

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TOYOTA MOTOR CORP.,
Petitioner,

v.

AUTOCONNECT HOLDINGS, LLC,
Patent Owner.

Case No. IPR2025-00890
U.S. Patent No. 8,793,034

**DECLARATION OF SCOTT DENNING
IN SUPPORT OF PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT NO. 8,793,034**

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I. Introduction

1. I, Scott Denning, submit this declaration to state my opinions on the matter described below.

2. I have been retained by Petitioner Toyota Motor Corp. (“Petitioner”), as an independent expert in this proceeding before the United States Patent and Trademark Office. Although I am being compensated at my usual and customary rate, no part of my compensation depends on the outcome of this proceeding, and I have no other interest in this proceeding.

3. I understand that this proceeding involves U.S. Patent No. 8,793,034 (“the ’034 patent”), and I have been asked to provide my opinions as to the patentability of claims 1 and 7-17 of the ’034 patent based on certain prior-art references. I have been asked to consider the state of the art and prior art available as of November 16, 2011. Based on the prior art discussed in this declaration, it is my opinion that claims 1 and 7-17 of the ’034 patent are unpatentable for the reasons provided below.

II. Background & Qualifications

4. I believe I am well qualified to serve as a technical expert in this matter based on my educational and work experience in the field of vehicle electronics and computing devices. My curriculum vitae (CV) is submitted as Exhibit 1003.

5. I received a Bachelor of Science degree in Computer Science from Southern College of Technology in 1993. I have a Master of Science in Economic Analytics from Clemson University and with the exception of defending my dissertation, I have completed all requirements for my Ph.D. degree from University of Colorado with a focus on Machine Learning and Natural Language Processing.

6. In formulating my opinions, I have relied upon my training, knowledge, and experience in the relevant art. I have 30 years of experience working with server software, embedded software, communication protocols, mobile devices, computer networks, and vehicle embedded systems. As detailed below, I have contributed architectural design, systems engineering, and millions of lines of functional program code on many projects that are highly relevant to the subject matter of the '034 patent.

7. I worked as a consulting engineer for Optical Robotics in 1995. In my official capacity, I designed and built many robotics components for pipeline inspection that included user and location profiles, user interfaces including remote displays and graphical user interfaces, infrared scanners, wired and wireless communication assemblies, motor speed and direction controllers, and various sensors including location, direction, inclination, and distance. For this project, data was collected from the user and numerous sensors around the robotic

inspection devices as well as from devices within support trucks and stored within profiles by a data logging system. After the data collection process was complete the data was relayed back to servers located at the home office via a cellular connection or was loaded onto removeable media for manual transfer. These systems required user authentication and administrative permissions to manipulate collected data.

8. In 2000 I was employed by Navsys Corporation I designed the SpotterSensor, a system designed to provide the precise coordinates of objects viewed from within rangefinder binoculars. This system included laser rangefinder binoculars, lcd display, a fiberoptic gyroscope, an electronic compass, a GPS module, a long-range rf transceiver and a control module. This system required user authentication in order to connect to the remote host controller. I designed the firmware for the control module that communicated with each of the sensors and computed the coordinates and the communications protocol for the rf data link.

9. While at Navsys I was also principal engineer for the Personal Guardian system, a system designed to get assistance for disabled American Veterans in the event that they needed help. This system included many handheld wireless emergency locators having a cellular connection, and a central dispatch center comprised of numerous servers in communication with the emergency locators. The handheld devices had an lcd graphical display, several buttons, a GPS

receiver, and a cellular modem. This system required administration and dispatcher authentication, administrative permissions for configuration changes, and included numerous profiles for managing information related to the veterans, their family members, system options, and the dispatch operators. I designed the handheld device firmware, the device and network communications protocols, and many of the routines used by the servers including identifying the veteran, identifying the location of the device, locating the nearest source of help, and notification of friends and family.

10. Additionally, while at Navsys I designed a fleet vehicle dispatch and tracking system for Coca Cola service trucks. This system included a large mapping display along with several servers installed at the dispatch center and GPS logging and user modules installed in the service trucks. The user modules were comprised of a Compaq Ipaq handheld computer connected to a satellite data receiver/transmitter. This system required admin and user authentication, administrative permissions for configuration changes, and included driver, truck, and client profiles, which were stored on the server and a copy of the client profile stored on the iPaq. I designed the system architecture, developed the communication protocols, and wrote the dispatch server and the iPaq Microsoft Pocket PC software applications.

11. In 2004 while at DRS Technologies I worked on the US Army IMPCS

program for ITT developing a satellite bandwidth management system that utilized DRS proprietary high-speed signal processors. This system relied on operational profiles stored on the satellites for approving or denying service to users.

Authentication was required for all users and special privileges were required and validated for any changes to the operational profiles. I wrote the control plane processor code for the signal processor, which signaled the satellite controller when a user's bandwidth utilization exceeded that permitted by their profile.

12. In 2005 I founded Purple Mountain Labs in Colorado Spring which focused on supercomputing and high-speed communications research and development. During this time, I was chief scientist and led product development for the client Lockheed, which included a new compact massively parallel multi-core supercomputing architecture for military vehicle applications. These included the Global Hawk and Predator reconnaissance aircraft and Aegis class naval destroyers. I created an image processing library which included many routines used in object recognition. I also ported standard communications and signal processing libraries to our platform and created a suite of administrative tools utilizing profiles for configuring users, jobs, and groups of computing resources. User and device authentication was required, and administrative permissions had to be validated for any system configuration change.

13. In 2008 I was the CTO of Allied Security Trust and designed the

architecture of a patent asset tracking database. This system resided on a web server and comprised an online catalog of all known patents currently for sale. The system used predefined profiles to automatically notify members of patents which might be of interest. The profiles included the member point of contact, patent information, technology domain of interest, and seller/broker. Authentication was required for all users and profile management required permission validation.

III. Materials Considered

14. In forming my opinions, I reviewed the following documents and any other documents cited in my declaration:

Exhibit	Description
Ex. 1001	U.S. Patent No. 8,793,034 to <i>Ricci</i> .
Ex. 1002	Prosecution File History for U.S. Patent No. 8,793,034.
Ex. 1005	Japanese Patent Pub. No. JP2008-017227 to <i>Yasui</i>
Ex. 1007	European Patent App. No. EP 1 211 141 A2 to <i>Morehouse</i>
Ex. 1008	U.S. Patent Pub. No. 2008/0215209 to <i>Ikeda et al.</i>
Ex. 1020	U.S. Patent Pub. No. 2007/0208861 to <i>Zellner et al.</i>
Ex. 1021	U.S. Patent Pub. No. 2011/0093159 to <i>Boling et al.</i>

IV. Legal Standards

15. In forming my opinions and considering the subject matter of the '034 patent and its claims in light of the prior art, I am relying on certain legal principles

that counsel in this case explained to me. My understanding of these concepts is summarized below.

16. I understand that the claims define the invention. I also understand that an unpatentability analysis is a two-step process. First, the claims of the patent are construed to determine their meaning and scope. Second, after the claims are construed, the content of the prior art is compared to the construed claims.

17. I understand that a claimed invention is only patentable when it is new, useful, and non-obvious in light of the “prior art.” That is, the invention, as defined by the claims of the patent, must not be anticipated or rendered obvious by the prior art.

A. Claim Construction

18. I understand that the United States Patent and Trademark Office interprets claim terms in an *inter-partes* review proceeding under the same claim construction standard that is used in a United States federal court. I understand that under this standard, the meaning of claim terms is considered from the viewpoint of one of ordinary skill in the art at the time of the alleged invention.

19. I understand that claim terms are generally given their ordinary and customary meaning as understood by one of ordinary skill in the art in light of the specification and the prosecution history pertaining to the patent. I understand, however, that claim terms are generally not limited by the embodiments described

in the specification.

20. I understand that in addition to the claims, specification, and prosecution history, other evidence may be considered to ascertain the meaning of claim terms, including textbooks, encyclopedias, articles, and dictionaries. I have been informed that this other evidence is often less significant and less reliable than the claims, specification, and prosecution history.

B. Anticipation Under 35 U.S.C. § 102

21. I understand that under 35 U.S.C. § 102, a patent claim is invalid if its subject matter was patented or described in a printed publication before the effective filing date of the claimed invention. I have been told that this is referred to as invalidity by anticipation. I have been told that a patent claim is anticipated under § 102 if a single prior art reference discloses all limitations of the claimed invention.

C. Obviousness Under 35 U.S.C. § 103

22. I understand that a patent claim is invalid as obvious if the claimed invention would have been obvious to a person of ordinary skill in the art (“POSITA”) at the time the claimed invention was made. This means that even if all of the elements of the claim cannot be found in a single prior art reference that would anticipate the claim, a person of ordinary skill in the field who knew about all the prior art would have come up with the claimed invention. I understand that

in an obviousness determination, the person of ordinary skill in the art is presumed to have knowledge of all material prior art. I understand that whether a claim is obvious is based upon the determination of several factual issues.

23. I understand that obviousness is a determination of law based on underlying determinations of fact. I understand that these factual determinations include the scope and content of the prior art, the level of ordinary skill in the art, the differences between the claimed invention and the prior art, and secondary considerations of non-obviousness.

24. In considering obviousness, I understand that one must determine the scope and content of the prior art. I understand that, in order to be considered as prior art to a patent being considered, a prior art reference must be reasonably related to the claimed invention of that patent. A reference is reasonably related if it is in the same field as the claimed invention or is from another field to which a person of ordinary skill in the art would look to solve a known problem.

25. I understand that one must determine what differences, if any, existed between the claimed invention and the prior art.

26. I understand that a patent claim composed of several elements is not proved obvious merely by demonstrating that each of its elements was independently known in the prior art. In evaluating whether such a claim would have been obvious, one may consider whether a reason has been identified that

would have prompted a person of ordinary skill in the art to combine the elements or concepts from the prior art in the same way as in the claimed invention. There is no single way to define the line between true inventiveness on the one hand (which is patentable) and the application of common sense and ordinary skill to solve a problem on the other hand (which is not patentable). For example, market forces or other design incentives may be what precipitated a change, rather than true inventiveness.

27. I understand that whether a prior art reference renders a patent claim unpatentable as obvious is determined from the perspective of a person of ordinary skill in the art at the time of the alleged invention. I have been told that there is no requirement that the prior art contain an express suggestion to combine known elements to achieve the claimed invention, but a suggestion to combine known elements to achieve the claimed invention may come from the prior art, as filtered through the knowledge of one skilled in the art. In addition, I have been told that the inferences and creative steps a person of ordinary skill in the art would employ are also relevant to the determination of obviousness.

28. I understand that there is no rigid rule that a reference or combination of references must contain a “teaching, suggestion, or motivation” to combine references. But I also understand that the “teaching, suggestion, or motivation” test can be a useful guide in establishing a rationale for combining elements of the

prior art. I have been told that this test poses the question as to whether there is an express or implied teaching, suggestion, or motivation to combine prior art elements in a way that realizes the claimed invention, and that it seeks to counter impermissible hindsight analysis.

29. I understand that one may consider, e.g., whether (1) the change was merely the predictable result of using prior art elements according to their known functions, or whether it was the result of true inventiveness; (2) there is some teaching or suggestion in the prior art to make the modification or combination of elements claimed in the patent; (3) the claimed innovation applies a known technique that had been used to improve a similar device or method in a similar way; (4) the claimed invention would have been obvious to try, meaning that the claimed innovation was one of a relatively small number of possible approaches to the problem with a reasonable expectation of success by those skilled in the art; (5) the invention merely substituted one known element for another known element in order to obtain predictable results; (6) the invention merely applies a known technique to a known device, method, or product to yield predictable results; or (7) known work in the field may have prompted variations of use of the same inventions in the same or different fields due to market forces or design incentives that would have been predictable to a person of ordinary skill in the art.

30. I understand that any assertion of secondary considerations of non-

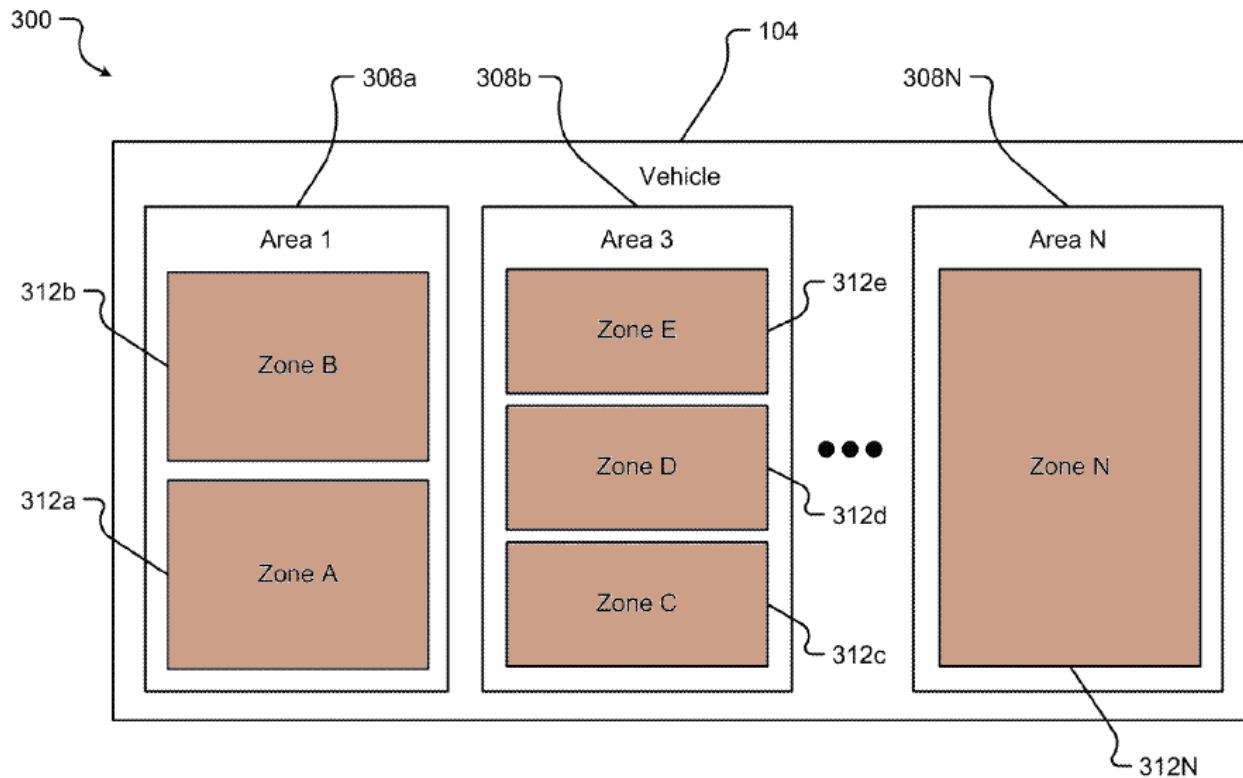
obviousness must be accompanied by a nexus between the merits of the invention and the evidence offered. I am not aware of any evidence of secondary considerations that would support a determination of non-obviousness of the claimed subject matter in the '034 patent.

V. The '034 Patent

A. Disclosure

31. The '034 patent claims systems and methods related to detecting a user within a zone of a vehicle, identifying the user, and configuring a vehicle's environment to match the user's settings.

32. The specification describes a system where a vehicle is conceptually “separated into one or more zones.” '034 patent, 11:12-21. Figure 3 illustrates a vehicle separated into one or more zones:



'034 patent, Fig. 3 (annotated).

33. The '034 patent specification identifies these **zones**, in some cases, as being associated with the seats in the vehicle.

34. For example, Zone A is “associated with a driver,” Zone B is “associated with a front passenger,” and Zones C, D, and E are “associated with three passenger seats typically found in the rear passenger area of an automobile.”
'034 patent, 11:12-34.

35. Zone N would be associated with the trunk of the vehicle. '034 patent, 11:27-30.

36. Figure 10 of the '034 patent, as annotated below, illustrates the process of **detecting a user**, **identifying the user**, **determining if the user has saved**

settings, and configuring the vehicle to match those settings.

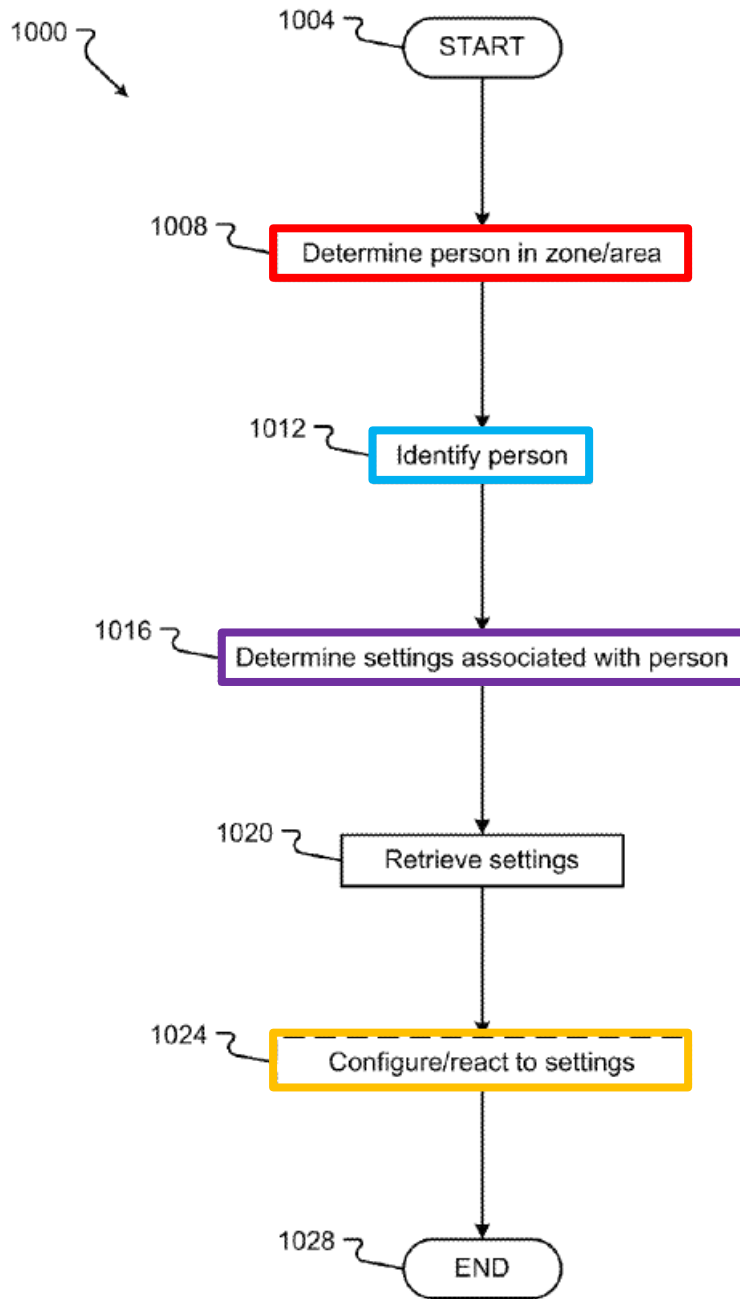


Fig. 10

'034 patent, Fig. 10 (annotated).

37. In step 1008 the '034 patent's system "can determine if a person is in

a zone . . . by receiving data from one or more sensors.” ’034 patent, 24:49-52.

38. The specification further explains that these can include “facial recognition, weight sensors, heat sensors, or other sensors to determine i[f] a person is occupying a certain zone.” ’034 patent, 24:52-54.

39. The specification further explains that its system “can identify the person, in step 1012.” ’034 patent, 24:55-56.

40. The system “can obtain characteristics for the user currently occupying the zone . . . can compare those characteristics to the identifying features in portion 812 of data structure 804.” ’034 patent, 24:56-60.

41. After detecting and identifying the person in the zone, in step 1016 the system will “determine if there are settings associated with the identified person for that zone.” ’034 patent, 24:63-25:2.

42. Once the system determines that settings exist, it can “read and retrieve those settings, in step 1020.” ’034 patent, 25:2-5.

43. Finally, having determined that settings exist and having retrieved those settings, in step 1024 the system uses the settings “to configure or react to the presence of the user.” ’034 patent, 25:5-8.

44. Specifically, the system uses settings “to change the configuration of the vehicle,” such as “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.” ’034 patent, 25:5-12.

45. The specification further discloses that the above steps may be performed by “a processor.” ’034 patent, 31:39-51.

46. Specifically, “a processor” may “automatically determine a person is within a vehicle,” “automatically identify the person,” and “determine if the person has made a setting.” ’034 patent, 31:39-51.

47. The specification also mentions embodiments in which “sensor data” is “voice data from the person,” ’034 patent, 31:52-67, or in which settings are “stored in cloud storage.” ’034 patent, 24:29-35.

B. File History

48. I have reviewed the prosecution history of the application that led to the ’034 patent—Exhibit 1002. I am not aware of anything in the prosecution history that changes my opinions expressed in this declaration. To the extent Patent Owner relies on the prosecution history for some point relevant to my opinions, I will respond in a future declaration.

VI. The Prior Art

A. Yasui

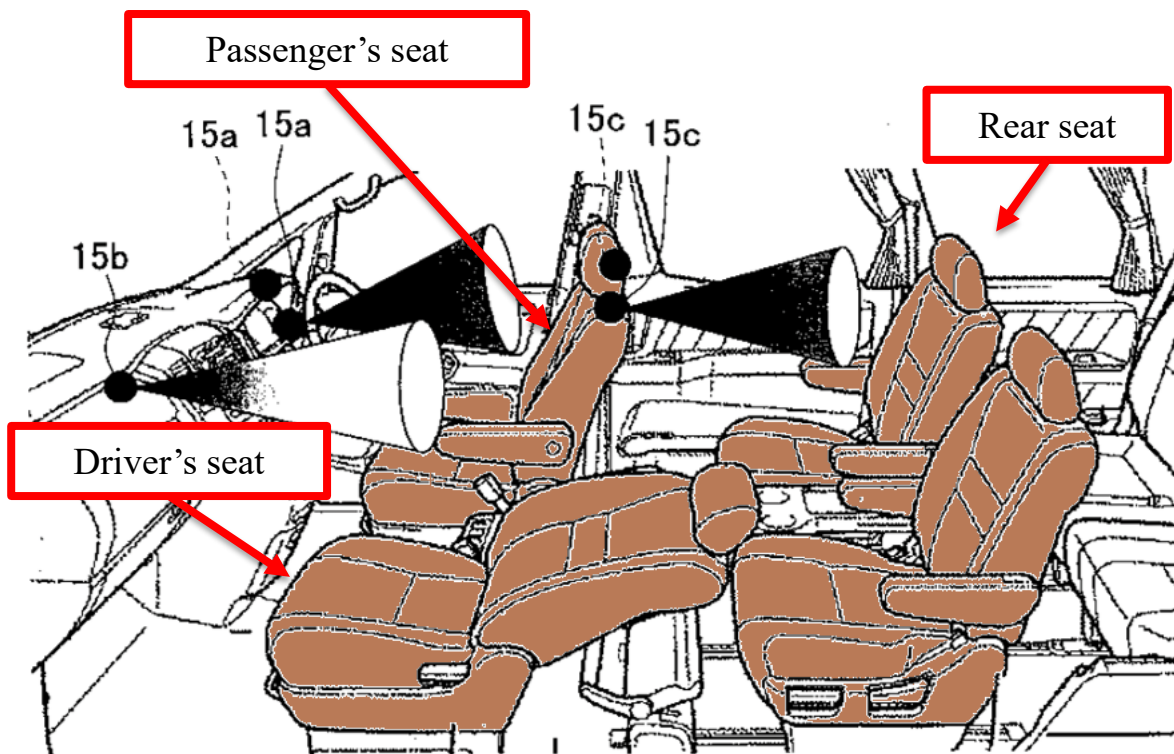
49. *Yasui* is from the same field of endeavor as the ’034 patent, which is vehicle control systems. ’034 patent, Abstract, 2:66-3:7; *Yasui*, [0001], [0064].

Further, *Yasui* is reasonably pertinent to the problem faced by the inventor of the

'034 patent, which is customizing a vehicle to match a recognized user's preferences. '034 patent, Abstract, 2:66-3:7; *Yasui*, [0001], [0064].

50. Specifically, *Yasui* discloses a system for detecting and identifying a user in a zone of a vehicle and then configuring the zone of the vehicle to match the user's saved settings.

51. *Yasui* discloses separate zones: "the driver's seat," "the passenger seat," and "the rear seat." *Yasui*, [0022].



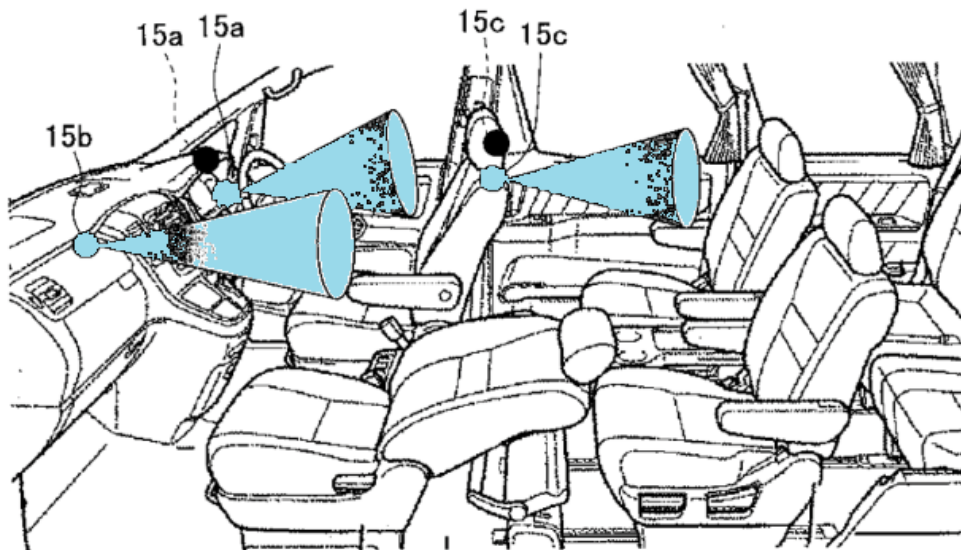
Yasui, Fig. 3A (annotated).

52. *Yasui* further discloses "a proximity sensor that detects imaging targets present within the imaging field of imaging devices 15." *Yasui*, [0020]. The "the imaging field of imaging devices 15" corresponds to the "zones." For

example, as illustrated in Figure 3A above and described in *Yasui*, imaging device 15a's field is the **driver's seat**, imaging device 15b's field is the **front passenger seat**, and imaging device 15c's field is the **rear seat**. *Yasui*, [0021]-[0022].

53. After detecting an imaging target, *Yasui*'s system “**recogniz[es] users** by comparing acquired facial feature information with facial feature information registered in face registration unit 17.” *Yasui*, [0025]. Figure 3A illustrates the imaging devices:

[FIG. 3A]



Yasui, Fig. 3A (annotated).

54. *Yasui* describes “a **facial recognition device 10**, which **recognizes users** using captured facial images.” *Yasui*, [0017]; see *Yasui*, [0021].

55. Based on the outcome of its “**face detection unit 10**,” *Yasui*'s system

then “decides what kind of hospitality operation to perform.” *Yasui*, [0064]. *Yasui* discloses settings associated with a particular user are stored as “hospitality operation information” in the “hospitality operation information storage unit.” *Yasui*, Claim 10, [0008], [0052].

56. After determining the “hospitality operation information” associated with the user identified by the “the face detection unit 10,” *Yasui*’s “[h]ospitality execution control unit 3 . . . causes the corresponding hospitality operation units . . . to execute hospitality operations.” *Yasui*, [0064]. These “hospitality operation units” adjust parameters such as the “car stereo,” “power seats,” “mirror angles,” and “car navigation device.” *Yasui*, [0059].

B. Morehouse

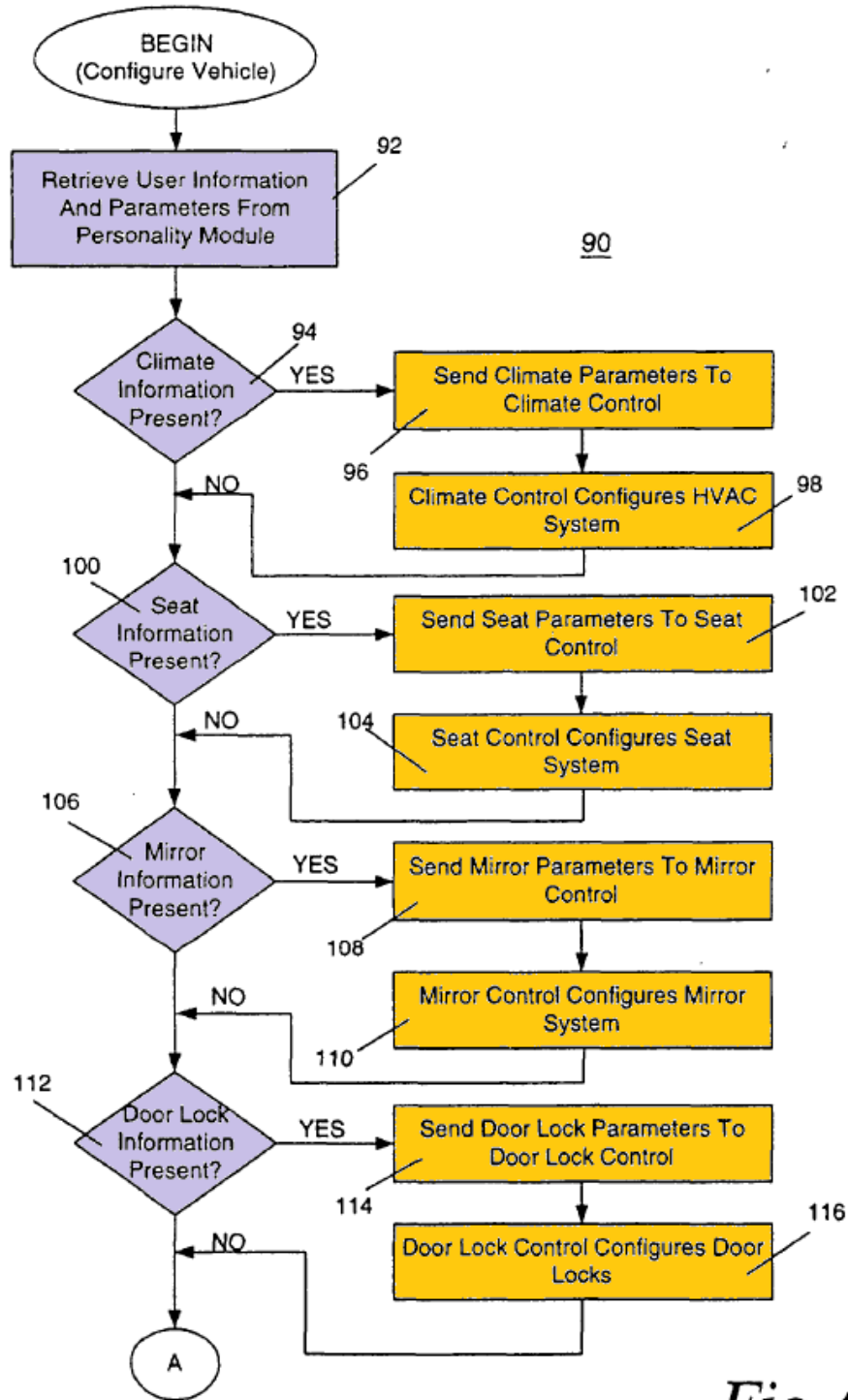
57. *Morehouse* is from the same field of endeavor as the ’034 patent, which is vehicle control systems. ’034 patent, Abstract, 2:66-3:7; *Morehouse*, [0001]. Further, *Morehouse* is reasonably pertinent to the problem faced by the inventor of the ’034 patent, which is determining whether a recognized user has setting preferences and customizing a vehicle to match the recognized user’s preferences. ’034 patent, Abstract, 2:50-63; *Morehouse*, Abstract (57), [0002], [0019].

58. Specifically, *Morehouse* also discloses details of a system to explicitly “automatically configure” a vehicle based on an identified user’s preferences.

Morehouse, Abstract (57).

59. *Morehouse* discloses a vehicle having zones—such as seats—that are adjustable to match an identified user’s preferences for several different parameters. *Morehouse*, Abstract (57), [0002], [0019].

60. While similar to *Yasui*, *Morehouse* further contains substantial disclosure on **determining whether settings exist for an identified user across an array of parameters** and **implementing those settings if they exist**. *Morehouse*, [0021]. *Morehouse* specifically discloses individually determining whether settings exist for individual parameters and, if so, sending the settings to configure the relevant parameter in the identified user’s environment. *Morehouse*, [0021]. Annotated Figures 6 and 7 below illustrates *Morehouse*’s disclosure in relevant part:



Morehouse, Fig. 6 (annotated).

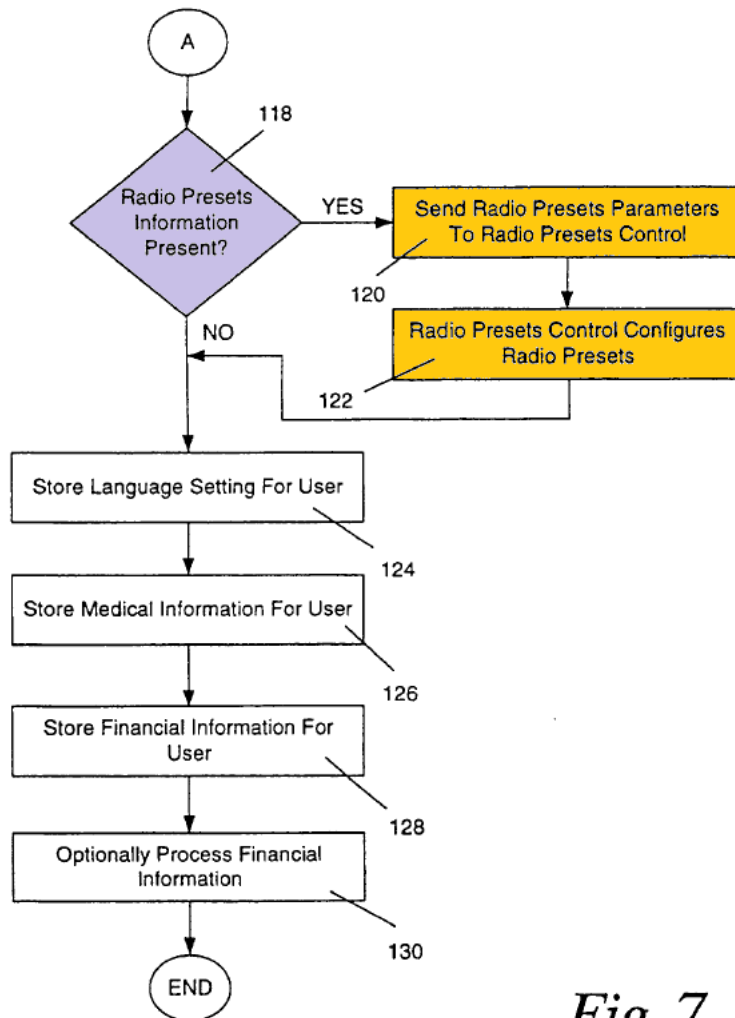


Fig. 7

Morehouse, Fig. 7 (annotated).

C. Ikeda

61. *Ikeda* is from the same field of endeavor as the '034 patent, which is vehicle control systems. '034 patent, Abstract, 2:66-3:7; *Ikeda*, [0003] (“The present invention relate[s] to a driving-environment setup system which sets up a driving environment of a vehicle.”). Further, *Ikeda* is reasonably pertinent to the problem faced by the inventor of the '034 patent, which is customizing a vehicle to

match a recognized user's preferences. '034 patent, Abstract, 2:50-63; *Ikeda*, [0009] (“[I]t is an object of the present invention to provide a driving-environment setup system which can set the driving environment of a vehicle as a driving environment for a driver[.]”).

62. *Ikeda* discloses “a driving-environment setup system” that detects the presence of a user, identifies the user, and then configures the user's environment based on the user's saved settings. *Ikeda*, [0079], [0409], [0062], [0106], [0091].

63. Further to the disclosure of *Yasui* and *Morehouse*, *Ikeda* further discloses identifying a user via voice recognition. For example, *Ikeda* discloses using a user's “voiceprint” as a feature “unique to the individual.” *Ikeda*, [0429].

D. Zellner

64. *Zellner* is from the same field of endeavor as the '034 patent—vehicle control systems.'034 patent, Abstract, 2:66-3:7; *Zellner*, [0048] (“Still other embodiments include a system and/or method configured to receive user preferences and interpret these preferences to provide a comfortable environment for the user.”), [0046] (“This disclosure includes embodiments of systems and methods that can store user preferences at a remote location for use in any of a plurality of environments. . . . “[T]he environment can communicate with a remote provisioning system or other remote component that is configured to identify the user and download the user's preferences to the environment.”). Further, *Zellner* is

reasonably pertinent to the problem faced by the inventor of the '034 patent—customizing a vehicle to match a recognized user's preferences. '034 patent, Abstract, 2:66-3:7; *Zellner*, [0046] (“systems and methods that can store user preferences at a remote location”).

65. *Zellner* discloses “systems and methods that can store user preferences at a remote location.” *Zellner*, [0046]. These “user preferences” (*corresponding settings*) can include “radio stations,” “seat position,” “temperature for an automobile,” etc. *Zellner*, [0049]. *Zellner*'s “environment 102”—such as a car—“can send a preference request to remote network 210 to determine the desired preference data.” *Zellner*, [0059].

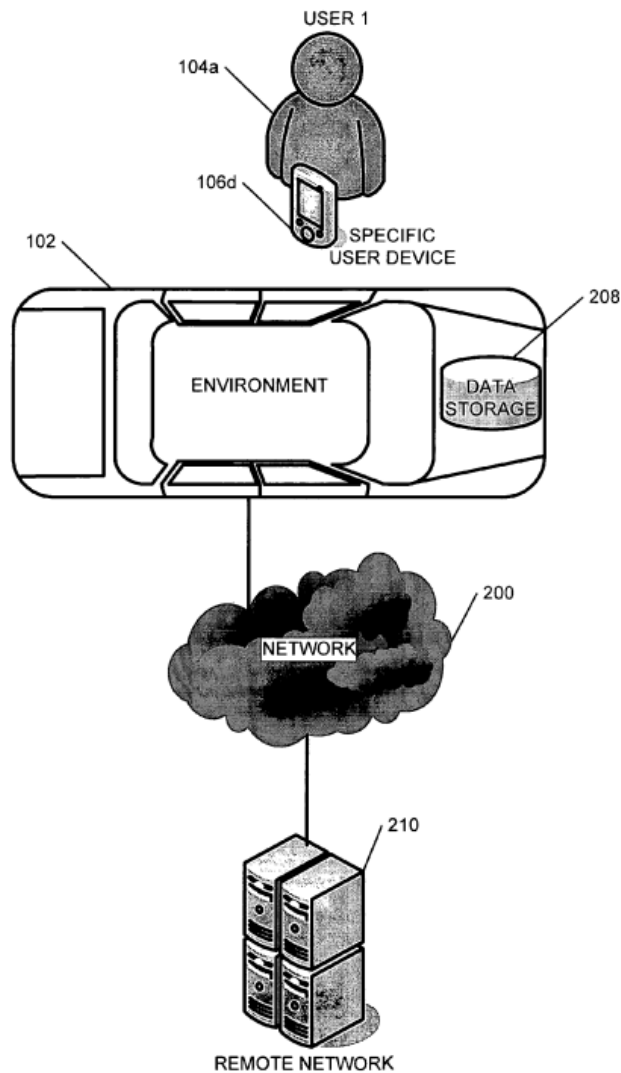


FIG. 2

Zellner, Fig. 2.

VII. Level of Ordinary Skill

66. I have been informed that patentability must be analyzed from the perspective of “one of ordinary skill in the art” (“POSITA”) in the same field as the ’034 patent at the time of the invention. I am also informed that several factors are considered in assessing the level of ordinary skill in the art, including (1) the

types of problems encountered in the art; (2) the prior art solutions to those problems; (3) the rapidity with which innovations are made; (4) the sophistication of the technology; and (5) the education level of active workers in the field.

67. I have been instructed to assume a POSITA is not a specific real individual, but rather a hypothetical individual having the qualities reflected by the factors discussed above.

68. In my opinion, a POSITA would have had at least a four-year undergraduate degree in computer science, electrical engineering, automotive engineering, or a closely related field and at least two years of experience in the field of vehicle control systems. More education can supplement practical experience and vice versa.

69. At the earliest priority date of the '034 patent, I qualified as a POSITA. My analysis and opinions regarding the '034 patent have been based on the perspective of the POSITA.

VIII. Claim Construction

70. I was not asked to construe any terms. Instead, I was asked to assume claim terms generally have their ordinary and customary meaning as understood by one of ordinary skill in the art in light of the specification and the prosecution history. No claim terms require construction in this proceeding because the claims encompass the prior-art mappings provided below under any construction

consistent with the claim construction principles discussed above (in the legal standards section). If the Patent Owner proposes or the Board adopts a different construction, I will respond to any such construction at the appropriate time.

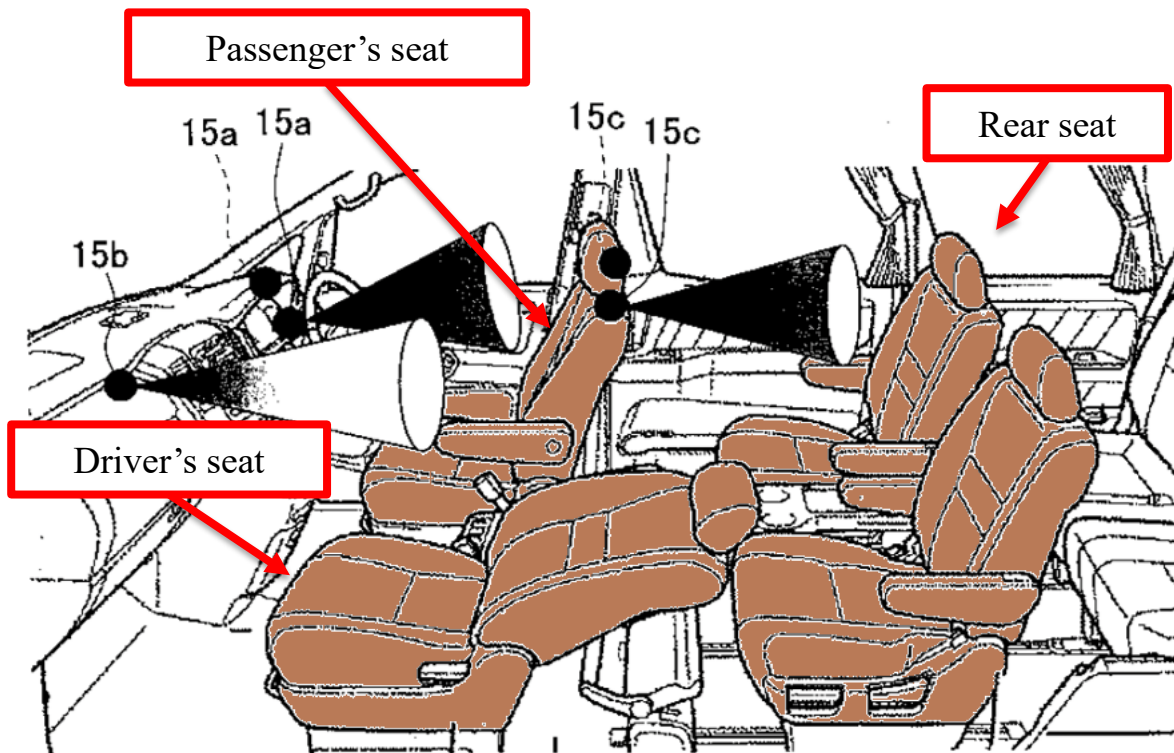
IX. Summary of Opinions on Unpatentability

A. Ground 1a/b: *Yasui* anticipates claims 1 and 7-17 (Ground 1a) and/or renders obvious claims 7, 12, 13, and 17 (Ground 1b).

1. Independent Claim 1

1[a]: A method, comprising: separating a vehicle into one or more zones;

71. *Yasui* discloses *separating a vehicle into one or more zones*. For example, *Yasui* discloses the separate zones of “the driver’s seat,” “the passenger seat,” and “the rear seat.” *Yasui*, [0021]-[0022].



Yasui, Fig. 3A (annotated).

72. As explained above, the '034 patent describes a *zone* as being the space associated with a seat in the vehicle. '034 Patent, 10:62-11:34. Specifically, the '034 patent describes five zones—labeled 312a, 312b, 312c, 312d, and 312e—that are each “associated with a particular portion of the interior occupied by a passenger.” '034 Patent, 11:12-34. Zones 312a and 312b, for example, are associated with “a driver” and “a front passenger,” respectively. '034 Patent, 11:12-21. Zones 312c, 312d, and 312e, are “associated with three passenger seats typically found in the rear passenger area.” '034 Patent, 11:22-34.

73. *Yasui* similarly discloses a vehicle separated into *zones* or spaces associated with a particular seat in the vehicle. *Yasui* identifies zones when it identifies “the driver’s seat,” “the passenger seat,” and “the rear seat.” *Yasui*, [0022].

74. Accordingly, in my opinion, *Yasui* discloses this limitation of claim 1.

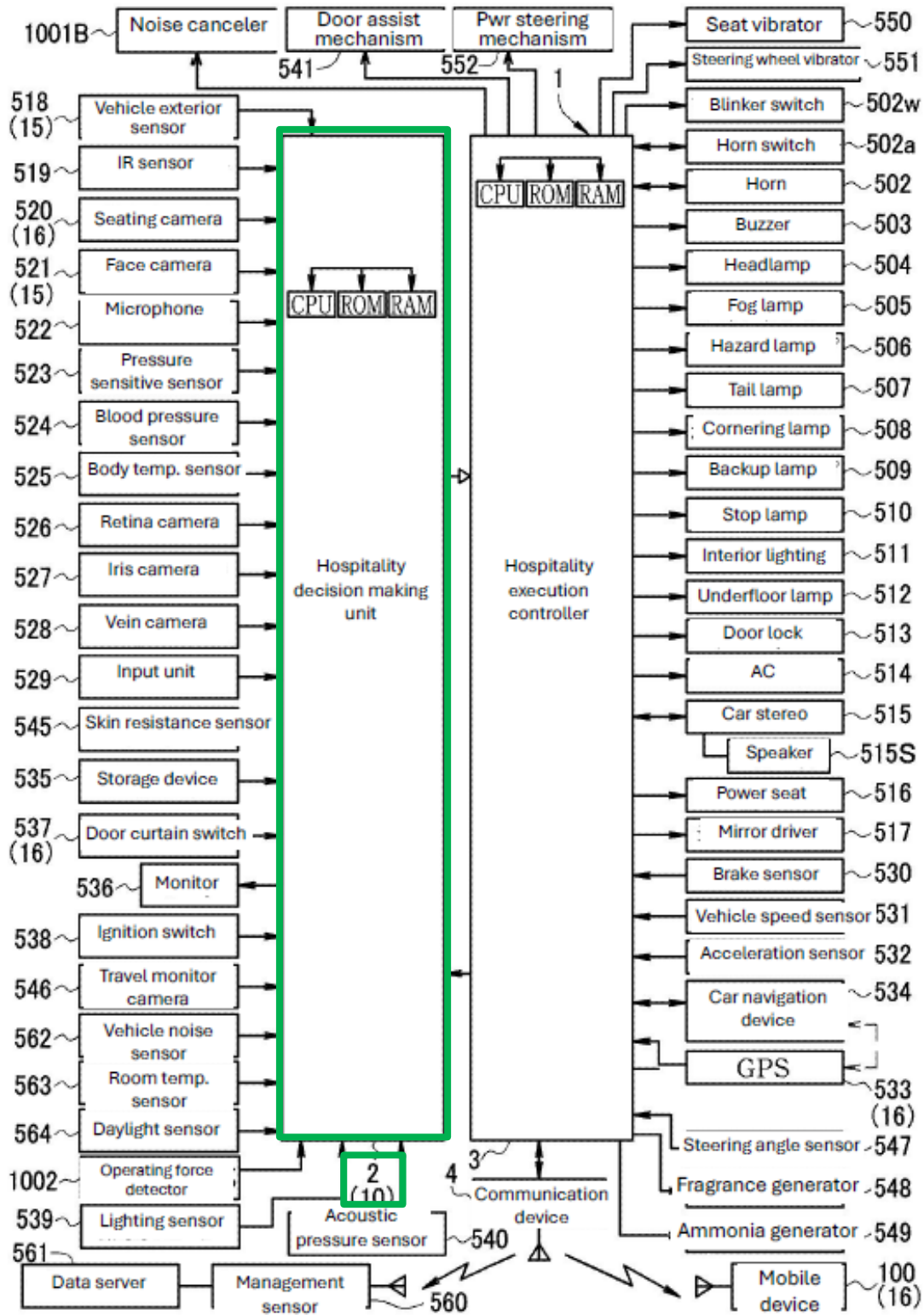
1[b]: automatically determining, by a processor, if a person is within a zone of said vehicle;

75. *Yasui* discloses *automatically determining, by a processor, if a person is within a zone of said vehicle*. For example, *Yasui* discloses a “hospitality decision-making unit 2” that, along with a “sensor/camera group,” “detects imaging targets present within the imaging field of imaging devices 15.” *Yasui*, [0020], [0047].

76. Yasui's "hospitality decision-making unit 2" includes "a CPU"—a processor. Yasui, Fig. 11, [0046]. Using the processor, the "hospitality decision-making unit 2" performs "various functions . . . by executing control software stored in ROM." Yasui, Fig. 11, [0046].

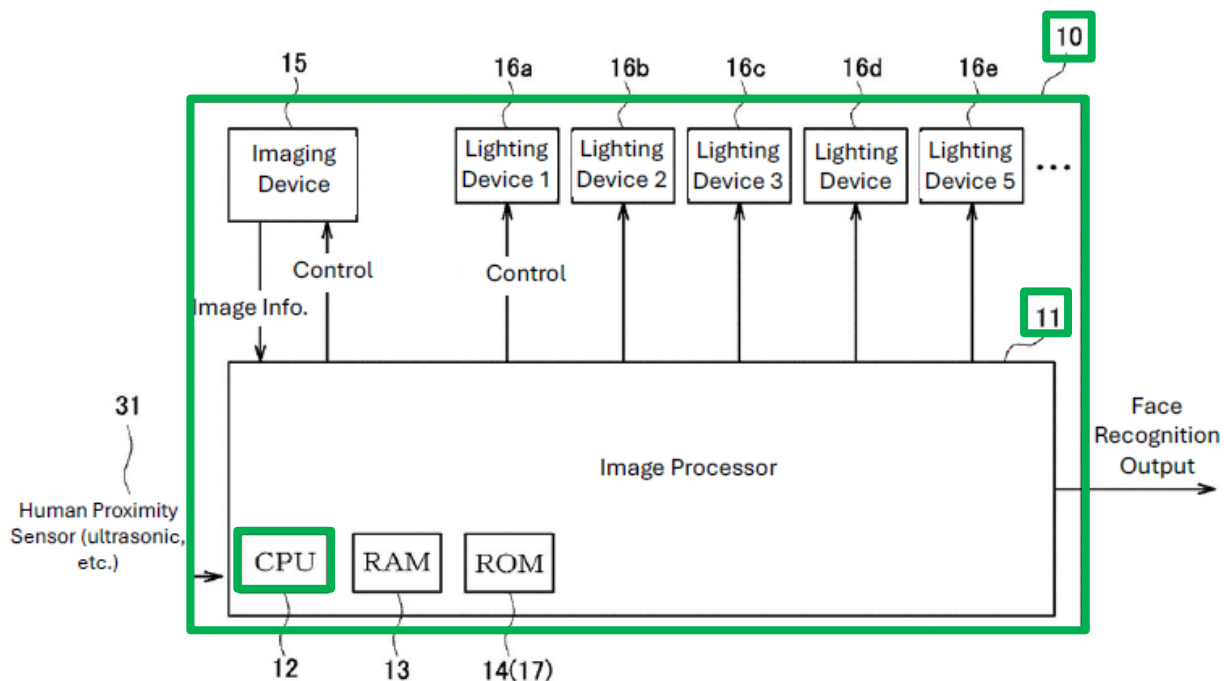
77. Figure 11 illustrates that the component referred to as the "hospitality decision-making unit 2" is incorporated with the "facial recognition device[/unit]10":

FIG. 11



Yasui, Fig. 11 (annotated); see Yasui, [0047].

78. Figure 2 further illustrates that “facial recognition device[/*unit*] 10” (or “hospitality decision-making unit 2”) includes “control unit 11,” which further includes “CPU 12”—*the processor*:



Yasui, Fig. 2 (annotated); see Yasui, [0019].

79. Figure 2, above, also illustrates the “imaging target detection unit 31,” which “is a proximity sensor that detects imaging targets present within the imaging field of imaging devices 15.” Yasui, [0020]. A user’s presence is detected when the “control unit 11” executes the “user recognition program” that it has stored “in the ROM 14.” Yasui, [0025]. In the first step of this program—step S101—the “control unit 11” (which is incorporated in the “facial recognition device[/*unit*] 10” / “hospitality decision-making unit 2” and acts via CPU 12)

causes “the imaging target detection unit 31 [to] **determine[] whether an imaging target (person) was detected within the imaging device 15 field of view.**” *Yasui*, [0026].

80. The “imaging device 15 field of view” is *a zone of said vehicle* because the field of an individual photographing device is a specific seat or “zone.” Specifically, photographing device 15a’s field is the **driver’s seat**, photographing device 15b’s field is the **front passenger seat**, and imaging device 15c’s field is the **rear seat**. *Yasui*, [0021]-[0022].

81. *Yasui*’s “**hospitality decision-making unit 2**” operates *automatically*, without requiring user input. The “**hospitality decision-making unit 2**,” acting through the “imaging target detection unit 31,” detects “imaging targets **present within the imaging field of imaging devices 15, or imaging targets approaching that imaging field of view.**” *Yasui*, [0020]. The “imaging target detection unit 31” accomplishes this by using “a known [device] that **detects intrusion into a measurement area.**” *Yasui*, [0020].

82. Accordingly, in my opinion, *Yasui* discloses this limitation of claim 1.

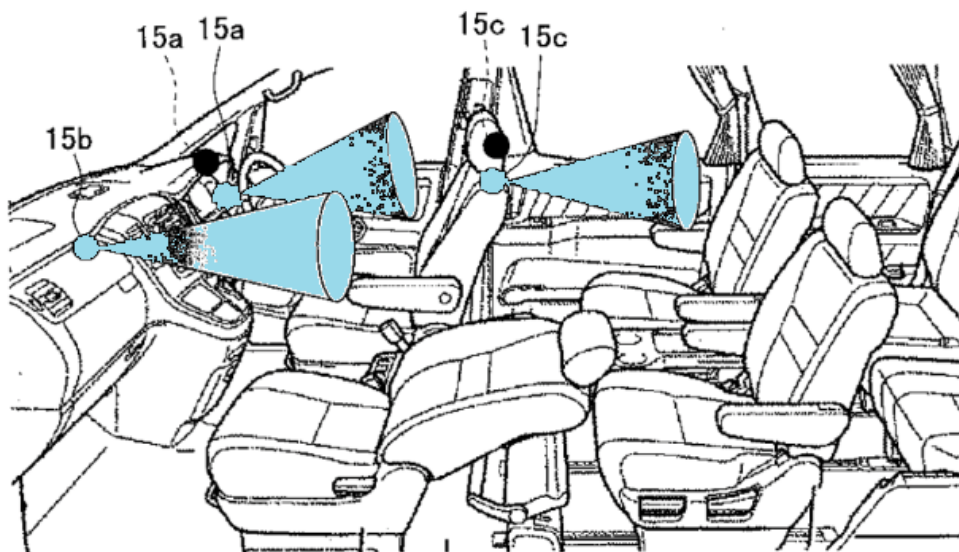
1[c]: identifying said person within said zone of the vehicle;

83. *Yasui* discloses *identifying said person within said zone of the vehicle*. For example, *Yasui* discloses that it performs “**user recognition processing**” “**based on the captured facial image.**” *Yasui*, [0028]; *see Yasui*, Figs. 8, 10.

84. After detecting a person in step S101, the “control unit 11” (which is incorporated in the “facial recognition device[/unit] 10” / “hospitality decision-making unit 2”) advances the program until it eventually gets to step S104, where “user recognition processing is performed based on the captured facial image.” *Yasui*, [0028].

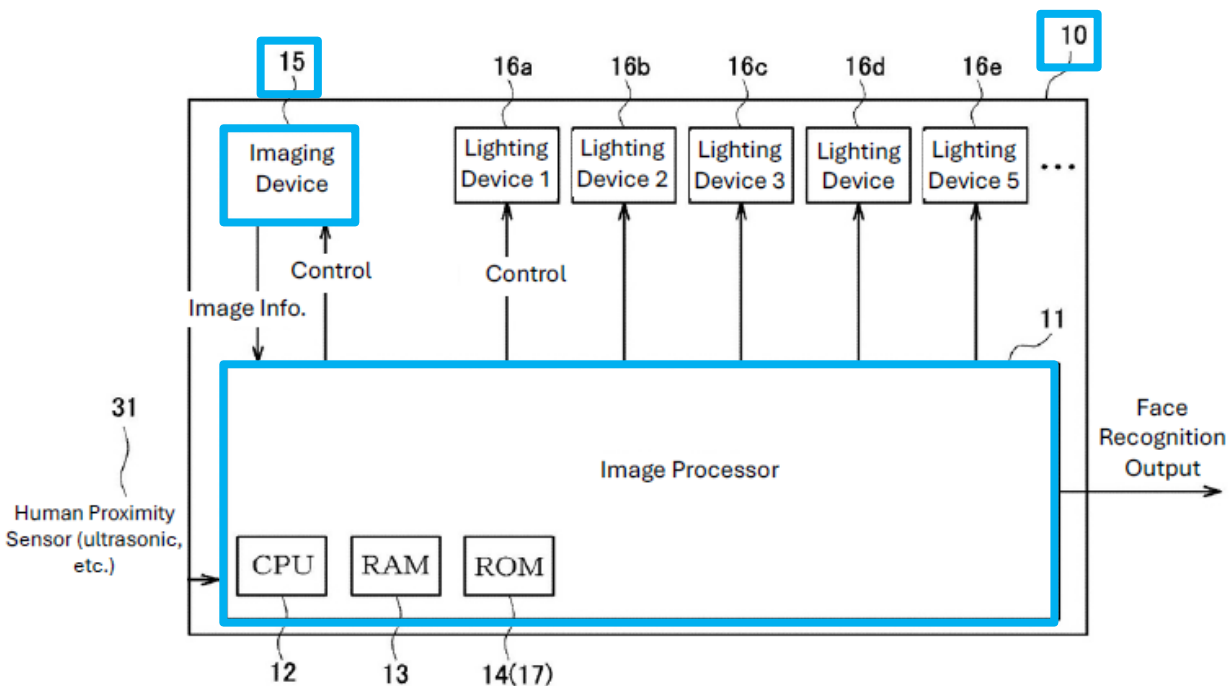
85. *Yasui* discloses capturing the image used in step S104 with “vehicle interior imaging devices 15a, 15b, and 15c” “for imaging the face of a user” in the driver’s seat, passenger seat, and rear seat, respectively (i.e., *within said zone of the vehicle*). *Yasui*, [0021]-[0022]. Figure 3A illustrates these imaging devices as described:

[FIG. 3A]



Yasui, Fig. 3A (annotated).

86. *Yasui* specifically discloses that the “control unit 11” “acquires facial feature information from facial images taken by the imaging device 15” and then “performs user recognition processing by comparing the acquired facial feature information with facial feature information registered in the face registration unit 17.” *Yasui*, [0019]; [0047]; see also *Yasui*, [0029]; [0064] (“[T]he hospitality decision making unit 2 face detection unit 10 outputs user identifying information[.]”)



Yasui, Fig. 2 (annotated).

87. The information registered in “face registration unit 17” is the “facial feature information of a person registered as a vehicle user.” *Yasui*, [0019]. Thus, the outcome of this “user recognition process” is that a specific registered user is

identified.

88. Accordingly, in my opinion, *Yasui* discloses this limitation of claim 1.

1[d]: determining, by a processor, if said identified person has corresponding settings; and

89. *Yasui* discloses *determining, by a processor, if said identified person has corresponding settings*. For example, *Yasui* discloses that “**hospitality decision-making unit 2 . . .decides what kind of hospitality operation to perform.**” *Yasui*, [0064].

90. As explained above, *Yasui*’s “**hospitality decision-making unit 2**” (“**facial recognition device[/unit] 10**”) includes “a CPU”—*a processor*. *Yasui*, Fig. 11, [0046]-[0047].

91. *Yasui* specifically discloses a person having *corresponding settings*. For example, *Yasui* discloses “**hospitality operation information corresponding to a registered user.**” *Yasui*, Claim 10, [0008]. The “hospitality operation information” contains “operational content” for the “hospitality operation units,” including settings for “interior lighting,” “car stereo,” “power seats,” “mirror angles,” and “car navigation device”—i.e., *corresponding settings*. *Yasui*, [0008], [0059].

92. *Yasui* discloses *determining if said identified person has corresponding settings*. For example, the “**hospitality decision making unit 2,**” acting via **CPU 12**, “**decides what kind of hospitality operation to perform.**” *Yasui*, [0064]. As explained above, *Yasui*’s “face detection unit 10” “performs user

recognition processing” and “outputs user identifying information.” *Yasui*, [0019], [0064]; *see Yasui*, [0047]. Using the “user identifying information,” the “hospitality decision-making unit 2” acting via CPU 12 identifies the “setting conditions” corresponding to the “identified” user. *Yasui*, [0067]; *see also Yasui*, [0044].

93. Thus, based on the “user identifying information,” the “hospitality decision making unit 2,” acting via CPU 12, “decides what kind of hospitality operation to perform.” *Yasui*, [0064]. By disclosing that its “hospitality decision making unit 2” must “decide what kind of hospitality operation to perform,” *Yasui* acknowledges that it will not always perform the same “kind” of hospitality operations from one user to the next. A POSITA would have recognized that referring to a particular “kind of hospitality operation” is just another way of referring to the particular hospitality operation unit that implements a user’s preferential setting for one of the adjustable vehicle components. A POSITA would further have recognized that a registered user may have preferential settings for all, some, or none of the hospitality operation units. For example, a user may not have settings corresponding to each “hospitality operation unit.” A user, for example, may have settings for the position of the driver’s seat but not for preset radio stations. *Yasui*, [0045] (noting that *Yasui*’s system can “control a music playback device . . . in response to a user recognized by a facial image”), [0073]-

[0079] (disclosing “a car audio system that functions as a hospitality operation”).

And this is, indeed, the reason that *Yasui*’s “hospitality decision making unit 2” must “decide[] what kind of hospitality operation to perform.” Because after making this decision, *Yasui*’s “hospitality decision making unit 2,” acting via CPU 12, issues a “command[]” that “causes corresponding hospitality operation units 502-517, 534, 541, 548, 549, 550, 551, 552, and 1001B to execute hospitality operations.” *Yasui*, [0064]. Notably, the “hospitality decision making unit 2” only “commands” the “corresponding hospitality operation units . . . to execute hospitality operations.” *Yasui*, [0064] (emphasis added). These are the units “corresponding” to the “hospitality decision making unit 2’s” decision regarding “what kind of hospitality operation to perform.”

94. Accordingly, in my opinion, *Yasui* discloses this limitation of claim 1.

1[e]: configuring said zone of said vehicle based on said corresponding settings.

95. *Yasui* discloses *configuring said zone of said vehicle based on said corresponding settings*. For example, *Yasui* discloses “**controlling the operation of the hospitality operation unit according to said hospitality operation information.**” *Yasui*, Claim 10, [0008].

96. *Yasui* discloses “**hospitality operation information corresponding to registered users.**” *Yasui*, Claim 10, [0008]. As explained above, the service operation information is *corresponding settings*. *Yasui* then discloses

“perform[ing] operation control of a hospitality operation unit according to said hospitality operation information.” *Yasui*, Claim 10, [0008]. When the operation controls are *performed*, the zone of the vehicle is being *configured . . . based on said corresponding settings*.

97. As specific examples, *Yasui* describes “hospitality operation units” that provide parameters to be configured by the “hospitality execution control unit.” Exemplary parameters include “interior lighting,” “car stereo,” “power seats,” “mirror angles,” and “car navigation device.” *Yasui*, [0064]; *see also* [0059], Fig. 11.

98. *Yasui* specifically discloses that the “hospitality decision making unit 2 face detection unit 10 . . . decides what kind of hospitality operation to perform according to that content, then commands this to **hospitality execution control unit 3.**” *Yasui*, [0064]. Then, based on the command from the “hospitality decision-making unit 2,” the “[h]ospitality execution control unit 3 . . . **causes corresponding hospitality operation units . . . to execute hospitality operations.**” *Yasui*, [0064].

99. Ultimately, “**hospitality decision making unit 2 and hospitality execution control unit 3 cooperate with one another to realize a function that changes the operational content of hospitality operation units.**” *Yasui*, [0064].

100. Accordingly, in my opinion, *Yasui* discloses this limitation of claim 1.

2. Claim 7: The method of claim 1, wherein said corresponding settings is stored in cloud storage.

101. *Yasui* further discloses or renders obvious *wherein said corresponding settings is stored in cloud storage*. For example, *Yasui* discloses storing “hospitality operation information” “on a data server outside the vehicle.” *Yasui*, [0052], [0103].

102. The '034 patent describes “cloud storage” as “a server . . . that may be located in a facility that is not within physical proximity to the vehicle.” '034 patent, 10:21-24. The '034 patent notes that using “a cloud computing system or cloud storage . . . allows the vehicle control system [] to either gain access to further computing capabilities or to storage in a location outside of the vehicle.” '034 patent, 10:21-39.

103. *Yasui* specifically discloses that its “hospitality operation information,” which are *corresponding settings*, are stored on a “storage device 535.” *Yasui*, [0052]. *Yasui* further discloses that “data in storage unit 535 used by hospitality decision making unit 2 for hospitality decision-making”—including the “hospitality operation information”—“may be stored on a data server outside the vehicle and downloaded to the vehicle by wireless communication.” *Yasui*, [0103].

104. To the extent *Yasui* does not explicitly disclose *wherein said corresponding settings is stored in cloud storage*, it would have been obvious to modify *Yasui* based on its own teachings and the knowledge of a POSITA. A POSITA would have known the many advantages of storing corresponding settings

in cloud storage. For example, a POSITA would have been motivated to store corresponding settings in cloud storage so that a user could access and implement these settings in more than one vehicle. A POSITA would have known that one of the primary benefits of cloud storage is that data stored in cloud storage remains available to users via a variety of devices or, in this case, vehicles. Storing data in cloud storage provides an advantage over storing data on a user device, as a user device can be lost along with its accompanying data. Further, storing data in cloud storage provides an advantage over storing data on a vehicle, as the data stored in cloud storage can be downloaded by *any* network-connected vehicle. Additionally, a POSITA would have been motivated to store corresponding settings in cloud storage so that the limited local memory on the vehicle could be used for storing other data. A POSITA at the time of the alleged invention would have recognized that vehicles had limited on-board storage space and would want to offload as much data storage as possible. A POSITA would have recognized cloud storage as a solution readily available to accomplish the above-mentioned motivations. For example, U.S. Patent Publication No. 2007/0208861 (“*Zellner*”) discloses “embodiments of systems and methods that can store user preferences at a remote location for use in any of a plurality of environments.” *Zellner*, [0046]. *Zellner* specifically discloses that this remote storage can be used to store “user preferences and interpret those preferences to provide a comfortable environment

for the user.” *Zellner*, [0048]. *Zellner* discloses that these “user preferences,” once stored remotely, can be used by “any environment” (for example, any vehicle connected to a network that can access the data stored in the remote location). *Zellner*, [0068]. As another example of this well-known solution for data storage, U.S. Patent Publication No. 2011/0093159 (“*Boling*”) discloses storing data in “multiple server computers distributed anywhere within the network [] (i.e., cloud computing).” *Boling*, [0018]. These are just two examples that illustrate the broader principle that cloud computing was a well-known mechanism for storing data at the time of the alleged invention. And it would have been well within the ability of a POSITA to utilize cloud storage to store user preference data.

105. There are many reasons why modifying *Yasui*’s disclosure to store corresponding settings in cloud storage would have been obvious to a POSITA. A POSITA would have considered such changes to *Yasui* because they involved combining prior-art elements according to known methods to yield predictable results. For example, *Yasui* discloses both *corresponding settings* in at least its “hospitality operation information” and storing those *corresponding settings in cloud storage* when, for example, it discloses that “data in storage unit 535 used by hospitality decision making unit 2 for hospitality decision-making”—including the “hospitality operation information”—“may be stored on a data server outside the vehicle and downloaded to the vehicle by wireless communication.” *Yasui*, [0052],

[0103]. A POSITA would have further recognized a modification of *Yasui* to store its “hospitality operation information” in cloud storage as the use of a known technique to improve similar devices in the same way. Specifically, a POSITA would have recognized that cloud storage of vehicle data was a known technique and that storing the “hospitality operation information” in cloud storage would improve *Yasui*’s vehicle control system for the reasons described above. A POSITA would have further recognized a modification of *Yasui* to store its “hospitality operation information” would have been applying a known technique (e.g., storing data in cloud storage) to a known device (e.g., *Yasui*’s vehicle control system) ready for improvement to yield predictable results.

106. A POSITA would have had a reasonable expectation of success in modifying *Yasui*’s disclosure to store corresponding settings in cloud storage because doing so would require nothing more than the simple modification of computer code, a task well within the ability of a POSITA at the time of the alleged invention. *See Boling*, [0018]. Writing code to implement functions taught by the prior art was well within the skill of a POSITA at the time of the alleged invention. And neither the ’034 patent nor the prior art suggestion that special software programming or algorithms were needed to achieve the claimed feature, confirming that such was well within the level of skill in the art at the time of the alleged invention. *See, e.g.*, ’034 patent, 16:25-44.

107. Accordingly, in my opinion, *Yasui* discloses or renders obvious any additional limitations in claim 7.

- 3. Claim 8: The method of claim 1, wherein the said corresponding setting is one of a position of a seat, a position of a mirror, a heat or cold setting, a configuration of a console, a configuration of a dash, a configuration of a heads up display, or a setting for a radio.**

108. *Yasui* further discloses *wherein the said corresponding settings is one of a position of a seat, a position of a mirror, a heat or cold setting, a configuration of a console, a configuration of a dash, a configuration of a heads up display, or a setting for a radio.* For example, *Yasui* discloses that its system “performs operation control of a hospitality operation unit according to said hospitality operation information” where the “hospitality operation units” include “power seats” (i.e., a *position of a seat*), a “drive unit[]” for adjusting “mirror angles” (i.e., a *position of a mirror*), “an air conditioner” (i.e., a *heat or cold setting*), and a “car audio system (car stereo)” (i.e., a *setting for a radio*). *Yasui*, [0008], [0059], Fig. 11. As explained above, the “hospitality operation information” is the *corresponding setting*, so performing operation control of these service operation units according to the service operation information demonstrates that the corresponding setting is one of the claimed settings.

109. Accordingly, in my opinion, *Yasui* discloses any additional limitations in claim 8.

4. Claim 9

9[a]: A vehicle system, comprising: one or more sensors;

110. *Yasui* discloses a vehicle system, comprising one or more sensors. For example, *Yasui* discloses “various sensor/camera groups.” *Yasui*, [0046].

111. *Yasui* specifically discloses that its “hospitality decision-making unit 2” is a “computer to which various sensor/camera groups 518-528 are connected,” including “a sensor/camera group for user recognition” and a “sensor/camera group for detecting a captured object within the imaging area of imaging device 15.” *Yasui*, [0046]-[0048].

112. Accordingly, in my opinion, *Yasui* discloses this limitation of claim 9.

9[b]: a vehicle control system comprising: a processor[and] a memory;

113. *Yasui* discloses a vehicle control system comprising a processor. For example, *Yasui* discloses the “hospitality decision-making unit 2” which contains “a CPU, ROM, and RAM.” *Yasui*, [0046].

114. *Yasui*’s “hospitality decision making unit 2” is a computer that includes “a CPU, ROM, and RAM, and various functions described below are realized by executing control software stored in ROM.” *Yasui*, [0046]. A POSITA would have recognized the CPU as a processor.

115. Accordingly, in my opinion, *Yasui* discloses this limitation of claim 9.

9[c1]: wherein the processor is operable to: receive sensor data from the one or more sensors;

116. *Yasui* discloses that *the processor is operable to receive sensor data from the one or more sensors*. For example, *Yasui* discloses that the “**hospitality decision-making unit 2**,” acting via its CPU, receives data from at least “**imaging device 15**.” *Yasui*, [0026], [0047].

117. *Yasui* specifically discloses that the “**hospitality decision-making unit 2**” is incorporated with the “**facial recognition device[/unit] 10**,” containing “**control unit 11**,” which is, in turn, “constituted by a CPU 12.” *Yasui*, [0019], [0047], Figs. 2 and 11. *Yasui* further discloses that “a hospitality decision-making unit 2 including a facial recognition unit 10” is “connected to” a “sensor/camera group for user recognition,” including the “[f]ace camera 521 (corresponding to vehicle-interior imaging device 15[]).” *Yasui*, [0047]. *Yasui* further discloses that, in addition to user recognition, “hospitality decision-making unit 2 including a facial recognition unit 10” is “connected to” a “sensor/camera group for detecting a captured object present within the imaging area of imaging device 15, or an imaging target approaching into said imaging area.” *Yasui*, [0048].

118. As to identifying a user, the “**control unit 11**” (which is incorporated in the “**facial recognition device[/unit] 10**” / “**hospitality decision-making unit 2**”) “**acquires facial feature information from facial images taken by the imaging device 15**” and then “performs user recognition processing by comparing the

acquired facial feature information with facial feature information registered in the face registration unit 17.” *Yasui*, [0019]; [0047]. Thus, the “control unit 11,” using “CPU 12,” receives data from a sensor to identify a user.

119. As to detecting the presence of a user, the “facial recognition device[/unit] 10” includes “an imaging target detection unit 31,” which uses a “known [device] that detects intrusion into a measurement area.” *Yasui*, [0019]. Thus, the “facial recognition device[/unit] 10” receives data from a sensor to detect a user’s presence.

120. Accordingly, in my opinion, *Yasui* discloses this limitation of claim 9.

**9[c2]: based on the received sensor data,
automatically determine if a person is within a zone of
a vehicle;**

121. *Yasui* discloses that the processor is operable to, *based on the received sensor data, automatically determine if a person is within a zone of a vehicle.*

Supra § IX.A.1 (element 1[b]). For example, *Yasui* discloses a “facial recognition device[/unit] 10” (incorporated with the “hospitality decision-making unit 2” that includes “a CPU”) that includes “an imaging target detection unit 31,” which uses a “known [device] that detects intrusion into a measurement area.” *Yasui*, [0020].

122. *Yasui* discloses using received sensor data to determine a person’s presence in a zone *automatically*, without requiring user input. For example, in one embodiment, the “imaging target detection unit 31,” detects “imaging targets

present within the imaging field of imaging devices 15 or imaging targets approaching that imaging field of view” by using a “known [device] that detects intrusion into a measurement area.” *Yasui*, [0020].

123. Accordingly, in my opinion, *Yasui* discloses this limitation of claim 9.

9[c3]: based on the received sensor data, automatically identify the person;

124. *Yasui* discloses that the processor is operable to *based on the received sensor data, automatically identify the person. Supra* § IX.A.1 (element 1[c]). For example, *Yasui* discloses performing “user recognition processing” “based on the captured facial image.” *Yasui*, [0028]; *see Yasui*, Figs. 8, 10, [0047].

125. Accordingly, in my opinion, *Yasui* discloses this limitation of claim 9.

9[c4]: determine if the person has made a setting; and

126. *Yasui* discloses that the processor is operable to *determine if the person has made a setting. Supra* § IX.A.1 (element 1[d]). For example, *Yasui* discloses that the “hospitality decision-making unit,” acting via CPU 12, “decides what kind of hospitality operation to perform.” *Yasui*, [0064]; *see Yasui*, Fig. 11, [0046]-[0047].

127. Accordingly, in my opinion, *Yasui* discloses this limitation of claim 9.

9[c5]: based on the determination, configure said zone of said vehicle to said setting.

128. *Yasui* discloses *the processor is operable, based on the determination,*

configure said zone of said vehicle to said setting. Supra § IX.A.1 (element 1[e]).

For example, *Yasui* discloses causing “corresponding hospitality operation units . . . to execute hospitality operations” based on a “command[]” from the “hospitality decision making unit 2,” acting via CPU 12, to the “hospitality execution control unit 3.” *Yasui*, [0064].

129. Accordingly, in my opinion, *Yasui* discloses this limitation of claim 9.

5. Claim 10: The device of claim 9, wherein the sensor data is an image of the person.

130. *Yasui* further discloses *wherein the sensor data is an image of a person*. For example, *Yasui* discloses “user recognition processing . . . based on the captured facial image.” *Yasui*, [0028].

131. *Yasui* discloses that the “[f]ace camera 521” (a *sensor*) “[c]aptures facial expressions of a seated user” (*an image of the person*). *Yasui*, [0047]. *Yasui* further discloses that the “hospitality decision-making unit 2 including a facial recognition unit 10,” is “connected to” the “[f]ace camera 521.” *Yasui*, [0047].

132. Accordingly, in my opinion, *Yasui* discloses any additional limitations in claim 10.

6. Claim 11: The device of claim 10, wherein in automatically identifying the person the processor is operable to match the image to a stored image in a data structure.

133. *Yasui* further discloses *wherein in automatically identifying the person the processor is operable to match the image to a stored image in a data structure*.

For example, *Yasui* discloses “cutting out the facial image portion from that captured image and comparing various facial expressions to previously captured and prepared master images.” *Yasui*, [0047].

134. *Yasui*’s “master image” is a *stored image*. *Yasui*, [0047].

135. *Yasui* further discloses storing the “master facial image” in the “user registration unit 17,” which is, for example, “a ROM . . . in hospitality decision-making unit 2,” thus it is *stored in a data structure*. *Yasui*, [0054]-[0055].

136. A POSITA would have understood that the ROM contains a *data structure* in which the “master facial image” is stored. Specifically, a POSITA would have understood that, in order for the “master facial image” to be useful in identifying a person, the “master facial image” would need to have been stored in some manner associated with data corresponding to the person.

137. And *Yasui* discloses just such a storage arrangement. For example, *Yasui* discloses that it stores “facial feature information . . . in association with user-identification information.” *Yasui*, [0006]. *Yasui* further discloses that “each user name . . . and [] facial image . . . are registered in this user registration unit 17 in a mutually associated form.” *Yasui*, [0054]. *Yasui* discloses one possible embodiment of a *data structure* in which these pieces of data are stored in a manner associated with one another in Figure 12’s conceptual diagram:

FIG. 12

17

User 1	Facial image 1	Age 1	Gender 1	Characteristic 1
User 2	Facial image 2	Age 2	Gender 2	Characteristic 2
User 3	Facial image 3	Age 3	Gender 3	Characteristic 3
⋮	⋮	⋮	⋮	⋮

Yasui, Fig. 12.

138. Accordingly, in my opinion, *Yasui* discloses any additional limitations in claim 11.

7. Claim 12: The device of claim 9, wherein the sensor data is voice data from the person.

139. *Yasui* further discloses or renders obvious *wherein the sensor data is voice data from the person*. For example, *Yasui* discloses “the voice recognition unit 130.” *Yasui*, [0100].

140. A POSITA would have recognized that a “voice recognition unit 130,” “using known speech recognition technology” could be used to either automatically determine if a person is within a zone of a vehicle or automatically identify the person, as recited in claim 9 of the ’034 patent. *Yasui*, [0100].

141. To the extent the Board finds that this functionality is not explicitly disclosed in *Yasui*, it would have been obvious for a POSITA to incorporate

“known speech recognition technology” with the “voice recognition unit 130” to either determine if a person is within a zone of a vehicle or automatically identify a person. A POSITA would have been motivated to do this as it would allow the vehicle system to determine the presence of or identify a user without regarding to lighting conditions, a problem with image-based sensors recognized in *Yasui*. See, e.g., *Yasui*, Claim 1, [0005]. A POSITA would have recognized using voice data as a solution readily available to accomplish the above-mentioned motivations. See, e.g., *Ikeda*, [0429] (disclosing “authentication of the driver” using a “user’s physical feature” such as “a voiceprint”).

142. Further, a POSITA would have had a reasonable expectation of success in making this modification, as *Yasui* itself discloses the necessary hardware and recognizes that the technology needed to implement the hardware is “known” in *Yasui*’s field. Further, a POSITA would have recognized that implementing this modification would require nothing more than the simple modification of computer code to utilize the hardware and technology to achieve the claimed feature, a task well within the ability of a POSITA at the time of the alleged invention. Writing code to implement functions taught by the prior art was well within the skill of a POSITA at the time of the alleged invention. And neither the ’034 patent nor the prior art suggestion that special software programming or algorithms were needed to achieve the claimed feature, confirming that such was

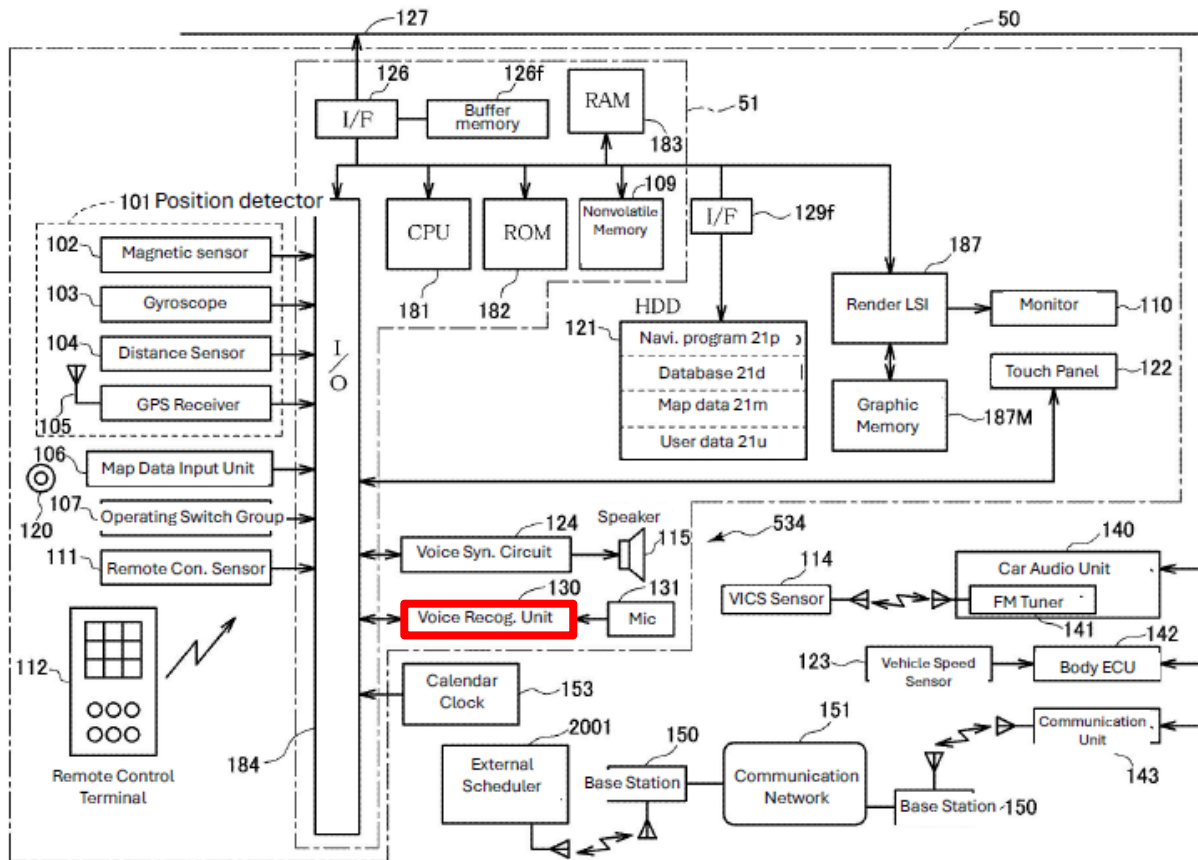
well within the level of skill in the art at the time of the alleged invention. *See, e.g.*, '034 patent, 16:25-44.

143. Accordingly, in my opinion, *Yasui* discloses or renders obvious any additional limitations in claim 12.

8. Claim 13: The device of claim 12, wherein in automatically identifying the person the processor is operable to match the voice data to stored voice data in a data structure.

144. *Yasui* further discloses or renders obvious *wherein in automatically identifying the person the processor is operable to match the voice data to stored voice data in a data structure*. For example, *Yasui* discloses “the speech recognition unit 130.” *Yasui*, [0100]; Figure 20 illustrates “the speech recognition unit 130.”

FIG. 20



Yasui, Fig. 20 (annotated).

145. A POSITA would have known that “known speech recognition technology” and a “voice recognition unit” at the time would work by matching received voice data with voice data stored in a data structure. *Yasui*, discloses storing data associated with a user in a *data structure*. See *supra* § IX.A.6 (claim 11). A POSITA would have known that *voice data* could have been stored in the same manner and according to the same data structure as any other user identification data, such as image data. For example, a POSITA would have understood that *voice data* for a given user would be stored in association with a

user's profile or other data. Thus, *Yasui*'s disclosure of a "voice recognition unit 130" and "known speech recognition technology" discloses matching received voice data with stored voice data in a data structure.

146. To the extent the Board finds that this functionality is not explicitly disclosed in *Yasui*, it would have been obvious for a POSITA to use *Yasui*'s processor ("hospitality decision-making unit 2"), its "voice recognition unit 130," and its existing data structure in "hospitality operation information storage unit" to store voice data in a data structure and then match received voice data with the stored data to perform user recognition. *Yasui* recognizes that voice recognition technology was "known," and *Yasui* discloses the necessary hardware and processing capabilities to implement this solution. As explained above, *Yasui* discloses storing the "master facial image" in the "user registration unit 17"—e.g., "a ROM . . . in hospitality decision-making unit 2." *Yasui*, [0054]-[0055]. *Yasui* further discloses that "each user name . . . and [] facial image . . . are registered in this user registration unit 17 in a mutually associated form." *Yasui*, [0054]. Figure 12 illustrates a conceptual diagram showing this *data structure*.

FIG. 12

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User 1	Facial image 1	Age 1	Gender 1	Characteristic 1
User 2	Facial image 2	Age 2	Gender 2	Characteristic 2
User 3	Facial image 3	Age 3	Gender 3	Characteristic 3
⋮	⋮	⋮	⋮	⋮

Yasui, Fig. 12.

147. It would have been obvious to a POSITA to use this same data structure to store user information in association with voice data. Further, a POSITA would have been motivated to do this as it would allow the vehicle system to determine the presence of or identify a user without regard to lighting conditions, a problem with image-based sensors recognized in *Yasui*. See, e.g., *Yasui*, Claim 1, [0005]. A POSITA would further have been motivated to use this *data structure* so as to ensure that voice data was stored in a manner associated with a user's information so that it could be used to identify a user. A POSITA would have recognized using voice data as a solution readily available to accomplish the above-mentioned motivations. See, e.g., *Ikeda*, [0429] (disclosing "authentication of the driver" using a "user's physical feature" such as "a voiceprint").

148. Further, a POSITA would have had a reasonable expectation of success in making this modification, as *Yasui* itself discloses the necessary hardware and recognizes that the technology needed to implement the hardware is “known” in *Yasui*’s field.

149. Accordingly, in my opinion, *Yasui* discloses or renders obvious any additional limitations in claim 13.

9. Claim 14

14[a]: A non-transitory computer readable medium having stored thereon computer-executable instructions, the computer executable instructions causing a processor to execute a method for providing a unified desktop, the computer-executable instructions comprising:

150. *Yasui* discloses *a non-transitory computer readable medium having stored thereon computer-executable instructions, the computer executable instructions causing a processor to execute a method for providing a unified desktop*. For example, *Yasui* discloses that by using the “**hospitality decision making unit 2**,” “various functions described below are realized by executing **control software stored in ROM**.” *Yasui*, [0046].

151. *Yasui* discloses *a processor to execute a method for providing a unified desktop*. As explained above, *Yasui*’s “**hospitality decision-making unit 2**” includes “**a CPU**”—*a processor*. *Yasui*, Fig. 11, [0046]. Further *Yasui* discloses that the “**hospitality decision-making unit 2**” is incorporated with the “**facial**

recognition device[/unit] 10,” containing “control unit 11.” *Yasui*, [0047], Figs. 2 and 11. *Yasui*’s “control unit 11,” like the “hospitality decision-making unit 2” of which it is a part, is described as having a “ROM 14 for storing various programs.” *Yasui*, [0019].

152. Thus, *Yasui* discloses *a non-transitory computer readable medium having stored thereon computer-executable instructions.*

153. As to a *unified desktop*, *Yasui* discloses a “monitor 536” with “a touch panel overlaid on monitor 536.” *Yasui*, [0057]; *see* ’034 patent, 5:52-59 (“The term ‘desktop,’ as used herein, refers to a metaphor used to portray systems.”). Figure 11 illustrates the “[h]ospitality decision making unit”—into which the “facial recognition device[/unit] 10,” the “control unit 11,” and the “CPU 12” are all incorporated—connected to the “monitor 536.” *Yasui*, [0019], [0047], Figs. 2, 11. A POSITA would have understood this to disclose that the “control unit 11,” acting via its “CPU 12,” provides processing for the “monitor 536” (and the overlaid “touch panel”).

154. *Yasui* discloses *instructions*. For example, *Yasui* discloses that “various functions described below are realized by executing control software stored in ROM.” *Yasui*, [0046]; *see also Yasui*, [0019].

155. Accordingly, in my opinion, *Yasui* discloses this limitation of claim 14.

14[b]: instructions to receive sensor data from one or more sensors;

156. *Yasui* discloses *instructions to receive sensor data from one or more sensors*. *Yasui* discloses *instructions (supra § IX.A.9 (element 14[a]) to receive sensor data from one or more sensors*. *Supra § IX.A.4 (element 9[c1])*.

157. For example, *Yasui* discloses that the “hospitality decision-making unit 2” receives data from at least “**imaging device 15**.” *Yasui*, [0026], [0047].

158. *Yasui* discloses *instructions*. For example, *Ikeda* discloses that “various functions described below are realized by executing **control software stored in ROM**.” *Yasui*, [0046]; *see also Yasui*, [0019] (“**ROM 14 for storing various programs**”).

159. *Yasui* specifically discloses that the “hospitality decision-making unit 2” is incorporated with the “facial recognition device[/unit] 10,” containing “control unit 11.” *Yasui*, [0047], Figs. 2 and 11. *Yasui* further discloses that “a hospitality decision-making unit 2 including a facial recognition unit 10” is “connected to” a “sensor/camera group for user recognition,” including the “[f]ace camera 521 (corresponding to vehicle-interior imaging device 15[]).” *Yasui*, [0047]. *Yasui* further discloses that, in addition to user recognition, “hospitality decision-making unit 2 including a facial recognition unit 10” is “connected to” a “sensor/camera group for detecting a captured object present within the imaging area of imaging device 15, or an imaging target approaching into said imaging

area.” *Yasui*, [0048].

160. As to identifying a user, the “control unit 11” (which is incorporated in the “facial recognition device[/unit] 10” / “hospitality decision-making unit 2”) “acquires facial feature information from facial images taken by the imaging device 15” and then “performs user recognition processing [(which is part of “a user recognition program,” *Yasui*, [0025])] by comparing the acquired facial feature information with facial feature information registered in the face registration unit 17.” *Yasui*, [0019]; [0047]. Thus, the “control unit 11” receives data from a sensor to identify a user.

161. As to detecting the presence of a user, the “facial recognition device[/unit] 10” includes “an imaging target detection unit 31,” which uses a “known [device] that detects intrusion into a measurement area.” *Yasui*, [0019]. Thus, the “facial recognition device[/unit] 10” receives data from a sensor to detect a user’s presence.

162. Accordingly, in my opinion, *Yasui* discloses this limitation of claim 14.

14[c]: based on the received sensor data, instructions to automatically determine if a person is within a zone of a vehicle;

163. *Yasui* discloses *based on the received sensor data, instructions to automatically determine if a person is within a zone of a vehicle*. *Yasui* discloses

instructions (supra § IX.A.9 (element 14[a]) to automatically determine if a person is within a zone of a vehicle. Supra § IX.A.4 (element 9[c2]).

164. For example, *Yasui* discloses “facial recognition device[/unit] 10” includes “an imaging target detection unit 31,” which uses a “known [device] that detects intrusion into a measurement area.” *Yasui*, [0020].

165. *Yasui* discloses *instructions*. For example, *Ikeda* discloses that “various functions described below are realized by executing control software stored in ROM.” *Yasui*, [0046]; *see also Yasui*, [0019] (“ROM 14 for storing various programs”).

166. One of the functions “described below” is that *Yasui* discloses that the “hospitality decision-making unit 2 including a facial recognition unit 10” is “connected to” a “sensor/camera group for detecting a captured object present within the imaging area of imaging device 15, or an imaging target approaching into said imaging area,” including “[s]eated sensor 520 (corresponding to the imaging target detection unit 31[]).” *Yasui*, [0048]. *Yasui* further describes its “imaging target detection unit 31” as a “proximity sensor that detects imaging targets present within the imaging field of imaging devices 15.” *Yasui*, [0048], [0020]. As explained above, the “imaging field of view of these imaging devices 15” is a particular seat or *zone*.

167. The “imaging target detection unit 31” is part of the “facial

recognition device[/unit] 10,” which is incorporated with the “hospitality decision-making unit 2.” *Yasui*, [0046], [0018]. The “imaging target detection unit 31” uses a “**known [device] that detects intrusion into a measurement area.**” *Yasui*, [0020]. Thus, the “facial recognition device[/unit] 10” receives data from a sensor to detect a user’s presence.

168. *Yasui*’s discloses using received sensor data to determine a person’s presence in a zone *automatically*, without requiring user input. For example, in one embodiment, the “imaging target detection unit 31,” detects “**imaging targets present within the imaging field of imaging devices 15 or imaging targets approaching that imaging field of view**” by using a “**known [device] that detects intrusion into a measurement area.**” *Yasui*, [0020].

169. In addition to the “imaging target detection unit 31,” *Yasui* also discloses that its “hospitality decision-making unit 2,” determines if a person is within a zone, that is, a specific seat in the vehicle, such as the driver seat, passenger seat, or rear seat. The “imaging target detection unit 31” detects “**imaging targets present within the imaging field of imaging devices 15.**” *Yasui*, [0020]. The field of an individual photographing device is a specific seat or “zone.” *Yasui*, [0021]-[0022]; *see supra* § IX.A.1 (element 1[c]).

170. Additionally, *Yasui*’s “hospitality decision-making unit 2” can determine if a person is within a zone of a vehicle using data received from the

“[s]eated sensor 520” that “[d]etects if a user is seated in a seat.” *Yasui*, [0048].

171. Accordingly, in my opinion, *Yasui* discloses this limitation of claim 14.

14[d]: based on the received sensor data, instructions to automatically identify the person;

172. *Yasui* discloses *based on the received sensor data, instructions to automatically identify the person. Yasui discloses instructions (supra § IX.A.9 (element 14[a])), based on the received sensor data, to automatically identifying a person. Supra § IX.A.4 (element 9[c3]).*

173. For example, *Yasui* discloses that “a hospitality decision-making unit 2 including a facial recognition unit 10” is “connected to” a “sensor/camera group for user recognition.” *Yasui*, [0047].

174. *Yasui* discloses *instructions*. For example, *Ikeda* discloses that “various functions described below are realized by executing control software stored in ROM.” *Yasui*, [0046]; *see also Yasui*, [0019] (“ROM 14 for storing various programs”).

175. One of the functions “described below” is that *Yasui* specifically discloses that the “hospitality decision-making unit 2” is incorporated with the “facial recognition device[/unit] 10,” containing “control unit 11.” *Yasui*, [0047], Figs. 2 and 11. *Yasui* further discloses “a hospitality decision-making unit 2 including a facial recognition unit 10” is “connected to” a “sensor/camera group

for **user recognition**,” including the “[f]ace camera 521 (corresponding to vehicle-interior imaging device 15[]).” *Yasui*, [0047].

176. As to user recognition, the “control unit 11” (which is incorporated in the “facial recognition device[/unit] 10” / “hospitality decision-making unit 2”) “acquires facial feature information from facial images taken by the imaging device 15” and then “**performs user recognition processing by comparing the acquired facial feature information with facial feature information registered in the face registration unit 17.**” *Yasui*, [0019]; [0047]. *see* [0017], Fig. 1; *see supra* § IX.A.1 (element 1[c]).

177. Accordingly, in my opinion, *Yasui* discloses this limitation of claim 14.

14[e]: instructions to retrieve one or more settings associated with the identified person; and

178. *Yasui* discloses *instructions to retrieve one or more settings associated with the identified person*. *Yasui* discloses *instructions (supra* § IX.A.9 (element 14[a])) *to retrieve one or more settings associated with the identified person*. *Supra* § IX.A.4 (element 9[c4]).

179. For example, *Yasui* discloses that the “service decision-making unit” “**determines which service operation unit should perform which service operation.**” *Yasui*, [0064].

180. *Yasui* discloses *instructions*. For example, *Ikeda* discloses “realiz[ing]

the various functions described below by executing **control software stored in the ROM.** *Yasui*, [0046]; *see also Yasui*, [0019] (“**ROM 14 for storing various programs**”).

181. One of the functions “described below” is that the “service decision-making unit” “**determines which service operation unit should perform which service operation.**” *Yasui*, [0064].

182. *Yasui* specifically discloses a person can make a *setting*. For example, *Yasui* discloses “**hospitality operation information corresponding to registered users.**” *Yasui*, Claim 10, [0008]. The “hospitality operation information” contains “operational content” for the “hospitality operation units,” including settings for “interior lighting,” “car stereo,” “power seats,” “mirror angles,” and “car navigation device”—i.e., *corresponding settings*. *Yasui*, [0008], [0059].

183. *Yasui* further discloses “a **hospitality operation information storage unit for storing the registered user and hospitality operation information defining the operational content of the hospitality operation unique to each said registered user.**” *Yasui*, Claim 10, [0008]. *Yasui* further discloses that this “hospitality operation information storage unit” is “a storage device 535 constituted by a hard disk drive or the like” that is connected to the “**hospitality decision-making unit 2.**” *Yasui*, [0052]; *see* Fig. 11, [0103] (noting that “data in storage unit 535” is “used by hospitality decision-making unit 2 for hospitality decision making”).

184. *Yasui* further discloses that “the face detection unit 10 of the service decision-making unit 2 outputs user identifying information” and “decides what kind of hospitality operation to perform according to that content.” *Yasui*, [0064]. By determining “which service operation unit should perform which service operation” for an identified user, *Yasui*’s “face detection unit 10” can retrieve one or more settings associated with the identified person. *Yasui*, [0064].

185. Accordingly, in my opinion, *Yasui* discloses this limitation of claim 14.

14[f]: instructions to automatically configure the vehicle according to the retrieved settings.

186. *Yasui* discloses instructions to automatically configure the vehicle according to the retrieved settings. *Yasui* discloses instructions (*supra* § IX.A.9 (element 14[a])) to automatically configure the vehicle according to the retrieved settings. *Supra* § IX.A.4 (element 9[c5]).

187. For example, *Yasui* discloses causing “corresponding hospitality operation units . . . to execute hospitality operations” based on a “command[]” from the “hospitality decision making unit 2” to the “hospitality execution control unit 3.” *Yasui*, [0064].

188. *Yasui* discloses instructions. For example, *Yasui* discloses that “various functions described below are realized by executing control software stored in ROM.” *Yasui*, [0046]; see also *Yasui*, [0019] (“ROM 14 for storing

various programs”).

189. One of the functions “described below” is that the “hospitality decision making unit 2 face detection unit 10 . . . decides what kind of hospitality operation to perform according to that content, then commands this to hospitality execution control unit 3.” *Yasui*, [0064]. Then, based on the command from the “hospitality decision-making unit 2,” the “[h]ospitality execution control unit 3 . . . causes corresponding hospitality operation units . . . to execute hospitality operations.” *Yasui*, [0064]; *See supra* § IX.A.1 (element 1[e]).

190. Ultimately, “hospitality decision making unit 2 and hospitality execution control unit 3 cooperate with one another to realize a function that changes the operational content of hospitality operation units.” *Yasui*, [0064];

191. Accordingly, in my opinion, *Yasui* discloses this limitation of claim 14.

10. Claim 15: The computer readable medium of claim 14, wherein the settings retrieved are associated with the determined area or zone.

192. *Yasui* further discloses *wherein the settings retrieved are associated with the determined area or zone*. For example, *Yasui* discloses “perform[ing] operation control of a hospitality operation unit according to said hospitality operation information” where the “hospitality operation units” include “drive units [] for adjusting” “power seats” and “side and rearview mirror angles” and “the

GPS [] (also used in car navigation device[]).” *Yasui*, [0008], [0059]. *Yasui* discloses *settings* that are *associated with the determined area or zone*. First, *Yasui* discloses settings by disclosing “hospitality operation information corresponding to a registered user.” *Yasui*, Claim 10, [0008]. The “hospitality operation information” contains “operational content” for the “hospitality operation units,” including a user’s settings for “interior lighting,” “car stereo,” “power seats,” “mirror angles,” and “car navigation device”—i.e., *corresponding settings*. *Yasui*, [0008], [0059].

193. Second, *Yasui* discloses zones, including, “*the driver’s seat*,” “*the passenger seat*,” and “*the rear seat*.” *Yasui*, [0021]-[0022].

194. Finally, *Yasui* discloses that its “hospitality operation units” are associated with a particular zone. For example, the “power seats” operation unit adjusts a seat, and that seat is associated with a particular seat or zone (driver’s, passenger, or rear seat). *Yasui*, [0059]; As another example, the “drive unit [] for adjusting . . . side and rearview mirror angles” is associated with the zone of the driver’s seat, as it is the person occupying the driver’s seat that uses those mirrors. *Yasui*, [0059]; As yet another example, the “GPS [] (also used in car navigation device [])” is also associated with the driver’s seat, as *Yasui* anticipates that the driver interacts with the “car navigation device.” *Yasui*, [0059], [0106].

195. Accordingly, in my opinion, *Yasui* discloses any additional limitations

of claim 15.

**11. Claim 16: The computer readable medium of claim 15,
wherein the settings are retrieved from a data structure.**

196. *Yasui* further discloses *wherein the settings are retrieved from a data structure*. For example, *Yasui* discloses that the “hospitality operation information” is stored in “a hospitality operation information storage unit.” *Yasui*, Claim 10, [0008]; *see also Yasui*, [0052], [0103], Fig. 11.

197. *Yasui* specifically discloses “a hospitality operation information storage unit for storing registered user and hospitality operating information defining the operational content of the hospitality operation unique to each said registered user.” *Yasui*, Claim 10, [0008]. *Yasui* further discloses that this “hospitality operation information storage unit” is “a storage device 535 constituted by a hard disk drive or the like” that is connected to the “hospitality decision-making unit 2.” *Yasui*, [0052]; *see* Fig. 11, [0103] (noting that “data in storage unit 535” is “used by hospitality decision-making unit 2 for hospitality decision-making”).

198. A POSITA would have recognized the “hospitality operation information storage unit” or “storage device 535” contains a *data structure*. Specifically, a POSITA would have understood that, in order for the “hospitality operating information” to be useful for the hospitality decision-making unit to implement a user’s preferences, the “hospitality operating information” would

need to have been stored in some manner associated with data corresponding to the person.

199. And *Yasui* discloses this sort of *data structure*. For example, *Yasui* discloses that its “hospitality operation information storage unit” is “for storing registered user and hospitality operating information defining the operational content of the hospitality operation unique to each said registered user in a mutually associated manner.” *Yasui*, [0008]. Thus *Yasui* discloses user information and “hospitality operating information” (*settings*) are stored in a “mutually associated” manner, which is a *data structure*. And *Yasui* gives examples of what it means for multiple pieces of data to be stored in a manner “associated” with one another. For example, *Yasui* discloses one possible embodiment of a *data structure* in which these pieces of data are stored in a manner associated with one another in Figure 12’s conceptual diagram:

FIG. 12

17

User 1	Facial image 1	Age 1	Gender 1	Characteristic 1
User 2	Facial image 2	Age 2	Gender 2	Characteristic 2
User 3	Facial image 3	Age 3	Gender 3	Characteristic 3

Yasui, Fig. 12.

200. A POSITA would have known that by disclosing the “hospitality operating information” is stored “in a mutually associated manner” with each registered user, it was disclosing the type of *data structure* in which this information would be stored. A POSITA would have known that “hospitality operating information” would be stored in this data structure.

201. *Yasui* further discloses *retrieving settings*. For example, *Yasui* discloses that “the hospitality decision making unit 2 face detection unit 10 outputs user identifying information and decides what kind of hospitality operation to perform according to that content, then commands this to hospitality execution control unit 3.” *Yasui*, [0064]. When *Yasui* discloses that the “hospitality decision-making unit 2,” through its “face detection unit 10” and based on “user identifying information,” “decides what kind of hospitality operation to perform according to that content,” it discloses *retrieving settings*. *Yasui*, [0064]; And, because *Yasui* discloses storing the *settings* in a *data structure*, *Yasui* discloses that the *settings* are retrieved from a *data structure*.

202. Accordingly, in my opinion, *Yasui* discloses any additional limitations of claim 16.

12. Claim 17: The computer readable medium of claim 16, wherein the data structure is stored in cloud storage.

203. *Yasui* further discloses or renders obvious *wherein the data structure*

is stored in cloud storage. For example, *Yasui* discloses storing “hospitality operation information” “on a data server outside the vehicle.” *Yasui*, [0052], [0103]; *see supra* § IX.A.2 (claim 7).

204. Further, *Yasui* discloses storing *corresponding settings* in a *data structure*. *Supra* §§ IX.A.2 (claim 7) and IX.A.11 (claim 16). *Yasui* further discloses that data in storage unit 535, which can be used to store the settings in “hospitality operation information storage unit,” “may be stored on a data server outside the vehicle.” *Yasui*, [0103]. A POSITA would have thus understood *Yasui* to disclose its “hospitality operation information storage unit” data structure could be stored in cloud storage, or would have at least found this obvious for the reasons discussed in claim 7.

205. If the Board finds *Yasui* does not explicitly disclose *wherein the data structure is stored in cloud storage*, it would have been obvious to modify *Yasui* based on its own teachings and a POSITA’s knowledge. A POSITA would have known the many advantages of storing the data structure in cloud storage. For example, a POSITA would have been motivated to store the data structure in cloud storage so that a user could access and implement these settings in more than one vehicle. Additionally, a POSITA would have been motivated to store the data structure in cloud storage so that the limited local memory on the vehicle could be used for storing other data. Further, a POSITA would have recognized cloud

storage as a solution readily available to accomplish the above-mentioned motivations. *See supra* § IX.A.2 (claim 7).

206. There are many reasons why modifying *Yasui*'s disclosure to store the data structure in cloud storage would have been obvious to a POSITA. A POSITA would have considered such changes to *Yasui* because they involved (A) combining prior-art elements according to known methods to yield predictable results (e.g., storing *Yasui*'s data structure in cloud storage); (B) use of a known technique (e.g., storing a data structure in cloud storage) to improve similar devices in the same way (e.g., *Yasui*'s vehicle control system); (C) applying a known technique (e.g., storing a data structure in cloud storage) to a known device (e.g., *Yasui*'s vehicle control system) ready for improvement to yield predictable results.

207. A POSITA would have had a reasonable expectation of success in modifying *Yasui*'s disclosure to store a data structure in cloud storage because doing so would require nothing more than the simple modification of computer code, a task well within the ability of a POSITA at the time of the alleged invention. *See Boling*, [0018]. Writing code to implement functions taught by the prior art was well within the skill of a POSITA at the time of the alleged invention. And neither the '034 patent nor the prior art suggestion that special software programming or algorithms were needed to achieve the claimed feature, confirming that such was well within the level of skill in the art at the time of the

alleged invention. *See, e.g.*, '034 patent, 16:25-44.

208. Accordingly, in my opinion, *Yasui* discloses or renders obvious any additional limitations of claim 17.

B. Ground 2: *Yasui* in view of *Morehouse* renders obvious claims 1 and 7-17.

209. *Yasui* discloses or renders obvious claims 1 and 7-17. *Supra* § IX.A. But if the Board finds that *Yasui* alone does not disclose elements 1[d] (*determining, by a processor, if said identified person has corresponding settings*) or 9[c4] (*determine if the person has made a setting*), they would have been obvious in view of *Morehouse*.

1. Independent Claim 1

1[d]: determining, by a processor, if said identified person has corresponding settings; and

210. To the extent the Board finds that *Yasui* does not disclose *determining, by a processor, if said identified person has corresponding settings*, it would have been obvious in further view of *Morehouse*.

211. It would have been obvious to a POSITA to modify *Yasui* to include *Morehouse*'s teaching of querying whether an identified person has settings. Specifically, *Morehouse* discloses "retriev[ing] user information and associated parameters from personality module 10" using a series of queries that determine *if* certain settings exist for a particular user, including "climate information" and

“seat information.” *Morehouse*, [0021]. The diamond shaped boxes in the figure below represent queries in *Morehouse* to determine if a person identified in block 92 has corresponding settings for climate (94), seat (100), mirror (106), door locks (112), or radio presets (118).

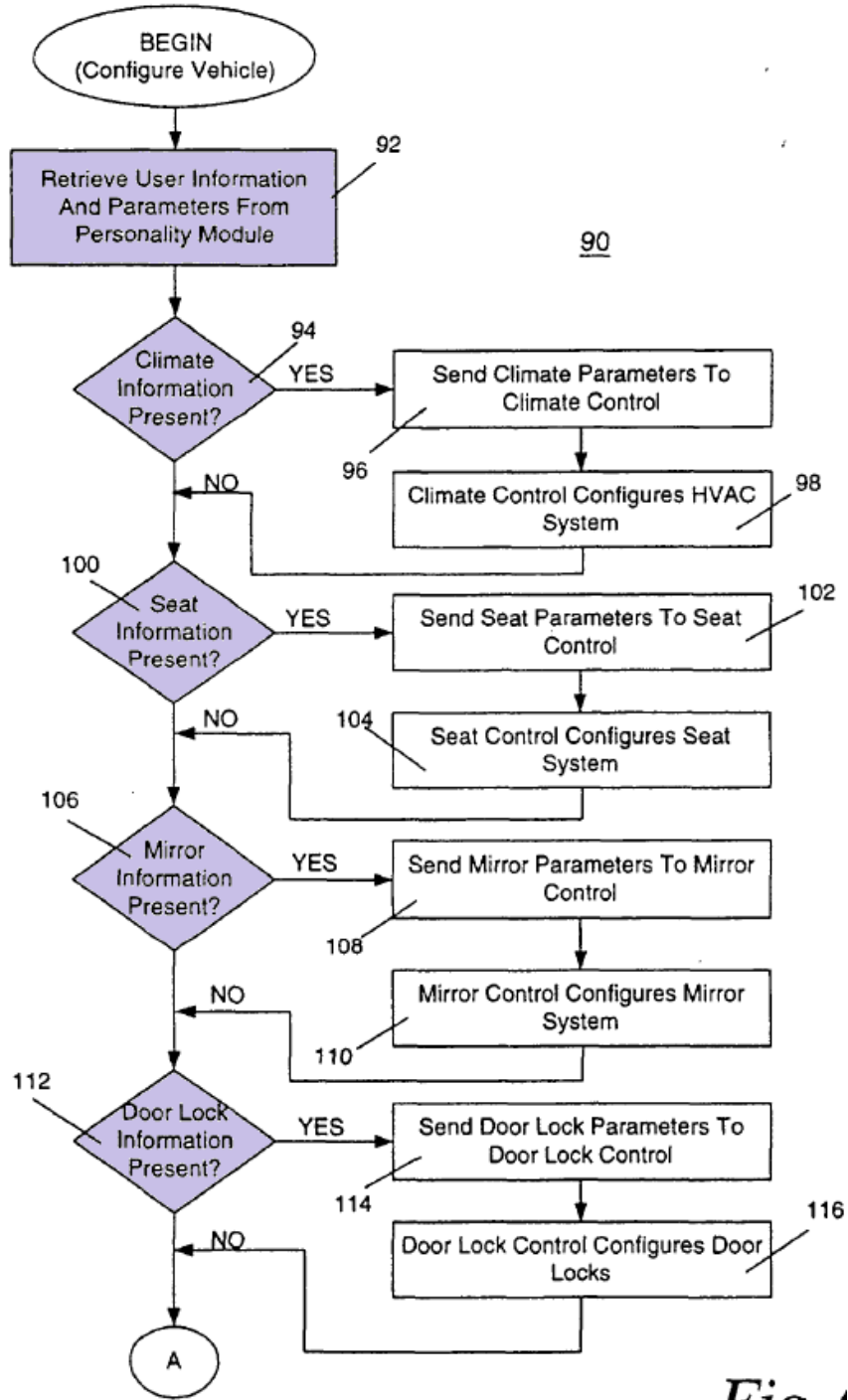


Fig. 1

Morehouse, Fig. 6 (annotated).

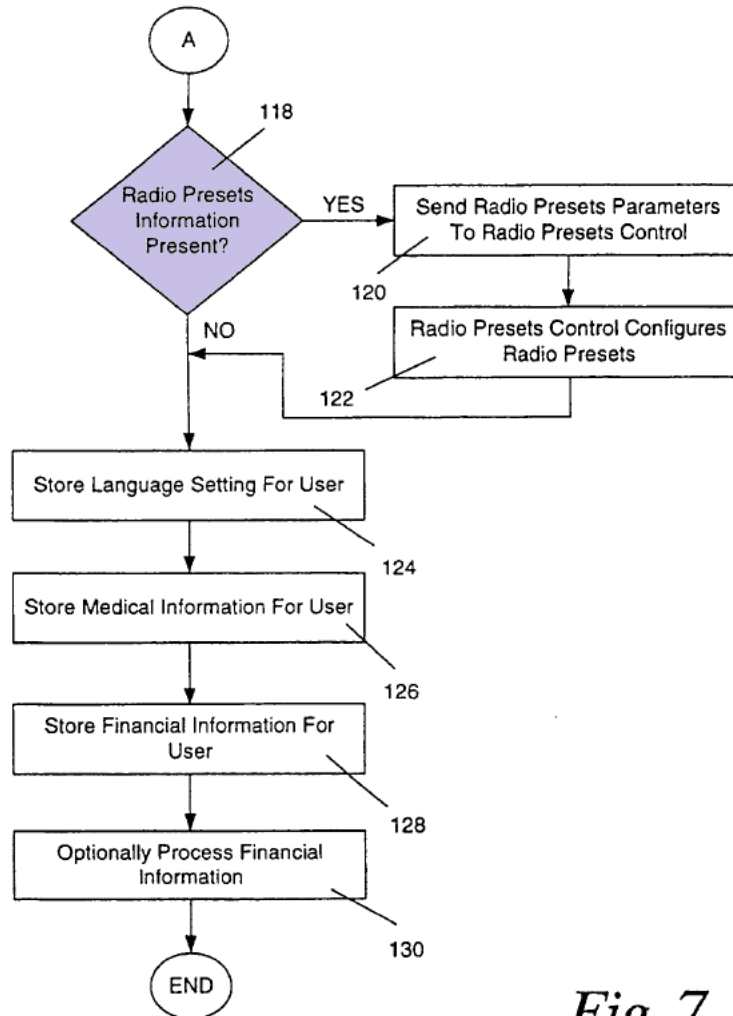


Fig. 7

Morehouse, Fig. 6 (annotated).

212. *Yasui* and *Morehouse* are both analogous art with the '034 patent, as explained above. But they are also analogous art with one another. Both references are from the same *Yasui* is from the same field of endeavor as the '034 patent, which is vehicle control systems. *See supra* §§ VI.A (*Yasui*) and VI.B (*Morehouse*). Further, *Yasui* is reasonably pertinent to the problem faced by the inventor of the '034 patent, which is customizing a vehicle to match a recognized

user's preferences. *See supra* §§ VI.A (*Yasui*) and VI.B (*Morehouse*).

213. A POSITA would have been motivated to combine *Morehouse's* disclosure of querying whether an identified person has settings with *Yasui's* vehicle control system. A POSITA would have recognized that *Yasui*, as explained above, discloses storing a user's preferred settings in association with a user's identifying information. A POSITA would further have recognized that *Yasui*, as also explained above, discloses a processor—CPU 12 of “hospitality decision making unit 2”—deciding which “hospitality operation units” to “command[]” (“decide[] what kind of hospitality operation to perform”). A POSITA would have been motivated to design an efficient system that only “commands” the “hospitality operation units” for which settings exist. A POSITA would have known that a vehicle control system uses a number of electronic control units to control various adjustable components in a vehicle, such as electric seats, mirrors, and the steering wheel. These electronic control units receive command to adjust. And, in the case of a vehicle control system that configures a vehicle to match a user's saved preference, a POSITA would have known that the vehicle control system only sends commands to those electronic control units for which saved settings exist. A POSITA would have recognized that it would be an inefficient use of processing power to send commands to electronic control units (i.e., “hospitality operation units”) for which no settings exist for a given user. A POSITA would

have recognized that *Morehouse*'s disclosure of queries to determine whether settings exist would have provided a straightforward means by which the POSITA could determine which "hospitality operation units" to command.

214. There are many reasons why applying *Morehouse*'s disclosure of a series of queries to determine whether settings exist would have been obvious to a POSITA. A POSITA would have considered such changes to *Yasui* because they involved (A) combining prior-art elements according to known methods to yield predictable results (e.g., applying *Morehouse*'s queries to *Yasui*'s vehicle control system); (B) use of a known technique (e.g., *Morehouse*'s queries) to improve similar devices in the same way (e.g., *Yasui*'s vehicle control system); (C) applying a known technique (e.g., *Morehouse*'s queries) to a known device (e.g., *Yasui*'s vehicle control system) ready for improvement to yield predictable results.

215. A POSITA would have had a reasonable expectation of success in combining *Morehouse*'s teaching of a series of settings queries with *Yasui*'s disclosure of a vehicle user recognition and settings adjustment system. *Yasui* discloses that its "various functions" "are realized by executing control software stored in ROM." *Yasui*, [0046]. A POSITA would have known how to make adjustments to *Yasui*'s software to implement *Morehouse*'s series of settings queries. Writing code to implement functions taught by the prior art was well within the skill of a POSITA at the time of the alleged invention. And neither the

'034 patent nor the prior art suggestion that special software programming or algorithms were needed to achieve the claimed feature, confirming that such was well within the level of skill in the art at the time of the alleged invention. *See, e.g.*, '034 patent, 16:25-44.

216. Accordingly, in my opinion, *Yasui* in view of *Morehouse* renders obvious this limitation of claim 1.

2. Independent Claim 9

9[c4]: determine if the person has made a setting; and

217. To the extent the Board finds that *Yasui* does not explicitly disclose that *the processor is operable to determine if the person has made a setting*, it would have been obvious in further view of *Morehouse*. *Yasui* and *Morehouse* are analogous art with each other and with the '034 patent. *See supra* § IX.A.1 (element 1[d]). As explained above, a POSITA would have been motivated to combine *Morehouse*'s disclosure with *Yasui*'s to *determine if the person has made a setting* and would have had a reasonable expectation of success in doing so. *See supra* § IX.A.1 (element 1[d]).

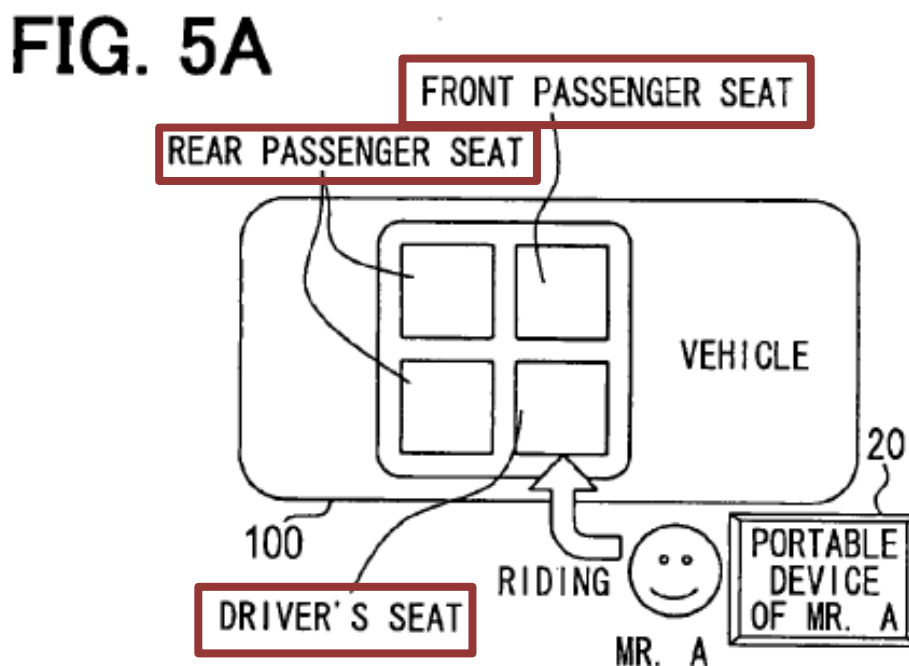
218. Accordingly, in my opinion, *Yasui* in view of *Morehouse* renders obvious this limitation of claim 9.

C. Ground 3: *Ikeda* anticipates claims 1, 7-10, and 12-17.

1. Independent Claim 1

1[a]: A method, comprising: separating a vehicle into one or more zones;

219. Ikeda discloses separating a vehicle into one or more zones. For example, Ikeda discloses the separate zones of “driver’s seat,” “front passenger seat,” and “rear passenger seat.” Ikeda, Fig. 5A; see supra IX.A.1 (element 1[a]) (describing ’034 patent’s description of a zone).



Ikeda, Fig. 5A (annotated).

220. Accordingly, in my opinion, Ikeda discloses this limitation of claim 1.

1[b]: automatically determining, by a processor, if a person is within a zone of said vehicle;

221. Ikeda discloses automatically determining, by a processor, if a person is within a zone of said vehicle. For example, “[d]etection of the driver to ride in the vehicle” (automatically determining if a person is within a zone of said vehicle)

is the first step of the “**vehicle environment setup processing**” “performed by the **control unit 11** of the in vehicle device 10” (*by a processor*). *Ikeda*, [0079]; [0409].

222. *Ikeda* discloses *a processor*. Its “**in-vehicle device 10**” contains “**control unit 11**” which “includes as a main element a microcomputer having a **CPU**, a ROM, a RAM, and **executes various processing**.” *Ikeda*, [0061].

223. *Ikeda* further discloses detecting a user’s presence *automatically*—without requiring any user input. For example, *Ikeda* discloses that “[d]etection of the driver to ride in the vehicle 100 can be performed by, for example, detecting a user's seating with a sitting sensor provided in the driver’s seat.” *Ikeda*, [0079]; *see also Ikeda*, [0080].

224. Accordingly, in my opinion, *Ikeda* discloses this limitation of claim 1.

1[c]: identifying said person within said zone of the vehicle;

225. *Ikeda* discloses *identifying said person within said zone of the vehicle*. For example, *Ikeda* discloses it performs “**driver determination processing**.” *Ikeda*, [0087], [0224].

226. *Ikeda* discloses the “in-vehicle device 10 transmits [] facial feature information items . . . to the personal identification device 41” to initiate “driver determination processing.” *Ikeda*, [0087]. The first step of “driver determination processing” occur when “the personal identification device 41 directs the camera 42 to start capturing an image of the driver.” *Ikeda*, [0096]. After this, “the

personal identification device 41 identifies the driver's facial feature information item out of the facial feature information items received from the in-vehicle device 10, by template matching of the facial feature information items received from the in-vehicle device 10 with the image taken with the camera 42.” *Ikeda*, [0097]; see *Ikeda* [0225].

227. Accordingly, in my opinion, *Ikeda* discloses this limitation of claim 1.

1[d]: determining, by a processor, if said identified person has corresponding settings; and

228. *Ikeda* discloses *determining, by a processor, if said identified person has corresponding settings*. The “in-vehicle device 10” determines if an identified person has corresponding settings by sending a “setup information-sending request.” *Ikeda*, [0091]; see *Ikeda*, [0246].

229. Initially, *Ikeda* discloses *corresponding settings*. For example, *Ikeda* discloses its “environment setup information item” includes a user’s preferred settings for individual “control units.” *Ikeda*, [0064]. Specifically, *Ikeda* describes the “environment setup information item” as “indicative of a driving environment of the associated user.” *Ikeda*, [0013].

230. *Ikeda* discloses “control units 51-59” “operable to set or change the driving environment.” *Ikeda*, [0064]. These “control units” control aspects of the vehicle such as “seat position,” “steering wheel position,” “mirror attitude,” “air-conditioning,” “audio,” “navigation,” and “information display.” *Ikeda*, [0063]. As

one example of a *corresponding setting*, “the seat position controller 51 adjusts the position of the driver’s electric seat.” *Ikeda*, [0064]. A user’s preferential setting for the “seat position controller 51” is stored as part of the “environment setup information item” and can be recalled so “the driving environment can be reproduced correctly, without performing fine tuning by the external operation” (i.e., manually). *Ikeda*, [0064].

231. *Ikeda* further discloses *determining, by a processor, if said identified person has corresponding settings*. *Ikeda*’s discloses its “in-vehicle device 10” contains “control unit 11” which “includes as a main element a microcomputer having a CPU, a ROM, a RAM, and executes various processing.” *Ikeda*, [0061]. The “in-vehicle device 10,” acting via its CPU, determines if an identified person has corresponding settings by sending a “setup information-sending request.” *Ikeda*, [0091]; *see Ikeda*, [0246]. In response to this request, “the environment setup information item indicative of the driving environment for the driver is transmitted . . . to the in-vehicle device 10.” *Ikeda*, [0091]-[0092]; *see Ikeda* [0247]. Thus, the “in-vehicle device 10” determines if an identified user has corresponding settings when it receives the “environment setup information item.”

232. Upon receipt of “the environment setup information item,” the “in-vehicle device 10,” acting via its CPU, determines if an identified person has corresponding settings as to each individual control unit when determines which

settings are saved in the received “environment setup information item.” After the “in-vehicle device 10” receives the “environment setup information item,” it transmits data to “various” (i.e., one or more) “control units 51-59.” *Ikeda*, [0092]-[0093]; *see Ikeda*, [0251]. *Ikeda*’s disclosure that its “in-vehicle device 10,” acting via its CPU, commands “various” (i.e., one or more) control units means that it will not necessarily command *all* the control units. *Ikeda*, [0092]-[0093]; The “in-vehicle device 10” determines which control units to command based on the control units for which settings are saved in the “environment setup information item.”

233. Accordingly, in my opinion, *Ikeda* discloses this limitation of claim 1.

1[e]: configuring said zone of said vehicle based on said corresponding settings.

234. *Ikeda* discloses *configuring said zone of said vehicle based on said corresponding settings*. For example, *Ikeda* discloses that its “control units” operate “**to reproduce the driving environment indicated by the environment setup item.**” *Ikeda*, [0064].

235. *Ikeda* discloses that transmitting “**the environment setup information**” “to various control units” is part of the “vehicle environment setup processing.” (“performed by the control unit 11 of the in vehicle device 10,” via its CPU). *Ikeda*, [0093], [0079], Fig. 2. *Ikeda* discloses that its “**environment setup information item**” contains any saved settings for individual “control units.” *Ikeda*,

[0064]. *Ikeda* discloses “control units 51-59” that “are operable to set or change the driving environment.” *Ikeda*, [0064]. These “control units” control aspects of the vehicle such as “seat position,” “steering wheel position,” “mirror attitude,” “air-conditioning,” “audio,” “navigation,” and “information display.” *Ikeda*, [0063]. As one example of a *corresponding setting*, “the seat position controller 51 adjusts the position of the driver’s electric seat.” *Ikeda*, [0064]. A user’s preferential setting for the “seat position controller 51” is stored as part of the “environment setup information item” and can be recalled so that “the driving environment can be reproduced correctly, without performing fine tuning by the external operation” (i.e., manually). *Ikeda*, [0064].

236. *Ikeda* further discloses that “the environment setup information item . . . is transmitted to various control units 51-59” and thereby “**the driving environment of the vehicle [] is set as the driving environment for the driver.**” *Ikeda*, [0093].

237. Accordingly, in my opinion, *Ikeda* discloses this limitation of claim 1.

2. Claim 7: The method of claim 1, wherein said corresponding settings is stored in cloud storage.

238. *Ikeda* discloses *wherein said corresponding settings is stored in cloud storage*. For example, *Ikeda* discloses that, in at least one embodiment, “the in-vehicle device 10 is operable to perform data communication with the management device 30, in a communications area covered by a mobile phone base station

arranged in various places (it is markedly wider than the communications area with the portable device 20).” *Ikeda*, [0136].

239. *Ikeda* further discloses that this “management device 30 includes . . . a storage unit 32.” *Ikeda*, [0141]. And this “storage unit 32 is operable to store a variety of information,” including “the environment setup information item indicative of the driving environment for each of the users.” *Ikeda*, [0143].

240. Accordingly, in my opinion, *Ikeda* discloses this limitation of claim 1.

3. Claim 8: The method of claim 1, wherein the said corresponding setting is one of a position of a seat, a position of a mirror, a heat or cold setting, a configuration of a console, a configuration of a dash, a configuration of a heads up display, or a setting for a radio.

241. *Ikeda* further discloses *wherein the said corresponding settings is one of a position of a seat, a position of a mirror, a heat or cold setting, a configuration of a console, a configuration of a dash, a configuration of a heads up display, or a setting for a radio*. For example, *Ikeda* discloses that its “environment setup information item” contains any saved settings for “control units 51-59” that control aspects of the vehicle such as “seat position” (*a position of a seat*), “mirror attitude” (*a position of a mirror*), “air-conditioning” (*a heat or cold setting*), “audio” (*a setting for a radio*), “navigation” (*a configuration of a heads up display*), or “information display” (*configuration of a console; configuration of a dash; configuration of a heads up display*). *Ikeda*, [0063].

242. Accordingly, in my opinion, *Ikeda* discloses any additional limitations of claim 8.

4. Claim 9

9[a]: A vehicle system, comprising: one or more sensors;

243. *Ikeda* discloses *a vehicle system, comprising one or more sensors*. For example, *Ikeda* discloses “detecting a user’s seating with a **sitting sensor** provided in the driver’s seat” and additionally using a “**camera 42**” to “captur[e] an image of the driver.” *Ikeda*, [0079], [0096].

244. Accordingly, in my opinion, *Ikeda* discloses this limitation of claim 9.

9[b]: a vehicle control system comprising: a processor[and] a memory;

245. *Ikeda* discloses *a vehicle control system comprising a processor*. *Ikeda*’s discloses its “**in-vehicle device 10**” contains “**control unit 11**” which “includes as a main element a microcomputer having **a CPU, a ROM, a RAM, and executes various processing.**” *Ikeda*, [0061].

246. Accordingly, in my opinion, *Ikeda* discloses this limitation of claim 9.

9[c1]: wherein the processor is operable to: receive sensor data from the one or more sensors;

247. *Ikeda* discloses that *the processor is operable to receive sensor data from the one or more sensors*. For example, *Ikeda* discloses that the “**in-vehicle device 10** possesses or includes a control unit 11” and acts through its **CPU** to

receive data from at least “a sitting sensor” and from “camera 42.” *Ikeda*, [0079], [0088], [0096]-[0098].

248. *Ikeda* discloses that “the in-vehicle device 10 detects the fact that the driver rides the vehicle 100 with the aid of the seat sensor provided in the driver’s seat.” *Ikeda*, [0409]. *Ikeda* clarifies that the invention “is not limited” to using the seat sensor because “it may be possible to detect the fact that the driver rides the vehicle 100, through the detection of opening, closing, and unlocking of the door of the driver’s seat side, or in use of the taken image of the camera 42[.]” *Ikeda*, [0409]; *see* [0088] (disclosing that the “in-vehicle device 10” can process signals from “camera 42”).

249. Additionally, *Ikeda* discloses that “the in-vehicle device 10” “identifie[s] or select[s] the facial feature information item that corresponds to the detected facial feature point detected by the camera 42[.]” *Ikeda*, [0088].

250. Accordingly, in my opinion, *Ikeda* discloses this limitation of claim 9.

**9[c2]: based on the received sensor data,
automatically determine if a person is within a zone of
a vehicle;**

251. *Ikeda* discloses that the processor is operable to, *based on the received sensor data, automatically determine if a person is within a zone of a vehicle.*

Supra § IX.C.1 (element 1[b]). For example, “[d]etection of the driver to ride in the vehicle” (*automatically determining if a person is within a zone of said vehicle*)

is the first step of the “vehicle environment setup processing” “performed by the control unit 11 of the in vehicle device 10,” acting via its CPU (*by a processor*).

Ikeda, [0079]; [0409].

252. Accordingly, in my opinion, *Ikeda* discloses this limitation of claim 9.

**9[c3]: based on the received sensor data,
automatically identify the person;**

253. *Ikeda* discloses that the processor is operable to *based on the received sensor data, automatically identify the person. Supra* § IX.C.1 (element 1[c]). For example, *Ikeda* discloses that the “in-vehicle device 10 possesses or includes a control unit 11” and acts through its CPU to use “driver determination processing” to “identif[y] or select[] the facial feature information item that corresponds to the detected facial feature point detected by the camera 42[.]” *Ikeda*, [0088].

254. *Ikeda* discloses that the “in-vehicle device 10 transmits [] facial feature information items . . . to the personal identification device 41” to initiate “driver determination processing.” *Ikeda*, [0087]. The first step of “driver determination processing” occurs when “the personal identification device 41 directs the camera 42 to start capturing an image of the driver.” *Ikeda*, [0096]. After this, “the personal identification device 41 identifies the driver's facial feature information item out of the facial feature information items received from the in-vehicle device 10, by template matching of the facial feature information items received from the in-vehicle device 10 with the image taken with the camera

42.” *Ikeda*, [0097]. Driver determination processing ends when “the identified facial feature information of the driver identified as the determination result of the driver determination processing is received from the personal identification device 41.” *Ikeda*, [0088]. *Ikeda* notes that in this final step “the in-vehicle device 10 has identified or selected the facial feature information item that corresponds to the detected facial feature point detected by the camera 42.” *Ikeda*, [0088].

255. Accordingly, in my opinion, *Ikeda* discloses this limitation of claim 9.

9[c4]: determine if the person has made a setting; and

256. *Ikeda* discloses that the processor is operable to *determine if the person has made a setting*. *Supra* § IX.C.1 (element 1[d]). For example, *Ikeda* discloses, as part of the vehicle environment setup processing as performed by the “the control unit 11 of the in-vehicle device 10,” acting via its CPU, obtaining “the environment setup information item indicative of the driving environment for the driver” by sending a “setup information-sending request requests the portable device 20 of the driver to send the environment setup information item.” *Ikeda*, [0091].

257. *Ikeda* discloses that its “environment setup information item” contains any saved settings for individual “control units.” *Ikeda*, [0064]. *Ikeda* discloses “control units 51-59” that “are operable to set or change the driving environment.” *Ikeda*, [0064]. These “control units” control aspects of the vehicle such as “seat

position,” “steering wheel position,” “mirror attitude,” “air-conditioning,” “audio,” “navigation,” and “information display.” *Ikeda*, [0063]. As one example of a *corresponding setting*, “the seat position controller 51 adjusts the position of the driver’s electric seat.” *Ikeda*, [0064]. A user’s preferential setting for the “seat position controller 51” is stored as part of the “environment setup information item” and can be recalled so that “the driving environment can be reproduced correctly, without performing fine tuning by the external operation” (i.e., manually). *Ikeda*, [0064].

258. *Ikeda* further discloses that the “in-vehicle device 20” determines if an identified person has made a setting by sending a “setup information-sending request.” *Ikeda*, [0091]. In response to this request, “the environment setup information item indicative of the driving environment for the driver is transmitted . . . to the in-vehicle device 10.” *Ikeda*, [0091]-[0092]. Thus, the “in-vehicle device 10” determines that an identified user has made a setting when it receives the “environment setup information item.”

259. Accordingly, in my opinion, *Ikeda* discloses this limitation of claim 9.

9[c5]: based on the determination, configure said zone of said vehicle to said setting.

260. *Ikeda* discloses *the processor is operable, based on the determination, configure said zone of said vehicle to said setting. Supra* § IX.C.1 (element 1[e]).

Specifically, this configuration is part of the vehicle environment setup processing

as performed by the “the control unit 11 of the in-vehicle device 10,” acting via its CPU. *Ikeda*, [0093].

261. Accordingly, in my opinion, *Ikeda* discloses this limitation of claim 9.

5. Claim 10: The device of claim 9, wherein the sensor data is an image of the person.

262. *Ikeda* further discloses that as part of “driver determination processing,” as directed by the “in-vehicle device 10,” “the personal identification device 41 directs the camera 42 to start capturing an image of the driver.” *Ikeda*, [0096].

263. Specifically, the “in-vehicle device 10 transmits the facial feature information items . . . to the personal identification device 41 such that the personal identification device is directed to perform the driver determination processing.” *Ikeda*, [0087]. And during “driver determination processing,” “the personal identification device 41 directs the camera 42 to start capturing an image of the driver.” *Ikeda*, [0096]. A POSITA would have understood that the “in-vehicle device 10” performs this processing using “personal identification device 41.”

264. Accordingly, in my opinion, *Ikeda* discloses any additional limitations of claim 10.

6. Claim 12: The device of claim 9, wherein the sensor data is voice data from the person.

265. *Ikeda* discloses *wherein the sensor data is voice data from the person*.

For example, *Ikeda* discloses performing “authentication of the driver” by “detecting” a “user’s physical feature,” including “a voice print.” *Ikeda*, [0429].

266. Accordingly, in my opinion, *Ikeda* discloses any additional limitations of claim 12.

7. Claim 13: The device of claim 12, wherein in automatically identifying the person the processor is operable to match the voice data to stored voice data in a data structure.

267. *Ikeda* discloses *wherein in automatically identifying the person the processor is operable to match the voice data to stored voice data in a data structure*. For example, *Ikeda* discloses performing “authentication of the driver” by “detecting” a “user’s physical feature,” including “a voice print.” *Ikeda*, [0429].

268. *Ikeda* further discloses that the “personal identification device 41” *matches* the received sensor data (in the case of a “voice print,” *voice data*) *to stored data in a data structure*. For example, *Ikeda* discloses that during “driver determination processing,” “the personal identification device 41” identifies data that matches a driver “by template matching” the received sensor data with data “received from the in-vehicle device 10.” *Ikeda*, [0097]. *Ikeda* discloses that the “in-vehicle device 10” directs the “driver determination processing,” using the “personal identification device 41.” *Supra* § IX.C.1 (element 1[c]).

269. That data “received from the in-vehicle device 10” is *stored data in a data structure* because it is “stored in the portable device 20” before being

“transmitted to the in-vehicle device 10.” *Ikeda*, [0085].

A POSITA would have known that, in order for the “voice print” to be useful in identifying a person, the “voice print” would need to have been stored in some manner associated with data corresponding to the person. And *Ikeda* discloses storing data in just such a manner. *Ikeda* describes “storage unit 32” (a complementary storage unit in another embodiment) as storing “the environment setup information item for each user in association with user identification information.” *Ikeda*, [0143]; *see, e.g., Ikeda*, [0144], [0159], [0190]. A POSITA would thus have understood that *Ikeda* discloses a *data structure* in which “user identification information” is stored “in association with” the corresponding “environment setup information” (*settings*). And a “voice print” is just one kind of “user identification information.”

270. The “portable device 20” contains “storage unit 22” in which both “user identification information, which is identification information unique to a user” and the “environment setup information, which is indicative of the driving environment for the user” is stored. *Ikeda*, [0073]. A user’s “physical feature”—including “a voice print”—is a type of “user identification information.” *Ikeda*, [0429], [0072]. Thus, a POSITA would have understood this disclosure to mean that the “storage unit 22” contains a data structure that stores the “environment setup information” for a particular user in association with the “user identification

information” unique to that user.

271. Accordingly, in my opinion, *Ikeda* discloses any additional limitations of claim 13.

8. Claim 14

14[a]: A non-transitory computer readable medium having stored thereon computer-executable instructions, the computer executable instructions causing a processor to execute a method for providing a unified desktop, the computer-executable instructions comprising:

272. *Ikeda* discloses a non-transitory computer readable medium having stored thereon computer-executable instructions, the computer executable instructions causing a processor to execute a method for providing a unified desktop. *Ikeda* discloses that its “in vehicle device . . . includes a computer readable medium and program instructions.” *Ikeda*, [0015]. *Ikeda* further discloses that these “program instructions . . . caus[e] the computer to serve as driver identifying means and driving-environment setup means.” *Ikeda*, [0015].

273. Additionally, *Ikeda* discloses that its “in-vehicle device 10 possesses or includes a control unit 11” and that the “control unit 11 includes as a main element a microcomputer having a CPU, a ROM, a RAM, and executes various processing.” *Ikeda*, [0060]-[0061]; *see also Ikeda*, [0015]-[0018].

274. As to a *unified desktop*, *Ikeda* discloses “a display device 43” that is used by control unit 11 and thus its CPU for communications. *Ikeda*, [0204],

[0206]; *see* '034 patent, 5:52-59 (“The term ‘desktop,’ as used herein, refers to a metaphor used to portray systems.”).

275. Accordingly, in my opinion, *Ikeda* discloses this limitation of claim 14.

14[b]: instructions to receive sensor data from one or more sensors;

276. *Ikeda* discloses *instructions to receive sensor data from one or more sensors*. *Ikeda* discloses *instructions (supra § IX.C.8 (element 14[a]) to receive sensor data from one or more sensors*. *Supra* § IX.C.4 (element 9[c1]).

277. Accordingly, in my opinion, *Ikeda* discloses this limitation of claim 14.

14[c]: based on the received sensor data, instructions to automatically determine if a person is within a zone of a vehicle;

278. *Ikeda* discloses *based on the received sensor data, instructions to automatically determine if a person is within a zone of a vehicle*. *Ikeda* discloses *instructions (supra § IX.C.8 (element 14[a]) to automatically determine if a person is within a zone of a vehicle*. *Supra* § IX.C.4 (element 9[c2]).

279. Accordingly, in my opinion, *Ikeda* discloses this limitation of claim 14.

14[d]: based on the received sensor data, instructions to automatically identify the person;

280. *Ikeda* discloses based on the received sensor data, instructions to automatically identify the person. *Ikeda* discloses instructions (*supra* § IX.C.8 (element 14[a]), based on the received sensor data, to automatically identify the person. *Supra* § IX.C.4 (element 9[c3])).

281. Accordingly, in my opinion, *Ikeda* discloses this limitation of claim 14.

14[e]: instructions to retrieve one or more settings associated with the identified person; and

282. *Ikeda* discloses instructions to retrieve one or more settings associated with the identified person. *Ikeda* discloses instructions (*supra* § IX.C.8 (element 14[a])) to retrieve one or more settings associated with the identified person. *Supra* § IX.C.4 (element 9[c4])).

283. Accordingly, in my opinion, *Ikeda* discloses this limitation of claim 14.

14[f]: instructions to automatically configure the vehicle according to the retrieved settings.

284. *Ikeda* discloses instructions to automatically configure the vehicle according to the retrieved settings. *Ikeda* discloses instructions (*supra* § IX.C.8 (element 14[a])) to automatically configure the vehicle according to the retrieved settings. *Supra* § IX.C.4 (element 9[c5])).

285. Accordingly, in my opinion, *Ikeda* discloses this limitation of claim

14.

9. Claim 15: The computer readable medium of claim 14, wherein the settings retrieved are associated with the determined area or zone.

286. *Ikeda* further discloses *wherein the settings retrieved are associated with the determined area or zone*. For example, *Ikeda* discloses that the “environment setup information item” is “indicative of the driving environment for the driver” (*settings*). *Ikeda*, [0091], [0064]. *Ikeda* further discloses that the “environment setup information item” (*settings*) contains settings for the “seat position controller 51” which “adjusts the position of the driver’s electric seat,” and is, thus, *associated with the driver’s seat (determined area or zone)*. *Ikeda*, [0064].

287. Accordingly, in my opinion, *Ikeda* discloses any additional limitations of claim 15.

10. Claim 16: The computer readable medium of claim 15, wherein the settings are retrieved from a data structure.

288. *Ikeda* further discloses *wherein the settings are retrieved from a data structure*. For example, *Ikeda* discloses obtaining “the environment setup information item indicative of the driving environment for the driver” (*settings*) by sending a “setup information-sending request [that] requests the portable device 20 of the driver to send the environment setup information item” (whereby *settings are retrieved*). *Ikeda*, [0091]. *Ikeda* further discloses “portable device 20”—to

which the “setup information-sending request” is sent—stores the “environment setup information item” in the “storage unit 22” (*a data structure*). *Ikeda*, [0070]-[0072].

289. *Ikeda* discloses that its “storage unit 22” is used to store both “user identification information, which is identification information unique to a user” and the “environment setup information, which is indicative of the driving environment for the user” (*settings*). *Ikeda*, [0073].

290. A POSITA would have understood this disclosure to mean that the “storage unit 22” contains a data structure that stores the “environment setup information” for a particular user in association with the “user identification information” unique to that user. A POSITA would have understood this because a POSITA would have understood that for the “environment setup information” for a particular user to be useful in implementing a user’s preferred settings, then the “environment setup information” would need to be stored in some manner associated with the user’s data.

291. And, in fact, *Ikeda* describes “storage unit 32” (a complementary storage unit in another embodiment) as storing “the environment setup information item for each user in association with user identification information.” *Ikeda*, [0143]; *see, e.g., Ikeda*, [0144], [0159], [0190]. A POSITA would thus have understood that *Ikeda* discloses a *data structure* in which “user identification

information” is stored “in association with” the corresponding “environment setup information” (*settings*).

292. Accordingly, in my opinion, *Ikeda* discloses any additional limitations of claim 16.

11. Claim 17: The computer readable medium of claim 16, wherein the data structure is stored in cloud storage.

293. *Ikeda* discloses *wherein said the data structure is stored in cloud storage*, as explained in the discussion of claim 7. *Supra* § IX.C.2 (claim 7).

294. *Ikeda* discloses storing *corresponding settings* in a *data structure*. *Supra* §§ IX.C.2 (claim 7) and IX.C.10 (claim 16).

295. For example, *Ikeda* discloses that, in at least one embodiment, “the in-vehicle device 10 is operable to perform data communication with the management device 30, in a communications area covered by a mobile phone base station arranged in various places (it is markedly wider than the communications area with the portable device 20).” *Ikeda*, [0136]. A POSITA would have recognized the “management device 30”—thus described—as *cloud storage*. *Ikeda* further discloses that this “management device 30 includes . . . a storage unit 32.” *Ikeda*, [0141]. And this “storage unit 32 is operable to store a variety of information,” including “the environment setup information item indicative of the driving environment for each of the users.” *Ikeda*, [0143].

D. Ground 4: *Ikeda* in view of *Morehouse* renders obvious

claims 1, 7-10, and 12-13.

296. *Ikeda* discloses claims 1, 7-10, and 12-13. *Supra* § IX.C. But if the Board finds that *Ikeda* alone does not disclose elements 1[d] (*determining, by a processor, if said identified person has corresponding settings*) or 9[c4] (*determine if the person has made a setting*), they would have been obvious in view of *Morehouse*.

1. Independent Claim 1

1[d]: determining, by a processor, if said identified person has corresponding settings; and

297. It would have been obvious to a POSITA to modify *Ikeda* to include *Morehouse*'s teaching of querying whether an identified person has settings. *Morehouse* discloses using a series of queries to determine *if* certain settings exist for a particular user, including "climate information" and "seat information." *Morehouse*, [0021]. The diamond shaped boxes in the figure below represent queries in *Morehouse* to determine if a person identified in block 92 has corresponding settings for climate (94), seat (100), mirror (106), door locks (112), or radio presets (118).

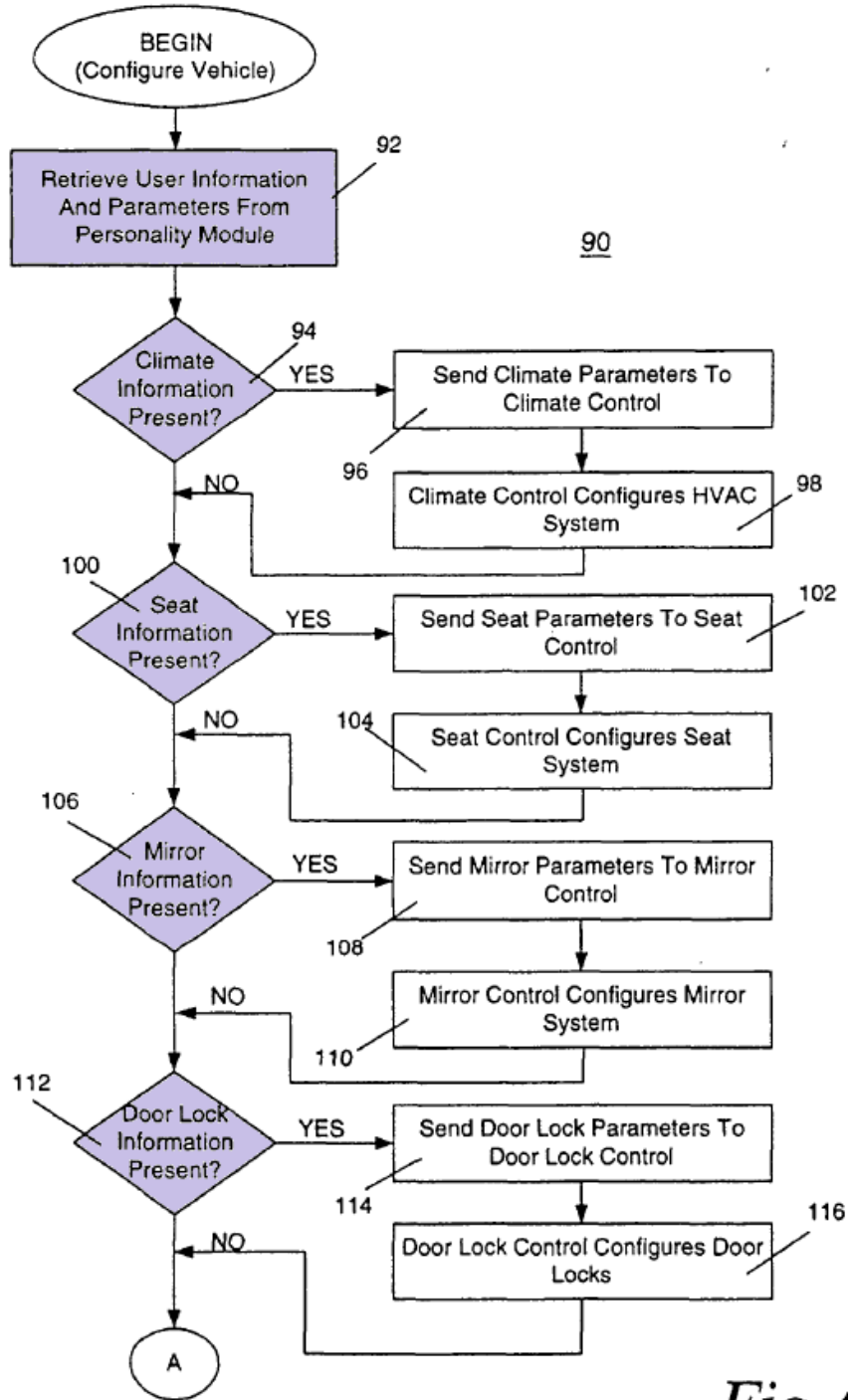


Fig. 1

Morehouse, Fig. 6 (annotated).

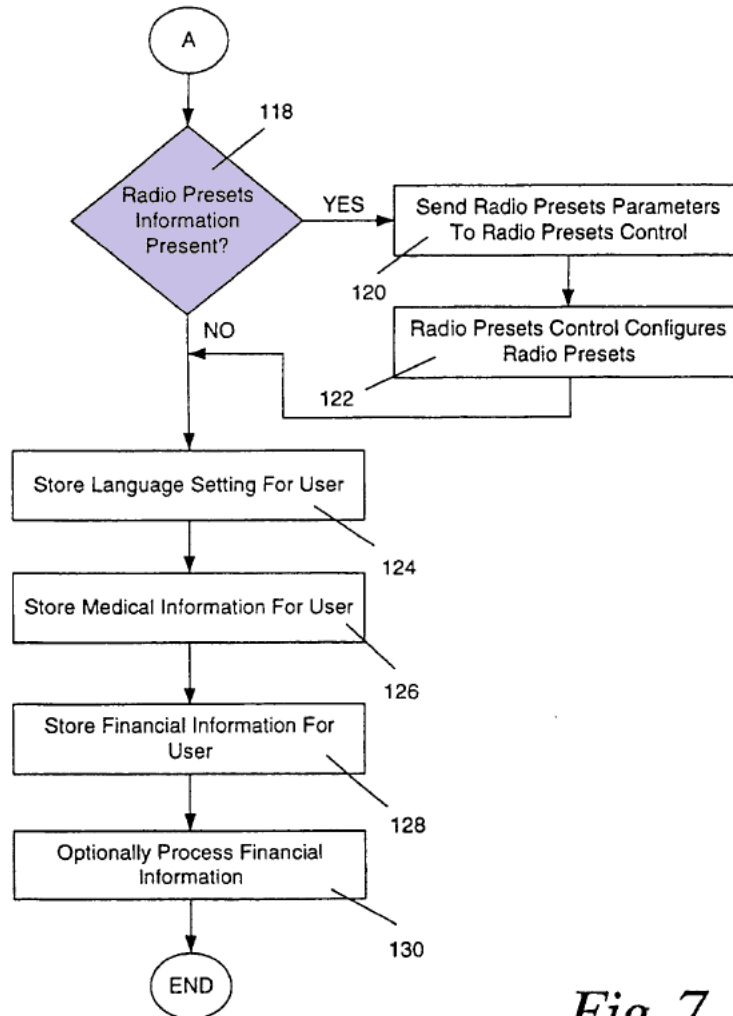


Fig. 7

Morehouse, Fig. 6 (annotated).

298. *Ikeda* and *Morehouse* are both analogous art with the '034 patent, as explained above. But they are also analogous art with one another. Both references are from the same *Ikeda* is from the same field of endeavor as the '034 patent—vehicle control systems. *See supra* §§ VI.C (*Ikeda*) and VI.B (*Morehouse*). Further, *Ikeda* is reasonably pertinent to the problem faced by the inventor of the '034 patent—customizing a vehicle to match a recognized user's preferences. *See*

supra §§ VI.C (*Ikeda*) and VI.B (*Morehouse*).

299. A POSITA would have been motivated to combine *Morehouse*'s disclosure of querying whether an identified person has settings with *Ikeda*'s vehicle control system. A POSITA would have been motivated to design an efficient system that only transmits data to the "control units" for which settings exist in the "environment setup information time." A POSITA would have recognized that it would be an inefficient use of processing power to send commands to electronic control units (i.e., "control units") for which no settings exist for a given user. A POSITA would have recognized that *Morehouse*'s disclosure of queries to determine whether settings exist would have provided a straightforward means by which the POSITA could determine which "control units" to transmit data to.

300. There are many reasons why applying *Morehouse*'s disclosure of queries to determine whether settings exist would have been obvious to a POSITA. A POSITA would have considered such changes to *Ikeda* because they involved (A) combining prior-art elements according to known methods to yield predictable results (e.g., applying *Morehouse*'s queries to *Ikeda*'s vehicle control system); (B) use of a known technique (e.g., *Morehouse*'s queries) to improve similar devices in the same way (e.g., *Ikeda*'s vehicle control system); (C) applying a known technique (e.g., *Morehouse*'s queries) to a known device (e.g., *Ikeda*'s vehicle

control system) ready for improvement to yield predictable results.

301. A POSITA would have had a reasonable expectation of success in combining *Morehouse*'s teaching of queries with *Ikeda*'s disclosure of a vehicle user recognition and settings adjustment system. *Ikeda* discloses that its "control unit 11" uses "a ROM" to "execute[] various processing." *Ikeda*, [0061]. A POSITA would have known how to adjust *Ikeda*'s processing software to implement *Morehouse*'s series of settings queries. Writing code to implement functions taught by the prior art was well within the skill of a POSITA at the time of the alleged invention. And neither the '034 patent nor the prior art suggestion that special software programming or algorithms were needed to achieve the claimed feature, confirming that such was well within the level of skill in the art at the time of the alleged invention. *See, e.g.*, '034 patent, 16:25-44.

302. Accordingly, in my opinion, *Ikeda* in view of *Morehouse* renders obvious this limitation of claim 1.

2. Independent Claim 9

9[c4]: determine if the person has made a setting; and

303. To the extent the Board finds that *Ikeda* does not explicitly disclose that *the processor is operable to determine if the person has made a setting*, it would have been obvious in view of *Ikeda*'s teachings and *Morehouse*. *Ikeda* and *Morehouse* are analogous art with each other and with the '034 patent. *See supra* §

IX.D.1 (element 1[d]). For the same reasons explained above, a POSITA would have been motivated to combine *Morehouse*'s disclosure with *Ikeda*'s to *determine if the person has made a setting* and would have had a reasonable expectation in doing so. *See supra* § IX.D.1 (element 1[d]).

304. Accordingly, in my opinion, *Ikeda* in view of *Morehouse* renders obvious this limitation of claim 9.

E. Grounds 5a/b: *Ikeda* in view of *Yasui* (Ground 5a) and *Ikeda* in view of *Morehouse* and *Yasui* (Ground 5b) renders obvious claim 11.

305. *Ikeda* discloses or, in view of *Morehouse*, renders obvious claims 9 and 10, from which claim 11 depends. *Supra* §§ IX.C.4-5 and IX.D.2.

1. Claim 11: The device of claim 10, wherein in automatically identifying the person the processor is operable to match the image to a stored image in a data structure.

306. *Ikeda* in view of *Yasui* or *Ikeda* in view of *Morehouse* in further review of *Yasui* renders obvious *wherein in automatically identifying the person the processor is operable to match the image to a stored image in a data structure*.

307. *Yasui* discloses “cutting out the facial image portion from that captured image and comparing various facial expressions to previously captured and prepared master images.” *Yasui*, [0047]. *Yasui* further discloses storing the “master facial image” in the “user registration unit,” which is, for example, “a ROM . . . in hospitality decision-making unit 2” (*stored in a data structure*). *Yasui*, [0054]-[0055].

308. *Yasui* further discloses a *data structure* in which images are stored.

Supra § IX.A.6 (claim 11).

309. It would have been obvious to combine *Ikeda*'s vehicle control system with *Yasui*'s disclosure of a processor operable to match an image to a stored image in a data structure. *Supra* § IX.C.1 (element 1[c]). During *Ikeda*'s "driver determination processing," "the personal identification device 41 identifies the driver's facial feature information item out of the facial feature information items received from the in-vehicle device 10, by template matching of the facial feature information items received from the in-vehicle device 10 with the image taken with the camera 42." *Ikeda*, [0097]; *see Ikeda* [0225].

310. A POSITA would have been motivated to make this combination so that *Ikeda*'s system would be able to perform additional real-time processing on a stored image to help identify a driver in a situation where the in-vehicle device 10 receives similar facial data from more than one portable device.

311. *Ikeda* discloses storing "facial feature information, which is indicative of the user's facial feature point." *Ikeda*, [0072]. A POSITA would have recognized that this "facial feature information" would have been data extracted from an image captured of the user. But *Ikeda* does not explicitly disclose storing that image but, rather, the "facial feature information" extracted from the image.

312. *Ikeda* recognizes situations in which the in-vehicle device 10 receives

data from multiple portable devices in the vehicle. *See, e.g., Ikeda*, [0201]-[0237] (Fourth Embodiment) and [0238]-[0273] (Fifth Embodiment). Specifically, *Ikeda* recognizes that sometimes the “multiple facial feature information items may be identified as belonging to the driver.” *Ikeda*, [0215]. A POSITA would have recognized that it was important to determine which data matches the driver so as to implement the correct user settings.

313. A POSITA would have recognized that retaining the original captured facial images would have permitted the resolution of this question by further processing of the original images. For example, consider a situation in which “facial feature information” typically consists of data representing a user’s nose, ear, and eye shape and/or location. In a situation where two users—both with portable devices in the vehicle by only one of whom is seated in the driver’s seat—have identical data concerning nose, ear, and eye shape and/or location. *Ikeda* anticipates such a situation when it describes the case of twin brothers both sitting in the vehicle. *See Ikeda*, [0215]. In such a case, if the system had stored the original images it could directly compare those images to detect any additional facial feature information (such as, for example, check structure or blemishes). That additional data could then be compared with an image obtained of a user sitting in the driver’s seat to determine which of the portable devices belongs to the user.

314. A POSITA would have known that it would be an inefficient use of processing power and to extract all possible facial feature metrics at the outset, as most users can be distinguished from one another based on just a few facial feature metrics and the additional processing would only be required in scenarios when two users closely resembling one another exist in the vehicle at the same time.

315. the “in-vehicle device 10” has received two pieces of facial data that both appear to belong to the driver. *Ikeda*, [0238]-[0273]. *Ikeda* recognizes a situation in which two users with portable devices both are present in the vehicle. *Ikeda*,

316. There are many reasons why modifying *Ikeda*'s disclosure to match an image to a stored image in a data structure would have been obvious to a POSITA. A POSITA would have considered such changes to *Ikeda* because they involved (A) combining prior-art elements according to known methods to yield predictable results (e.g., storing *Yasui*'s technique for matching an image to a stored image in a data structure); (B) use of a known technique (e.g., *Yasui*'s technique for matching an image to a stored image in a data structure) to improve similar devices in the same way (e.g., *Ikeda*'s vehicle control system); (C) applying a known technique (e.g., *Yasui*'s technique for matching an image to a stored image in a data structure) to a known device (e.g., *Ikeda*'s vehicle control system) ready for improvement to yield predictable results.

317. A POSITA would have had a reasonable expectation of success in combining *Ikeda*'s disclosure with *Yasui*'s to match an image to a stored image in a data structure. Doing so would have simply required modification of software to compare a captured image with a stored image. Writing code to implement functions taught by the prior art was well within the skill of a POSITA at the time of the alleged invention. And neither the '034 patent nor the prior art suggestion that special software programming or algorithms were needed to achieve the claimed feature, confirming that such was well within the level of skill in the art at the time of the alleged invention. *See, e.g.,* '034 patent, 16:25-44.

318. Accordingly, in my opinion, *Ikeda* renders obvious any additional limitations of claim 11.

F. Grounds 6a/b: *Ikeda* in view of *Zellner* (Ground 6a) and *Ikeda* in view of *Morehouse* and *Zellner* (Ground 6b) renders obvious claims 7 and 17.

319. *Ikeda* discloses or, alone or in view of *Morehouse*, renders obvious claims 1 and 14, from which claims 7 and 17 depend. *Supra* §§ IX.C. and IX.D.

1. Claim 7: The method of claim 1, wherein said corresponding settings is stored in cloud storage.

320. *Ikeda* in view of *Zellner* or *Ikeda* in view of *Morehouse* in further view of *Zellner* renders obvious *wherein said corresponding settings is stored in cloud storage*.

321. *Zellner* discloses “systems and methods that can store user

preferences at a remote location.” *Zellner*, [0046]. These “user preferences” (*corresponding settings*) can include “radio stations,” “seat position,” “temperature for an automobile,” etc. *Zellner*, [0049]. *Zellner*’s “environment 102”—such as a car—“can send a preference request to remote network 210 to determine the desired preference data.” *Zellner*, [0059].

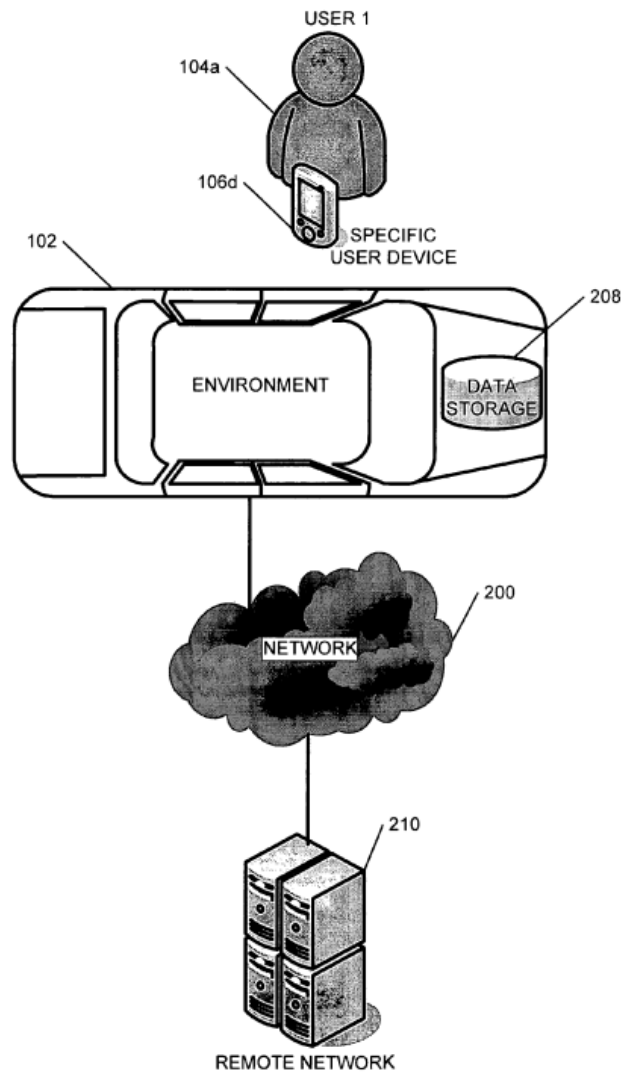


FIG. 2

Zellner, Fig. 2.

322. It would have been obvious to combine *Ikeda*'s vehicle control system with *Zellner*'s cloud storage of corresponding settings and corresponding ability to query that cloud storage. Further, a POSITA would have understood that *Zellner*'s disclosure of a "remote network 210" as *cloud storage*. *Zellner*'s disclosed "remote network 210"—accessible through "network 200"—provides for the remote storage of data that can be access via a variety of devices and vehicle systems. *Zellner*, [0068]. A POSITA would have been motivated to combine *Zellner*'s "remote network" disclosure with *Ikeda*'s vehicle control system to ensure a user's settings are applied wherever possible, because storing corresponding settings in cloud storage allows "any environment" (e.g., any vehicle) "communicatively coupled to the remote network" to "receive the stored user preferences, and configure at least one setting according to those preferences." *Zellner*, [0068]; *compare* '034 patent, 10:36-39 ("The stored data [], being stored in a cloud or in a distant facility, may be exchanged among vehicles"); Additionally, a POSITA would have been motivated to store corresponding settings in cloud storage so that the limited local memory on the vehicle could be used for storing other data.

323. There are many reasons why modifying *Ikeda*'s disclosure to store corresponding settings in cloud storage and send queries to the cloud storage would have been obvious to a POSITA. A POSITA would have considered such changes to *Ikeda* because they involved (A) combining prior-art elements

according to known methods to yield predictable results (e.g., storing *Ikeda*'s corresponding settings in cloud storage for retrieval); (B) use of a known technique (e.g., storing data in cloud storage) to improve similar devices in the same way (e.g., *Ikeda*'s vehicle control system); (C) applying a known technique (e.g., storing data in cloud storage) to a known device (e.g., *Ikeda*'s vehicle control system) ready for improvement to yield predictable results.

324. A POSITA would have had a reasonable expectation of success in combining *Ikeda*'s disclosure with *Zellner*'s to store corresponding settings in cloud storage because doing so would require the simple modification of computer code, a task well within the ability of a POSITA at the time of the alleged invention. *See Boling*, [0018] (disclosing a database containing information on vehicle diagnostics that “comprises multiple server computers distributed anywhere within the network [] (i.e., cloud computing)”). Writing code to implement functions taught by the prior art was well within the skill of a POSITA at the time of the alleged invention. And neither the '034 patent nor the prior art suggestion that special software programming or algorithms were needed to achieve the claimed feature, confirming that such was well within the level of skill in the art at the time of the alleged invention. *See, e.g.*, '034 patent, 16:25-44; *Zellner*, [0075]-[0076].

325. Accordingly, in my opinion, *Ikeda* in view of *Zellner* renders obvious

any additional limitations of claim 7.

**2. Claim 17: The computer readable medium of claim 16,
wherein the data structure is stored in cloud storage.**

326. *Ikeda* in view of *Zellner* or *Ikeda* in view of *Morehouse* in further view of *Zellner* renders obvious claim 17, including *wherein the data structure is stored in cloud storage*.

327. *Ikeda* discloses storing *corresponding settings* in a *data structure*. *Supra* §§ IX.C.2 (claim 7) and IX.C.10 (claim 16).

328. *Ikeda* also discloses *wherein the data structure is stored in cloud storage*. *Supra* § IX.C.11 (claim 17).

329. *Zellner* further discloses “utilizing the user identifier to access a database to retrieve preference data related to that user,” via a “remote network.” *Zellner*, [0110]. Thus, *Zellner* also discloses storing a *data structure* (“database”) in *cloud storage* (“remote network”).

330. A POSITA would have known the many advantages of storing the data structure in cloud storage. For example, a POSITA would have been motivated to store the data structure in cloud storage so that a user could access and implement these settings in more than one vehicle. Additionally, a POSITA would have been motivated to store the data structure in cloud storage so that the limited local memory on the vehicle could be used for storing other data. Further, a POSITA would have recognized cloud storage as a solution readily available to

accomplish the above-mentioned motivations. *See supra* § XI.F.1 (claim 7).

331. There are many reasons why combining *Ikeda*'s disclosure with *Zellner*'s would have been obvious to a POSITA. A POSITA would have considered such changes to *Ikeda* because they involved (A) combining prior-art elements according to known methods to yield predictable results (e.g., storing *Ikeda*'s data structure in cloud storage); (B) use of a known technique (e.g., storing a data structure in cloud storage) to improve similar devices in the same way (e.g., *Ikeda*'s vehicle control system); (C) applying a known technique (e.g., storing a data structure in cloud storage) to a known device (e.g., *Ikeda*'s vehicle control system) ready for improvement to yield predictable results.

332. A POSITA would have had a reasonable expectation of success in combining *Ikeda*'s disclosure with *Zellner*'s disclosure of a *data structure* ("database") stored in *cloud storage* ("remote network") because doing so would require nothing more than the simple modification of computer code, a task well within the ability of a POSITA at the time of the alleged invention. *See Boling*, [0018]. Writing code to implement functions taught by the prior art was well within the skill of a POSITA at the time of the alleged invention. And neither the '034 patent nor the prior art suggestion that special software programming or algorithms were needed to achieve the claimed feature, confirming that such was well within the level of skill in the art at the time of the alleged invention. *See, e.g.*,

'034 patent, 16:25-44; *Zellner*, [0075]-[0076].

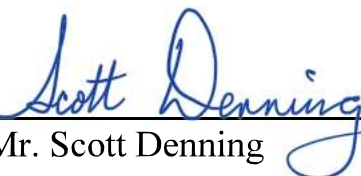
333. Accordingly, in my opinion, *Ikeda* in view of *Zellner* renders obvious any additional limitations of claim 17.

X. Conclusion

334. For the reasons set forth above, I believe claims 1 and 7-17 of the '034 patent are unpatentable in view of the prior art. In signing this declaration, I understand that the declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I acknowledge that I may be subject to cross-examination in this case and that cross-examination will take place within the United States. If cross-examination is required of me, I will appear for cross-examination within the United States during the time allotted for cross-examination.

335. I declare that all statements made herein of my knowledge are true, that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated: April 29, 2025

By: 
Mr. Scott Denning