for each seat, preferences for temperature settings differ among persons. Therefore, when moving to a different seat after a break at a drive-in, the settings must be adjusted again. This issue also applies when temperature adjustments can be made individually[.] . . . This invention aims to solve the aforementioned problems by automatically adjusting the in-vehicle environment settings, such as air conditioning temperature, seat angle, and seat belt height, according to the preferences of the passengers.

(Suzuki, Ex. 1026, [0003]-[0004].)

549. Relatedly, both He and Suzuki recognize the benefit of storing different settings for different seats in the vehicle:

> The controller 110 then retrieves the setting inputs 134 associated with the unique device IDs 136 of the detected telephones 104 and sends the setting inputs 134 for each of the users to the appropriate vehicle components 160 (Block 224). The actuators or controls 162 then adjust the vehicle components 160 based on the setting inputs 134 (Block

> 226). For example, 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, 0etc. The setting inputs 134 for the other users are sent to those vehicle components 160 appropriate for passengers.

(He, Ex. 1025, [0033].)

> In addition, even for the same person, there may be different conditions for the front and rear seats; therefore, keeping separate in-vehicle environment conditions for each seat allows for more detailed customization of the in-vehicle environment.

(Suzuki, Ex. 1026, [0010].)

a. Reduced/Eliminated Manual Involvement

550. As mentioned above, both He and Suzuki seek to improve comfort and user convenience of operating and riding a vehicle.

551. He discloses a vehicle system 100 focuses on "establishing wireless connection between a wireless user device and a wireless vehicle system." (He, Ex. 1025, [0001].) In addition, "[t]he vehicle system 100 allows users to set and select preferred settings for vehicle components 160." (He, Ex. 1025, [0017].) These settings are linked to the user via a device ID 136 that is associated with the user's wireless user device 104. (He, Ex. 1025, [0020].) He explains that the wireless user devices 104 "are wireless telephones, such as cellular phones or the like." (He, Ex. 1025, [0017].) Thus, He teaches detecting users and automatically determining the

users' preferred settings via their cell phones, and in some cases asking the users to identify which location they are in using the user interface.

552. Suzuki similarly discloses a vehicle system that automatically loads a user's preferred settings, (Suzuki, Ex. 1026, [0004],) but Suzuki's system detects passengers of a vehicle through means other than a remote device carried by the user. Instead, Suzuki discloses various means of detection, including "cameras embedded in the front pillar, rearview mirror, headrest, etc., to capture images of people's faces . . . ." (Suzuki, Ex. 1026, [0006].) Thus, as Suzuki explains, this vehicle system can accommodate situations where multiple people are present in the vehicle, for example, multiple people are traveling together and switch seats during the trip. (Suzuki, Ex. 1026, [0011]-[0014].)

553. He discusses situations in which there may be multiple occupants in the vehicle but the vehicle system 100 only detects a single wireless telephone 104:

> If only one wireless telephone 104 has been detected (Block 210), the profile handler 120 may assume that the user of the detected wireless telephone 104 is the current driver of the vehicle 102. Accordingly, the controller 110 establishes wireless connection with the driver's detected wireless telephone 104 (Block 212). In addition, the controller 110 sends the driver's preferred setting inputs 134 to the vehicle components 160 appropriate for the driver (Block 214), and the actuators and other controls 162 adjust the vehicle components 160 accordingly (Block 216).

(He, Ex. 1025, [0027].)

554. Thus, He teaches that the vehicle system 100 makes assumptions in determining which occupant is a driver versus which is a passenger. Recognizing that the assumption may be incorrect, He discloses a mechanism to account for such error:

> The assumption by the controller 110 that the one detected telephone 104 belongs to the driver may be incorrect. For example, the detected telephone 104 may actually belong to a passenger, and the driver may not have her telephone 104 or it may be turned off. Therefore, the controller 110 may allow the users to verify or override the assumption using the user interface 140.

(He, Ex. 1025, [0028].)

555. A PHOSITA would have recognized that combining He's automatic user detection vehicle system with Suzuki's camera and facial recognition would have yielded predictable results by allowing for verification of the system's driver assumption without the requirement of manual user override, which would further the automated operation goal of He's vehicle system 100.

b. Improved Accuracy

556. As mentioned above, He teaches that the vehicle system 100 may make an incorrect assumption as to which passenger is the driver of the vehicle, which may be corrected by prompting the user to manually override the determination. In

addition, He teaches gathering and using additional types of information to inform how the system operates when determining which passenger is the driver:

> In one embodiment, the controller 110 may determine from seat sensors (not shown) how many people are sitting in the vehicle 102. If only one person is detected and only one wireless telephone 104 is detected, then that person is most likely the current driver of the vehicle 102. Therefore, the need for manual verification or override with the user interface 140 may be unnecessary. On the other hand, if seat sensors indicate that both the driver's seat and the front passenger's seat are occupied, then the need for manual verification or override with the user interface 140 may be necessary, especially if only one wireless telephone 104 is detected.

(He, Ex. 1025, [0028].)

557. A PHOSITA would have understood that combining He's vehicle system 100 with Suzuki's camera and facial recognition functionality would be yet another additional type of information that the vehicle system 100 could evaluate in determining how to make the determination of which user is in the driver's seat. Instead of or in addition to using seat sensors to determine the number of occupants, the combination could use the cameras to determine the number of occupants. If the users' profiles stored the users' facial characteristics, then the cameras could not only determine the number of occupants but could specifically determine who each occupant is and the seat in which they are located.

558. Thus, rather than making any assumption of who the driver is, the combination of He and Suzuki would automatically determine who the driver of the vehicle is without needing to rely on manual override for correction. The result would have been greater accuracy, improving the user experience.

c. A PHOSITA would have understood how to combine He and Suzuki

559. A PHOSITA would have understood how to combine 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. 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. This integration would be straightforward for a PHOSITA familiar with embedded systems and automotive software architectures.

560. He teaches associating the user's profile with an identifier unique to the user:

> To implement the wireless connection, the user first associates a device ID 136 for her wireless telephone 104 with her preferred setting inputs 134 stored in the user's profile 132.

(He, Ex. 1025, [0020].)

By integrating facial characteristics as an additional type of information associated with both the user profile and the device ID 136, the combination of He and Suzuki would be able to compare facial characteristics located in the user profiles associated with the detected device IDs 136 to determine in which seat each user carrying a device is located.

d. *KSR* Factors

561. Several *KSR* factors also **support** combining the teachings of Suzuki with the teachings of He.

562. First, as described above, He would have yielded the predictable result of verifying the location of detected users rather than making potentially incorrect assumptions and thus improving the functionality of He's system. (*See* ¶¶ 550–555.)

563. 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 in various different seats within the vehicle. (He, Ex. 1025, [0009]–[0010], [0025], [0033]; Suzuki, Ex. 1026, [0003]–[0005], [0010].) Including Suzuki's functionality

would provide He with an additional method of determining the location of a particular user—consistent with the functionality and goals of He.

564. 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, which takes away from the automated operation goals of the disclosure. (He, Ex. 1025, [0028].) This would improve the accuracy of the system's functionality, making it more reliable and desirable for users.

565. 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, (He, Ex. 1025, [0027]-0028]), while Suzuki discloses a system that precisely determines the identity of every occupant without the need to make any assumptions in the first place (Suzuki, Ex. 1026, [0011]-[0014].) Thus, He effectively describes how its teachings would 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.

9. Dependent Claims 5, 12, and 18

e. Claim 5

566. Claim 5 depends from claim 1, which I understand means that claim 5 adds further limitations to all of the limitations of claim 1 in addition to its own

limitations. As described above, He discloses all of the limitations of claim 1, and I incorporate my analysis of claim 1 into this analysis of claim 5.

5[pre] The method of claim 1, wherein determining the presence of the user inside the vehicle further comprises:

567. As explained for limitation [1c], He discloses a method that includes a step of determining the presence of a user inside a vehicle. Specifically, He discloses that "[w]hen one or more users . . . enter the vehicle 102 with active wireless telephones 104 . . ., 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 . . . ." (He, Ex. 1025, [0026].) Thus, He discloses a system that utilizes device discovery for determining a user is present inside the vehicle. It is thus my opinion that He in combination with Suzuki renders this limitation obvious.

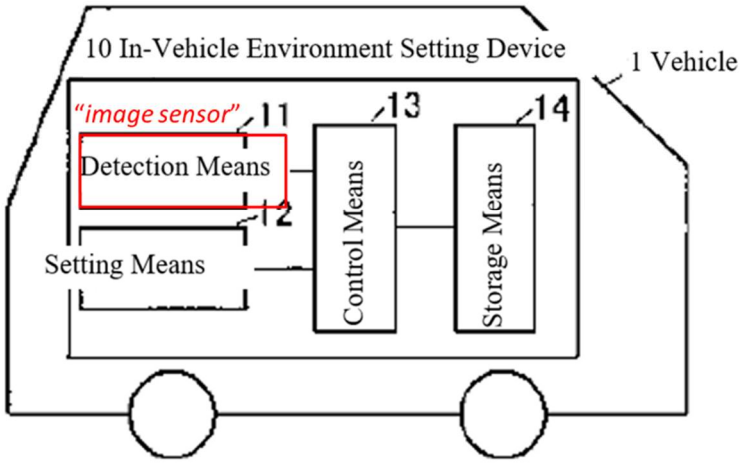
[5a] detecting a person via at least one image sensor associated with the vehicle;

568. Suzuki discloses a vehicle environment setting 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." (Suzuki, Ex. 1026, [0004].) Suzuki explains that 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." (Suzuki, Ex. 1026, [0005].)

569. With reference to Figure 1, Suzuki 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. (Suzuki, Ex. 1026, [0006], [0008]-[0009].)

[Fig. 1]



Suzuki, Ex. 1026, Fig. 1 (Annotated)

570. Suzuki explains that the detection means 11 can take many forms, such as "cameras . . . to capture images of people's faces" and more. (Suzuki, Ex. 1026, [0006].) Suzuki teaches using cameras as a means of detecting identification

information related to the passengers who have boarded the vehicle. (Suzuki, Ex. 1026, [0006].)

571. Based on Suzuki teaching that the cameras are used to detect identification information of passengers, a PHOSITA would have understood that a camera is or includes an "*image sensor*."

572. Indeed, the '296 Patent even correlates image sensors to cameras—stating "the sensors may include one or more of optical, or **image, sensors** . . . (e.g., **cameras**, etc.)" ('296 Patent, Ex. 1001, 33:50-51.) The '296 Patent also explains that "camera sensors . . . may be similar to image sensors" and that "camera sensors may record still images, video, and/or combinations thereof." ('296 Patent at 37:34-37.) Continuing further, the '296 Patent explains that "matching operations may be performed by . . . relating to video input received via one or more image sensors, cameras [], and the like. ('296 Patent, Ex. 1001, 40:46-49.) The '296 Patent also explains that "the system 800 may receive information about a user 216 (*e.g.*, from a camera . . .)." ('296 Patent, Ex. 1001, 42:20-21.) These examples described in the '296 Patent further reinforce my opinion that a PHOSITA would have understood that the camera taught by Suzuki is an "*image sensor*."

573. Suzuki further claims a "program for controlling an in-vehicle environment setting device . . . comprising: a step of detecting information that specifies the passengers using the detection means[.]" (Suzuki, Ex. 1026, Claim 2.)

574. Thus, it is my opinion that Suzuki renders the limitation "*detecting a person via at least one image sensor* [detection means 11 as a camera] *associated with the vehicle*" of claim 5 obvious.

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

575. As I mentioned in my analysis of limitation [5a] above, Suzuki explains that the detection means 11 can take many forms, such as "cameras . . . to capture images of people's faces" and more. (Suzuki, Ex. 1026, [0006].)

576. As I also mentioned, Suzuki claims a "program for controlling an in-vehicle environment setting device . . . comprising: a step of detecting information that specifies the passengers using the detection means[.]" (Suzuki, Ex. 1026, Claim 2.)

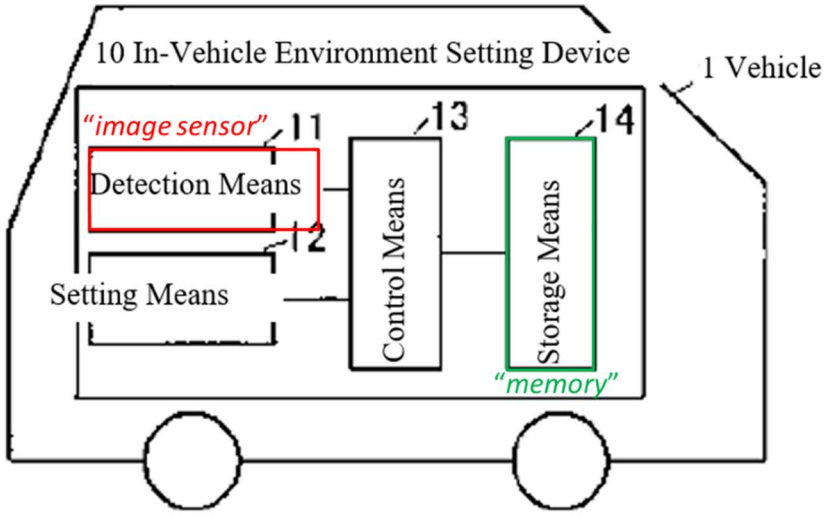
577. In light of Suzuki teaching that the detection means 11 may be a camera "to capture images of people's faces," a PHOSITA would have understood that Suzuki teaches that the information that specifies the passenger, detected by the detection means 11 [camera], includes "*facial features*," specifically when the camera (image sensor) takes images of people's faces.

578. Thus, Suzuki teaches "*identifying facial features* [information that specifies the passenger which may be images of faces] *associated with the person detected via the at least one image sensor* [detection means 11 as a camera]."

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

579. Suzuki further explains that if the identifying information captured by the detection means 11 [a camera] (annotated in red) is the specified information for person A, that "information is linked to the environmental conditions set by A, . . . which are then stored in storage means 14" (annotated in green). (Suzuki, Ex. 1026, [0009].)

[Fig. 1]



Suzuki, Ex. 1026, Fig. 1 (Annotated)

580. 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." (Suzuki, Ex. 1026, [0010].)

581. Suzuki's claimed program therefore includes "a step of comparing the information specifying the detected passengers with the information stored in the storage means[.]" (Suzuki, Ex. 1026, claim 2.)

582. Thus, it is my opinion that Suzuki renders the limitation "*determining whether the identified facial features associated with the person* [detected identification information] *match user characteristics* [passenger identification information] *stored in a memory* [storage means 11]" of claim 5 obvious.

f. Claim 12

583. Claim 12 depends from claim 9, which I understand means that claim 12 adds further limitations to all of the limitations of claim 9 in addition to its own limitations. As described above, He discloses all of the limitations of claim 9, and I incorporate my analysis of claim 9 into this analysis of claim 12.

584. Claim 12 is largely duplicative of claim 5. To illustrate, the table below shows a side-by-side comparison of claims 5 and 12. I have annotated (in red) the text of claim 12 that is different from claim 5.

Claim 5	Claim 12
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:
[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;
[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
[5c] determining whether the identified facial features associated with the person match user characteristics stored in a memory.	**[12c]** determining whether the identified facial features associated with the person match user characteristics stored in a memory.

12[pre] The non-transitory computer readable medium of claim 9, wherein determining the presence of the user inside the vehicle further comprises:

585. Limitation 12[pre] is substantially similar to limitation 5[pre]. Claim 12[pre] requires the method step of determining the presence of the user to be realized through execution of instructions contained on a non-transitory computer

readable medium whereas claim 5[pre] claims only the method itself. Because claim 12 depends from claim 9 and my analysis for that claim explained how He discloses that "*determining the presence of the user inside the vehicle* [within range of the hands-free system 150]" is performed by execution of instructions by a processor [controller 110 or therein] stored on a "*non-transitory computer readable medium* [memory of controller 110]," I refer back to my analysis of claim 9 to establish that He discloses this limitation.

[12a] detecting a person via at least one image sensor associated with the vehicle;

586. This limitation is substantially identical to element [5a]. I therefore repeat my discussion of element [5a] for this element [12a].

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

587. This limitation is substantially identical to element [5b]. I therefore repeat my discussion of element [5b] for this element [12b].

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

588. This limitation is substantially identical to element [5c]. I therefore repeat my discussion of element [5c] for this element [12c].

g. Claim 18

589. Claim 18 depends from claim 15, which I understand means that claim 18 adds further limitations to all of the limitations of claim 15 in addition to its own limitations. As described above, He discloses all of the limitations of claim 15, and I incorporate my analysis of claim 15 into this analysis of claim 18.

590. Claim 18 is largely duplicative of claim 12. To illustrate, the table below shows a side-by-side comparison of claims 12 and 18. I have annotated (in red) the text of claim 18 that is different from claim 12.

Claim 12	Claim 18
12[pre]. The non-transitory computer readable medium of claim 9, wherein determining the presence of the user inside the vehicle further comprises:	**18[pre].** The vehicle control system of claim 15, wherein, in determining the presence of the user inside the vehicle, the user [sic] the profile identification module is further configured to
[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,

[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
[12c] determining whether the identified facial features associated with the person match user characteristics stored in a memory.	**[18c]** determine whether the identified facial features associated with the person match user characteristics stored in a memory.

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

591. Limitation 18[pre] is substantially similar to limitation 5[pre] and 12[pre]. 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, whereas claim 12[pre] merely requires the method step to be realized through execution of instructions contained on "*[a] non-transitory computer readable medium*."

592. Because claim 18 depends from claim 15 and my analysis for that claim explained how He discloses a "*profile identification module* [controller 110 containing or being a processor and including programed instructions in the memory] *further configured to determine a presence of the user inside the vehicle*

[within range of the hands-free system 150]," I refer back to my analysis of claim 15 to establish that He discloses this limitation.

[18a] detect a person via at least one image sensor associated with the vehicle,

593. This limitation is substantially identical to element [5a]. I therefore repeat my discussion of element [5a] for this element [18a].

[18b] identify facial features associated with the person detected via the at least one image sensor, and

594. This limitation is substantially identical to element [5b]. I therefore repeat my discussion of element [5b] for this element [18b].

[18c] determine whether the identified facial features associated with the person match user characteristics stored in a memory.

595. This limitation is substantially identical to element [5c]. I therefore repeat my discussion of element [5c] for this element [18c].

IX. Objective Indicia Does Not Support Patentability

596. Considering the information that I have reviewed, my general knowledge of the field of vehicle control systems and loading users' saved settings for vehicle features, and publications within that and related fields, I am not aware of any objective evidence that might support the patentability of the claims of the '296 Patent. Further, from my review of the file history (Ex. 1002) of the '296 Patent, I did not see that the applicant raised any secondary indicia of non-obviousness

during prosecution. I am not otherwise aware of any publicly available evidence of secondary indicia of non-obviousness. Should any alleged secondary indicia of non-obviousness be presented, I reserve the right to provide an opinion thereon.

X. Conclusion

597. In my opinion, all the elements of the challenged claim limitations are disclosed by the references discussed above and that the claims are unpatentable in view of these prior art references.

598. I reserve the right to supplement my opinions to address any information obtained, or positions taken, based on any new information that comes to light throughout this proceeding.

Executed on: October 1, 2025



Scott Andrews