

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

RIDECO INC.,
Petitioner,

v.

VIA TRANSPORTATION, INC.,
Patent Owner.

IPR2022-00740
Patent 10,197,411 B2

Before PATRICK R. SCANLON, MICHAEL L. WOODS, and
RICHARD H. MARSCHALL, *Administrative Patent Judges*.

WOODS, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining No Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

Petitioner, RideCo Inc., filed a Petition requesting *inter partes* review of claims 1–13, 15, and 17–20 (“the challenged claims”) of U.S. Patent No. 10,197,411 (Ex. 1001, “the ’411 patent”). Paper 1 (“Pet.”). Pursuant to 35 U.S.C. § 314, we instituted an *inter partes* review as to all challenged claims and all grounds raised in the Petition. Paper 12 (“Institution Decision” or “Inst. Dec.”).

After institution, Patent Owner, Via Transportation, Inc., filed a Response (Paper 18, “PO Resp.”), Petitioner filed a Reply (Paper 19, “Pet. Reply”), and Patent Owner filed a Sur-reply (Paper 20, “PO Sur-reply”). An oral hearing in this proceeding was held on June 7, 2023, and a transcript of the hearing is included in the record (Paper 26).

We have jurisdiction under 35 U.S.C. § 6, and we issue this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73 (2019). For the reasons set forth below, we determine that Petitioner has not shown by a preponderance of the evidence that claims 1–13, 15, and 17–20 of the ’411 patent are unpatentable based on the grounds asserted in the Petition.

II. BACKGROUND

A. Real Parties-In-Interest and Related Matters

Petitioner identifies itself and Transit Labs Inc. as real parties-in-interest. Pet. 71. Patent Owner identifies itself as its sole real party-in-interest. Paper 4, 2.

Petitioner identifies one district court proceeding relating to the ’411 patent: *Via Transportation, Inc. v. RideCo Inc.*, Case No. 6:21-cv-

00457-ADA (W.D. Tex.) (“Related Litigation”). Pet. 71. Patent Owner does not identify any additional related proceedings. *See* Paper 4, 2.

Petitioner further identifies IPR2022-00286, which challenges U.S. Patent No. 9,816,824 B1 (the “’824 patent”). Pet. 71. In a final written decision entered on June 23, 2023, the Board determined that no challenged claim of the ’824 patent was shown to be unpatentable. IPR2022-00286, Paper 30 (June 23, 2023).

B. Overview of the ’411 Patent

The ’411 patent describes a “computer-implemented transportation system.” Ex. 1001, code (57). The ’411 patent describes “continuously updatable computer-generated routes with continuously configurable *virtual bus stops* for passenger ride-sharing.” *Id.* at 1:23–26 (emphasis added).

The ’411 patent describes “the term ‘virtual bus stop’ [as] a location selected . . . as being safe for at least one passenger pickup (i.e., the location to which passenger(s) being directed to go to be picked up by a designated vehicle (e.g., bus, van, car, etc.))[] and/or at least one passenger dropoff.” *Id.* at 8:57–63.

The system can also identify suitable vehicles for completing the user’s requested route using GPS data to determine the “current vehicle location data for a plurality of ride-sharing vehicles traveling within the at least one geographic locale.” Ex. 1001, 2:5–10. The system and method described in the ’411 patent may include additional features and steps, such as dynamically selecting and assigning a plurality of optimal virtual bus stops and routes for vehicles that will be simultaneously servicing multiple ride-sharing requesting passengers based on various parameters. *See id.* at

2:25–61. The '411 patent further describes dynamically updating and displaying optimal routes on the screens of electronic devices associated with passengers and vehicles. *See id.* at 2:53–3:4. The '411 patent further explains, “the term ‘dynamic(ly)’ means that events and/or actions *can be* triggered and/or occur without any human intervention.” *Id.* at 8:25–27 (emphasis added).

To illustrate, we reproduce Figure 5 of the '411 patent, below:

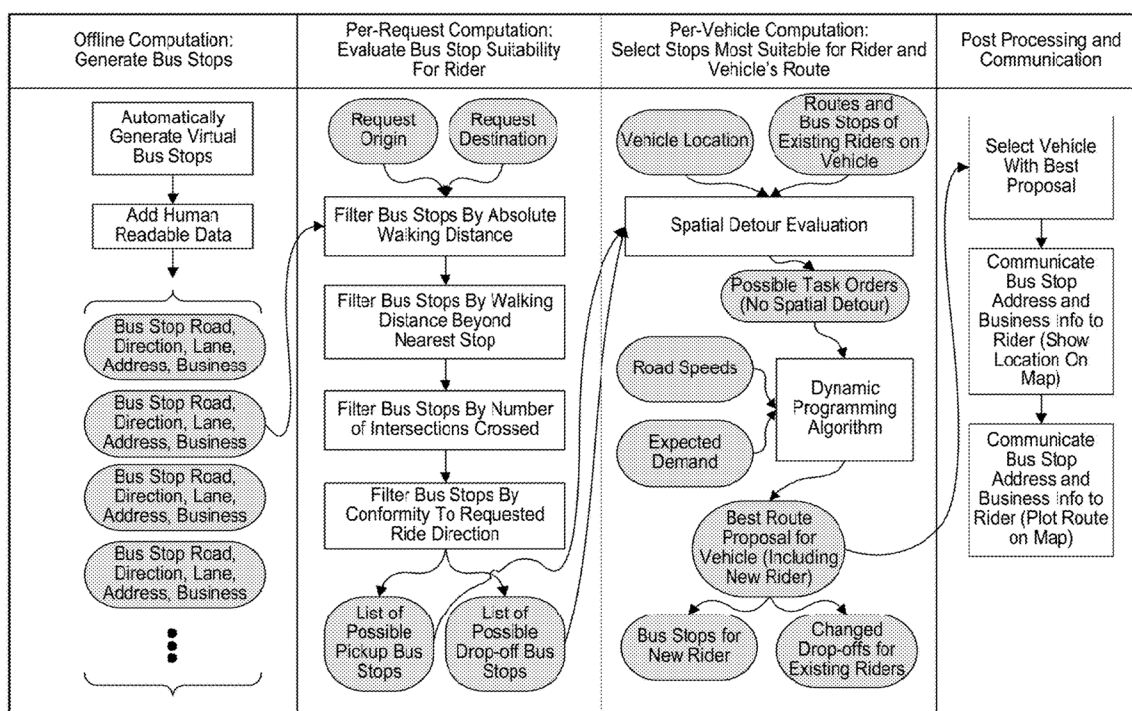


FIGURE 5

Figure 5 “is a diagram illustrating an embodiment of the exemplary computer transportation system” described in the '411 patent. *Id.* at 16:54–56. As shown above in Figure 5 and detailed in the '411 patent, the patent teaches a multistep process by which the *system will dynamically select* appropriate *virtual bus stops*, routes, and vehicles for a plurality of rideshare-requesting passengers. *See id.* at 8:25–27 (“As used herein, the term ‘dynamic(ly)’ means that events and/or actions can be triggered

and/or occur without any human intervention.”). For example, “the exemplary computer transportation systems of the present invention are further configured to determine which of the virtual bus-stops among the grid of virtual bus-stops are candidate[s] for boarding and/or disembarking based on at least one of” several parameters and factors. *Id.* at 9:13–17. The ’411 patent additionally explains that the system can be “further configured to choose a single boarding virtual bus-stop and/or single disembarking virtual bus-stop . . . , where the chosen boarding virtual bus-stop and/or disembarking bus-stop are based on at least one of” several parameters and factors. *Id.* at 9:37–45.

C. Challenged Claims

Petitioner challenges claims 1–13, 15, and 17–20 of the ’411 patent. Pet. 1. Claims 1, 2, and 11 are independent and similar to each other in language and scope, with claims 1 and 2 directed to a system and claim 11 directed to a method. Ex. 1001, 30:46–34:34. Claims 3–10, 12, 13, 15, and 17, 18, and 20 depend directly or indirectly from claim 2. *Id.* at 31:17–34:34. Claim 19 depends from claim 11. *Id.* at 34:16–30. Claims 1 and 2 are illustrative and reproduced below:

1. **[P]** A system for routing a rideshare vehicle, the system comprising:

[1(a)(i)] a communications interface configured to receive, from a first mobile communications device of a first user, a request for a rideshare, **[1(a)(ii)]** wherein the request includes information associated with a current location of the first user and a first desired destination;

[1(b)] at least one processor configured to receive information from the communications interface and programmed to:

[1(c)] determine, based on current locations of multiple rideshare vehicles and the received request, a rideshare vehicle to pick up the first user;

[1(d)(i)] select, based on the current travel route of the rideshare vehicle, virtual bus stops for the identified rideshare vehicle, including a first virtual bus stop for picking up the first user and a second virtual bus stop for dropping off the first user, and **[1(d)(ii)]** wherein the first virtual bus stop is at a first location at least a block away from the current location of the first user and the second virtual bus stop is at a second location differing from the first desired destination;

[1(e)] assign the rideshare vehicle to pick up the first user from the first virtual bus stop and to drop off the first user at the second virtual bus stop;

[1(f)] generate a first time-estimation for the rideshare vehicle to arrive at the first virtual bus stop for picking up the first user;

[1(g)] continuously track location a current location of the rideshare vehicle prior to arrival at the first virtual bus stop, to generate an updated time-estimation for the rideshare vehicle to arrive at the first virtual bus stop for picking up the first user;

[1(h)] cancel the assignment of the rideshare vehicle when the updated time-estimation differs from the first time-estimation by more than a predefined threshold; and

[1(i)] reassign another rideshare vehicle to pick up the first user from the first virtual bus stop.

2. **[P]** A system for routing a rideshare vehicle, the system comprising:

[2(a)(i)] a communications interface configured to receive, from a first mobile communications device of a first user, a request for a rideshare,

[2(a)(ii)] wherein the request includes information associated with a current location of the first user and a first desired destination;

[2(b)] a memory for storing a plurality of pre-identified locations for candidate virtual bus stops;

[2(c)] at least one processor configured to receive information from the communications interface and to:

[2(d)] determine, based on current locations of multiple rideshare vehicles and the received request, a rideshare vehicle to pick up the first user;

[2(e)(i)] select from the plurality of pre-identified locations stored in the memory, based on the current travel route of the rideshare vehicle, virtual bus stops for the identified rideshare vehicle, including a first virtual bus stop for picking up the first user and a second virtual bus stop for dropping off the first user, and

[2(e)(ii)] wherein the first virtual bus stop is at a first location at least a block away from the current location of the first user and the second virtual bus stop is at a second location differing from the first desired destination; and

[2(f)] assign the rideshare vehicle to pick up the first user from the first virtual bus stop and to drop off the first user at the second virtual bus stop.

Id. at 30:46–31:44 (bold reference numerals correspond with Petitioner’s captions to the elements); *see* Pet. 10–34 (addressing claim 1); *see also* Pet. 35–39 (addressing claim 2); *see also* Pet. 73–74 (Appendix of Challenged Claims).

D. Asserted Grounds of Unpatentability

Petitioner asserts that claims 1–13, 15, and 17–20 are unpatentable based on the following grounds (Pet. 5–6):

Claims Challenged	35 U.S.C. §	References
1	103	Lambert, ¹ Sweeney, ² Olmi ³
2–7, 10, 12, 15, 18	103	Lambert, Sweeney, Poykko ⁴
11, 19, 20	103	Lambert, Sweeney, Lerenc ⁵
8, 9, 13	103	Lambert, Sweeney, Poykko, Lerenc
17	103	Lambert, Sweeney, Poykko, Olmi

Petitioner also relies on the declaration of Mr. Scott Andrews. Ex. 1003. Patent Owner relies on the declaration of Dr. Alexandre Jacquillat. Ex. 2022.

III. ANALYSIS

A. Level of Ordinary Skill in the Art

The level of skill in the art is “a prism or lens” through which we view the prior art and the claimed invention. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). “The person of ordinary skill in the art is a hypothetical person who is presumed to know the relevant prior art” at the

¹ US 9,679,489 B2, issued June 13, 2017 (Ex. 1004, “Lambert”).

² US 2015/0161554 A1, published June 11, 2015 (Ex. 1008, “Sweeney”).

³ GB 2,397,683 A, published July 28, 2004 (Ex. 1033, “Olmi”).

⁴ US 2008/0270204 A1, published Oct. 30, 2008 (Ex. 1005, “Poykko”).

⁵ US 2014/0324505 A1, published Oct. 30, 2014 (Ex. 1007, “Lerenc”).

time of the invention. *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). In determining the level of ordinary skill in the art, we may consider certain factors, 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.” *Id.*

Petitioner contends that a person of ordinary skill in the art at the time of the invention (“POSITA” or “PHOSITA”) “would have been a person having (i) a Bachelor’s degree in computer science, computer engineering, electrical engineering, or a similar technical field[;] (ii) a working knowledge of computer programming and navigation systems; and (iii) two to four years of experience with location-based systems, user interfaces and databases.” Pet. 4–5 (citing Ex. 1003 ¶ 37).

Patent Owner contends that a person of ordinary skill in the art at the time of the invention would have “at least a bachelor’s degree in computer science, operations research, industrial engineering, applied mathematics, or a related field with at least two years of experience with optimization modeling, large scale optimization algorithms, or artificial intelligence solutions in the context of ride-sharing systems.” PO Resp. 20. Patent Owner further contends that “[a] person with an advanced degree [in the above fields] (a master’s or Ph.D.) . . . would also have been an ordinary artisan in the field of the ’411 patent even if that person lacked two years of specific experience with ride-sharing systems.” *Id.*

Patent Owner contends that its proposed definition of a POSITA is commensurate in scope with someone who “would have had the ability to work with the type of complex mathematical modeling and algorithms used

in 2015 to match riders to drivers and assign routes within the time-frames acceptable to an on-demand ride-sharing system.” PO Resp. 20–21 (citing Ex. 2022 ¶¶ 43–51). According to Patent Owner, ride sharing systems in 2015 “used sophisticated modeling and algorithms such as: (i) integer optimization methods with branch-and-cut algorithms; (ii) set partitioning methods with column generation, route enumeration, and branch-and-price algorithms; and (iii) timespace network optimization with branch-and-cut and branch-and-price algorithms.” *Id.* (citing Ex. 2022 ¶ 48).

Patent Owner argues that we should reject Petitioner’s proposed definition because “it focuses on navigation technology rather than ride-sharing technology.” PO Resp. 21 (citing Ex. 2022 ¶¶ 52–56). According to Patent Owner, “on-demand ride-sharing systems include multiple components, including but not limited to navigation technology (‘location based systems’), databases, and user interfaces.” *Id.* (citing Ex. 2022 ¶¶ 31, 52; *see also id.* at 3–4 (arguing the same to distinguish prior art systems)). Patent Owner claims that, unlike previous ride sharing apps, the ’411 patent “is directed to the backend artificial intelligence (decision-making) components that a ride sharing system uses to match riders with drivers,” including “improving the artificial intelligence components to select pickup and dropoff locations on behalf of riders.” *Id.* at 21–22 (citing Ex. 2022 ¶¶ 20–23, 37, 43, 52). Patent Owner and its declarant, Dr. Jacquillat, explain that a person familiar with navigation technology broadly would not have the relevant experience with the backend artificial intelligence systems they assert are at issue in the ’411 patent. *Id.*

Petitioner disagrees, contending that the “complex mathematical modeling and algorithms” that Patent Owner asserts to be relevant to

the '411 patent are not even described in the '411 patent. Pet. Reply 6. Petitioner submits that the field of the '411 patent invention is “continuously updatable computer generated routes with continuously configurable virtual bus stops for passenger ridesharing of a fleet of ride-sharing vehicles and computer transportation systems and computer-implemented methods for use thereof.” *Id.* at 6–7 (quoting Ex. 1001, 1:23–28). Petitioner argues this field is not the same as the “significant advancement in the artificial intelligence technology” that Patent Owner proposes. *Id.* Petitioner claims that the only disclosure in the '411 patent that Patent Owner relies on for its argument is “a single reference to dynamic programming algorithms, which Dr. Jacquillat concedes are ‘[t]ypical algorithms covered in introductory textbooks’ that ‘have been around for quite some time[.]’” *Id.* (citing PO Resp. 20–21).

In its sur-reply, Patent Owner submits that its declarant, Dr. Jacquillat, provided extensive citations to the '411 patent and other relevant publications to support his proposed definition of a POSITA. PO Sur-Reply 1 (citing Ex. 2022 ¶¶ 20-23, 29–40, 43–51). Patent Owner contends that Dr. Jacquillat’s testimony regarding artificial intelligence and the '411 patent “adheres to the basic definition of artificial intelligence,” is “widely supported,” and that Petitioner does not rebut Dr. Jacquillat’s testimony. *Id.* at 1–2 (citing Ex. 1037, 14:23–16:7, 20:23–21:19; Ex. 2040 (New Oxford American Dictionary definition of “artificial intelligence”), 3; Ex. 2039 (Cambridge Advanced Learner’s Dictionary definition of “artificial intelligence”), 3. According to Patent Owner, Petitioner’s argument is limited to “**attorney argument** asserting, in essence, that the '411 patent

does not describe artificial intelligence because the words ‘artificial intelligence’ do not appear in the patent.” *Id.* at 2–3 (citing Pet. Reply 1–4).

Patent Owner contends that Petitioner’s declarant, Mr. Andrews, is not qualified as a person of ordinary skill in the art under Patent Owner’s proposed definition of a person of ordinary skill in the art. PO Resp. 22. According to Patent Owner, Mr. Andrews has “**never** worked in the field of ride-sharing systems,” “has never worked directly with anyone who worked on a ride-sharing system,” and “at the time of the invention in 2015, Mr. Andrews had already been acting as a professional expert witness and consultant for the preceding 14 years.” PO Resp. 22–23, n.2 (citing Pet. 4–5; Ex. 1003 ¶¶ 36, 37; Ex. 1009; Ex. 2023 (Andrews Deposition Transcript I), 44:23–45:10; Ex. 2037 (Andrews Deposition Transcript II), 13:6–8). Accordingly, Patent Owner concludes that Mr. Andrews “could not have credibly identified a PHOSITA” at the time of the ’411 invention. *Id.* at n.2.

Patent Owner further contends that Mr. Andrews “is not qualified to offer expert opinions on the backend artificial intelligence operations of ridesharing systems that are at issue in the ’411 patent,” in part because, according to Patent Owner, “Mr. Andrews does not have any experience working with those systems.” PO Resp. 27. Patent Owner argues that Mr. Andrews describing ride-sharing technologies as “not complicated,” demonstrates that he has a “lack of expertise in the pertinent art.” *Id.* at 28 (citing Ex. 2022 ¶¶ 54–55). Patent Owner cites to Dr. Jacquillat’s testimony to support its position that the relevant art is directed towards “complicated artificial intelligence problems requiring knowledge of sophisticated mathematical modeling and algorithms well beyond those

taught in introductory engineering courses.” *Id.* at 28–29 (citing Ex. 2022 ¶¶ 45–49, 54–55). Patent Owner concludes that Mr. Andrews’s testimony and alleged lack of expertise is relevant because the grounds Petitioner raises “hinge[] on Mr. Andrew[s]’s interpretation of a single sentence from Lambert.” *Id.* at 29.

For its part, Petitioner argues that “[Mr. Andrews] is qualified in the pertinent art regardless of the definition.” Pet. Reply 7–9. According to Petitioner, Mr. Andrews identified himself as a PHOSITA, and that he studied dynamic programming including through a book called “Fundamental Algorithms.” *Id.* at 8 (citing Ex. 1003 ¶ 38; Ex. 2022 ¶ 55; Ex. 2023 35:10–23). Petitioner concedes that Mr. Andrews “has not specifically worked on ridesharing systems,” but argues that “complete overlap between a witness’s technical qualifications in the field of the invention is not necessary for the witness’s testimony to be admissible.” *Id.* Petitioner notes that Mr. Andrews testified that “the algorithms for ridesharing systems are in large part algorithms for location-based systems . . . and the parts that are not location based systems are the kind of dispatch-related problems of matching up a service provider with service need . . . and I’ve worked in both of those kinds of systems.” *Id.* (quoting Ex. 2023, 44:2–9). As one example of the types of systems Mr. Andrews worked on, Petitioner claims his experience includes “work[ing] in database dispatch systems for fleet management . . . where you’re trying to match up a truck driver with a load[.]” *Id.* at 8–9 (quoting Ex. 2023, 44:15–19). Petitioner reasons that for at least the above reasons, Mr. Andrews is qualified to offer opinions as a PHOSITA under either party’s proposed definition. *Id.*

In its sur-reply, Patent Owner argues that Mr. Andrews is not qualified in the pertinent art under its proposed definition. PO Sur-reply 3–4. Patent Owner disparages Mr. Andrews as a “professional expert,” and highlights Petitioner’s acknowledgement that Mr. Andrews has never worked directly on a ride-sharing system. *Id.* According to Patent Owner, Mr. Andrews’s degree is in electrical engineering, which is “not an area of study relevant to the ’411 patent and Mr. Andrews is also missing the subject matter focus necessary to qualify him as a PHOSITA (e.g., data science, operations research, or artificial intelligence).” *Id.* (citing Ex. 2022 ¶ 42). Patent Owner further argues that Mr. Andrews’s review of “Fundamental Algorithms” is not sufficient experience because the book is an introductory textbook which does not provide the experience necessary for the complexities of the ’411 patent.

Having considered the parties’ arguments and evidence of record, we adopt Petitioner’s asserted level of ordinary skill. We find that Petitioner’s level of skill is consistent with the problems identified and solutions provided in the ’411 patent and the prior art. In particular, we agree with Petitioner that the relevant field of art is not limited to the backend artificial intelligence components in a ride-sharing system, as Patent Owner contends. *See* Pet. Reply 6–7; *see also* PO Resp. 20–23. We disagree with Patent Owner’s assertions that the ’411 patent is directed towards a complex artificial intelligence system far beyond the scope of traditional navigation systems. *See* PO Resp. 20–23. Neither Patent Owner nor its expert, Dr. Jacquillat, cites to the patent to explain why the art of the ’411 patent is limited to artificial intelligence components in determining the relevant skill in the art. *See id.*; *see also* Ex. 2022 ¶¶ 41–51. As Patent

Owner acknowledges, the '411 patent makes no reference to “artificial intelligence” directly, and Patent Owner instead relies upon declarant testimony to argue that the patent is directed towards an advancement in artificial intelligence. PO Sur-reply 11. Patent Owner claims that “programming a computer to make decisions in the place of humans is a form of artificial intelligence.” *Id.* Regardless, we need not determine the precise definition of artificial intelligence to determine the relevant skill in the art for a patent that never even uses the term. We agree with Petitioner that a skilled artisan with an understanding of computer programming and navigation systems, as well as two to four years of experience in location-based systems, would understand the “computer-implemented transportation system” of the '411 patent.

In summary, we find that the relevant level of ordinary skill in the art “would have been a person having (i) a Bachelor’s degree in computer science, computer engineering, electrical engineering, or a similar technical field[;] (ii) a working knowledge of computer programming and navigation systems; and (iii) two to four years of experience with location-based systems, user interfaces and databases.” Pet. 5–6 (citing Ex. 1003 ¶ 37).

Additionally, we find that Mr. Andrews’s background would qualify him as a person of ordinary skill in the art *even if* we adopted Patent Owner’s proposed level of ordinary skill in the art. Under Patent Owner’s proposal, a person of ordinary skill in the art would have a “degree in computer science, operations research, industrial engineering, applied mathematics, *or a related field* with at least two years of experience with optimization modeling, large scale optimization algorithms, or artificial intelligence solutions in the context of ride-sharing systems.” PO Resp. 30

(emphasis added). The record demonstrates that Mr. Andrews meets these qualifications. Mr. Andrews possesses a Bachelor of Science degree in Electrical Engineering and a Master of Science degree in Electronic Engineering, which we find to be in a “related field.” Ex. 1003 ¶ 6. Additionally, Mr. Andrews has significantly more than two years of experience in the fields Patent Owner suggests are relevant as evidenced by, for example, Mr. Andrews’s testimony that he has experience in “location-based systems,” and “work[ing] in database dispatch systems for fleet management.” Ex. 2023, 44:2–9; 44:15–19. This experience demonstrates that Mr. Andrews had at least two years of experience in “optimization modeling.”

The parties agree, however, that Mr. Andrews does not have experience working with ride-sharing systems. Nevertheless, Patent Owner’s definition includes artisans who lack that particular experience. Specifically, Patent Owner’s definition provides that:

A person with an *advanced degree (a master’s or Ph.D.)* in computer science, operations research, industrial engineering, applied mathematics or a *related field* and a focus on data science, artificial intelligence or operations research would also have been an ordinary artisan in the field of the ’411 patent *even if that person lacked two years of specific experience with ride-sharing systems.*

PO Resp. 20 (emphases added). In other words, even if the first prong of Patent Owner’s definition requires the expert’s experience to be “in the context of ride-sharing systems,” Mr. Andrews would nevertheless satisfy the qualifications of a POSITA under the second prong, which does not require experience with “ride-sharing systems.” *See id.* This Decision does

not turn on the differences between the parties' characterization of a skilled artisan.

B. 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) (2019). 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).

Petitioner contends that it generally applies “the ordinary and customary meaning of the claim terms” (Pet. 6), proposing specifically that the term *virtual bus stop* “require[s] no construction” (*id.* at 7 (citation omitted)). Patent Owner agrees that “virtual bus stops” should be given its plain and ordinary meaning, and notes that the district court in the parallel proceeding has also adopted the plain and ordinary meaning for “virtual bus stops.” PO Resp. 23 (citing Ex. 2011 (District Court Markman Hearing Transcript)).

1. “virtual bus stop”

Construing the term “virtual bus stop” is central to this Decision.

Patent Owner submits that the plain and ordinary meaning of “virtual bus stops” is “pickup and dropoff locations selected by the ride-sharing system itself (i.e., not a rider or driver).” PO Resp. 23 (citations and emphasis omitted).

Petitioner agrees with Patent Owner, acknowledging that “[t]he parties agree that virtual bus stops must be selected by the ride-sharing system.” Pet. Reply 4. Petitioner argues, however, that the claims *do not* “require the system to use AI [or artificial intelligence] to select virtual bus stops.” *See id.*

Patent Owner responds that it “has not asked the Board to construe ‘virtual bus stops’ as locations selected ‘using AI.’” PO Sur-reply 5.

The parties are in agreement. Despite the parties’ briefing on this term, the parties do not dispute the construction of “virtual bus stops.” Absent any controversy, we adopt the parties agreed-upon construction of the term. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (stating that “we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

Specifically, we adopt the parties’ construction that “virtual bus stops” means “pickup and dropoff locations selected by the ride-sharing system itself.” *Compare* PO Resp. 23, *with* Pet. Reply 4. We further adopt the parties’ construction that the system need not use artificial intelligence—whatever that may mean—to select the virtual bus stops. *Compare* PO Sur-reply 5, *with* Pet. Reply 4; *see also supra* § III.A (“[W]e need not determine the precise definition of artificial intelligence to determine the relevant skill in the art pertaining to a patent that never even uses the term.”).

2. Other claim terms

We need not construe any other claim terms in making this determination as to the unpatentability of the challenged claims. *See Nidec*, 868 F.3d at 1017.

C. Principles of Law

Petitioner relies on obviousness under § 103(a) for each of its challenges. Pet. 6–7. A claim is unpatentable under § 103(a) 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.⁶ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

D. Ground 1: Claim 1 as Unpatentable Over Lambert, Sweeney, and Olmi

Petitioner contends that independent claim 1 would have been obvious over Lambert, Sweeney, and Olmi. Pet. 8–34.

⁶ With respect to the fourth *Graham* factor, the parties do not present arguments or evidence regarding objective indicia of non-obviousness. Therefore, the obviousness analysis at this stage of the proceeding is based on the first three *Graham* factors.

1. Lambert (Ex. 1004)

Lambert is a United States patent titled “Ride Chaining.” Ex. 1004, code (54). Lambert discloses “[a] ride sharing system [that] connects drivers who wish to share their vehicles with riders looking for a ride,” and “[m]atching an individual rider with an individual driver [to get] the rider to his destination quickly.” *Id.* at 1:13–16. Lambert explains that the “invention can be implemented in numerous ways, including as a process; an apparatus; a system; . . . [or] a computer program product embodied on a computer readable storage medium.” *Id.* at 1:61–64. Lambert describes a system for determining a dispatch that “comprises an input interface for receiving a request for a first pickup including a first pickup location and a first destination, a driver selection system for determining a driver to dispatch to the first pickup location, and an output interface for providing a first pickup indication to the driver to go to the first pickup location.” *Id.* at 2:28–34. Lambert also discloses “ride chaining,” which Lambert describes as including the steps for a first request and “further for receiving a request for a second pickup including a second pickup location and a second destination.” *Id.* at 2:39–41.

Lambert explains a system for coordinating ride sharing. At a basic level, “[a] rider uses the rider system to request a ride, the driver dispatch server system assigns the ride to a driver, the ride request is delivered to the driver using the driver system, and the driver drives to meet the rider and gives them the ride.” *Id.* at 2:49–53. Lambert’s Figure 8A is reproduced below.

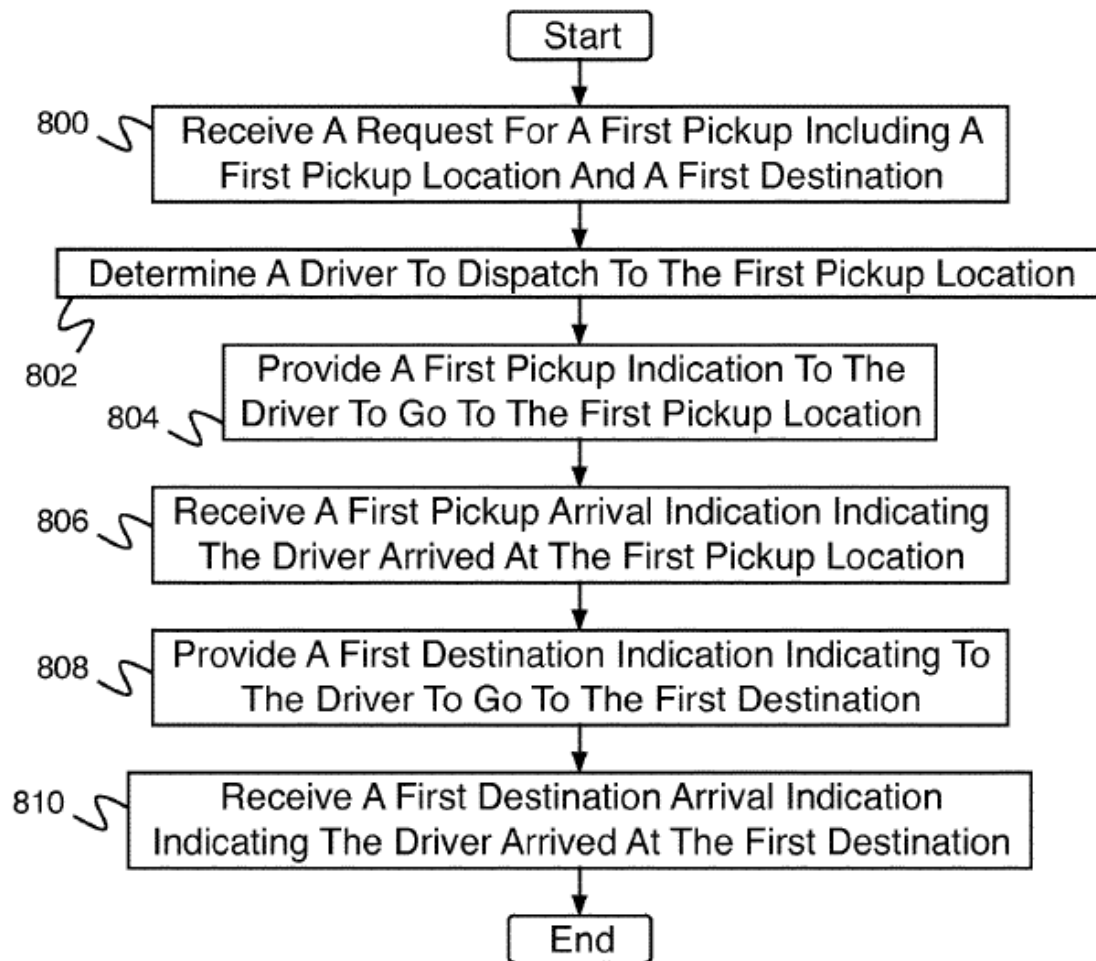


Fig. 8A

Figure 8A “is a flow diagram illustrating an embodiment of a process for a dispatch,” and explains the steps by which the system assigns drivers to particular requests from riders. *Id.* at 1:41–42. The steps include receiving a request for a first pickup from a first pickup location, providing that location to a driver, and providing a first destination location to the driver. *Id.* at Fig. 8A.

For some embodiments, Lambert discusses two riders sharing rides for the purpose of efficiency due to similarities in routes and request times, in which case the “request for a new ride is received by the driver dispatch

server system that can be shared with the already assigned route, the driver dispatch server system modifies the route to include the new ride, and provides the new modified route to the driver.” *Id.* at 2:53–3:1. Also, for the purpose of efficiency, Lambert discloses that, in some embodiments,

trip efficiency is increased by dynamically selecting pickup and dropoff locations (e.g., dropping off the first passenger a block away from their destination in order to avoid the driver looping around the block or making a left turn onto a busy street; selecting a pickup point at a major intersection between both riders and instructing them to walk there, etc.).

Id. at 4:17–23.

We further reproduce Lambert’s Figure 9 below:

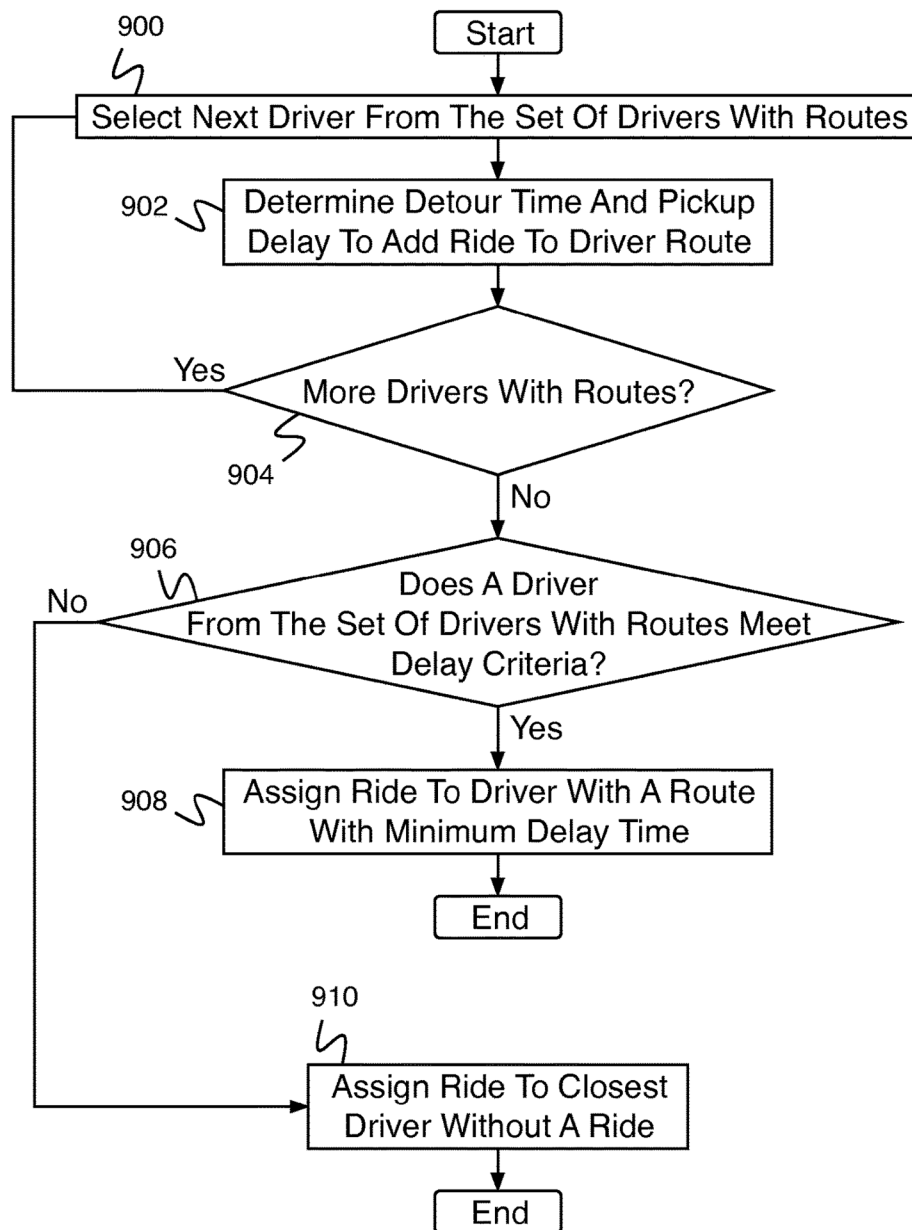


Figure 9 “is a flow diagram illustrating an embodiment of a process for determining a driver to dispatch to a pickup location.” Ex. 1004, 1:46–48.

We further reproduce Lambert’s Figure 11 below:

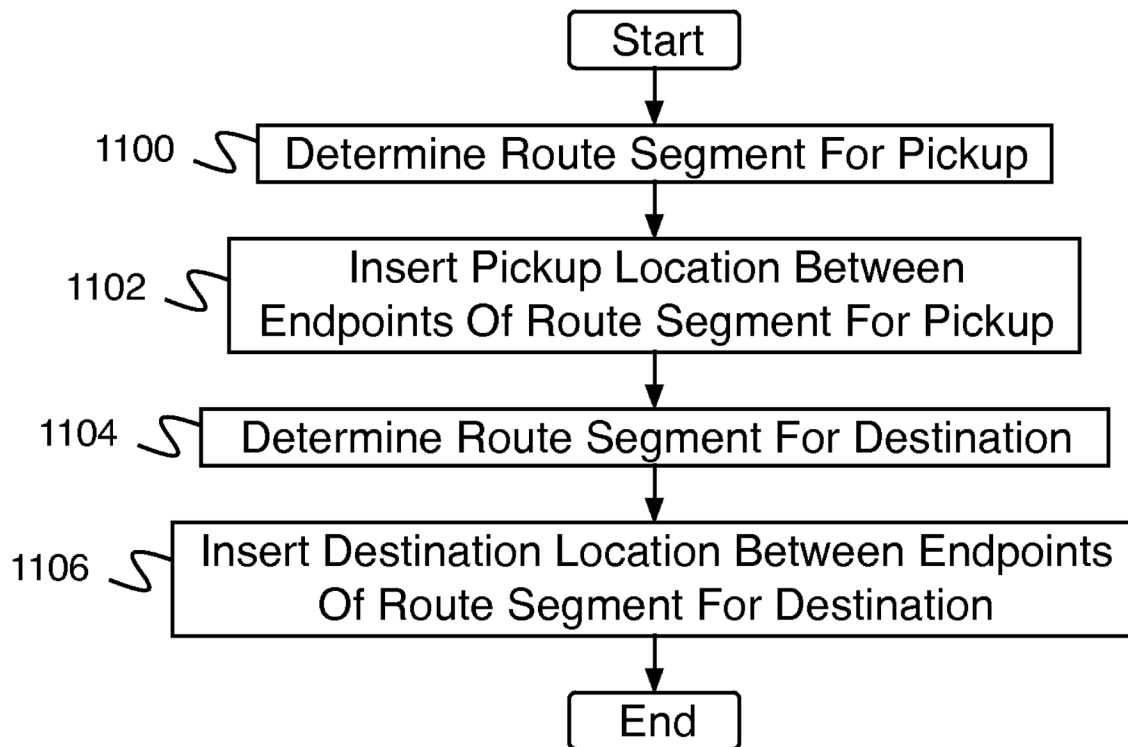


Figure 11 “is a flow diagram illustrating an embodiment of a process for determining a most efficient new route comprising a current route with a ride added.” Ex. 1004, 1:51–53.

2. *Sweeney (Ex. 1008)*

Sweeney is a United States patent application titled “Intelligent Dispatch System for Selecting Service Providers” and describes a “system and method for arranging a transport service.” Ex. 1008, codes (54), (57). Sweeney explains that “a user that requests a transport service may be provided the first available driver or the closest driver to the user’s requested pickup location.” *Id.* ¶2. We reproduce Figure 1A of Sweeney below:

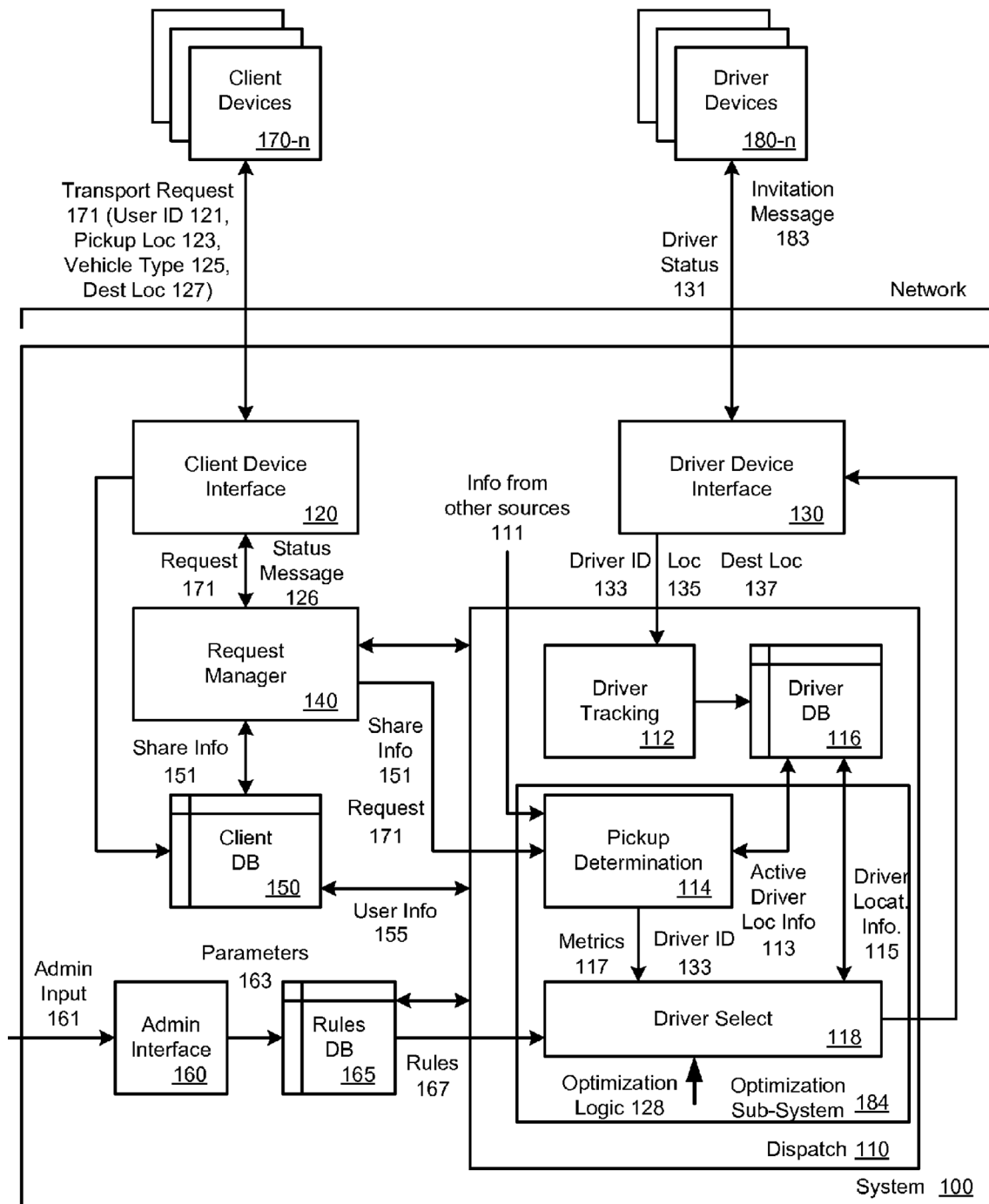


FIG. 1A

Figure 1A “illustrates an example system to arrange an on-demand service.”

Id. ¶ 3. In particular, system 100 includes dispatch 110, client service

interface 120, driver device interface 130, request manager 140, administrator interface 160, client database 150, rules database 165, driver database 116, a plurality of client devices 170, a plurality of driver devices 180. *Id.* ¶ 33. In at least some examples, client devices 170 execute service applications when generating transport requests 171. *Id.* ¶ 36. In some examples, transport request 171 specifies vehicle type 125 and/or destination location 127. *Id.* Pickup location can correspond to location of client device 170, a future location of client device 170, or a location specified by the client. *Id.*

3. *Olmi (Ex. 1033)*

Olmi is a United Kingdom patent application titled “Intelligent Grouping Transportation – Autonomous dial-a-ride transit system.” Ex. 1033, code (54). Olmi discloses a “mode of public transportation which uses computer systems, data communication systems, electronic positioning systems, and electronic street navigation systems in order to orchestrate a fleet of driver-controlled multi-passenger transit vehicles on the roads.” *Id.* at code (57). “To ride via this transport system, individual [travelers] must first submit their itinerary requirements to the computer system.” *Id.* In some examples, travelers will enter their itinerary data on their cellular phone. *Id.* Olmi’s computer system then “scans all the submitted itinerary requirements that it receives, and then intelligently groups [travelers] with compatible itineraries onto the same, typically minibus-sized, transit vehicle.” *Id.* Olmi’s computer system creates customized road routes so that each traveler is picked up and transported according to the itinerary.

Id. Olmi’s computer system provides street navigation instructions to the transit vehicle driver for guidance along the customized route. *Id.*

Olmi further discloses “route re-optimisation” that “kick[s]-in automatically whenever a transit vehicle becomes significantly displaced from its intended route.” *Id.* at 76. “[S]hould a transit vehicle, for whatever reason, significantly deviate[s] from th[e] optimal transit route, this will trigger the intelligent grouping module to step in and re-optimize that transit vehicle’s route.” *Id.*

4. Analysis

We address Petitioner’s challenge of claim 1 as presented in the Petition, adopting Petitioner’s nomenclature of the claim limitations. *See* Pet. 10–34.

a. [P] A system for routing a rideshare vehicle

Petitioner cites to Lambert’s disclosure of a “ride sharing system that connects drivers who wish to share their vehicles with riders looking for a ride.” Pet. 10 (quoting Ex. 1004, 1:13–14). Petitioner further cites Lambert’s disclosure that

If a driver has already been assigned a route by the driver dispatch server system, and a request for a new ride is received by the driver dispatch server system that can be shared with the already assigned route, the driver dispatch server system modifies the route to include the new ride, and provides the new modified route to the driver.

Id. (quoting Ex. 1004, 2:63–3:1).

Patent Owner does not dispute Petitioner’s assertions.

Without determining whether the preamble is limiting, Petitioner has demonstrated by a preponderance of the evidence that Lambert discloses a “system for routing a rideshare vehicle.”

- b. *[1(a)(i)] a communications interface configured to receive, from a first mobile communications device of a first user, a request for a rideshare*

Petitioner submits that Lambert discloses this limitation (see Pet. 10–11), producing the following annotated version of Lambert’s Figure 1:

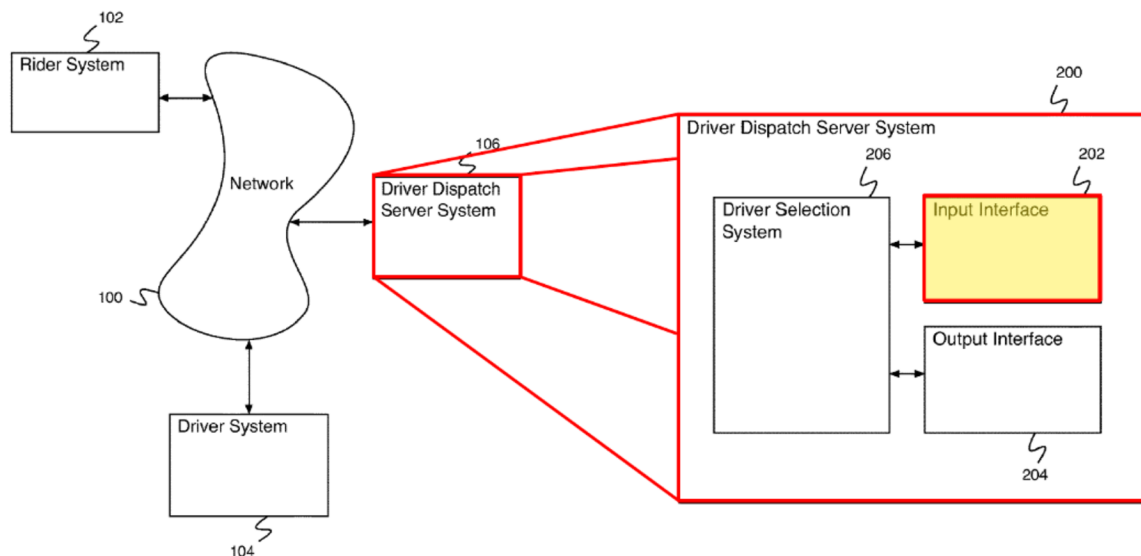


Figure 1 “is a block diagram illustrating an embodiment of [Lambert’s] system for ride chaining.” Ex. 1004, 1:24–25. In particular, Figure 1 depicts network 100 in two-way communication with rider system 102, driver system 104, and driver dispatch server system 106. *See id.* at 4:46–67. Petitioner annotates Figure 1 to include further detail of driver dispatch system 106/200 to include input interface 202, driver selection system 206, and output interface 204. *See* Pet. 11.

Petitioner explains that Lambert’s driver dispatch system 106 communicates with rider system 102 over network 100 and that rider

system 102 includes “computing systems for operation by users” and mobile devices, such as smartphones and tablet computers. *Id.* at 10–11 (citing Ex. 1004, Fig. 1, 4:64–67, 4:53–55, 4:62–64). Based on this disclosure, Petitioner submits that Lambert’s “rider system 102 includes a first mobile communications device of a first user.” *Id.* at 11 (emphasis omitted).

Petitioner further explains that input interface 202 receives ““a request for a pickup including a first pickup location and a first destination’ from rider system 102.” *Id.* (quoting Ex. 1004, 5:38–41).

Patent Owner does not dispute Petitioner’s assertions.

Petitioner has demonstrated by a preponderance of the evidence that Lambert discloses a “communications interface configured to receive, from a first mobile communications device of a first user, a request for a rideshare.”

c. [1(a)(ii)] wherein the request includes information associated with a current location of the first user and a first desired destination

To address limitation 1(a)(ii), Petitioner relies on a combination of Lambert and Sweeney. *See* Pet. 12–16.

Petitioner acknowledges that “Lambert does not specify whether the requested first pickup location includes information associated with a current location of the first user.” *Id.* at 12 (emphases omitted). To address this shortcoming, Petitioner reasons that “[i]t would have been obvious to a PHOSITA to configure Lambert’s rider system to submit the user’s current location as the pick-up location because this configuration was already well known in the art.” *Id.* (citing Ex. 1003 ¶¶ 133–141).

Petitioner submits that Sweeney teaches transport requests that can be “automatically generated in response to corresponding users providing input (e.g., in response to user selection of a user interface feature provided from execution of the application) when, for example, requesting transport from a pickup location” and that the transport request may correspond to “the current location of the client device,” as provided through Global Positioning System (“GPS”). *See* Pet. 12–13 (citing in part Ex. 1008 ¶ 36, Ex. 1003 ¶ 135).

Based on Sweeney’s teachings, Petitioner reasons that

It would have been obvious to a PHOSITA to configure *Lambert*’s pick-up location to be the user’s current location as taught by *Sweeney*. . . . A PHOSITA would have been motivated to include the first user’s current location in *Lambert*’s first pick-up location information as taught by *Sweeney* at least because this combination would have been (1) a combination of prior art elements according to known methods to yield predictable results; and (2) obvious to try—a choice of pick-up locations from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Pet. 13 (citing Ex. 1003 ¶¶ 136–141). Petitioner further explains that a “PHOSITA would have further understood this combination of prior art elements would have predictably resulted in communicating the current location of the user to the server, which would then reliably use this information to determine a driver to pick-up the user.” *Id.* at 14 (citing Ex. 1003 ¶ 137). Petitioner’s expert testifies that the proposed combination “would have predictably resulted in *less opportunity for user error* (e.g., entering the wrong location information), which would have increased the efficiency and reliability of *Lambert*’s rideshare system.” Ex. 1003 ¶ 139 (emphasis added).

Patent Owner does not dispute Petitioner’s findings or reasoning in addressing this limitation.

Petitioner has demonstrated by a preponderance of the evidence that it would have been obvious to combine Lambert with Sweeney such that Lambert’s system includes a “request [that] includes information associated with a current location of the first user and a first desired destination.”

d. [1(b)] at least one processor configured to receive information from the communications interface

Petitioner cites to Lambert’s disclosure that its driver selection system 206 “receives a ride request (e.g., via input interface 202) and determines a driver to assign the ride.” Pet. 15 (quoting Ex. 1004, 5:62–64; citing *also id.* at Fig. 2). Petitioner also cites to Lambert’s disclosure that “driver selection system 206 is implemented using a processor” and submits that Lambert’s input interface is the “communications interface.” *See id.* (citing Ex. 1004, 6:4–5).

Patent Owner does not dispute Petitioner’s assertions.

Petitioner has demonstrated by a preponderance of the evidence that Lambert discloses a system with “at least one processor configured to receive information from the communications interface.”

e. [1(c)] determine, based on current locations of multiple rideshare vehicles and the received request, a rideshare vehicle to pick up the first user

Petitioner cites to Lambert’s disclosure that “[d]river selection system 206 determines a driver for ride sharing (e.g., assigning a ride to a driver that is in the process or carrying out a route including one or more

rides).” Pet. 16 (quoting Ex. 1004, 5:65–67). Petitioner further submits an annotated version of Lambert’s Figure 8A (*id.* at 17), a copy of which we reproduce, below:

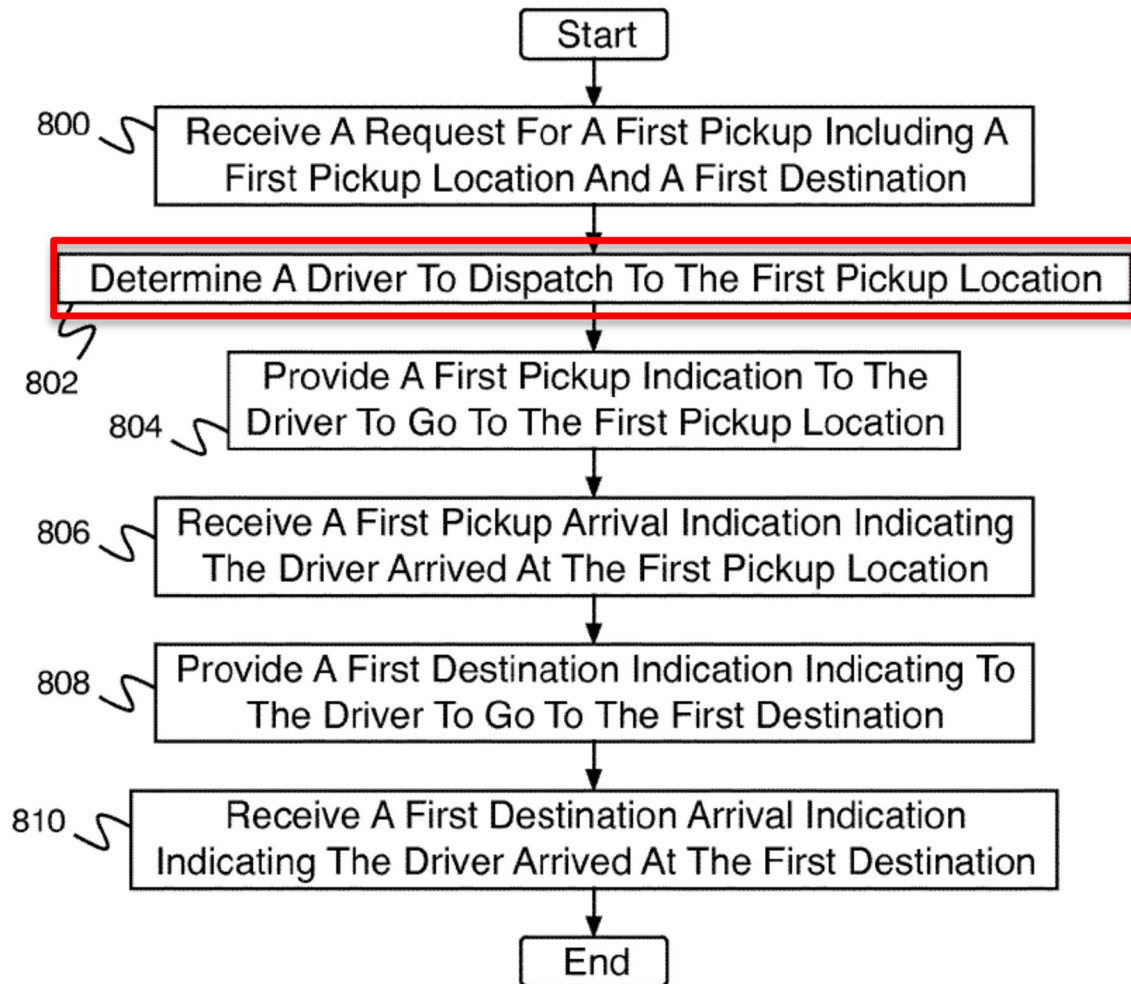


Fig. 8A

Figure 8A “is a flow diagram illustrating an embodiment of [Lambert’s] process for a dispatch.” Ex. 1004, 1:41–42. Petitioner annotates Figure 8A by placing a red box around step 802, “Determine a Driver To Dispatch To The First Pickup Location.” Pet. 17.

Petitioner further submits an annotated version of Lambert’s Figure 9 (Pet. 19), a copy of which we reproduce, below:

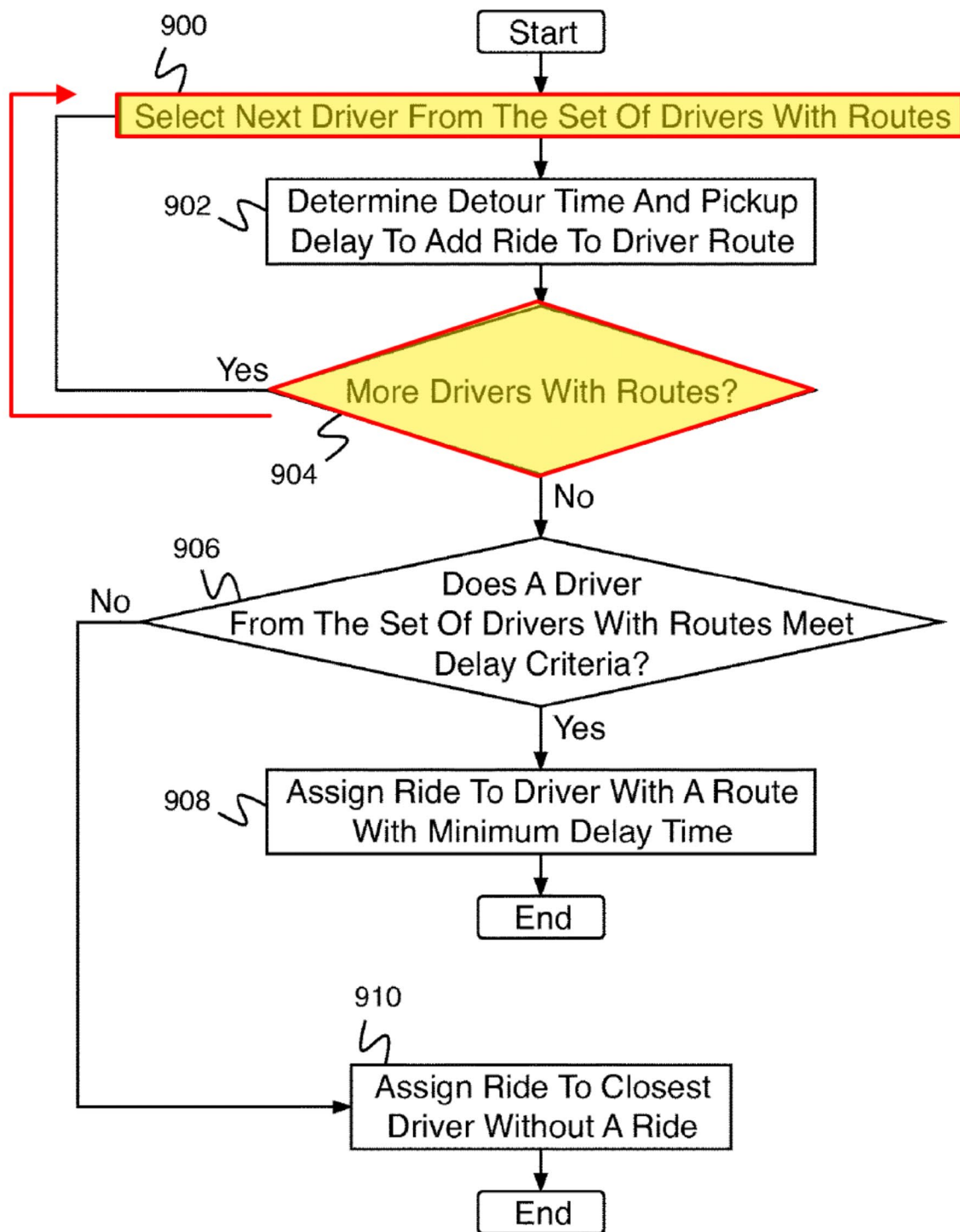


Figure 9 “is a flow diagram illustrating an embodiment of a process for determining a driver to dispatch to a pickup location.” Ex. 1004, 1:46–48. Petitioner annotates Figure 9 by highlighting (in yellow) decision step 904

“More Drivers With Routes?” and emphasizes (in red) the arrow that emanates from step 904 to step 900, “Select Next Driver From The Set Of Drivers With Routes.” Pet. 19. Petitioner submits that Lambert’s system *determines a rideshare vehicle to pick up the first user* based on the detour time and pickup delay for each driver selected from the driver database. *Id.* (citations omitted).

Petitioner explains that since each driver “in the database is associated with a specific vehicle, a PHOSITA would have understood [that] *Lambert’s* ‘driver present location data’ is also the current location of the driver’s rideshare vehicle.” Pet. 18 (citing Ex. 1003 ¶ 145).

Patent Owner does not dispute Petitioner’s assertions.

Petitioner has demonstrated by a preponderance of the evidence that Lambert discloses a “processor . . . programmed to: determine, based on current locations of multiple rideshare vehicles and the received request, a rideshare vehicle to pick up the first user.”

f. [1(d)(i)] select, based on the current travel route of the rideshare vehicle, virtual bus stops for the identified rideshare vehicle, including a first virtual bus stop for picking up the first user and a second virtual bus stop for dropping off the first user

Petitioner cites to Lambert’s teaching of improving route efficiency by “dynamically selecting pickup and dropoff locations (e.g., dropping off the first passenger a block away from their destination in order to avoid the driver looping around the block or making a left turn onto a busy street[.]” and “[([selecting a pickup point at a major intersection between both riders and instructing them to walk there, etc.).” Pet. 22–23 (citing Ex. 1004, 4:17–23). Petitioner explains,

Since these dynamically selected pick-up/drop-off locations (i.e., virtual bus stops for the identified rideshare vehicle, including a first virtual bus stop for picking up the first user and a second virtual bus stop for dropping off the first user) are selected to increase the efficiency of the vehicle's route, they are selected based on the current travel route of the rideshare vehicle.

Id. at 23 (citing Ex. 1003 ¶ 158) (emphasis omitted).

Petitioner acknowledges that Lambert “does not describe when the dynamic selection of efficient pick-up/drop-off locations is performed.”

Pet. 23. Petitioner explains,

However, it would have been obvious to a PHOSITA to perform this selection during the updated route building process of Figure 11. . . . When implementing Figure 11, a PHOSITA would have been motivated to configure the driver selection system to dynamically select pickup/dropoff locations to improve the efficiency of the route as expressly suggested by *Lambert*. . . . A PHOSITA would have understood this modification would have yielded the predictable result of a more efficient route that does not require the driver to travel along a route segment that would add unnecessary delay to the route by avoiding, for example, the driver looping around the block or making a left turn onto a busy street.

Pet. 23 (citing Ex. 1003 ¶ 159). Petitioner further explains,

A PHOSITA would have further understood this could be implemented by including a further optimization process in Figure 11 that recognizes inefficiencies to the route caused by the user's requested pick-up/dropoff locations and dynamically selecting more efficient pick-up/drop-off locations in the vicinity of the user's requested location. . . . A PHOSITA would have understood this modification would have only required a minor change to the software running on *Lambert's* server. . . . Therefore, there would have been a reasonable expectation of success.

Pet. 24 (citing Ex. 1003 ¶ 160).

Patent Owner argues, “Petitioner’s obviousness argument is based on a fundamental misunderstanding of Lambert’s teachings.” PO Resp. 31. Patent Owner also argues that Petitioner “fails to establish that a POSITA would have been motivated to modify Lambert’s ‘driver selection system’ or would have expected success in doing so.” *Id.*

We agree with Patent Owner. Lambert does not teach a server or processor programmed to select “virtual bus stops.” Further, we disagree with Petitioner that it would have been obvious to modify Lambert to meet the limitation.

*(1) Lambert does not teach a processor
programmed to select “virtual bus stops”*

Lambert discloses,

In some embodiments, trip efficiency is increased by dynamically selecting pickup and dropoff locations (e.g., dropping off the first passenger a block away from their destination in order to avoid the driver looping around the block or making a left turn onto a busy street; selecting a pickup point at a major intersection between both riders and instructing them to walk there, etc.).

Ex. 1004, 4:17–23 (emphases added). Petitioner relies on this disclosure in support of its position that Lambert discloses “virtual bus stops.” *See* Pet. 23 (citing Ex. 1003 ¶ 158) (“Since these dynamically selected pick-up/drop-off locations (i.e., virtual bus stops . . .)”).

Upon reviewing the entirety of Lambert, however, we disagree with Petitioner’s position that Lambert’s reference to “dynamically selected pick-up/drop-off locations” and instructing both riders to walk to a pickup

point teaches a *system* that selects pick-up and drop-off locations, i.e., “virtual bus stops.” *Id.*

Although the ’411 patent defines “dynamically” to mean “events and/or actions [that] can be triggered and/or occur without any human intervention” (Ex. 1001, 8:25–27), Lambert does not define “dynamically,” nor does Lambert use dynamically anywhere outside of this single reference. We agree with Patent Owner that a POSITA reading Lambert in the context of Lambert’s full disclosure would understand that “dynamically” refers to the riders and drivers of the system making changes after an initial request has been made. *See* PO Resp. 33 (citing Ex. 2022 ¶¶ 95, 100–102). In other words, we find that the particular sentence that Petitioner relies on (Ex. 1004, 4:17–23) refers to “the conventional practice in 2015 of allowing riders and drivers to make dynamic changes to pickup and dropoff locations.” PO Resp. 33 (citing Ex. 2022 ¶¶ 95, 100–102) (emphasis omitted).

In support of Patent Owner’s position, Patent Owner cites to multiple references that it was a “routine feature of ride-sharing systems in 2015” to allow “riders to adjust pickup locations using the ridesharing locations” and to communicate these “dynamic changes” between the riders and drivers. *Id.* at 33–34 (citing Ex. 2033 ¶ 112; Ex. 2034, 5:46–49; Ex. 2022 ¶ 100). Based on this evidence, we find that Lambert’s reference to “dynamically selecting” actually describes the conventional practice of allowing drivers and riders to make dynamic changes to those locations, such as a driver asking a rider to meet at a specific location to avoid traffic congestion, for example. *See* PO Resp. 34–35 (explaining the same, citations omitted).

Patent Owner is correct that Lambert's sentence describing pickup and dropoff locations (Ex. 1004, 4:17–23) is “part of a broader explanation of how such changes are communicated to the ride sharing system so it can update information on its ‘pool of riders’ and ‘pool of drivers.’” PO Resp. 35 (citing Ex. 1004, 4:24–45; Ex. 2022 ¶ 102) (emphasis omitted). As correctly pointed out by Patent Owner, in the paragraph that follows the discussion of “dynamically selecting,” Lambert states that the system “‘receive[s]’ an indication of ‘a pickup location change, a dropoff location change’ from the riders and drivers” such as when “a driver indicates a dropoff location change, a pickup location change.” *Id.* at 35–36 (citing Ex. 1004, 4:24–45) (emphasis omitted). This disclosure supports Patent Owner's position that Lambert simply teaches “the conventional practice of allowing riders and drivers to dynamically select a pickup or dropoff location once the rider is matched with a vehicle.” *Id.* (citing Ex. 2022 ¶ 102) (emphasis omitted).

We further point out that Lambert expressly describes when its server undertakes programmed actions, as opposed to actions taken by riders or drivers. For example, the following disclosure delineates actions taken by Lambert's server:

(1) “A rider uses the rider system to request a ride, the driver dispatch server system assigns the ride to a driver, the ride request is delivered to the driver using the driver system.” Ex. 1004, 2:49–52.

(2) “If a driver has already been assigned a route by the driver dispatch server system, and a request for a new ride is received by the driver dispatch server system that can be shared with the already assigned route, the driver dispatch server system modifies the route.” *Id.* at 2:63–67.

(3) “The server uses the destination address to determine whether a ride can be combined.” *Id.* at 3:19–20

(4) “In some embodiments, the server attempts to match the rider with another rider to share the ride.” *Id.* at 3:34–35.

Because Lambert expressly describes when its server (or system) performs actions (*see, e.g.*, Ex. 1004, 2:49–52; 2:63–67, 3:19–20, 3:34–35), we decline to infer from Lambert’s single sentence (*id.* at 4:17–23) that Lambert’s server is *also* programmed to perform the step of “dynamically selecting pickup and dropoff locations” (i.e., virtual bus stops). In other words, if Lambert’s server was programmed to select pickup and dropoff locations, as Petitioner would have us believe, we find that Lambert’s disclosure would have stated so. It does not.

Accordingly, Lambert does not disclose a system comprising a processor programmed to select virtual bus stops, as recited in claim 1. Ex. 1001, 30:46–60.

In its Reply, Petitioner explains that it does not merely rely on the key sentence from Lambert as to dynamic pickup and dropoff locations. *See* Pet. Reply 11. Rather, Petitioner explains that, although “Lambert does not describe when the dynamic selection of efficient pickup/drop-off locations is performed,” “it would have been obvious to a PHOSITA to perform this selection during the updated route building process of *Figure 11*.” *Id.* (quoting Pet. 22, emphasis added).

As explained below, we are not persuaded that it would have been obvious to modify Lambert’s system to include a processor programmed to select “virtual bus stops.”

(2) *Not obvious to modify Lambert to select
“virtual bus stops”*

Petitioner explains that its challenge “is based on Lambert’s *holistic disclosure*, including the dynamic selection of pickup/dropoff locations AND the route-building process described in *Figure 11*.” Pet. Reply 11 (italicized emphases added). Petitioner explains,

[I]t would have been obvious to a PHOSITA to perform this [dynamic selection of pickup/dropoff locations] during the updated route building process of Figure 11. . . . When implementing Figure 11, a PHOSITA would have been motivated to configure the driver selection system to dynamically select pickup/dropoff locations to improve the efficiency of the route as expressly suggested by *Lambert*. . . . A PHOSITA would have understood this modification would have yielded the predictable result of a more efficient route that does not require the driver to travel along a route segment that would add unnecessary delay to the route by avoiding, for example, the driver looping around the block or making a left turn onto a busy street.

Pet. 23 (citing Ex. 1003 ¶ 159). Petitioner further explains,

A PHOSITA would have further understood this could be implemented by including a further optimization process in Figure 11 that recognizes inefficiencies to the route caused by the user’s requested pick-up/dropoff locations and dynamically selecting more efficient pick-up/drop-off locations in the vicinity of the user’s requested location. . . . A PHOSITA would have understood this modification would have only required a minor change to the software running on *Lambert’s* server. . . . Therefore, there would have been a reasonable expectation of success.

Pet. 24 (citing Ex. 1003 ¶ 160).

We are not persuaded that a skilled artisan would have modified Lambert’s system and server to “dynamically select pickup/dropoff

locations to improve the efficiency” based on Lambert’s “holistic” teachings.

Underlying Petitioner’s analysis is a presumption that Lambert’s system, rather than the riders and drivers, selects pickup and dropoff locations. In particular, Petitioner’s reasoning is premised on a misunderstanding of Lambert’s Figure 11. Petitioner submits that “Figure 11 provides evidence that the system—not a rider or a driver—performs the ‘dynamic selection’ because the system is responsible for placing pickup/dropoff locations on selected road segments.” Pet. Reply 12 (citing Ex. 2037, 38:11–39:5). We disagree with Petitioner.

To illustrate, we reproduce Lambert’s Figure 11 below:

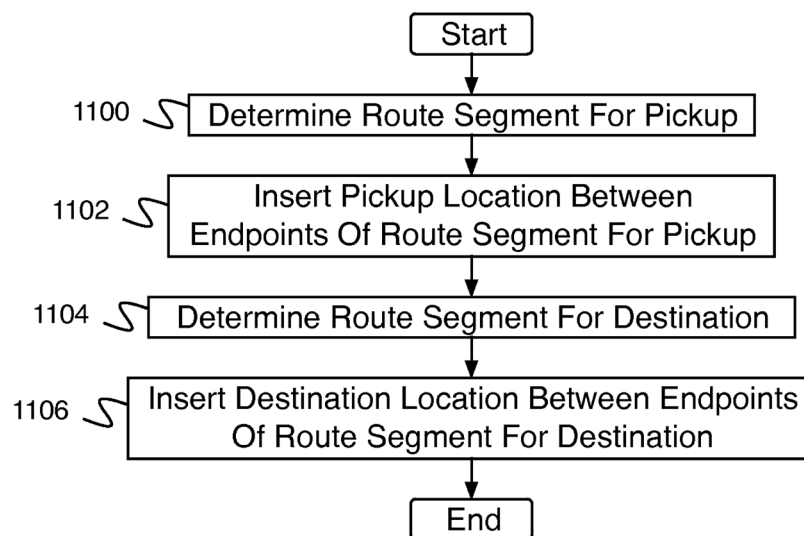


Figure 11 “is a flow diagram illustrating an embodiment of a process for determining a most efficient new route comprising a current route with a ride added.” Ex. 1004, 1:51–53. In step 1100, “the route segment for pickup (e.g., the segment of the route in which the pickup location of the ride should be added) is determined.” *Id.* at 11:23–25. In step 1102, “the pickup location is inserted between the endpoints of the route segment for

pickup.” *Id.* at 32–34. In step 1104, “the route segment for the destination is determined.” *Id.* at 11:34–35. Finally, in step 1106, “the destination location is inserted between the endpoints of the route segment for the destination.” *Id.* at 11:35–37.

Importantly, we find nothing in Lambert to suggest that the embodiment of Figure 11 teaches that the system determines pickup and dropoff locations. Even though Lambert discloses that *route segments are determined* (steps 1100, 1104), Lambert simply states that *pickup and dropoff locations are inserted* (steps 1102, 1106). *See* Ex. 1004, 11:23–37. This disclosure supports Patent Owner’s position that Lambert requires the driver or rider to insert the pickup and dropoff locations, and Lambert’s system is not programmed to determine the pickup and dropoff locations.

Because Lambert does not teach or suggest a system comprising a processor programmed to select pickup and dropoff locations, we are not persuaded that it would have been obvious to modify Lambert to satisfy the recited “virtual bus stops.” *See* Pet. 23–24. We do not find Petitioner’s proposed modification to “only require[] a minor change to the software running on Lambert’s server,” as Petitioner contends. *Id.* at 24 (citing Ex. 1003 ¶ 160). As explained above, Petitioner’s reasoning is premised on a misunderstanding of Lambert’s Figure 11, namely, that “Figure 11 provides evidence that the system—not a rider or a driver—performs the ‘dynamic selection’ because the system is responsible for placing pickup/dropoff locations on selected road segments.” Pet. Reply 12 (citing Ex. 2037, 38:11–39:5).

Having weighed the competing evidence, we credit Dr. Jacquillat’s testimony that “there are other teachings in Lambert that indicate that

dynamic changes to pickup and dropoff locations are made by riders and/or drivers, as was common in other systems at the time.” Ex. 2022 ¶ 102. We agree that “Lambert’s reference to ‘dynamically selecting’ pickup and dropoff locations is part of a larger discussion of how information is sent to the ride-sharing system so that the system can update information concerning riders and drivers.” *Id.* (citing Ex. 1004, 4:24–45). Lambert teaches that the ride-sharing system “updates a pool of riders” after receiving an “indication” of “a pickup location change, a dropoff location change.” Ex. 1004, 4:24–31. Lambert further teaches that “a *driver indicates* a dropoff location change, a pickup location change, or any other appropriate change.” *Id.* at 4:31–45 (emphasis added). These particular teachings support Dr. Jacquillat’s testimony that the “dynamic selection” disclosed in Lambert is performed by drivers and/or riders to improve the efficiency of a trip, such as a driver asking the rider to meet at an intersection. *See* Ex. 2002 ¶ 102. We further credit Dr. Jacquillat’s testimony that a “PHOSITA would have understood that the goal of Lambert’s teaching was to indicate that Lambert’s driver dispatch process was compatible with the conventional features that *allow riders and drivers to increase trip efficiency* by making dynamic changes to pickup and dropoff locations.” *Id.* (emphasis added).

(3) *Summary of limitation 1(d)(i)*

Petitioner has not demonstrated by a preponderance of the evidence that Lambert discloses, or that it would have been obvious to modify Lambert based on Lambert’s teachings to include, a “processor . . . programmed to . . . select, based on the current travel route of the rideshare

vehicle, virtual bus stops for the identified rideshare vehicle, including a first virtual bus stop for picking up the first user and a second virtual bus stop for dropping off the first user.”

g. *[1(d)(ii)] wherein the first virtual bus stop is at a first location at least a block away from the current location of the first and the second virtual bus stop is at a second location differing from the first desired destination*

Petitioner cites to Lambert’s teaching of improving route efficiency by “dynamically selecting pickup and dropoff locations (e.g., dropping off the first passenger a block away from their destination in order to avoid the driver looping around the block or making a left turn onto a busy street” and “selecting a pickup point at a major intersection between both riders and instructing them to walk there, etc.).” Pet. 22–23 (quoting Ex. 1004, 4:17–23). Based on this teaching, Petitioner reasons that

it would have been obvious to a PHOSITA to configure *Lambert* to also dynamically select a *pick-up location* a block away from the requested pick-up location (i.e., *the current location of the first user*) for at least the same beneficial reasons described in *Lambert* relating to the drop-off location. . . . A PHOSITA would have understood a dynamically selected pick-up location a block away from the user-requested pick-up location would be selected to avoid the driver looping around the block or making a left turn onto a busy street as expressly suggested by *Lambert*. [] Since selecting a more efficient location a block away from the user’s requested location was known and expressly suggested by *Lambert*, there would have been a reasonable expectation of success selecting a pick-up location a block away from the user’s current location. . . . Thus, *Lambert* also renders obvious *the first virtual bus stop is at a first location at least a block away from the current location of the first user*.

Pet. 24–25 (citing Ex. 1003 ¶¶ 162, 163).

Patent Owner argues that Lambert does not disclose “wherein the first virtual bus stop is at a first location at least a block away from the current location of the first user.” PO Resp. 45 (citing Pet 24–25).

Because Petitioner fails to show by a preponderance of the evidence that Lambert discloses or otherwise renders obvious a processor programmed to select “virtual bus stops,” Petitioner also fails to show that Lambert discloses or teaches a processor programmed to select a “first virtual bus stop . . . at a first location at least a block away from the current location of the first user.” *Supra* § III.D.4.f. As explained above, although Lambert teaches a system and processor programmed to select routes, Lambert’s system and processor is not programmed to select “virtual bus stops.” *See id.* § III.D.4.f.1. Furthermore, Petitioner’s reasoning that it would have been obvious to modify Lambert’s system to satisfy the step of selecting is premised on a misunderstanding of Lambert’s Figure 11. *See id.* § III.D.4.f.2. In particular, we disagree with Petitioner’s position that Lambert’s “Figure 11 provides evidence that the system—not a rider or a driver—performs the ‘dynamic selection’ because the system is responsible for placing pickup/dropoff locations on selected road segments.” Pet. Reply 12 (citing Ex. 2037, 38:11–39:5). As described in Lambert, the embodiment depicted in Figure 11 provides that route segments are *determined* (steps 1100, 1104), not pickup and dropoff locations (steps 1102, 1106), which are instead *inserted*, presumably by the rider or driver. *See* Ex. 1004, 11:23–37.

Petitioner fails to demonstrate by a preponderance of the evidence that Lambert discloses or renders obvious a “processor . . . programmed to .

. . select virtual bus stops . . . wherein the first virtual bus stop is at a location at least a block away from the current location of the first user.”

h. [1(e)] assign the rideshare vehicle to pick up the first user from the first virtual bus stop and to drop off the first user at the second virtual bus stop

Petitioner submits that Lambert teaches this limitation. Pet. 26.

Quoting Lambert, Petitioner submits that in step 908, shown in Figure 9 (reproduced above), “the ride is assigned to the driver with a route with minimum delay time (e.g., detour time, pickup delay, a combination of detour time and pickup delay, etc.).” Pet. 25–26 (quoting Ex. 1004, 10:61–64) (emphasis omitted). Petitioner submits that “Lambert teaches assigning the rideshare vehicle to pick up the first user from the first virtual bus stop and to drop off the first user at the second virtual bus stop.” Pet. 26 (citing Ex. 1003 ¶¶ 165, 166).

Patent Owner does not dispute Petitioner’s assertions.

Petitioner has demonstrated by a preponderance of the evidence that Lambert satisfies a “processor . . . programmed to . . . assign the rideshare vehicle to pick up the first user from the first virtual bus stop and to drop off the first user at the second virtual bus stop.”⁷

⁷ For purposes of our analysis of this limitation, we assume Lambert discloses a “virtual bus stop.”

- i. *[1(f)] generate a first time-estimation for the rideshare vehicle to arrive at the first virtual bus stop for picking up the first user*

Petitioner submits that Lambert teaches this step, citing Lambert’s disclosure of a “pickup delay (e.g., the delay until the ride passenger is picked up).” Pet. 26 (quoting Ex. 1004, 10:39–44).

Patent Owner disputes Petitioner’s treatment of limitation (f). *See* Pet. 48. Patent Owner contends that Petitioner “cherry-pick[s] disparate statements from multiple references” and argues that “none of the references even remotely touches on the process claimed in limitation[] 1(f).” *Id.* at 49.

Patent Owner’s argument is not persuasive. We find that Lambert’s pickup delay satisfies the recited “first time-estimation.” *See* Pet. Reply 21 (arguing the same). Lambert discloses using a “pickup delay,” which is described as “the delay until the rider passenger is picked up,” when calculating the selection of a driver. *See* Ex. 1004, 10:39–44.

Petitioner has demonstrated by a preponderance of the evidence that Lambert satisfies a “processor . . . programmed to . . . generate a first time-estimation for the rideshare vehicle to arrive at the first virtual bus stop for picking up the first user.”⁸

⁸ *Supra* n.7.

- j. *[1(g)] continuously track location a current location of the rideshare vehicle prior to arrival at the first virtual bus stop, to generate an updated time-estimation for the rideshare vehicle to arrive at the first virtual bus stop for picking up the first user*

Petitioner relies on a combination of Lambert and Sweeney to address this limitation. *See* Pet. 28–29. Petitioner submits that Lambert “teaches tracking the current location of the rideshare vehicle via a GPS location signal prior to arrival at the first pick-up location (i.e., the first virtual bus stop)” but acknowledges that Lambert “does not specify whether the tracking is performed *continuously*,” as required by the claim. *Id.* at 28 (emphasis replaced). Nevertheless, Petitioner submits that “continuously tracking a current location of the rideshare vehicle prior to arrival at the first virtual bus stop would have been obvious to a PHOSITA based on the teachings of Sweeney.” *Id.* (citing Ex. 1003 ¶ 169) (emphasis omitted).

Petitioner cites to Sweeney’s disclosure that

The driver tracking 112 can update the driver database 116 with the driver information in real-time for each respective driver (using the driver IDs 133). In this manner, the dispatch 110 can **continuously** (or periodically) **monitor the current location 115** and service state 131 of drivers of system 100.

Pet. 28 (citing Ex. 1008 ¶ 40).

Based on Sweeney’s teachings, Petitioner reasons that

[A] PHOSITA would have been motivated to configure *Lambert’s* server to continuously track the current location of the rideshare vehicle prior to arrival at the first virtual bus stop at least because this combination would have been (1) a combination of prior art elements according to known methods to yield predictable results and (2) use of a known technique to improve similar ridesharing systems in the same way.

Pet. 28–29 (citing Ex. 1003 ¶¶ 171–173). Mr. Andrews testifies that “[d]etecting changes to the vehicle’s route via continuous tracking would have made Lambert’s system more robust and able to adapt to changing conditions in real time” and that a POSITA “would have been motivated to improve similar ridesharing systems in the same way.” Ex. 1003 ¶ 172.

Patent Owner argues that “none of the prior art teaches continuously tracking the location of an assigned ridesharing vehicle for the purpose of determining whether the ridesharing vehicle is experiencing delays while en route to pickup a rider.” PO Resp. 50. Patent Owner further argues that “none of the cited prior art teaches calculating the difference between a ‘first’ and an ‘updated’ estimated arrival time and comparing that difference to a ‘predefined threshold’ to determine when an assigned vehicle should be cancelled.” *Id.*

Patent Owner’s arguments are not persuasive as they attack the references individually. *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) (internal citation omitted) (explaining that nonobviousness cannot be shown by attacking references individually). As explained above, Petitioner relies on a combination of Lambert and Sweeney for addressing this limitation and proposes “to configure *Lambert*’s server to continuously track the current location of the rideshare vehicle prior to arrival at the first virtual bus stop” based on Sweeney’s teachings. *See* Pet. 28–29.

Petitioner has demonstrated by a preponderance of the evidence that Lambert, as reconfigured based on Sweeney’s teachings, satisfies a “processor . . . programmed to . . . continuously track location a current location of the rideshare vehicle prior to arrival at the first virtual bus stop,

to generate an updated time-estimation for the rideshare vehicle to arrive at the first virtual bus stop for picking up the first user.”⁹

- k. *[1(h)] cancel the assignment of the rideshare vehicle when the updated time-estimation differs from the first time-estimation by more than a predefined threshold*

Petitioner relies on a combination of Lambert and Olmi to address this limitation. *See* Pet. 30–33.

Petitioner submits that Lambert’s “selection of a driver involves generating a first pick-up delay” and “cancelling the assignment of a rideshare vehicle when conditions change,” such as “when the actual number of passengers exceeds the expected number.” Pet. 30 (citing Ex. 1004, 7:37–46). Petitioner acknowledges, however, that Lambert “does not expressly describe cancelling the assignment of the rideshare vehicle when the updated pick-up delay time-estimation differs from the first pick-up delay time-estimation by more than a predefined threshold.” *Id.* Nevertheless, Petitioner reasons that it “would have been obvious to a PHOSITA based on the teachings of Olmi.” *Id.* (citing Ex. 1003 ¶¶ 174–178) (emphasis omitted).

Patent Owner argues that “Petitioner utterly fails to establish that the ‘predefined threshold’ of limitation 1(h) was within the general knowledge of a PHOSITA.” PO Resp. 51. Patent Owner acknowledges that while Olmi references a “long delay,” Patent Owner argues that “there is no indication that the ‘long delay’ is based on a threshold nor determined by comparing original and updated ETAs.” *Id.* at 52

⁹ *Supra* n.7.

Patent Owner’s arguments are not persuasive. Petitioner’s analysis is fully supported by the teachings of Olmi and the testimony of Mr. Andrews.

Specifically, Petitioner cites to Olmi’s teaching of “re-optimizing” rideshare assignments “when a transit vehicle gets delayed for a long time due to heavy traffic, or when traffic congestion conditions . . . have significantly deteriorated ahead along the current optimal transit route of the transit vehicle, now making that route less optimal.” Pet. 30–31 (quoting Ex. 1033, 76). Petitioner further cites to Olmi’s teaching that the “re-optimization process results in ‘one or more passenger pick-ups planned for that transit vehicle are now cancelled, with waiting passengers now collected by another transit vehicle.’” *Id.* at 31 (quoting Ex. 1033, 76).

Based on Olmi’s “re-optimization” teaching, Petitioner reasons that

[I]t would have been obvious to a PHOSITA to modify *Lambert* to cancel the assignment of the rideshare vehicle only when the difference between the updated pick-up delay time-estimation and the first pick-up delay time-estimation exceeds a predefined limit/threshold such as 5 minutes or 10 minutes.

Id. at 31–32 (citing Ex. 1003 ¶ 177). In support of this reasoning, Mr. Andrews testifies that

A PHOSITA would have understood this modification would have been a predictable improvement in user experience since using a time difference threshold means the user’s expectations of the time delay do not deviate by more than a threshold amount, meaning the user can more reliability count on the system to pick them up or deliver them at a predictable time. . . . Therefore, a PHOSITA would have been motivated to improve similar ridesharing systems in the same way.

Ex. 1003 ¶ 177.

We agree with Petitioner that “even if Mr. Andrews had relied on the general knowledge of a PHOSITA, this is permissible ‘when the limitation

in question [is] unusually simple and the technology particularly straightforward[,]’ such as repeating steps ‘until a particular quantity of email was sent[.]’” Pet. Reply 24 (quoting *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1362 (Fed. Cir. 2016)).

Petitioner has demonstrated by a preponderance of the evidence that the cited art satisfies a “processor . . . programmed to . . . cancel the assignment of the rideshare vehicle when the updated time-estimation differs from the first time-estimation by more than a predefined threshold.”¹⁰

1. [1(i)] reassign another rideshare vehicle to pick up the first user from the first virtual bus stop

Petitioner relies on a combination of Olmi and Lambert for satisfying this limitation. *See* Pet. 33–34.

Patent Owner argues that “none of the references even remotely touches on the process claimed in limitation[] . . . 1(i).” PO Resp. 49. Patent Owner argues that “there are many problems with Petitioner’s patchwork analysis.” *Id.* at 50.

Patent Owner’s arguments are not persuasive. Petitioner sufficiently addresses the claim limitation.

Petitioner cites to Olmi’s re-optimization teaching that results in “one or more passenger pick-ups planned for that transit vehicle are now cancelled, with waiting passengers now collected by *another transit vehicle.*” Pet. 33 (quoting Ex. 1033, 76) (emphasis replaced). Petitioner further cites to Lambert’s teaching of “recalculating selection of a

¹⁰ *Supra* n.7.

driver/vehicle for a rider based on changed conditions” and “driver selection calculation result[ing] in assigning a driver/rideshare vehicle to pick-up the first user from the first virtual bus stop.” *Id.* at 33–34 (citing Ex. 1004, 4:43–45).

Based on these and other teachings, Petitioner reasons that “[i]t would have also been obvious to a PHOSITA configure *Lambert*’s driver selection system re-assign the first user to another rideshare vehicle after cancelling the original rideshare vehicle as taught by *Olmi*.” Pet. 33 (citing Ex. 1003 ¶ 180). Mr. Andrews testifies that the proposed modification would have improved rider’s/user’s satisfaction, as “cancelling the user’s assignment to a rideshare vehicle and *failing* to reassign the user to another vehicle would have frustrated users and created a tremendous amount of user dissatisfaction.” Ex. 1003 ¶ 182.

Petitioner has demonstrated by a preponderance of the evidence that the prior art satisfies the step of “reassign[ing] another rideshare vehicle to pick up the first user from the first virtual bus stop.”¹¹

5. *Summary of Ground 1*

Petitioner has failed to demonstrate by a preponderance of the evidence that claim 1 is unpatentable over *Lambert* in view of *Sweeney* and *Olmi*.

¹¹ *Supra* n.7.

E. Ground 2: Claims 2–7, 10, 12, 15, and 18 as Obvious over Lambert, Sweeney, and Poykko

Petitioner contends that independent claim 2 and its dependent claims 3–7, 10, 12, 15, and 18 would have been obvious over Lambert, Sweeney, and Poykko. Pet. 35–55.

Independent claim 2 is similar to independent claim 1. *Compare* Ex. 1001, 30:46–31:16, *with id.* at 31:17–44. Similar to claim 1, claim 2 requires a “processor configured to . . . select from the plurality of pre-identified locations stored in memory, virtual bus stops.” *Id.* at 31:26–33. To address this limitation, Petitioner relies on its challenge under Ground 1 and submits that “Lambert teaches dynamically selecting pick-up/dropoff locations (i.e., virtual bus stops).” Pet. 39 (cross-referencing Petition’s analysis of element 1(d)(i)).

For the same reasons Petitioner’s challenge of claim 1 falls short, Petitioner’s challenge of claim 2 falls short. As such, Petitioner fails to establish by a preponderance of the evidence that independent claim 2, and dependent claims 3–7, 10, 12, 15, and 18, would have been obvious over Lambert, Sweeney, and Poykko.

F. Ground 3: Claims 11, 19, and 20 as Obvious over Lambert, Sweeney, and Lerenc

Petitioner contends that independent claim 11 and its dependent claims 19 and 20 would have been obvious over Lambert, Sweeney, and Lerenc. Pet. 55–62.

Independent claim 11 is a method claim that recites limitations similar to limitations recited in claim 1. *Compare* Ex. 1001, 30:46–31:16, *with id.* at 32:45–33:7. Notably, independent claim 11 requires the step of

“selecting, based on the current travel route of the rideshare vehicle, virtual bus stops for the identified rideshare vehicle.” *Id.* at 32:54–56; *see supra* § III.B.1 (construing “virtual bus stop” as “pickup and dropoff locations selected by the ride-sharing system itself”). To address this limitation, Petitioner relies on Lambert based on its challenge under Ground 1. *See* Pet. 56 (cross-referencing Petitioner’s analysis of claim element 1(d)(i)).

For the same reasons Petitioner’s challenge of claim 1 falls short, Petitioner’s challenge of claim 11 falls short. As such, Petitioner fails to establish by a preponderance of the evidence that independent claim 11, and its dependent claims 19 and 20, would have been obvious over Lambert, Sweeney, and Lerenc.

G. Grounds 4 and 5: Claims 8, 9, 13, and 17 as Obvious over Lambert, Sweeney, Poykko, and either Lerenc or Olmi

Petitioner challenges claims 8, 9, 13, and 17 as obvious over Lambert, Sweeney, Poykko, and either Lerenc or Olmi. *See* Pet. 6. Claims 8, 9, 13, and 17 depend from independent claim 2. *See* Ex. 1001, 32:20–30, 33:10–15; 33:30–36. In challenging these claims, Petitioner relies on the same insufficient analysis relied on in challenging independent claims 1 and 2. *See* Pet. 62–65.

For the same reasons Petitioner’s challenges of claims 1 and 2 fall short, Petitioner’s challenges of claims 8, 9, 13, and 17 fall short. As such, Petitioner fails to establish by a preponderance of the evidence that claims 8, 9, 13, and 17 would have been obvious over Lambert, Sweeney, Poykko, and either Lerenc or Olmi.

IV. CONCLUSION¹²

Based on the fully developed record, Petitioner fails to demonstrate by a preponderance of the evidence that claims 1–13, 15, and 17–20 of the '411 patent are unpatentable.

Claims	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1	103	Lambert, Sweeney, Olmi		1
2–7, 10, 12, 15, 18	103	Lambert, Sweeney, Poykko		2–7, 10, 12, 15, 18
11, 19, 20	103	Lambert, Sweeney, Lerenc		11, 19, 20
8, 9, 13	103	Lambert, Sweeney, Poykko, Lerenc		8, 9, 13
17	103	Lambert, Sweeney, Poykko, Olmi		17
Overall Outcome				1–13, 15, 17–20

¹² 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. 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).

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–13, 15, and 17–20 of the '411 patent are not determined to be unpatentable; and

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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