

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LYFT, INC.,
Petitioner,

v.

RIDESHARE DISPLAYS, INC.,
Patent Owner.

IPR2021-01599
Patent 10,169,987 B1

Before THOMAS L. GIANNETTI, LYNNE E. PETTIGREW, and
JOHN D. HAMANN, *Administrative Patent Judges*.

PETTIGREW, *Administrative Patent Judge*.

JUDGMENT

Final Written Decision

Determining All Challenged Claims Unpatentable

35 U.S.C. § 318(a)

Dismissing Patent Owner's Motion to Exclude

37 C.F.R. § 42.64

I. BACKGROUND

Petitioner, Lyft, Inc., challenges claims 1, 2, 4, and 6–8 (“the challenged claims”) of U.S. Patent No. 10,169,987 B1 (Ex. 1001, “the ’987 patent”). We have jurisdiction under 35 U.S.C. § 6, and we issue this Final Written Decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons discussed below, Petitioner has shown by a preponderance of the evidence that claims 1, 2, 4, and 6–8 of the ’987 patent are unpatentable.

A. Procedural History

Petitioner filed a Petition for *inter partes* review of the challenged claims. Paper 1 (“Pet.”). Patent Owner, Rideshare Displays, Inc., filed a Preliminary Response. Paper 7 (“Prelim. Resp.”). Applying the standard set forth in 35 U.S.C. § 314(a), which requires demonstration of a reasonable likelihood that Petitioner would prevail with respect to at least one challenged claim, we instituted an *inter partes* review of the challenged claims. Paper 8 (“Institution Decision” or “Inst. Dec.”).

Following institution, Patent Owner filed a Patent Owner Response (Paper 13, “PO Resp.”), Petitioner filed a Reply (Paper 16, “Pet. Reply”), and Patent Owner filed a Sur-reply (Paper 18, “PO Sur-reply”). Patent Owner filed a Motion to Exclude Evidence (Paper 22, “Mot. Excl.”), and Petitioner filed an Opposition to the Motion to Exclude Evidence (Paper 23).

On January 10, 2023, we held a consolidated oral hearing for IPR2021-01598, IPR2021-01599, IPR2021-01600, IPR2021-01601, and IPR2021-01602. A copy of the hearing transcript has been entered into the record. Paper 26 (“Tr.”).

B. Real Parties-in-Interest

Petitioner identifies Lyft, Inc. as the only real party-in-interest. Pet. 1. Patent Owner identifies Rideshare Displays, Inc. as the only real party-in-interest. Paper 6, 2. Neither party challenges those identifications.

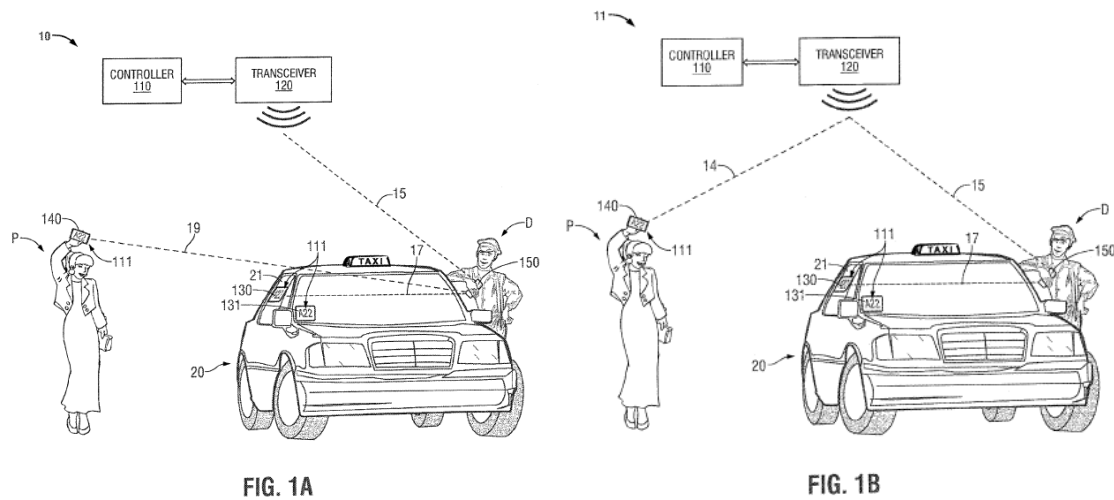
C. Related Matters

The parties identify the following district court proceeding involving the '987 patent: *Rideshare Displays, Inc. v. Lyft, Inc.*, No. 20-cv-01629-RGA-JLH (D. Del.). Pet. 1; Paper 6, 2. The parties also identify several petitions for *inter partes* review of patents related to the '987 patent: IPR2021-01598, IPR2021-01600, IPR2021-01601, and IPR2021-01602. Pet. 1; Paper 6, 2.

D. Overview of the '987 Patent

The '987 patent is titled “Vehicle Identification System.” Ex. 1001, code (54). The '987 patent is a continuation of U.S. Patent No. 9,892,637. *Id.* at code (63). The patent describes a system for providing an indicator on a mobile communication device of a user having requested a ride service to allow the user to identify a vehicle prior to boarding the vehicle. *Id.* at 1:22–26. According to the patent, “[a] continuing need exists for systems and methods adapted for use by transportation services to ensure rider and driver security.” *Id.* at 1:59–61.

Two separate embodiments of the invention are shown in Figures 1A and 1B:



Figures 1A and 1B, above, illustrate two embodiments of a vehicle identification system in accordance with the '987 patent. *Id.* at 2:38–43. Figure 1A illustrates vehicle identification system 10, which includes controller 110, transceiver 120, and one or more displays associated with motor vehicle 20. *Id.* at 3:57–59. First display 130 is associated with passenger side rear window 21 of motor vehicle 20, and second display 131 is associated with the front windshield of motor vehicle 20. *Id.* at 3:59–63. Vehicle identification system 10 can generate one or more signals representing an indicator, which may be displayable as a “code” (e.g., a text string or an alphanumeric string), an icon, or other identifier, on display 130 and on mobile communication device 140 associated with user P to enable the user to identify the vehicle that he or she has requested for a ride service. *Id.* at 4:4–13.

Figure 3 is a flowchart illustrating a method of identifying a vehicle in accordance with the '987 patent. *Id.* at 2:47–49. Figure 3 follows:

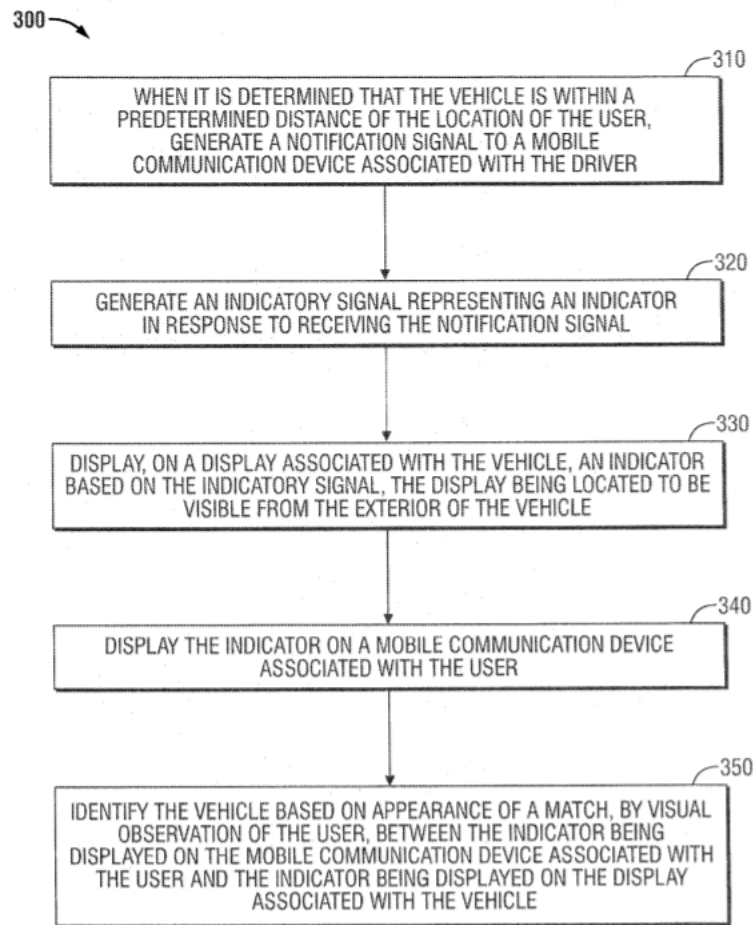


Figure 3 above illustrates a method of identifying a vehicle being dispatched to a location of a user having requested a ride from a transportation service. Ex. 1001, 6:66–7:2. When it is determined that motor vehicle 20 is within a predetermined distance of the location of user P, notification signal 15 is generated to mobile communication device 150 associated with driver D. *Id.* at Fig 3, block 310. Indicatory signal 17 representing indicator 111 is generated in response to receiving notification signal 15. *Id.* at Fig. 3, block 320. Indicator 111 based on indicatory signal 17 is displayed on

display 130 associated with vehicle 20. *Id.* at Fig. 3, block 330. Display 130 is located to be visible on the exterior of vehicle 20. *Id.* at 7:12–13.

Indicator 111 is also displayed on mobile communication device 140 associated with user P. *Id.* at Fig. 3, block 340. Motor vehicle 20 is identified based on appearance of a match, by visual observation of user P, comparing the indicator being displayed on the mobile communication device associated with user P and the indicator being displayed on the display associated with vehicle 20. *Id.* at Fig. 3, block 350.

In the embodiment of Figure 1A, the mobile communication device associated with driver D generates a second signal representing an indicator that is transmitted to mobile communication device 140 associated with user P. *Id.* at 5:32–39. In the embodiment of Figure 1B, vehicle identification system 11 generates indicatory signal 14 transmitted to the mobile communication device associated with user P and notification signal 15 to be transmitted to the mobile communication device associated with driver D. *Id.* at 5:40–49. In this embodiment, the driver's mobile communication device does not communicate with the user's mobile communication device. *Id.* at 5:49–54.

E. Illustrative Claim

Among the claims challenged in the Petition, claims 1 and 8 are independent. Claim 1 is illustrative of the claimed subject matter and is reproduced below:

1. [preamble] A vehicle identification system, comprising:
 - [1A] a display associated with a vehicle, wherein the display is located to be visible from an exterior of the vehicle by a rider;
 - [1B] a controller communicatively coupled to a network
 - [1C] and configured to, in response to receipt of a signal from a user, generate and transmit a first signal representing an

indicator via the network to a mobile communication device associated with a driver of the vehicle; and

[1D] wherein, in response to receiving the first signal, the mobile communication device associated with the driver of the vehicle generates and transmits a second signal representing the indicator to the display, the indicator identifies the vehicle.

Ex. 1001, 7:33–46 (formatting modified and Petitioner’s identification of limitations added).

F. Asserted Grounds of Unpatentability

We instituted *inter partes* review of the challenged claims based on the following grounds of unpatentability asserted by Petitioner:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1, 2, 4, 6–8	103	Kalanick, ¹ Kemler ²
1, 2, 4, 7, 8	102	Lalancette ³
6	103	Lalancette, Kemler

Inst. Dec. 8, 43; *see* Pet. 5.

G. Testimonial Evidence

In support of its unpatentability contentions, Petitioner relies on a Declaration of David Hilliard Williams (Ex. 1003) submitted with the Petition and a Second Declaration of Mr. Williams submitted with Petitioner’s Reply (Ex. 1030). Patent Owner cross-examined Mr. Williams via deposition. *See* Ex. 2022.

¹ U.S. Patent Pub. 2015/0332425 A1, filed Jan. 23, 2015, published Nov. 19, 2015 (Ex. 1006, “Kalanick”).

² U.S. Patent No. 9,494,938 B1, filed Apr. 3, 2014, issued Nov. 15, 2016 (Ex. 1008, “Kemler”).

³ U.S. Patent Pub. 2012/0137256 A1, published May 31, 2012 (Ex. 1009, “Lalancette”).

In support of its Patent Owner Response, Patent Owner relies on a declaration of Dr. Matthew Valenti (Ex. 2023). Petitioner cross-examined Dr. Valenti via deposition. *See* Ex. 1029.

II. DISCUSSION

A. Principles of Law

A prior art reference anticipates a claim if it discloses each and every element of the claimed invention arranged or combined in the same way as in the claim. *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1341 (Fed. Cir. 2016). “However, a reference can anticipate a claim even if it ‘d[oes] not expressly spell out’ all the limitations arranged or combined as in the claim, if a person of ordinary skill in the art, reading the reference, would ‘at once envisage’ the claimed arrangement or combination.” *Id.* (quoting *Kennametal, Inc. v. Ingersoll Cutting Tool Co.*, 780 F.3d 1376, 1381 (Fed. Cir. 2015)).

A claim is unpatentable under § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *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 ordinary

skill in the art; and (4) when in evidence, objective indicia of non-obviousness.⁴ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

To prevail on its challenges to Patent Owner’s claims, Petitioner must demonstrate by a preponderance of the evidence that the claims are unpatentable. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). “In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)).

B. Level of Ordinary Skill in the Art

According to Petitioner, a person of ordinary skill in the pertinent art “would have had at least a bachelor’s degree in electrical or computer engineering, or a similar field with at least two years of experience in the field of vehicle location and tracking systems or related technologies.” Pet. 9. Petitioner adds that “[a] person with less education but more relevant practical experience may also meet this standard. The prior art also evidences the level of skill in the art.” *Id.* (citing Ex. 1003 ¶ 47).

Patent Owner provided a slightly different formulation in the Preliminary Response. According to Patent Owner, a person of ordinary skill at the relevant time would have had:

- i) at least a bachelor’s degree in electrical or computer engineering, or a similar field;

⁴ The parties do not present arguments or evidence regarding objective indicia of non-obviousness, and therefore we do not consider the fourth *Graham* factor as part of our obviousness analysis. See Pet. 58; PO Resp.

ii) at least two years of experience in wireless cellular network protocols, including location and tracking/positioning, and having an understanding of signal timing and reliability issues in such wireless cellular network protocols; and

iii) knowledge of issues with respect to data privacy and database storage systems. Regarding data privacy, the [person of ordinary skill] need not have extensive knowledge in, e.g. data encryption methodologies, but would have experience with data privacy policies and protection models.

Prelim. Resp. 5. At the institution stage, we adopted Petitioner’s more general formulation, with one qualification. Inst. Dec. 19. We stated we would also expect a person of ordinary skill to have at least some experience in wireless cellular network protocols, as suggested by Patent Owner. *Id.* at 19–20. We reasoned that our review of the ’987 patent and the cited prior art did not suggest that specific experience with data privacy policies and protection models would be required, given the focus of the ’987 patent on more general principles of cellular communications and signaling. *Id.* at 20. However, we observed that our decision would be the same under either formulation. *Id.* at 20.

In its Patent Owner Response, Patent Owner states that it “disagrees” with our formulation because “the [’987] patent is not directed to a vehicle tracking system.” PO Resp. 3. Patent Owner explains that “[i]t is directed to a communication system between a rider and driver, albeit using location[-]based services in some aspects of this system, and thus a [person of ordinary skill] would be a person who is skilled in the field of communication systems along cellular networks.” *Id.* at 3–4.

We agree that the patented technology involves cellular communications, and this is reflected in our formulation, where we stated “we would also expect a person of ordinary skill to also have at least some

experience in wireless cellular network protocols, as suggested by Patent Owner.” Inst. Dec. 19–20. But Patent Owner continues that “a [person of ordinary skill] should have knowledge of wireless communications protocols and some general experience with data privacy issues and protection models, in addition to the education level in electrical or computer engineering identified by the parties.” PO Resp. 4. Patent Owner cites no authority for this proposal, which we rejected in our Institution Decision based on our review of the patent and the prior art. Inst. Dec. 19. We therefore maintain our formulation of the person of ordinary skill from our Institution Decision.

Patent Owner segues from discussing the scope of knowledge of a person of ordinary skill to an attack on Mr. Williams’s testimony. PO Resp. 4–5. We are not persuaded by Patent Owner’s citations to Mr. Williams’s testimony, or by Patent Owner’s attempt to discredit Mr. Williams’s opinions on the pertinent art as “overreach.” *Id.* None of the testimony cited by Patent Owner relates to the Kalanick, Lalancette, or Kemler references. Nor do we see how Mr. Williams’s testimony concerning background technology “infects each argument that Petitioner makes with respect to the knowledge of a [person of ordinary skill in the art],” as Patent Owner alleges. *Id.* at 5. Patent Owner does not point to any specific arguments that would be so “infected.”

As we stated in our Institution Decision, “the arguments presented by the parties do not depend on the definition of the person o[f] ordinary skill, and therefore, our decision would be the same under either formulation.” Inst. Dec. 20. The parties’ statements made during the oral hearing are consistent with this point. *See* Tr. 75:17–18 (Patent Owner stating that “[i]t’s not clear to us that the level of ordinary skill arguments actually

matter”), 106:12–17 (Petitioner stating that its arguments do not depend on which definition we adopt).

C. Claim Construction

In this *inter partes* review, we apply the same claim construction standard that would be used in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b). In applying this standard, we generally give claim terms their ordinary and customary meaning as would be understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *See id.*; *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (en banc).

We address below two terms that we construed in our Institution Decision. *See* Inst. Dec. 20–25. To the extent we need to interpret any other claim terms, we will do so in the context of our analysis of the prior art that follows.

1. “indicator”

In our Institution Decision, we construed the term “indicator” as a “code (e.g., a text string or an alphanumeric string), an icon, or other identifier, for display to enable a match between a user/rider and a driver.” Inst. Dec. 22. We determined this construction was consistent with the description of an indicator in the specification of the ’987 patent. *Id.* at 21–22 (citing Ex. 1001, 4:9–13). Neither party challenges this construction, which we maintain for this Final Written Decision. *See* PO Resp. 6; Pet. Reply 2; PO Sur-reply 2.

2. “generate”

Our Institution Decision addressed a dispute regarding the term “generate” in the phrases “generate . . . a first signal representing an indicator” and “generates . . . a second signal representing an indicator,”

recited in independent claims 1 and 8. Inst. Dec. 22–25. We rejected Patent Owner’s argument that the claims require that “a new signal be actively formulated each time a ride is dispatched.” *Id.* at 22–23 (citing Prelim. Resp. 29, 32, 36). This argument equates “generate” with “actively formulate,” which does not appear in the claim language or elsewhere in the specification of the ’987 patent. *Id.* at 22–24 (citing Ex. 1001, 2:1–5, 2:63–67, 5:4–7, 6:62–65 (describing controller operation)).

We also rejected Patent Owner’s contention that a “new indicator” must be “actively formulated” for each ride, which appears to conflate “signal” and “indicator.” *Id.*; see Prelim. Resp. 29 (“[T]he present invention actively formulates a new indicator for each rider-driver trip while the driver is in transit.”). The claim language recites that the controller is configured to “generate . . . a first signal representing an indicator” and the mobile communication device associated with the driver “generates . . . a second signal representing the indicator.” Ex. 1001, 7:37–45, 8:5–13. Thus, the claims require generating a signal that represents the indicator, which is different from generating the indicator itself.

Because the specification and prosecution history do not explicitly provide a definition for the term “generate,” we looked to extrinsic sources to determine its plain meaning. Inst. Dec. 24. The Federal Circuit has approved the use of dictionaries for guidance in claim construction, “so long as the extrinsic evidence does not contradict the meaning otherwise apparent from the intrinsic record.” *Helmsderfer v. Bobrick Washroom Equip., Inc.*, 527 F.3d 1379, 1382 (Fed. Cir. 2008); see also *Comaper Corp. v. Antec, Inc.*, 596 F.3d 1343, 1348 (Fed. Cir. 2010) (approving of “consult[ing] a general dictionary definition of [a] word for guidance” in determining ordinary meaning); *Praxair, Inc. v. ATMI, Inc.*, 543 F.3d 1306, 1325 (Fed.

Cir. 2008) (“[O]ur decisions, including *Phillips*, do not preclude the use of general dictionary definitions as an aid to claim construction.”) (citation omitted). One dictionary definition of “generate” is “to bring into existence: such as: . . . to originate by a vital, chemical, or physical process: PRODUCE.” See <https://www.merriam-webster.com/dictionary/generate>. We therefore construed the term “generate” as it relates to the controller in reference to a signal in accordance with its plain and ordinary meaning, which is “to originate or produce the signal.” Inst. Dec. 24–25.

Patent Owner’s Response does not directly respond to this construction. PO Resp. 6. Instead, Patent Owner asserts that “[a]t institution, the Board determined that the term ‘generating’ should be construed according to its ordinary meaning. . . . Applying ordinary meaning should still lead to the conclusion that the prior art does not render the claims of the patent unpatentable.” *Id.* (citing Ex. 2023 ¶ 33). Patent Owner further asserts that its positions in the Patent Owner Response “are based on the Board’s use of the plain and ordinary meaning of the term ‘generate.’” PO Sur-reply 2.

For the foregoing reasons and those discussed in our Institution Decision, we maintain our construction of “generate” as it relates to a signal as “to originate or produce the signal.” Inst. Dec. 25.

D. Overview of Asserted Prior Art References

1. Kalanick

Kalanick discloses a system for arranging an on-demand service to be provided by a transport service provider to a requesting user. Ex. 1006 ¶ 2. Kalanick describes a dynamically configured and personalized display that is positioned on or fastened to a vehicle. The display is easily visible to a user

outside of the vehicle and informs the user which vehicle has been assigned to the user for the on-demand service. *Id.* ¶ 10.

The on-demand service system can arrange a transport service for a user by receiving a request for transport from the user's device, selecting a driver from a plurality of available drivers to perform the transport service for that user, sending an invitation to the selected driver's device, and receiving an acceptance of the invitation by the selected driver. *Id.* ¶ 11.

The on-demand service system described by Kalanick can associate an identifier of the user and an identifier of the driver with an entry for that transport service. *Id.* Once the on-demand service system arranges the transport service for the user and the driver, the transport personalization system can access a user database to determine whether that user has specified an output configuration for an indication device (e.g., determine whether the user has personalized at least one aspect of the transport service). *Id.*

This operation is illustrated in Figure 1 of Kalanick:

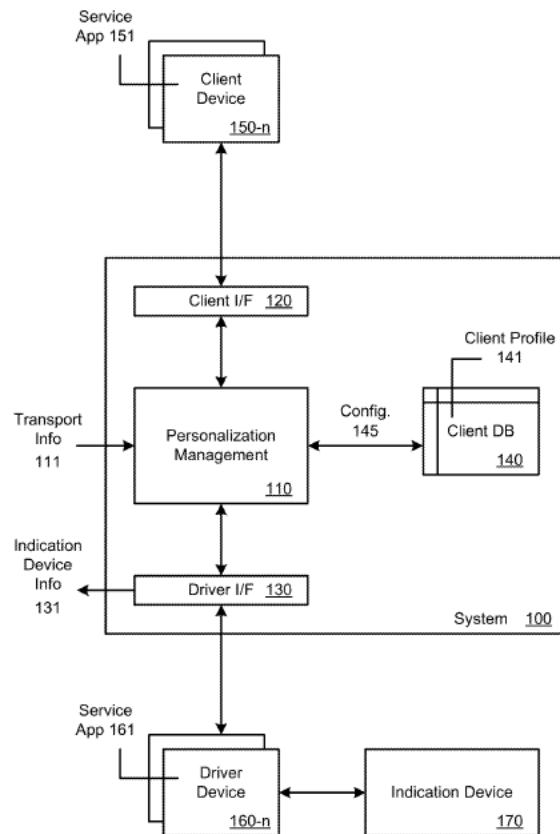


FIG. 1

Figure 1 of Kalanick, above, illustrates a system to provide configuration information for controlling an indication device for use with an on-demand service. *Id.* ¶ 3. System 100 can communicate, over one or more networks via a network interface (e.g., wirelessly or using a wire), with client devices 150 (e.g., mobile computing devices operated by clients or users/customers) and driver devices 160 (e.g., mobile computing devices operated by drivers) using client device interface 120 and driver device interface 130, respectively. *Id.* ¶ 25. System 100 can receive transport information 111 about the transport service from the on-demand service

system and determine whether to transmit user-specified configuration data to the driver device of the driver selected to provide the transport service.

Id. ¶ 26.

Client database 140 stores a plurality of client profiles 141 for each user that has an account with the on-demand service system. A client profile 141 can include a user identifier. *Id.* ¶ 29. When personalization management 110 receives transport information 111, the personalization management can use the user ID to access client database 140. *Id.*

Personalization management 110 can perform a lookup of client profile 141 (e.g., using the user's ID or user's device ID) and determine if the user has specified an output configuration for an indication device. *Id.* ¶ 30. If the user has specified the output configuration, the personalization management can determine or retrieve configuration data 145 corresponding to the specified configuration for that user. *Id.* If the user does not provide indication preferences, however, the personalization management can store or maintain default indication preferences in the user's profile 141. *Id.*

The personalization management can transmit the user's configuration data 145 corresponding to the user's indication preferences (or default configuration data if the user has not specified indication preferences) to the driver device. *Id.* ¶ 31.

In one example, the on-demand service system can use location information from driver's device 160 and/or transport information 111 to automatically determine the driver's state, and based on the state of the transport service or the driver, system 100 and/or service application 161 can control the operation of indication device 170. *Id.* ¶¶ 35–36.

The state of the transport service can correspond to the driver “arriving now.” *Id.* ¶ 37. When service application 161 determines that the

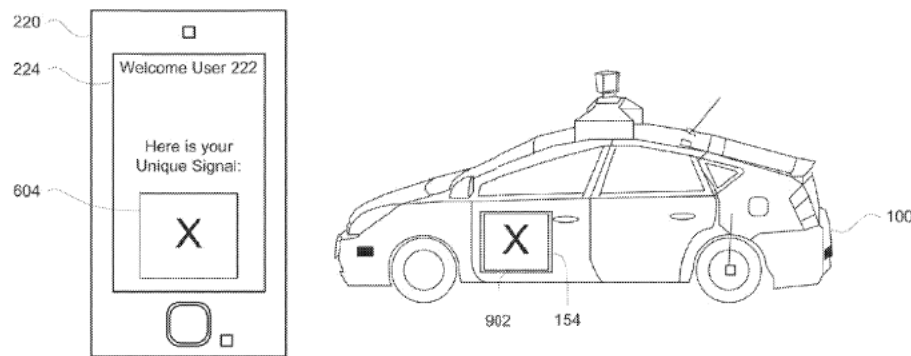
transport service is to change states from “en route” to “arriving now,” the service application can trigger or control the indication device to output the user’s specified color (and/or other preferred output content, patterns, or sequences) so that the user can see which vehicle is approaching and will provide the service for the user. *Id.* The service application can also control the indication device to output the user’s specified display/output preferences in a specific configuration that is based on the transport state. *Id.*

2. Kemler

Kemler discloses providing a user with a way to identify or verify a vehicle dispatched to pick up the user. Ex. 1008, 3:38–40. Once the vehicle is within a certain distance of the user, the vehicle may signal to the user in order to identify the vehicle to the user and avoid confusion. This signaling could include a display or audio including a unique string of text. *Id.* at 3:43–47.

Kemler describes the dispatched vehicle as having an external electronic display mounted on the vehicle and an internal electronic display. *Id.* at 5:22–24. Kemler explains that as the dispatched vehicle approaches the user’s client device, a unique signal may be displayed on the vehicle’s external display and the user’s client device so the user can identify the vehicle without compromising the user’s privacy. *Id.* at 4:1–19.

This operation is illustrated in Figure 9 of Kemler:



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FIGURE 9

Figure 9 above shows a client computing device and a computing device of a vehicle displaying unique signal “X” around the same time. *Id.* at 12:45–47. By comparing unique signal 604 of display 224 to unique signal 902 of external electronic display 154, a user may recognize that vehicle 100 was dispatched for that user. *Id.* at 12:47–51. If the signals are the same, the user can easily identify the vehicle, and if not, the user may continue to look for the vehicle dispatched for that user. *Id.* at 12:51–53.

3. *Lalancette*

In its most relevant embodiment, *Lalancette* describes an electronic display mounted to be visible from outside a taxi, a mobile computing device in the taxi that manages a dash-mounted driver display and the mounted electronic display, and a smart phone of a user. Ex. 1009 ¶¶ 27–33. The taxi is equipped with an electronic display mounted outside of the taxi car, or at least visible from outside the taxi car, as well as a dash-mounted driver display. *Id.* ¶ 27. The displays are configured to display information received from the taxi dispatch service. *Id.*

In one scenario described by Lalancette, a user orders a taxi using a handset to request taxi service from a taxi dispatch service. *Id.* ¶ 29. The user device (the handset) conveys user identification (user ID) to the service provider. *Id.* The service provider validates the request to ensure the request can be accommodated. *Id.* ¶ 30. An automated dispatch system uses the user's location to select the most suitable taxi car to respond to the request for service from the user. *Id.*

The service provider then requests a personal human-readable icon for the user from an icon server by sending a message carrying a user ID for the user. *Id.* ¶ 31. The icon server uses the user ID to retrieve a personal icon corresponding to the user from an icon database. *Id.*

The icon server sends the retrieved icon to the service provider. *Id.* ¶ 32. The service provider dispatches the selected taxi car to the location of the user and displays the user's icon on the taxi's roof-top electronic display and the driver's dashboard display. *Id.* The service provider also transmits a copy of the icon to the user device for confirmation to the user. *Id.*

In one embodiment, as part of the dispatch procedure, the service provider transmits the dispatch information and the user's icon to a mobile computer in the taxi car and the mobile computer manages the taxi roof-top electronic display 122 and the driver's dashboard display. *Id.*

When the taxi car approaches the user's location, the user can view the rooftop display to identify the taxi car as the taxi responding to the user's request. *Id.* ¶ 33. The user can compare the display of the icon on the rooftop display to the copy of the icon on the user's device to confirm the identity of the taxi. *Id.*

E. Obviousness over Kalanick and Kemler

Petitioner contends that claims 1, 2, 4, and 6–8 are unpatentable under 35 U.S.C. § 103(a) as obvious over Kalanick and Kemler. Pet. 22–42.

Patent Owner disagrees, arguing that the combined references do not teach or suggest all the claim limitations and that Petitioner has failed to show a sufficient motivation to combine the references. PO Resp. 7–31. For the reasons discussed below, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 1, 2, 4, and 6–8 are unpatentable for obviousness over Kalanick and Kemler.

1. Independent Claim 1

a. Preamble and Limitations [1A] and [1B]

Petitioner contends that Kalanick teaches a “vehicle identification system,” as recited in the preamble of claim 1, that comprises “a display associated with a vehicle, wherein the display is located to be visible from an exterior of the vehicle by the rider,” as recited in limitation [1A]. Pet. 26–28 (citing Ex. 1003 ¶¶ 126–130). Petitioner explains that Kalanick discloses a “system that can automatically configure an indication device (or a display device) for use with an on-demand service.” *Id.* at 26 (quoting Ex. 1006 ¶ 10). Petitioner contends that Kalanick’s indication device can be positioned or fastened on or within a vehicle operated by a service provider such that it is easily visible to a user. *Id.* at 27 (citing Ex. 1006 ¶ 10). Petitioner further contends that a person of ordinary skill in the art would have understood that Kalanick’s “user” is a “rider.” *Id.* at 28 (citing Ex. 1003 ¶ 130; Ex. 1006 ¶ 11 (stating that the disclosed system “can arrange a transport service for a user”)).

Petitioner contends that Kalanick teaches that its disclosed system comprises “a controller communicatively coupled to a network,” as recited

in limitation [1B]. With reference to Kalanick's Figure 1, Petitioner points to system 100, which communicates over one or more networks with client devices (e.g., mobile computing devices operated by riders) and driver devices (e.g., mobile computing devices operated by drivers). *Id.* at 28–29 (citing Ex. 1006 ¶¶ 23, 25, Fig. 1). Petitioner contends that a person of ordinary skill would have recognized that Kalanick's system 100 is a “controller,” which the '987 patent describes as a “computing device . . . capable of executing a series of instructions.” *Id.* at 29–30 (citing Ex. 1003 ¶ 134); *see* Ex. 1001, 2:63–66.

Patent Owner does not advance any arguments regarding these limitations. *See* PO Resp. 18–26. Having considered Petitioner's arguments and supporting evidence, we find that Kalanick teaches the preamble of claim 1 and limitations [1A] and [1B].⁵

b. Limitation [1C]

Limitation [1C] requires the claimed controller to be “configured to, in response to receipt of a signal from the user, generate and transmit a first signal representing an indicator via the network to a mobile communication device associated with a driver of the vehicle.” Petitioner contends that to the extent we reject Patent Owner's proposed claim constructions, Kalanick alone teaches this limitation. Pet. 31 n.5. Petitioner additionally contends that, even applying Patent Owner's constructions, the combination of Kalanick and Kemler teaches this limitation. *Id.* at 30–31; *see* Ex. 1003 ¶ 137.

⁵ We need not determine whether the preamble is limiting because we find that Kalanick teaches a “vehicle identification system.”

Petitioner asserts that Kalanick’s “controller” (i.e., system 100) can communicate, over one or more networks via a network interface (i.e., a transceiver), with client devices 150 (e.g., mobile computing devices operated by users) and driver devices 160 (e.g., mobile computing devices operated by drivers) using client device interface 120 and driver device interface 130, respectively. Pet. 31 (citing Ex. 1006 ¶ 25). Petitioner further asserts that Kalanick discloses arranging a transport service for a user by receiving a transport request from a user device and, in response to determining that the user has specified an output configuration (i.e., an indicator) for an indication device, identifying data corresponding to the user-specified output configuration and transmitting the data over a network to the driver device to configure the vehicle’s indication device. *Id.* at 31–32 (citing Ex. 1006 ¶ 2, claim 1). Additionally, Petitioner asserts that indicator preferences for Kalanick’s indication device display may include color, text, pattern, illumination sequence, or media content. *Id.* at 32 (citing Ex. 1006 ¶¶ 10, 29).

Patent Owner argues that Petitioner “fails to identify with specificity what in Kalanick corresponds to the first signal.” PO Resp. 19 (citing Ex. 2023 ¶ 53). We disagree. The Petition articulates that Kalanick’s controller communicates via a network interface with the driver’s mobile communication device. Pet. 31 (citing Ex. 1006 ¶ 25); *see* Ex. 1003 ¶ 138. The Petition also cites Kalanick’s claim 1, which specifically recites “transmitting, over one or more networks, the data [corresponding to the output configuration specified by the user] to . . . the driver device . . . to configure how the indication device of the driver operates when the driver is selected for the customer.” Pet. 32 (quoting Ex. 1006, claim 1). Thus, we find the Petition identifies with particularity Kalanick’s disclosure of a

communication containing data for configuring the vehicle's display, transmitted from the controller to the driver's mobile device, as teaching or suggesting the claimed "first signal representing an indicator" that is transmitted via the network to a mobile communication device associated with a driver of the vehicle, as recited in limitation [1C]. *See* Pet. Reply 9.

Next, Patent Owner argues that disclosure in Kalanick cited by Petitioner "does not identify a signal that corresponds to transmission of a first signal 'in response to receipt of a signal from a user.'" PO Resp. 20 (citing Ex. 1006 ¶¶ 25, 36–37). We disagree with Patent Owner's position. Patent Owner overlooks Petitioner's citation to Kalanick's claim 1, which specifically recites "receiving a transport request from a user device operated by the user," "determining that the user has specified an output configuration for an indication device," "in response to determining that the user has specified the output configuration, identifying . . . data corresponding to the output configuration," and "transmitting, over one or more networks, the data to at least one of the driver device or the indicator device." Ex. 1006, claim 1; *see* Pet. 31–32. We find that Petitioner's citation to Kalanick's claim 1 identifies with particularity that Kalanick teaches transmitting a first signal "in response to receipt of a signal from a user," as recited in limitation [1C].

Patent Owner also argues that Kalanick does not satisfy the "generate" requirement because the claims "require that a new signal be generated each time a ride is dispatched." PO Resp. 21 (citing Ex. 1001, 3:8–17, 4:7–13). By contrast, Patent Owner argues, Kalanick "does not generate an indicator signal. Instead, it transmits a signal that was stored in the user's profile based on the user's predetermined configuration preferences." *Id.* (citation omitted).

We disagree. Kalanick meets this limitation because it generates for transmission a *signal* representing the indicator. Kalanick does not “transmit[] a signal that was stored in the user’s profile,” as Patent Owner argues. PO Resp. 21. In Kalanick, it is the indicator itself (the user’s profile) that is stored, not the signal. Ex. 1006 ¶¶ 29–30. As Petitioner points out, Patent Owner’s argument is a variation on the “active formulation” claim construction argument advanced by Patent Owner, which we have rejected. *See* Pet. Reply 10; *supra* Section II.C.2. We also agree with Petitioner that Patent Owner “continues to confuse generating a unique icon or symbol with the claim requirement that simply requires that the controller generate or produce a first signal.” Pet. Reply 10. As discussed in our claim construction section, the claim language does not require generating an indicator, but rather a signal that represents an indicator. *See supra* Section II.C.2. Thus, Patent Owner’s arguments premised on a claim construction requiring “active formulation” or generating an indicator are unavailing.

Moreover, Petitioner additionally argues that the combination of Kalanick and Kemler teaches this limitation. Pet. 32–33; Pet. Reply 11. Petitioner refers to Kemler’s Figure 9, which “illustrates ‘a client computing device and a computing device of a vehicle displaying a unique signal at the same, or nearly the same time.’” Pet. 32 (citing Ex. 1008, 12:45–53, Fig. 9). Petitioner contends that a person of ordinary skill would have been motivated to combine Kemler’s “controller generated signal/indicator” with Kalanick’s vehicle identification system to have the controller send a signal representing the indicator to the driver’s device. *Id.* at 33 (citing Ex. 1008, Fig. 9; Ex. 1003 ¶ 143).

Patent Owner argues that Kemler cannot be combined with Kalanick because Kemler describes a driverless system that “does not have a mobile communication device associated with a driver.” PO Resp. 24–25. This argument is unavailing because, in the asserted combination, Petitioner relies on Kalanick, not Kemler, for teaching a mobile communication device associated with a driver. *See* Pet. 33. Patent Owner’s argument fails to address the combination of teachings from Kalanick and Kemler set forth in the Petition. We further address the motivation to combine the teachings of Kalanick and Kemler below. *See infra* Section II.E.1.d.

For the reasons discussed above and those presented in the Petition, and having considered Patent Owner’s opposing arguments and supporting evidence, we find that Kalanick alone, as well as the combination of Kalanick and Kemler, teaches limitation [1C].

c. Limitation [1D]

Limitation [1D] recites “wherein, in response to receiving the first signal, the mobile communication device associated with the driver of the vehicle generates and transmits a second signal representing the indicator to the display, the indicator identifies the vehicle.” Petitioner contends that Kalanick, as well as the combination of Kalanick and Kemler, teaches this limitation. Pet. 33–35; *see* Ex. 1003 ¶ 142 (Mr. Williams stating that “Kalanick discloses this element”).

Petitioner asserts that Kalanick teaches that the service application on the driver’s communication device controls the vehicle’s indication device to output the user’s specified display preferences, such as light sources in a particular color or pattern (i.e., indicator). Pet. 34 (citing Ex. 1006 ¶¶ 36, 37, 90). Petitioner also cites Kalanick’s teaching that the vehicle’s indication device communicates with the driver’s device using a communication

interface to receive data from the driver's device (i.e., a second signal) to control the display on the indication device. *Id.* (citing Ex. 1006 ¶ 16).

Petitioner additionally cites Kemler, which discloses an identifier shown on the vehicle display. *Id.* (citing Ex. 1008, 3:60–63). Similar to its argument for limitation [1C], Petitioner contends that a person of ordinary skill would have been motivated to combine Kemler's "controller generated signal/indicator" with Kalanick's vehicle identification system "to permit the driver's device to send the signal to the display on the vehicle after the driver's device receives the signal from the controller." *Id.* at 34–35 (citing Ex. 1003 ¶ 144).

In response, Patent Owner raises the same arguments that it raised for limitation [1C]. PO Resp. 26. As discussed previously, those arguments are unavailing. *See supra* Section II.E.1.b.

For the reasons discussed above and those presented in the Petition, and having considered Patent Owner's opposing arguments and supporting evidence, we find that Kalanick alone, as well as the combination of Kalanick and Kemler, teaches limitation [1D].

d. Motivation to Combine Kalanick and Kemler

Petitioner asserts that a person of ordinary skill would have been motivated to combine the teachings of Kalanick and Kemler with a reasonable expectation of success. Pet. 22–26; Ex. 1003 ¶¶ 118–124. Petitioner asserts that both Kalanick and Kemler address similar problems related to vehicle identification. Pet. 22–23. Furthermore, Petitioner asserts that "[b]oth teach similar solutions involving generating, transmitting, and displaying unique, easily distinguishable visual indicators on multiple displays such that users can visually match the unique indicators to efficiently identify their assigned vehicle." *Id.* at 23. Petitioner additionally

contends that “[b]oth also utilize vehicle mounted displays which are visible from the outside of the vehicle.” *Id.* at 23; Ex. 1003 ¶ 118.

Further, Petitioner explains that Kalanick and Kemler both focus on vehicle identification using indicators but “approach indicator selection in slightly different ways.” Pet. 24; Ex. 1003 ¶ 122. For example, Petitioner explains that Kalanick’s on-demand service system “can receive information about the transport state from the service application and can control the indication device to output the user’s color or other unique distinctive indicator based on the transport state.” Pet. 24 (citing Ex. 1006 ¶ 38). As for Kemler, Petitioner explains that it describes a central dispatching system that generates a signal to identify the vehicle to the user, and “[o]nce the vehicle is within a certain distance of the user’s client device, the vehicle’s computing device may display the signal on an external display of the vehicle such that the signal should be visible to the user as the vehicle approaches the user’s client device.” *Id.* at 24–25 (quoting Ex. 1008, 3:48–4:11).

Petitioner concludes that a person of ordinary skill would have been motivated to implement Kemler’s indicator selection system, which provides for automatic selection of an indicator, in Kalanick’s vehicle identification system to “eliminate instances where riders within a similar area select the same or similar indicators, or are provided the same default indicator, making them less unique.” *Id.* at 25. Petitioner contends also that a person of ordinary skill would have had a reasonable expectation of success in making the combination because it would require nothing more than modifying the software of Kalanick’s system to permit the central controller to create and assign unique indicators, as taught in Kemler. *Id.*; see Ex. 1003 ¶ 124 (stating that the modification “is nothing more than

combining known display technologies and visual identification techniques described in these references to perform their intended functions with described benefits and predictable results”).

Patent Owner argues that the Petition fails to provide a sufficient motivation to combine Kemler with Kalanick. PO Resp. 7–18. First, Patent Owner contends that Petitioner’s assertion that Kalanick and Kemler “teach similar solutions” is insufficient proof of a motivation to combine “as a matter of law.” *Id.* at 9. Patent Owner also asserts that Kalanick “already mitigates” the potential “duplication” problem created when riders from the same area select the same or similar indicators. *Id.* at 11–13. Patent Owner further argues that “combining known technologies” is not sufficient to establish a motivation to combine. *Id.* at 13–17. Finally, Patent Owner argues there would be no reasonable expectation of success due to the “immense expense and complexity of operating a server farm” in Kemler’s system. *Id.* at 17–18 (internal quotation marks omitted).

The Federal Circuit has recently reminded us that “[t]he motivation-to-combine analysis is a flexible one. *Any* need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.” *Intel Corp. v. PACTXPP Schweiz AG*, 61 F.4th 1373, 1379 (Fed. Cir. 2023) (citing *KSR*, 550 U.S. at 420). The court further observed that “in many cases[,] a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.* at 1379–80 (alteration in original, internal quotation marks omitted). The court continued, “[t]hat’s why the motivation-to-combine analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of

ordinary skill in the art would employ.” *Id.* at 1380 (internal quotation marks omitted).

We find that the Petition and supporting expert testimony sufficiently demonstrate that a person of ordinary skill would have combined the teachings of Kemler and Kalanick with a reasonable expectation of success. *See* Pet. 22–26; Ex. 1003 ¶¶ 118–124. We do not find Patent Owner’s responsive arguments persuasive. For example, we disagree with Patent Owner’s argument that Petitioner’s demonstration that Kalanick and Kemler provide similar solutions is “insufficient as a matter of law.” PO Resp. 9. The assertion that Kalanick and Kemler are analogous art to the ’987 patent, which Patent Owner no longer disputes (*see* Tr. 58:11–15), is entitled to consideration as one factor among many in Petitioner’s argument. *See* Pet. 22–24; Pet. Reply 3–4. Moreover, Patent Owner’s argument is contrary to *Intel*’s approval of the “known-technique” rationale for combining the teachings of references: “[I]f there’s a known technique to address a known problem using ‘prior art elements according to their established functions,’ then there is a motivation to combine.” *Intel Corp.*, 461 F.4th at 1380 (citation omitted).

We disagree, also, with Patent Owner’s argument that potential duplication of indicators does not provide a reason for combining Kemler’s indicator selection with Kalanick’s system. *See* PO Resp. 11–13. The fact that Kalanick may not “disclose any problem” arising from the possibility of two passengers in the same area having the same indicator does not prove a problem did not exist or that a person of ordinary skill would not be motivated to improve upon the solution for it. *See* Pet. Reply 5–6; Ex. 1003 ¶ 123. We also are not persuaded by Patent Owner’s argument that there would be no reasonable expectation of success in combining the references

due to the complexity of Kemler's system. *See* PO Resp. 17–18. Patent Owner does not sufficiently explain the relevance of the alleged complexity of Kemler's system to the proposed combination of Kemler's indicator selection with Kalanick's vehicle identification system that Petitioner asserts against the challenged claims of the '987 patent. *See id.*; Pet. Reply 7–8.

e. Conclusion for Claim 1

For the reasons explained above, we find that the combination of Kalanick and Kemler teaches or suggests all the limitations of claim 1 and that a person of ordinary skill in the art would have combined Kalanick and Kemler in the manner asserted in the Petition with a reasonable expectation of success. Having considered the evidence of obviousness under the first three *Graham* factors, we determine that Petitioner has shown by a preponderance of the evidence that claim 1 of the '987 patent is unpatentable under 35 U.S.C. § 103 as obvious over the combination of Kalanick and Kemler.

2. Dependent Claim 2

Claim 2 depends from claim 1 and further recites “wherein the controller is further configured to transmit a third signal representing the indicator to a mobile communication device associated with the rider, the indicator identifies the vehicle.” Ex. 1001, 7:47–50. Petitioner relies on a combination of Kalanick and Kemler for teaching this limitation. Pet. 35–37.

Petitioner first points to Kalanick's description of a user interface depicting a service application displayed on a mobile computing device of a user/rider. *Id.* at 35 (citing Ex. 1006 ¶¶ 75–76, Figs. 4A, 4B). Petitioner then cites Kemler's disclosure that the dispatching system may send a signal to a user's device to identify a dispatched vehicle. *Id.* at 35–36 (citing

Ex. 1008, 4:12–19, 7:31–36, 9:33–41, Figs. 6, 9). Petitioner refers to Kemler’s Figure 9, which “illustrates ‘a client computing device and a computing device of a vehicle displaying a unique signal at the same, or nearly the same time.’” *Id.* at 36 (quoting Ex. 1008, 12:45–53). Petitioner asserts that in view of Kemler’s teachings, it would have been obvious to a person of ordinary skill in the art to modify Kalanick’s vehicle identification system to send and display a third signal representing the indicator to assist the rider in quickly locating the dispatched vehicle. *Id.* at 37 (citing Ex. 1003 ¶¶ 146–150).

In response, Patent Owner argues that Kalanick does not disclose a controller “configured to transmit a third signal representing the indicator to a mobile communication device associated with the rider.” PO Resp. 27. This argument fails because it does not address the teachings of Kemler. One cannot show non-obviousness by attacking references individually where the challenge is based on combinations of references. *See In re Keller*, 642 F.2d 413, 426 (CCPA 1981); *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). Instead, the test for obviousness is what the combined teachings of the references would have suggested to those having ordinary skill in the art. *In re Mouttet*, 686 F.3d 1322, 1333 (Fed. Cir. 2012).

Patent Owner also argues that Petitioner has not made a sufficient showing regarding motivation to combine Kalanick and Kemler. PO Resp. 27. We disagree. Petitioner has established that a person of ordinary skill in the art would have had reason to combine the references for the reasons discussed above. *See supra* Section II.E.1.d. Petitioner further demonstrates, with support from Mr. Williams, that a person of ordinary skill in the art would have modified Kalanick with Kemler “to implement[]

Kalanick’s purpose of assisting the rider with ensuring it has located the correct vehicle” and so “the rider can quickly and safely locate the vehicle dispatched for them.” Pet. 37 (citing Ex. 1003 ¶ 150).

For these reasons, we find that the combination of Kalanick and Kemler teaches or suggests the limitations of claim 2 and that a person of ordinary skill in the art would have combined the references in the manner asserted. Accordingly, we determine that Petitioner has shown by a preponderance of the evidence that claim 2 is unpatentable as obvious over Kalanick and Kemler.

3. Dependent Claim 4

Claim 4 depends from claim 1 and further recites that the vehicle identification system includes “a transceiver which receives and transmits signals from the controller to the mobile communication devices.” Ex. 1001, 7:57–59. Petitioner asserts that Kalanick’s system 100 (corresponding to the claimed “controller”) communicates via a network interface with the mobile computing devices operated by the driver and the user (i.e., rider). Pet. 37–38 (citing Ex. 1006 ¶¶ 23, 25). Petitioner contends that a person of ordinary skill in the art would have recognized Kalanick’s network interface to be a “transceiver” that receives and transmits signals between the controller and the mobile communication devices associated with the driver and the rider. *Id.* at 38 (citing Ex. 1003 ¶¶ 153–154).

Patent Owner does not advance any arguments regarding claim 4 other than those discussed above with respect to claims 1 and 2 and the motivation to combine the references. PO Resp. 28. Based on Petitioner’s arguments and supporting evidence, we find that the combination of Kalanick and Kemler teaches or suggests the limitations of claim 4 and that a person of ordinary skill in the art would have combined the references in

the manner asserted. Accordingly, we determine that Petitioner has shown by a preponderance of the evidence that claim 4 is unpatentable as obvious over Kalanick and Kemler.

4. Dependent Claim 6

Claim 6 depends from claim 1 and further recites “wherein the indicator is an identifier in the form of an alphanumeric string.” Ex. 1001, 7:62–64. For this limitation, Petitioner first cites Kalanick’s disclosure that user preferences for the indicator device can include text. Pet. 39 (citing Ex. 1006 ¶¶ 10, 29). Petitioner also cites Kemler, which teaches sending to the user a signal identifying the dispatched vehicle, which may be a unique string of text or alphanumeric characters. *Id.* (citing Ex. 1008, 4:12–19, Fig. 6); *see* Ex. 1008, 3:60–61, 11:1–2. Petitioner contends that a person of ordinary skill in the art would have been motivated to combine Kalanick’s visual indicator with the central controller of Kemler sending the indicator signal in order to utilize the diverse indicator options disclosed in Kalanick along with the benefits of the central controller selecting and sending indicators signals as disclosed in Kemler. Pet. 39 (citing Ex. 1003 ¶ 159).

Patent Owner argues that “Kalanick does not describe an alphanumeric string when it refers to indicators that it allows for sign preferences.” PO Resp. 28 (citing Ex. 1006 ¶ 29; Ex. 2023 ¶ 69). We disagree, as Kalanick explicitly provides that “user preferences can be configured by the user and can include indication (or sign) preferences, such as . . . text.” Ex. 1006 ¶ 29. Patent Owner otherwise advances the same arguments discussed above with respect to claims 1 and 2 and the motivation to combine the references. PO Resp. 28.

Based on Petitioner’s arguments and supporting evidence, we find that the combination of Kalanick and Kemler teaches or suggests the limitations

of claim 6 and that a person of ordinary skill in the art would have combined the references in the manner asserted. Accordingly, we determine that Petitioner has shown by a preponderance of the evidence that claim 6 is unpatentable as obvious over Kalanick and Kemler.

5. Dependent Claim 7

Claim 7 depends from claim 1 and further recites “wherein the indicator is an identifier in the form other than an alphanumeric string.” Ex. 1001, 7:65–67. Petitioner cites Kalanick, which discloses non-alphanumeric configurable indicator sign preferences including color and pattern. Pet. 40 (citing Ex. 1006 ¶¶ 29, 39; Ex. 1003 ¶ 162).

Patent Owner does not advance any arguments regarding claim 7 other than those discussed above with respect to claims 1 and 2 and the motivation to combine the references. PO Resp. 28. Based on Petitioner’s arguments and supporting evidence, we find that the combination of Kalanick and Kemler teaches or suggests the limitations of claim 7 and that a person of ordinary skill in the art would have combined the references in the manner asserted. Accordingly, we determine that Petitioner has shown by a preponderance of the evidence that claim 7 is unpatentable as obvious over Kalanick and Kemler.

6. Independent Claim 8

Most of the limitations in claim 8 are substantially the same as the limitations in claim 1. *Compare* Ex. 1001, 8:1–14, *with id.* at 7:33–46. Additionally, claim 8 recites “wherein the indicator is displayed on the mobile communication device associated with the driver, the mobile communication device associated with the rider and the display associated with the vehicle.” *Id.* at 8:15–18.

Petitioner refers back to its analysis for claims 1 and 2. Pet. 40–42. Patent Owner repeats some of its earlier arguments with respect to claims 1 and 2. PO Resp. 29–31. For the reasons discussed previously, we find those arguments unavailing. *See supra* Sections II.E.1, II.E.2.

For the reasons explained above with respect to claims 1 and 2 and those presented in the Petition, we find that the combination of Kalanick and Kemler teaches or suggests the limitations of claim 8 and that a person of ordinary skill in the art would have combined the references in the manner asserted. Accordingly, we determine that Petitioner has shown by a preponderance of the evidence that claim 8 is unpatentable as obvious over Kalanick and Kemler.

F. Anticipation by Lalancette

Petitioner contends that claims 1, 2, 4, 7, and 8 are unpatentable under 35 U.S.C. § 102 as anticipated by Lalancette. Pet. 42–54. Patent Owner disagrees, arguing that Lalancette does not disclose all the claim limitations. PO Resp. 31–38. For the reasons discussed below, we determine that Petitioner has demonstrated by a preponderance of the evidence that Lalancette anticipates claims 1, 2, 4, 7, and 8.

1. Independent Claim 1

a. Preamble and Limitations [1A] and [1B]

Petitioner contends that Lalancette discloses a “vehicle identification system,” as recited in the preamble of claim 1, that comprises “a display associated with a vehicle, wherein the display is located to be visible from an exterior of the vehicle by the rider,” as recited in limitation [1A]. Pet. 42–43. Petitioner cites Lalancette’s disclosure of a “cross-platform target identification system” for use with a taxi dispatch service. *Id.* at 42 (citing Ex. 1009 ¶¶ 1, 2, 27, 29, 33). As Petitioner explains, Lalancette

discloses a taxi car with an electronic display mounted on the outside, such as a rooftop display, as well as a dash-mounted driver display. *Id.* at 42–43 (citing Ex. 1009 ¶¶ 27, 32–33, Fig. 1).

Petitioner also contends that Lalancette discloses that its system comprises “a controller communicatively coupled to a network,” as recited in limitation [1B]. *Id.* at 44–47. Petitioner cites Lalancette’s disclosure of a taxi dispatch service that is accessible to customers via wired or wireless communication links in a telecommunications network and telecommunications equipment at the service provider. *Id.* at 44 (citing Ex. 1009 ¶¶ 27, 29). Petitioner explains that Lalancette’s taxi service provider system incorporates a server that, according to a method illustrated in Figure 2, receives a request for service for a person ordering a taxi, associates the request for service with a human-readable icon associated with the user, and sends the icon to a target display. *Id.* at 45–46 (citing Ex. 1009 ¶¶ 37, 39, Fig. 2). Petitioner contends that Lalancette also discloses that its methods may be implemented using computers, processors, or controllers, and that a person of ordinary skill in the art would have recognized that the taxi dispatch server performing the method in Figure 2 is a “controller” that would be “communicatively coupled” to a network. *Id.* at 46–47 (citing Ex. 1009 ¶¶ 45–48; Ex. 1003 ¶¶ 177–179).

Patent Owner does not advance any arguments regarding these limitations. *See* PO Resp. 32–35. Having considered Petitioner’s arguments and supporting evidence, we find that Lalancette discloses the preamble of claim 1 and limitations [1A] and [1B].⁶

⁶ We need not determine whether the preamble is limiting because we find that Lalancette discloses a “vehicle identification system.”

b. Limitation [1C]

Limitation [1C] requires the claimed controller to be “configured to, in response to receipt of a signal from the user, generate and transmit a first signal representing an indicator via the network to a mobile communication device associated with a driver of the vehicle.” Petitioner contends that Lalancette discloses that the controller (i.e., taxi service provider 108) generates a first signal representing an indicator (icon) which is transmitted to a mobile communication device (i.e., mobile computer) in the taxi car. Pet. 48 (citing Ex. 1009 ¶¶ 29, 31–33, 39, Fig. 1).

We disagree with Patent Owner’s argument that Lalancette does not disclose a mobile device associated with a driver. *See* PO Resp. 32. Lalancette discloses that the mobile computer is in the taxi car, and thus is associated with it. And Lalancette discloses that the taxi car has one driver while it is in service for dispatch to a rider, and thus, that driver is associated with the taxi car. Ex. 1009 ¶¶ 29–33. Moreover, Lalancette discloses that the taxi’s equipment is associated with its driver. *See* Ex. 1009 ¶ 33 (teaching that “user 102 can show the driver the copy of the icon on the user device 104 which the driver can compare to the copy of the icon displayed on the *driver’s dashboard display 124*” (emphasis added)).

We also find unavailing Patent Owner’s argument that Mr. Williams, Petitioner’s expert, “acknowledges that Lalancette does not disclose the use of a mobile communication device associated with the driver.” *Id.* (citing Ex. 2022, 128:14–129:25, 132:1–8). Patent Owner misrepresents Mr. Williams’s testimony. Mr. Williams was not asked whether Lalancette “discloses” a mobile communication device, but rather was asked “You’ll agree that La[l]ancette doesn’t identify the mobile computer as a mobile communication device associated with the driver?” Ex. 2022, 129:10–13.

Mr. Williams responded “[i]n that passage of where mobile computer is specifically referenced, that description is not in that passage.” *Id.* at 129:14–16. Notably, Mr. Williams also testified that (i) “[t]he nature of La[l]ancette requires some sort of computing device in the taxi that has the ability to receive and communicate in order to get information, for example, icon information from the central computer”; (ii) “mobile computer . . . has a variety of form factors inclusive of something like a [s]martphone”; and (iii) “[i]n the passage where [Lalancette] references mobile computer, it doesn’t have a specific form factor discussion such as referencing [s]martphones.” *Id.* at 125:17–22, 129:20–25, 132:5–8.

We also find unavailing Patent Owner’s argument that “Lalancette does not disclose a mobile device associated with a driver at all” to the extent that Patent Owner “tries to improperly narrow the definition of a mobile communication device to only mean a smartphone,” as Petitioner alleges. Pet. Reply 15 (citing Ex. 2022, 128:14–17); *see* PO Resp. 32. We find that this argument is contradicted by the ’987 patent, which describes mobile communication devices broadly. *See* Ex. 1001, 3:4–7.

We further disagree with Patent Owner’s argument that Lalancette does not meet the “generate” requirement because the claims “require that a new signal be actively formulated each time there is a ride dispatched.” PO Resp. 33 (citing Ex. 2023 ¶ 80). As discussed previously, we have rejected Patent Owner’s proposed construction requiring “active formulation.” *Supra* Section II.C.2. Moreover, to the extent Patent Owner contends that a new indicator/icon must be generated for each ride, the claim language does not require generating an indicator, but rather a signal that represents an indicator. *Id.*

For the reasons discussed above and those presented in the Petition, and having considered Patent Owner’s opposing arguments and supporting evidence, we find that Lalancette discloses limitation [1C].

c. Limitation [1D]

Limitation [1D] recites “wherein, in response to receiving the first signal, the mobile communication device associated with the driver of the vehicle generates and transmits a second signal representing the indicator to the display, the indicator identifies the vehicle.” Petitioner contends that Lalancette “discloses that the taxi’s mobile computer manages the taxi roof-top electronic display and displays the received icon signal on the roof-top display as the taxi approaches the user.” Pet. 49.

Patent Owner argues that Lalancette does not disclose this limitation for the same reasons raised with respect to limitation [1C]. For the reasons discussed, those arguments are unavailing.

For the reasons discussed above and those presented in the Petition, and having considered Patent Owner’s opposing arguments and supporting evidence, we find that Lalancette discloses limitation [1D].

d. Conclusion for Claim 1

For the reasons explained above, we find that Lalancette discloses all the limitations of claim 1. Accordingly, we determine that Petitioner has shown by a preponderance of the evidence that Lalancette anticipates claim 1.

2. Dependent Claim 2

Claim 2 depends from claim 1 and further recites “wherein the controller is further configured to transmit a third signal representing the indicator to a mobile communication device associated with the rider, the indicator identifies the vehicle.” Ex. 1001, 7:47–50. Lalancette discloses

that the service provider transmits a copy of the icon (indicator) to the user device. Ex. 1009 ¶ 32.

Patent Owner does not advance any arguments regarding claim 2 other than those discussed above with respect to claim 1. PO Resp. 35. Based on Petitioner's arguments and supporting evidence, we find that Lalancette discloses the limitations of claim 2. Accordingly, we determine that Petitioner has shown by a preponderance of the evidence that Lalancette anticipates claim 2.

3. Dependent Claim 4

Claim 4 depends from claim 1 and further recites that the vehicle identification system includes "a transceiver which receives and transmits signals from the controller to the mobile communication devices." Ex. 1001, 7:57–59. Petitioner contends that a person of ordinary skill in the art would have recognized that Lalancette's taxi dispatch server (controller) has a transceiver for receiving and transmitting signals to the mobile communication devices. Pet. 51 (citing Ex. 1003 ¶ 190; Ex. 1009 ¶¶ 27, 29, 45–48).

Patent Owner does not advance any arguments regarding claim 4 other than those discussed above with respect to claim 1. PO Resp. 35–36. Based on Petitioner's arguments and supporting evidence, we find that Lalancette discloses the limitations of claim 4. Accordingly, we determine that Petitioner has shown by a preponderance of the evidence that Lalancette anticipates claim 4.

4. Dependent Claim 7

Claim 7 depends from claim 1 and further recites "wherein the indicator is an identifier in the form other than an alphanumeric string."

Ex. 1001, 7:65–67. Lalancette discloses “human-readable icons” such as a simple geometric pattern of pixels. Ex. 1009 ¶¶ 43–44, Fig. 4; *see* Pet. 52.

Patent Owner does not advance any arguments regarding claim 7 other than those discussed above with respect to claim 1. PO Resp. 36. Based on Petitioner’s arguments and supporting evidence, we find that Lalancette discloses the limitations of claim 7. Accordingly, we determine that Petitioner has shown by a preponderance of the evidence that Lalancette anticipates claim 7.

5. Independent Claim 8

For independent claim 8, Petitioner refers back to its analysis for claims 1 and 2. Pet. 52–54. Similarly, Patent Owner refers back to or repeats its arguments for claims 1 and 2, which we have found unavailing. PO Resp. 36–38.

For the reasons explained with respect to claims 1 and 2, we find that Lalancette discloses the limitations of claim. Accordingly, we determine that Petitioner has shown by a preponderance of the evidence that Lalancette anticipates claim 8.

G. Obviousness over Lalancette and Kemler

Petitioner contends that claim 6 is unpatentable under 35 U.S.C. § 103 as obvious over Lalancette and Kemler. Pet. 54–57. For this asserted ground, Petitioner relies on Kemler only for teaching the limitation in claim 6 reciting “wherein the indicator is an identifier in the form of an alphanumeric string.” Ex. 1001, 7:62–64; *see* Pet. 57. As Petitioner asserts, Kemler discloses that the “unique signal may include a unique string of text or alphanumeric characters.” Ex. 1008, 11:1–2; *see* Pet. 57. Petitioner contends that a person of ordinary skill would have found it obvious to

modify Lalancette's taxi identification system to use the alphanumeric indicators taught in Kemler. Pet. 57 (citing Ex. 1003 ¶ 213).

Similar to its argument with respect to Kalanick and Kemler, Petitioner argues that Lalancette and Kemler address similar problems related to vehicle identification and teach similar solutions involving transmitting and displaying unique visual indicators so that users can efficiently and safely identify their vehicle. Pet. 54. Petitioner contends that it would have been an obvious design choice to use the type of indicators taught in Kemler in the vehicle identification system of Lalancette. *Id.* at 56; Ex. 1003 ¶ 207. Petitioner also contends that a person of ordinary skill in the art would have understood that Kemler's alphanumeric indicators are easier to display on low resolution displays and easier to recognize than Lalancette's icons. Pet. 56; Ex. 1003 ¶ 207. Further, Petitioner contends that a person of ordinary skill would have had a reasonable expectation of success in implementing Kemler's indicators in Lalancette's system because the systems use similar display technologies and modifying Lalancette as proposed "is nothing more than combining known display technologies and visual identification techniques described in these references to perform their intended functions with described benefits and predictable results." Pet. 56–57 (citing Ex. 1003 ¶ 208).

Patent Owner argues that Petitioner fails to show that Lalancette generates a first signal including an alphanumeric string. PO Resp. 45 (citing Ex. 2023 ¶ 110). This argument is unavailing because Petitioner relies on Kemler, not Lalancette, for teaching a signal in the form of an alphanumeric string. *See* Pet. 57.

Patent Owner also contends that the Petition fails to show a motivation to combine Kemler with Lalancette. PO Resp. 38–44. We

disagree. Patent Owner's various arguments do not relate to the particular combination set forth by Petitioner, i.e., using alphanumeric indicators, such as those taught in Kemler, in place of Lalancette's icons. *See id.* Petitioner sufficiently demonstrates that using alphanumeric indicators would have been an obvious design choice and further provides reasoning for why a person of ordinary skill in the art would have replaced Lalancette's icons with alphanumeric indicators. *See* Pet. 56–57; Ex. 1003 ¶¶ 207–208.

For the reasons explained above, we find that the combination of Lalancette and Kemler teaches or suggests all the limitations of claim 6 and that a person of ordinary skill in the art would have combined Lalancette and Kemler in the manner asserted in the Petition with a reasonable expectation of success. Accordingly, we determine that Petitioner has shown by a preponderance of the evidence that claim 6 is unpatentable as obvious over Lalancette and Kemler.

H. Patent Owner's Motion to Exclude

Patent Owner filed a Motion to Exclude paragraphs 4–60 of the Second Declaration David Hilliard Williams (Ex. 1030). Mot. Excl. 1. We do not rely on any of these paragraphs in this Final Written Decision. Accordingly, we dismiss as moot Patent Owner's Motion to Exclude.

III. CONCLUSION⁷

For the foregoing reasons, we determine Petitioner has shown by a preponderance of the evidence that claims 1, 2, 4, and 6–8 of the '987 patent are unpatentable. The chart below summarizes our conclusions:

Claim(s)	35 U.S.C. §	References/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 2, 4, 6–8	103	Kalanick, Kemler	1, 2, 4, 6–8	
1, 2, 4, 7, 8	102	Lalancette	1, 2, 4, 7, 8	
6	103	Lalancette, Kemler	6	
Overall Outcome			1, 2, 4, 6–8	

IV. ORDER

Accordingly, it is

ORDERED that claims 1, 2, 4, and 6–8 of the '987 patent have been shown to be unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Exclude (Paper 22) is *dismissed* as moot; and

⁷ 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 Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16654 (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).

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

IPR2021-01599
Patent 10,169,987 B1

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