

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

UBER TECHNOLOGIES, INC and UBER FREIGHT US LLC,
Petitioners

v.

CARMA TECHNOLOGY, LTD.,
Patent Owner

IPR2026-00307

Patent No. 11,164,456

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 11,164,456**

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LIST OF EXHIBITS

EX1001	U.S. Patent No. 11,164,456 (“the ’456 patent”)
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EX1005	UK Patent Application No. GB2397683A to Olmi (“Olmi”)
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EX1007	Provisional Application No. 60/900,808 (“’808 Provisional”)
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EX1009	U.S. Patent Application No. 12/069,656
EX1010	U.S. Patent Application Publication No. 2003/0040944 to Hileman (“Hileman”)
EX1011	U.S. Patent Application No. 12/924,487
EX1012	U.S. Patent Application No. 15/998,864
EX1013	U.S. Patent Application No. 16/198,000
EX1014	U.S. Patent Application No. 16/698,312
EX1015	U.S. Patent Application No. 16/983,598
EX1016	Prosecution History of U.S. Patent No. 7,840,427

EX1017 – EX1029	RESERVED
EX1030	U.S. Patent Application Publication No. 2001/0037174 to Dickerson (“Dickerson”)
EX1031	U.S. Patent Application Publication No. 2003/0036935 to Nel (“Nel”)
EX1032	International Patent Publication No. WO 2005/104059 A2 to Bhushan (“Bhushan”)
EX1033	U.S. Patent No. 5,799,263 to Culbertson (“Culbertson”)
EX1034	“A distributed geographic information system for the daily car pooling problem,” Roberto Wolfler Calvo et al. <i>Computers & Operations Research</i> 31 (2004) 2263-2278 (“Calvo”)
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I. INTRODUCTION

Uber Technologies, Inc. and Uber Freight US LLC (“Petitioners”) request *inter partes* review of claims 1-5, 7, 10-15, 19, and 20 (“the challenged claims”) of U.S. Patent No. 11,164,456 (the ‘456 patent”) (EX1001), which, according to PTO records, is assigned to Carma Technology, Ltd. (“PO”).

II. MANDATORY NOTICES

Real Parties-in-Interest: Pursuant to 37 C.F.R. § 42.8(b)(1), Petitioners identify Uber Technologies, Inc., Uber Freight US LLC, and Uber Freight Holding Corporation as the real parties-in-interest.

Related Matters: The ‘456 patent is asserted by PO against Petitioners in *Carma Technology, Corp. v. Uber Technologies, Inc.*, Case No. 2:25-cv-00029 (E.D. Tex.) (“Carma Litigation”). Uber was served with the complaint on March 20, 2025. Thus, this petition is timely under 35 U.S.C. § 315(b).

Petitioners are submitting petitions for *inter partes* review of U.S. Patent Nos. 7,840,427 (“the ‘427 patent”), 11,017,668, 10,741,071, and 10,916,138, which are also asserted by PO in the Carma Litigation.

Counsel and Service Information: Lead counsel: Naveen Modi (Reg. No. 46,224). Backup counsel: (1) Joseph E. Palys (Reg. No. 46,508), (2) Phillip W. Citroën (Reg. No. 66,541), (3) Alexa Lowman (*pro hac vice* to be filed), and (4) Maksim Mints (Reg. No. 78,507).

Service information is Paul Hastings LLP, 2050 M St., N.W., Washington, DC 20036, Tel.: 202.551.1700, Fax: 202.551.1705, email: PH-Uber-Carma-IPR@paulhastings.com. Petitioners consent to electronic service.

III. PAYMENT OF FEES

The PTO is authorized to charge any fees due during this proceeding to Deposit Account No. 50-2613.

IV. GROUNDS FOR STANDING

Petitioners certify under 37 C.F.R. § 42.104(a) that the '456 patent is available for review and Petitioners are not barred/estopped from requesting review on the identified grounds.

V. PRECISE RELIEF REQUESTED AND GROUNDS RAISED

The challenged claims should be canceled as unpatentable based on the following grounds:

Ground 1: Claims 1-5, 7, 10-15, 19, and 20 are unpatentable under 35 U.S.C. § 103 as being obvious over O'Sullivan (EX1006) in view of Olmi (EX1005).

As discussed below, O'Sullivan and Olmi qualify as prior art and are properly relied upon for showing unpatentability of the '456 patent, which has an earliest effective filing date of April 21, 2021.

A. Earliest Effective Filing Date of '456 Patent

The '456 patent issued from U.S. App. No. 17/236,491 (“the '491 application”), which claims priority to a series of applications, including U.S. App. No. 12/069,656 (“the '656 application”) (filed February 12, 2008) (EX1009),¹ and Provisional App. No. 60/900,808 (“the '808 provisional”) (EX1007) (filed February 12, 2007). For the reasons explained below, the claims of the '456 patent lack written description support (1) in the '808 provisional and (2) in any earlier non-provisional application to which the '456 patent purports to claim priority, including the '656 application (collectively, “the Priority Applications”). (EX1002, ¶¶34-72.)

A claim is entitled to the benefit of an earlier U.S. filing date only when the earlier application discloses the claimed subject matter in a manner that satisfies the written description requirement of 35 U.S.C. § 112. *See, e.g., PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 1306 (Fed. Cir. 2008) (subject matter disclosed for the first time in a continuation application does not receive benefit of the parent’s filing date). To comply with the written description requirement, the earlier application “must describe the invention sufficiently to convey to a person of skill in the art that the patentee had possession of the claimed invention at the time of the application, i.e., that the patentee invented what is claimed.” *LizardTech, Inc. v. Earth Resource Mapping, Inc.*, 424 F.3d 1336, 1345 (Fed Cir. 2005); *see also*

¹ The '656 application issued as U.S. Patent No. 7,840,427.

Allergan, Inc. v. Sandoz Inc., 796 F.3d 1293, 1308-09 (Fed. Cir. 2015). Whether the claimed subject matter would have been an obvious variant of disclosed material is irrelevant to the written-description inquiry. *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997).

Here, the '808 provisional and the Priority Applications do not sufficiently disclose the subject matter claimed in the '456 patent. A person of ordinary skill in the art ("POSITA")² reviewing the '808 provisional and the Priority Applications would have understood that the named inventor was not in possession of the claim elements discussed below, which appear in independent claims 1, 11, and 19. This deficiency likewise extends to the remaining challenged claims, which depend from claims 1, 11, or 19. (Ex. 1002, ¶¶34-72.)

Accordingly, at best, the '456 patent's earliest effective filing date is no earlier than April 21, 2021—the filing date of the '491 application—and the '656 application publication (U.S. Pat. App. Pub. No. 2008/0195428) ("O'Sullivan") (EX1006), published August 14, 2008, is prior art to the '456 patent. (EX1001, Cover; EX1002, ¶¶34-72.)

² The definition of a POSITA is discussed below in §VI.

1. [1.g.i]/[11.g.i]/[19.g.i]: Displaying Transport Provider Rating Score on Transport User’s Device

To begin, the claims articulate a sequence: The “causing” claim element [1.g]/[11.g]/[19.g], including subparts [1.g.i]/[11.g.i]/[19.g.i] through [1.g.iv]/[11.g.iv]/[19.g.iv], which concerns the “display” of certain information by “the transport user device,” occurs **after** the “acceptance of the pick-up request” (elements [1.e]/[11.e]/[19.e]) but **before** “the at least one person or item has been picked up” (elements [1.j]/[11.j]/[19.j]). For example, the “causing” element (elements [1.g]/[11.g]/[19.g]) refers to “the transport provider” and requires displaying “information” relating to that provider, including “information descriptive of...a transport provider vehicle associated with the transport provider,” and details of that driver’s transport service, such as “an estimated cost” and “time associated with arrival...at the drop-off location.” (EX1002, ¶¶39-40; *see also id.*, 39-50.)

Subsequent claim elements confirm this sequence:

- Claim element [1.i]/[11.i]/[19.i] recites a separate “causing” step to “display a notification indicative of the **approaching** transport provider” in response to “receiving the indication that the transport provider is approaching the pick-up location”;

- Claim element [1.j]/[11.j]/[19.j] recites “receiving...an indication that the at least one person or item has been **picked up**”; and
- Claim element [1.l]/[11.l]/[19.l] recites another “causing” step to “display one or more of an estimated time associated with arrival of the at least one person or item **at the drop-off** location.”

Thus, the “causing” claim element [1.g]/[11.g]/[19.g] must occur **after** acceptance but **before** pick up. (EX1002, ¶¶41-42.)

Based on the disclosure of the Priority Applications, a POSITA would have understood that the named inventor did not possess “causing the transport user device to display, via the transport user application:...a transport provider rating score associated with the transport provider” after acceptance but before pick up, as recited in claim element [1.g.i]/[11.g.i]/[19.g.i]. (Ex. 1002, ¶43.)

The Priority Applications describe limited use of a driver rating score in its shared transport system. For example, the Priority Applications explain that “drivers with continually risky behavior are **identified through a real-time rating mechanism available to riders** and the in-car computer measurement system.” (EX1009, 8; *see also id.*, 41 (“A trust system for managing networks of Transport Providers with varying trust characteristics. As shown in FIG. 7, the **Transport Providers/Drivers are managed by a system 705 which considers their**

ratings....”), 48.)³ Additionally, the Priority Applications explain that “**system rankings are available**” and that “Riders have the ability to only **request Transport Capacity from Drivers with specified quality Star Ratings**, and the like.” (*Id.*, 19-20.) The Priority Applications also explain that riders may “**rate the Driver**” **at the end of the ride.** (*Id.*, 24 (“**At the end of each journey**, as the Rider leaves the vehicle, they are messaged with the details and cost of their journey on their GPS phone 11 (via SMS, e-mail, or via a special application or web page, for example). This message also could **prompt the Rider to rate the Driver**, for example, with 1 to 5 stars, on one or more scales (safety, comfort, social factors).”), 47; EX1002, ¶¶44-46.)

Based on such generic discussions relating to a driver rating score, a POSITA would have understood that the named inventor did not possess claim element [1.g.i]/[11.g.i]/[19.g.i]. At best, the Priority Applications state that the rating scores

³ The §112 analysis herein relies on the as-filed application of the ’656 application (EX1009). Because the as-filed applications of the other Priority Applications are substantively the same, the same §112 analysis governs each Priority Application. (*See* EX1011 (U.S. Pat. App. No. 12/924,487); EX1012 (U.S. Pat. App. No. 15/998,864); EX1013 (U.S. Pat. App. No. 16/198,000); EX1014 (U.S. Pat. App. No. 16/698,312); EX1015 (U.S. Pat. App. No. 16/983,598); Ex. 1002, ¶¶34-38.)

are updated (EX1009, 47), “available to riders” (*id.*, 19-20), and “drivers with continually risky behavior are identified through a real-time rating mechanism” (*id.*, 8). Nowhere do the Priority Applications state that the rating score is **displayed** on a transport user application **after** the pick-up request is accepted but **before** pick up. (EX1002, ¶47.)

Indeed, if displayed at all, the above-cited portions of the Priority Applications suggest that rating scores may be provided to riders **prior to selection of a driver** so that the riders can avoid risky drivers. According to the Priority Applications, what is displayed **after** acceptance but **before** pick up is as follows: “a message would optimally be sent to [the Rider]...along with the specific color, model, picture and/or other identifying characteristics of the transport capacity that was arriving.” (*Id.*, 18.) Nowhere do the Priority Applications disclose that the transport user device, via its user application, would also display “a transport provider rating score” at this period. (EX1002, ¶¶48-49.)

The ’808 provisional likewise does not disclose this claimed feature. While the provisional discloses a “rating system,” it does not disclose that the rider’s device, via its user application, displays “a transport provider rating score.” (*See, e.g.*, EX1007, 8-9 (“The below system incorporates a security verifying and rating system to provide that the strangers in shared transit systems are trustworthy.”), 15 (“Driver No Show rating”); EX1002, ¶50.)

2. [1.g.ii]/[11.g.ii]/[19.g.ii]: Displaying Estimated Cost on Transport User's Device

As discussed above (§V.A.1), claim element [1.g.ii]/[11.g.ii]/[19.g.ii] must occur **after** acceptance but **before** pick up. A POSITA would have understood, based on the Priority Applications, that the named inventor did not possess this claim element, which recites “causing the transport user device to display, via the transport user application:...an estimated cost associated with servicing the pick-up request.” (Ex. 1002, ¶¶51-54.)

The Priority Applications disclose that cost information of the ride may be presented to the rider only **when selecting the driver or after the ride is completed**. For example, the Priority Applications disclose that the rider, “**upon submitting a Demand Route**...could be presented with a sorted list of the transport options available, by...**cost**.” (EX1009, 16.) And, “**as the Rider leaves the vehicle**, they are messaged with the details and **cost** of their journey on their GPS phone 11.” (*Id.*, 24.) These portions of the Priority Applications do not disclose that the ride cost information is displayed on a transport user device after acceptance but before pick up. (EX1002, ¶¶52-53.)

The '808 provisional also does not disclose this claim element. Like the Priority Applications, the provisional merely discloses that the rider is presented with “a sorted list of the transport options available, by...cost” upon “submitting a Demand Route.” (EX1007, 13.) The provisional does not disclose the rider's

device, via its application interface, displaying an estimated cost associated with the ride (“an estimated cost associated with servicing the pick-up request”) **after** acceptance but **before** pick up. (EX1002, ¶54.)

3. [1.g.iii]/[11.g.iii]/[19.g.iii]: Displaying Estimated Time Associated with Arrival on Transport User’s Device

As discussed above (§V.A.1), claim element [1.g.iii]/[11.g.iii]/[19.g.iii] must occur **after** acceptance but **before** pick up. A POSITA would have understood, based on the disclosures of the Priority Applications, that the named inventor did not possess this claim element, which recites “causing the transport user device to display, via the transport user application:...an estimated time associated with arrival of the at least one person or item at the drop-off location.” (Ex. 1002, ¶¶55-57.)

The Priority Applications disclose that the rider “upon submitting a Demand Route....could be presented with a sorted list of the transport options available, by...estimated transit time to end-point.” (EX1009, 16.) The Priority Applications do not disclose or suggest displaying an estimated time associated with arrival at the drop-off location at any other time, including **after** acceptance but **before** pick up. (EX1002, ¶56.)

The ’808 provisional also does not disclose this claim element. Instead, similar to the Priority Applications, it merely describes presenting “a sorted list of

the transport options available, by...estimated transit time to end-point” upon “submitting a Demand Route.” (EX1007, 13; EX1002, ¶57.)

4. [1.k]/[11.k]/[19.k]: Displaying Navigation Directions to Drop-off

A POSITA would have understood, based on the disclosures of the Priority Applications, that the named inventor did not possess “causing the transport provider device, via the transport provider application, to display navigation directions to the drop-off location based on the GPS position data of the transport provider device,” as recited in claim element [1.k]/[11.k]/[19.k]. (Ex. 1002, ¶¶58-62.)

The Priority Applications include only limited discussion on providing navigation to a drop-off location. For example, the Priority Applications in Figure 6b disclose “follow[ing] **audio guidance** to drop-off.” (EX1009, FIG. 6b.) While the Priority Applications explain that the driver’s device has “an ability to display graphics,” and describe “a personal navigation device or built-in sat-nav unit” to “route the driver to **pick-up locations,**” they do not disclose **displaying** navigation directions to a **drop-off location.** (*Id.*, 47.) Thus, a POSITA would have understood, based on the disclosures of the Priority Applications, that the named inventor did not possess the driver’s device, via its application interface, “display[ing] navigation directions to the drop-off location based on the GPS position data of the transport provider device.” (EX1002, ¶¶59-61.)

The '808 provisional is similarly deficient. Instead of disclosing displaying navigation directions to drop-off locations, the provisional application only describes “audio guidance to drop-off.” (EX1007, FIG. 6; EX1002, ¶62.)

5. [1.1]/[11.1]/[19.1]: Displaying Time until Arrival on Transport User’s Device

Claim element [1.1]/[11.1]/[19.1] recites “causing the transport user device, via the transport user application, to display one or more of an estimated time associated with arrival of the at least one person or item at the drop-off location.” This “causing” element must occur **after** “the at least one person or item has been picked up” (element [1.j]/[11.j]/[19.j]) but **before** “the transport provider has delivered the at least one person or item to the drop-off location” (element [1.n]/[11.n]/[19.n])—i.e., this “causing” element must occur during the ride. (EX1002, ¶63; *see also id.*, ¶¶63-69.) For example, as discussed in §V.A.1 with respect to claim element [1.g]/[11.g]/[19.g], the claims previously recite “causing the transport user device to display, via the transport user application:...an estimated time associated with arrival of the at least one person or item at the drop-off location” after acceptance but before pick up. Additionally, referring to claim element [1.j]/[11.j]/[19.j], the claims previously recite “receiving...an indication that the at least one person or item has been picked up.” The subsequent claim elements concern “tracking progress of travel of the transport provider” (element [1.m]/[11.m]/[19.m]) and “receiving an indication that the transport provider has delivered the at least one

person or item to the drop-off” (element [1.n]/[11.n]/[19.n]). Thus, this “causing” element of [1.l]/[11.l]/[19.l] corresponds to the point in time after pick up but before drop off—i.e., **during the ride**. (EX1002, ¶¶64-66.)

A POSITA would have understood, based on the disclosures of the Priority Applications, that the named inventor did not possess “causing the transport user device, via the transport user application, to display one or more of an estimated time associated with arrival of the at least one person or item at the drop-off location” during the ride. (Ex. 1002, ¶67.)

The Priority Applications disclose, upon the rider submitting a demand route, presenting the rider with “transport options available...**estimated transit time to end-point**.” (EX1009, 16.) The Priority Applications also disclose that the rider’s device is capable of displaying graphics that “enables [the] Transport User to book travel, receive updates on travel information, confirm bookings and receive activity receipts, provide proof of identity and location, as well as update trust ratings on providers in the network.” (*Id.*, 47; EX1002, ¶68.) Based on such a generic discussion relating to an estimated transit time, a POSITA would have understood that the named inventor did not possess “causing the transport user device, via the transport user application, to display one or more of an estimated time associated with arrival of the at least one person or item at the drop-off location” during the ride, as recited in claims 1, 11, and 19. (EX1002, ¶68.)

The '808 provisional also does not disclose this claim element. Instead, similar to the Priority Applications, the provisional discloses, upon submitting a request, presenting the rider with transport options, along with “estimated transit time to end-point.” (EX1007, 13; EX1002, ¶69.)

6. [1.r]/[11.r]/[19.r]: Charging Cost for Servicing the Request

A POSITA would have understood, based on the disclosures of the Priority Applications, that the named inventor did not possess “causing the cost for servicing the pick-up request to be charged to a payment method associated with the transport user.” (Ex. 1002, ¶¶70-72.)

The Priority Applications disclose that “[a]t the end of this journey, a message would be sen[t] to Rider with the details and any billing information about the journey.” (EX1009, 22.) The Priority Applications also disclose “providing...cashless transaction benefit to users of both public transport and shared transport,” without explaining what that benefit is. (*Id.*, 54.) Based on such a generic discussion about providing a message with billing information and/or cashless transaction benefit, a POSITA would have understood that the named inventor does not possess causing the cost to be charged to a payment method associated with the transport rider, as required by the claims. Nothing in the Priority Applications describes charging payment for servicing the pick-up request. (EX1002, ¶71.)

The '808 provisional also does not disclose this claim element. For example, while the provisional discloses “pricing for a route would be determined by per mile default rates, the number of seats occupied and other preset fixed and variable charges,” it does not disclose charging the cost to a payment method. (EX1007, 12; EX1002, ¶72.)

B. O’Sullivan (EX1006)

As discussed above, O’Sullivan is the publication of the '656 application, which issued as the '427 patent, the earliest parent of the '456 patent. It published on August 14, 2008, and therefore qualifies as prior art at least under 35 U.S.C. § 102(a). Because the '427 and '456 patents are part of the same continuation chain and share the same disclosure, O’Sullivan—the published application corresponding to the '427 patent—discloses all limitations of the challenged claims except for those limitations that lack support in the Priority Applications, as discussed above. (*See* §V.A; EX1002, ¶75.)

C. Olmi (EX1005)

Olmi published on July 28, 2004, and thus qualifies as prior art at least under 35 U.S.C. § 102(a). Although Olmi was not considered during prosecution of the '456 patent, it was a principal reference in an earlier European Patent Office’s examination of counterpart application EP08725447A, where the EPO relied on

Olmi to reject the claims. (EX1036, 217-22, 251-58.) The applicant ultimately abandoned that EP application without overcoming Olmi. (*Id.*, 263-67.)

Olmi discloses a method/system that, like the '456 patent, leverages existing features/concepts from public transport and individual transport applications to address transportation problems. (EX1005, 8-9.)⁴ For example, Olmi describes matching prospective travelers/passengers from a journey request database with available carpool drivers from a transit vehicle current itineraries database. (*Id.*, 35-39.) Olmi also describes other features/components, including a digitized street layout map, communicator devices capable of displaying information, a controlling computer, positions/navigation systems, and a data transmission system. (*Id.*, 12-15; EX1002, ¶¶76-83.)

VI. LEVEL OF ORDINARY SKILL

A POSITA at the time of the alleged invention of the '456 patent would have had at least a bachelor's degree in computer science, computer engineering, software engineering, electrical engineering, or the equivalent and at least two years of experience in technologies relevant to or utilized in transportation systems.

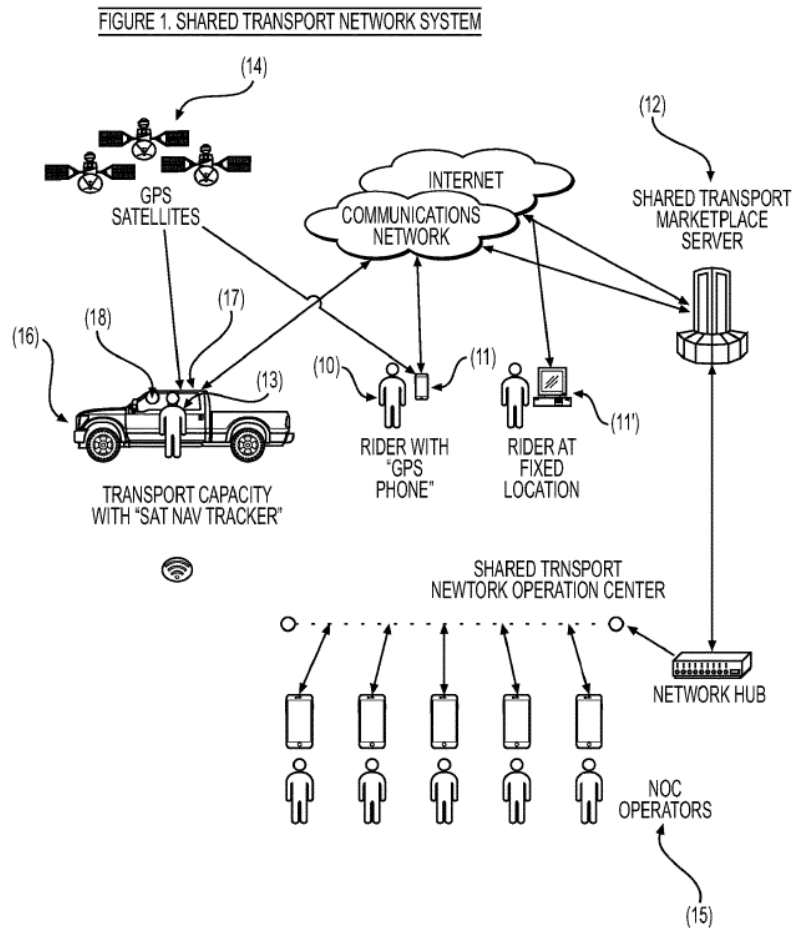
⁴ Citations to EX1005 are to the underlying document page number(s) or section number(s).

(EX1002, ¶¶15-17.)⁵ More education can substitute for practical experience and vice versa.

VII. OVERVIEW OF THE '456 PATENT

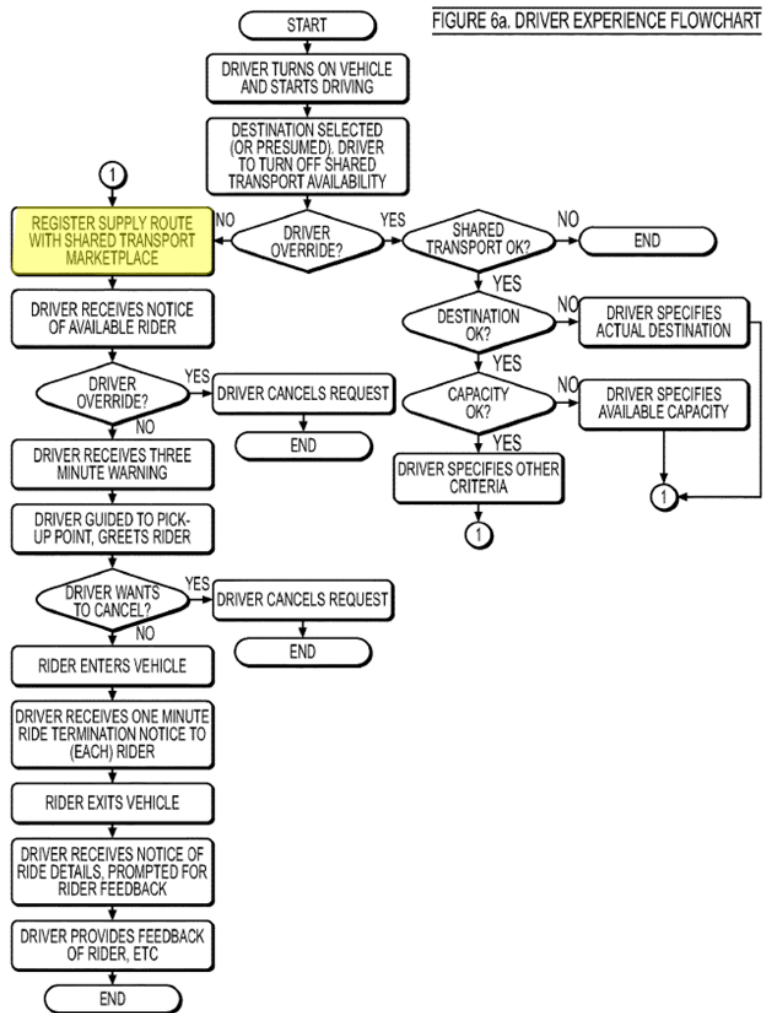
The '456 patent discloses a shared transport system that is a compilation of conventional techniques, concepts, and components, performing known processes for matching riders and drivers in a transportation network. (EX1002, ¶¶24-33; *infra* §IX.) Indeed, referring to Figure 1, the '456 patent describes a “Shared Transport System” that purportedly “enabl[es] private transport vehicles to serve as an extension of the mass transit system” by matching potential riders with potential drivers. (EX1001, 3:53-55; *id.*, 5:21-22, 7:13-25, FIG. 1 (below); EX1002, ¶26.) Consistent with Petitioners’ constructions below (§VIII), the specification repeatedly frames matching as being performed against transport-provider-declared/registered supply routes, with riders selecting pick-up/drop-off nodes along (or near) those routes, rather than requiring providers to generate a door-to-door route in response to each rider request. (*See* EX1001, 5:32-43, 14:45-49, 15:7-12, 16:53-17:10, FIGS. 5a-5b, 6a, 14a.)

⁵ Petitioners submit the declaration of Dr. Petros Ioannou (EX1002), an expert in the field of the '456 patent. (EX1002 ¶¶3-10, 15-17, 18-23; EX1003.)

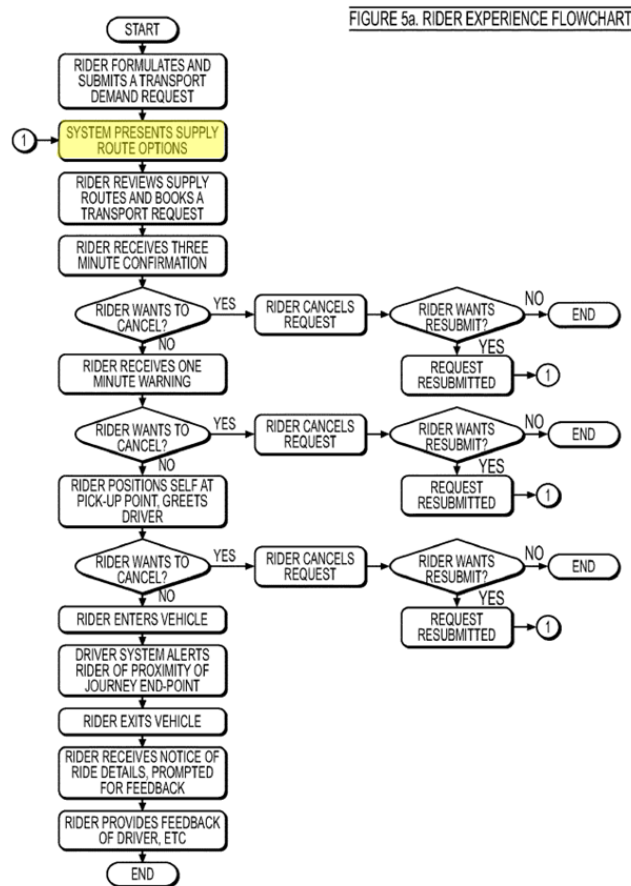


(EX1001, FIG. 1.)

The '456 patent discloses that a prospective driver may register a supply route with the Shared Transport Marketplace (shown in yellow in Figure 6a ("Driver Experience Flowchart") below), and that a prospective rider is presented with available supply route options (shown in yellow in Figure 5a (Rider Experience Flowchart) below) after submitting a transport demand request. (EX1001, 22:22-22:40, FIGs. 5a, 6a; EX1002, ¶27.)



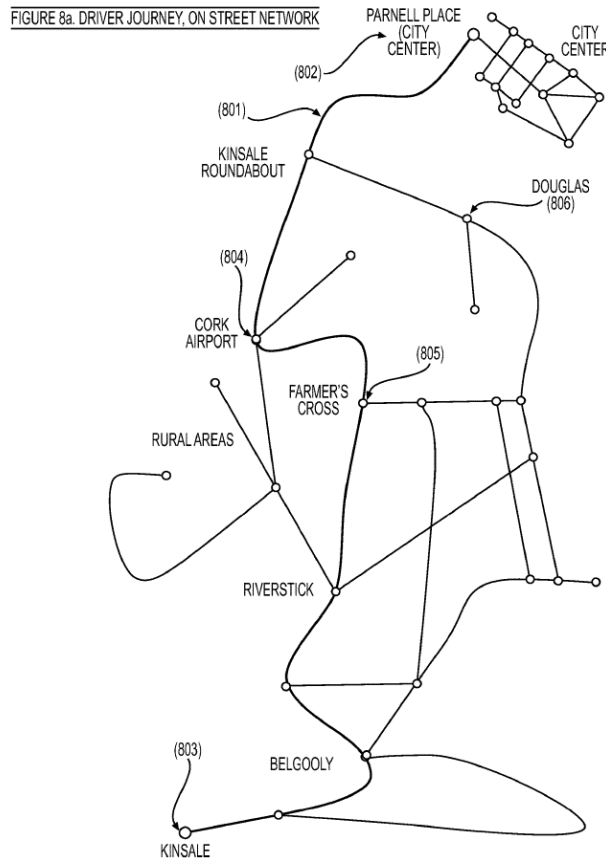
(EX1001, FIG. 6a (annotated).)



(*Id.*, FIG. 5a (annotated).)

The '456 patent discusses features related to known concepts to “convert[] the computer’s representation of a driver’s route into a format which is more usable for further analysis and presentation.” (*Id.*, 14:66-15:2.) The system “can present the journey at the end of the route in the format of a very useful and concise set of major stops, rather than incomprehensible list of addresses of geographic co-ordinates.” (*Id.*, 15:16-15:23.) Figure 8a (below) shows the “route of the driver’s journey,” where the path of the driver’s route 801 is from certain points to others (e.g., “from

Parnell Place 803 to Cork Airport 804 to Farmer's Cross 805"). (*Id.*, 15:16-25; EX1002, ¶28.)

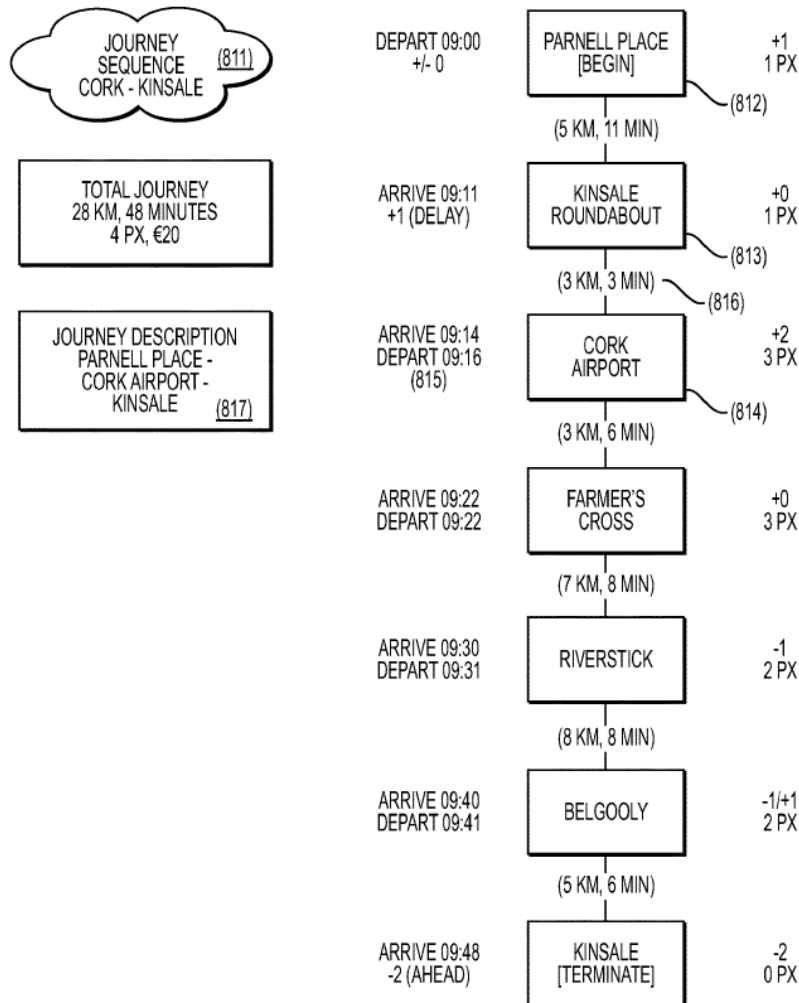


(EX1001, FIG. 8a.)

The '456 patent explains that “once the geographic representation is abstracted to stop nodes, it is possible to show the driver’s route in a variety of alternate presentations, such as the presentation shown in FIG. 8b.” (*Id.*, 15:26-29, FIG. 8b (below).) Such abstraction encompasses, for example, the presentation shown in Figure 8b below, which includes characterizations of start and end points

as, for example, names/labels (e.g., place/location (town) names, etc., in boxes below). (*Id.*, 15:36-42, FIG. 8b (below); EX1002, ¶29.)

FIGURE 8b. DRIVER JOURNEY LOGICAL CHARACTERIZATION



(EX1001, FIG. 8b.)

The '456 patent explains that, while a city route may have dozens of stops, “perhaps only the most major stops (as coded separately using operator intervention or data entry, for example) would be shown in order to present the information more clearly.” (*Id.*, 15:17-22.) The “major stops of a route, as shown in 817 [of Figure

8b], may not necessarily even include the start or end point.” (*Id.*, 15:34-40; *see also id.*, 15:43-47 (driver journeys “organized as stream of stop nodes”).) Figure 9a “shows the same network model as FIG. 8a, but trimmed to only show those segments and nodes in the network that have active transport capacity on them.” (*Id.*, 15:48-62; *see also id.*, 16:6-13 (“schematization of a shared transport network is shown in Fig. 9b, using the model of the 9a network”); EX1002, ¶30.)

FIGURE 9a. ACTIVE NETWORK, GEOGRAPHICAL REPRESENTATION

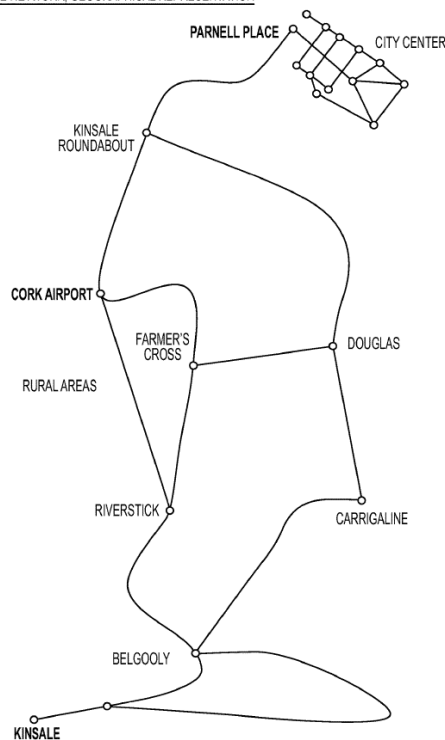
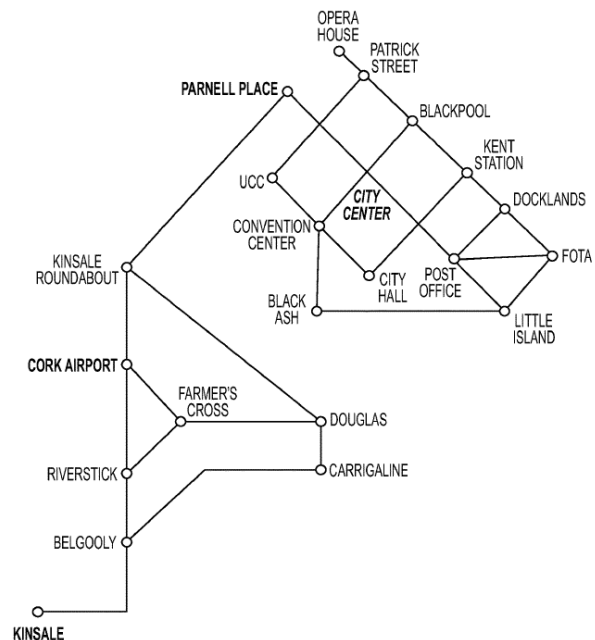


FIGURE 9b. ACTIVE TRANSPORT NETWORK, LOGICAL PRESENTATION



(EX1001, FIGs. 9a-9b.)

The '456 patent explains that “[t]raditional transport networks have known this for a long time, of course, and so maps of network capacity have

long been available on public transport systems.”⁶ (*Id.*, 15:63-65). And while the ’456 patent represents that such features “have not been applied usefully to carpooling systems or...public shared transport,” the patent acknowledges that “[t]raditional public transport networks have also sought to make their transport more understandable by simplifying the geographic maps into quasi-geographic schematic representations that enhance readability and information display” (*id.*, 15:65-16:5), and that “programs and techniques” for generating schematic maps automatically **“are known in academia”** (*id.*, 16:6-11). (EX1002, ¶31.)

Moreover, the ’456 patent discusses conventional transportation systems/processes/concepts directed to addressing known transport capacity and demand issues. (EX1001, 1:31-3:2 (conventional central assigning system and associated vehicle communications devices, dynamic ridesharing concepts, transportation networks, etc.), 4:3-16 (discussing existing traffic measurement systems, use of GPS systems, traffic speed measurement systems), 4:28-35 (discussing existing carpooling systems and mass transport systems that give “confidence” to transport users on available capacity).) Likewise, the ’456 patent recognizes the prior use of graphical representations and stochastic models for

⁶ Emphasis added herein unless stated otherwise.

improving user confidence in shared transport systems. (*Id.*, 15:57-16:11.) The ’456 patent further recognizes that journey planners that show the best available route between start and destination points, and cost and schedule information, “are a well-known concept for public transport.” (*Id.*, 20:7-12; EX1002, ¶32.)

Thus, the ’456 patent’s alleged invention involves applying known and conventional concepts and techniques (including those already applied by traditional transportation networks) to carpooling and related types of shared transportation applications, which was far from innovative at the time. (EX1002, ¶33.) As demonstrated below, the features described and claimed in the ’456 patent were known in the prior art before the earliest effective filing date of the ’456 patent. (*Infra* §IX; EX1010, EX1030-EX1035; EX1002, ¶¶3-10, 11-14, 15-17, 18-23, 24-72, 73-74, 75-83, 84-172.)

VIII. CLAIM CONSTRUCTION

The Board only construes the claims when necessary to resolve the controversy. *Toyota Motor Corp. v. Cellport Sys., Inc.*, IPR2015-00633, Paper No. 11 at 16 (Aug. 14, 2015). Petitioners believe that the following claim terms of the ’456 patent should be construed as indicated in the table below. These constructions are consistent with Petitioners’ claim construction positions taken in the Carma Litigation. To the extent these constructions are found not to apply, Petitioners also

explain in §IX how the '456 patent claims are disclosed and/or rendered obvious if no express constructions are applied. (EX1002, ¶¶73-74, 84-172.)

'456 Patent Term	Construction
“shared transport system” (all claims)	“A server system that matches transport users with transport providers traveling an existing route defined before demand for transport and independently of a transport user’s door-to-door trip.”
“pick-up location” / “drop-off location” (all claims)	“A node along an existing route defined before demand for transport and independently of a transport user’s door-to-door trip.”
“transport provider” (all claims)	“A driver offering transport along an existing route defined before demand for transport and independently of a transport user’s door-to-door trip.”

1. “Shared Transport System”

A POSITA would have understood that a “shared transport system,” as used in the '456 patent, refers to “a server system that matches transport users with

transport providers traveling an existing route defined before demand for transport and independently of a transport user's door-to-door trip.”

The first portion of the proposed construction (that the shared transport system is a server system that matches transport users with transport providers) derives directly from the specification. The specification states that “the invention provides a **network system** that matches the supply and demand of transportation services” and defines “the network system” as the “Shared Transport System.” (EX1001, 3:16–22, 3:35–46.) (“The network system (‘Shared Transport System’)...”). The specification further confirms that the supply of transportation services comes from providers within the shared transport system. (*Id.*, 3:11-15.) (“It is another object of the invention to provide riders and transport providers with information services and content that adequately enable the use and expansion of such a system.”).

The remainder of the construction (that the match is with transport providers traveling an existing route defined before demand for transport and independently of a transport user's door-to-door trip) is consistent with the specification and express admissions made by PO during prosecution of the '427 patent, which is an indirect parent of the '456 patent. For example, Figure 6a shows a flowchart of “the experiences of a Driver in using the network system.” (*Id.*, 22:18–21.) In Figure 6a, a Driver defines a “Supply Route” along which to travel independent of and before receiving any notice of an available rider. An example of how the system will match

riders to these pre-existing supply routes is shown in Figure 14a, which shows a transport user 1401 who wants to go from departure point 1406 to arrival location 1409. (*Id.*, 16:53-55.) Two transport capacity (1402 and 1403, *i.e.*, vehicles) both pass through 1406—the requested pick-up location of transport user 1401—along their “declar[ed] . . . routes.” (*Id.*, 16:55-58.) But only one of those vehicles—1403—also has registered a route going through 1409, the requested arrival location of transport user 1401. (*Id.*, 16:58–63.) “All other considerations being equal,” the matching engine would match transport user 1401 to vehicle 1403, which is the vehicle whose declared route passes through both the pick-up and drop off locations. (*Id.*) Thus, the transport user 1401 would travel along the route vehicle 1403 had defined before the transport user demanded a ride, which route vehicle 1403 had defined independently of the user’s door-to-door trip.

Further confirming this interpretation, the specification explains what would happen if transport capacity 1403 refused to match with transport user 1401: the system could determine that transport capacity 1402 has a route that passes through the user’s pick-up location 1406 and also goes through a location (1408), which is *near* the requested drop-off location (1409). (*Id.*, Fig 14a; *id.*, 17:5–10.) Transport user 1401 would be alerted of this option that gets them near their ultimate destination and could agree to be matched with transport capacity 1402. (*Id.*) In this case, transport user 1401 would walk from 1408 to 1409, without redefining

transport capacity 1402's route, which, again, was defined independently of the user's door-to-door trip. (*Id.*)

This understanding is consistent with and further supported by statements made by patent owner during prosecution of the parent '427 patent. See One-E-Way, Inc. v. Int'l Trade Comm'n, 859 F.3d 1059, 1064 n.3 (Fed. Cir. 2017) (“[T]he meaning of claim terms in one patent can be informed by statements made during prosecution of other patents in the same family.”); *Comput. Docking Station Corp. v. Dell, Inc.*, 519 F.3d 1366, 1374 (Fed. Cir. 2008) (holding that a patentee can disavow claim scope “by clearly characterizing the invention in a way to try to overcome rejections based on prior art”). Specifically, to overcome a rejection over prior art reference Lecouturier, Applicant distinguished Lecouturier as describing a “‘door to door’ approach [that] requires segment by segment direction to a driver, who *may have to divert from his natural route* to reach the pick-up or drop-off point.” (EX1016, 53-54.) Applicant explained that, by contrast, the alleged invention “provided specific pick-up and drop-off locations [nodes] that do not require a driver to divert.” (*Id.*) During an examiner interview conducted in the '427 prosecution, the “Applicant asserted that the ‘abstracting’ step was different than the prior art in that an existing route is checked versus the plurality of pickup/dropoff nodes.” (*Id.*, 23.) In that interview, the examiner agreed with the Applicant and characterized the “transport vehicle journey” as “predetermined.”

(*Id.*) And in the '427 examiner's "statement of reasons for allowance," the examiner stated that "Lecouturier fails to disclose abstracting a predetermined route by calculating places where the route intersects the nodes and representing the journey as a set of nodes."⁷ (*Id.*, 30.)

This requirement of a predetermined or existing route is further confirmed as applicable to the scope of any claimed system arising out of the shared specification of the '427 and '456 patents. Applicant described *dynamic systems that tracked and matched drivers and riders based on their live locations as "computationally unsolvable,"* and prohibitively expensive because cars would have to communicate their "positional information constantly." (EX1016, 87-88.) See *Techtronic Indus. Co. v. Int'l Trade Comm'n*, 944 F.3d 901, 909 (Fed. Cir. 2019) (statements disavowing embodiments recognized as "infeasible" or "impossible"); *AstraZeneca*

⁷ The '427 patent claims themselves do not recite a "shared transport system." For that patent, the applicant tied this fundamental statement of the scope of the invention to the "predetermined transport vehicle journey" claim limitation. (EX1016, 23.) Thereafter, when prosecuting subsequent applications, including the '456 patent, the applicant added the "shared transport system" limitation to capture this concept. (*Compare, e.g., '427 patent at claim 1, with '456 patent at claim 1; EX1016, 26.*)

AB v. Mylan Pharms. Inc., 19 F.4th 1325, 1335 (Fed. Cir. 2021) (statements in prosecution history that “capture the scope of the actual invention” inform claim construction).

Applicant’s statements are consistent with the specification: the transport provider follows his existing route without diverting. Thus, a POSITA would have understood that the patent’s shared transport system would match a transport provider with a transport request that would allow the transport provider to stay along his existing route that he had defined independent of the transport user’s pickup and drop-off locations.

2. “Transport Provider”

A POSITA would have understood that a “transport provider,” as used in the ’456 patent, refers to “a driver offering transport along an existing route defined before demand for transport and independently of a transport user’s door-to-door trip.”

This construction follows from the same intrinsic evidence cited above, including the prosecution history and specification. In particular, a POSITA would have understood that the claimed system would not direct a transport provider to divert from his “natural route” to pick up or drop off a transport user according to his door-to-door trip, as Lecouturier required. (EX1016, 53-54.) Instead, according to the patent, the shared transport system would only match a transport provider with

pick-up and drop-off locations “that would not require a driver to divert.” (*Id.*) The specification gives detailed disclosures of this, describing how a transport provider “declare[s] . . . their Supply Route” as going through a series of defined nodes (e.g., vehicle 1402 travels through nodes 1405, 1406, 1407, and 1408), and matches occur based on a transport user requesting pick-up and drop-off locations along, or sufficiently close to, a declared supply route. (EX1001, Fig. 14a & 16:53–56.) Accordingly, a POSITA would recognize that a transport provider would only offer transport along his existing route defined before any demand for transport.

3. “Pick-Up Location” / “Drop-Off Location”

A POSITA would have understood that a “pick-up location” and a “drop-off location,” as used in the ’456 patent, each refer to “a node along an existing route defined before demand for transport and independently of a transport user’s door-to-door trip.”

The specification expressly equates “nodes” and “pick-up locations” and “drop-off locations” stating: “the System maintains a matrix of journey time and cost estimates for the nodes (pick-up and drop-off points). Next available capacity, and estimated travel time between each of these nodes is maintained.” (EX1001, 14:45–49.) The specification repeats this concept and further confirms that nodes are established prior to any particular trip. (*Id.*, 15:7–12 (“[F]or the purposes of establishing a shared transport network, it is useful to establish a network of pick-up

and drop-off points (nodes), so that Riders and Drivers can be guided to places that are safe and convenient and comfortable for both the Riders and Drivers.”).) During prosecution of the ’427 patent, Applicant gave a substantively identical definition of pick-up and drop-off locations as node. (EX1016, 53-54 (describing the alleged invention as “providing specific pick-up and drop-off locations [nodes] that do not require a driver to divert”) (brackets in original).)

In short, because the patent’s alleged invention does not require a transport provider to divert from his natural route to reach pick-up or drop-off locations, a POSITA would have understood that pick-up and drop-off locations could each only be a node along the transport provider’s existing, natural route that is defined before demand for transport and independently of a transport user’s door-to-door trip.

IX. DETAILED EXPLANATION OF GROUNDS

A. Ground 1: O’Sullivan in view of Olmi Renders Claims 1-5, 7, 10-15, 19, and 20 Obvious

1. Claims 1, 11, and 19

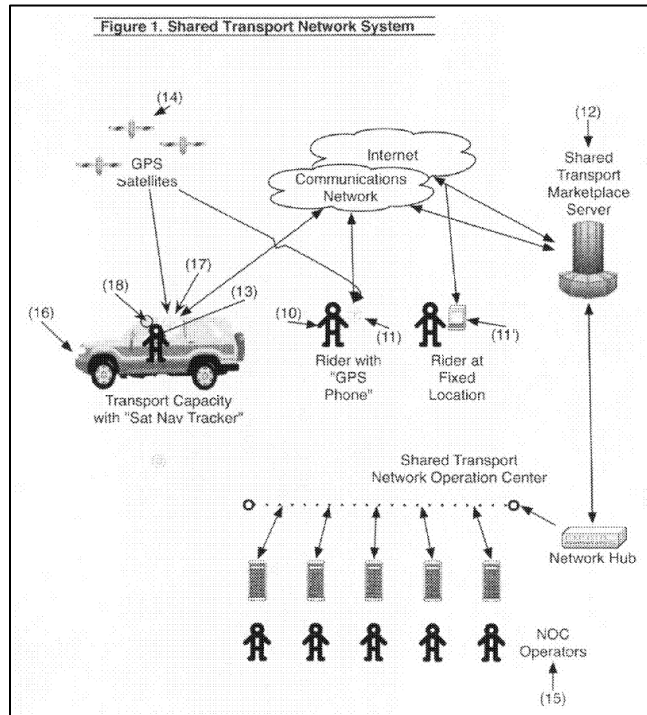
- i) [1.pre] A method implemented by at least one processor of a shared transport system, the method comprising:**

To the extent the preamble of claim 1 is limiting, O’Sullivan discloses the limitations therein. (EX1002, ¶¶85-92; *see also id.*, ¶¶76-82.)

O’Sullivan discloses a “network system” (“shared transport system”) that “matches the supply and demand of transportation services by incorporating unused

transportation capacity...with a real-time allocation and matching service that enables individuals and goods to conveniently hire that capacity with attractive pricing, rapid responsiveness, better information availability and trusted security.” (EX1006, [0014]; *see also id.*, [0002], [0015], [0016] (referring to “the network system” as “Shared Transport System”); EX1002, ¶86.)

O’Sullivan discloses that the network system (Figure 1) allows “a person 10” (rider), via “a personal communications device 11,” to send a ride request to a “Shared Transport Marketplace” 12, specifying “a particular start-point (‘Pick-up Point’) and endpoint (‘Destination Point’[]),” which O’Sullivan refers to as the “Demand Route.” (EX1006, [0060].) Device 11 can be “equipped with location information (‘GPS Phone’)” and includes a “Rider Software Interface.” (*Id.*; EX1002, ¶87.)



(EX1006, FIG. 1.)

According to O’Sullivan, a driver 13 may have a vehicle with “Transport Capacity” for providing “transportation services.” (*Id.*, [0062]-[0063].) The vehicle may be equipped with a “navigation device, typically using GPS or other location finding technology, with built-in or external data communication capability, typically using cellular phone or wide area wireless data networks (‘Sat Nav Tracker’), running a software layer with a Shared Transport interface (‘Driver Software Interface’).” (*Id.*; EX1002, ¶88.)

O’Sullivan explains that a driver’s transport capacity is registered with the system when the driver “starts the vehicle,” where the driver’s route is predetermined, i.e., the driver’s route is determined before the rider’s demand for

transportation service. (EX1006, [0063].) O’Sullivan further explains that shared transport marketplace 12 “provides to the Rider 10 and to the Driver 13 information about Transport Capacity and Transport Demand.” (*Id.*, [0064]; EX1002, ¶89.)

O’Sullivan’s system, discussed above, constitutes a “shared transport system” under Petitioners’ proposed construction, i.e., “a server system that matches transport users with transport providers traveling an existing route defined before demand for transport and independently of a transport user’s door-to-door trip.” For example, O’Sullivan’s system includes:

- A server system that matches transport users [rider(s)] with transport providers [driver(s)]. (EX1006, [0014] (“a network system that matches the supply and demand of transportation services”), [0080]-[0081], [0156] (“Referring to FIG. 7, the Shared Transport Marketplace will be composed of a number of computer servers networked together”), [0165], FIG. 7; *see also infra*; EX1002, ¶90.)
- Traveling an existing route defined before demand for transport and independently of a transport user’s door-to-door trip: The available routes supplied by the driver(s) are existing routes defined prior to a rider’s transportation request and independently of a rider’s door-to-door trip. For instance, O’Sullivan explains that the Driver registers a “Supply Route” along which to travel independent of and before

receiving any notice of an available rider. (EX1006, [0063]; *see also supra* §VIII; EX1002, ¶90.)⁸

The above-discussed processes/operations of O’Sullivan’s shared transport service (the claimed “method”) are “implemented by at least one processor” of its system. O’Sullivan discloses that “[t]he network system incorporates...**computing technology** to match the supply of excess transport capacity with the demand for personal transport.” (EX1006, [0015].) Indeed, shared transport marketplace 12 includes “**computer servers**...to perform the data and communications functions as specified.” (*Id.*, [0156], FIG. 7; *see also id.*, [0080]-[0081], [0165]-[0166].) A POSITA would have understood that such technology/servers necessarily include one or more processors, or else the processes/operations could not be performed. (EX1002, ¶91.)

Thus, O’Sullivan discloses limitation [1.pre]. (*Id.*, ¶92.)

⁸ In district court, PO disagrees with Petitioners’ proposed construction of the claimed “shared transport system.” (See EX1008, 10.) However, O’Sullivan discloses a “shared transport system” under any reasonable construction of the term, for the same reasons explained in this ground. (EX1002, ¶¶85-92.)

ii) [11.pre] A shared transport system, comprising:

[11.a.i] a memory storing instructions; and

[11.a.ii] a processor operatively connected to the memory, and configured to execute the instructions to perform operations including:

O’Sullivan discloses the preamble of claim 11, to the extent it is limiting, and limitations [11.a.i] and [11.a.ii]. (EX1002, ¶¶93-94.) As discussed for limitation [1.pre], O’Sullivan discloses a “shared transport system,” including under Petitioners’ construction. Additionally, the associated processes/operations of the system are implemented by at least one “processor” of the system because it uses, e.g., “computer servers...to perform the data and communications functions as specified,” which necessarily include at least one processor. (EX1006, [0156]; *see also id.*, [0015], [0080]-[0081], [0165], FIG. 7.) A POSITA would have understood that specific “instructions” of the disclosed processes/operations, in order to be executed, are necessarily stored in the system’s “memory” (e.g., memory of computer servers) that is “operatively connected” to the disclosed “processor” “configured to execute the instructions to perform operations.” (EX1002, ¶¶93-94; EX1006, [0154], [0155], [0226]-[0228], [0231]-[0232].)

Thus, O’Sullivan discloses limitations [11.pre], [11.a.i], [11.a.ii]. (EX1002, ¶¶93-94.)

iii) **[19.pre] A non-transitory computer readable medium comprising instructions that are executable by a processor to perform operations including:**

To the extent the preamble of claim 19 is limiting, O’Sullivan discloses the limitations therein. (EX1002, ¶95.) As discussed for [11.pre], O’Sullivan discloses memory comprising instructions executed by at least one processor to perform the disclosed operations/processes. A POSITA would have understood that such memory includes a “non-transitory computer readable medium” given that, in order for O’Sullivan’s system to work, it must store and make such instructions continually available. (EX1002, ¶95; EX1006, [0154], [0155], [0226]-[0228], [0231]-[0232].) Thus, O’Sullivan discloses limitation [19.pre]. (EX1002, ¶95.)

iv) **[1.a]/[11.a.iii]/[19.a] receiving, from a transport user application operating on a transport user device corresponding to a transport user, a pick-up request for at least one person or item, the pick-up request identifying a pick-up location and a drop-off location for the at least one person or item;**

O’Sullivan discloses this limitation. (EX1002, ¶¶96-101.)

First, O’Sullivan discloses “a transport user application operating on a transport user device corresponding to a transport user,” as it discloses that rider/person 10 has a device 11 “equipped with a software layer with transport intelligence.” (EX1006, [0060]; *see also id.*, [0162], Fig. 1 (device 11); *see* discussions for [1.pre]; EX1002, ¶97.)

Second, O’Sullivan discloses “receiving, from a transport user application..., a pick-up request for at least one person or item, the pick-up request identifying a pick-up location and a drop-off location for the at least one person or item.” For example, O’Sullivan discloses rider/person 10, via the rider software interface of device 11, sending a “Demand Route,” which identifies a “Pick-up Point” and a “Destination Point,” to “Shared Transport Marketplace” 12. (EX1006, [0060]; *see also id.*, [0063]-[0064], [0069], [0087], [0153], FIG. 5a; EX1002, ¶98.)

Rider 10, “upon submitting a Demand Route into the Shared Transport Marketplace 12,” receives “transport options available, by class of service, type of vehicle, time until Transport Capacity arrives at start-point, estimated transit time to end-point, number of legs in the journey, and cost.” (EX1006, [0070].) This shared transportation service is provided for “individuals and/or goods.” (*Id.*, Abstract, [0012]; *see also id.*; [0014], [0157], [0167]; EX1002, ¶99.)

O’Sullivan discloses the claimed “pick-up location” and “drop-off location” under Petitioners’ proposed construction, i.e., “a node along an existing route defined before demand for transport and independently of a transport user’s door-to-door trip.” For example, as discussed for element [1.pre], O’Sullivan discloses that the available routes (e.g., the “Supply Route”) are predefined by drivers. (*See, e.g.*, EX1006, [0063].) Thus, O’Sullivan’s pick-up and drop-off locations are along a predetermined route that exists before the rider’s demand for transport and

independently of a transport user's door-to-door trip. (*See supra* §VIII and discussions for limitation [1.pre] addressing the claimed “shared transport system.”)⁹ Additionally, O’Sullivan states that, “for the purposes of establishing a shared transport network, it is useful to establish a network of **pick-up and drop-off points (nodes)**, so that Riders and Drivers can be guided to places that are safe and convenient and comfortable for both the Riders and Drivers.” (*Id.*, [0113]; *see also id.*, [0111].) Thus, O’Sullivan’s pick-up point and drop-off point are each a “node” along a route. (EX1002, ¶100.)

Thus, O’Sullivan discloses limitation [1.a]/[11.a.iii]/[19.a]. (EX1002, ¶¶100-101.)

- v) **[1.b]/[11.b]/[19.b] identifying one or more transport providers available to service the pick-up request, based on information from a transport provider application operating on one or more transport provider devices corresponding to the identified one or more transport providers;**

O’Sullivan discloses this limitation. (EX1002, ¶¶102-105.)

⁹ In district court, PO disagrees with Petitioners’ proposed construction of the claimed “pick-up location” and “drop-off location.” (*See* EX1008, 10.) However, O’Sullivan discloses a “pick-up location” and a “drop-off location” under any reasonable construction of the term, for the same reasons explained in this ground. (EX1002, ¶¶96-101.)

First, O’Sullivan discloses “identifying one or more transport providers available to service the pick-up request.” For example, O’Sullivan discloses “consider[ing] the availability of transport capacity, provider criteria 404 and transport demand criteria 405 in **providing ideal matches** for the [rider’s] request.” (*See, e.g.*, EX1006, [0153]; *see also id.*, [0083] (“As there could be hundreds of vehicles on the road that also provide Transport Capacity, this distinctive display serves the unique function of distinguishing the **Dispatched Transport Capacity which has been matched to the Demand Route from other Transport Capacity which may be on the same road at the same time.**”), [0086] (“**Upon a match-up of Rider 10 and Driver 13**, Rider would enter the Transport Capacity vehicle (“In Process Journey”), [0121], [0122], [0146], [0147], [0165]; EX1002, ¶103.)

O’Sullivan’s driver constitutes a “transport provider” under Petitioners’ proposed construction, i.e., “a driver offering transport along an existing route defined before demand for transport and independently of a transport user’s door-to-door trip.” For example, as discussed for element [1.pre], O’Sullivan discloses that the available routes (e.g., the “Supply Route”) serviced by the driver are predefined by the driver. (*See, e.g.*, EX1006, [0063].) Thus, O’Sullivan’s driver offers transport along an existing route defined before demand for transport and independently of a transport user’s door-to-door trip. (*See supra* §VIII and

discussions for limitation [1.pre] addressing the claimed “shared transport system”; EX1002, ¶104.)¹⁰

Second, O’Sullivan discloses that the above “identifying” process is performed “based on information from a transport provider application operating on one or more transport provider devices corresponding to the identified one or more transport providers.” For example, O’Sullivan discloses that vehicles/drivers providing transportation services have a “navigation device” that includes a driver “software layer.” (EX1006, [0062].) Via the driver software, the device “registers the spare transport capacity and location information of the vehicles via wireless data communications to the registry of capacity,” which, as discussed above, is used for matching. (*Id.*, [0166]; *see also id.*, [0015], [0153] (“The Matching Engine 401 would consider the availability of transport capacity, provider criteria 404 and transport demand criteria 405 in providing ideal matches for the request.”), [0163], claim 1; EX1002, ¶105.)

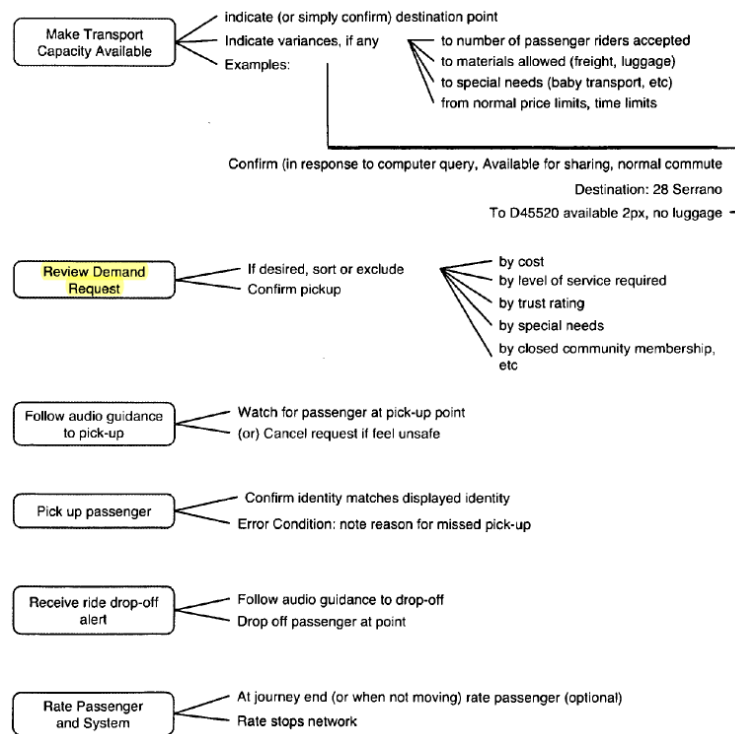
¹⁰ In district court, PO disagrees with Petitioners’ proposed construction of the claimed “transport provider.” (*See* EX1008, 10.) However, O’Sullivan discloses a “transport provider” under any reasonable construction of the term, for the same reasons explained in this ground. (EX1002, ¶¶102-105.)

Thus, O’Sullivan discloses limitation [1.b]/[11.b]/[19.b]. (EX1002, ¶¶102-105.)

- vi) **[1.c]/[11.c]/[19.c] transmitting the pick-up request to a transport provider device corresponding to a transport provider, the transport provider being one of the identified one or more transport providers;**

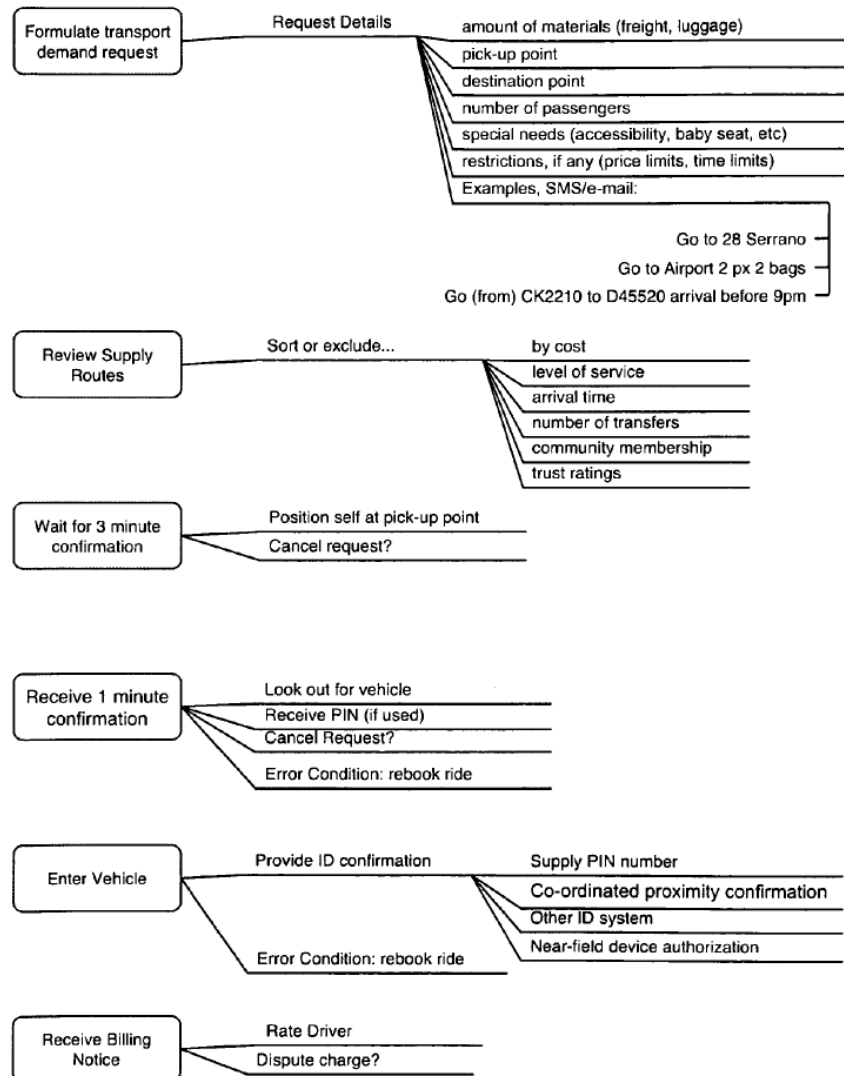
O’Sullivan discloses this limitation. (EX1002, ¶¶106-109.) The rider “selects from the [ride] **options** available to them” and “[a] **message is sent** to the nearest appropriate Transport Capacity.” (EX1006, [0072]; *see also id.*, [0073], Figs. 6a.) Additionally, as illustrated in Figure 6b, the Driver can “Review Demand Request,” which corresponds to the Demand Request that was received from the rider, as illustrated in Figure 5b. (*Id.*, Fig. 6b.) Such communication is handled by the vehicle’s (i.e., the Transport Capacity) “navigation device,” which has “built-in or external data communication capability.” (*Id.*, [0062]; EX1002, ¶¶106-108.)

Figure 6b. Driver Experience - Functional Options



(EX1006, FIG. 6b (annotated).)

Figure 5b. Rider Experience, Functional Options Data and Action Details



(EX1006, FIG. 5b.)

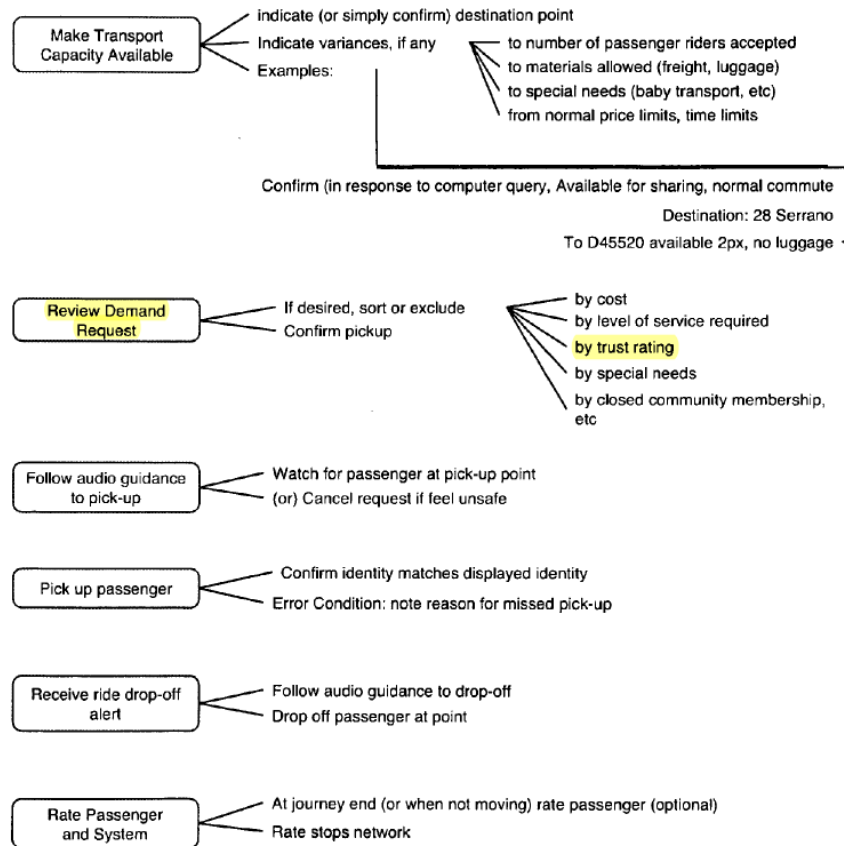
Thus, O’Sullivan discloses limitation [1.c]/[11.c]/[19.c]. (EX1002, ¶109.)

- vii) **[1.d]/[11.d]/[19.d] causing the transport provider device to display, via the transport provider application, one or more of the pick-up location or a transport user rating score associated with the transport user;**

O’Sullivan discloses this limitation. (EX1002, ¶¶110-111.) O’Sullivan discloses that the matched driver is “guided to the **pick-up point**...through the Sat Nav Tracker 117 **display unit**” corresponding to the navigation device, which discloses causing the device to “display, via the transport provider application,...the pick up location.” (EX1006, [0072]; *see also id.*, [0062] (describing the “navigation device” having a “Sat Nav Tracker” and a “software layer”), [0076], [0163].)

Additionally, in Figure 6b, O’Sullivan explains that the Driver can “Review Demand Request,” including by “trust rating” (“transport user rating score associated with the transport user”).

Figure 6b. Driver Experience - Functional Options



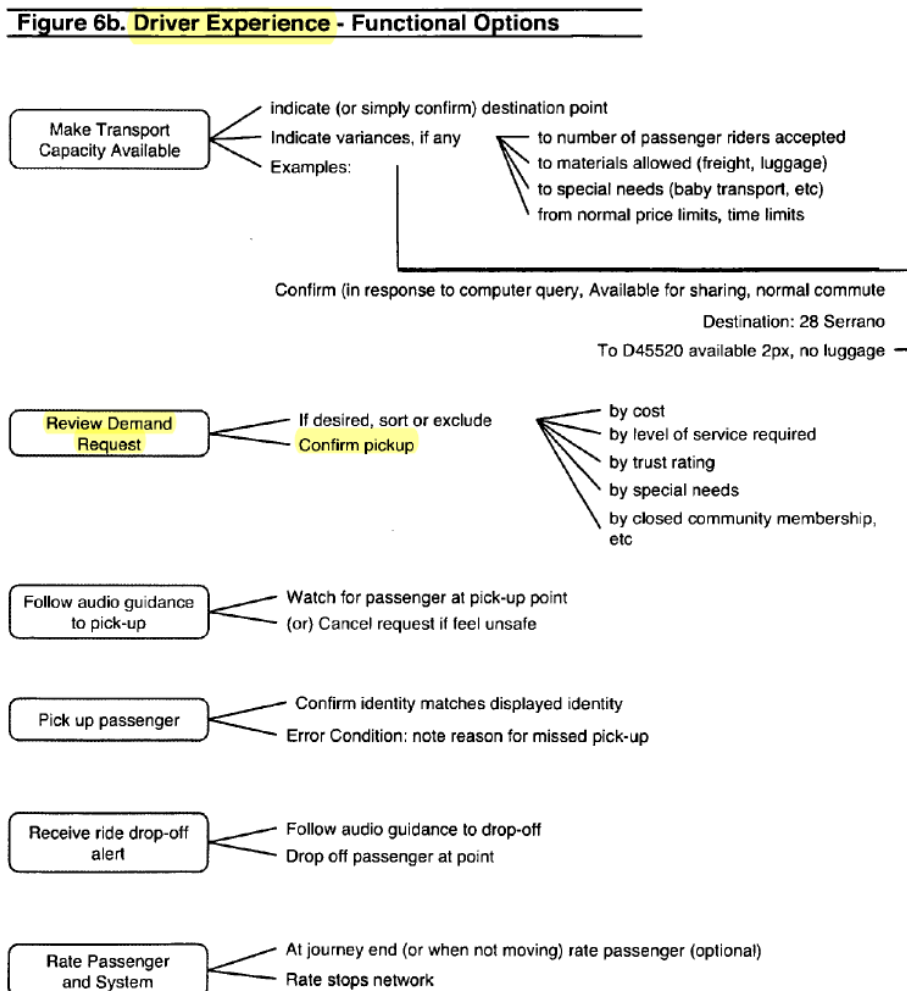
(EX1006, FIG. 6b (annotated).)

And, according to Figure 6b, the “Demand Request” includes the “pick-up point” (pick up location). Thus, as these figures further demonstrate, O’Sullivan discloses limitation [1.d]/[11.d]/[19.d]. (EX1002, ¶111.)

viii) [1.e]/[11.e]/[19.e] receiving an indication of an acceptance of the pick-up request;

O’Sullivan discloses this limitation. (EX1002, ¶¶112-114.) The driver software interface determines if the matched driver complies with the pick-up request, which may be based on “the vehicle’s movement” and “a period of time for

the Driver 13 to automatically accept or deny the request.” (EX1006, [0072].) O’Sullivan further describes a “means of automated communication with the transport capacity to confirm the availability and **willingness of the capacity to transport the demand.**” (*Id.*, [0182].) Additionally, in Figure 6b, O’Sullivan illustrates that the “Driver Experience,” which includes “Review Demand Request” and “Confirm pickup.” (*Id.*, Fig. 6b.)



(EX1006, FIG. 6b (annotated).)

Thus, O’Sullivan discloses limitation [1.e]/[11.e]/[19.e]. (EX1002, ¶¶112-114.)

ix) [1.f]/[11.f]/[19.f] causing the transport provider device to display, via the transport provider application, at least:

(1) [1.f.i]/[11.f.i]/[19.f.i] (1) navigation instructions from a location of the transport provider to the pick-up location, the location determined based on GPS position data of the transport provider device; and

O’Sullivan discloses this limitation. (EX1002, ¶115.) The matched driver is guided to the pick-up point using its navigation device with Sat Nav Tracker 17 and GPS capability (“transport provider device”). (EX1006, [0072]; *see also id.*, [0076], [0079].) Indeed, O’Sullivan explains that the transport provider device may be “a GPS phone with an ability to display graphics,” “a personal navigation device or built-in sat-nav unit, serving the primary functions of enabling transport provider to...route the driver to pick-up locations.” (*Id.*, [0163]; *see also id.*, [0182]-[0185].) Thus, O’Sullivan discloses limitation [1.f.i]/[11.f.i]/[19.f.i].

(2) [1.f.ii]/[11.f.ii]/[19.f.ii] (2) information descriptive of the at least one person or item;

O’Sullivan discloses this limitation. (EX1002, ¶116.) O’Sullivan discloses that, as the driver “approaches the Pick-up Point,” the driver would be “presented with a picture of the Rider(s) and the identification name of each Rider.” (EX1006,

[0085]; *see also id.*, [0099] (“Personal communications device could show the picture and name identification of the driver responding to pickup request.”).) Thus, O’Sullivan discloses limitation [1.f.ii]/[11.f.ii]/[19.f.ii].

x) **[1.g]/[11.g]/[19.g] causing the transport user device to display, via the transport user application:**

(1) **[1.g.i]/[11.g.i]/[19.g.i] information descriptive of one or more of the transport provider, a transport provider vehicle associated with the transport provider, or a transport provider rating score associated with the transport provider;**

Limitation [1.g.i]/[11.g.i]/[19.g.i] recites three separate options, only one of which is required to satisfy this limitation. O’Sullivan discloses the first two options, “causing the transport user device to display, via the transport user application: information descriptive of one or more of the transport provider, a transport provider vehicle associated with the transport provider.” For example, information descriptive of the driver and/or the vehicle may be sent after acceptance but before pick-up to prompt the rider to be on the lookout for the vehicle, “along with the specific color, model, picture and/or other identifying characteristics.” (EX1006, [0078].) Rider’s GPS phone may also “show the picture and name identification of the driver responding to pickup request.” (*Id.*, [0099]; EX1002, ¶¶117-118.)

- (2) [1.g.ii]/[11.g.ii]/[19.g.ii] an estimated cost associated with servicing the pick-up request;
- (3) [1.g.iii]/[11.g.iii]/[19.g.iii] an estimated time associated with arrival of the at least one person or item at the drop-off location; and

O’Sullivan in view of Olmi discloses and/or suggests these limitations.
(EX1002, ¶¶119-129.)

O’Sullivan does not expressly disclose “causing the transport user device to display, via the transport user application:...an estimated cost associated with servicing the pick-up request” or “an estimated time associated with arrival of the at least one person or item at the drop-off location” after acceptance but before pick-up. (See §§V.A.2-3.) Nevertheless, it would have been obvious to implement these features in view of Olmi. (EX1002, ¶120.)

Like O’Sullivan, Olmi discloses a system where a traveler uses a cell phone to request for a ride, and the system provides a route for “[a] transit vehicle so that each [traveler] thus grouped is picked up and conveyed exactly according to his itinerary.” (EX1005, Abstract; *see also id*, 32, FIG. 6.) Thus, Olmi is similar to O’Sullivan, and both are analogous to the claimed features of the ’456 patent. Accordingly, a POSITA would have been motivated to consider teachings of Olmi when implementing the method/system akin to that of O’Sullivan. (Ex. 1002, ¶121.)

Olmi additionally discloses that after the rider “selects the destination address,” “[o]n the telephone’s display screen, a validation message summarises the

travel itinerary...just requested,” which includes various information associated with the ride, as illustrated below. (EX1005, 87; EX1002, ¶122.)

Traveller Journey Request

Embarkation: Home > 56 Muswell Hill, N10 3ST
Destination: Office > 110 Charing Cross Rd, WC2H 0JP
Departure Time: Immediate
Transit Vehicle Type: Taxibus
Passengers: 1

(EX1005, 87.)

After the request is received/accepted, the “details [of] a nearby transit vehicle” are “displayed on [the] cellular phone” in the following format. (*Id.*)

Transit Vehicle Availability

Vehicle	Pick-Up	Journey	Cost	Arrival
Taxibus	2 mins	34 mins	£0.96	8:58pm

Please Confirm: YES | NO

(*Id.*)

As shown below, if “YES” is selected, the “cellular phone subsequently displays some confirmatory details,” which “**remain visible** and provide a real-time countdown to pickup.” (*Id.*)

Taxibus Selection Confirmed

Embarkation: Home

Destination: Office

Distance: 6.4 miles **Fare Cost:** £0.96

Vehicle Identification: Taxibus 4025

Countdown to Pick-Up: 1 min 50 sec

(*Id.*; EX1002, ¶¶122-124.)

Accordingly, Olmi discloses displaying, on a rider mobile device, information associated with the ride, including “cost” and an estimated time associated with “arrival” at the drop-off location, after a transit vehicle accepts the pick-up request but before pick-up, which discloses “causing the transport user device to display, via the transport user application: ...an estimated cost associated with servicing the pick-up request” and “an estimated time associated with arrival of the at least one person or item at the drop-off location.” (EX1002, ¶125.)

Based on these teachings of Olmi, a POSITA would have had good reason to cause the rider’s mobile device software interface to display information associated with the ride, including during the period leading up to pick-up, consistent with the teachings in Olmi. (*Id.*, ¶126.) As disclosed and/or suggested by Olmi, such information would include: (1) cost for the ride (“an estimated cost associated with

servicing the pick-up request”), and (2) estimated time to the drop-off location (“an estimated time associated with arrival of the at least one person or item at the drop-off location”). A POSITA would have found it beneficial to display such information during this period because it would have improved the rider experience by displaying pertinent ride information, including estimated ride cost and estimated time until arrival, when potentially needed. For example, by implementing such a feature, a rider in a system like that described in Olmi could readily locate information about estimated ride cost to confirm the rider has sufficient funds or to calculate how to split the cost with other riders. As another example, by implementing such a feature, the rider would have been continually apprised of changes to the estimated time until arrival that may occur due to delays experienced by the driver prior to pick up, which may impact the rider’s plans. (EX1002, ¶¶126-127.)

A POSITA would have had a reasonable expectation of success implementing such a combination. Indeed, such information is already available in O’Sullivan’s system, and O’Sullivan explains that the rider’s device is capable of displaying such ride-related information when displaying driver options for selection. (EX1006, [0025], [0070], [0081], [0092], [0162] (“a GPS phone with an ability to display graphics”).) Thus, the O’Sullivan-Olmi combination would have merely required displaying such information at a different time, i.e., while the rider

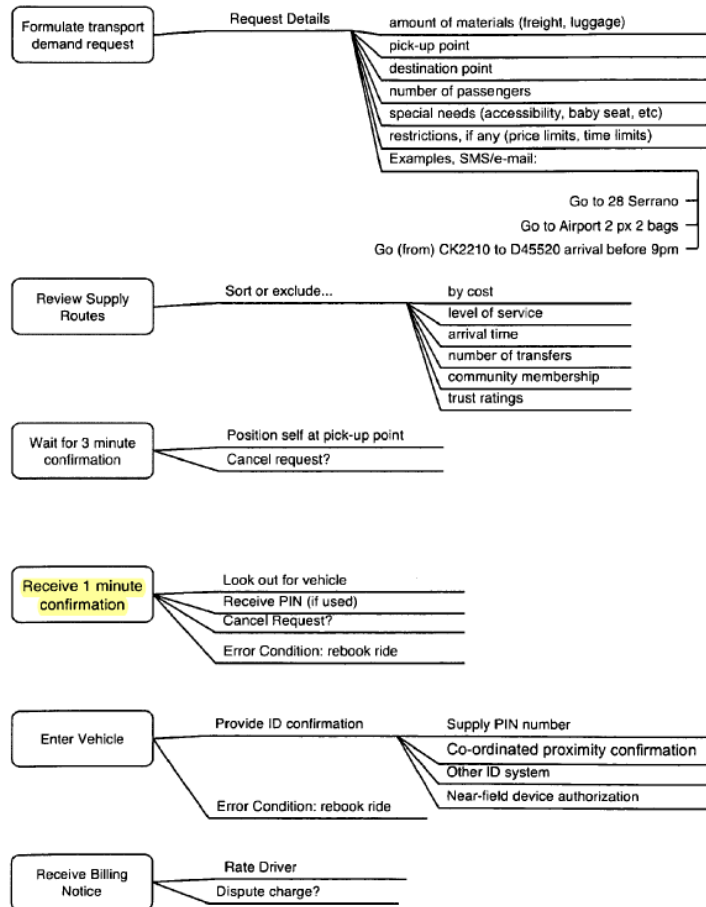
waits to be picked up by the driver, consistent with Olmi’s teachings. A POSITA would have appreciated that the above-described combination would have merely involved a combination of known prior art technologies (e.g., transport systems like those described in O’Sullivan and displaying ride-relevant information to a rider) according to known methods (e.g., software changes to display such information) to yield the predictable result of a shared transport system that provides useful information to riders prior to pick up. (Ex. 1002, ¶¶128-129.) *See KSR Int’l. Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007).

(4) [1.g.iv]/[11.g.iv]/[19.g.iv] location information of the transport provider based on the GPS position data of the transport provider device;

O’Sullivan (including as modified above) discloses and/or suggests this claim element. (EX1002, ¶¶130-131.)

For example, O’Sullivan discloses that, “[a]t or before the One Minute Warning Time, a message would optimally be sent to indicate to the Rider to be on the lookout for the Transport Capacity...that was arriving.” (EX1006, [0078].) O’Sullivan also states that the rider will “Receive 1 minute confirmation.” (*Id.*, Fig. 5b.)

Figure 5b. Rider Experience, Functional Options Data and Action Details



(EX1006, FIG. 5b (annotated).)

Such a proximity alert constitutes “location information of the transport provider based on the GPS position data of the transport provider device,” as it indicates that the provider is nearby based on the driver’s GPS position. (EX1002, ¶¶130-131.)

- xi) **[1.h]/[11.h]/[19.h] receiving an indication, based on the GPS position data of the transport provider device, that the transport provider is approaching the pick-up location;**

O’Sullivan (including as modified above) discloses and/or suggests this limitation. (EX1002, ¶¶132-134.) For example, O’Sullivan discloses that, “[w]hen the Driver 13 approached the Rider Destination, and possibly **at points along the way**, the Rider 10 and Driver 13 could be **polled for their location information** to verify that the ride was **progressing** (‘Continuous Co-ordinated Proximity’ elements and methods of which are illustrated in FIGS. 10 a and 10 b).” (EX1006, [0088].) A POSITA would have understood that “points along the way” refers to points on the route, including the “pick-up location,” as claimed. (EX1002, ¶132.)

Moreover, O’Sullivan explains that “[p]rocessing and communications could be done either **locally** []using software **inside the Transport Capacity vehicle**” and “communicating via near-field communications **inside the Transport Capacity vehicle**...or via network polling to Sat Nav Tracker 17 or GPS Phone 11, or a similar combination of methods and communications.” (EX1006, [0088].) O’Sullivan also discloses that positionings of the driver’s device (Sat Nav Tracker device) and the rider’s device (GPS phone) are determined using GPS technology. (*Id.*, [0067] (“determining **positioning for the Sat Nav Tracker device 17** and the **GPS Phone 11** is through the use of a **GPS 14** or Magellan satellite”).) Thus, O’Sullivan describes the driver’s device providing information as it approaches the pick-up

location (the claimed “indication”), which is a point along the way, using the device’s GPS capabilities, which discloses limitation [1.h]/[11.h]/[19.h]. (EX1002, ¶¶133-134.)

- xii) **[1.i]/[11.i]/[19.i] in response to receiving the indication that the transport provider is approaching the pick-up location, causing the transport user device, via the transport user application, to display a notification indicative of the approaching transport provider;**

O’Sullivan (including as modified above) discloses and/or suggests this limitation. (EX1002, ¶135.) For example, according to O’Sullivan, when the “indication” that the vehicle is approaching the pick-up location is received (as discussed for elements [1.h]/[11.h]/[19.h]), such as “[a]t or before the One Minute Warning time,” the system 12 sends “a message” to the rider’s device, which causes its software to display a notification to be “on the lookout for the Transport Capacity, along with the specific color, model, picture and/or other identifying characteristics of the transport capacity that was arriving.” (EX1006, [0078]; *see also id.*, [0076]-[0077].) Thus, O’Sullivan (including as modified above) discloses and/or suggests limitation [1.i]/[11.i]/[19.i].

- xiii) **[1.j]/[11.j]/[19.j] receiving, from the transport provider device, an indication that the at least one person or item has been picked up;**

O’Sullivan (including as modified above) discloses and/or suggests this limitation. (EX1002, ¶136.) For example, to verify pick up, “Shared Transport

Marketplace 12 would then optimally verify, through the location information in the Sat Nav Tracker 17 and in the GPS Phone 11, that the Rider and Driver were indeed at the same location.” (EX1006, [0086]; *see also id.*, [0087] (explaining that the system may know if a rider is not picked up “due to the divergence in location information between the GPS Phone 11 and the Sat Nav Tracker 17”).) O’Sullivan also discloses that the pick-up may be verified by, e.g., “entry of a PIN” that is entered on the in-vehicle system. (*Id.*, [0192].)

- xiv) **[1.k]/[11.k]/[19.k] causing the transport provider device, via the transport provider application, to display navigation directions to the drop-off location based on the GPS position data of the transport provider device;**

O’Sullivan in view of Olmi discloses and/or suggests this limitation. (EX1002, ¶¶137-141.)

O’Sullivan does not expressly disclose “causing the transport provider device, via the transport provider application, to display navigation directions to the drop-off location based on the GPS position data of the transport provider device.” Nevertheless, it would have been obvious to implement this feature based on the teachings of Olmi. (EX1002, ¶138.)

As discussed above for limitations [1.g.ii]/[11.g.ii]/[19.g.ii] and [1.g.iii]/[11.g.iii]/[19.g.iii], a POSITA would have had good reason to consider the teachings of Olmi when implementing a method/system like that disclosed in

O’Sullivan. Additionally, Olmi discloses that, after pick up, its system provides “real-time street navigation instructions on a dashboard display screen” to guide the driver “along the...route.” (EX1005, 95; *see also id.*, 14 (“in-car satellite navigation systems make use of a digitised street layout map, and make use of data from a satellite electronic positioning system, **in order to provide the car driver with real-time navigation instructions** which are based on, and dynamically respond to, the vehicle’s current geographic location”), 15 (“the drivers in each of the said transit vehicles being directed along the said optimal transit routes to convey the said travellers by means of navigational data supplied by an electronic street navigation module incorporated into the said controlling computer system”; **“the said navigational data being sent to the communicator device within each of the said transit vehicles**, these communicator devices detailing the navigational data to the drivers of the said transit vehicles”).) A POSITA would have had good reason to implement such a feature in a method/system like that described in O’Sullivan, e.g., by displaying navigation instructions on the software interface of driver’s Sat Nav Tracker 17 display unit, because it would have provided persistent and precise navigation instructions to the drop-off location, enhancing the driver and rider experience. (EX1002, ¶¶139-140.) For example, as Olmi explains, such navigation instructions may be provided in “real-time” and may “dynamically respond to[] the vehicle’s current geographic location.” (EX1005, 14.) Accordingly, the driver and

rider may rest assured that the navigation guidance displayed will be timely, accurate, and responsive to changing conditions—reducing routing uncertainty, minimizing delay, and improving overall trip efficiency and safety. (EX1002, ¶¶139-140.)

A POSITA would have had a reasonable expectation of success implementing such a combination, particularly given O’Sullivan already describes using GPS technology and a Sat Nav Tracker. (EX1006, [0062] (“all vehicles that wish to provide transportation services...have a navigation device”), [0067] (“determining positioning for the Sat Nav Tracker device 17 and the GPS Phone 11 is through the use of a GPS 14 or Magellan satellite”).) Additionally, Olmi explains that such navigation systems were “commonly available.” (EX1005, 14.) Accordingly, such a person would have recognized that the above-described combination would have merely involved a combination of known prior art technologies (e.g., known transport systems and GPS navigation technology) according to known methods (e.g., known and commonly available navigation systems, as described in Olmi) to yield the predictable result of a shared transport system that provides an enhanced driver and rider experience using real-time navigation. (Ex. 1002, ¶141.) *See KSR*, 550 U.S. at 416.

- xv) **[1.1]/[11.1]/[19.1] causing the transport user device, via the transport user application, to display one or more of an estimated time associated with arrival of the at least one person or item at the drop-off location or the location information of the transport provider based on the GPS position data of the transport provider device;**

O’Sullivan in view of Olmi discloses and/or suggests this limitation. (EX1002, ¶¶142-144.) O’Sullivan does not expressly disclose this limitation, but it would have been obvious based on the teaching of Olmi. (*Id.*)

As discussed for limitation [1.g.iii]/[11.g.iii]/[19.g.iii], it would have been obvious based on the teachings of O’Sullivan and Olmi to display on a rider mobile device information associated with the ride, including an estimated time associated with “arrival,” after an available transit vehicle is selected but before pick-up. Limitation [1.1]/[11.1]/[19.1] would have been obvious for similar reasons, given Olmi describes displaying such information as a rider “is nearing his destination” as well—i.e., during the ride—as illustrated below. Such “information is...available on [the rider’s] cellular telephone.” (EX1005, 95.)

NEXT STOP: Charing Cross Rd, WC2
Arrival Time: 2 minutes
Passengers Alighting: Alex-G

(*Id.*)

A POSITA would have had both good reason and a reasonable expectation of success in implementing such a feature for the reasons discussed above with respect to limitation [1.g.iii]/[11.g.iii]/[19.g.iii]. For example, such a feature would keep the rider apprised of any changes to the estimated time until arrival, making it easier for the rider to make any accommodations in view of the changes. (EX1002, ¶143.)

Thus, the O’Sullivan-Olmi combination discloses and/or suggests “causing the transport user device, via the transport user application, to display one or more of an estimated time associated with arrival of the at least one person or item at the drop-off location,” as recited in limitation [1.l]/[11.l]/[19.l]. (EX1002, ¶144.)

xvi) [1.m]/[11.m]/[19.m] tracking progress of travel of the transport provider along a route from the pick-up location to the drop-off location based on one or more of the GPS position data of the transport provider device or GPS position data of the transport user device;

O’Sullivan (including as modified above) discloses and/or suggests this limitation. (EX1002, ¶¶145-146.)

For example, O’Sullivan discloses that, “[w]hen the Driver 13 approached the Rider Destination, and possibly at points along the way, the Rider 10 and Driver 13 could be polled for their location information to verify that the ride was progressing (‘Continuous Co-ordinated Proximity’ elements and methods of which are illustrated in FIGS. 10 a and 10 b),” where the “poll[ing]” process is facilitated by driver’s Sat Nav Tracker or rider’s GPS Phone, (EX1006, [0088]), “each having

separately determined but accurate location and time information...[and] can be asserted to be verifiably in transit with each other through their continuous [coordinated] proximity,” (*id.*, [0246]). (*See also id.*, [0182]-[0196], [0226]-[0227], FIGs. 8a, 8b, 9a, 9b, 10a-10b, 14a-14i.) Thus, O’Sullivan discloses limitation [1.m]/[11.m]/[19.m].

- xvii) **[1.n]/[11.n]/[19.n] receiving an indication that the transport provider has delivered the at least one person or item to the drop-off location from at least one of the transport provider device or the transport user device;**

O’Sullivan (including as modified above) discloses and/or suggests this limitation. (EX1002, ¶¶147-148.)

O’Sullivan discloses that the delivery of the transport service is verified based on simultaneous geographic proximity, and, at the end of this journey, a message is sent to rider with the details and any billing information about the journey. For example, O’Sullivan explains that “[w]hen the Driver 13 approached the Rider Destination,...the **Rider 10 and Driver 13 could be polled for their location information to verify that the ride was progressing** (‘Continuous Co-ordinated Proximity’ elements and methods of which are illustrated in FIGS. 10 a and 10 b).” (EX1006, [0088]; *see also id.*, [0246], FIG. 10b.) Moreover, O’Sullivan explains that “[t]he **delivery of the transport service could be proven** beyond a reasonable doubt through the continuous [coordinated] proximity between the Driver and the

Rider according to the verification of simultaneous geographic proximity as illustrated in FIG. 10 b.” (*Id.*, [0088]; *see also id.*, [0197] (“providing the transport user’s proof of delivery to the destination location... via automatic communication between the in-vehicle device, by the confirmation of the transport provider and the transport user”).) Thus, O’Sullivan discloses limitation [1.n]/[11.n]/[19.n].

xviii) [1.o]/[11.o]/[19.o] transmitting trip summary data associated with the pick-up request to the transport user device, the trip summary data displayable via the transport user application and including a cost for servicing the pick-up request and a transport provider rating prompt soliciting the transport user to provide a rating value for the transport provider;

O’Sullivan (including as modified above) discloses and/or suggests this limitation. (EX1002, ¶149.)

For example, O’Sullivan discloses that, “[a]t the end of each journey,...[Riders] are messaged with the details and cost of their journey on their GPS phone 11,” where the message “also could prompt the Rider to rate the Driver, for example, with 1 to 5 stars, on one or more scales (safety, comfort, social factors).” (EX1006, [0092]; *see also id.*, [0088], FIG. 7.) Thus, O’Sullivan discloses limitation [1.o]/[11.o]/[19.o].

xix) [1.p]/[11.p]/[19.p] receiving the rating value for the transport provider from the transport user device via the transport user application;

O’Sullivan (including as modified above) discloses and/or suggests this limitation. (EX1002, ¶¶150-151.)

For example, O’Sullivan discloses that “[a]t the end of each journey, as the Rider leaves the vehicle, they are messaged with the details and cost of their journey on their GPS phone 11,” where the message “also could prompt the Rider to rate the Driver, for example, with 1 to 5 stars, on one or more scales (safety, comfort, social factors).” (EX1006, [0092].) The rider’s rating of the driver (“rating value for the transport provider from the transport user device via the transport user application”) is “receiv[ed]” by O’Sullivan’s system as it “could be used to automatically ‘blacklist’ that Rider from ever matching with the Driver again.” (*Id.*, [0092]; *see also id.*, FIG. 7.) Thus, O’Sullivan discloses limitation [1.p]/[11.p]/[19.p].

xx) [1.q]/[11.q]/[19.q] updating the transport provider rating score of the transport provider based on the received rating value for the transport provider; and

O’Sullivan (including as modified above) discloses and/or suggests this limitation. (EX1002, ¶¶152-154.)

For example, as discussed for limitation [1.p]/[11.p]/[19.p], O’Sullivan discloses that, based on the rider’s rating of the driver, the system could “automatically ‘blacklist’ that Rider from ever matching with the Driver again” if

the driver received “[a] sufficiently low rating.” (EX1006, [0092].) Thus, a POSITA would have understood that the “the transport provider rating score of the transport provider based on the received rating value for the transport provider” is “update[ed]” in O’Sullivan’s system to prevent future matches. (EX1002, ¶152.)

Additionally, O’Sullivan discloses a “**self-correcting** trust system for **feedback of Rider response** to Driver performance,” where the rider’s “measurement of trustability” associated with the driver is provided to the system. (EX1006, [0147]; *see also id.*, [0146].) O’Sullivan further states that the transport user device can be used to “update trust ratings on providers in the network.” (*Id.*, [0162].) Thus, O’Sullivan discloses limitation [1.q]/[11.q]/[19.q]. (EX1002, ¶¶152-154.)

xxi) [1.r]/[11.r]/[19.r] causing the cost for servicing the pick-up request to be charged to a payment method associated with the transport user.

O’Sullivan in view of Olmi discloses and/or suggests this limitation. (EX1002, ¶¶155-158.)

While O’Sullivan discloses “a message would be sen[t] to Rider with the details and any billing information about the journey” (EX1006, [0088]), it does not disclose or suggest “causing the cost for servicing the pick-up request to be charged to a payment method associated with the transport user.” Nevertheless, it would have been obvious to implement this feature in view of Olmi.

As discussed above for limitations [1.g.ii]/[11.g.ii]/[19.g.ii] and [1.g.iii]/[11.g.iii]/[19.g.iii], a POSITA would have had good reason to consider the teachings of Olmi when implementing a method/system like that disclosed in O’Sullivan. Additionally, Olmi discloses that, “[f]or speed and simplicity, no money is exchanged in the vehicle,” and “after a car pool journey, the controlling computer system credits the driver’s monetary account with his fee and debits the passenger’s monetary account by an amount which represents the fare for his journey.” (EX1005, 46.) Accordingly, Olmi discloses “causing the cost for servicing the pick-up request to be charged to a payment method associated with the transport user.” (EX1002, ¶156.)

Based on these teachings of Olmi, a POSITA would have had good reason to implement such a feature in a method/system like that described in O’Sullivan. Indeed, Olmi itself discloses such a feature is beneficial for both the driver and the rider because, e.g., it provides “[f]or speed and simplicity” because “no money is exchanged in the vehicle.” (EX1005, 46; *see also id.*, 20; EX1002, ¶157.)

A POSITA would have had a reasonable expectation of success implementing such a feature because, for example, Olmi explains that the ride fare charging process may be conducted by using known methods, such as “credit[ing] the driver’s monetary account with his fee and debits the passenger’s monetary account by an amount which represents the fare for his journey.” (EX1005, 46). Accordingly, a

skilled person would have appreciated that the above-described combination would have merely involved a combination of known prior art technologies (e.g., transport systems and automatic financial transactions) according to known methods (e.g., known financial systems and processes for charging and debiting accounts) to yield the predictable result of a shared transport system that provides an improved transport system with automated financial transactions. (Ex. 1002, ¶158.) *See KSR*, 550 U.S. at 416.

2. Claim 2

- i) The method of claim 1, wherein: the pick-up request is for at least one person; and
- ii) the method further comprises:
 - (1) determining one or more of (i) whether the at least one person is remote from the pick-up location or (ii) whether an alternative pick-up location is located near the pick-up location; and
 - (2) in response to determining one or more of that the at least one person is remote from the pick-up location or that an alternative pick-up location is located near the pick-up location, one or more of (i) modifying the pick-up location to be the alternative pick-up location, or (ii) causing the transport user device to display, via the transport user application, navigation directions to the pick-up location based on GPS position data of the transport user device.

O’Sullivan (including as modified above) discloses and/or suggests these limitations. (EX1002, ¶¶159-161.) As discussed for limitation [1.a/11.a.iii/19.a], O’Sullivan discloses that “the pick-up request” is for a rider/person 10.

O’Sullivan also discloses the remaining limitations of claim 2. **First**, O’Sullivan discloses “determining one or more of (i) whether the at least one person is remote from the pick-up location.” For example, O’Sullivan’s system determines “from the Rider’s GPS Phone 11 that the **Rider is positioned within a certain proximity to the Pick-up Point.**” (EX1006, [0077]; *see also id.*, [0088], [0113]; EX1002, ¶160.)

Second, O’Sullivan discloses “in response to determining one or more of that the at least one person is remote from the pick-up location or that an alternative pick-up location is located near the pick-up location, one or more of (i) modifying the pick-up location to be the alternative pick-up location.” For example, O’Sullivan’s system may “direct[] Rider to an **alternate nearby optimal Pick-up Point** in order to maximize transport efficiency... if the Rider made a request on an infrequently used street, the Rider may be directed to walk a block or two to a Pick-up Point where Transport Capacity is available.” (EX1006, [0069], [0074]; EX1002, ¶161.)

3. Claim 3

- i) **The method of claim 1, further comprising: causing the transport provider device to display, via the transport provider application, an estimated time associated with arrival of the transport provider at the pick-up location.**

O’Sullivan (including as modified above) discloses and/or suggests claim 3. For example, O’Sullivan discloses “[a]t the time of the **Three Minute Warning**” (corresponding to “an estimated time associated with arrival of the transport provider at the pick-up location”), a message is “sent to the Driver Software Interface and the Rider(s) with the information pertinent to the pick-up destination and the Riders.” (EX1006, [0076]; EX1002, ¶162.)

4. Claim 4

- i) The method of claim 3, wherein the estimated time associated with arrival of the transport provider at the pick-up location includes one or more of an estimated time of arrival of the transport provider at the pick-up location or an estimated time remaining until arrival of the transport provider at the pick-up location.**

O’Sullivan (including as modified above) discloses and/or suggests claim 4 for the reasons discussed for claim 3. (EX1002, ¶163.) A “Three Minute Warning” constitutes “an estimated time remaining until arrival of the transport provider at the pick-up location.” (EX1006, [0076]; EX1002, ¶163.)

5. Claim 5

- i) The method of claim 1, further comprising: causing at least one of the transport user device or the transport provider device to display, via the transport user application or the transport provider application, respectively, an interface configured to generate, transmit, and receive messages to and from an other of the at least one of the transport user device or the transport provider device, wherein contact information of the transport user and of the transport provider are anonymized.**

O’Sullivan (including as modified above) discloses and/or suggests claim 5. (EX1002, ¶164.) For example, O’Sullivan discloses a “rider/driver proxy messaging system” that enables the driver and the rider to communicate via their respective devices (and corresponding software interface), where the “Riders/Drivers remain anonymous.” (EX1006, [0082] (“Although Riders/Drivers remain anonymous,

system rankings are available, and Riders have the ability to only request Transport Capacity from Drivers with specified quality Star Ratings, and the like.”), [0101], [0102] (“FIG. 13 shows a message proxy system that would enable communications between members of the community without losing this identity”), [0103] (describing “rider/driver proxy messaging system”).)

6. Claim 7

- i) **The method of claim 1, further comprising: monitoring the progress of travel of the transport provider along the route from the pick-up location to the drop-off location for anomalies, wherein the shared transport system is configured to transmit an anomaly notification to one or more of the transport user device, the transport provider device, or one or more devices associated with safety personnel in response to detection of an anomaly in the progress of the travel of the transport provider.**

O’Sullivan (including as modified above) discloses and/or suggests claim 7. (EX1002, ¶165.) For example, O’Sullivan explains that “[i]n order to improve on the quality of this trust, and to provide security assurance to Riders and Drivers, certain behaviors would **prompt alert conditions**, especially those related to security or safety.” (EX1006, [0091].) “[F]or example, automated phone calls to verify the intent of the Rider & Driver, including **prompting the Rider or Driver for verification of pass codes** (‘Favorite Color’) which would be established upon user registration.” (*Id.*) “If a Rider or Driver was unable to verify their Favorite Color, **human intervention and responses and queries** (from Network Operators,

optimally, at a Network Operations Center (15), as shown in FIG. 1) **could escalate the situation response** as appropriate, even initiating vehicle tracking and dispatching security personnel if appropriate.” (*Id.*; EX1002, ¶165.)

7. **Claim 10**

- i) **The method of claim 1, further comprising: transmitting a transport user rating prompt to the transport provider device, the transport user rating prompt soliciting the transport provider to provide a rating value for the transport user via the transport provider application;**
- ii) **receiving the rating value for the transport user from the transport provider device via the transport provider application; and**
- iii) **updating the transport user rating score of the transport user based on the received rating value for the transport user.**

O’Sullivan (including as modified above) discloses and/or suggests claim 10 limitations. (EX1002, ¶166.) For example, O’Sullivan discloses that “at the end of the driver’s journey, as they stop their vehicle, they would be automatically **prompted to rate the Rider(s)** that they had carried on their Supply Route” and “**provide their feedback to the system** about the rider.” (EX1006, [0093]; *see also id.*, [0025], [0092], [0094], [0146], [0163], [0243].) O’Sullivan also discloses that its system “refin[s] trustability ratings” and “**continuously update[s] transport provider and transport user ratings.**” (*Id.*, [0181].)

8. Claim 12

- i) The system of claim 11, wherein: the pick-up request is for at least one person; and**
- ii) the operations further include:**
 - (1) determining one or more of (i) whether the at least one person is remote from the pick-up location or (ii) whether an alternative pick-up location is located near the pick-up location; and**
 - (2) in response to determining one or more of that the at least one person is remote from the pick-up location or that an alternative pick-up location is located near the pick-up location, one or more of (i) modifying the pick-up location to be the alternative pick-up location, or (ii) causing the transport user device to display, via the transport user application, navigation directions to the pick-up location based on GPS position data of the transport user device.**

O'Sullivan (including as modified above) discloses and/or suggests claim 12

for the same reasons discussed for claim 2. (EX1002, ¶167.)

9. Claim 13

- i) The system of claim 11, wherein: the operations further include causing the transport provider device to display, via the transport provider application, an estimated time associated with arrival of the transport provider at the pick-up location; and**
- ii) the estimated time associated with arrival of the transport provider at the pick-up location includes one or more of an estimated time of arrival of the transport provider at the pick-up location or an estimated time remaining until arrival of the transport provider at the pick-up location.**

O’Sullivan (including as modified above) discloses and/or suggests claim 13 for the same reasons discussed for claim 3. (EX1002, ¶168.)

10. Claim 14

- i) The system of claim 11, wherein the operations further include: causing at least one of the transport user device or the transport provider device to display, via the transport user application or the transport provider application, respectively, an interface configured to generate, transmit, and receive messages to and from an other of the at least one of the transport user device or the transport provider device, wherein contact information of the transport user and of the transport provider are anonymized.**

O’Sullivan (including as modified above) discloses and/or suggests claim 14 for the same reasons as discussed for claim 5. (EX1002, ¶169.)

11. Claim 15

- i) The system of claim 11, wherein the operations further include:**
 - (1) determining that the transport provider has failed to pick up the at least one person or item; and**
 - (2) in response to determining that the transport provider has failed to pick up the at least one person or item, re-allocating the pick-up request to a different transport provider so as to replace the transport provider with the different transport provider.**

O’Sullivan (including as modified above) discloses and/or suggests claim 15 limitations. (EX1002, ¶170.) For example, O’Sullivan discloses “tracking the pick-

up and delivery of the transport demand by the transport capacity.” (EX1006, [0186].) If there is “**a missed pick-up,**” the system may “**automatically re-allocat[e]** and reschedul[e] a missed pick-up to **other available transport capacity** in the registry of transport.” (*Id.*, [0187])

12. Claim 20

- i) **The non-transitory computer readable medium of claim 19, wherein the operations further include: transmitting a transport user rating prompt to the transport provider device, the transport user rating prompt soliciting the transport provider to provide a rating value for the transport user via the transport provider application;**
- ii) **receiving the rating value for the transport user from the transport provider device via the transport provider application; and**
- iii) **updating the transport user rating score of the transport user based on the received rating value for the transport user.**

O’Sullivan (including as modified above) discloses and/or suggests claim 20 for the same reasons discussed for claim 10. (EX1002, ¶171.)

X. CONCLUSION

Accordingly, Petitioners request IPR be instituted.

Respectfully submitted,

Dated: March 12, 2026

By: /Naveen Modi/
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Counsel for Petitioners

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. §42.24(d), the undersigned certifies that the foregoing Petition for *Inter Partes* Review of U.S. Patent No. 11,164,456 contains, as measured by the word-processing system used to prepare this paper, 13,703 words. This word count does not include the items excluded by 37 C.F.R. §42.24 as not counting towards the word limit.

Respectfully submitted,

Dated: March 12, 2026

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CERTIFICATE OF SERVICE

I hereby certify that on March 12, 2026, I caused a true and correct copy of the foregoing Petition for *Inter Partes* Review of U.S. Patent No. 11,164,456 and supporting exhibits to be served via express mail on the Patent Owner at the following correspondence address of record as listed on Patent Center:

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