

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

Patent No. 11,017,668

DECLARATION OF PETROS IOANNOU, PH.D.

I.	INTRODUCTION	1
II.	QUALIFICATIONS	2
A.	Educational Background	2
B.	Career History	2
C.	Publications and Patents	4
III.	SUMMARY OF OPINIONS	6
IV.	PERSON OF ORDINARY SKILL IN THE ART	9
V.	TECHNOLOGICAL BACKGROUND	11
VI.	OVERVIEW OF THE '668 PATENT	15
VII.	CLAIM CONSTRUCTION	19
VIII.	OVERVIEW OF THE REFERENCES	21
A.	Overview of Olmi (EX1005).....	21
A.	Overview of Peer (EX1006).....	25
B.	Overview of Poykko426 (EX1011)	27
C.	Overview of Jeon (EX1007)	28
IX.	THE PRIOR ART DISCLOSES ALL OF THE LIMITATIONS OF THE CHALLENGED CLAIMS	30
A.	The Combination of Olmi, Peer, and Poykko426 Discloses or Suggests the Limitations of Claims 1, 2, 4-13, and 15-20	30
1.	Claim 1	31
i)	[1.pre] “A computer-implemented method for managing anomalous conditions in a shared transport system, the method comprising”	31
ii)	[1.a] “receiving, by the shared transport system, a transport request from a transport user device of a transport user, the transport request including a pick-up location and a destination;”	51

- iii) [1.b] “transmitting, by the shared transport system, the transport request to a transport provider device of a transport provider;”56
 - iv) [1.c] “determining, by the shared transport system, a start of a transport using at least one of the transport provider device and the transport user device;”67
 - v) [1.d] “determining, by the shared transport system, an anomalous condition associated with the transport using at least one of the transport provider device and the transport user device; and”69
 - vi) [1.e] “transmitting, by the shared transport system, a notification to one or more of the transport user device, the transport provider device, and security personnel based on the determined anomalous condition.”72
2. Claim 2: “The computer-implemented method of claim 1, wherein determining, by a shared transport system, a start of a transport using at least one of the transport provider device and the transport user device comprises: determining that the transport provider device and the transport user device are within a predetermined proximity using Global Positioning System (GPS) technology enabled at the transport provider device and the transport user device”74
3. Claim 4: “The computer-implemented method of claim 1, wherein determining, by the shared transport system, an anomalous condition associated with the transport using at least one of the transport provider device and the transport user device comprises: determining the transport is off-route by comparing a location of the transport provider device with the destination or a route.”79

4. Claim 5: “The computer-implemented method of claim 1, wherein determining, by the shared transport system, an anomalous condition associated with the transport using at least one of the transport provider device and the transport user device comprises: determining the transport has terminated before reaching the destination.”81
5. Claim 6: “The computer-implemented method of claim 5, wherein determining the transport has terminated before reaching the destination comprises: determining, before reaching the destination, that the transport provider device and the transport user device are no longer within a predetermined proximity.”84
6. Claim 7: “The computer-implemented method of claim 6, wherein the transport provider device and the transport user device are determined to be no longer within the predetermined proximity using Global Positioning System (GPS) technology or Near Field Communication (NFC) technology enabled at the transport provider device and the transport user device.”85
7. Claim 8: “The computer-implemented method of claim 1, wherein determining, by the shared transport system, an anomalous condition associated with the transport using at least one of the transport provider device and the transport user device comprises: determining the transport has terminated at a location different from the destination.”87
8. Claim 9: “The computer-implemented method of claim 8, wherein determining the transport has terminated at a location different from the destination comprises: determining a location at which the transport provider device and the transport user device became no longer within a predetermined proximity.”88
9. Claim 10: “The computer-implemented method of claim 1, wherein the notification to the transport provider device or the transport user device comprises a request for transport status.”91

10.	Claim 11: “The computer-implemented method of claim 10, wherein the notification to the transport provider device or the transport user device further comprises a request for identity verification.”	93
11.	Claim 12	96
	i) [12.pre] A system comprising:	97
	ii) [12.a] at least one processor; and.....	97
	iii) [12.b] at least one storage storing instructions which, when executed by the at least one processor, cause the at least one processor to perform operations for managing anomalous conditions in a shared transport system, the operations comprising:	97
12.	Claim 13: The system of claim 12, wherein determining, by a shared transport system, a start of a transport using at least one of the transport provider device and the transport user device comprises: determining that the transport provider device and the transport user device are within a predetermined proximity using Global Positioning System (GPS) technology enabled at the transport provider device and the transport user device.....	101
13.	Claim 15: The system of claim 12, wherein determining, by the shared transport system, an anomalous condition associated with the transport using at least one of the transport provider device and the transport user device comprises: determining the transport is off-route by comparing a location of the transport provider device with the destination or a route.....	101
14.	Claim 16: The system of claim 12, wherein determining, by the shared transport system, an anomalous condition associated with the transport using at least one of the transport provider device and the transport user device comprises: determining the transport has terminated before reaching the destination.	102

15. Claim 17: The system of claim 16, wherein determining the transport has terminated before reaching the destination comprises: determining, before reaching the destination, that the transport provider device and the transport user device are no longer within a predetermined proximity.....102
16. Claim 18: “The system of claim 17, wherein the transport provider device and the transport user device are determined to be no longer within the predetermined proximity using Global Positioning System (GPS) technology or Near Field Communication (NFC) technology enabled at the transport provider device and the transport user device.”102
17. Claim 19: The system of claim 12, wherein determining, by the shared transport system, an anomalous condition associated with the transport using at least one of the transport provider device and the transport user device comprises: determining the transport has terminated at a location different from the destination.....103
18. Claim 20.....103
 - i) [20.pre] At least one non-transitory computer readable medium comprising instructions which, when executed by at least one processor, cause the at least one processor to perform operations for managing anomalous conditions in a shared transport system, the operations comprising:104
 - ii) [20.a] receiving, by the shared transport system, a transport request from a transport user device of a transport user, the transport request including a pick-up location and a destination;105
 - iii) [20.b] transmitting, by the shared transport system, the transport request to a transport provider device of a transport provider;105

iv)	[20.c] determining, by the shared transport system, a start of a transport using at least one of the transport provider device and the transport user device;.....	105
v)	[20.d] determining, by the shared transport system, an anomalous condition associated with the transport using at least one of the transport provider device and the transport user device; and.....	105
vi)	[20.e] transmitting, by the shared transport system, a notification to one or more of the transport user device, the transport provider device, and security personnel based on the determined anomalous condition.	105
B.	The Combination of Olmi, Peer, Poykko426, and Jeon Discloses or Suggests the Limitations of Claims 3 and 14	106
1.	Claim 3: The computer-implemented method of claim 1, wherein determining, by a shared transport system, a start of a transport using at least one of the transport provider device and the transport user device comprises: determining that the transport provider device and the transport user device are within a predetermined proximity using Near Field Communication (NFC) technology enabled at the transport provider device and the transport user device.....	106
2.	Claim 14: The system of claim 12, wherein determining, by a shared transport system, a start of a transport using at least one of the transport provider device and the transport user device comprises: determining that the transport provider device and the transport user device are within a predetermined proximity using Near Field Communication (NFC) technology enabled at the transport provider device and the transport user device.	114
X.	CONCLUSION.....	115

I, Petros Ioannou, declare as follows:

I. INTRODUCTION

1. I have been retained by counsel for Uber Technologies, Inc. and Uber Freight US LLC (“Petitioners”) as an independent expert consultant in this proceeding before the United States Patent and Trademark Office (“PTO”) regarding U.S. Patent No. 11,017,668, (“the ’668 patent”) (EX1001). I have been asked to consider whether certain references alone or in combination disclose or suggest the limitations recited in claims 1-20 (“the challenged claims”) of the ’668 patent. My opinions are set forth below.

2. I am being compensated at my rate of \$500 per hour for the time I spend on this matter. My compensation is in no way contingent on the nature of my findings, the presentation of my findings in testimony, or the outcome of this or any other proceeding. I have no other interest in this proceeding.

II. QUALIFICATIONS

3. I have summarized in this section my educational background, career history, publications, and other relevant qualifications. My full curriculum vitae is attached as Exhibit 1003 to this report.

A. Educational Background

4. I received a Bachelor of Science degree in Mechanical Engineering from the University London (University College) in 1978 with first class honors, a Master of Science degree in Mechanical Engineering from the University of Illinois at Urbana Champaign in 1980 and a PhD degree in Electrical Engineering from University of Illinois at Urbana Champaign in 1982. My PhD thesis was on the topic of Robust Adaptive Control with applications.

B. Career History

5. In 1982 I became an assistant professor in Electrical Engineering and Systems at the University of Southern California (USC), Los Angeles, California. In 1987, I was promoted to associate professor at USC and in 1992 I was promoted to a Full Professor. I have courtesy appointments with the Departments of Aerospace and Mechanical Engineering and Industrial System Engineering and currently hold the A.V. “Bal” Balakrishnan Chair and the prestigious title of University Professor. I am the founder and Director of the Center for Advanced Transportation Technologies, an organized research unit at USC, and I am the co-

founder of the University Transportation Center METRANS at USC where I hold the position of associate research director. I am the founder and Director of the Master Degree program in Financial Engineering at USC and serve as the Director of the Center for Responsible AI in Decision Making in Finance supported by CapitalOne. Starting January 2026, I am the President of the IEEE Intelligent Transportation Systems Society (ITSS). Prior to 2026 I served as President Elect of the IEEE ITSS, Vice President (VP) for Membership, VP for Publications and served as Editor in Chief of the IEEE Transactions on Intelligent Transportation Systems. I have been a member of the National Academy of Engineering since 2022.

6. Vehicle Routing: I have over 30 years of experience in optimization applied to routing of passenger vehicles; trucks carrying and delivering containers; central coordination of schedules and routes of shuttles for airports using connectivity and central computers. My research team and I developed a centrally coordinated truck routing system where trucks send via communication links their origin and destination and desired time window to a central computer system which generates and communicates back their schedules and routes to reduce overall travel time. We also developed a centrally coordinated system for generating schedules and optimum routes for shuttles serving the Los Angeles international airport to reduce congestion at the curbside drop off and pick up points.

7. Intelligent Transportation Systems: These systems use vehicle to vehicle and vehicle to infrastructure communication together with control and optimization techniques to perform lane change control, dynamic speed assignment, ramp metering and traffic light control. These systems involve active communication between vehicles and a central computer system where algorithms and protocols are executed in real time. These technologies involve active communication between users and a central computer system, optimization and decision making without requiring any private information from the users.

C. Publications and Patents

8. I am the author/co-author of 11 books and over 400 publications in Journals and Conference proceedings in the areas of controls, automated vehicles, vehicle routing and intelligent transportation systems.¹ I have close to 40,000 citations with h-index 78 and i10-index 290 on Google Scholar².

9. Some of my representative publications about vehicle routing include:

- Zheyu Wang, Maged Dessouky, Tom Van Woensel, Petros Ioannou, *Pickup and delivery problem with hard time windows considering*

¹ <https://pioannou.usc.edu/>

² <https://scholar.google.com/citations?user=lvDGI2UAAAAJ&hl=en>

stochastic and time-dependent travel times, EURO Journal on Transportation and Logistics, Volume 12, 100099, ISSN 2192-4376.³

- Aristotelis-Angelos Papadopoulos; Ioannis Kordonis, Maged Dessouky; Petros Ioannou, *Personalized Freight Route Recommendations with System Optimality Considerations: A Utility Learning Approach*, Oct. 2022.⁴
- Ioannis Kordonis, Maged M. Dessouky, and Petros A. Ioannou, *Mechanisms for Cooperative Freight Routing: Incentivizing Individual Participation*, IEEE Transactions on Intelligent Transportation Systems, vol. 21, no. 5, May 2020.
- Jie Shi, Yuanqi Gao, Wei Wang, Nanpeng Yu and Petros Ioannou, *Operating Electric Vehicle Fleet for Ride-Hailing Services with Reinforcement Learning*, IEEE Transactions on Intelligent Transportation Systems, November 2020, Vol. 21, Issue 11, pp. 4822-4834.⁵

10. I also have three issued patents and two pending patent applications in control and transportation.

³ <https://doi.org/10.1016/j.ejtl.2022.100099>

⁴ <https://doi.org/10.1109/TITS.2022.3213773>

⁵ <https://ieeexplore.ieee.org/document/8878000>

III. SUMMARY OF OPINIONS

11. The opinions contained in this Declaration are based on the documents I reviewed and my professional judgment, as well as my education, experience, and/or knowledge regarding technologies relating to, among other things, transportation systems.

12. In forming my opinions expressed in this Declaration, I reviewed the following materials, as well as any other materials referenced in this Declaration:

Reviewed Materials	
EX1001	U.S. Patent No. 11,017,668 (“the ’668 patent”)
EX1004	Prosecution History of U.S. Patent App. No. 16/983,598
EX1005	UK Patent Application No. GB2397683A to Olmi (“Olmi”)
EX1006	European Patent No. 1251475A2 to Peer (“Peer”) and Certified Translation of <i>Peer</i> with Certification of Translation
EX1007	Korean Patent No. 20060107894A to Jeon (“Jeon”) and Certified Translation of <i>Jeon</i> with Certification of Translation
EX1010	U.S. Patent Application Publication No. 2003/0040944 to Hileman (“Hileman”)
EX1011	International Patent Publication No. WO 2005/022426 A1 to Poykko (“Poykko426”)

EX1012	Prosecution History of U.S. Patent App. No. 16/698,312
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. Computers & Operations Research 31 (2004) 2263-2278 (“Calvo”)
EX1035	U.S. Patent No. 10,520,325 to Lewinson (“Lewinson”)

13. In support of my opinions, I have taken into account how a person of ordinary skill in the art (as I discuss below in Section IV) would have understood the claims and the specification of the '668 patent at the time of the alleged invention, which I have been asked to assume is around and no later than February 12, 2007. My opinions reflect how such a skilled person would have understood the '668 patent, the references, and the state of the art at the time of the alleged invention.

14. As I discuss in detail below, it is my opinion that:

- the combination of Olmi, Peer, and Poykko426 discloses or suggests all of the limitations of claims 1, 2, 4-13, and 15-20 (*see my discussion below in Section IX.A*); and
- the combination of Olmi, Peer, Poykko426, and Jeon discloses or suggests all of the limitations of claims 3 and 14 (*see my discussion below in Section IX.B*).

15. A person of ordinary skill in the art would have had reason to combine the teachings of these references and would have been able to do so with a reasonable expectation of success. (*See my discussions below in Sections VIII and IX.*)

IV. PERSON OF ORDINARY SKILL IN THE ART

16. I have been asked to consider the time of the alleged invention for the challenged claims of the '668 patent to be around and up to February 12, 2007. I understand from reviewing the '668 patent that this is the same date as the filing date of "Provisional application No. 60/900,808" that is identified on the Cover of the patent. (EX1001 at Cover ("Related U.S. Application Data").) Accordingly, I applied this understanding in my analysis herein.

17. Based on my knowledge and experience, I understand what a person of ordinary skill in the art would have known at the time of the alleged invention that I considered above. My opinions herein are, where appropriate, based on my understanding as to a person of ordinary skill in the art at the time of the alleged invention. In my opinion, based on the materials I have reviewed, and based on my experience in the technical areas relevant to the '668 patent, a person of ordinary skill in the art at the time of the alleged invention of the '668 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. More education can substitute for practical experience and vice versa.

18. My opinions in this Declaration, including my analysis of the '668 patent, and the references, are from the perspective of a person of ordinary skill in

the art, as I defined it above, during the relevant time frame around and up to February 12, 2007. I possessed at least the qualifications of such a person of ordinary skill in the art at that time.

V. TECHNOLOGICAL BACKGROUND

19. In this section, I discuss the state of the art relevant to the subject matter of the '668 patent as would have been known, understood, and appreciated by a person of ordinary skill in the art at the time of the alleged invention for the '668 patent. In particular, a person of ordinary skill in the art would have been aware of various developments in the areas of transportation systems and related processes, as I discuss below. This section is not intended to be technically comprehensive, but rather provide a foundation for the knowledge of a person of ordinary skill in the art at the relevant time. I rely on the following discussions and identified exhibit disclosures to support my opinions in Section IX, as they summarize features that a person of ordinary skill in the art would have been aware of, appreciated, and understood at the time of the alleged invention for the '668 patent. Accordingly, I incorporate such disclosures and understanding in support of my opinions below concerning the knowledge of such a person or ordinary skill in the art at the relevant time, and how such knowledge and understanding would support my opinions concerning the features disclosed in the prior art and reasons for combining features similar to those disclosed in that prior art in such a manner that, in my opinion, predictably results in a system or method that meets the limitation of the challenged claims of the '668 patent as I discuss below in Section IX.

20. Transportation systems were well-known prior to and at the time of the alleged invention of the '668 patent as a means of addressing widespread traffic congestion problems. Traffic congestion was a known problem with wide-ranging consequences, including those related to the transportation of persons and goods.

21. For example, Olmi (EX1005),⁶ which I discuss further below, explains the known critical problems relating to “road traffic congestion.” (EX1005, 3 (§3).) Travel times, parking, road network maintenance costs, pollution, and even traveler stress and related health concerns stemming from traffic congestion are issues that a person of ordinary skill in the art would have appreciated and contemplated when considering mechanisms to address them. (*Id.*, 3 (§3), 8 (§4.4); *see also* EX1030, ¶¶[0005]-[0012] (describing the “very serious concerns” relating to the growing reliance on individual transportation”); EX1010, ¶¶[0002]-[0005]; EX1033, 1:6-61; EX1035, 1:25-55 (describing known traffic and pollution issues caused by single-occupancy vehicles).)

22. Those of ordinary skill in the art would have also understood and been aware of transportation systems and related processes that were designed to address such issues and to improve transportation efficiency of travelers and goods. For

⁶ Citations to EX1005 are to the underlying document page number(s) or Section number(s).

example, as I describe in detail below, Olmi discloses several known transportation systems and related processes that were designed to improve transportation issues known in the art and improvements Olmi sought to provide to such existing systems and approaches, include systems to facilitate carpooling and leverage of existing fixed route transportation network infrastructure. (*See, e.g.*, EX1005, 4-9 (§§ 4-5.1), 19 (“seamlessly integrate with existing public transport”), 62-63; *see also* my discussions of Olmi below in Sections VIII and IX.) Other disclosures summarize approaches in transportation systems that were likewise known and appreciated by those of ordinary skill in the art at the time. (*See, e.g.*, EX1010, Abstract, ¶¶ [0006]-[0011], [0024]-[0035], FIGS. 1-8; EX1031, ¶¶[0001]-[0016], [0025]-[0027] (describing transportation system for freight hauling); EX1032, Abstract, 1-3 (describing vehicle pooling transportation system processes); EX1033, Abstract, 2:64-5:41, FIGs. 1-5; EX1034, Abstract, 2263-65 (§§ 1-2), 2266-2272 (§§ 3-4.1.1), 2274-2277 (§§ 5-6); EX1035, 1:59-3:22, 3:48-7:29, FIGS. 1A-6.)

23. Use of communication devices in transportation systems was also widely known by those of ordinary skill in the art. (*See, e.g.*, EX1005, 29-32, 40 (§§ 6.2, 7, 7.2), FIGs. 4, 6; EX1010, ¶¶[0025]-[0027], FIG. 1; EX1031, ¶¶ [0027]-[0029], [0051]-[0052], FIGS. 4A-4B; EX1032, Abstract, 1-5, 8-11, Figure sheets 1-3; EX1033, Abstract, 2:64-5:41, 6:19-8:62, FIGs. 1-5; EX1034, 2267.) Similarly, the use of networked computer systems and servers for managing transportation

system components and processes was known and understood by those of ordinary skill in the art. (*See, e.g.*, EX1005, (§§ 6.2, 7, 7.2), FIGs. 4, 6; EX1010, ¶¶ [0021]-[0028], FIG. 1; EX1031, ¶¶[0030]-[0050], FIGs. 2, 3A-4B; EX1034, 2269-2271 (§§ 3.2-4).)

24. Based on my experience, and from my review of the materials I identify in this Declaration, it is my opinion that a person of ordinary skill in the art at the time of the alleged invention would have been well aware of different transportation systems and processes designed to address known traffic and related issues with the transportation of vehicles, persons, and goods. This includes the use of carpooling and other types of ridesharing applications that leveraged and enhanced existing technologies related to fixed route transportation networks and other ridesharing optimization mechanisms. Given such knowledge and experience, and understanding of the technology underlying such transportation systems and processes, a person of ordinary skill in the art would have had reasons to consider the collective teachings of the prior art I discuss below in Section IX and integrate features and/or functionalities from such disclosures while leveraging their own experience and knowledge of existing transportation systems (consistent with those I discuss above in this section) to configure and provide transportation systems and processes that provide shared transport solutions, and communication protocols, consistent with that in the art at the time.

VI. OVERVIEW OF THE '668 PATENT

25. Based on my review, I understand the '668 patent “relates to a ground transportation network” that, for example, “match[es]” individuals with transport capacity on a supply and demand basis. (EX1001, 1:23-26.) Consistent with my discussions above in Section V, the '668 patent discusses conventional transportation systems, processes, and concepts directed to addressing known transport capacity and demand issues consistent with what would have been known and appreciated by a person of ordinary skill in the art prior to and at the time of the alleged invention for the '668 patent. For example, the '668 patent describes a conventional central assigning system that works in conjunction with vehicle communication devices and employs known dynamic ridesharing and transportation network concepts. (*Id.*, 1:27-2:67.) The '668 patent also describes the use of existing traffic measurement systems, GPS systems, and traffic speed measurement systems (*id.*, 4:1-14), and describes features of current carpooling systems and mass transport systems that give “confidence” to transport users on available capacity (*id.*, 4:22-36). Thus, the '668 patent acknowledges that implementing existing proposals for dynamic ridesharing systems “*would represent advances over methods in common practice.*” (*Id.*, 1:53-54.)

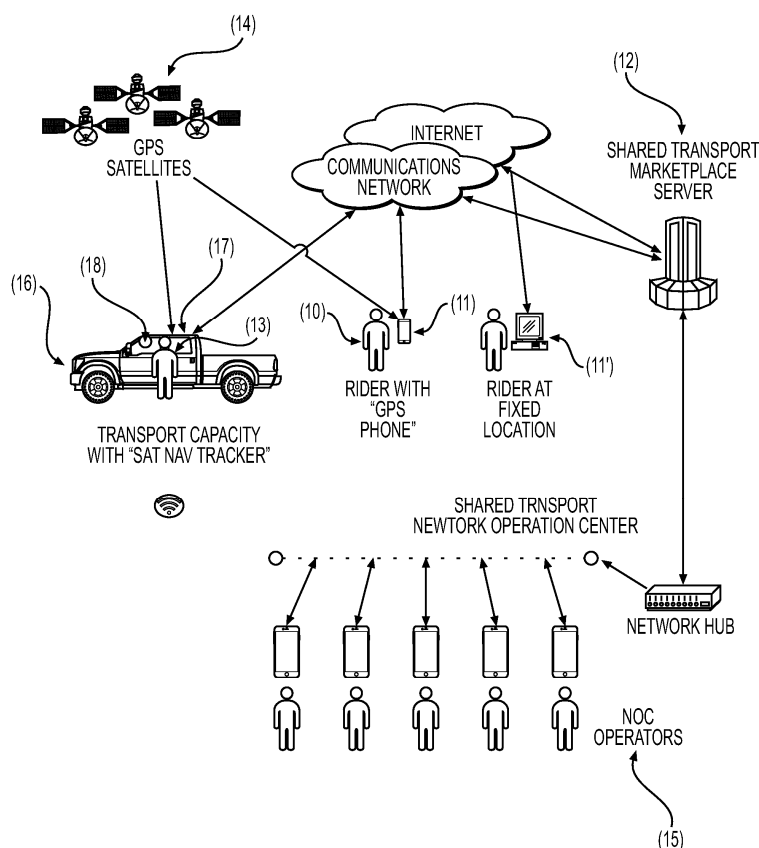
26. However, I understand that the '668 patent expresses a belief that the alleged invention “makes such systems more practical and useful” by purportedly

reducing workload and/or steps necessary “to make this system more inconvenient,” improving “trustability,” increasing use, providing a device that communicates “visually” to riders, determining and/or registering transport capacity, and providing information about “ad-hoc” transport capacity “*in manners similar to traditional, centrally controlled transit systems.*”⁷ (*Id.*, 1:53-2:3.)

27. The ’668 patent discusses its “Shared Transport System” (or marketplace) in the context of Figure 1 (below), which purportedly “enabl[es] private transport vehicles to serve as an extension of the mass transit system” by matching potential riders with potential drivers. (*Id.*, 3:51-55; *see also id.*, 3:1-5:19, FIG. 1.)

⁷ Unless I have otherwise noted, the emphasis provided in portions of the referenced text is added.

FIGURE 1. SHARED TRANSPORT NETWORK SYSTEM



(*Id.*, FIG. 1.)

28. The '668 patent also describes a transport provider/driver defining a supply route along which to travel (independent of and before receiving any notice of an available rider) and the system matching transport users/riders (who have requested pick-up and drop-off locations along, or sufficiently close to, a declared supply route) to a pre-existing supply route. (EX1001, FIGS. 6a, 14a; *id.*, 3:10-20, 3:33-44, 16:49-17:6, 22:30-33.)

29. Beyond many other conventional features (as I have demonstrated below in Section IX), the '668 patent discusses features related to ensuring the trip is progressing as expected. (*Id.*, Abstract, 11:39-12:3.) For example, “to provide security assurance to Riders and Drivers, certain behaviors would prompt alert conditions, especially those related to security or safety.” (*Id.*, 12:14-17.) If a ride “is terminated before or at a different point than the established Destination Point, this information is logged and could further be used to generate, for example, automated phone calls to verify the intent of the Rider & Driver, including prompting the Rider or Driver for verification of pass codes...which would be established upon user registration.” (*Id.*, 12:17-25.) If a rider or driver is unable to verify the pass code, human intervention (e.g., from network operators or dispatched security personnel) is available. (*Id.*, 12:25-31.)

30. The claims of the '668 patent were allowed (and subsequently issued) after minimal examination, during which the Office did not apply any prior art rejections. (EX1004, 15-17, 29-34, 52-59; EX1012, 16 (parent application's reasons for allowance relied on by Office in examining '668 patent application).)

31. As I explain below, it is my opinion, based on my review of the materials referenced herein and my experience, these and other features described in the challenged claims of the '668 patent were known in the prior art before the alleged invention of the '668 patent. (*See* my discussions below in Section IX.)

VII. CLAIM CONSTRUCTION

32. I understand that terms of the challenged claims should be interpreted as would have been understood by a person of ordinary skill in the art at the time of the alleged invention, taking into consideration the language of the claims, the specification, and the prosecution history of the '668 patent (EX1004) at the time of the alleged invention (around and up to February 12, 2007). I have applied these understandings of the claim terms in my analysis and in forming my opinions where appropriate in this Declaration.

33. I also have been asked to provide my opinions regarding the challenged claims of the '668 patent and the prior art discussed in this Declaration under the following constructions for the following claim terms, which I understand are proposed by Petitioners or Patent Owner (PO), as indicated in the table below. I applied those meanings as presented in support of my opinions as requested. My opinions below regarding the challenged claims also demonstrate how the claimed features are disclosed and/or suggested even if no such express constructions are applied.

'668 Patent Term	Constructions
“shared transport system” (all claims)	<u>Petitioners’ Construction</u> : “A server system that matches transport users with transport providers

'668 Patent Term	Constructions
	traveling an existing route defined before demand for transport and independently of a transport user's door-to-door trip."
"pick-up location" (all claims)	<u>Petitioners' Construction</u> : "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)	<u>Petitioners' Construction</u> : "A driver offering transport along an existing route defined before demand for transport and independently of a transport user's door-to-door trip."
"anomalous condition" (all claims)	<u>Patent Owner's Construction</u> : "when a ride results in a journey which is terminated before or at a different point than the established destination point"

VIII. OVERVIEW OF THE REFERENCES⁸

A. Overview of Olmi (EX1005)

34. Based on my review, a person of ordinary skill in the art would have understood that Olmi discloses a method/system that leverages existing features/concepts from public transport and individual transport applications to address transportation problems. (EX1005, 8-9 (§5.1).) Olmi teaches a transportation sharing process where a central computer system analyzes “submitted itinerary requirements that it receives, and then intelligently groups travellers with compatible itineraries onto the same...transit vehicle” (*id.*, Abstract) to address problems with inefficient use of transportation services, among other things, in existing transportation networks (*id.*, 2-7 (“present invention is the breakthrough solution to transport problems and traffic congestion” by providing a “minimal impact system, which easily coexists with other forms of transport, and other traffic control schemes” while “maintaining people-mobility”), 4-7 (§§4.1-4.4).)

⁸ These summaries of the references in Section VIII are applicable to my analysis below in Section IX. Accordingly, I incorporate these summaries, which reflect how a person of ordinary skill in the art would have understood the references, into my analysis below where discussing the disclosures and suggestions as appropriate.

35. One configuration that Olmi describes relates to carpooling transport. (*Id.*, 8.) The carpooling configuration matches prospective passengers with carpool drivers having compatible itineraries involving fixed journeys. (*Id.*) An itinerary is a data structure that specifies a travel plan (e.g., embarkation and disembarkation points, but can include multiple destination points, routing requirements, etc.). (*Id.*, 11-12, 32-35.)

36. Olmi explains that both carpool drivers with personal fixed itineraries and potential passengers are considered travellers, i.e., a person with a journey itinerary. (*Id.*, 11.) Travellers (both drivers and passengers) submit their predetermined personal itineraries to the central computer system by submitting a “journey request,” which is a data structure or a computer data format which includes a specification of a traveller or passenger itinerary,” as well as “other travel requirements relating to this itinerary.” (*Id.*, 12.) Prospective travellers define their predetermined personal itineraries by using a communicator device to send their journey requests to a central controlling computer system, which stores journey requests in a “journey requests database.” (*Id.*, 32.) Olmi also explains that “[m]athematically speaking, using the terminology of graph theory,” each traveller/passenger itinerary “can be encoded as a directed graph whose vertices are the embarkation and disembarkation points of the itinerary, and whose direct edges indicate the direction of travel.” (*Id.*, 11.)

37. Olmi explains that a vehicle can have a vehicle itinerary, which is a data structure that specifies the travel plan of the vehicle and comprises a “set of prescribed geographic points or addresses to which the vehicle must navigate in a prescribed order” and may include a “specification of the road route that will enable the vehicle to reach the said geographic points or addresses.” (*Id.* 11-12.) “Typically these geographic points [of the vehicle itinerary] will be traveller embarkation and destination points,” e.g., pick-up and drop-off points for passengers of the vehicle, as well as points corresponding to “additional stops en route.” (*Id.*, 12). Similar to traveller itineraries, each vehicle itinerary “can be encoded as a directed graph whose vertices are the said geographic points or addresses, and whose direct edges indicate the direction of travel between these geographic points or addresses.” (*Id.*)

38. For example, carpool drivers may have a “car pool intended itinerary specification,” which “include[s] details of the vehicle itinerary that the car pool driver intends to follow,” as well as “related information such as the number of available passenger seats in the car pool vehicle.” (*Id.*, 12.) A carpool driver may use a communicator device in their vehicle to “submit his car pool intended itinerary specification...to the controlling computer system.” (*Id.*, 35; *see also id.*, 15, 32, 40.) The vehicle itineraries are stored in a “transit vehicle current itineraries database,” which contains transit vehicle records for currently operational transit vehicles, i.e., “a vehicle that is currently conveying travellers, or a vehicle that is

currently empty but is ready to convey travellers.” (*Id.*, 34.) Carpool intended itinerary specifications are also “entered in the journey request database as a journey request record, with a relational link set up from this transit vehicle record to this journey request record...because [the carpool driver] is also a traveller, and his personal itinerary forms part of the itinerary commitments of his vehicle.” (*Id.*, 35.)\

39. Olmi also describes intelligent grouping processes that match vehicles/drivers having a predetermined vehicle journey with a traveller having a compatible journey itinerary and facilitating the transportation of the traveller along the vehicle’s journey route. (*Id.*, 15-20 (§§5.5-5.6), 21-27 (§5.7), 35-39.) For example, Olmi describes matching prospective travellers/passengers from the journey request database with available carpool drivers from the transit vehicle current itineraries database. (*Id.*, 35-39.) Olmi also describes other features/components, including a digitised street layout map, communicator devices, controlling computer, positions/navigation systems, and a data transmission system. (*Id.*, 12-15 (§§5.3-5.4).)

A. Overview of Peer (EX1006)

41. Based on my review, a person of ordinary skill in the art would have understood that Peer discloses a method for arranging, facilitating, and monitoring trips for travelers. (EX1006, Abstract.) Specifically, the invention monitors trips of people wishing to travel in vehicles of parties wishing to transport. (*Id.*) The method in Peer uses a central computer which communicates with both the party wishing to travel and the party wishing to transport. (*Id.*) The central computer uses the current positions of both parties, calculated by a localization system, and a trip destination from the traveler for determining at least one parameter relevant for the trip. (*Id.*)

42. Peer addresses the problem of providing a method for arranging and monitoring the trip of a traveler, enabling the use of private transportation to be more efficient and safe. (*Id.*, ¶[0005].) Peer solves this problem by determining and electronically transmitting the position of the traveler to a central computer, which processes the request and arranges the transportation. (*Id.*) Namely, the central computer uses location data that is obtained by electronic localization methods to track users, using either passive localization (e.g., satellite navigation systems such as GPS) or active localization (e.g., locating a traveler's transmitter within a cell site) techniques. (*Id.*, ¶[0007].) Peer also discloses processes performed by the central computer that occur after a prospective rider provides their ride request information

such as “the central computer determines which party wishing to transport who is traveling in [a commuter’s] direction is just then nearby” to the pick-up location associated with the rider’s request. (*Id.*, ¶[0010].)

43. Additionally, Peer discloses features that enhance the safety of the traveler. Peer discloses that “the safety of the traveler can be increased by tracking using an electronic localization system,” which may be incorporated in the ridesharing service system. (*Id.*, ¶[0033].) Peer also uses this method to determine whether or not an unusual event has occurred. (*Id.*) Peer discloses that “[t]he recording of the noteworthy event can be implemented in such a way that specific parameters of the trip are calculated, and a comparison is made in each case as to whether the value of these parameters match specific target values and/or whether these parameters correspond to specific criteria specified in advance, which indicate a noteworthy event.” (*Id.*, ¶[0034].) For example, “[t]he position of the monitored person” is a parameter that may be compared to “a specified trip route.” (*Id.*) Peer explains that the corresponding “noteworthy event” is “a deviation from the trip route,” which “can be monitored in that a check is made as to whether the position of the party wishing to transport and/or the person wishing to travel deviates from a previously input trip route.” (*Id.*, [0036].)

44. As I discuss further below (Section IX.A.), Peer discloses a method in which persons wishing to travel and persons wishing to transport can arrange and

monitor the trip using a central computer, consistent with the features found in the challenged claims.

B. Overview of Poykko426 (EX1011)

45. Based on my review, a person of ordinary skill in the art would have understood that Poykko426 discloses a method of implementing a shared transport system using mobile devices of riders and drivers. For example, Poykko426's "invention relates to ordering a transportation vehicle for a person and particularly, for improving reliability and early indication of approaching when ordering a transportation vehicle." (EX1011, 1:3-5.) Poykko426 provides "a method for arranging transportation for at least one person," where that potential rider "has a communication device that is capable of establishing a communication connection to a server, and said server is capable of establishing a communication connection to at least one driver of a transportation vehicle having a second communication device." (*Id.*, 2:12-16.) Poykko426 explains that both potential riders and drivers may connect to each other via the server by using their own mobile devices. (*Id.*, 4:28-5:11.) Poykko426 further describes a process for receiving a transportation request containing origination and destination information from a rider and using that information to match a rider with a potential driver. (*Id.*, 4:14-6:32.) Poykko426 additionally discloses that when a transportation request (containing origination and destination information) from the communication device of a

potential rider is received by the server, the server may send “an exact copy of the transportation request” to a communication device of a driver of a transportation vehicle. (EX1011, 5:29-6:21; *see also id.*, 2:16-21.)

C. Overview of Jeon (EX1007)

46. Based on my review, a person of ordinary skill in the art would have understood that Jeon discloses a method and system of implementing location-based safety features in a shared transport system. For example, Jeon discloses a “method and system for providing taxi safety services, which are designed to enable passengers to use taxis with enhanced safety and peace of mind.” (EX1007, Abstract.) Jeon explains that “[t]axi passengers and taxi companies apply for subscription and registration to the taxi safety service.” (*Id.*, 3.) Jeon describes that both the passenger and the taxi driver have a mobile terminal, each of which may be a mobile phone. (*Id.*, 3-4.) A passenger uses their mobile terminal to call for a safe taxi ride, while a driver uses their mobile terminal to share payment and safety information with the passenger terminal (e.g., a cost, a vehicle number, and driver’s name) and to communicate with the service center. (*Id.*, 3-4.) Jeon explains that the “service center (40) also tracks the current location of the taxi via the GPS (23) of the taxi terminal (20) so that, in the event of a loss such as taxi theft, the current position of the vehicle can be determined.” (*Id.*, 4.) Jeon also explains that the

service center can detect taxi theft via this tracking and can issue alerts (e.g., to the police) in response. (*Id.*)

47. Jeon additionally discloses that “[t]he passenger terminal (10) and the taxi terminal (20) are connected via a near-field communication network, such as infrared (IrDA) or Bluetooth.” (*Id.*, 3.) Jeon explains that “the taxi terminal (20) comprises a near-field communicator (21) installed at a predetermined position on the exterior of the taxi and configured to enable near-field communication with the passenger terminal (10).” (*Id.*, 3.) The service center then proceeds to “track[] the current location of the taxi” to perform the safety monitoring discussed above. (*Id.*, 4.)

48. As I discuss further below (Section IX.B), Jeon discloses a method and system for taxi safety services, enabling passengers to use taxis with enhanced safety and peace of mind, consistent with the features found in the challenged claims.

IX. THE PRIOR ART DISCLOSES ALL OF THE LIMITATIONS OF THE CHALLENGED CLAIMS

A. The Combination of Olmi, Peer, and Poykko⁴²⁶ Discloses or Suggests the Limitations of Claims 1, 2, 4-13, and 15-20

49. In my opinion, the combination of Olmi, Peer, and Poykko⁴²⁶ discloses and/or suggests all of the limitations of claims 1, 2, 4-13, and 15-20.⁹ Below, I address each limitation of the claims.

⁹ Olmi describes the invention as having two configurations—taxibus and carpooling—that may operate independently or concurrently, and discloses embodiments that integrate features of both. (EX1005, 8, 30.) A person of ordinary skill in the art would have understood that these configurations address substantially similar transportation problems using comparable hardware and communication architectures, and therefore any features described solely with respect to the taxibus configuration could readily be implemented in the carpooling configuration. (*Id.*, 66.) Therefore, even if any of the features that I rely on herein were assumed to arise solely from the taxibus configuration or from a separate embodiment, a person of ordinary skill in the art would have viewed their incorporation into the carpooling configuration as a routine design choice involving the application of known technologies using known techniques. (*Id.*, 5, 9, 11-14, 59, 66.) For example,

1. Claim 1

- i) [1.pre] “A computer-implemented method for managing anomalous conditions in a shared transport system, the method comprising”**

50. I have been asked to assume the preamble of claim 1 is limiting. Under that assumption, it is my opinion that Olmi in view of Peer discloses and/or suggests the preamble of claim 1.

51. Firstly, Olmi discloses “a shared transport system.”¹⁰ Olmi’s method/system, like the ’668 patent’s method/system, leverages existing features/concepts from public transport and individual transport applications to address transportation problems. (EX1005, 8-9 (§5.1).)¹¹ For example, Olmi teaches a transportation sharing process where a central computer system analyzes

Olmi’s discussion of integrating public transport stops, fixed embarkation points, and kiosk communicator devices further confirms that such features would predictably yield the same benefits when applied to carpooling. (*Id.*, 40, 70, 78.) For these reasons, a person of ordinary skill in the art would have had both good reason and a reasonable expectation of success in implementing any taxibus-specific features in Olmi’s carpooling configuration.

¹⁰ I have underlined claim language throughout my Declaration.

¹¹ Citations to EX1005 are to the underlying document page number(s).

“submitted itinerary requirements that it receives, and then intelligently groups travellers with compatible itineraries onto the same...transit vehicle” (*id.*, Abstract) to address problems with inefficient use of transportation services, among other problems, in existing transportation networks (*id.*, 2-7; e.g., 3 (“present invention is the breakthrough solution to transport problems and traffic congestion” by providing a “minimal impact system, which easily coexists with other forms of transport, and other traffic control schemes” while “maintaining people-mobility”), 4-7 (§§4.1-4.4)).

52. One configuration of the method/system that Olmi describes relates to “car pooling transport,” as explained below:

To achieve these objectives, this invention has two main configurations: electronic navigation taxibus transport, and **car pooling transport**. This invention can run either of these configurations separately, or can run them both at the same time.

(*Id.*, 8.) This configuration provides a very effective means of matching prospective passengers with car pool drivers having compatible itineraries.” (*Id.*, 9.)

53. Olmi explains that both carpool drivers with personal fixed itineraries and potential passengers are considered travellers, meaning a person with a journey itinerary. (*Id.*, 11.) For example, Olmi explains:

In this document the term traveller is used to denote a person journeying on their own itinerary, which **includes drivers journeying on their own itinerary**. The term passenger denotes any person journeying on their own itinerary, excluding drivers. The term driver covers both

drivers who are travellers (such as car pool drivers and drivers of the self-drive transit vehicle described in section 9.21, who are journeying on their own itinerary), as well as drivers who are not travellers (such as taxibus drivers, who have no itinerary of their own).

(*Id.*)

54. An “itinerary” is a “data structure or a computer data format” that specifies a “travel plan,” which may include, among other things, the embarkation and disembarkation points and routing requirements. (*Id.*, 11; *see also id.*, 12, 32-35.) Olmi also explains that a vehicle can have a “vehicle itinerary,” which is a data structure that specifies the travel plan of the vehicle and comprises a “set of prescribed geographic points or addresses to which the vehicle must navigate in a prescribed order” and may include a “specification of the road route that will enable the vehicle to reach the said geographic points or addresses.” (*Id.*, 11-12.)

55. As I discussed for limitation [1.a], a passenger submits a “journey request” to the central computer system, which defines the passenger’s predetermined personal itineraries. (*Id.*, 12, 15, 18, 32; *see also* my discussion for limitation [1.a].) As I also discuss for limitation [1.b], a carpool driver also submits their intended personal itinerary, which forms part of the itinerary commitments of the driver’s vehicle, and so Olmi’s central computer system stores a relational link between these itineraries. (EX1005, 35; *see also* my analysis below in Section IX.A.1.ii.)

56. Olmi also describes “intelligent grouping” processes that match vehicles/drivers having a predetermined vehicle journey with a passenger having a compatible journey itinerary and facilitating the transportation of the passenger along the vehicle’s journey route. (EX1005, 15-20 (§§5.5-5.6), 21-27 (§5.7), 35-39.)

57. Referring to Figure 4 below, Olmi uses a “central controlling computer system 15 [that] has, by means of the data transmission system 16, a two-way communications connection with the communicator devices 17 and 18 of the prospective travellers 19, and a two-way communications connection with the communicator devices 20 of the transit vehicles 21.” (EX1005, 29.)

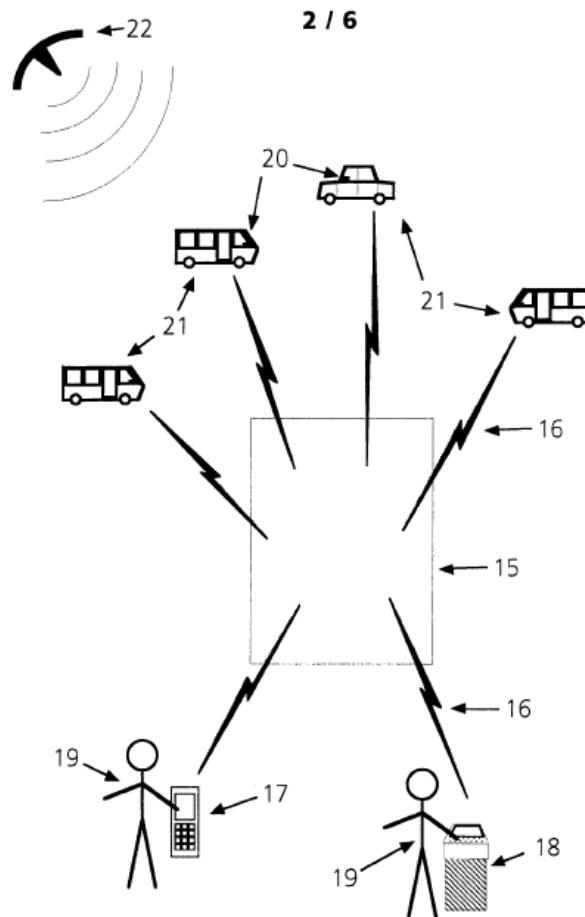


Figure 4

(*Id.*, FIG. 4.) The “single central controlling computer system 15 orchestrates all transit vehicles 21 and travellers 19.” (*Id.*, 31.) Olmi explains that each passenger and driver has a “communicator device” that allows them to “interact[] with this transportation invention...to send and/or receive data over the data transmission system (typically to the controlling computer system).” (*Id.*, 14.) “Examples of communicator devices include the telephone, the cellular telephone, the wireless

PDA (Personal Digital Assistant), and an Internet-connected personal computer.”
(*Id.*, 14.)

58. Olmi’s central controlling computer system is itself a “data-processing system” that may “compris[e] one or more mainframe computer data-processing installations, or compris[e] a set of distributed...computer processors.” (*Id.*, 13.) “A data transmission system 16 comprising land lines, cellular telephone networks, and Internet transmission is used to provide a two-way data exchange between this centralized controlling computer system 15 and the communicator devices 17 and 20 (of the travellers 19 and transit vehicles 21 respectively).” (*Id.*, 31.) “[T]he data transmitted over the data transmission system 16 will consist of such information as journey requests detailing the itinerary requirements of travellers, the controlling computer system’s responses to these journey requests sent back to travellers, and other categories of information.” (*Id.*, 30.) Olmi explains that its transportation sharing features (e.g., for matching drivers and passengers) may be enabled by using an “electronic positioning system...such as the American GPS (Global Positioning System), the broadcast positioning signal of which is received by GPS receivers contained in the vehicle communicator devices (and optionally in passenger communicator devices).” (*Id.*, 31.) Olmi explains that this system in Figure 4 is

“capable of running the invention’s two main transport modes,” including the carpooling mode. (*Id.*)

59. In addition to enabling carpool transport via the central computer system and data transmission system described above, Olmi explains that “the invention can also work with existing public transport such as buses, trains or trams, if they are fitted with communicator devices and computer processors.” (EX1005., 70). “When a prospective passenger broadcasts his journey request (over the data transmission system), fixed-route transport vehicles in the vicinity of the passenger will receive his broadcast journey request, and their computer processors will calculate whether the passenger’s journey request is compatible with the itinerary of the transport vehicle.” (*Id.*) Thus, rather than match with a carpool driver with a fixed personal itinerary, a passenger may alternatively match with a public transport vehicle driver operating a fixed route vehicle itinerary. (*Id.*)

60. Accordingly, it is my opinion that Olmi discloses a method of sharing transportation (e.g., by carpooling or existing public transport), where a central computer system (“shared transport system”) communicates with devices respectively associated with a passenger and driver (in a transit vehicle) to arrange rides between passengers and drivers.

61. As I discuss above, I was asked to apply Petitioners’ proposed construction of “shared transport system.” (See my discussion above in Section VII.)

For the reasons I discuss above and below, in my opinion, Olmi's method/system discloses this term under Petitioners' proposed construction. (*See* also my discussion for limitation [1.b] relating to Petitioners' proposed construction of "transport provider"). Olmi discloses these claim elements by arranging rides between passengers and drivers (e.g., by carpooling or existing public transport for individuals) using mobile communicator devices and a central computer and communication systems.¹² For example, for the reasons explained above and those summarized below, Olmi discloses:

¹² I have been informed that in district court, Patent Owner disagrees with Petitioners' proposed construction of the claimed "shared transport system" that I was asked to consider. I was also asked to consider Olmi (and further as modified in view of Peer as I discuss below) under the assumption that Petitioners' proposed construction is not applied to the claim term. Under that assumption, my opinions do not change as Olmi, including as modified herein, still discloses a "shared transport system" under any reasonable construction of the term, consistent with the language of the claims of the '668 patent, its specification, and from my review of the prosecution history for the '668 patent, for the same reasons that I explain herein. Meaning, the Olmi system and method (including as modified in light of Peer) still

“shared transport system”

“A server system”: For example, Olmi discloses a “single central controlling computer system” (which may be distributed processors) connected via a data transmission system. (EX1005, 13, 29-31.)

“that matches transport users with transport providers”: For example, Olmi’s controlling computer system “scans”/processes journey requests and selects transit vehicles/drivers to convey travelers. (*Id.*, Abstract, 15-18, 35-38; *see also* my discussion for element [1.b].)

“traveling an existing route”: in Olmi’s carpool configuration, drivers submit their intended itinerary/vehicle itinerary, and (alternatively) fixed-route public transport vehicles have fixed vehicle itineraries. (EX1005, 8, 11-12, 35, 70 (describing “fixed-route transport vehicles” and confirming a “passenger’s journey request is compatible with the itinerary of the transport vehicle”).)

discloses the claimed “shared transport system” in a manner consistent with and in context of the ’668 patent. (*See also* my analysis below in Section IX.A.1.iii (my discussion of Petitioners’ proposed construction of “transport provider” that I was asked to consider).)

“shared transport system”

“defined before demand for transport”: Olmi discloses that the driver/vehicle itinerary information is submitted/stored in the system databases prior to matching and dispatch for a particular passenger request. (*Id.*, 32-36, 70.)

“independently of a transport user’s door-to-door trip”: In Olmi, the provider vehicle itinerary exists as provider-submitted itinerary commitments (or fixed vehicle itinerary) and is evaluated for compatibility with passenger requests rather than being created solely from the passenger’s request. (*Id.*, 11-12, 35-36, 70.)

62. Secondly, Olmi discloses a “method for managing anomalous conditions.” This includes Olmi’s disclosure of a method for managing security incidents/conditions, such as deviations from the intended route. Olmi discloses means of increasing security by which “the controlling computer system could monitor car pool journeys in real time as they progress to their destinations.” (EX1005, 83.) “Any inexplicable deviation from the intended passenger destination will flag an alert to a human operator at the control centre,” and “[t]he operator might then phone the driver or passenger to find out why there was a deviation from the intended route, and could contact the police if any suspicious circumstances were

encountered.” (*Id.*) Olmi discloses that to determine deviations from the intended route, “the location of the passenger and driver will be known through the incoming electronic positioning data.” (*Id.*)

63. While Olmi discloses that the central computer system (“shared transport system”) monitors and flags unintended route deviations, it is my opinion that Olmi does not explicitly disclose that the entire process for managing (e.g., addressing) these alerts is computer-implemented. Indeed, as I discussed above, a human operator is responsible for confirming whether an unintended route deviation involves suspicious circumstances and whether police should be contacted. (EX1005, 83.) However, while Olmi does not explicitly disclose a “computer-implemented method for managing anomalous conditions in a shared transport system,” it is my opinion that a person of ordinary skill in the art would have been motivated to implement, and would have had a reasonable expectation of success in implementing, such a feature in a system/method like that described in Olmi in view of Peer.

64. Like Olmi, Peer relates to a method of arranging and monitoring rides between potential passengers and drivers using a central computer system. Peer discloses “a method...using a computer which communicates with the person

wishing to travel and/or the party wishing to transport.” (EX1006, Abstract.)¹³ The “method according to the invention can be used to arrange, initiate, implement, and/or settle a rideshare.” (*Id.*, ¶[0010].) In particular, Peer explains that rides (e.g., transportation of a rider by a vehicle/driver) in the rideshare system are arranged, initiated, and implemented using a central computer (“shared transport system”) that communicates with devices respectively associated with a rider and a vehicle/driver/transportation provider. and performs processes including receiving location information for the rider and transport provider and using the location information to arrange and monitor a trip. (*Id.*, Abstract, ¶[0007] (“the current position of the party wishing to transport and/or of the person wishing to travel, is determined electronically and transmitted to a **computer, which further processes the corresponding data and uses them** for arranging or monitoring a trip of a person wishing to travel with a party wishing to transport, factoring in the respective trip destinations”), [0018] (“The calculation of the trip route preferably occurs in a computer separate from a traveler’s navigation system or the localization system, particularly in a **central and stationary computer, which then transmits the corresponding trip route to the navigation system of** a person wishing to travel and/or a **party wishing to transport.**”), [0020], [0023], [0041], [0048] (referring to

¹³ Citations to EX1006 are to the certified translation of Peer.

“the ride-sharing agency’s computer,” which is a “shared transport system” that includes or operates in connection with the central computer).)

65. Peer also discloses that the central computer (or ridesharing center) (“shared transport system”) uses location data that is obtained by electronic localization methods to track users using either passive localization (e.g., satellite navigation systems such as GPS) or active localization (e.g., locating a traveler’s transmitter within a cell site). (*Id.*, ¶¶[0007] (“**the current position of the party wishing to transport and/or of the person wishing to travel, is determined electronically and transmitted to a computer**, which further processes the corresponding data and uses them for arranging or monitoring a trip of a person wishing to travel with a party wishing to transport, factoring in the respective trip destinations”), [0008] (“Both satellite navigation methods and terrestrial methods can be used for **electronic localization**. In principle, two methods are primarily possible. The first method is **passive localization**, such as is used in satellite navigation systems such as GPS. In this method, a traveler’s receiver determines the traveler’s position based on the signals from satellites....As an alternative, **active localization** can occur in that a traveler’s transmitter is localized. In this method, mobile telephones, which are already very widespread by now, are particularly attractive as transmitters. It is relatively simple to localize a mobile telephone within a mobile network cell.”).) For both localization techniques, Peer discloses that both

the prospective rider and transport provider have a mobile transmitter device that tracks location. For example, a prospective rider may carry a mobile phone or other mobile device and a transport provider may use a mobile device that either contains a satellite navigation system itself or is coupled to the satellite navigation system of the transport provider's vehicle. (EX1006, ¶¶[0008] (“The first method is passive localization....In this method, a **traveler's receiver** determines the traveler's position based on the signals from satellites. **Satellite navigation systems are increasingly present in motor vehicles and are also increasingly used by individual travelers....**As an alternative, active localization can occur in that a **traveler's transmitter** is localized. In this method, **mobile telephones**, which are already very widespread by now, **are particularly attractive as transmitters.**”), [0009] (“The result of the position determination is then forwarded to a central computer....**A satellite navigation system within the motor vehicles can, for example, be coupled to a transmitter, e.g., a mobile telephone, which transmits corresponding data or is itself already designed as a mobile telephone.** Likewise, there are already mobile telephones today having an implemented satellite navigation system. **In case of active localization, the localization will generally occur via a central office, e.g., at a provider of a mobile network system, wh[ich] then forwards the corresponding data to the central computer,** with the consent of the mobile telephone subscriber, of course.”), [0043].)

66. Thus, Peer is similar to Olmi, which as I discussed above, also discloses a transportation system for arranging rides between drivers and passengers by implementing a central computer system that enables communication between mobile devices of a rider and driver, and accompanying localization techniques for monitoring rides using the location of the rider/driver mobile transmitter devices. In my opinion, a person of ordinary skill in the art would have therefore had good reason to consider the teachings of Peer when implementing the Olmi system/method.

67. Peer discloses a “computer-implemented method for managing anomalous conditions in a shared transport system.” Peer’s central computer monitors the rider and transport provider to detect and respond to unusual or noteworthy events (“managing anomalous conditions in a shared transport system”). For example, the “central computer monitors the position of the party wishing to transport and/or the person wishing to travel and records when a noteworthy event occurs that indicates that the trip is not going according to the wishes of the party wishing to transport and/or the person wishing to travel.” (EX1006, ¶[0033].) For example, these unusual/unplanned noteworthy events (“anomalous conditions”) may include a “deviation from the trip route” (*id.*, ¶[0036]) or “the position or operation of the transmitter chang[ing] in an unusual way” (*id.*, ¶[0037]). Peer discloses the central computer system managing these unusual/noteworthy events

(“managing anomalous conditions”) by “recording of the noteworthy event” (*id.*, ¶[0034]) and subsequently “contact[ing]...the passenger or the driver” to determine “whether or not a dangerous situation exists” (*id.*, ¶[0048]).

68. Peer discloses that the recording of a noteworthy event (“anomalous condition”) is part of a “computer-implemented method.” The central computer determines whether to record a noteworthy event by calculating “specific parameters of the trip” and “compar[ing]...in each case whether the value of these parameters match specific target values and/or whether these parameters correspond to specific criteria specified in advance, which indicate a noteworthy event.” (EX1006, ¶[0034].) For example, parameters may include “[t]he position of the monitored person, where the corresponding target value may result from, e.g., a specified trip route,” “[t]he speed at which the monitored person is moving, where a target range may be a speed, for instance, which matches that of a vehicle,” or “[t]he status of a transmitter that is used to localize the traveler.” (*Id.*) In other words, the central computer uses location data that is obtained by electronic localization methods to track users and determine whether a noteworthy event (“anomalous condition”) has occurred, and thus the recording of the anomalous condition is computer-implemented.

69. Peer also discloses that the process by which the central computer contacts a passenger or driver to determine whether or not a dangerous situation

exists is also computer-implemented. Peer explains that if a noteworthy event is recorded, the ride-sharing agency's central computer then "make[s] contact with the passenger or the driver...possibly by a message on the pager or using an obvious step such as a checkup call via a mobile telephone." (*Id.*, ¶[0048].) The passenger/driver can use "prearranged passwords or prearranged messages" to respond, e.g., by "repl[ying] to an inquiry or to the password request with a sentence or a word that was agreed upon in advance as a signal for a dangerous situation." (*Id.*) Peer discloses that this communication between the central computer and a passenger/driver, even when performed by mobile telephone, is computer-implemented, because the central computer is equipped to process both speech (using speech recognition) and emails/text messages. (*Id.*, ¶[0041].) For example, if "information is transmitted to a central computer by said person orally using a mobile telephone," the central "computer has a speech recognition system that converts the data corresponding to acoustic signals received via the telephone connection into corresponding text data or other data that can be directly processed by the computer." (*Id.*)

70. Accordingly, it is my opinion that Peer discloses "[a] computer-implemented method for managing anomalous conditions in a shared transport system."

71. In my opinion, the above-discussed teachings of unusual/noteworthy events meet Patent Owner’s proposed construction of “anomalous condition,” which I was asked to consider. (*See* Section VII.)

<u>“anomalous condition”</u>
<p>“when a ride results in a journey which is terminated before...the established destination point”: As I discuss below for claim 5, Peer discloses determining an anomalous condition has occurred by determining the transport journey has prematurely terminated before reaching the intended destination. (<i>See</i> my analysis below in Section IX.A.4.)</p> <p>“when a ride results in a journey which is terminated...at a different point than the established destination point”: As I discuss below for claim 8, Peer discloses determining an anomalous condition has occurred by determining the trip has terminated at a location different from the intended destination. (<i>See</i> my analysis below in Section IX.A.7.)</p>

72. Thus, in my opinion, Peer discloses that an anomalous condition may occur “when a ride results in a journey which is terminated before or at a different

point than the established destination point,” as required by Patent Owner’s proposed construction.¹⁴

73. In my opinion, a person of ordinary skill in the art would have good reason, and would have been motivated, to include features similar to those disclosed by Peer when implementing the Olmi system/method in order to provide a method for managing anomalous conditions that allows for more robust monitoring and reduced need for human operators. As I discussed above, Olmi discloses a method

¹⁴ I have been informed that Petitioners disagree with Patent Owner’s proposed construction of “anomalous condition” in district court. I was also asked to consider Peer (including as incorporated in the Olmi-Peer combination) under the assumption that Patent Owner’s proposed construction is not applied to the claim term. Under that assumption, my opinions do not change as Peer, including as incorporated in the Olmi-Peer system/method, still discloses an “anomalous condition” under any reasonable construction of the term, consistent with the language of the claims of the ’668 patent, its specification, and from my review of the prosecution history for the ’668 patent, for the same reasons that I explain herein. Meaning, the Peer system and method (including as incorporated in the Olmi-Peer system/method) still discloses the claimed “anomalous condition” in a manner consistent with and in context of the ’668 patent. (*See also* my analysis above in Section IX.A.1.)

for monitoring trip progress and any inexplicable deviations, but discloses intervention from a human operator in order to determine whether anomalous conditions need police intervention. (EX1005, 83.) A person of ordinary skill in the art would have therefore found it beneficial to incorporate Peer's anomalous condition monitoring method, which a person of ordinary skill in the art would have understood would have reduced the need for human assistance, as I discussed above. A person of ordinary skill in the art would have also understood that Peer provides a more robust monitoring system that can detect more types of anomalous conditions, including those based on assessments of mobile device transmitter position, speed, and status, as I discussed above, and would have found it beneficial to include such a monitoring system in the Olmi system/method in order to improve security.

74. A person of ordinary skill in the art would have had a reasonable expectation of success in implementing such features based on the teachings of Olmi and Peer. As I discussed above, both references are in the same field of art. Moreover, as I discussed above, Olmi discloses security methods of monitoring trips to determine if unusual deviations from the trip route have occurred (EX1005, 83), and thus a person of ordinary skill in the art would have understood that implementing the Olmi-Peer combined features would have involved modifying the Olmi system/method in a manner that Olmi suggests is feasible. A person of

ordinary skill in the art would have had the skills to implement and a reasonable expectation of success in achieving such a modification, because it would have involved a combination of known technologies (e.g., known shared transport systems in which locations of rider/driver mobile devices are tracked throughout a journey (Olmi)) according to known techniques (e.g., known computer-implemented methods of managing anomalous conditions in shared transport systems by monitoring locations of rider/driver mobile devices throughout a journey (Peer)) to yield the predictable result of Olmi's system/method being configured to incorporate a computer-implemented method for managing anomalous conditions in a shared transport system, consistent with features contemplated by Olmi and Peer, as I explained above.

- ii) **[1.a] “receiving, by the shared transport system, a transport request from a transport user device of a transport user, the transport request including a pick-up location and a destination;”**

75. In my opinion, the Olmi-Peer combination discloses and/or suggests this limitation. Olmi discloses that the controlling computer system receives (“receiving, by the shared transport system”) a journey request (“a transport request”) from a potential passenger's mobile communicator device (“from a transport user device of a transport user”). (EX1005, 15 (“This invention provides a traveller transportation system operating on the roads in which **travellers use**

communicator devices to send their journey requests, and any car pool vehicle drivers use communicator devices to send their car pool intended itinerary specifications, **to a controlling computer system....**”), 18 (“Preferably this invention will rapidly process incoming journey requests, so that **when a prospective traveller submits a journey request on his communicator device, the controlling computer system will marshal a fast response** that has a transit vehicle arrive to collect the traveller and convey him along his specified itinerary typically within minutes....”), 32 (“[A] **prospective traveller 19 uses a communicator device 17 to formulate and send his journey request to a central controlling computer system 15** via the data transmission system 16....”).) Olmi explains that a “journey request is defined as a data structure or a computer data format which includes a specification of a traveller or passenger itinerary.” (*Id.*, 12.)

76. As shown in Figure 8 below, the journey request includes data fields such as the “itinerary of the traveller,” which “include[s] the current location or desired pick-up point for the traveller” and the destination point (“the transport request including a pick-up location and a destination”). (*Id.*, 32; *see also id.*, 12 (“[M]any traveller itineraries are specified by just two items of data: the traveller’s embarkation point and the traveller’s destination point.”), 16 (“Preferably this invention will operate with traveller itineraries that fall into the category of simple two-point itineraries which comprise the traveller’s embarkation point and

destination point.”), 29 (“Figure 8 shows part of the sequence of user-interface events on the text display screen of a communicator device when a passenger submits a journey request to the controlling computer system....”), 43 (“For passengers using communicator devices that have built-in electronic positioning functionality, the controlling computer system can automatically determine their current location address. However passengers using communicator devices that do not have built-in electronic positioning functionality must manually specify their current location address.”).) Olmi explains that “preferably this invention will operate using pre-defined passenger pick-up (and optionally set down) points, each with a unique pick-up point reference code, in order to eliminate passenger pick-up point ambiguity.” (*Id.*, 17.)

<u>Traveller Journey Request</u>
From: 263 Kensington High Street
To: 116 Upper Street N1 1AE
Transit Vehicle: Taxibus or Car Pool
Passengers: 1
Departure Time: Immediate
Prioritise: Speed of Response

(*Id.*, FIG. 8 (excerpted and annotated).)

77. Thus, in my opinion, Olmi discloses “receiving, by the shared transport system, a transport request from a transport user device of a transport user, the transport request including a pick-up location and a destination.”

78. I have been asked to apply Petitioners’ proposed construction of “pick-up location,” as I discuss above in Section VII. In my opinion, Olmi discloses that a predefined passenger pick-up point included in a passenger’s journey request is a “pick-up location” under Petitioners’ proposed construction. (See my discussion above in Section VII.)

“pick-up location”

“A node”: As I discussed above, a passenger’s journey request includes the passenger’s itinerary, which includes the desired pick-up point of the passenger. (EX1005, 32.) Olmi discloses that “using the terminology of graph theory, most traveller or passenger itineraries can be encoded as a directed graph whose vertices are the embarkation and disembarkation points of the itinerary, and whose directed edges indicate the direction of travel.” (*Id.*, 11.) A person of ordinary skill in the art would have understood that each of these vertices, including the pick-up point, is a “node” along a route.

“pick-up location”

“along an existing route defined before demand for transport and independently of a transport user’s door-to-door trip”: Additionally, this pick-up/embarkation point may be along a carpool or public transport driver’s predetermined/fixed route. For example, Olmi explains that “travellers [passengers or carpool drivers] that have identical pick-up or drop-off points” can be “plac[ed]...on the same transit vehicle.” (*Id.*, 74.) Thus, in the carpool context, a potential passenger’s pick-up point may be a node along a predetermined route of a carpool driver. Similarly, in the public transport context, Olmi explains that a passenger’s pick-up point may be an “embarkation point such as a bus stop” along the public transport fixed route. (*Id.*, 70.) As I have described above for limitation [1.pre], each of these predetermined/fixed routes is “an existing route defined before demand for transport and independently of a transport user’s door-to-door trip.” (*See* my analysis above in Section IX.A.1.i.)

79. Accordingly, it is my opinion that Olmi discloses that a passenger’s pick-up point may be “[a] node along an existing route defined before demand for

transport and independently of a transport user's door-to-door trip.”¹⁵ Thus, for similar reasons (and those discussed above for this claim), the Olmi-Peer combination also discloses or suggests this limitation.

iii) [1.b] “transmitting, by the shared transport system, the transport request to a transport provider device of a transport provider;”

80. It is my opinion that Olmi in view of Peer and Poykko426 discloses and/or suggests this limitation.

¹⁵ I have been informed that in district court, Patent Owner disagrees with Petitioners' proposed construction of the claimed “pick-up location” that I was asked to consider. I was also asked to consider Olmi (and further as modified in view of Peer as I discuss above) under the assumption that Petitioners' proposed construction is not applied to the claim term. Under that assumption, my opinions do not change as Olmi, including as modified herein, still discloses a “pick-up location” under any reasonable construction of the term, consistent with the language of the claims of the '668 patent, its specification, and from my review of the prosecution history for the '668 patent, for the same reasons that I explain herein. Meaning, the Olmi system and method (including as modified in light of Peer) still discloses the claimed “pick-up location” in a manner consistent with and in context of the '668 patent. (*See also* my analysis above in Section IX.A.1.)

81. As I discussed above for limitation [1.a], a potential passenger uses their mobile communicator device to submit a journey request (“transport request”) to the controlling computer system, where the journey request is a data structure that indicates the pick-up location and destination of the passenger. (See my analysis above in Section IX.A.1.ii.) “The data in each such incoming journey request is stored as a journey request record in the journey requests database” of the controlling computer system. (EX1005, 32.) “In addition to the journey requests database, the controlling computer system also maintains a transit vehicle current itineraries database.” (*Id.*, 34.) This database “contains a data record, which we shall call the transit vehicle record, for each currently operational transit vehicle,” i.e., “a vehicle that is currently conveying travellers, or a vehicle that is currently empty but is ready to convey travellers.” (*Id.*) “The format of the transit vehicle record includes” data fields such as “[t]he current geographic position of the transit vehicle” and “[t]he current vehicle itinerary of the transit vehicle.” (*Id.*) “When a driver of a car pool vehicle wants to make himself available for car pooling, he will use the communicator device in his vehicle to submit his car pool intended itinerary specification, via the data transmission system 16, to the controlling computer system 15, and these details are stored in the transit vehicle current itineraries database” and also “entered in the journey request database as a journey request record, with a relational link set up from this transit vehicle record to this journey

request record...because [the carpool driver] is also a traveller, and his personal itinerary forms part of the itinerary commitments of his vehicle.” (*Id.*, 35; *see also id.*, 15 (“[A]ny **car pool vehicle drivers use communicator devices to send their car pool intended itinerary specifications, to a controlling computer system** wherein: an intelligent grouping module intelligently groups the said travellers into transit vehicles...”), 32 (“[T]ravellers who are **car pool vehicle drivers will use a communicator device to submit their car pool intended itinerary specification to the controlling computer system....**”).) This “vehicle itinerary will comprise a set of prescribed geographic points or addresses to which the vehicle must navigate in a prescribed order.” (*Id.*, 11-12; *see also id.*, 16.)

82. Olmi discloses that the controlling computer system includes an “intelligent grouping module,” which is a data-processing module used to intelligently group passengers with drivers in transit vehicles. (EX1005, 13-14.) Olmi describes a process by which the intelligent grouping module groups passengers with drivers using criteria such as the “transit vehicle [being] within the vicinity of the traveller’s current location or embarkation pick-up point as specified in the journey request record,” the “transit vehicle [having] a sufficient quantity of available passenger places for the number of travellers specified in his journey request,” and the “transit vehicle is of the type specified in this journey request,” among other criteria. (*Id.*, 35-36; *see also id.*, 43 (“[T]he intelligent grouping

module will begin searching the transit vehicle current itineraries database for a suitable car pool vehicle, seeking one that is close to the passenger (a few minutes drive away), and with itinerary commitments that can easily accommodate the passenger's desired destination (that is to say, with itinerary commitments that are compatible with the passenger's itinerary), 70 ("When a prospective passenger broadcasts his journey request (over the data transmission system), fixed-route transport vehicles in the vicinity of the passenger will receive his broadcast journey request, and their computer processors will calculate whether the passenger's journey request is compatible with the itinerary of the transport vehicle.").

83. When one or more suitable transit vehicles are identified, the central computer system sends details of the transit vehicle(s) to the passenger's communicator device. (*Id.*, 37-38 ("When the intelligent grouping module has selected a suitable transit vehicle into which the traveller 19 can be intelligently grouped according to his journey request, **details of this transit vehicle are sent to the traveller's communicator device 17.**"), 43 ("As soon as a suitable car pool vehicle is found, the controlling computer system provides details to the passenger....Should the controlling computer system find more than one suitable car pool option, **a list of the suitable vehicles will be detailed on the passenger's communicator device.**")). "The passenger then simply selects any vehicle from the list in order to proceed with the car pool trip." (*Id.*, 43.) "As soon as the passenger

selects a car pool vehicle from the list, the controlling computer system will send a message to that vehicle's communicator device, requesting the driver to convey this passenger.” (*Id.*) Upon receiving the passenger's selection, the controlling computer system identifies the selected vehicle's in-vehicle communicator device (“the transport provider device”) and transmits the request to that device. (EX1005, 43; *see also id.*, 37-38.) Once the central computer system has determined which suitable vehicle and corresponding driver has been selected and sent the message to the driver's in-vehicle communicator device, “[t]he driver can accept this journey by pressing the appropriate key or button on his communicator device.” (*Id.*, 43.)

84. I have been asked to apply Petitioners' proposed construction of “transport provider,” as I explain in Section VII. It is my opinion that Olmi discloses that the driver is a “transport provider” under Petitioners' proposed construction.¹⁶ (*See* Section VII.)

¹⁶ I understand that in district court, Patent Owner disagrees with Petitioners' proposed construction of the claimed “transport provider.” I was also asked to consider Olmi (and further as modified in view of Peer and Poykko⁴²⁶ as discussed herein) under the assumption that Petitioners' proposed construction is not applied to the claim term. Under that assumption, my opinions do not change as Olmi,

“transport provider”

“A driver offering transport along an existing route defined before demand for transport and independently of a transport user’s door-to-door trip”:

As I discussed above for limitation [1.pre], a potential driver (“[a] driver”) offers transport along a predetermined route (“offering transport along an existing route”) that a driver has submitted to the central computer system before being matched with a potential passenger (“defined before demand for transport”) and independently of any potential passenger’s submitted journey itinerary (“independently of a transport user’s door-to-door trip”). (*See* my discussion above in Section IX.A.1.i; *see also* EX1005, 8, 11-12, 32-36, 70.)

including as modified herein, still discloses a “transport provider” under any reasonable construction of the term, consistent with the language of the claims of the ’668 patent, its specification, and from my review of the prosecution history for the ’668 patent, for the same reasons that I explain herein. Meaning, the Olmi system and method (including as modified in light of Peer and Poykko426) still discloses the claimed “transport provider” in a manner consistent with and in context of the ’668 patent. (*See also* my analysis above in Section IX.A.1.)

85. In my opinion, Olmi also suggests transmitting, by the shared transport system (e.g., computer/ridesharing system that provides ride opportunities associated with travel requests of potential riders), the received transport request to a transport provider device of a transport provider (e.g., mobile device for vehicle/driver providing transportation) (“transmitting, by the shared transport system, the transport request to a transport provider device of a transport provider”). But Olmi does not expressly state that the exact same transport request received in limitation [1.a] is transmitted to the transport provider device recited in this limitation. However, it is my opinion that a person of ordinary skill in the art would have had reason to configure the Olmi-Peer combined system/method (discussed above) to do so in view of Poykko426, and would have been able to do so with a reasonable expectation of success.

86. Like Olmi and Peer, Poykko426 relates to a method of implementing a shared transport system using mobile devices of riders and drivers. For example, Poykko426’s “invention relates to ordering a transportation vehicle for a person and particularly, for improving reliability and early indication of approaching when ordering a transportation vehicle.” (EX1011, 1:3-5.) Poykko426 provides “a method for arranging transportation for at least one person,” where that potential rider “has a communication device that is capable of establishing a communication connection to a server, and said server is capable of establishing a communication

connection to at least one driver of a transportation vehicle having a second communication device.” (*Id.*, 2:12-16.) Poykko426 explains that both potential riders and drivers may connect to each other via the server by using their own mobile devices. (*Id.*, 4:28-5:11.) Poykko426 further describes a process for receiving a transportation request containing origination and destination information from a rider and using that information to match a rider with a potential driver. (*Id.*, 4:14-6:32.) Thus, Poykko426 is similar to Olmi and Peer, both of which disclose rideshare systems for arranging rides using a rider’s and transport provider’s mobile devices and a central computer. (*See* my analysis above in Section IX.A.1.i.) In my opinion, a person of ordinary skill in the art would have therefore had good reason to consider the teachings of Poykko426 when implementing Olmi’s shared transport system/method (including as modified by Peer).

87. Poykko426 additionally discloses that when a transportation request (containing origination and destination information) from the communication device of a potential rider is received by the server, the server may send “an exact copy of the transportation request” to a communication device of a driver of a transportation vehicle. (EX1011, 5:29-6:21 (“The customer orders transportation, e.g. a taxi at step 301....**The customer makes his request** (501 in figure 5) using a suitable method as illustrated previously with reference to figure 1. **At this stage the customer tells the reservation system the pick-up and drop-off locations.** At step 302 the server

receives the request and then...responds to the customer at step 305 with the exact price for the ride and optionally further with estimates of travel time and distance (502 in figure 5)....At step 306 **the server waits for confirmation message from the customer....If the server receives the confirmation e.g. within a predetermined time limit, it delivers a ride request to at least one driver of a transportation vehicle (504 and 505 in figure 5), such as a taxi (step 307). Said ride request may be an exact copy of the transportation request made by the customer at step 301....**"); *see also id.*, 2:16-21 ("The method comprises at the server: **receiving a transportation request from said person, said transportation request comprising an origination and a destination of a transportation, and sending said transportation request to a communication device of a driver of a transportation vehicle.**".))

88. Similar to that disclosed by Poykko426, a person of ordinary skill in the art would have had good reason, and would have been motivated, to implement a shared transport system/method like that described in Olmi such that the system's central computer forwards the same ride request/ride opportunity received from the potential rider to a potential driver. Olmi's system/process is designed so that a transportation provider has the opportunity to view/consider potential ride options and agree to providing transportation to a requesting rider. (EX1005, 43-44 ("As soon as the passenger selects a car pool vehicle from the list, the controlling

computer system will send a message to that vehicle's communicator device, requesting the driver to convey this passenger. The driver can accept this journey by pressing the appropriate key or button on his communicator device. If he does not respond to the request within a short time, the controlling computer system assumes that the driver has declined the request, and the passenger will be so informed via his communicator device.”), 69 (“[I]n car pooling, the vehicle driver must be given the option to accept or decline any journey request.”).) A person of ordinary skill in the art would have understood that these features allow the travel provider to easily view specific ride requests for approval, allowing the travel provider the option to decline a ride when the situation changes for that provider (e.g., plans change, undesirable options for the particular provider, etc.).

89. A person of ordinary skill in the art would have understood that having the central computer/ridesharing system transmit the same transport request (with the exact pick-up and destination location information for the potential rider) to the transport provider's device would have facilitated the travel provider's decision by allowing the provider to accurately assess the desired travel. Such an approach would have provided a straightforward implementation for sharing ride opportunities with the travel provider, given the rider's request already includes the information needed by the transport provider to facilitate ridesharing, and sending the exact request to the provider would have reduced processing requirements. A

person of ordinary skill in the art would have understood that such an implementation would have maximized efficiency and ensured reliable service, consistent with Olmi's and Poykko426's shared goals. (EX1006, ¶¶[0002], [0005], [0038]; EX1011, 1:3-5.)

90. A person of ordinary skill in the art would have had a reasonable expectation of success in implementing such features based on the teachings of Olmi and Poykko426. As I discussed, both references are in the same field of art. Moreover, as I discussed above, Olmi suggests that the server may transmit the same transport request received from a rider to a potential driver (EX1006, ¶¶[0018]-[0022]), and thus a person of ordinary skill in the art would have understood that implementing the Olmi-Poykko426 combined features (as incorporated in the Olmi-Peer-Poykko426 combination) would have involved modifying the Olmi system/method in a manner that Olmi suggests is feasible. A person of ordinary skill in the art would have had the skills to implement and a reasonable expectation of success in achieving such a modification, because it would have involved a combination of known technologies (e.g., known shared transport systems in which riders' requested rideshare options are shared with potential drivers (Olmi)) according to known techniques (e.g., known methods of sharing rideshare options with potential drivers by forwarding the exact requests received from riders (Poykko426)) to yield the predictable result of Olmi's system/method being

configured to allow the computer/ridesharing system to transmit the same transportation request (received as I discussed above for limitation [1.a]), to the transportation provider's device (e.g., mobile device) for assessment, consistent with features contemplated by Olmi and Poykko426, as I explained above. (*See my analysis above in Section IX.A.1.ii.*)

91. Thus, for the reasons explained above (and for earlier limitations), the Olmi-Peer-Poykko426 combination discloses and/or suggests this limitation.

iv) [1.c] “determining, by the shared transport system, a start of a transport using at least one of the transport provider device and the transport user device;”

92. It is my opinion that the Olmi-Peer-Poykko426 combination discussed above discloses and/or suggests this limitation by way of Peer's disclosures.

93. In particular, Peer discloses that its ride monitoring system operates such that the central computer determines that the ride has begun (“determining, by the shared transport system, a start of a transport”) when the transport provider and the rider both use their devices to indicate that the ride has begun (“using at least one of the transport provider device and the transport user device”). (EX1006, ¶[0045] (“When the party wanting to transport and the person wishing to travel have arrived at the pickup point, they input a message to the computer that the joint trip is now beginning....”).) Peer discloses that, alternatively, the system may determine that the ride has begun (“determining, by the shared transport system, a start of a

transport”) by monitoring the positions of the transport provider and rider and evaluating whether their respective positions are essentially the same and moving at essentially the same speed in the same direction. (*Id.*, ¶[0045] (“As an alternative or supplement, the system monitors the positions of the party wishing to transport and the person wishing to travel, and when it determines that the two positions are essentially identical and are changing essentially at the same speed and in the same direction, the system can conclude that the person wishing to travel has climbed into the vehicle of the party wishing to transport, and the two of them are now on the joint trip.”).) As I discussed for limitation [1.pre], this monitoring of the transport provider and rider occurs via electronic localization techniques that track the location of each user’s device (“using at least one of the transport provider device and the transport user device”). (See my analysis above in Section IX.A.1.i; EX1006, ¶[0043] (system uses active/passive localization system “[i]n the manner described above”).)

94. For reasons I have explained above (and those discussed for earlier limitations), a person of ordinary skill in the art would have been motivated to implement, and would have had a reasonable expectation of success in implementing, Peer’s above teachings in the Olmi-Peer-Poykko⁴²⁶ combined system/method, predictably resulting in the system/method performing the features recited in this limitation.

- v) **[1.d] “determining, by the shared transport system, an anomalous condition associated with the transport using at least one of the transport provider device and the transport user device; and”**

95. In my opinion, the Olmi-Peer-Poykko426 combination discussed above discloses and/or suggests this limitation by way of Peer’s disclosures.

96. Peer discloses that “the safety of the traveler can be increased by tracking using an electronic localization system,” which may be incorporated in the ridesharing service system (“shared transport system”). (EX1006, ¶[0033].) The system’s “central computer monitors the position of the party wishing to transport and/or the person wishing to travel and records when a noteworthy event occurs that indicates that the trip is not going according to the wishes of the party wishing to transport and/or the person wishing to travel” (“determining, by the shared transport system, an anomalous condition associated with the transport”). (*Id.*) For example, an unusual or noteworthy event (“anomalous condition”) may include a “deviation from the trip route” (*id.*, ¶[0036]) or “the position or the operation of the transmitter chang[ing] in an unusual way” (*id.*, ¶[0037]).¹⁷

¹⁷ As I discuss above in Section IX.A.1.i, I have been informed that Petitioners do not agree with PO’s proposed construction of “anomalous condition.” However, as I discussed in that section, it is my opinion that Peer (including as incorporated in

97. Peer explains that the determination of whether an unusual/noteworthy event (“anomalous condition”) has occurred is made by tracking the transport provider’s device and the rider’s device (“using at least one of the transport provider device and the transport user device”). Peer discloses that “[t]he recording of the noteworthy event can be implemented in such a way that specific parameters of the trip are calculated, and a comparison is made in each case as to whether the value of these parameters match specific target values and/or whether these parameters correspond to specific criteria specified in advance, which indicate a noteworthy event.” (EX1006, ¶[0034].) For example, “[t]he position of the monitored person” is a parameter that may be compared to “a specified trip route.” (*Id.*) Peer explains that the corresponding “noteworthy event” (“anomalous condition”) is “a deviation from the trip route,” which “can be monitored in that a check is made as to whether the position of the party wishing to transport and/or the person wishing to travel deviates from a previously input trip route.” (*Id.*, ¶[0036]; *see also id.*, ¶¶[0047]-[0048] (describing how the “ride-sharing agency’s computer checks during the trip whether the trip route is being complied with” and “[i]f this is not the case, or if the

the Olmi-Peer-Poykko426 combination) discloses an “anomalous condition” under PO’s proposed construction and under any reasonable construction of the term. (*See my analysis above in Section IX.A.1.i.*)

driver's vehicle even moves away from the specified trip destination or unusual routes, e.g., dirt roads, are taken, the ride-sharing agency's computer records this as a noteworthy event," "contact[s]...the passenger or the driver," and upon determining whether a "dangerous situation" exists, notifies "the nearest police station"), claims 41-54.)

98. Also, as I discussed above and for limitation [1.pre], the monitoring of the transport provider and rider disclosed by Peer may occur via electronic localization techniques that track the location of each user's device ("using at least one of the transport provider device and the transport user device"). (See my analysis above in Section IX.A.1.i; EX1006, ¶[0043].)

99. Accordingly, Peer discloses "determining, by the shared transport system, an anomalous condition associated with the transport using at least one of the transport provider device and the transport user device." For similar reasons explained above (and those discussed for earlier limitations), it is my opinion that a person of ordinary skill in the art would have been motivated to implement, and would have had a reasonable expectation of success in implementing, Peer's above teachings in the Olmi-Peer-Poykko426 combined system/method, predictably resulting in the system/method performing the features recited in this limitation.

- vi) **[1.e] “transmitting, by the shared transport system, a notification to one or more of the transport user device, the transport provider device, and security personnel based on the determined anomalous condition.”**

100. In my opinion, the Olmi-Peer-Poykko426 combination discussed above discloses and/or suggests this limitation by way of Peer’s disclosures.

101. Consistent with that explained above for limitation [1.d] (*see* my analysis above in Section IX.A.1.v; EX1006, ¶¶[0033]-[0039]), Peer discloses that “the ride-sharing agency’s computer checks during the trip whether the trip route is being complied with,” and “[i]f this is not the case, or if the driver’s vehicle even moves away from the specified trip destination or unusual routes, e.g., dirt roads, are taken, the ride-sharing agency’s computer records this as a noteworthy event” (“determined anomalous condition”). (EX1006, ¶[0048].) Peer explains that “[t]he next step is for it to make contact with the passenger or the driver, depending on who requested the safety monitoring, possibly by a message on the pager or using an obvious step such as a checkup call via a mobile telephone” (“transmitting, by the shared transport system, a notification to one or more of the transport user device, the transport provider device...based on the determined anomalous condition”). (*Id.*) The rideshare system’s computer may use “prearranged passwords or prearranged messages” to “check whether or not a dangerous situation exists.” (*Id.*) “[If] a passenger replies to an inquiry or to the password request with a sentence or

a word that was agreed upon in advance as a signal for a dangerous situation, the nearest police station will be notified” (“transmitting, by the shared transport system, a notification to...security personnel based on the determined anomalous condition”). (*Id.*) Peer also explains “[t]he same applies if the call or the message is abruptly interrupted, or if the transmitter or the mobile telephone of the passenger has obviously been thrown away or destroyed.” (*Id.*; *see also id.*, claims 41-54, *e.g.*, claim 43 (sends “warning signal” to “person wishing to travel and/or the party wishing to transport if a noteworthy event has occurred” and/or “sends a check-up call, for example to a mobile telephone of the person wishing to travel or of the party wishing to transport”), claim 54 (communicates noteworthy events records to “a safety agency”).) Thus, in Peer, alerts may be sent to one or more of a rider’s device, provider’s device, and security/police based on a determined unusual/dangerous/noteworthy event.

102. Accordingly, Peer discloses “transmitting, by the shared transport system, a notification to one or more of the transport user device, the transport provider device, and security personnel based on the determined anomalous condition.” For similar reasons I have explained above (and those discussed for earlier limitations), it is my opinion that a person of ordinary skill in the art would have been motivated to implement, and would have had a reasonable expectation of success in implementing, Peer’s above teachings in the Olmi-Peer-Poykko426

combined system/method, predictably resulting in the system/method performing the features recited in this limitation.

2. **Claim 2: “The computer-implemented method of claim 1, wherein determining, by a shared transport system, a start of a transport using at least one of the transport provider device and the transport user device comprises: determining that the transport provider device and the transport user device are within a predetermined proximity using Global Positioning System (GPS) technology enabled at the transport provider device and the transport user device”**

103. In my opinion, the Olmi-Peer-Poykko426 combination discussed above discloses and/or suggests this limitation by way of Peer’s disclosures.

104. As I discussed for limitation [1.c], Peer discloses “determining, by a shared transport system, a start of a transport using at least one of the transport provider device and the transport user device.” For example, Peer teaches a technique for determining that a ride has begun that involves using electronic localization techniques to evaluate whether the positions of the transport user device and transport provider device are “essentially identical and are changing essentially at the same speed and in the same direction,” indicating that “the person wishing to travel has climbed into the vehicle of the party wishing to transport, and the two of them are now on the joint trip.” (EX1006, ¶[0045]; *see also* my analysis above in Section IX.A.1.iv.) As I discussed for limitation [1.pre], the electronic localization techniques are enabled at both the transport provider’s device and the prospective

rider's device via a built-in satellite navigation system such as GPS ("using Global Positioning System (GPS) technology enabled at the transport provider device and the transport user device"). (See my analysis above in Section IX.A.1.i; EX1006, ¶¶[0007]-[0008] (passive localization with "satellite navigation systems such as GPS"), [0041] (mobile phone with built-in GPS system, or GPS system within built-in mobile radio interface, usable by rider and transport provider); see also *id.*, ¶[0043] (explaining the same active/passive localization system and techniques "[i]n the manner described above" are used to determine the current location of a rider and transport provider in context of the aspects of the system that implement such user/transport provider device proximity monitoring features described in ¶[0045]).) This technique of determining whether the two positions are "essentially identical" (EX1006, ¶[0045]) discloses "determining that the transport provider device and the transport user device are within a predetermined proximity," because a person of ordinary skill in the art would understand that determining whether the positions of two devices are essentially identical requires determining how close the devices are to each other. For example, a person of ordinary skill in the art would have understood that in the context of the start of a transport journey, the rider and driver devices may be slightly apart (e.g., sitting in a front and back seat of a vehicle), but to determine whether the rider and driver devices are at essentially identical locations (e.g., in the same vehicle), a calculation would need to be performed to determine

whether the distance between the two devices is within a predetermined proximity threshold (e.g., representing a small enough proximity to be in the same vehicle).

105. I have been asked to consider a scenario in which Patent Owner argues, or it is determined, that Peer’s above teachings do not disclose the claimed “determining...within a predetermined proximity” limitation. Under that scenario, it is my opinion that a person of ordinary skill in the art would have been motivated to implement such a feature in the Olmi-Peer-Poykko426 combination in view of Peer’s other disclosures regarding proximity detection. Similar to how Peer describes two methods of determining a start of transport—either through rider/driver entering a manual input that the trip is starting, or alternatively the system detecting that the positions of the rider/driver devices are essentially identical and changing at the same speed in the same direction, as I discussed above (EX1006, ¶[0045])—Peer discloses two complementary methods for determining that the trip has ended (*id.*, ¶[0046]). For example, Peer explains that “[u]pon ending the trip, the two travelers input the fact that the trip has now ended, in the same way” as I discussed for determining start of the trip. (*Id.*, ¶[0046].) Peer discloses that “[a]s an alternative or supplement, the computer can check whether...the positions of the two travelers **differ by more than a specified amount for a longer period**, e.g., longer than the normal stay at a rest stop or the like, from which the system concludes that the person wishing to travel is no longer in the vehicle of the party wishing to

transport and will also not return to it.” (*Id.*, ¶[0046].) In other words, Peer discloses determining whether the positions of the rider and driver devices indicate that the transport journey has ended by determining whether those positions are outside of a predetermined proximity.

106. Based on these teachings, a person of ordinary skill in the art would have had good reason to similarly determine whether the positions of the rider and driver devices are essentially the same and indicate that the transport journey has started by using localization technology (e.g., GPS) to determine whether those devices are within a predetermined proximity (“determining that the transport provider device and the transport user device are within a predetermined proximity”).

107. A person of ordinary skill in the art would have been motivated from Peer’s disclosures, which describe determining the end of a journey in the same or a complementary way to determining the start of a journey, to determine whether the transport user device and the transport provider device are at essentially the same position and moving in essentially the same direction at the same speed by, in part, determining that the two devices are within a predetermined proximity (e.g., the locations provided by GPS technology differ by less than some specified amount, indicating that the devices are at essentially the same position). A person of ordinary skill in the art would have further recognized the benefits of determining whether

the devices are at the same position by determining whether the devices are within a predetermined proximity because, in the context of the start of a transport journey, the rider and driver devices may be slightly apart (e.g., sitting in a front and back seat of a vehicle) for the duration of the trip, rather than at the exact same location. Additionally, as a person of ordinary skill in the art would have recognized, such an implementation would have increased accuracy and avoided or reduced the chance of an erroneous determination that a journey has started. Accordingly, use of a predetermined proximity helps ensure accuracy and reliability thereby improving system performance and user experience.

108. A person of ordinary skill in the art would have had a reasonable expectation of success in implementing such a feature, especially since such an implementation would have involved modifying the Peer system/method (as incorporated in the Olmi-Peer-Poykko426 combination) in a manner that Peer suggests is feasible—using GPS technology to determine device locations and determining whether devices are or are not at the same location by comparing the distance between devices to some predetermined amount/proximity. A person of ordinary skill in the art would have had the skills to implement and reasonable expectation of success in achieving such a modification, because it would have involved a combination of known technologies (e.g., known tracking of mobile device locations to determine the start of a journey (Peer)) according to known

techniques (e.g., known methods of position comparison using comparison to a predetermined proximity (Peer)) to yield the predictable result of a system/method in which determining a start of transport (as described for limitation [1.c]) comprises “determining that the transport provider device and the transport user device are within a predetermined proximity using Global Positioning System (GPS) technology enabled at the transport provider device and the transport user device.”

109. For reasons explained above (and those discussed for claim 1), a person of ordinary skill in the art would have been motivated to implement, and would have had a reasonable expectation of success in implementing, Peer’s above teachings/suggestions in the Olmi-Peer-Poykko426 combined system/method, predictably resulting in the system/method performing the features recited in this limitation.

3. **Claim 4: “The computer-implemented method of claim 1, wherein determining, by the shared transport system, an anomalous condition associated with the transport using at least one of the transport provider device and the transport user device comprises: determining the transport is off-route by comparing a location of the transport provider device with the destination or a route.”**

110. In my opinion, the Olmi-Peer-Poykko426 combination discussed above discloses and/or suggests this limitation by way of Peer’s disclosures.

111. As I discussed for limitation [1.d], Peer discloses “determining, by the shared transport system, an anomalous condition associated with the transport using

at least one of the transport provider device and the transport user device.” (See my analysis above in Section IX.A.1.v.) Peer explains that such determining may comprise determining that there has been a deviation from the travel route or destination (“determining the transport is off-route”). (EX1006, ¶[0036].) The detection of such an anomalous condition in Peer can include “check[ing]...whether the position of the party wishing to transport...deviates from a previously input trip route” (*id.*, ¶[0036]) and “whether the trip route is being complied with” or “if the driver’s vehicle even moves away from the specified trip destination or unusual routes...are taken” (*id.*, ¶[0048]) (“comparing a location of the transport provider...with the destination or a route”). (See my analysis above in Section IX.A.1.v.) As further explained for limitation [1.d], the transport provider’s location is tracked by tracking the location of the user’s device (“location of the transport provider device”). (See, e.g., Section IX.A.1.v; EX1006, ¶¶[0034]-[0037], [0043], [0047]-[0048].) Accordingly, Peer discloses “determining the transport is off-route by comparing a location of the transport provider device with the destination or a route.” For similar reasons explained above (and those discussed for claim 1), it is my opinion that a person of ordinary skill in the art would have been motivated to implement, and would have had a reasonable expectation of success in implementing, Peer’s above teachings in the Olmi-Peer-Poykko426 combined

system/method, predictably resulting in the system/method performing the features recited in this limitation.

4. **Claim 5: “The computer-implemented method of claim 1, wherein determining, by the shared transport system, an anomalous condition associated with the transport using at least one of the transport provider device and the transport user device comprises: determining the transport has terminated before reaching the destination.”**

112. In my opinion, the Olmi-Peer-Poykko426 combination discussed above discloses and/or suggests this limitation by way of Peer’s disclosures. As I discussed for limitation [1.d], Peer discloses “determining, by the shared transport system, an anomalous condition associated with the transport using at least one of the transport provider device and the transport user device.” (See my analysis above in Section IX.A.1.v.) My analysis above for claim 4 also demonstrates how Peer discloses determining the transport is off-route by checking for a deviation from a determined travel route or destination. (See my analysis above in Section IX.A.3; EX1006, ¶¶[0036], [0048], claims 41-42, 44-46.) Peer also discloses determining the end of a transport by checking whether the positions of the rider and transport provider devices are moving away from each other or have different positions, “both of which suggest that the party wishing to transport has dropped off the person wishing to travel and is now driving away.” (EX1006, ¶[0046].)

113. Peer further discloses that an unusual/noteworthy event (“anomalous condition”) may be an event in which a transmitter is turned off, destroyed, or discarded, which indicates that a user with improper intentions has attempted to circumvent monitoring by prematurely ending monitoring of the transport journey. (EX1006, ¶[0037] (“However, a noteworthy event may also be that the position or the operation of the transmitter changes in an unusual way. For instance, if the localization occurs via a mobile telephone, a party wishing to transport and/or a person wishing to travel with illicit intent could attempt to circumvent the monitoring in that the device is switched off, destroyed, or thrown away. This can be detected, for instance, in that a transmitter is suddenly no longer working despite functionality, where the functionality can be monitored, for instance, in that the transmitter regularly transmits data regarding its functionality, e.g., the status of the battery or the like.”).) Peer explains that “[t]hrowing away the transmitter can be detected, for instance, in that **the position of this transmitter no longer changes before an input trip destination**, or, if the other traveler can be localized, the position of a transmitter of the party wishing to transport and that of the transmitter of a person wishing to travel suddenly separate from each other, or also in that such a change occurs while the vehicle is moving, or **at a location that is not customary for the end of a trip**, e.g., along a highway away from inhabited regions.” (*Id.*, ¶[0037].)

114. A person of ordinary skill in the art would have understood that such teachings are consistent with a process of determining the transport journey has prematurely terminated (“determining the transport has terminated before reaching the destination”). Indeed, Peer discloses that its claimed method includes determining “whether a **discrepancy** exists between the position[s] of the **transmitter[s]**” of the rider and transport provider “**by more than a specified amount before the trip destination of the person wishing to travel has been reached.**” (EX1006, claim 47.) Such features are consistent with Peer’s teachings that determining whether the “end of the trip...has been reached” involves “checking whether the corresponding positions” of the transport user and provider “are moving away from each other...or that the positions of the two travelers differ by more than a specified amount for a longer period, e.g., longer than the normal stay at a rest stop or the like.” (*Id.*, ¶[0046].) Thus, a person of ordinary skill in the art would have understood Peer’s disclosed features relating to determining whether the positions of the transport user device and transport provider device separate suddenly before a destination is reached, while the vehicle is in motion, or at an unusual location for the end of the journey (i.e., not at the indicated destination) discloses “determining the transport has terminated before reaching the destination,” as claimed, because such an anomalous condition indicates that the destination has not yet been reached. For similar reasons explained above (and those discussed for claim 1), a person of

ordinary skill in the art would have been motivated to implement, and would have had a reasonable expectation of success in implementing, Peer's above teachings in the Olmi-Peer-Poykko426 combined system/method, predictably resulting in the system/method performing the features recited in this limitation.

5. Claim 6: "The computer-implemented method of claim 5, wherein determining the transport has terminated before reaching the destination comprises: determining, before reaching the destination, that the transport provider device and the transport user device are no longer within a predetermined proximity."

115. In my opinion, the Olmi-Peer-Poykko426 combination discussed above discloses and/or suggests this limitation by way of Peer's disclosures.

116. As I discussed for claim 5, "determining the transport has terminated before reaching the destination" involves "checking whether the corresponding positions" of the transport user and transport provider devices "**differ by more than a specified amount** for a longer period, e.g., longer than the normal stay at a rest stop or the like, from which the system concludes that the person wishing to travel is no longer in the vehicle of the party wishing to transport and will also not return to it." (EX1006, ¶[0046]; *see also id.*, ¶[0037] (determining an anomalous condition has occurred if "the position of a transmitter of the party wishing to transport and that of the transmitter of a person wishing to travel suddenly separate from each other"), claim 47 (determining "whether a discrepancy exists between the position[s]

of the transmitter[s]” of the rider and transport provider “by more than a specified amount before the trip destination of the person wishing to travel has been reached....”); Section IX.A.4.) In other words, Peer discloses determining the transport has terminated before reaching the destination by determining, before reaching the destination, that the locations of the transport provider device and transport user device are no longer within a specified distance (e.g., some predetermined distance indicating that the rider and driver are in the same vehicle) (“determining, before reaching the destination, that the transport provider device and the transport user device are no longer within a predetermined proximity”). For similar reasons explained above (and those discussed for claims 1 and 5), a person of ordinary skill in the art would have been motivated to implement, and would have had a reasonable expectation of success in implementing, Peer’s above teachings in the Olmi-Peer-Poykko426 combined system/method, predictably resulting in the system/method performing the features recited in this limitation.

- 6. Claim 7: “The computer-implemented method of claim 6, wherein the transport provider device and the transport user device are determined to be no longer within the predetermined proximity using Global Positioning System (GPS) technology or Near Field Communication (NFC) technology enabled at the transport provider device and the transport user device.”**

117. In my opinion, the Olmi-Peer-Poykko426 combination discussed above discloses and/or suggests this limitation by way of Peer’s disclosures.

118. As I discussed for claim 6, Peer discloses that “the transport provider device and the transport user device are determined to be no longer within the predetermined proximity” by determining whether the positions of the two devices differ by more than a predetermined amount. (See my analysis above in Section IX.A.5.) As I discussed for limitation [1.pre], Peer discloses that device positions are tracked by using electronic localization techniques, which are enabled at both the transport provider’s device and the prospective rider’s device via the mobile device’s built-in satellite navigation system such as GPS (“using Global Positioning System (GPS) technology...enabled at the transport provider device and the transport user device”). (See my analysis above in Section IX.A.1.i.) For similar reasons explained above (and those discussed for claims 1, 5, and 6), a person of ordinary skill in the art would have been motivated to implement, and would have had a reasonable expectation of success in implementing, Peer’s above teachings in the Olmi-Peer-Poykko426 combined system/method, predictably resulting in the system/method performing the features recited in this limitation

7. **Claim 8: “The computer-implemented method of claim 1, wherein determining, by the shared transport system, an anomalous condition associated with the transport using at least one of the transport provider device and the transport user device comprises: determining the transport has terminated at a location different from the destination.”**

119. In my opinion, the Olmi-Peer-Poykko426 combination discussed above discloses and/or suggests this limitation by way of Peer’s disclosures.

120. As I discussed for limitation [1.d], Peer discloses “determining, by the shared transport system, an anomalous condition associated with the transport using at least one of the transport provider device and the transport user device.” (See my analysis above in Section IX.A.1.v) As I discussed for claim 5, Peer discloses that one such anomalous condition may be determining that the trip has terminated (“determining the transport has terminated”) by determining that the positions of the transport provider device and transport user device have separated at an unusual location (i.e., at an unintended destination) and before the destination is reached (“at a location different from the destination”). (See my analysis above in Section IX.A.4; EX1006, ¶¶[0037], [0046], [0048], claims 41-48.) Accordingly, Peer discloses the “determining” of limitation [1.d] includes “determining the transport has terminated at a location different from the destination,” as recited in claim 8. (See my analysis above in Sections IX.A.1.v, IX.A.4.) For similar reasons explained above (and those discussed for claim 1), it is my opinion that a person of ordinary

skill in the art would have been motivated to implement, and would have had a reasonable expectation of success in implementing, Peer's above teachings in the Olmi-Peer-Poykko426 combined system/method, predictably resulting in the system/method performing the features recited in this limitation.

- 8. Claim 9: "The computer-implemented method of claim 8, wherein determining the transport has terminated at a location different from the destination comprises: determining a location at which the transport provider device and the transport user device became no longer within a predetermined proximity."**

121. In my opinion, the Olmi-Peer-Poykko426 combination discussed above discloses and/or suggests this limitation by way of Peer's disclosures.

122. As I discussed for claims 5, 6, and 8, Peer discloses that "determining the transport has terminated at a location different from the destination" comprises determining the positions of each of the transport user and transport provider devices (e.g., determining locations of these devices) and determining that the two devices have prematurely separated (e.g., at a location different than the intended destination) ("determining a location") by "checking whether the corresponding positions [of the transport user and transport provider's devices] are moving away from each other...or that the positions of the two travelers differ by more than a specified amount for a longer period [of time]" ("transport provider device and the transport user device became no longer within a predetermined proximity").

(EX1006, ¶[0046], claims 45 (moving away from a destination), 47-48 (deviation/distance between positions of the rider/transport provider transmitters by more than a predefined amount before the destination; *see also* my analysis above in Sections IX.A.4-IX.A.5, IX.A.7.)

123. A person of ordinary skill in the art would have understood that the determination that the devices are no longer within a predetermined proximity involves “determining a location” at which that separation occurs because, as I discussed above, the proximity check involves a comparison of the device locations, and thus each time a proximity check is performed, a location of each of the transport user and transport provider devices is determined. The position of the transport user device at the time when the proximity check determines that the positions of the devices are no longer within a predetermined proximity is a determined location of separation. Indeed, Peer discloses that the “recording of the noteworthy event can be implemented in such a way that specific parameters of the trip are calculated, and a comparison is made in each case as to whether the value of these parameters match specific target values and/or whether these parameters correspond to specific criteria specified in advance.” (EX1006, ¶[0034].) For example, “[t]he position of the monitored person” (i.e., a determined location) may be compared to a “corresponding target value...result[ing] from, e.g., a specified trip route” (i.e., a specified location along the route, such as a destination). (*Id.*) Peer explains that

“the system retains a record of the trip data and any noteworthy events.” (*Id.*, ¶[0048].) Thus, a person of ordinary skill in the art would have understood that determining that the transport has terminated at a location different from the destination, e.g., by determining that the transport provider device and transport user device are no longer within a predetermined proximity, would have involved determining and recording the location at which the devices separated and comparing that to the target destination value.

124. Accordingly, Peer discloses that “determining the transport has terminated at a location different from the destination comprises: determining a location at which the transport provider device and the transport user device became no longer within a predetermined proximity,” like that recited in claim 9. For similar reasons explained above (and those discussed for claims 1, 5-6, and 8), it is my opinion that a person of ordinary skill in the art would have been motivated to implement, and would have had a reasonable expectation of success in implementing, Peer’s above teachings in the Olmi-Peer-Poykko⁴²⁶ combined system/method, predictably resulting in the system/method performing the features recited in this limitation.

9. Claim 10: “The computer-implemented method of claim 1, wherein the notification to the transport provider device or the transport user device comprises a request for transport status.”

125. In my opinion, the Olmi-Peer-Poykko426 combination discussed above discloses and/or suggests this limitation by way of Peer’s disclosures.

126. As I discussed for limitation [1.e], Peer discloses that if an anomalous condition is detected, the computer/ridesharing system may send a message or phone call to the device of the user that requested safety monitoring (i.e., either the transport provider device or transport user device) (“notification to the transport provider device or the transport user device”) to check whether a dangerous situation exists (“comprises a request for transport status”). (See my analysis above in Section IX.A.1.vi; EX1006, ¶[0048], claims 41-43 (makes “a check-up call”).) A person of ordinary skill in the art would have understood that such a check-up call/message is a “request for transport status” because it seeks from the transport user a confirmation as to whether the status of the transport journey is dangerous or not dangerous. For example, Peer explains that its system/method uses “prearranged passwords or prearranged messages” to “check whether or not a dangerous situation exists,” and “if a passenger replies to an inquiry or to the password request with a sentence or a word that was agreed upon in advance as a signal for a dangerous situation, the nearest police station will be notified.” (EX1006, ¶[0048].)

127. Peer also describes that the system may detect an anomalous condition by “check[ing] whether the navigation system is continuously and reliably providing data regarding the current position.” (*Id.*, ¶[0038].) “If this is not the case, the owner of the device can receive a notice that his navigation system is not working correctly,” as well as “a prompt by means of which the traveler confirms that no dangerous situation exists.” (*Id.*) A person of ordinary skill in the art would have likewise understood that such a prompt, which asks a user to confirm whether the transport journey status is dangerous or not, is also a notification that comprises a “request for transport status.”

128. Accordingly, Peer discloses “wherein the notification to the transport provider device or the transport user device comprises a request for transport status.” For similar reasons explained above (and those discussed for claim 1), it is my opinion that a person of ordinary skill in the art would have been motivated to implement, and would have had a reasonable expectation of success in implementing, Peer’s above teachings in the Olmi-Peer-Poykko426 combined system/method, predictably resulting in the system/method performing the features recited in this limitation.

10. Claim 11: “The computer-implemented method of claim 10, wherein the notification to the transport provider device or the transport user device further comprises a request for identity verification.”

129. It is my opinion that the Olmi-Peer-Poykko426 combination discussed above discloses and/or suggests this limitation by way of Peer’s disclosures.

130. As I discussed for limitation [1.e] and claim 10, Peer discloses that a “notification to the transport provider device or the transport user device” may be a message or phone call for a “password request,” to which the device user responds with “a sentence or a word that was agreed upon in advance as a signal for a dangerous situation” if a dangerous situation indeed exists. (EX1006, ¶[0048] (“prearranged passwords or prearranged messages”); *see* my analysis above in Sections IX.A.1.vi, IX.A.9.) Peer explains that a request for a user’s agreed-upon password “comprises a request for identity verification” because the confirmation of the password serves as a mechanism of confirming the identity of the person (e.g., transport user or transport provider).

131. In particular, Peer explains how, in addition to agreeing upon a password, “[a] driver can transmit a description of his passenger to the monitoring system or, if the passenger agrees to it, **the number of an identification document**” when accepting a rideshare. (EX1006, ¶[0048]; *see also id.*, ¶[0045] (rider and transport provider enter a message into the computer regarding start of journey and

“authenticity of this message can be determined using known methods, e.g., by using a PIN”).) Peer explains that if a user provides the agreed-upon password indicating that a dangerous situation exists and “the relevant person is later reported as a missing person, the corresponding data can be handed over to the police,” which “serves as insurance...that there is at least a trace to his person if something should happen to the other person.” (*Id.*, ¶[0048].) Thus, a person of ordinary skill in the art would have understood that in the Peer system/method (as incorporated in the Olmi-Peer-Poykko426 combination) discussed above for claim 10 (*see* my analysis above in Section IX.A.9), an alert for an anomalous condition serves to check whether a dangerous condition exists by asking the device’s user to confirm their identity (“wherein the notification to the transport provider device or the transport user device further comprises a request for identity verification”).

132. I have been asked to consider a scenario in which a password request is found not to disclose a “request for identity verification.” Under that scenario, it is my opinion that a person of ordinary skill in the art would have had good reason to implement such a feature in the Peer monitoring system (as incorporated in the Olmi-Peer-Poykko426 combination) in view of Peer’s disclosures above, which explain the importance of tracking rider/driver identity in the context of Peer’s safety mechanisms. (EX1006, ¶¶[0046], [0048].) A person of ordinary skill in the art would have thus understood the benefits of implementing a password request

message/call that not only confirms whether there is a dangerous situation, but also verifies the user's identity (e.g., by implementing the password as a user identifier or by storing in the system a set of unique relationships between each user's identity and the user's safety verification password) to provide an extra level of verification that the user answering the password request is actually the intended user. For example, a person of ordinary skill in the art would have understood that, when confirming whether a dangerous situation exists, it is important to make contact with the correct user (and not, for example, another user who has taken the intended user's mobile device) in order to receive an accurate assessment of the situation and prevent further safety issues by bad actors.

133. A person of ordinary skill in the art would have had a reasonable expectation of success in implementing such a feature in the Peer system/method (as incorporated in the Olmi-Peer-Poykko426 combination) because Peer already discloses that the system stores various information associated with a given user (e.g., storing an association between a potential rider and driver (EX1006, ¶[0014]) and retaining trip data for each user (*id.*, ¶[0048])) and thus a person of ordinary skill in the art would have understood that storing the relationship between a user's identity information and a user's password for confirming dangerous situations would have been easily implemented in Peer's modified system/method. A person of ordinary skill in the art would have had the skills to implement and a reasonable

expectation of success in achieving such a modification, because it would have involved a combination of known technologies (e.g., known password request safety mechanisms (Peer)) according to known techniques (e.g., known methods of storing identity information for safety (Peer)) to yield the predictable result of an Olmi-Peer-Poykko426 system/method “wherein the notification to the transport provider device or the transport user device further comprises a request for identity verification,” like that claimed.

11. Claim 12

134. It is my opinion that claim 12 recites limitations similar to those recited in claim 1 except that claim 12 is presented as a “system” comprising “at least one processor” and “at least one storage” storing “instructions” that “when executed by the at least one processor” perform operations consistent with the method for managing anomalous conditions like that recited in claim 1. (*Compare* EX1001, claims 1 and 12). Accordingly, in addition to my analysis/explanation below, it is my opinion that Olmi in view of Peer and Poykko426 discloses and/or suggests the features of claim 12 for the same reasons explained above for claim 1. (*See* my analysis above in Section IX.A.1.)

- i) [12.pre] A system comprising:
- ii) [12.a] at least one processor; and
- iii) [12.b] at least one storage storing instructions which, when executed by the at least one processor, cause the at least one processor to perform operations for managing anomalous conditions in a shared transport system, the operations comprising:

135. I have been asked to assume the preamble of claim 12 is limiting. Under that assumption, it is my opinion that Olmi in view of Peer discloses and/or suggests the preamble of claim 12 ([12.pre]) and the features of limitations [12.a]-[12.b].

136. To begin, as I discussed for limitation [1.pre], Olmi discloses a computer/ridesharing system (“system”), and Olmi in view of Peer discloses and/or suggests that such a system performs a computer-implemented method for “managing anomalous conditions in a shared transport system,” consistent with the method recited in claim 1. (*See* my analysis above in Section IX.A.1.i.)

137. Olmi (including as modified in the Olmi-Peer combination) also discloses “at least one processor.” Olmi discloses that its central controlling computer system is a “data-processing system” that may “compris[e] a set of distributed...computer processors.” (EX1005, 13.) A person of ordinary skill in the art would have thus understood that the Olmi-Peer system includes “at least one

processor” in the central computer/ridesharing system responsible for arranging rides and monitoring trips for anomalous conditions.

138. The Olmi-Peer combination further discloses and/or suggests “at least one storage storing instructions which, when executed by the at least one processor, cause the at least one processor to perform operations for managing anomalous conditions in a shared transport system.” Olmi (including as modified in the Olmi-Peer combination) discloses that “the term controlling computer system not only refers to the data-processing hardware, but also encompasses the data-processing instructions (computer programming code) running on this hardware.” (EX1005, 13.) Olmi further explains that the system’s “data-processing instructions” include “computer instructions or code” that may be “encapsulated in hardware (such as firmware or purpose-designed integrated circuits).” (EX1005, 12.) Thus, a person of ordinary skill in the art would have understood that the Olmi-Peer computer/ridesharing system would have had a hardware/memory for storing data-processing instructions (“at least one storage storing instructions”), which are executed by the control computer’s processor(s) to perform the disclosed processes in the Olmi-Peer system/method (“which, when executed by the at least one processor, cause the at least one processor to perform operations”).

139. As for performing operations “for managing anomalous conditions in a shared transport system,” my analysis above for claim limitation [1.pre]

demonstrates how the Olmi-Peer “shared transport system” (e.g., computer/ridesharing system) performs a computer-implemented method like that recited in claim 1, and tracks the same operations recited in claim 12. (See my analysis above in Section IX.A.1.i.)

140. Thus, for the reasons provided above and for limitation [1.pre], and those below for limitations [12.b.i]-[12.b.v], the Olmi-Peer system/method discloses and/or suggests a “system” comprising “at least one processor” and “at least one storage storing instructions which, when executed by the at least one processor, cause the at least one processor to perform operations for managing anomalous conditions in a shared transport system,” like that claimed in limitations [12.pre]-[12.b]. (See my analysis above in Sections IX.A.1.i, IX.A.11.i-ii and below in Sections IX.A.11.iii.(1)-(5).).

- (1) [12.b.i] receiving, by the shared transport system, a transport request from a transport user device of a transport user, the transport request including a pick-up location and a destination;
- (2) [12.b.ii] transmitting, by the shared transport system, the transport request to a transport provider device of a transport provider;
- (3) [12.b.iii] determining, by the shared transport system, a start of a transport using at least one of

the transport provider device and the transport user device;

- (4) [12.b.iv] determining, by the shared transport system, an anomalous condition associated with the transport using at least one of the transport provider device and the transport user device; and**
- (5) [12.b.v] transmitting, by the shared transport system, a notification to one or more of the transport user device, the transport provider device, and security personnel based on the determined anomalous condition.**

141. In my opinion, limitations [12.b.1]-[12.b.v] track limitations [1.a]-[1.e]. Accordingly, Olmi in view of Peer and Poykko426 discloses and/or suggests limitations [12.b.i]-[12.b.v] for the same reasons as I discussed above for limitations [12.pre]-[12.b] (addressing claimed system, processor, and storage) and limitations [1.a]-[1.e] (addressing same “operations” recited in claim 12). (See my analysis above in Sections IX.A.1.ii-IX.A.1.vi, IX.11.i-IX.11.iii.)

142. Accordingly, for the reasons explained above, it is my opinion that the Olmi-Peer-Poykko426 system/method discloses and/or suggests claim 12.

- 12. Claim 13: The system of claim 12, wherein determining, by a shared transport system, a start of a transport using at least one of the transport provider device and the transport user device comprises: determining that the transport provider device and the transport user device are within a predetermined proximity using Global Positioning System (GPS) technology enabled at the transport provider device and the transport user device.**

143. In my opinion, the Olmi-Peer-Poykko426 combination discussed above discloses and/or suggests claim 13 for the same reasons as I discussed for claim 2.
(See my analysis above in Section IX.A.2.)

- 13. Claim 15: The system of claim 12, wherein determining, by the shared transport system, an anomalous condition associated with the transport using at least one of the transport provider device and the transport user device comprises: determining the transport is off-route by comparing a location of the transport provider device with the destination or a route.**

144. In my opinion, the Olmi-Peer-Poykko426 combination discussed above discloses and/or suggests claim 15 for the same reasons as I discussed for claim 4.
(See my analysis above in Section IX.A.3.)

- 14. Claim 16: The system of claim 12, wherein determining, by the shared transport system, an anomalous condition associated with the transport using at least one of the transport provider device and the transport user device comprises: determining the transport has terminated before reaching the destination.**

145. In my opinion, the Olmi-Peer-Poykko426 combination discussed above discloses and/or suggests claim 16 for the same reasons as I discussed for claim 5.
(See my analysis above in Section IX.A.4.)

- 15. Claim 17: The system of claim 16, wherein determining the transport has terminated before reaching the destination comprises: determining, before reaching the destination, that the transport provider device and the transport user device are no longer within a predetermined proximity.**

146. In my opinion, the Olmi-Peer-Poykko426 combination discussed above discloses and/or suggests claim 17 for the same reasons as I discussed for claim 6.
(See my analysis above in Section IX.A.5.)

- 16. Claim 18: “The system of claim 17, wherein the transport provider device and the transport user device are determined to be no longer within the predetermined proximity using Global Positioning System (GPS) technology or Near Field Communication (NFC) technology enabled at the transport provider device and the transport user device.”**

147. In my opinion, the Olmi-Peer-Poykko426 combination discussed above discloses and/or suggests claim 18 for the same reasons as I discussed for claim 7.
(See my analysis above in Section IX.A.6.)

- 17. Claim 19: The system of claim 12, wherein determining, by the shared transport system, an anomalous condition associated with the transport using at least one of the transport provider device and the transport user device comprises: determining the transport has terminated at a location different from the destination.**

148. In my opinion, the Olmi-Peer-Poykko426 combination discussed above discloses and/or suggests claim 19 for the same reasons as I discussed for claim 8. (See my analysis above in Section IX.A.7.)

18. Claim 20

149. In my opinion, claim 20 recites limitations similar to those recited in claim 1 (and claim 12) except that claim 20 is presented as a “non-transitory computer readable medium” comprising “instructions” that “when executed by at least one processor” cause the “processor to perform operations” consistent with the method for managing anomalous conditions like that recited in claim 1. (Compare EX1001, claims 1 and 20). Accordingly, in addition to my analysis/explanation below, Olmi in view of Peer and Poykko426 discloses and/or suggests the features of claim 20 for the same reasons explained above for claims 1 and claim 12. (See my analysis above in Sections IX.A.1, IX.A.11.)

- i) **[20.pre] At least one non-transitory computer readable medium comprising instructions which, when executed by at least one processor, cause the at least one processor to perform operations for managing anomalous conditions in a shared transport system, the operations comprising:**

150. I have been asked to assume the preamble of claim 20 is limiting. Under that assumption, it is my opinion that Olmi in view of Peer discloses and/or suggests the limitations therein.

151. In my opinion, my analysis for limitations [12.pre]-[12.b] demonstrates how the Olmi-Peer combination discloses and/or suggests similar features. (See my analysis above in Sections IX.A.11.i-IX.A.11.iii (demonstrating how Olmi (including as modified in the Olmi-Peer combination) as discloses and/or suggests a “processor” and “storage” with “instructions” (which is “at least one non-transitory computer readable medium comprising instructions”) that are executed by the processor in the Olmi-Peer computer/ridesharing system to perform processes for managing anomalous conditions (“which, when executed by at least one processor, cause the at least one processor to perform operations for managing anomalous conditions in a shared transport system”)).) For those same reasons discussed for limitations [12.pre]-[12.b], Olmi in view of Peer discloses and/or suggests limitation [20.pre]. (*Id.*)

- ii) **[20.a] receiving, by the shared transport system, a transport request from a transport user device of a transport user, the transport request including a pick-up location and a destination;**
- iii) **[20.b] transmitting, by the shared transport system, the transport request to a transport provider device of a transport provider;**
- iv) **[20.c] determining, by the shared transport system, a start of a transport using at least one of the transport provider device and the transport user device;**
- v) **[20.d] determining, by the shared transport system, an anomalous condition associated with the transport using at least one of the transport provider device and the transport user device; and**
- vi) **[20.e] transmitting, by the shared transport system, a notification to one or more of the transport user device, the transport provider device, and security personnel based on the determined anomalous condition.**

152. In my opinion, limitations [20.a]-[20.e] track limitations [1.a]-[1.e] and [12.b.i]-[12.b.v]. Accordingly, Olmi in view of Peer and Poykko426 discloses and/or suggests limitations [20.a]-[20.e] for the same reasons as I discussed above for limitation [20.pre] (addressing claimed computer readable medium, processor, and instructions) and limitations [1.a]-[1.e] and [12.b.1]-[12.b.v] (addressing same “operations” recited in claims 1 and 12). (*See my analysis above in Sections IX.A.1.ii-IX.A.1.vi, IX.11.i-IX.11.iv; IX.18.i.*)

153. Accordingly, for the reasons explained above, it is my opinion that the Olmi-Peer-Poykko426 system/method discloses and/or suggests claim 20.

B. The Combination of Olmi, Peer, Poykko426, and Jeon Discloses or Suggests the Limitations of Claims 3 and 14

154. In my opinion, the combination of Olmi, Peer, Poykko426, and Jeon discloses or suggests all of the limitations of claims 3 and 14, as I explain below.

1. **Claim 3: The computer-implemented method of claim 1, wherein determining, by a shared transport system, a start of a transport using at least one of the transport provider device and the transport user device comprises: determining that the transport provider device and the transport user device are within a predetermined proximity using Near Field Communication (NFC) technology enabled at the transport provider device and the transport user device.**

155. It is my opinion that the Olmi-Peer-Poykko426 combination (as I discussed above for claims 1, 2, and 12) in view of Jeon discloses and/or suggests this limitation. (See my analysis above in Sections IX.A.1, IX.A.2, IX.A.11.)

156. As I discussed for claim 2, Peer discloses “wherein determining, by a shared transport system, a start of a transport using at least one of the transport provider device and the transport user device comprises: determining that the transport provider device and the transport user device are within a predetermined proximity using...technology enabled at the transport provider device and the transport user device.” (See my analysis above in Section IX.A.2.) Peer (and likewise the Olmi-Peer-Poykko426 combination) does not explicitly disclose that the system determines that the two devices are within a predetermined proximity “using Near Field Communication (NFC) technology.” However, a person of

ordinary skill in the art would have been motivated to implement, and would have had a reasonable expectation of success in implementing, such features in the Olmi-Peer-Poykko⁴²⁶ system/method in view of Jeon.

157. Jeon relates to a method of implementing location-based safety features in a shared transport system. For example, Jeon discloses a “method and system for providing taxi safety services, which are designed to enable passengers to use taxis with enhanced safety and peace of mind.” (EX1007, Abstract.) Jeon explains that “[t]axi passengers and taxi companies apply for subscription and registration to the taxi safety service.” (*Id.* at 3.) Jeon describes that both the passenger and the taxi driver have a mobile terminal, each of which may be a mobile phone. (*Id.* at 3-4.) A passenger uses their mobile terminal to call for a safe taxi ride, while a driver uses their mobile terminal to share payment and safety information with the passenger terminal (e.g., a cost, a vehicle number, and driver’s name) and to communicate with the service center. (*Id.* at 3-4.) Jeon explains that the “service center (40) also tracks the current location of the taxi via the GPS (23) of the taxi terminal (20) so that, in the event of a loss such as taxi theft, the current position of the vehicle can be determined.” (*Id.* at 4.) Jeon also explains that the service center can detect taxi theft via this tracking and can issue alerts (e.g., to the police) in response. (*Id.*) Thus, Jeon is similar to Peer, which discloses a rideshare system that enables location tracking at both the rider’s and transport provider’s mobile devices in order to enable

safety alerts upon detection of anomalous conditions, and is also similar to Olmi and Poykko⁴²⁶, both of which disclose rideshare systems for arranging rides using a rider's and transport provider's mobile devices and a central computer/rideshare center. (*See* my analysis above in Section IX.A.1.) A person of ordinary skill in the art would have therefore had good reason to consider the teachings of Jeon when implementing Peer's monitoring system (as incorporated in the Olmi-Peer-Poykko⁴²⁶ combination discussed above).

158. Jeon additionally discloses that “[t]he passenger terminal (10) and the taxi terminal (20) are connected via a near-field communication network, such as infrared (IrDA) or Bluetooth.” (EX1007, 3.) Jeon explains that “the taxi terminal (20) comprises a near-field communicator (21) installed at a predetermined position on the exterior of the taxi and configured to enable near-field communication with the passenger terminal (10).” (*Id.* at 3.) Jeon discloses that NFC exchange between a passenger's mobile phone and the taxi's NFC device is a condition to begin a trip. “Prior to boarding, the passenger brings their terminal (10), such as a mobile phone, close to the near-field communicator (21) installed in the taxi in order to establish near-field communication.” (*Id.* at 4.) “Once near-field communication is established, the taxi terminal (20) relay's the taxi's information—such as the taxi company name, vehicle number, and driver's name—to the passenger terminal (10) via the near-field communicator (21).” (*Id.*; *see also id.* at 4 (“fare information is

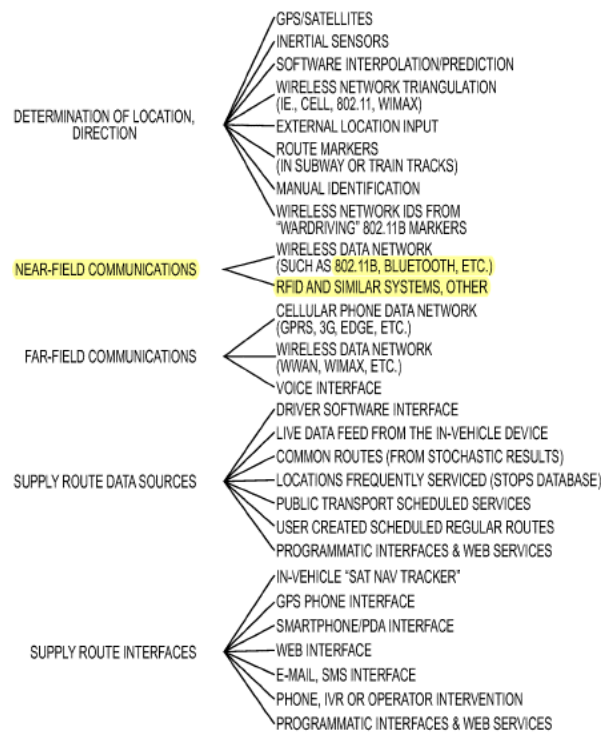
transmitted from the taxi terminal (20) to the passenger terminal (10) via near-field communication between the passenger terminal (10) and the taxi terminal (20)).) Jeon further explains how after the passenger and taxi mobile terminals share information to mark the start of a journey, “[t]he passenger presses a predetermined button on the terminal (10) to transmit the received taxi information, along with boarding-related data such as current location and time, to the service center (40) via the CDMA mobile communication network/mobile internet network (30) (step 303).” (*Id.* at 4.) The service center then proceeds to “track[] the current location of the taxi” to perform the safety monitoring discussed above. (*Id.* at 4.)

159. Thus, Jeon discloses that the system determines that the transport journey has started (“determining, by a shared transport system, a start of a transport”) using both the rider and driver devices (“using at least one of the transport provider device and the transport user device”) by bringing the two devices within a short-distance range (“determining that the transport provider device and the transport user device are within a predetermined proximity”) using near-field communication technology enabled on both devices (“using Near Field Communication (NFC) technology enabled at the transport provider device and the transport user device”). A person of ordinary skill in the art would have understood that Jeon’s system determines that the two devices are “within a predetermined proximity” because for a given short-range communication technology such as

Bluetooth, there is some predetermined proximity that the two devices must be within in order for the communication to occur.

160. A person of ordinary skill in the art would have understood that Jeon’s near-field communication technology is consistent with that disclosed by the ’668 patent, which similarly explains that near-field communication technology includes technologies such as Bluetooth. (See EX1001, 11:44-53 (describing “communicating via near-field communications inside the Transport Capacity vehicle...via communications technologies such as Bluetooth, 802.11, RFID or their equivalents”); *id.*, FIG. 2 (below, associating near-field communications with “802.11B, Bluetooth, etc.” and “RFID and similar systems, other”).)

FIGURE 2. TRANSPORT CAPACITY COMPUTING AND COMMUNICATIONS COMPONENTS



(EX1001, FIG. 2 (annotated).)

161. A person of ordinary skill in the art would have had good reason to include features similar to those disclosed by Jeon when implementing Peer's monitoring system/method (including as incorporated in the Olmi-Peer-Poykko426 combination) in order to provide an improved method of determining the start of transport in a manner consistent with the features disclosed by Peer. Indeed, as I discussed for limitation [1.c], Peer discloses that when both the transport user and transport provider arrive at the pick-up point, the start of the transport journey may be determined by both users entering a message into the computer indicating that the journey has begun, or the start may be determined by the system monitoring both users' positions and determining that the two positions are essentially the same (i.e., within a predetermined proximity). (*See my analysis above in Section IX.A.1.iv.*) A person of ordinary skill in the art would have understood that Jeon's method of determining the start of transport would have provided enhanced security and convenience to Peer's monitoring system/method for managing anomalous conditions (as incorporated in the Olmi-Peer-Poykko426 combination). Like Peer, Jeon's features would allow users to themselves mark that the journey has begun, but Jeon's method would offer improved security by only allowing users to mark that the journey has begun when they are within a predetermined proximity in which the near-field communication between devices can operate. Jeon's features would

have also improved security by allowing for the passenger to view both the vehicle number and the driver's name for the duration of the ride (as would occur in order for the short-range communications discussed by Jeon to facilitate device-to-device communications). And Jeon's features would have improved convenience by communicating the fare (alongside the safety information) upfront through the near-field communication functionalities. Likewise, limiting the range of communications would complement Peer's features that monitor when the position of the transport user and transport provider devices are getting closer, are within a determined range, or are moving further apart (EX1006, ¶¶[0045]-[0046], claims 45-48.) A person of ordinary skill in the art would have also understood that Jeon's near-field communication would have added flexibility and provided a fail-safe technique in case GPS is unavailable (e.g., due to physical obstructions, weather, etc.).

162. In light of these teachings/guidance in Jeon, in context of Peer's teachings as I discussed above, a person of ordinary skill in the art would have had good reason to use near-field communication technologies with the transport user/provider devices and configure the system/method to facilitate communications between those devices to determine a start of transport when the devices are within a predetermined proximity (e.g., a distance within range of the near-field communications, or within a predefined distance when in such range).

163. A person of ordinary skill in the art would have had a reasonable expectation of success in implementing such features based on the teachings of Peer and Jeon. As I discussed, both references are in the same field, and Peer discloses that the transport user and transport provider use mobile devices to both communicate within the system and to mark themselves as beginning a transport journey. (*See* my analysis above in Section IX.A.1.iv; EX1006, ¶[0045].) As I discussed above, Jeon discloses that mobile phones at the time could be enabled with near-field communication technologies suitable for determining the start of a transport journey. (EX1007, 4.) Thus, a person of ordinary skill in the art would have understood that implementing the Peer-Jeon combined features (as incorporated in the Olmi-Peer-Poykko426-Jeon combination) would have involved modifying the Peer system/method in a manner that Peer suggests is feasible—implementing features that use known mobile device communication functionalities to determine that the transport journey has begun in a near-field communication application as taught by Jeon. A person of ordinary skill in the art would have had the skills to implement and reasonable expectation of success in achieving such a modification, because it would have involved a combination of known technologies (e.g., known tracking of mobile device locations associated with rider/driver from the start of a journey (Peer)) according to known techniques (e.g., known methods of using near-field communication enabled mobile devices to determine the start of

a shared transport journey (Jeon)) to yield the predictable result of a system/method that uses near-field communication technology enabled at both the transport user device and transport provider device in order to determine a start of transport when the devices are brought within a predetermined proximity, like that claimed. *KSR*, 550 U.S. at 416.

164. Accordingly, for the reasons explained above, the Olmi-Peer-Poykko426-Jeon system/method discloses and/or suggests claim 3.

2. **Claim 14: The system of claim 12, wherein determining, by a shared transport system, a start of a transport using at least one of the transport provider device and the transport user device comprises: determining that the transport provider device and the transport user device are within a predetermined proximity using Near Field Communication (NFC) technology enabled at the transport provider device and the transport user device.**

165. The Olmi-Peer-Poykko426-Jeon combination (discussed above) discloses and/or suggests claim 14 for the same reasons as I discussed for claim 3. (See my analysis above in Section IX.B.1.)

X. CONCLUSION

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

Dated: March 11, 2026

By: 
Petros Ioannou, Ph.D.