

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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KIA CORP. and TOYOTA MOTOR CORP.,  
Petitioners,

v.

EMERGING AUTOMOTIVE LLC,  
Patent Owner.

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IPR2024-00981  
Patent 9,365,188 B1

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Before GEORGIANNA W. BRADEN, FRANCES L. IPPOLITO, and  
DANIEL J. GALLIGAN, *Administrative Patent Judges*.

BRADEN, *Administrative Patent Judge*.

JUDGMENT  
Final Written Decision  
Determining All Challenged Claims Unpatentable  
*35 U.S.C. § 318(a)*

## I. INTRODUCTION

In this *inter partes* review, Kia Corp. and Toyota Motor Corp. (collectively “Petitioner”) challenge the patentability of claims 1–20 of U.S. Patent No. 9,365,188 B1 (Ex. 1001, “the ’188 patent”), which is assigned to Emerging Automotive LLC (“Patent Owner”).

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision, issued pursuant to 35 U.S.C. § 318(a), addresses issues and arguments raised during the trial in this *inter partes* review. For the reasons discussed below, we determine Petitioner has proven by a preponderance of the evidence that claims 1–20 of the ’188 patent are unpatentable in view of the challenges based on Kleve, but has failed to prove that claims 1–20 are unpatentable in view of the challenges based on Zaid. *See* 35 U.S.C. § 316(e) (2018) (“In an *inter partes* review instituted under this chapter, the petitioner shall have the burden of proving a proposition of unpatentability by a preponderance of the evidence.”).

### A. Procedural History

Petitioner filed the original Petition (Paper 3, “Pet.”) challenging claims 1–20 of the ’188 patent on the following basis:

<b>Claim(s) Challenged</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>
1–9, 11–20	103	Kleve <sup>1</sup>
1–9, 11–20	103	Kleve, Sekiyama <sup>2</sup>
10	103	Kleve, Mottla, <sup>3</sup> Sekiyama

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<sup>1</sup> U.S. Patent Application Publication No. 2014/0129053 A1, published May 8, 2014 (Ex. 1004) (“Kleve”).

<sup>2</sup> JP Patent Application No. 2008-301427, published June 10, 2010, filed Nov. 26, 2008 (Ex. 1005 (translation of Ex. 1006)) (“Sekiyama”).

<sup>3</sup> U.S. Patent Application Publication No. 2011/0060480 A1, published Mar. 10, 2011 (Ex. 1010) (“Mottla”).

<b>Claim(s) Challenged</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>
1, 3, 5–7, 9, 11–16, 18–20	103	Zaid, <sup>4</sup> Harris <sup>5</sup>
2, 4, 8, 10	103	Zaid, Harris, Mottla
17	103	Zaid, Harris, Patenaude <sup>6</sup>
17	103	Kleve, Patenaude

Pet. 2. Patent Owner filed a Preliminary Response (Paper 7, “Prelim. Resp.”). Petitioner filed an authorized Reply to Patent Owner’s Preliminary Response (Paper 8, “Prelim. Reply”), and Patent Owner filed an authorized Sur-reply to Petitioner’s Reply (Paper 9, “Prelim. Sur-reply”). Trial was instituted on the asserted grounds of unpatentability. Paper 10 (“Inst. Dec.”), 56.

During the trial, Patent Owner filed a Response (Paper 16, “PO Resp.”), Petitioner filed a Reply (Paper 24, “Pet. Reply”), and Patent Owner filed a Sur-reply (Paper 30, “PO Sur-reply”). An oral hearing was held on September 19, 2025, a transcript of which appears in the record. Paper 35 (“Tr.”).

Petitioner relies on testimony from Kevin C. Almeroth, Ph.D. (“Dr. Almeroth”). Exs. 1003, 1198. Patent Owner relies on testimony from Sam Malek, Ph.D. (“Dr. Malek”). Exs. 2001, 2029. The parties have entered into the record deposition transcripts of these declarants. Ex. 1048 (Malek Deposition); Ex. 2030 (Almeroth Deposition).

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<sup>4</sup> U.S. Patent Application Publication No. 2011/0112969 A1, published May 12, 2011 (Ex. 1008) (“Zaid”).

<sup>5</sup> U.S. Patent Application Publication No. 2011/0312273 A1, published Dec. 22, 2011 (Ex. 1009) (“Harris”).

<sup>6</sup> U.S. Patent Application Publication No. 2006/0136106 A1, published June 22, 2006 (Ex. 1011) (“Patenaude”).

*B. Real Parties in Interest*

Petitioner identifies Toyota Motor Corp., Toyota Motor North America, Inc., and Toyota Motor Sales, U.S.A., Inc., Kia Corp., and Kia America Inc., as the real parties-in-interest. Pet. 68. Patent Owner identifies Emerging Automotive LLC as the real party-in-interest. Paper 4 (Patent Owner’s Mandatory Disclosures), 2.

*C. Related Matters*

The parties indicate that the ’188 patent has been asserted in the following district court litigations: (1) *Emerging Automotive LLC v. Toyota Motor North America, et al.*, 2:23-cv-00434 (E.D. Tex.); and (2) *Emerging Automotive LLC v. Kia Corp., et al.*, 2:23-cv-00437 (E.D. Tex.). Pet. 68–69; Paper 4, 2. Petitioner further indicates that the cases have been consolidated for pretrial issues with the lead case being *Emerging Automotive LLC v. Kia Corp.*, No. 2:23-cv-00437-JRG (E.D. Tex.). Pet. 69.

*D. The ’188 patent*

The ’188 patent is titled “Methods and Systems for Using Cloud Services to Assign E-Keys to Access Vehicles” and it issued on June 14, 2016. Ex. 1001, codes (45), (54). It is a continuation-in-part of a U.S. patent application and claims priority to several other continuation and continuation-in-part applications, as well as two provisional applications, the earliest of which was filed on April 22, 2011. *Id.* at codes (60), (63).

*1. Written Description*

The ’188 patent relates to systems and methods for generating and sharing electronic keys (e-Keys) with users and cloud-based processing systems. Ex. 1001, 1:33–35. In some embodiments, the ’188 patent discloses providing vehicle access to individuals, including an owner or “guest driver,” e.g., a friend, service person, or valet. *Id.* at 8:40–51.

According to the '188 patent, this access can be provided by an electronic key, or e-key, which allows the holder of the e-key to use the vehicle. *Id.* at 8:52–54. The '188 patent discloses that an e-key may be sent from a vehicle owner to another person, such as a guest. *Id.* at 8:54–63. The e-key allows use of the vehicle, and can further include privileges for the user, including speed limits, geographic restrictions, amount of time, etc. *Id.*

The '188 patent describes creating profiles for users that have privileges set by an administrator. *Id.* at 14:52–57. For example, accounts for a driver may be created with “defined roles,” which can “include a set of privileges,” such as speed limit or geographic privileges. *Id.* at 36:24–35. In this way, according to the '188 patent, logins of user profiles can be dynamically controlled. For example, “[a]dministrators can decide which settings are locked for specific logins or roles, which are open for the login user to toggle and which settings are to be enforced.” *Id.* at 15:29–31. “[U]se of the vehicle can be restricted to predefined rules,” including those based on the user profile. *Id.* at 20:23–24.

In one embodiment of the '188 patent, a vehicle owner or administrator may initiate transfer of e-keys to a user's device, such as a smartphone. *Id.* at 26:3–6, 40:35–37. The '188 patent discloses that an e-key may provide access to the vehicle, but otherwise may have a “set[] level of privileges for the vehicle during the use of the electronic keys.” *Id.* at 39:58–60. Via the privileges, “specific vehicle aspects are enabled for the vehicle.” *Id.* at 39:67–40:2. The user can “then use the electronic Keys to use the vehicle in accordance with the privileges.” *Id.* at 40:45–47.

One embodiment of the '188 patent is illustrated in Figure 29, which is reproduced below:

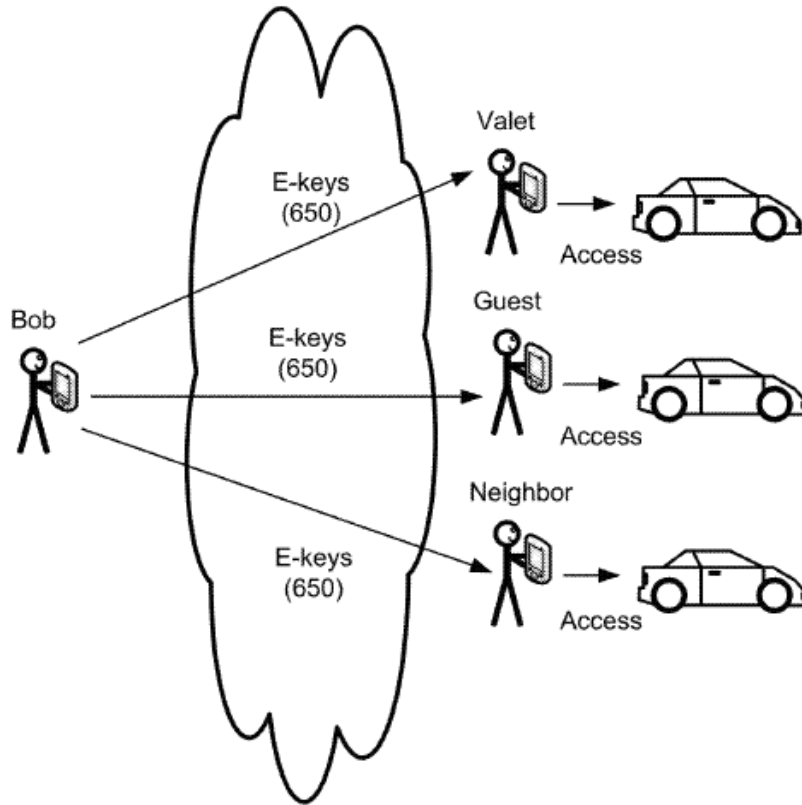


FIG. 29

Figure 29 of the '188 patent, above, is an illustration showing the assignment of “e-keys for enabling access of a vehicle to a remote user.” *Id.* at 8:14–15. In Figure 29, vehicle owner Bob shares electronic keys 650 with users “valet,” “guest,” and “neighbor,” each having “various privilege settings.” *Id.* at 40:64–66, 41:12–13.

Another embodiment of the '188 patent is illustrated in Figure 31A, which is reproduced below:

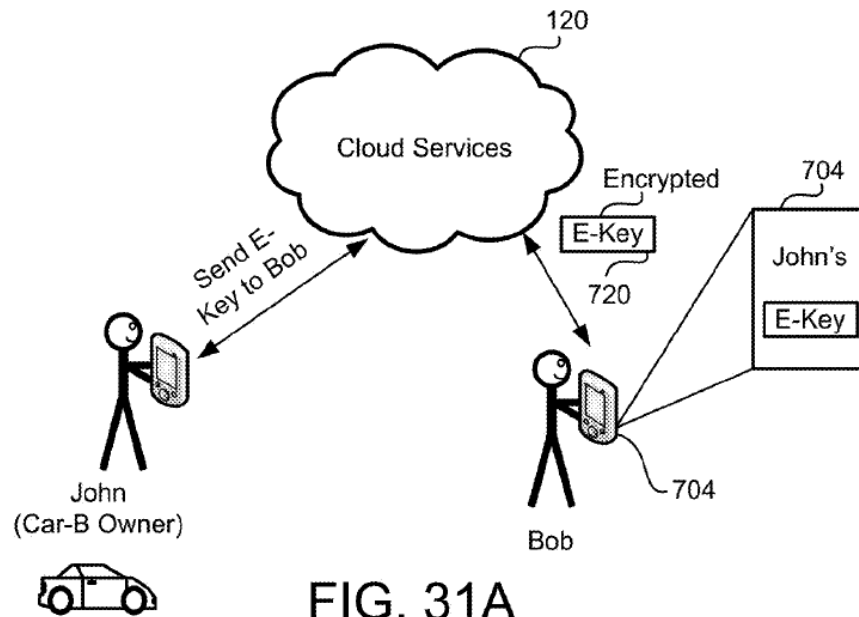
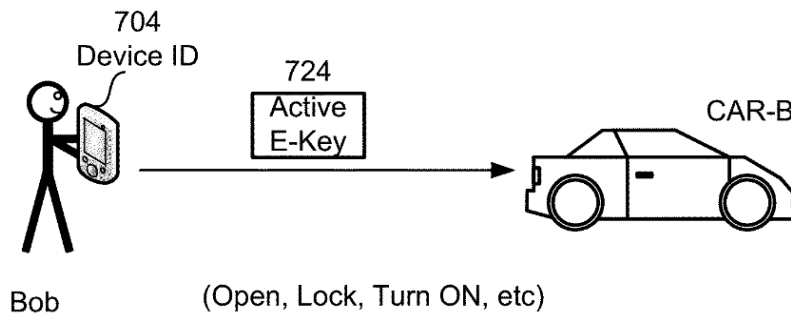


Figure 31A of the '188 patent, above, is an illustration showing a user (John) sending e-keys to another user (Bob) via mobile devices 702 (not labeled) and 704. *Id.* at 42:9–11. Per the '188 patent, the sending of the e-keys includes sending a request to a service, which may be operated by cloud services 120. *Id.* at 42:11–13. The '188 patent discloses that “[a]t the server, the server will generate an access code for the vehicle (carB)” and the “access code will then be encrypted by the server and then sent as encrypted e-keys 722 to Bob’s device 704.” *Id.* at 42:13–16. According to the '188 patent, Bob’s device 704 may be a mobile device, such as a smart phone. *Id.* at 42:16–17.

The '188 patent explains that “[e]ach e-key, in one embodiment, will include a unique access code or substantially unique access code.” *Id.* at 41:12–13. “The unique access code can be generated by a server, such as cloud services 120.” *Id.* at 41:13–15. “The unique generation of access codes enables each electronic keyed [sic] to be different for each user and each e-key can expire at any time set by a requesting user.” *Id.* at 41:20–24;

*see also id.* at 43:43–45 (“Each unique code can then be used to associate those e-keys with the same vehicle, but assigned to different devices/people with different privileges.”). The unique access code “can be generated by a number generator, and [sic] alphanumeric random generator, in [sic] incremental number generator, or any other generation device that can generate codes that are unique or substantially unique.” *Id.* at 43:25–28.

Another embodiment of the ’188 patent is illustrated in Figure 33, which is reproduced below:



**FIG. 33**

Figure 33 shows Bob using an e-key to unlock and start John’s vehicle (Car-B). *Id.* at 43:57–59. The ’188 patent discloses that “access by Bob is facilitated by the activated e-keys 724, which are used via device 704 having the device ID that is paired or associated with the access code associated with the activated e-keys 724.” *Id.* at 42:59–62.

## 2. Illustrative Claim

As noted previously, Petitioner challenges claims 1–20. Pet. 2. Claims 1, 16, and 19 are independent claims. Claim 1 is illustrative of the challenged subject matter and is reproduced below with Petitioner’s identifiers in brackets, which do not impact our analysis (*see* Pet. 2, List of Challenged Claims):

1. [1 preamble] A method, comprising,
  - [1a] receiving, by a server, a request from a user via a user account that has a vehicle associated therewith to generate an electronic key (e-key) for an identified recipient to use the vehicle, the request includes identifying information for enabling sending of the e-key to the recipient via an electronic transmission, the request includes a condition of use of the vehicle as set by the user via the user account;
  - [1b] generating, by the server, the e-key, the e-key being assigned with the condition of use of the vehicle;
  - [1c] transmitting, by the server, the e-key to the recipient using the identifying information so that a device of the recipient is implemented to use the e-key;
  - [1d] transmitting, by the server, data to the vehicle to enable use of the vehicle via the e-key; and
  - [1e] receiving, by the server, use data regarding use of the vehicle for when the vehicle is used via the e-key;
  - [1f] wherein the use data identifies information regarding the use of the vehicle, and the information identifies a violation of the condition of use;
  - [1g] wherein the server processes logic for generating the e-key and processes logic for analyzing the data regarding use of the vehicle when the e-key is used for the vehicle, the server or other servers connected to the server being accessible over the Internet, the vehicle having wireless communication systems for communicating with the server or other servers and for communicating with devices local to the vehicle.

Ex. 1001, 49:29–57.

## II. PRELIMINARY MATTERS

### *A. Claim Construction*

A claim “shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under

35 U.S.C. [§] 282(b).” 37 C.F.R. § 42.100(b). Under that standard, the “words of a claim ‘are generally given their ordinary and customary meaning.’” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc).

Petitioner contends express claim construction is unnecessary and states that all terms should be given their plain and ordinary meaning. Pet. 8. Patent Owner does not address claim construction in its Response.

Construction is needed only for those terms “that are in controversy, and only to the extent necessary to resolve the controversy.” *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)). There are no claim terms in controversy that need be construed for our analysis.

#### *B. Principles of Law Regarding Obviousness*

A claim is unpatentable “if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains.” 35 U.S.C. § 103; *see KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) where in evidence, objective evidence of non-obviousness.<sup>7</sup> *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). When evaluating a combination of teachings, we must also

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<sup>7</sup> Patent Owner has not presented objective evidence of non-obviousness.

“determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). Whether a combination of prior art elements would have produced a predictable result is an issue we weigh in the ultimate determination of obviousness. *Id.* at 416–17.

In an *inter partes* review, the petitioner must show with particularity why each challenged claim is unpatentable. *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016); 37 C.F.R. § 42.104(b). The burden of persuasion never shifts to the patent owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

We analyze the challenges presented in the Petition in accordance with the above-stated principles.

### *C. Level of Ordinary Skill in the Art*

In determining the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (quoting *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962, (Fed. Cir. 1986)). Furthermore, the prior art itself can reflect the appropriate level of ordinary skill in the art. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

Here, Petitioner asserts a person of ordinary skill in the art would have “had at least a four-year undergraduate degree in electrical engineering, automotive engineering, or [a] closely related field and [at] least two years of experience in the field of access control systems, vehicle electronics,

and/or cryptography.” Pet. 2 (citing Ex. 1003 ¶¶ 79–82). Dr. Almeroth supports Petitioner’s position and further testifies that “[a]dditional education could substitute for professional experience and vice versa.” Ex. 1003 ¶ 79.

Patent Owner does not assert a different level of skill in the art at the time of the alleged invention and appears to apply Petitioner’s proposed level of skill. *See* PO Resp. Patent Owner’s declarant, Dr. Malek, explicitly adopts Petitioner’s level of skill in the art but states that his opinions would be applicable under any reasonable definition for an ordinarily skilled artisan at the critical time. *See* Ex. 2001 ¶ 37.

For the purposes of this Decision, we too adopt Petitioner’s level of ordinary skill in the art because it appears consistent with the problems addressed in the ’188 patent and the prior art of record.

### III. ANALYSIS

#### A. *Summary of References*

##### 1. *Kleve (Ex. 1004)*

Kleve is a U.S. patent application publication titled “Credential Check and Authorization Solution for Personal Vehicle Rental.” Ex. 1004, code (54). Kleve discloses a vehicle computing system (“VCS”) that includes the ability to use a vehicle rental micro-business that is integrated into the VCS. *Id.* ¶ 36.

One embodiment of Kleve is shown in Figure 2, reproduced below.

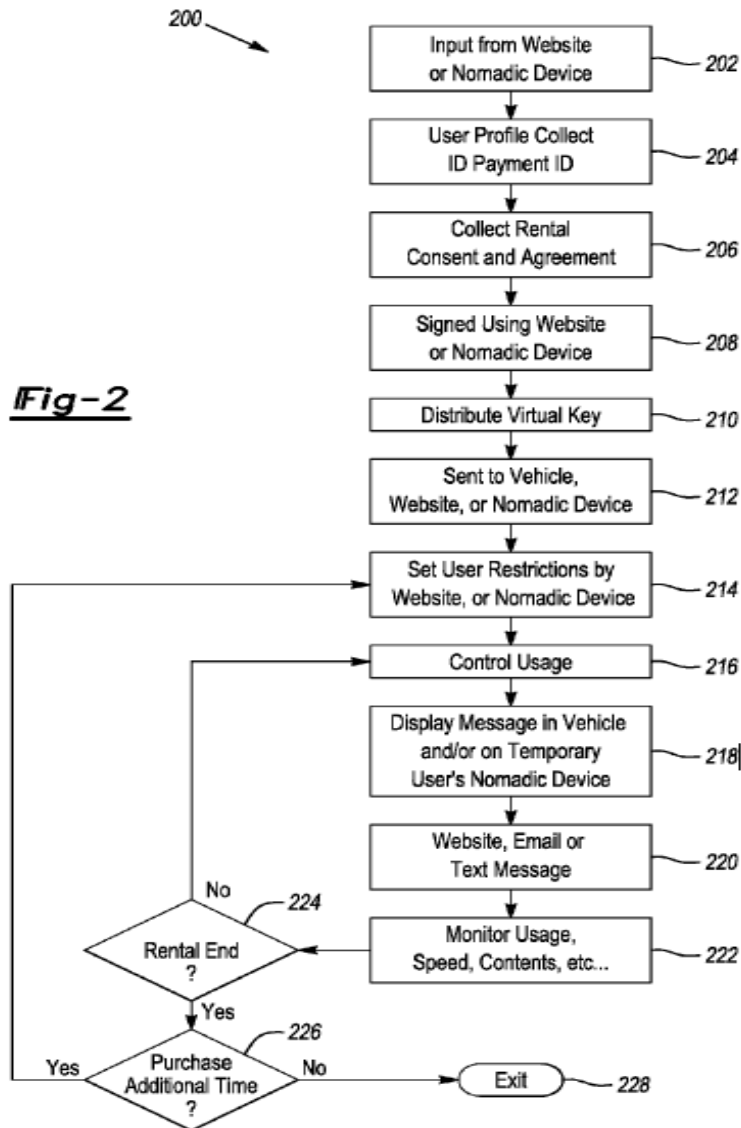


Figure 2, above, is a flow chart illustrating the steps of a vehicle rental micro-business as taught by Kleve. *Id.* ¶ 11. As part of Kleve’s system, an Owner and Temporary User “may set up a user profile using a website or a nomadic device communicating” with a site that is stored in a database. *Id.* ¶ 37, Fig. 2 at step 202. According to Kleve, a “Temporary User may also fill out a user profile using the website or nomadic device to include, but not limited to, photos of credit cards, photo of forms of ID, facial recognition, voice print recognition, matrix barcode (ex. two-dimensional code), code word or phrase for speech recognition, temporary mobile web login IDs and

password, or other types of unique Temporary User identification to validate and pay for the rental service at step 204.” *Id.* ¶ 37, Fig. 2 at step 204.

Using this system, an Owner can rent out their vehicle and the Temporary User may agree to terms to rent a vehicle. *Id.* ¶ 38.

Per Kleve, the Owner and Temporary User “may agree to terms and conditions for the rental period using the website or nomadic device” as shown at step 206 in Figure 2. *Id.* ¶ 38. Kleve discloses the use of an identifier from a vehicle rental administrative system that is configured to activate a vehicle during a prescribed rental period. *Id.* ¶¶ 7, 39. Kleve specifically discloses that in Figure 2 at step 210, the system generates a virtual key to distribute to the Temporary User and VCS (located within the vehicle itself). *Id.* ¶¶ 35, 39. Kleve then discloses that at step 214 of Figure 2, the Owner may have access to control use of the vehicle being rented by the Temporary User. *Id.* ¶ 40. According to Kleve, these restrictions “may be based on, but not limited to, the owner’s selection of parameters including, but not limited to, speed, global position coordinates, or load weight restrictions.” *Id.*

Kleve additionally explains that “during the rental term the VCS may monitor the Temporary User’s utilization of the vehicle including, but not limited to, renter verification, driving behavior, vehicle location, speed, fuel level, and other vehicle information requested by the vehicle owner.” *Id.* ¶ 73. “The continuous monitoring of the Temporary User’s behavior during the rental period may be transmitted to the server . . . .” *Id.* ¶ 76.

Kleve explains that Temporary User’s use of the shared vehicle may be subject to “restriction limits [privileges] initially set by the Owner at the beginning of the rental term.” *Id.* ¶ 43. According to Kleve, “[t]he restrictions may be based on, but not limited to, the [O]wner’s selection of

parameters including, but not limited to, speed, global position coordinates, or load weight restrictions.” *Id.* ¶ 40. Kleve specifies that during the rental term, the “control parameters” of the shared vehicle are “monitor[ed]” to determine whether a “restriction” has been exceeded. *Id.* ¶¶ 40, 53. When a restriction is exceeded, Kleve teaches that “the Temporary User and Owner may be notified.” *Id.* ¶ 40. Kleve discloses that “an in-vehicle display message may be sent [from the server] to notify the Temporary User if a restriction limit has been exceeded.” *Id.* ¶¶ 40, 53. Kleve states that “[t]he display message to alert the Temporary User of a restriction violation may be sent to the vehicle display information console.” *Id.* ¶ 53.

2. *Sekiyama (Ex. 1005)*

Sekiyama is a Japanese patent application publication titled “Electronic Key System.” Ex. 1005, code (54). Sekiyama provides an electronic key system that allows restrictions on functions that can be executed with a duplicate electronic key to be imposed when a duplicate electronic key is generated. *Id.* at code (57). Sekiyama discloses a server that generates an e-key. *Id.* ¶ 26 (“[A]n electronic key [is] outputted from the center server 20.”). This key performs “door lock . . . locking / unlocking” and “the permission for engine start.” *Id.* ¶ 18.

3. *Mottla (Ex. 1010)*

Mottla is a U.S. patent application publication titled “Mobile Device Application for Communicating with Vehicles.” Ex. 1010, code (54). Mottla explains that a mobile device can communicate directly with a vehicle-associated control module or through a reservation server using either a TCP/IP communications channel or near-field communications. *Id.* at code (57). A member enters a request using the user interface provided by the mobile-device application. *Id.* After the identity of the member is

validated, the vehicle-associated control module executes the request by sending a signal to a computer or sensor in the vehicle through the vehicle wiring or the vehicle CANbus. *Id.* The request can be a function, such as unlocking the vehicle doors, illuminating the interior or exterior lights, honking the horn, or activating a panic alarm. *Id.*

4. *Harris (Ex. 1009)*

Harris is a U.S. patent application publication titled “Cellular Phone Entry Techniques.” Ex. 1009, code (54). Harris explains that cell phones can be mated with a vehicle system and thereafter used to obtain access to the vehicle. *Id.* at code (57). A user who has a cell phone automatically can obtain access to the vehicle. *Id.* An embodiment describes a USB key that provides access to the vehicle, and in an emergency, either a complete or partial version of the key can be downloaded from a server. *Id.*

5. *Zaid (Ex. 1008)*

Zaid is a U.S. patent application publication titled “Vehicle Access Control Services and Platform.” Ex. 1008, code (54). Zaid discloses a car sharing system where renters use mobile devices to find vehicles, rent them for limited time periods, and use mobile devices to unlock and start the vehicle. *Id.* ¶¶ 67–69. During the rental, a mobile device receives an electronic key from a server and sends an encrypted vehicle reservation to the vehicle for access and use. *Id.* ¶ 70.

One embodiment of Zaid is shown in Figure 1, a block diagram, reproduced below. *Id.* ¶ 5.

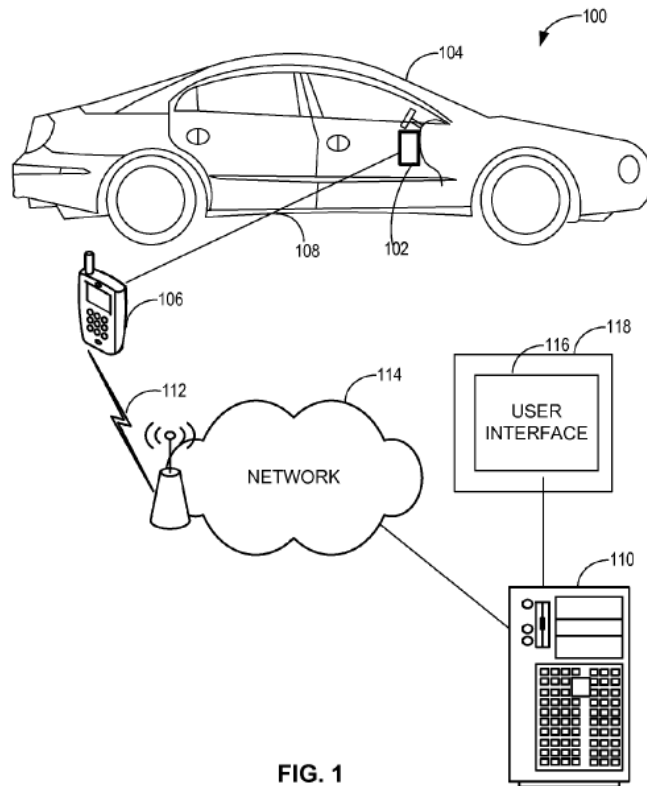


FIG. 1

Figure 1, above, is a block diagram illustrating an embodiment of system 100 for vehicle access control. *Id.* ¶ 5. Vehicle access component 102 provides access to vehicle 104 when a vehicle reservation is received from wireless communication device 106 via communication link 108. *Id.* ¶ 75. The wireless communication device 106 is connected to data network 114 via long-range wireless communication link 112, such as cellular communication link and/or satellite communication link. *Id.* ¶ 76. A vehicle reservation is received by wireless communication device 106 from central server 110 sitting on data network 114 via long-range wireless communication link 112 or a wired link. *Id.*

Zaid's vehicle access component can be integrated into a "vehicle access kit," containing electronic components such as a microprocessor, memory, and a communication interface (WiFi or Bluetooth) for communicating to a remote server via the user's mobile device. *Id.* at Fig. 2,

¶¶ 83, 86–87. Additionally, a long-range communication function can be added to the communication interface to “act as a backup” in case communication via the user’s mobile phone is unavailable. *Id.* ¶ 106.

Zaid discloses that server 110 interacts with a plurality of vehicle access control systems for providing access control to a plurality of vehicles, which may be geographically distributed across different locations. *Id.* ¶ 80. According to Zaid, a customer uses their wireless communication device 106 to search for and make a reservation for a vehicle, which is communicated to central server 110. *Id.* ¶¶ 76–77. The vehicle reservation is booked at the server 110 via a user interface 116 displayed on a computing device 118. *Id.* ¶ 80. In various embodiments in Zaid, computing device 118 can be any suitable computing device that has a connection to central server 110 and can support user interface 116. *Id.*

Another embodiment of Zaid is shown in Figure 5, which is a flow chart reproduced below:

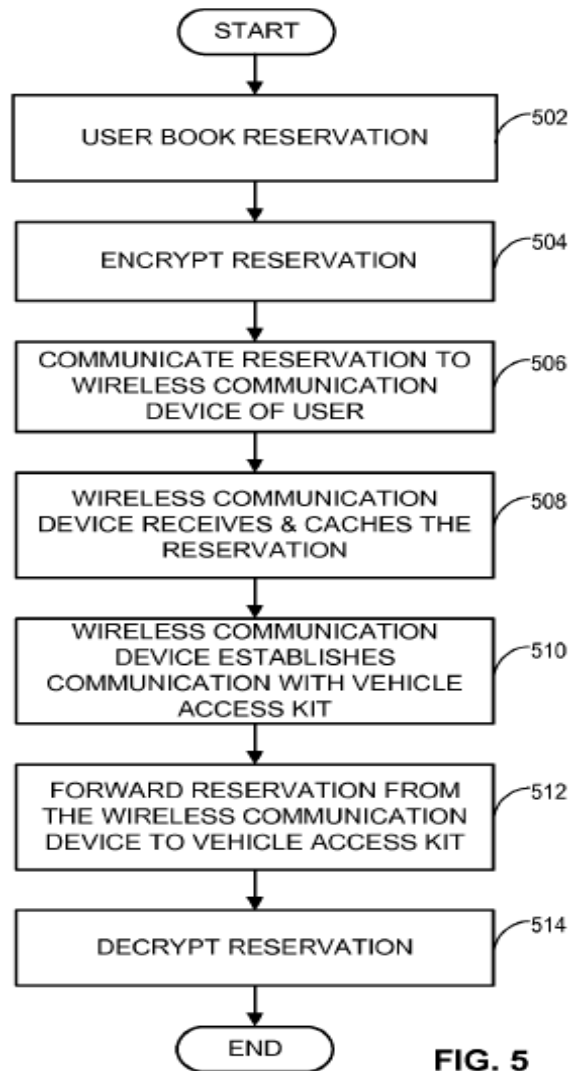


Figure 5 illustrates an example of receiving a vehicle reservation request from a wireless communication device. *Id.* ¶ 125. Zaid explains that at step 504, the vehicle reservation is encrypted. *Id.* According to Zaid, the central server encrypts the message containing the vehicle reservation, where the encryption includes multiple layers. *Id.* Zaid discloses that the vehicle reservation is encrypted in (1) a first layer of encryption using a public key of the wireless communication device the vehicle reservation will be sent to, and (2) a second layer of encryption using a public key of a vehicle access kit that provides access control to the vehicle. *Id.* Zaid then

discloses that the first layer of encryption can be decrypted using a private key of the wireless communication device, while the second layer of encryption can be decrypted using a private key of a vehicle access kit. *Id.*

Zaid discloses that at step 508, the wireless communication device receives and caches the reservation. *Id.* ¶ 126. In various embodiments, the wireless communication device decrypts the first layer of encryption encrypted using the public key of the wireless communication device using a locally stored private key of the wireless communication device. *Id.* In various embodiments, decryption is used to ensure and authenticate that the intended wireless communication device is receiving the vehicle reservation rather than one that intercepts the vehicle reservation. *Id.*

Zaid further discloses that vehicle access can be withdrawn when a vehicle reservation becomes invalid, such as when the time-out period elapses, when the reservation period ends, or when the vehicle is out of the communication range of the vehicle access control system. *Id.* ¶ 131.

#### 6. *Patenaude (Ex. 1011)*

Patenaude is a U.S. patent application publication titled “Method of Determining and Predicting Entertainment Selections for Telematics Units.” Ex. 1011, code (54). Patenaude “relates to providing entertainment in a vehicle by determining an entertainment selection profile.” *Id.* ¶ 1. Patenaude’s method includes using telematics unit 120 to monitor entertainment selections in a mobile vehicle communication system (MVCS) 100. *Id.* ¶¶ 18, 42. To do this and as an example, an “algorithm searches the acquired data to determine if the FM radio is tuned to the same received FM frequency signal within a specified time frame each weekday for the specific user.” *Id.* ¶ 70.

*B. Claims 1–9 and 11–20 Allegedly Rendered Obvious by Kleve Alone or in Combination with Sekiyama*

Petitioner contends that Kleve alone or in combination with Sekiyama teaches every limitation of claims 1–9 and 11–20. Pet. 8–37. Patent Owner disagrees. PO Resp. 1–3, 4–60. Patent Owner specifically challenges whether Petitioner has shown that Kleve alone or with Sekiyama teach limitation (a) a “request from a user via a user account . . . to generate an electronic key . . . the request includes a condition of use of the vehicle as set by the user via the user account,” and/or (b) “generating, by the server, the e-key, the e-key being assigned/associated with the condition of use of the vehicle,” as required by the challenged independent claims. *See, e.g., id.* at 7–12.

*1. Discussion of Independent Claim 1*

*a) Limitation [1a]*

Claim 1 recites the following step:

[1a] receiving, by a server, a request from a user via a user account that has a vehicle associated therewith to generate an electronic key (e-key) for an identified recipient to use the vehicle, the request includes identifying information for enabling sending of the e-key to the recipient via an electronic transmission, the request includes a condition of use of the vehicle as set by the user via the user account.

Ex. 1001, 49:30–37.

*(i) Petitioner’s Contentions*

For this limitation, Petitioner contends that “Kleve discloses ‘a vehicle rental micro-business’ which comprises a *server*.” Pet. 9 (citing Ex. 1004 ¶¶ 35 (“[T]he exemplary processes may be executed by a . . . remote computing system (e.g., . . . a server).”), 36 (“The vehicle rental micro-business 200 may include a website.”), 69 (“server 634”)). According to

Petitioner, a user in Kleve creates a user profile on the server that Petitioner contends is the required “user account,” and the user is required to include vehicle information in the user profile. *Id.* Petitioner asserts a person of ordinary skill in the art at the critical time would have understood that the website and database were part of a server system, because websites were hosted on servers and interacted with database servers. *Id.* (citing Ex. 1003 ¶ 104).

Petitioner next contends that Kleve’s Temporary User is an “identified recipient” who identifies himself or herself by creating a user profile for renting a car, and includes identification and payment in the user account. *Id.* at 10 (citing Ex. 1004 ¶¶ 36–37). Petitioner asserts that after the Temporary User selects a vehicle, “the Temporary User and vehicle Owner agree to terms 316,” and then the agreement “can be signed and payment made through the website.” *Id.* (citing Ex. 1003 ¶¶ 105–106; Ex. 1004 ¶ 47).

Petitioner then contends that after coming to an agreement, “the Vehicle Owner (user) sends a request to the server via their user profile (user account) to generate a virtual key, an e-key.” *Id.* at 10 (emphasis omitted). Petitioner relies on Kleve’s disclosure that “the vehicle Owner may enter in vehicle authorization credentials based on information received by the Temporary User to set up a virtual key.” *Id.* (quoting Ex. 1004 ¶ 62). Petitioner notes Kleve’s statement that such a request is “entered into the server.” *Id.* (citing Ex. 1004 ¶ 63). According to Petitioner, the “entering of this information is a request sent by the user to generate an e-key.” *Id.* at 10–11. Petitioner asserts that Kleve’s virtual key is only generated after the Vehicle Owner has “already setup a user profile,” which is “a user account.” *Id.* at 11 (citing Ex. 1004 ¶ 62; Ex. 1003, Fig. 5). Petitioner

concludes that the request is made via a user account because the Vehicle Owner “may enter in vehicle authorization credentials [*i.e.*, make a request] . . . to set up a virtual key.” *Id.* (alteration in original; citing Ex. 1003 ¶¶ 107–108).

Petitioner then provides alternative argument why Kleve’s server would have generated the virtual e-key in response to a request made via a user account. *Id.* at 11–13 (citing Ex. 1004 ¶¶ 109–114). Petitioner also provides an explanation of how and why the e-key would have been sent via an electronic transmission (*id.* at 14) to an identified recipient to use the vehicle (*id.* at 13–14).

Petitioner further contends that a Vehicle Owner’s request in Kleve may set conditions of use of the vehicle via the owner’s user profile because a rental agreement is negotiated through the user profiles (*i.e.*, user accounts) on the website and the agreement includes the rental period. Pet. 15 (citing Ex. 1003 ¶¶ 118–123; Ex. 1004 ¶¶ 38 (“The Owner and Temporary User may agree to terms and conditions for the rental period using the website.”), 47). According to Petitioner, Kleve discloses that the agreed conditions are sent with the request to generate a virtual key, which “enable[s] the keyless drive system for the appropriate Temporary User during a given rental period.” *Id.* (emphasis omitted) (citing Ex. 1003 ¶ 120; Ex. 1004 ¶¶ 39, 68 (“Once the rental period has expired the virtual key may be reset and cleared from the VCS.”)); *see also* Tr. 11:2–7 (Kleve’s “paragraph 39 is the critical disclosure and express disclosure of a restriction on use that is associated with the E-Key, it is a rental period and it states that the E-key is enabled for that rental period” and “[t]his E-key is directed at step 210,” which is “before step 214.”).

Petitioner additionally argues that enforcing a rental period before a rental period begins is both common sense and clear from Kleve's disclosure. Pet. Reply 2. Petitioner cites to Kleve's Figure 6 to demonstrate that the parties agree to the restrictions (i.e., the rental period including both the start and end time for the rental period), after which the vehicle owner's device sends a request to simultaneously "Generate Virtual Key and Vehicle Restrictions." *Id.* at 3 (citing Ex. 1004, Fig. 6; Ex. 1003 ¶ 111; Pet. 12), 12. Then the Temporary User can use the vehicle "within the scheduled rental time," which "Appl[ies] Restrictions." *Id.* at 3 (alteration in original; citing Ex. 1004 ¶ 70, Fig. 6). Petitioner notes that "Kleve makes clear that the virtual key is transmitted well before the start of the rental period." *Id.* at 16 (citing Ex. 1004 ¶¶ 39, 51, 54, 62, 69–70, 75, Figs. 3–7). Petitioner argues that association of the rental period with the E-key is "critical to the security in Kleve" because if the rental period were not associated with the E-key than "an unscrupulous renter could just go to the car and at the very least, gain access to that car." Tr. 15:5–10. Petitioner thus concludes that it would be advantageous and obvious to associate the virtual key with the restrictions to limit a vehicle's use to the agreed upon rental period and that Kleve teaches to do so. Pet. Reply 16.

(ii) *Patent Owner's Contentions*

Patent Owner disagrees with Petitioner's reading of Kleve and contends there is no teaching of a "a request . . . to generate an electronic key" where "the request includes a condition of use of the vehicle as set by the user via the user account" and where "the e-key being assigned with the condition of use of the vehicle." PO Resp. 1–3, 4–60; PO Sur-Reply 4, 6. Patent Owner contends that: (1) a rental period is not a user restriction and

is not part of the e-key; (2) neither the “set up” of a virtual key nor the distribution of a virtual key includes the rental agreement terms or any other restrictions; (3) to monitor and control vehicle usage, a Vehicle Owner may “set user restrictions,” but that is done after creating the e-key; (4) Kleve’s virtual key credential is operable independent of the agreed-upon rental period and (5) Kleve lacks any request to generate an e-key that includes a “condition of use.” *Id.* According to Patent Owner, Kleve specifically teaches that any alleged “restrictions,” which are what Petitioner uses as the required “condition of use,” are requested only after the alleged e-key is generated and distributed. PO Resp. 4 (citing Ex. 1004 ¶ 43, Fig. 2; Ex. 2029 ¶ 46); PO Sur-Reply 2, 6; Tr. 42:15–18.

Patent Owner relies on Kleve’s Figures 2 and 5 to support its position that the vehicle owner does not “have access to control usage of the vehicle being rented by the Temporary User” until step 214 (in Figure 2) and step 506 (in Figure 5), after a virtual key is distributed. PO Resp. 5–6 (citing Ex. 1004, Figs. 2, 5, ¶¶ 38, 40–41, 43, 51, 84, 86, 89). According to Patent Owner, the parties agree to specific conditions for a vehicle when they are negotiating terms for a contract. *Id.* at 7 (citing Ex. 1004 ¶¶ 46, 84–85, 89–90, 38, Figs. 8–9). When the parties agree to final terms, a website can generate a rental agreement and collect payment and signatures. *Id.* (citing Ex. 1004 ¶¶ 38, 47, 85, 90, Fig. 3A). But Patent Owner argues that Kleve fails to teach a way for the parties’ agreed-upon conditions to be included in the set up or distribution of an e-key. *Id.* at 8.

Patent Owner contends that the vehicle owner can set user restrictions at the beginning of the rental term (as shown in step 214 of Figure 2), which is after the distribution of the virtual key (in step 210), wherein those restrictions will be monitored and controlled by the vehicle’s VCS (at

step 222). PO Resp. 8 (citing Ex. 1004, Fig. 2, ¶¶ 40–41, 43, 51, 75; Ex. 2029 ¶¶ 66–70). Patent Owner argues that using these distinct methods, the vehicle owner can then enforce compliance with the restriction “by inputting, for example, load weight restrictions, as well as set additional user restrictions that are not necessarily agreed or contemplated in the rental agreement.” *Id.* at 8 (citing Ex. 2029 ¶ 46), 22–23 (citing Ex. 1004, Figs. 3B, 7B, ¶¶ 53, 79–80).

Patent Owner asserts that the means for setting the restrictions and monitoring such restrictions is a distinct operation from making the rental agreement and sending out the e-key. *Id.* at 12–13. Patent Owner then goes further and argues that

[b]ecause the Owner does not have the option to set rental restrictions until the beginning of the rental term at step 214—when those restrictions are “initially set”—neither the rental agreement terms themselves, nor the generation of a virtual key (each of which precedes the distribution of the virtual key, at step 210) could possibly qualify as Kleve’s Owner-set restrictions.

PO Resp. 13–14 (citing Ex. 1004 ¶¶ 40–41, 43, Fig. 2). Additionally, Patent Owner asserts that the server already knows the rental period because it has the rental agreement and therefore the vehicle owner would not need to “re-send to the server the very rental agreement it already has and ‘knows.’” PO Sur-Reply 3 (citing Ex. 1003 ¶ 108; Ex. 1004 ¶ 47 (server generates, stores and maintains rental agreement))

Patent Owner further argues that a rental period cannot be a condition that is part of an e-key because the rental end period can be extended and the same e-key will continue to work for remote access of a rented vehicle. PO Resp. 18–19 (citing Ex. 1004 ¶ 43). Patent Owner notes that “[a]t step 226, if the Temporary User decides that he may need to purchase additional rental

time, the system may update the new rental period end time restriction and continue to monitor usage of the vehicle.” *Id.* at 18 (citing Ex. 1004, Fig. 2, ¶¶ 43, 54; Ex. 2029 ¶¶ 51, 53). Patent Owner argues that Kleve also provides examples where the virtual key remains operable after the rental term has ended and will not be terminated until the vehicle rental exit process, after the rental period is over. *Id.* at 23–24 (citing Ex. 1004 ¶ 54). According to Patent Owner, there is no way to “update” or change the rental period at steps 206, 208, or 210 of Figure 2, which is when the rental agreement is negotiated or the e-key is created and distributed. *Id.* at 19; *see* PO Sur-Reply 14–17 (arguing that none of Figures 3, 6, or 7 provide a mechanism for extending the rental term).

Next, citing to Figure 5, Patent Owner contends that the vehicle owner can enter in “vehicle authorization credentials based on information received by the Temporary User to set up a virtual key.” PO Resp. 8–9 (citing Ex. 1004, Fig. 5, ¶ 62). According to Patent Owner, it is this “unique Temporary User identification or ‘credential’ that will ultimately be ‘used as a virtual key’” and it does not include any information about the rental period in it. *Id.* at 10 (citing Ex. 1004 ¶¶ 44, 63, 67). Patent Owner argues that the vehicle owner sends those credentials directly to the vehicle so that it can compare them to those entered by an authorized temporary “at rental time” and that means it is not necessary for the e-key to have the rental period associated with it. *Id.* at 11–12 (citing Ex. 2029 ¶¶ 61, 66, 70).

Lastly, Patent Owner contends that Dr. Almeroth’s testimony in support of Petitioner’s positions is incorrect and contrary to the express disclosures of Kleve. PO Resp. 27. Patent Owner argues that Dr. Almeroth’s proposed modification to Kleve “disregards and contradicts the very purpose and design of Kleve’s solution,” which is to allow the

Vehicle Owner alone the ability to control usage of their own vehicle. *Id.* at 29. Then, Patent Owner asserts that during his deposition “Dr. Almeroth admitted his testimony was wrong.” PO Sur-Reply 7 (citing Ex. 2030, 27:5–10, 27:21–28:1).

Thus, Patent Owner concludes that Kleve’s virtual key credential is operable independent of the agreed-upon rental period and can even be created before a rental agreement. PO Resp. 21; PO Sur-Reply 7–8. Patent Owner further concludes that Petition failed to point to any disclosure of Kleve demonstrating an alleged request that includes an alleged “condition of use” because Petitioner’s challenges are based on hindsight analysis. PO Sur-Reply 13, 20.

*(iii) Analysis*

We first are persuaded Petitioner demonstrates that Kleve’s server receives a “request from a user via a user account that has a vehicle associated therewith to generate an electronic key” because we are persuaded that the Vehicle Owner (user) in Kleve sends a request to the server via the user profile (user account) to generate a virtual key, an e-key. Kleve states that the virtual key is only generated after the Vehicle Owner has “already setup a user profile,” which we are persuaded qualifies as a user account. *See* Ex. 1004 ¶ 62. Then Kleve states that the Vehicle Owner “may enter in vehicle authorization credentials based on information received by the Temporary User to set up a virtual key.” *Id.* We understand this statement to mean that a user request is made from the user account that then generates the e-key.

Second, we are persuaded that Petitioner shows Kleve teaches, or at least suggests, that the user’s “request includes a condition of use of the

vehicle as set by the user via the user account” because we find that the distribution of Kleve’s virtual e-key includes a rental period, specifically the start of the rental period, which we find to constitute a restriction or condition of use of a rental vehicle. We do not agree with Patent Owner that Kleve’s request to the server to set up the e-key does not provide a rental period restriction because Kleve’s “server already knows the rental period.” *See* PO Sur-Reply 2–3. As Kleve teaches, the server is not used for remote access in every disclosed embodiment. *See* Ex. 1004 ¶¶ 38–39, 48–49, 57–63, 66, 68–71, 76, 78. Thus, Patent Owner’s position is unpersuasive.

We agree with the Petition that Kleve expressly discloses that the “terms and conditions for the rental period” are agreed to before the virtual key is generated. *See* Pet. 15 (quoting Ex. 1004 ¶ 38). We also agree with Petitioner that Kleve describes an e-key that is only operable during a rental period because Kleve transmits the e-key before the start of the rental period and discloses “[t]he virtual key may also be sent to the vehicle configuring the VCS to enable the keyless drive system for the appropriate Temporary User during a given rental period.” Ex. 1004 ¶¶ 39, 51, 54, 62, 69–70, 75, Figs. 3–7; *see* Pet. 16; *see* Pet. Reply 2.

We note Patent Owner’s citations to Kleve’s Figures 2 and 5 to indicate control restrictions are added after the distribution of a virtual key. PO Resp. 12–13. We agree with Patent Owner that the vehicle owner in Kleve can set user restrictions at the beginning of the rental term (as shown in step 214 of Figure 2), which is after the distribution of the virtual key (in step 210). And we understand Patent Owner’s position that Kleve’s means for setting the restrictions and monitoring such restrictions are a distinct operation from making the rental agreement and sending out the e-key. PO Resp. 12–13. Yet, although such means may be distinct operations, we are

unpersuaded that Kleve's vehicle owner cannot set any restriction prior to step 214 in Kleve's Figure 2 or that such restrictions cannot be associated with the e-key. *See* PO Resp. 8.

Contrary to Patent Owner's position, it appears that a rental start period is included prior to step 210, whereas restrictions that can be monitored separately (such as vehicle weight, speed, or geographic area of use) are set at step 214. *See* Ex. 1004, Fig. 2; ¶¶ 40–41, 43. Based on Kleve's teaching of "monitor[ing] the vehicle for the *entire* rental period" (Ex. 1004 ¶ 54 (emphasis added)), we find that Kleve's rental period restriction may be assigned prior to the start of the rental period in order to monitor usage for the entire period. *See* Ex. 1004 ¶¶ 38–39.

We do not agree with Patent Owner's position that Kleve fails to teach a way for the parties' agreed-upon conditions to be included in the set up or distribution of an e-key. *See* PO Resp. 8. Kleve specifically teaches that "[t]he Owner and Temporary User may agree to terms and conditions for the rental period," after which its "system may generate a virtual key to distribute to the Temporary User and VCS" so as "to enable the keyless drive system for the appropriate Temporary User during a given rental period." *See* Ex. 1004 ¶¶ 38–39. Although Kleve's system allows the Temporary User to purchase additional rental time and the system may update the new rental period end time restriction, such allowances does not negate the fact that Kleve teaches the rental start period is part of the e-key and allows a Temporary User to access the rental vehicle and remotely start the vehicle. *See id.* ¶¶ 39, 43.

Next, turning to Figure 5, we are unpersuaded by Patent Owner's contention that a "unique Temporary User identification or 'credential'" is "used as a virtual key" that does not include any information about the rental

period in it. *See* PO Resp. 8–9 (citing Ex. 1004, Fig. 5, ¶ 62). This argument is unavailing because Kleve discloses that its virtual key does not have to be the same as a “credential.” *See* Ex. 1004 ¶¶ 62–64. Kleve teaches that the virtual key is sent at step 502 in Figure 5 and provides access to the vehicle during the rental period, while a credential is sent at step 506 and allows a rental vehicle to authenticate a temporary user. *See id.* Additionally, not every embodiment of Kleve uses credentials but every relied-upon embodiment allows the use of a virtual key.

Additionally, we credit the testimony of Dr. Almeroth, who opines that Kleve discloses that certain restrictions are sent with the request to generate a virtual key. Ex. 1003 ¶¶ 118–123. Specifically, Dr. Almeroth testifies that Kleve discloses that the virtual key “enable[s] the keyless drive system for the appropriate Temporary User during a given rental period.” *Id.* According to Dr. Almeroth, this “indicates that rental agreement restrictions were sent with the request so that the virtual key could be associated with said restrictions.” *Id.* (citing Ex. 1004 ¶¶ 39, 68 (“Once the rental period has expired the virtual key may be reset and cleared from the VCS.”)). Dr. Almeroth further testifies that the virtual key in Kleve is always generated after the rental agreement. *Id.* (citing Ex. 1004 ¶¶ 39 (“[O]nce the Temporary User selects the vehicle, pays the appropriate amount and signs a consent agreement, th[e]n the system may generate a virtual key to distribute to the Temporary User and VCS.”), 68).

We do not agree with Patent Owner’s argument that Dr. Almeroth’s declaration testimony contradicts Kleve. *See* PO Resp. 27–29. Rather, as discussed previously, we find that Kleve’s vehicle owner can set a restriction, such as the rental start period, prior to step 214 in Kleve’s Figure 2 and that such restrictions can be associated with the e-key. We also

do not agree with Patent Owner's argument that (1) Dr. Almeroth's declaration testimony contradicts his deposition testimony or that (2) Dr. Almeroth "admitted his testimony was wrong." *See* PO Sur-Reply 7 (citing Ex. 2030, 27:5–10, 27:21–28:1). In a particular embodiment to which Dr. Almeroth was citing, he noted that the e-key is always generated after the rental agreement. *See* Ex. 2030, 26:14–20. Then the following exchange occurs:

Q. So you use typically and always. So always does not refer to all of the embodiments of Kleve, is that fair?

A. I think a person of skill in the art could read Kleve and understand that there are probably multiple ways in which the flow of actions among the parties could occur. And I think thinking about a real world scenario, in most cases you have an agreement before you would generate an eKey, but maybe, maybe not. I don't -- I don't know that the real world is necessarily cut and dry.

So reading -- a person reading Kleve would understand it's describing embodiments where it's always the case. That might be a pretty common scenario, but I don't know that it would necessarily be a hard and fast rule in every embodiment or in the understanding a person of skill in the art would have.

*Id.* at 28:3–20. There is nothing in the deposition testimony by Dr. Almeroth that appears inconsistent with his declaration testimony nor does there appear to be the kind of admission touted by Patent Owner. Instead, it is Dr. Malek who takes an overly narrow view of Kleve that appears inconsistent with Kleve's disclosure when read as a whole. *See, e.g.,* Ex. 2001 ¶¶ 56–57. Therefore, we do not credit or agree with Dr.

Malek’s testimony that Kleve teaches away from the concept of a virtual key created with the agreed-upon rental period as a restriction. *See id.* ¶ 57.

Thus, based on the entire trial record, we find that Petitioner has provided persuasive explanation and cited credible evidence that Kleve teaches or suggests the challenged claim limitation.

*b) Limitation [1b]*

Claim 1 recites the following step:

[1b] generating, by the server, the e-key, the e-key being assigned with the condition of use of the vehicle.

Ex. 1001, 49:38–39.

For this limitation, Petitioner contends Kleve discloses or renders this limitation obvious because Kleve teaches that a “Temporary User identification is first ‘entered into the server and [then] used as a virtual key, or in addition to the virtual key,’ which means the server receives the identification to generate and accompany the virtual key.” Pet. 12 (citing Ex. 1004 ¶ 63) (emphasis omitted; alteration by Petitioner). Petitioner argues that Kleve’s server sends the virtual key “to the VCS, Temporary User’s nomadic device, and/or vehicle Owner[’]s nomadic device,” which means “the server generates the virtual key and sends it to those various destinations.” *Id.* (alteration by Petitioner). According to Petitioner, this would only be the case if the server generated the e-key and not the Vehicle Owner’s device. *Id.*

Petitioner further contends that Kleve’s e-key is assigned with the condition of use of a vehicle associated with the rental period for the same reasons discussed previously for limitation 1[a]. Pet. 16. Specifically, Petitioner argues that a Vehicle Owner’s request in Kleve may set conditions of use of the vehicle via the owner’s user profile because a rental agreement

is negotiated through the user profiles (i.e., user accounts) on the website and the agreement includes the rental period. *Id.* at 15 (citing Ex. 1003 ¶¶ 118–123; Ex. 1004 ¶ 38 (“The Owner and Temporary User may agree to terms and conditions for the rental period using the website . . . .”), ¶ 47)). According to Petitioner, Kleve discloses that the agreed conditions are sent with the request to generate a virtual key, which “enable[s] the keyless drive system for the appropriate Temporary User during a given rental period.” *Id.* (citing Ex. 1003 ¶ 120; Ex. 1004 ¶¶ 39, 68 (“Once the rental period has expired the virtual key may be reset and cleared from the VCS.”)).

In the alternative, Petitioner also contends that Sekiyama discloses a server that generates an e-key. Pet. 37 (citing Ex. 1005 ¶ 25 (“an electronic key [is] output from the center server 20”)). According to Petitioner, “[t]his key performs ‘door lock locking / unlocking’ and ‘engine start permission.’” *Id.* (citing Ex. 1005 ¶ 18). Petitioner argues that it would have been obvious to modify Kleve such that the server generates the e-key, to the extent it does not already do so. *Id.* (citing Ex. 1003 ¶¶ 186–187); *see also id.* at 35–36 (addressing rationale to combine Kleve and Sekiyama).

Patent Owner disagrees with Petitioner, and referencing Kleve’s Figure 5, contends that Kleve’s “virtual key credential” does not incorporate “any information about any rental period the parties had agreed to as part of the rental agreement, nor does this ‘credential’ include *any* of the terms or conditions agreed to and accepted as the parties’ rental agreement.” PO Resp. 9–10 (citing Ex. 1004, Fig. 5, ¶¶ 44, 62–64, 67; Ex. 2029, ¶¶ 45, 61, 66–70).

Patent Owner argues “to set up a virtual key,” the Vehicle Owner enters only the vehicle authorization credential or “unique Temporary User identification,” which was received from the Temporary User. *Id.* at 10

(citing Ex. 1004, Fig. 5, ¶ 62; Ex. 2029 ¶¶ 45, 61). According to Patent Owner, for the Temporary User to have vehicle access, the vehicle will compare the credential sent by the Owner with the credential entered by the Temporary User. *Id.* (citing Ex. 1004, Fig. 5). Patent Owner specifically argues that Kleve “instructs that the Vehicle Owner sends this same ‘credential’ to the vehicle, e.g., via a server, and the Temporary User will provide this same credential to the vehicle, e.g., captured via camera, microphone, etc.” *Id.* (citing Ex. 1004, Fig. 5). Patent Owner further asserts that if the agreed upon “rental period” were included in the e-key credential set up or distribution as an alleged “condition of use,” then it would not be necessary for the Vehicle Owner to also send the credential to the vehicle “at rental time,” which would be counter to what is shown in Figure 5. *Id.* at 11 (citing Ex. 1004, Fig. 5, ¶ 66; Ex. 2029 ¶ 70).

As explained previously, we find that at least the rental start period is included as a restriction when the virtual key is created at step 206 of Figure 2 prior to the distribution of the virtual key at 210. *See* Ex. 1004 ¶¶ 38–39. We credit the testimony of Dr. Almeroth, who opines that Kleve discloses that certain restrictions are sent with the request to generate a virtual key. Ex. 1003 ¶¶ 118–123. Additionally, we agree with Petitioner and specifically note the Kleve states that “the system may generate a virtual key to distribute to the Temporary User and VCS” (Ex. 1004 ¶ 39), with the system being identified as a centralized server system that includes processing capability (*id.* ¶ 57). Ex. 1004, Fig. 4 at 410, Fig. 5. We do not agree with Patent Owner’s narrow reading of Figure 5, which allows for alternative embodiments of Kleve’s system. *See id.* ¶ 62.

Thus, based on the entire trial record, we find that Petitioner has provided persuasive explanation and cited credible supporting evidence that

Kleve alone or in combination with Sekiyama teaches the challenged claim limitation.

*c) Limitations [1c] – [1g]*

Claim 1 recites additional steps at limitations [1c] through [1g].

Ex. 1001, 49:40–57.

Petitioner provides arguments and evidence regarding each of these claim limitations. Pet. 16–21, 37. Patent Owner has not provided separate arguments regarding Kleve alone or in combination with Sekiyama in regards to these challenged claims. *See* PO Resp. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

We have reviewed the Petition’s analysis of the other claimed subject matter not discussed in the previous sections and find it persuasive. Based on our review of the entire trial record, including sufficient explanation and cited credible supporting evidence regarding limitations [1c] through [1g], we find that Petitioner has shown sufficiently that Kleve alone or in combination with Sekiyama teaches or suggests these limitations as recited in independent claim 1.

*d) Rationale to Combine*

Petitioner contends a person of ordinary skill in the art at the critical time would have been motivated to combine Kleve’s system with Sekiyama’s teaching of a server that generates an e-key to unlock and start a vehicle. Pet. 36 (citing Ex. 1005 ¶¶ 18, 26). According to Petitioner, “[t]here were well-known benefits of centralizing e-key generation, including better security and reliability.” *Id.* at 36 (citing Ex. 1003 ¶ 183). Petitioner argues that generating the key in Kleve requires that the Vehicle

Owner enter “authorization credentials” from the Temporary User, and the server stores the Temporary User’s user profile containing those credentials (e.g. “photo of forms of ID,” etc.) to confirm the Temporary User’s identity. *Id.* (citing Ex. 1004 ¶¶ 37, 62). Therefore, according to Petitioner, a person of ordinary skill in the art would have wanted the server to generate the key since it can confirm (1) the Vehicle Owner’s account that sent the request, (2) the identity of the Temporary User, and (3) a rental agreement between them. *Id.* (citing Ex. 1003 ¶ 183). Petitioner explains that “[h]aving the server centrally confirm all necessary information before issuing a key increases security and reliability.” *Id.* Petitioner then argues that a person of ordinary skill in the art would have had a reasonable expectation of success because having “Kleve’s server generate a key would have been well-within the capabilities of a POSITA” and “Kleve, Sekiyama and the ’188 patent are all directed to the same field of electronic key systems.” *Id.* (citing Ex. 1003 ¶¶ 184–185; Ex. 1001, Abstract; Ex. 1004 ¶ 48; Ex. 1005 ¶ 26).

Patent Owner has not provided separate arguments regarding Petitioner’s argument on the rationale to combine Kleve with Sekiyama in regards to these challenged claims. *See generally* PO Resp. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

After review of the entire trial record, we agree with Petitioner’s position and find that a person of ordinary skill in the art at the critical time would have reason to combine the teachings of Kleve with those of Sekiyama.

e) *Summary Regarding Challenge to Independent Claim 1 Based on Kleve Alone or in Combination with Sekiyama*

Based on the entire trial record, Petitioner has demonstrated by a preponderance of the evidence that independent claim 1 would have been obvious to a person of ordinary skill in the art at the critical time in view of Kleve alone or in combination with Sekiyama.

2. *Analysis of Independent Claims 16 and 19, and Dependent Claims 2–9, 11–15, 17, 18, and 20*

Petitioner provides arguments and evidence regarding independent claims 16 and 19, as well as dependent claims 2–9, 11–15, 17, 18, and 20 in view of Kleve alone or in combination with Sekiyama. Pet. 21–37. Patent Owner has not provided separate arguments regarding Kleve alone or in combination with Sekiyama in regards to these challenged claims. *See* PO Resp. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

We have reviewed the Petition’s analysis of the other claimed subject matter not discussed in the previous sections and we agree with the analysis. Based on our review of the arguments and evidence submitted for these challenged claims and the reasons discussed previously, we find that Petitioner has demonstrated by a preponderance of the evidence that Kleve alone or in combination with Sekiyama would have rendered independent claims 16 and 19, as well as dependent claims 2–9, 11–15, 17, 18, and 20 obvious to a person of ordinary skill in the art at the critical time.

C. *Claim 10 Allegedly Rendered Obvious by Kleve and Mottla and optionally with Sekiyama*

Claim 10 recites

The method of claim 1, wherein the e-key enables graphical icons on a screen of the device to be active for enabling use of

the vehicle, at least one of the graphical icons on the screen enabling unlocking of the vehicle, or turning on of the vehicle, or locking the vehicle.

Ex. 1001, 50:34–38.

Petitioner provides arguments and evidence regarding dependent claim 10 in view of Kleve in combination with Mottla and optionally with Sekiyama. Pet. 37–39. Specifically, Petitioner cites to Mottla for a GUI with “an unlock icon” for remotely “unlock[ing] the vehicle doors,” thereby disclosing claim 10. *Id.* at 37 (citing Ex. 1010 ¶ 33, Fig. 5). According to Petitioner, “[i]ncorporating this icon into Kleve (with or without Sekiyama) enabled by the e-key was obvious.” *Id.* at 38 (citing Ex. 1003 ¶¶ 190–192). Patent Owner has not provided separate arguments regarding Kleve in combination with Mottla and optionally with Sekiyama in regards to this challenged claim. *See* PO Resp. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

We have reviewed the Petition’s analysis and agree with it. Additionally, we credit Dr. Almeroth’s testimony that an ordinarily skilled artisan would have been motivated to incorporate a GUI with “an unlock icon” based on the benefits of a user-friendly GUI, because on-demand unlocking via icon gives the user better control over vehicle access, and using an unlock icon (instead of text) is more user-friendly. Ex. 1003 ¶¶ 190–192.

Accordingly, based on the entire trial record, we determine that Petitioner has demonstrated by a preponderance of the evidence that dependent claim 10 would have been obvious over Kleve in combination with Mottla and optionally with Sekiyama.

*D. Claim 17 Allegedly Rendered Obvious by Kleve and Patenaude*  
Claim 17 recites

The method of claim 16, further comprising, receiving, by the server, data from the vehicle being indicative of interface inputs or settings made during use with the e-key, the inputs or settings being examined to identify patterns; and learning the patterns, by a process executed by the server, to provide recommendations to the recipient or to an account of the recipient, for settings that should or may be made to the vehicle when using the e-key.

Ex. 1001, 51:39–48.

Petitioner provides arguments and evidence regarding dependent claim 17 in view of Kleve in combination with Patenaude. Pet. 67. Specifically, Petitioner argues Patenaude teaches transmitting an “entertainment unit factor,” i.e., interface input data that include radio inputs. *Id.* at 66 (citing Ex. 1011 ¶¶ 38, 42–43, 52; Ex. 1003 ¶¶ 281–83). Based on the “entertainment unit factor” and “selection time factors,” Petitioner also argues Patenaude’s telematics unit “determines patterns in the entertainment selections” of a user. *Id.* (citing Ex. 1011 ¶ 55). According to Petitioner, “[t]he algorithm automatically configures the user’s desired entertainment settings for when they are using the vehicle.” *Id.* (citing Ex. 1011 ¶ 73). Petitioner notes that “during stage S612, the telematics unit 120 powers-up at least one entertainment unit 135, 136, or 137 based on the retrieved user-specific entertainment selection profile.” *Id.* (citing Ex. 1011 ¶ 75).

Petitioner then argues that an ordinarily skilled artisan would have been motivated to combine Patenaude with Kleve’s rental car system to provide useful functionality because Patenaude tries to “determine and predict entertainment selections” by learning a user’s preferences and

developing a user’s “entertainment selection profile” stored in a vehicle. Pet. 65 (citing Ex. 1003 ¶ 277), 67. Petitioner further argues that an ordinarily skilled artisan would have had a reasonable expectation of success because Kleve includes all necessary hardware to implement Patenaude’s system, including wireless communication, computing systems, and vehicle settings, and implementation would simply require adding software to receive Patenaude’s data and perform its algorithms. *Id.* at 65–67 (citing Ex. 1003 ¶¶ 277–280).

Patent Owner has not provided separate arguments regarding Kleve in combination with Patenaude in regards to this challenged claim. *See* PO Resp. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

We have reviewed the Petition’s analysis and agree with it. Additionally, we credit Dr. Almeroth’s testimony that an ordinarily skilled artisan would have been motivated to incorporate Patenaude’s learning preferences because it would have been an obvious additional functionality for Kleve’s rental service. *See* Ex. 1003 ¶¶ 284–287 (citing Ex. 1003 ¶¶ 277–280).

Accordingly, based on the entire trial record, we find that Petitioner has demonstrated by a preponderance of the evidence that claim 17 would have been obvious over Kleve in combination with Patenaude.

*E. Claims 1, 3, 5–7, 9, 11–16, and 18–20 Allegedly Rendered Obvious by Zaid and Harris*

Petitioner contends that the combined teachings of Zaid and Harris render the subject matter of claims 1, 3, 5–7, 9, 11–16, and 18–20 obvious. Pet. 39–61. Patent Owner disagrees. PO Resp. 60–74. Patent Owner specifically challenges whether Petitioner has shown that Zaid in

combination with Harris teaches “receiving, by a server, a request from a user via a user account that has a vehicle associated therewith to generate an electronic key (e-key) for an identified recipient to use the vehicle, the request includes identifying information for enabling sending of the e-key to the recipient via an electronic transmission, the request includes a condition of use of the vehicle as set by the user via the user account” as recited in limitation [a] of independent claims 1, 16, and 19. The arguments for this limitation are dispositive for the Zaid grounds.

1. *Analysis of Independent Claims 1, 16, and 19*

Claim 1 recites the following step:

[1a] receiving, by a server, a request from a user via a user account that has a vehicle associated therewith to generate an electronic key (e-key) for an identified recipient to use the vehicle, the request includes identifying information for enabling sending of the e-key to the recipient via an electronic transmission, the request includes a condition of use of the vehicle as set by the user via the user account;

Ex. 1001, 49:30–37. Claims 16 and 19 recite the same or similar limitations. *Id.* at 51:11–18, 52:2–9.

For this limitation, Petitioner contends that “Zaid discloses or renders obvious a vehicle owner (*user*) that can use a *user account* (such as through Facebook) to facilitate a vehicle rental reservation that causes the server to generate an encrypted reservation (*e-key*) to allow an identified user (*identified recipient*) to use the owner’s vehicle.” Pet. 41 (citing Ex. 1003 ¶¶ 203–214). Petitioner asserts that Zaid’s vehicle reservations are booked at a central server “via a user interface displayed on a computing device” and the e-key is sent to a renter’s device through this server. *Id.* at 41–42 (citing Ex. 1008 ¶¶ 72, 125).

Petitioner next contends that the vehicle owner (user) has the user account with a vehicle associated with it because the owner can list a vehicle for rental on a vehicle reservation application. *Id.* at 42 (citing Ex. 1008 ¶ 177). According to Petitioner, a person of ordinary skill in the art at the critical time would have understood that “the vehicle owner accesses the reservation application via [a user’s] account so the application can associate a vehicle with the correct person” and “to facilitate rental payments or confirm insurance.” *Id.* (citing Ex. 1008 ¶ 79; Ex. 1003 ¶ 206). Petitioner then proffers an alternative theory, asserting that an ordinarily skilled artisan would have “considered it obvious for an owner to access the rental application through a user account to associate their vehicle with the account, providing the known benefit of increasing security and improving the vehicle owner experience.” *Id.* at 42–43 (citing Ex. 1003 ¶ 207); Pet. Reply 22 (“the reservation request is sent from the owner’s account, and [ ] it would be obvious to do so”).

Petitioner asserts that because “the owner advertises when the vehicle is available for reservation, and the owner has ‘control over the type of user the owner is lending/sharing/renting vehicle to,’” the owner decides whether a reservation will proceed. Pet. 44 (citing Ex. 1008 ¶¶ 72, 77, 79; Ex. 1003 ¶ 210). Thus, according to Petitioner, a person of ordinary skill in the art would have understood “that the reservation request to the server comes from the owner through the owner’s account.” *Id.* Again, Petitioner proffers an alternative theory, asserting that an ordinarily skilled artisan would have found it obvious that the reservation request is sent by the owner through the owner’s account. *Id.* at 44 (citing Ex. 1003 ¶¶ 211–212). Petitioner argues that because both the renter and the owner accounts are involved in making the reservation, whether the reservation request is sent by the renter or the

owner is a mere design choice, with the system able to handle a request regardless of the source. *Id.*; Pet. Reply 22.

Patent Owner disputes Petitioner’s position and contends that Zaid’s reservation does not include any request to a server to generate an e-key, let alone any request to generate an e-key “from a user via a user account that has a vehicle associated therewith.” PO Resp. 60. According Patent Owner, Zaid does not disclose or suggest a request to generate an e-key that includes a condition of use of the vehicle, which is set by the user via the user account that has a vehicle associated therewith. *Id.* Instead, according to Patent Owner, Zaid discloses that a prospective vehicle renter can log into Facebook or a similar social networking site, view an ad for a vehicle placed by a vehicle owner, and if interested, the renter can click on that ad and make a reservation. *Id.* (citing Ex. 1008 ¶ 72). Patent Owner contends that Petitioner’s citations to a vehicle owner’s Facebook or other social media account as the claimed “user account” is flawed and does not meet the recited claim limitation. PO Resp. 63–64.

Patent Owner argues that Zaid teaches that a vehicle reservation—the alleged “request”—is *not* sent via a vehicle owner’s Facebook account, as the Petition contends, but instead is that of the renter. PO Resp. 64 (citing Ex. 1008 ¶ 72). Patent Owner explains that Zaid’s vehicle owner can *advertise their vehicle* on social networking sites, like Facebook, but it is the renter that “must first *log into the social networking website* before he/she can view the advertisement and *make [sic, a] reservation.*” *Id.* (quoting Ex. 1008 ¶ 72; alteration by Patent Owner). As Patent Owner argues, Zaid makes it clear that “the user” is the renter (i.e., the *person who makes the reservation*) not the vehicle owner. *Id.* Patent Owner further argues choosing to send a request from a renter’s Facebook account versus an

owner’s account is not a “mere design choice” “because *Zaid* presents no ‘choice’ at all—*Zaid* never mentions or suggests any *owner account* from which such a request can be made.” *Id.* at 66–67 (citing Pet. 44; Ex. 1008 ¶ 72).

Patent Owner also contends that “[o]nce the renter makes the reservation, that reservation is relayed as an encrypted message.” PO Resp. 60–63 (citing Ex. 1008 ¶¶ 125–127). Patent Owner asserts, however, that “this encrypted reservation message, relayed from the server, is not the generation of an e-key.” *Id.* (citing Ex. 2029 ¶¶ 63, 102, 104–109). Instead, Patent Owner notes, the encryption disclosed by *Zaid* is used merely to convert the reservation message from one form to another. *Id.*

We agree with Patent Owner that Petitioner analysis of the requirement for the “request from a user” required by claim 1 is insufficient. *See* Pet. 44–45; Pet. Reply 19–21. *Zaid* discloses that (i) a vehicle reservation is booked by a vehicle renter through one or more social networking websites (Ex. 1008 ¶ 72), (ii) a vehicle renter (i.e., the user) can access an online reservation system using a browser or other communication interface and then make a reservation online (*id.* ¶ 74), (iii) the vehicle reservation system allows a vehicle user and owner to dynamically send out a vehicle request and/or update the server (*id.* ¶ 79), (iv) the vehicle reservation is booked at server 110 via user interface 116 displayed on computing device 118 (*id.* ¶ 80), and then (v) vehicle access control system receives a server update that includes a new private key to the vehicle access control system (*id.* ¶ 81).

We understand this disclosure to mean that the vehicle renter uses his or her own account to make a reservation and to send a request that generates an electronic key. Therefore, we find that *Zaid* fails to provide a

teaching or suggestion that such a user account would encompass the vehicle owner, and we not discern any suggestion that such request would emanate from the vehicle owner. *See id.* ¶¶ 72, 74, 79–80. To the extent Petitioner points to a different request (and one sent by the vehicle owner) (*see* Pet. 44), we find Petitioner has not shown sufficiently that Zaid teaches or suggests such a request, much less one that meets the other requirements of claims 1, 16, and 19. We also find that the teachings of Harris do not remedy the deficiencies of Zaid.

Accordingly, based on the entirety of the trial record, we determine Petitioner failed to demonstrate by a preponderance of the evidence that Zaid and Harris render obvious the required limitation of claims 1[a], 16[a], and 19[a] for a “request from a user via a user account that has a vehicle associated therewith to generate an electronic key (e-key).”

2. *Analysis of Dependent Claims 3, 5–7, 9, 11–15, 18, and 20*

Petitioner asserts that dependent claims 3, 5–7, 9, 11–15, 18, and 20 depend of the ’188 patent are rendered obvious by the combined teachings of Zaid and Harris. Pet. 53–61. Petitioner provides additional arguments regarding dependent claims 12, 14, and 15. Pet. Reply 23. Specifically, for claims 14 and 15, Petitioner contends that Zaid discloses a selectable “user” template where the reservation has a predetermined set of privileges that includes “a limited time period.” *Id.* at 23 (citing Pet. 57; Ex. 1008 ¶¶ 69, 131).

For this challenge, Patent Owner relies on the same arguments presented for claim 1, as well as additional arguments regarding dependent claims 12, 14, and 15. PO Resp. 60–74.

For the reasons discussed above with regards to independent claims 1, 16, and 19, and because no additional arguments remedy the deficiencies of Zaid and Harris, we determine Petitioner has failed to demonstrate by a preponderance of the evidence that claims 3, 5–7, 9, 11–15, 18, and 20 would have been obvious in view of Zaid and Harris.

*F. Alleged Obviousness of Claims 2, 4, 8, 10, and 17 in View of Zaid, Harris, and Mottla or Patenaude*

Petitioner contends the combined teachings of Zaid, Harris, and Mottla would have rendered claims 2, 4, 8, and 10 obvious, while the teachings of Zaid with Patenaude would have rendered obvious claim 17. Pet. 2, 61–66. For this challenge, Patent Owner relies on the same arguments presented for claim 1 in view of Zaid alone and argues that the addition of Harris, Mottla, and/or Patenaude do not cure Zaid’s deficiencies. See PO Resp. 71–72. For the reason discussed above, we agree with Patent Owner.

Accordingly, based on the entirety of the trial record, we determine Petitioner failed to demonstrate by a preponderance of the evidence that Zaid in combination with Harris, Mottla, and/or Patenaude would have rendered claims 2, 4, 8, 10, and 17 obvious to an ordinarily skilled artisan at the critical time.

#### IV. CONCLUSION<sup>8</sup>

For the reasons discussed above, we determine that Petitioner has proven, by a preponderance of the evidence, that claims 1–20 of the ’188 patent are unpatentable, as summarized in the following table:

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<sup>8</sup> Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner’s attention to the April 2019 *Notice*

<b>Claim(s)</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>	<b>Claims Shown Unpatentable</b>	<b>Claims Not Shown Unpatentable</b>
1–9, 11–20	103	Kleve	1–9, 11–20	
1–9, 11–20	103	Kleve, Sekiyama	1–9, 11–20	
10	103	Kleve, Mottla, Sekiyama	10	
1, 3, 5–7, 9, 11–16, 18– 20	103	Zaid, Harris		1, 3, 5–7, 9, 11–16, 18–20
2, 4, 8, 10	103	Zaid, Harris, Mottla		2, 4, 8, 10
17	103	Zaid, Harris, Patenaude		17
17	103	Kleve, Patenaude	17	
<b>Overall Outcome</b>			1–20	

## V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–20 of the '188 patent have been shown to be unpatentable;

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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*Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).*

IPR2024-00981  
Patent 9,365,188 B1

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