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. 10,916,138

DECLARATION OF PETROS IOANNOU, PH.D.

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. 10,916,138 ("the '138 patent") (EX1001). I have been asked to consider whether certain references alone or in combination disclose or suggest the limitations recited in claims 1-4, 9-13, and 18 ("the challenged claims") of the '138 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 Scholar[2].

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. 10,916,138 ("the '138 patent")
EX1004	Prosecution History of U.S. Patent App. No. 16/670,220
EX1005	UK Patent Application No. GB2397683A to Olmi ("Olmi")
EX1006	U.S. Patent No. 6,411,897 to Gaspard ("Gaspard")
EX1007	U.S. Patent Application Publication No. 2002/0123917 to Wolfe ("Wolfe")
EX1010	U.S. Patent Application Publication No. 2003/0040944 to Hileman ("Hileman")
EX1013	U.S. Patent No. 7,366,522 to Thomas ("Thomas")
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 '138 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 '138 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 and Gaspard discloses or suggests all of the limitations of claims 1-3, 10-12, and 18 (*see* my discussion below in Section IX.A);

- The combination of Olmi, Gaspard, and Thomas discloses or suggests all of the limitations of claims 4 and 13 (*see* my discussion below in Section IX.B); and
- The combination of Olmi, Gaspard, and Wolfe discloses or suggests all of the limitations of claim 9 (*see* my discussion below in Section IX.C).

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 '138 patent to be around and up to February 12, 2007. I understand from reviewing the '138 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 '138 patent, a person of ordinary skill in the art at the time of the alleged invention of the '138 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 '138 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 ’138 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 ’138 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 ’138 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, predicably results in a system or method that meets the limitation of the challenged claims of the ’138 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 '138 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 '138 PATENT

25. Based on my review, I understand the '138 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 '138 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 '138 patent. For example, the '138 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.*, 1:23-2:67.) The '138 patent also describes the use of existing traffic measurement systems, GPS systems, and traffic speed measurement systems (*Id.*, 4:1-4:14), 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 '138 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 '138 patent expresses a belief that the alleged invention "makes such systems more practical and useful" by purportedly

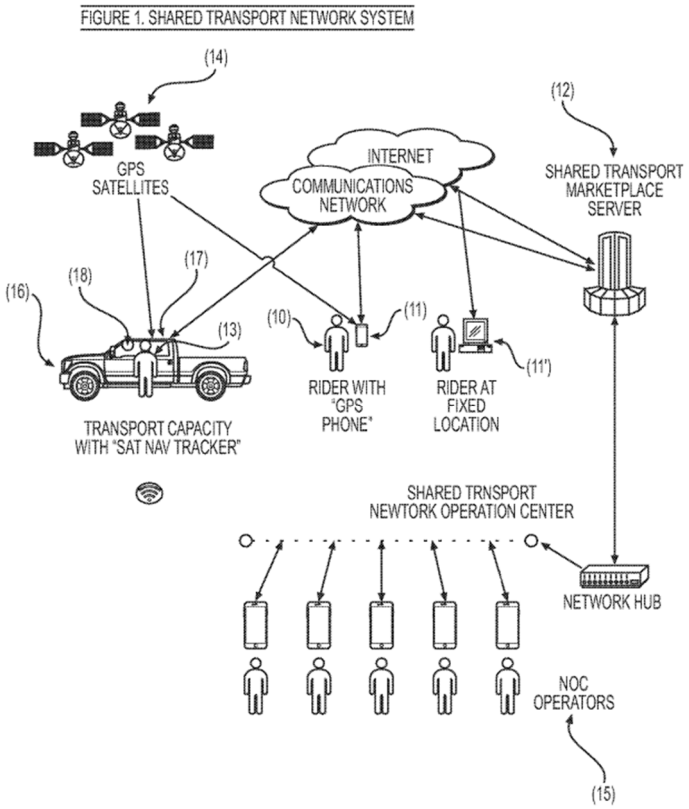
reducing workload and/or steps necessary "to make this system more inconvenient," improving "trustability," increasing use, providing a device that communicates "visually" to riders, determining and/or registering transport capacity, and providing information about "ad-hoc" transport capacity "*in manners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

27. The '138 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 for the transport of persons. (*Id.*, 3:51-55; *see also id*., 3:1-5:19, FIG. 1.)

28. The '138 patent also states that a "similar Shared Transport Marketplace" could "be used to transport goods and merchandise," and that such a system could simply be modified so "the Transport User send[s] packages" instead of people. (*Id.*, 21:17-22.) The '138 patent, however, does not describe the details of any required modification to transport packages, likely due to the realization that systems for transporting goods were already known and that any differences between

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

a system for transporting people and a system for transporting goods are insubstantial.



(*Id.*, FIG. 1.)

29. Beyond many other conventional features (as I have demonstrated below in §IX), the '138 patent discusses features related to a driver software interface, which is aimed at connecting riders and drivers, and providing transportation services while a vehicle is in transit, such as in the event that a user needs to arrange transport between a specific start point and end point for certain

goods and persons. (*Id.*, 3:13-32, 8:40-56, 9:12-16, 17:10-31.) For example, "[w]hen a driver starts the vehicle ('Driver' 13) a Driver Software Interface automatically determines if the Driver 13 is engaged in a traditional route ('Supply Route') and registers the transport capacity of the Driver 13 ('Transport Capacity') with the Shared Transport Marketplace 12." (*Id.*, 7:34-38.) The Shared Transport Marketplace "provides to the Rider 10 and to the Driver 13 information about Transport Capacity…to provide the Rider with "a variety of services types and prices to choose from." (*Id.*, 7:46-52.) To choose a service to transport a good, a "Rider 10, depending upon the mode preferred and the equipment available, can select a Pick-Up Point and Destination Point." (*Id*., 8:40-43). The Rider 10 "could be presented with a sorted list of transport options available, by class of service, type of vehicle, time until Transport Capacity arrives at start-point, estimated transit time to end-point, number of legs in the journey, and cost." (*Id*., 8:51-57). "[T]he Shared Transport Marketplace 12 will be working to optimize available capacity and services and will substitute Riders and Drivers." (*Id*. at 9:24-26.) The '138 patent also describes "[a]n active monitoring system for generation of usage/demand data for point-to-point routing of participating vehicles" by looking "for overlaps of capacity…to eliminate redundant capacity." (*Id*., 16:6-9).

30. 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 ’138 patent were known in the prior art before the alleged invention of the ’138 patent. (*See* my discussions below in Section IX.)

VII. CLAIM CONSTRUCTION

31. 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 '138 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.

32. I also have been asked to provide my opinions regarding the challenged claims of the '138 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.

'138 Patent Term	**Constructions**
"shared transport system" (all claims)	Petitioners' Construction: "A server system that matches transport users with transport providers

'138 Patent Term	**Constructions**
	traveling an existing route defined before demand for transport and independently of a transport user's door-to-door trip."
"transport provider" (all claims)	Petitioners' Construction: "A driver offering transport along an existing route defined before demand for transport and independently of a transport user's door-to-door trip."
"pick-up location" / "drop-off location" (all claims)	Petitioners' Construction: "A node along an existing route defined before demand for transport and independently of a transport user's door-to-door trip."
"the provider characteristics including a current location or planned route and an available space or capacity of the transport provider,	Petitioners' Construction: "The provider characteristics including (1) a current location or planned route, and (2) an available space or capacity of the transport provider, each received from the transport provider device of the transport provider."

'138 Patent Term	**Constructions**
the provider characteristics being received from a transport provider device of the transport provider" (all claims)	Patent Owner's Construction: "Some of the provider characteristics are provided by the transport provider device of the transport provider."

VIII. OVERVIEW OF THE REFERENCES[8]

A. Overview of Olmi (EX1005)

33. 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).)[9] 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.

[9] Citations to EX1005 are to the underlying document page number(s).

34. 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.)

35. 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.)

36. 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.*)

37. 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.)

38. 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).)

B. Overview of Gaspard (EX1006)

39. Based on my review, a person of ordinary skill in the art would have understood that Gaspard relates to a method/system for transporting both "freight and passengers." (EX1006, Abstract.) For example, Gaspard discloses "a method of scheduling a vehicle in real-time to transport both freight and passengers

simultaneously" through a host system that "receives transportation requests from a freight terminal and/or a passenger terminal connected to the host over a network." (*Id.*, 3:39-43.) Gaspard's method is implemented through "a communications system 100," as shown in Figure 1 below. (*Id.*, 4:48-49, FIG. 1.)

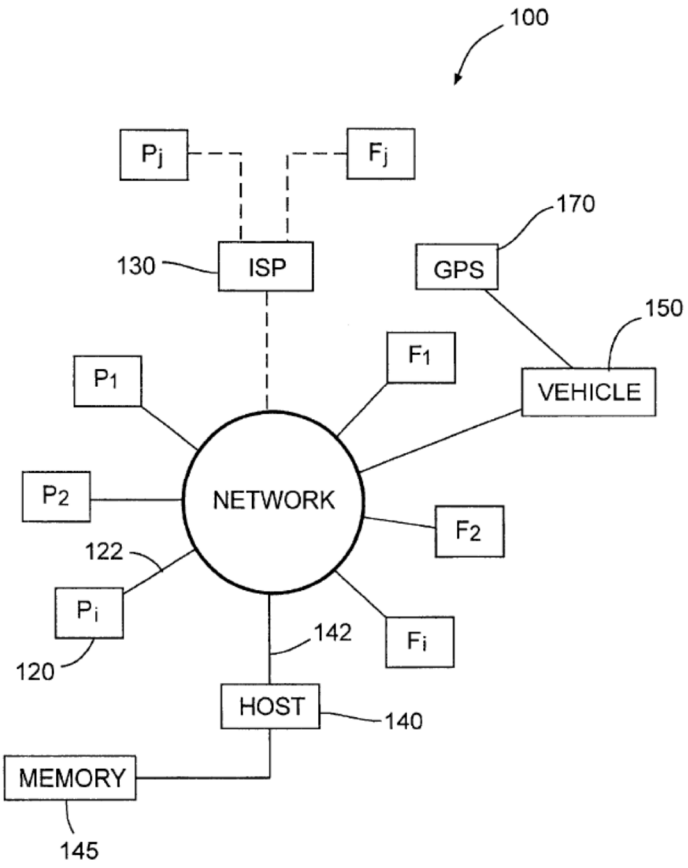


Fig. 1

(*Id.*, FIG. 1.)

40. Gaspard explains that its communication system 100 is a "conventional Intranet or the Internet and the terminals 120 and the host 140 are personal computers (e.g., conventionally available PENTIUM-based computers) or other Internet

appliances (e.g., digital handheld telephones with Internet access) with access to the network 110 (e.g., via modem, network card, direct cable access, etc.)." (EX1006, 5:64-6:3, FIG. 1.)

41. Gaspard explains that "[u]sers access a network 110 from terminals 120," where "P1, P2,…Pi indicating passenger terminals and F1, F2,…Fi indicating freight terminals." (*Id.*, 4:50-52, FIG. 1.) Gaspard's "[t]erminals 120 are interconnected (e.g., line 122 or through an Internet Service Provider 130) over the network 110 to a host 140." (*Id.*, 4:56-61, FIG. 1.) For example, Gaspard explains users can "access a website stored at the host (e.g., in memory 145) from the terminals 120" and that "[s]uch access over the Internet is conventional." (*Id.*, 6:3-7, FIG. 1.) Additionally, according to Gaspard, "use of websites and the Internet is conventional and other arrangements are possible (e.g., where the website is stored at an ISP)." (*Id.*, 6:12-14, FIG. 1.) Gaspard also states that the terminals can be "any type of terminal 120 (e.g., cellular phones, digital phones, facsimile machines, etc.)." (*Id.*, 6:19-21.)

42. Gaspard explains that the vehicle in the method/system "has passenger area 620*a* and a freight area 630*a*," (*id.*, 5:5-6), and is "equipped with a conventionally available global positioning system (GPS)" that "provides vehicle positioning data that can be transmitted from the vehicle 150 to the host 140 over the network 110," (*id.*, 6:39-48.) With respect to freight, "the vehicle 600*a* can be

used to deliver individual shipments to loading docks (e.g., under a post office or package delivery contract, or automobiles to dealerships), deliver individual shipments to multiple destinations (e.g., a shipment of clothes to a retail outlet and a shipment of electronics to another retail outlet or warehouse), or deliver entire containers (e.g., to freight staging areas, warehouses, shipyards, trains), etc." (*Id.*, 5:20-27.) If desired, the vehicle operator is "able to simultaneously offer passenger service…using the same vehicle 150 as used for freight transportation." (*Id.*, 5:49-52.)

43. According to Gaspard, a "host receives transportation requests from a freight terminal and/or a passenger terminal connected to the host over a network (e.g., the Internet)." (*Id.*, 3:42-44.) The requests can be "requests to pick up and deliver freight, to transport passengers, to reschedule a previously Scheduled or cancelled request, to cancel a previously Scheduled request, etc." (*Id.*, 3:44-48.) The host then "creates a route or routes having destinations based on the received transportation requests." (*Id.*, 3:48-49.)

44. Gaspard's process of "scheduling" is illustrated in Figure 2, which I have reproduced below. (*Id.*, 6:49-8:61, FIG. 2.)

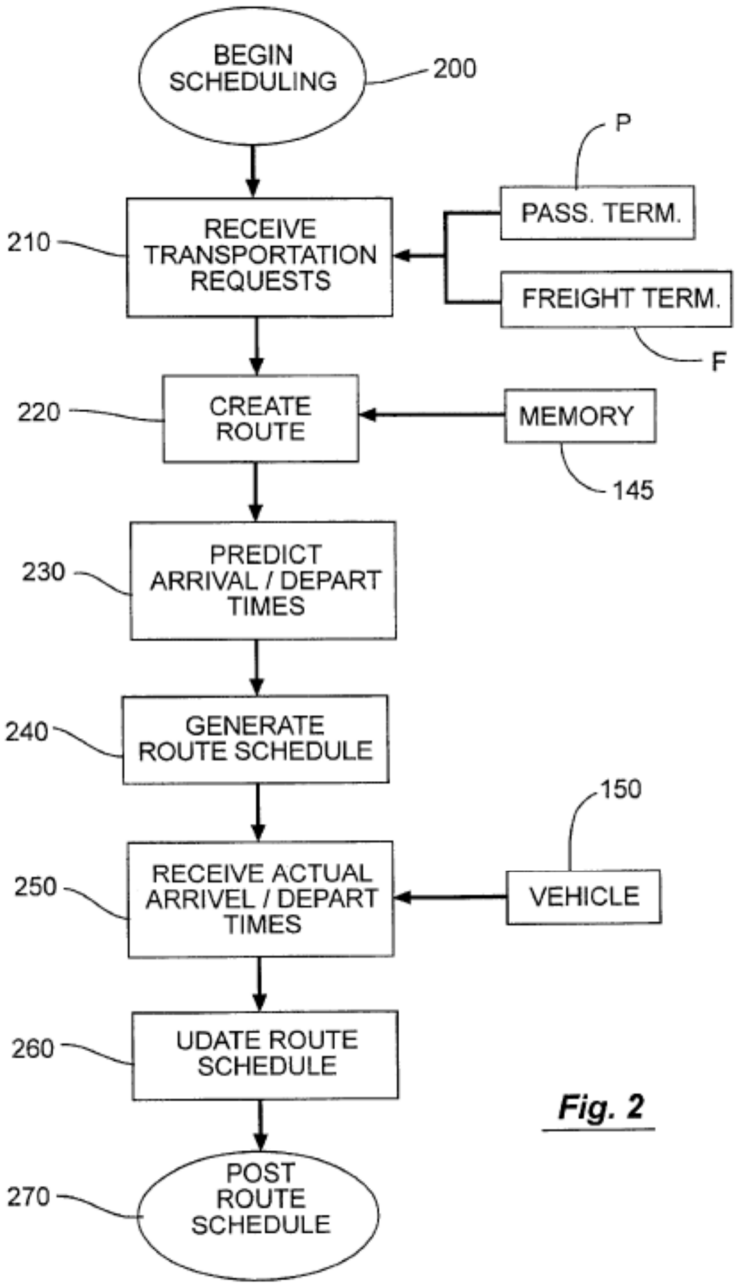


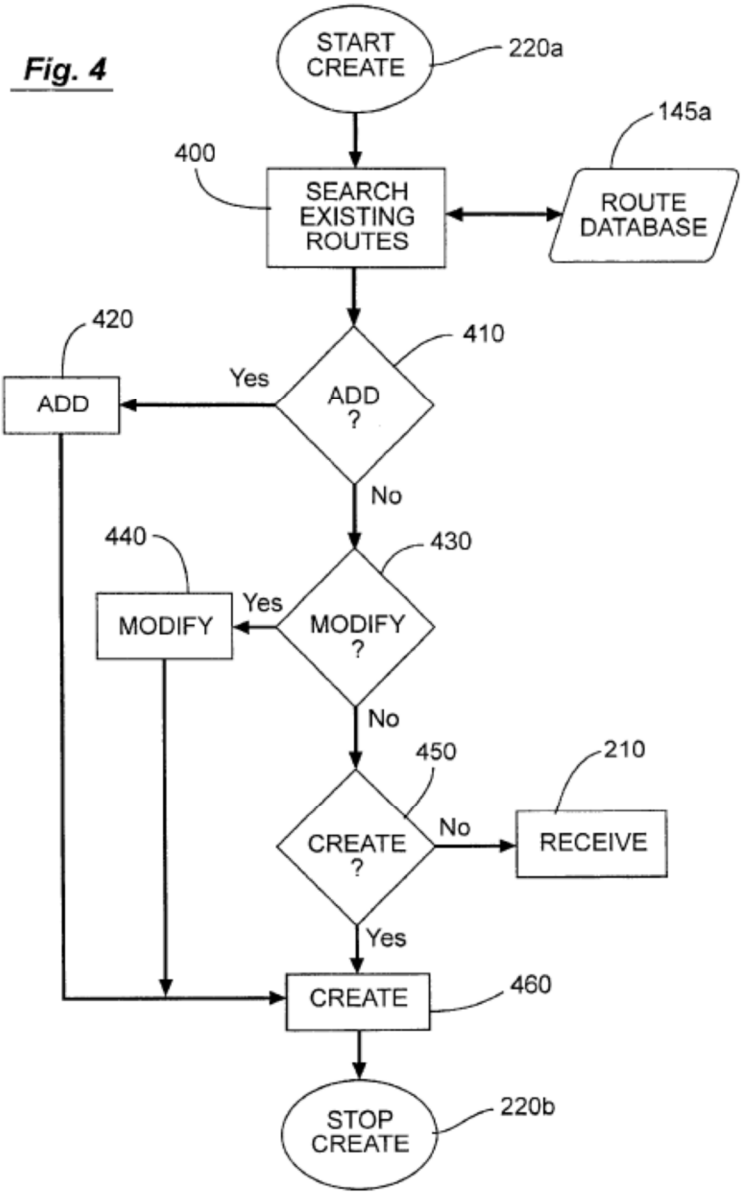
Fig. 2

(*Id.*, FIG. 2.)

45. The process involves the host 140 receiving "transportation requests from the terminals 120 (e.g., passenger terminals P and/or freight terminals F) in step 210." (*Id.*, 6:50-53.) The requests include (i) "requests by a potential passenger

or a group of passengers to be picked up at one location and taken to a destination," (*id.*, 6:53-56), and (ii) "requests by freight shippers to pick up and deliver freight from one location to another location," (*id.*, 6:65-67). "For example, a freight shipper can access an Internet site at the host 140 from a freight terminal F1 over the network 110 and transmit a request to pick up a specified number of cartons having specified dimensions (i.e., volume) and weight from a warehouse in Town A and deliver it to a store in Town B." (*Id.*, 6:67-7:5.) Gaspard further states that "the operator of vehicle 150 can require a request to transport freight to be specific, describing the size, weight and contents of a delivery." (*Id.*, 7:20-24.)

46. As Gaspard explains, once a transportation request is received, "the host 140 accesses memory 145 and retrieves a database containing available vehicles and destinations." (*Id.*, 7:32-35.) If a route already exists (e.g., a vehicle 150 is already scheduled to travel to or near the subject town), the host 140 will determine whether additional passengers, freight and/or destinations can be added." (*Id.*, 7:35-39.) Otherwise, "the host 140 creates a new route (e.g., using conventionally available mapping software) based on past traveled routes, distance between destinations, major highways, etc." (*Id.*, 7:39-43.) The process for scheduling routes, which corresponds to "process step 220 in FIG. 2, is set forth in greater detail in Figure 4, which I reproduce below.



(*Id.*, FIG. 4.)

47. As illustrated in Figure 5 below, which relates to step 410 in Figure 4, the host 140 "ascertain[s] whether or not the existing transportation request (these requests can be one or several can be added to existing routes" by determining whether or not there is availability that accommodates the "freight requirements for

a freight transportation request from a requested pick up to a requested destination." (*Id.*, 11:7-22.) For example, Gaspard explains that, in "FIG. 5 and in each 410, 430, and 450, each new transportation request is evaluated as to…available freight requirements." (*Id.*, 11:66-12:4.) If "freight space is available, then in stage 420, the process of the present invention adds the new request to existing routes." (*Id.*, 11:23-27.)

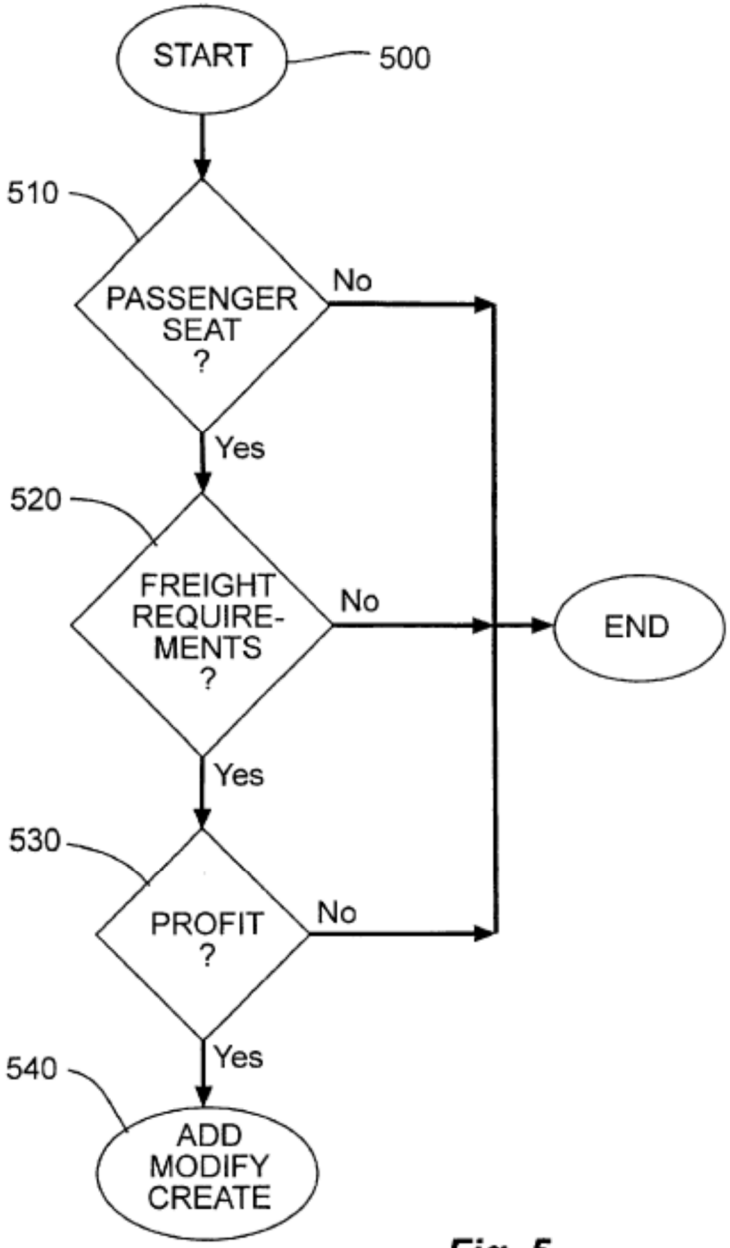


Fig. 5

(*Id.*, FIG. 5.)

48. As I discuss further below (*see* my discussions below in Section IX) Gaspard discloses a method and system for transporting goods, consistent with the features found in the challenged claims.

C. Overview of Thomas (EX1013)

49. Based on my review, a person of ordinary skill in the art would have understood that Thomas relates to a "location monitoring system 100," as shown in Figure 1 below. (EX1013, 2:58-59.)

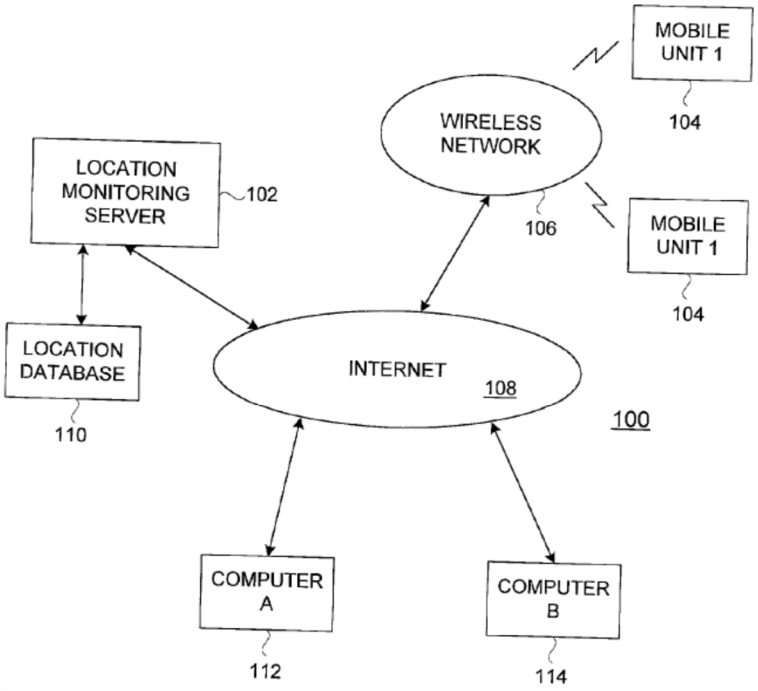


FIG. 1

(*Id.*, FIG. 1.)

50. The system 100 includes "location monitoring server 102," which "manages location information pertaining to a plurality of mobile units 104" that can be "attached to objects, such as people, vehicles, or containers." (*Id.*, 2:59-63.) The "mobile unit (client device, mobile communications device or mobile computing device) is, for example, one of a pager, mobile phone, personal digital assistant, or

reduced size portable computing device." (*Id.*, 9:24-27.) And the "location information can…be obtained by a variety of methods," including "GPS." (*Id.*, 3:18-46.) According to Thomas, "[l]ocation information associated with the mobile units 104 is…delivered to the location monitoring server 102 through the wireless network 106 and the Internet 108," which is stored in a "location database 110." (*Id.*, 3:1-6.)

51. Thomas explains that the system 100 is "suitable for tracking delivery…or vehicles," (*id.*, 9:5-6), as explained below:

> When a delivery or service appointment is made, you can receive a code for the truck or person that is going perform the delivery or service. Then, on the delivery day (days) when the truck or person is to deliver to or service one's home or business, an alert message or notification can be sent to the requestor (e.g., home owner or office manager). As examples, the message or notification is electronic and include a page, email or telephone type messages or notifications. Hence, if the homeowner is impatiently waiting for the delivery, they can access the location of the truck or person that is to perform the delivery or service.

(*Id.*, 9:6-16.)

52. As I discuss further below (Section IX.B), Thomas discloses a method/system for monitoring the location of vehicles transporting goods, consistent with the features recited in the challenged claims.

D. Overview of Wolfe (EX1007)

53. Based on my review, a person of ordinary skill in the art would have understood that Wolfe describes a "method and apparatus for providing a proof of delivery verification for freight transportation systems," (EX1007, Abstract), which have "the capability and flexibility to transport large amounts of goods to multiple destinations efficiently," (*id.*, [0004]). Figure 1 "illustrates the various elements involved in providing a proof of delivery verification in a land vehicle application using a mobile communication device." (*Id.*, [0019].) For example, "vehicle 100" can be various "types of land vehicles," such as a "tractor-trailer," "a pick-up truck, a courier vehicle," etc. (*Id.*) Vehicle 100 comprises a "mobile communication terminal [or MCT]…for communicating with a remote station 102," which comprises a "central processing center" that "serves as a central communication point between all vehicles having an MCT." (*Id.*, [0020].) Additionally, the "location of vehicle 100 may be determined by position detector 202," which may be "a Global Position Satellite (GPS) receiver," (*id.*, [0030]), and "transmitted to remote station 102 when needed," (*id.*, [0031]).

54. Wolfe explains that a "carrier 110" receiving "details of the shipment…, such as the location of the shipper, the date and time of the pick-up, the location of the destination, the desired date and time of delivery, and the amount and type of goods to be transported." (*Id.*, [0022].) "[A]t this time, an electronic record of the expected delivery may be created by carrier 110," or "remote station 102," "and stored in a database." (*Id.*, [0023].) A carrier 110 vehicle can then be "dispatched to shipper 106 to pick up the shipment." (*Id.*, [0024].) The goods are then picked up, transported, and delivered to the destination. (*Id.*, [0025]-[0028].)

55. According to Wolfe, at this point, a "validation request message may then be transmitted via the MCT to remote station 102, indicating delivery of the goods." (*Id.*, [0028]; *see also id.*, [0053] ("vehicle operator enters the shipment code into MCT 200 and transmits a validation request message to remote station 102 indicating delivery of goods identified by the bill of lading or other identifying information"), FIG. 3.) The message may include, for example, "the shipment code and information to identify the shipment, such as a vehicle identification number, a purchase order number, or a bill of lading number." (*Id.*, [0053].) Once the message is received, the remote station 102 "examines it to determine whether the arrival of vehicle 100 corresponds to an expected delivery," (*id.*, [0054]), and if "an expected shipment record matches the verification request message, the arrival of vehicle 100 is validated, and a proof of delivery verification

is generated," (*id.*, [0055]). The remote station 102 can then provide the "proof of deliver verification…to an interested party, such as shipper 106," and can "immediately send an invoice." (*Id.*, [0028]; *see also id.*, [0064].

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

A. The Combination of Olmi and Gaspard Discloses or Suggests the Limitations of Claims 1-3, 10-12, and 18

56. In my opinion, Olmi in combination with Gaspard discloses or suggests all of the limitations of claims 1-3, 10-12, and 18.[10] Below, I address each limitation of the claims.

[10] 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

a) [1.pre] A method of transporting a good using a shared transport system, the method comprising:

57. I have been asked to assume that the preamble of claim 1 is limiting. Under that assumption, it is my opinion that Olmi in view of Gaspard discloses/suggests the limitations therein.

58. In my opinion, Olmi discloses a "method of transporting" travellers "using a shared transport system."[11] Olmi's method/system, like the '138 patent's method/system, leverages existing features/concepts from public transport and individual transport applications to address transportation problems. (EX1005, 8-9 (§5.1).)[12] For example, Olmi teaches a transportation sharing process where a

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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.

[11] I have underlined claim language throughout my Declaration.

[12] Citations to EX1005 are to the underlying document page number(s).

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 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)).

59. 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.)

60. 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.*)

61. 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.)

62. As I discuss 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 discussion for limitation [1.b].)

63. 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; *see* also my discussion for limitation [1.b].)

64. 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.)

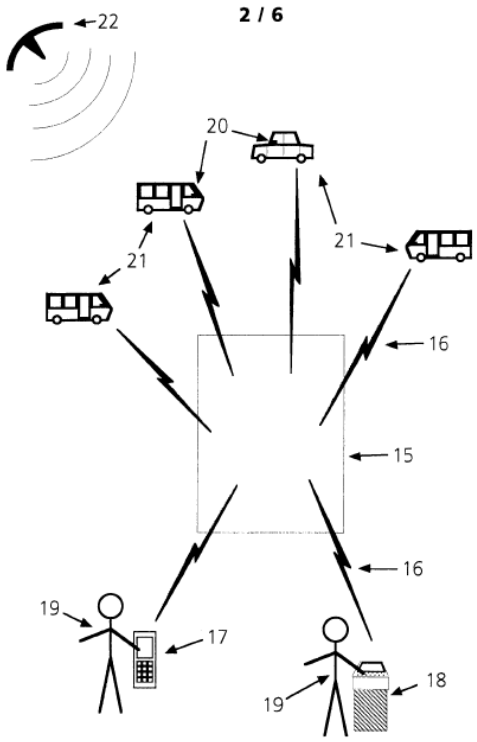


Figure 4

(*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.)

65. 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*.)

66. 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*.)

67. Accordingly, it is my opinion that Olmi discloses a "method of transporting" passengers "using a shared transport system."

68. As I discuss above, I was asked to consider 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 limitations [1.a] and [1.b] relating to Petitioners' proposed constructions of "first pick-up location," "first drop-off location," and "transport provider"). Olmi discloses these claim elements by arranging rides between passengers and drivers (e.g., by carpooling or existing public transport for individuals, including individuals transporting goods) using mobile communicator

devices and a central computer and communication systems.[13] For example, for the reasons explained above and those summarized below, Olmi discloses:

"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.)

[13] I have been informed that, in district court, Patent Owner (PO) 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 Gaspard 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 interpretation of the term consistent with the language of the claims of the '138 patent, its specification, and from my review of the prosecution history for the '138 patent (EX1004), for the same reasons that I explain herein. Meaning, the Olmi system and method (including as modified in light of Gaspard) still discloses the claimed "shared transport system" in a manner consistent with the '138 patent.

"shared transport system"
"**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").) "**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

"<u>shared transport system</u>"
rather than being created solely from the passenger's request. (*Id.*, 11-12, 35-36, 70.)

69. As I discuss above and below for claim element [1.a], Olmi discloses a method/system of transporting travellers using a shared transport system. (*See* my discussion for claim element [1.a].) ***In addition to transporting travellers, it is my opinion that Olmi also suggests that its shared transport method/system can be used to transport goods***. For example, in its "summary of transport problems" that it aims to solve, Olmi explains that "existing modes of public transport do not provide a door-to-door service, so personal security and protection from the weather is not complete, and carrying luggage or goods is made more difficult." (EX1005, 7.) Olmi's shared transport system therefore considers not only the number of passengers travelling, but also the amount of "luggage" a passenger is carrying "so that the controlling computer system can supply a car pool vehicle with sufficient space." (*Id.*, 85; *id.*, 12, 16, 79.) Olmi explains, for example, that a "journey request" includes details of "a traveller or passenger itinerary, and may also include a specification of any other travel requirements relating to this itinerary, such as the number of travellers to be conveyed on the said itinerary, the details of any luggage

carried by the travellers, and the time and date at which conveyance of the travellers according to the said itinerary is to commence." (*Id.*, 12.)

70. Olmi goes on to explain that certain vehicles will contain enough space to accommodate travellers carrying goods, such as "large or heavy items." (*Id.*, 52-53.) For example, according to Olmi, some vehicles can "accommodate passengers carrying a suitcase or several bags of supermarket shopping." (*Id.*, 85.) Olmi also states that there "should be no extra charge for carrying goods or luggage." (*Id.*). For example, Olmi explains:

> In taxibus travel it is thought that there should be no extra, charge for carrying **goods or luggage** - in keeping with most other forms of public transport. Most taxibus vehicles will contain enough space to accommodate passengers carrying a **suitcase or several bags of supermarket shopping**. However, smaller taxibus vehicles will possess only limited amount of luggage space, and may not be able to accommodate a group of passengers if each is carrying bulky luggage. Nevertheless, **if such a group of passengers indicate in their initial journey request that they have heavy luggage, the controlling computer system will automatically deploy a sufficiently spacious taxibus to transport them**.

(*Id.*)

71. Therefore, in my opinion, Olmi discloses not only a method/system for transporting travellers, it also discloses a method/system for transporting goods carried by travellers. Despite these teachings regarding accommodating the transportation of passengers with goods, however, Olmi does not explicitly disclose a "method of transporting a good using a shared transport system." It is my opinion that a person of ordinary skill in the art would have been motivated to implement such a feature in a system/method like that described in Olmi in view of Gaspard.

72. I discuss Olmi above. Gaspard is similar to Olmi in that it relates to a method/system for arranging transportation through a central computer system. Gaspard expressly discloses that such a system can transport both "freight and passengers," which, in my opinion, discloses the transport of "goods." (EX1006, Abstract.) For example, Gaspard discloses "a method of scheduling a vehicle in real-time to transport both freight and passengers simultaneously" through a host system that "receives transportation requests from a freight terminal and/or a passenger terminal connected to the host over a network." (*Id.*, 3:39-43.) The transportation requests described by Gaspard include "requests to pick up and deliver freight, to transport passengers, to reschedule a previously scheduled or cancelled request, to cancel a previously scheduled request, etc." (*Id.*, 3:44-47.)

73. Additionally, Gaspard's method/system is similar to Olmi's method/system in that it is implemented through "a communications system 100" shown in Figure 1 (below). (*Id.*, 4:48-49, FIG. 1.)

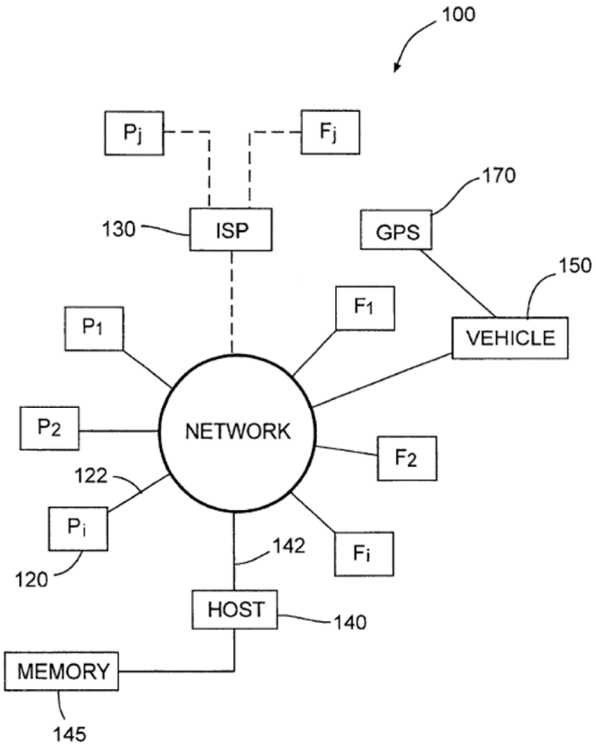


Fig. 1

74. Gaspard explains that "[u]sers access a network 110 from terminals 120," including "passenger terminals" (e.g., P1) and "freight terminals" (e.g., F1), and are interconnected with a "host 140." (*Id.*, 4:50-61, FIG. 1.) For example, Gaspard explains the following regarding communication system 100:

> The method of the present invention is implemented over a **communications system 100** such as that shown in FIG. 1. Users access a network 110 from **terminals 120** (e.g.,

> P1, P2, . . . Pi indicating passenger terminals and **F1, F2, . . . Fi indicating freight terminals**). It is to be understood that while the terminals 120 are designated as passenger terminals P and freight terminals F, the terminals are preferably otherwise indistinguishable and the same terminal can be used by either a passenger or a freight shipper. **Terminals 120 are interconnected (e.g., line 122 or through an Internet Service Provider 130) over the network 110 to a host 140**. A similar terminal 120 can also be **used on-board the vehicle 150**. The host 140 is connected to the network 110 through a direct connection (or through an ISP, not shown) over line 142.

(*Id.*)

75. Similar to Olmi's communication system, Gaspard's communication system, as shown in Figure 1 (above), is a "conventional Intranet or the Internet and the terminals 120 and the host 140 are personal computers (e.g., conventionally available PENTIUM-based computers) or other Internet appliances (e.g., digital handheld telephones with Internet access) with access to the network 110 (e.g., via modem, network card, direct cable access, etc.)." (*Id.*, 5:64-6:3, FIG. 1.) Gaspard explains users can "access a website stored at the host (e.g., in memory 145) from the terminals 120" and that "[s]uch access over the Internet is conventional and typically involves the use of a domain name (e.g., www.<domain name>.com)."

(*Id.*, 6:3-7, FIG. 1.) Gaspard's "use of websites and the Internet is conventional and other arrangements are possible (e.g., where the website is stored at an ISP)." (*Id.*, 6:12-14, FIG. 1.) The network described by Gaspard "can be land-based, Satellite-based, direct cable (e.g., DSL, LAN), etc., or any combination thereof." (*Id.*, 6:17-19.) Similarly, Gaspard's terminals can be "any type of terminal 120 (e.g., cellular phones, digital phones, facsimile machines, etc.)." (*Id.*, 6:19-21.) Gaspard further explains that "each terminal 120 and the host computer 150 can have individual internal memory (e.g., 160). Likewise, memory 145 can be random access memory (RAM), read only memory (ROM), any suitable form of Storage disk (e.g., magnetic tape, hard disk, floppy disk, ZIP disk, etc.)." (*Id.*, 6:29-33.)

76. Therefore, it is my opinion that Gaspard is similar to Olmi, which as discussed above, also discloses a transportation ecosystem for arranging transportation via a central system (similar to Gaspard's network/host system). A person of ordinary skill in the art would have had good reason to consider the teachings of Gaspard when implementing a system/method like that disclosed in Olmi.

77. For example, a person of ordinary skill in the art would have been motivated to implement Gaspard's teachings relating to the method/system for transporting freight ("method of transporting a good") in a method/system like that disclosed in Olmi. (*Id*, 3:40-4:9, FIG. 2.) Like Olmi, Gaspard's method is

implemented using a host computer 140 that manages multiples vehicles at a time (which, like Olmi, is "using a shared transport system"). (*Id.*, FIG. 1, Abstract, 3:42-4:9, 4:15-17, 4:46-5:3, 5:64-6:14, 6:28-38, 6:50-9:5, 11:2-12:26.) In particular, Gaspard describes a scheduling method, shown in Figure 2 (below), that facilitates scheduling between the host and freight. (*Id.*, 6:50-51, FIG. 2.)

78. Similar to Olmi, the scheduling method begins when "[t]he host 140 receives transportation requests from the terminals 120 (e.g., passenger terminals P and/or freight terminals F)." (*Id.*, 6:51-53.) Transportation requests can include requests by "freight Shippers to pick up and deliver freight from one location to another location." (*Id.*, 6:53-67.) For example, "a freight shipper can access an Internet site at the host 140 from a freight terminal F1 over the network 110 and transmit a request to pick up a specified number of cartons having specified dimensions (i.e., volume) and weight from a warehouse in Town A and deliver it to a store in Town B." (*Id.*, 6:67-7:5.) Gaspard explains that the transportation request will depend on design considerations. In one example, Gaspard describes that "the operator of vehicle 150 can require a request to transport freight to be specific, describing the size, weight and contents of a delivery." (*Id.*, 7:19-23.) In another example, "a request to transport freight need not be specific as to size and weight so long as it falls within set guidelines (e.g., small, lightweight packages)." (*Id.*, 7:23-26.)

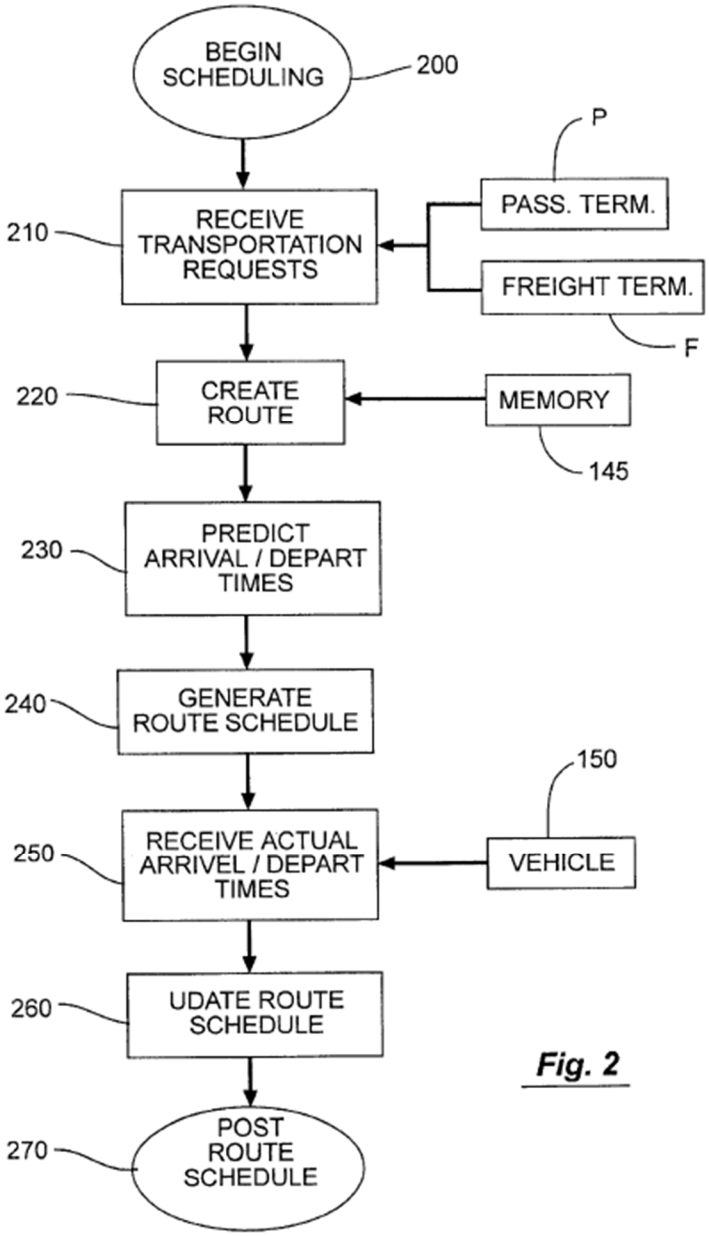


Fig. 2

(*Id.*, FIG. 2.)

79. A person of ordinary skill in the art would have been motivated to include features similar to those disclosed by Gaspard when implementing the Olmi system/method in order to provide a transport system that accommodates the

transportation of goods between points. In fact, Olmi acknowledges that its method/system can accommodate the transportation of goods along with a passenger, given the "journey request…may also include a specification of any other travel requirements relating to this itinerary, such as…the details of any luggage carried by the travellers." (EX1005, 12, 16, 86.) Additionally, Olmi explains that cars are "unbeatable" for the "carrying [of] goods or luggage" (*id.*, 4), because "existing modes of public transport" make "carrying luggage or goods…difficult" (*id.*, 7). Olmi goes on to explain that, in its method/system, certain vehicles contain enough space to accommodate travellers carrying "large or heavy items," (*id.*, 52-53), or "a suitcase or several bags of supermarket shopping," (*id.*, 85), and that there "should be no extra charge for carrying goods or luggage" (*id.*).

80. Therefore, based on my review of Gaspard and Olmi and my experience in the field, it is my opinion that a person of ordinary skill in the art would have been motivated to adapt Olmi's method/system to accommodate "transporting a good," as claimed, in addition to, or instead of, passengers. For example, as a person of ordinary skill in the art would have recognized, such a method/system would have yielded predictable commercial benefits, including increased driver revenue and increased shipping options and volume to the benefit of those requiring the transportation of goods, providing further incentive for a person of ordinary skill in the art to implement such a change.

81. In fact, Gaspard itself explains benefits that could be realized in such systems that are capable of accommodating goods. For example, as Gaspard explains, "[b]y scheduling the vehicle to transport both passengers and freight, the profitability of existing routes increases" for the vehicle drivers. (EX1006, 3:12-14.) Additionally, Gaspard explains that its scheduling method/system "allows for new unserved or underserved passenger and freight routes to be added" and meeting rapidly updating passenger and freight requirements for transport. (*Id.*, 3:33-37.) Such a method/system, as Gaspard explains, achieves the "goal…to maximize passenger seat usage, ship as much as possible freight, and to receive a maximum profitability figure." (*Id.*, 11:62-65.)

82. A person of ordinary skill in the art would have also had a reasonable expectation of success in implementing such a combination, especially given it would have involved the application of known technologies according to known software and hardware techniques. Gaspard expressly contemplates a shared transport marketplace for goods, and the modifications required in Olmi—substituting goods for passengers by, e.g., adjusting simple system parameters—are routine engineering changes within ordinary skill. In fact, both Olmi and Gaspard rely on conventional software and hardware, as discussed above, which would have enabled implementation of the combination with a reasonable expectation of success. (EX1005, 13-14 (describing conventional vehicles, data transmission

systems, computer systems, communicator devices (e.g., cellular telephone), and positioning systems (e.g., GPS)); EX1006, 7:53-8:48 (describing conventional vehicles, communication systems, computer and terminal systems, and location systems (e.g., GPS)).) For these reasons, it is my opinion that the combination of Olmi and Gaspard, as discussed above, would have predictably resulted in an Olmi-Gaspard method/system in which a shared transport system (e.g., in a carpooling or public transport configuration, similar to as described in Olmi) is configured to allow for the transportation of one or both of passengers and goods via a central computer system (e.g., consisting of network/data center servers) and mobile devices. (*Id*.) I discuss the Olmi-Gaspard method/system in more detail, including how the method/system operates for purposes of transporting goods, in my discussion of the remaining claim limitations.

b) [1.a] receiving, by the shared transport system, a first transport request from a first transport user device for delivery of a first good, wherein the first transport request includes a first pick-up location, a first drop-off location and a first needed space or capacity for the first good;

83. In my opinion, the Olmi-Gaspard combination discloses this limitation.

84. First, as I explain above for limitation [1.pre], the Olmi-Gaspard method/system discloses that the central computer system ("share[d] transport system") receives a journey request ("a first transport request") from a potential

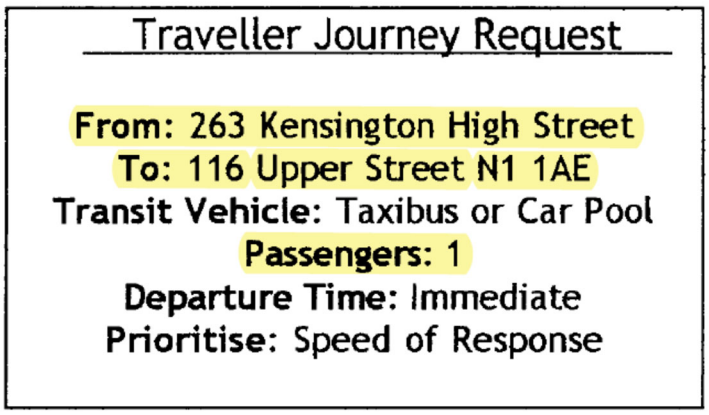
passenger's communicator device ("from a first transport user's device"). (*See* my discussion above for limitation [1.pre].) For example, Olmi explains that "a prospective traveller 19 uses a communicator device 17 to formulate and send his journey request to a central controlling computer system 15 via the data transmission system 16." (EX1005, 32.) As I discussed for limitation [1.pre] and below, in the Olmi-Gaspard method/system, the journey request includes criteria, such as a pick-up location, a drop-off location, and needed capacity ("wherein the first transport request includes a first pick-up location, a first drop-off location and a first needed space or capacity"). (*See* my discussion for limitation [1.pre].)

85. Olmi discloses "wherein the first transport request includes a first pick-up location." For example, in Olmi, the journey request, as shown in Figure 8 below, includes the "specification of the itinerary of the traveller," "includ[ing] the current location or desired pick-up point for the traveller." (*Id.*, 32; *see also id*., 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.)

86. As also shown in Figure 8 below, the journey request includes the "traveller's destination," which is "a first drop-off location," as part of the specification of the itinerary of the traveller. (*Id.*, 11 (defining "traveller or passenger itinerary" to include "the traveller's embarkation point and the traveller's destination"), 12 ("journey request is defined as a data structure or a computer data formal which includes a specification of a traveller or passenger itinerary"), 16 ("traveller itineraries that fall into the category of simple two-point itineraries which comprise the traveller's embarkation point and destination point"), 32 (explaining the "journey request" includes the "specification of the itinerary of the traveller").)

87. While Olmi does not describe a request to transport goods, it does describe a request to transport a certain number of travellers, which may be carrying goods. For example, as shown in Figure 8 below, the journey request includes the "number of travellers to be conveyed on the said itinerary." (*Id.*, 32.) The request may further include "details of any luggage carried by the travellers." (*Id.*, 12.)



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

88. Thus, Olmi discloses "receiving, by the shared transport system, a first transport request from a first transport user device."

89. In my opinion, the above-discussed teachings of pick-up and drop-off points meet Petitioners' proposed constructions of a "pick-up location" and a "drop-off location," which I was asked to consider. (*See* Section VII.)

"pick-up location" / "drop-off location"
"A node": As I discuss above for limitation [1.pre], a passenger's journey request includes the passenger's itinerary, which includes the desired pick-up and drop-off points of the passenger. (*See* my discussion of claim element [1.pre]; 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,

"pick-up location" / "drop-off location"
and whose directed edges indicate the direction of travel." (*Id*., 11.) In my opinion, a person of ordinary skill in the art would have understood that each of these vertices, including the pick-up and drop-off points, is a "node" along a route. **"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 and drop off/disembarkation points 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 and drop-off points may be nodes 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 explain for limitation [1.pre], each of these predetermined/fixed routes is "an existing route defined before demand for transport and

"pick-up location" / "drop-off location"
independently of a transport user's door-to-door trip." (*See* my discussion for limitation [1.pre].)

90. Accordingly, Olmi discloses that each of a passenger's pick-up and drop-off points may be "[a] node along an existing route defined before demand for transport and independently of a transport user's door-to-door trip," as required by Petitioners' proposed construction.[14]

[14] I have been informed that, in district court, Patent Owner (PO) disagrees with Petitioners' proposed construction of the claimed "pick-up location" and "drop-off location," that I was asked to consider. I was also asked to consider Olmi (and further as modified in view of Gaspard as I discuss below) under the assumption that Petitioners' proposed construction is not applied to these claim terms. Under that assumption, my opinions do not change as Olmi, including as modified herein, still discloses these terms under any reasonable interpretation of the terms consistent with the language of the claims of the '138 patent, its specification, and from my review of the prosecution history for the '138 patent (EX1004), for the same reasons that I explain herein. Meaning, the Olmi system and method (including as modified in

91. Second, as I discuss above for limitation [1.pre], while Olmi describes the transportation of passengers carrying goods, it does not explicitly disclose a method/system for transporting goods. It therefore does not explicitly disclose that the journey request (the claimed "first transport request") is "for delivery of a first good" or includes "a first needed space or capacity for the first good." A person of ordinary skill in the art, however, would have been motivated to implement such features in the Olmi system in view of Gaspard for the reasons I discuss below and above for [1.pre].

92. Gaspard discloses that its freight transportation request from a terminal, which is "a first transport request from a first transport user device for delivery of a first good," includes a volume and/or weight of the freight to be transported, which discloses "a first needed space or capacity for the first good." (EX1006, 12:23-26 ("the freight transportation requests include reservations for cubic space").) For example, as I discuss above for [1.pre], Gaspard describes an exemplary "request" ("a first transport request") to "pick up and deliver freight" having a "specified" "volume" and/or "weight" ("a first needed space or capacity for the first good") from a "warehouse in Town A" ("a first pick-up location") and to a "store in Town B" ("a

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light of Gaspard) still discloses the claimed "pick-up location" and "drop-off location" in a manner consistent with the '138 patent.

first drop-off location"). (*Id.*, 6:65-7:9; *see also id.*, 7:19-31 ("For example, the operator of vehicle 150 can require a request to transport freight to be specific, describing the size, weight and contents of a delivery.").)

93. Accordingly, based on these teachings of Gaspard, in the Olmi-Gaspard method/system, a person of ordinary skill in the art would have been motivated to implement Olmi's journey request such that it is "for delivery of a first good" and includes "a first needed space or capacity for the first good," for reasons similar to those I discuss above for [1.pre]. (*See* my discussion for [1.pre].) For example, given Olmi and Gaspard describe similar features (e.g., use of a transportation ecosystem through mobile devices that communicate via a central system) and address similar problems (e.g., transportation of people and goods), a person of ordinary skill in the art would have looked to Gaspard when implementing Olmi's method/system. Additionally, based on Gaspard's teachings, a person of ordinary skill in the art would have been motivated to implement the combined system/method to provide a transport system that accommodates goods to yield predictable commercial benefits, including increased driver revenue and increased shipping options and volume to the benefit of those requiring the transportation of goods. (*See* my discussion for claim element [1.pre].) In implementing such a combination, a person of ordinary skill in the art would have recognized the need to include the required space or capacity of the good to be transported, to ensure

sufficient space is available. Otherwise, the method/system would not operate efficiently or as intended.

94. Implementing the Olmi-Gaspard combination to include the required space or capacity of the good to be transported is consistent with the teachings of both Olmi and Gaspard. For example, Olmi teaches that its journey request must specify not only the number of passengers but also any "luggage requirements, so that travellers with luggage can be found a suitable transit vehicle." (EX1005, 16.)

95. Similarly, in Gaspard, the request must specify the freight requirements (e.g., size, volume, weight) in order to find a vehicle that can accommodate the freight. (EX1006, 7:35-39, 11:66-12:4 ("each new transportation request is evaluated" for "available freight requirements").) Indeed, such information about the good is required in order for the method/system to function properly and/or efficiently. For example, if the request did not specify the freight requirements, a driver that cannot accommodate the freight may be selected. This would result, for example, in both lost revenue for the driver and freight shipment delays, contrary to the goals of Gaspard, including "to maximize passenger seat usage, ship as much as possible freight, and to receive a maximum profitability figure." (*Id.*, 11:63-65.)

96. A person of ordinary skill in the art would have had a reasonable expectation of success implementing such a combination, which would have required nothing more than a combination of known prior art elements using known

programming methods without changing their respective functions to achieve a predictable result. For example, while Olmi explains that a journey request for a traveller may include details of any luggage carried by the traveller, it does not explicitly disclose a journey request for transporting goods along with the space or capacity requirements corresponding to the goods. Gaspard, however, provide disclosure of a request to transport freight that includes freight space or capacity, and a person of ordinary skill in the art would have recognized that it would have taken nothing more than straightforward design and programming modifications to incorporate such freight information in a journey request, which is a simple data structure. (EX1005, 12 ("journey request is defined as a data structure").) For example, a journey request need only be modified at the data-structure level to specify the space or capacity required to transport a good rather than (or in addition to) the number of passengers. One way to do that is to replace (or supplement) a passenger count field with fields for cargo dimensions or capacity. Such changes are well within the capabilities of a person of ordinary skill in the art.

c) [1.b] identifying, by the shared transport system, a transport provider based on comparing provider characteristics of the transport provider with the first transport request, the provider characteristics including a current location or planned route and an available space or capacity of the transport provider, the provider characteristics being received from a transport provider device of the transport provider;

97. In my opinion, the Olmi-Gaspard combination discloses/suggests this limitation.

98. For example, Olmi discloses that the central computer system ("shared transport system") identifies a potential driver ("identifying, by the shared transport system, a transport provider") that complies with the transport provider's and the journey request's characteristics. (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….").)

99. Additionally, as I discuss above, I have been asked to consider Petitioners' proposed construction of "transport provider." In my opinion, Olmi's driver is a "transport provider" under Petitioners' proposed construction.

"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 discuss 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").[15] (*See* Section VII

[15] I have been informed that, in district court, Patent Owner (PO) disagrees with Petitioners' proposed construction of the claimed "transport provider" that I was asked to consider. I was also asked to consider Olmi (and further as modified in

"transport provider"
regarding claim construction and my discussion for limitations [1.pre] (regarding the limitation "shared transport system") and [1.a] (regarding the limitations "first pick-up location" and "first drop-off location").) For example, 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").) Additionally, Olmi

view of Gaspard 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 "transport provider" under any reasonable interpretation of the term consistent with the language of the claims of the '138 patent, its specification, and from my review of the prosecution history for the '138 patent (EX1004), for the same reasons that I explain herein. Meaning, the Olmi system and method (including as modified in light of Gaspard) still discloses the claimed "transport provider" in a manner consistent with the '138 patent.

"transport provider"
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.) 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.)

100. In my opinion, Olmi explains that the driver's characteristics are received from a vehicle driver's communicator device, which discloses "the provider characteristics being received from a transport provider device of the transport provider." Additionally, the characteristics include the proximity of the vehicle to the passenger, the vehicle's current or planned route, the seats available and number of passengers requesting rides, and the type of transit vehicle, which discloses "the provider characteristics including a current location or planned route and an available space or capacity of the transport provider."

101. For example, Olmi explains that each driver's transit vehicle has a "transit vehicle record" ("the provider characteristics") maintained in "a transit vehicle current itineraries database." (EX1005, 35.) The record includes the

"current geographic position of the transit vehicle" ("a current location … of the transport provider"), the "current vehicle itinerary of the transit vehicle" ("planned route … of the transport provider"), and the "passenger capacity of the transit vehicle" ("an available space or capacity of the transport provider"). (*Id.*, 34.) Olmi also accounts for a traveller's "luggage" when finding "a suitable transit vehicle." (*Id.*, 16.)

102. In my opinion, such records ("provider characteristics") are "received from a transport provider device of the transport provider." For example, Olmi explains:

> 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, in the same transit vehicle record format described above, the only difference being that the car pool driver's specified itinerary is 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. (A journey request record is created for the car pool driver because he is also a traveller,

> and his personal itinerary forms part of' the itinerary commitments of his vehicle).

(*Id.*, 35.)

103. These disclosures in Olmi discussed above satisfy the limitation, "the provider characteristics including a current location or planned route and an available space or capacity of the transport provider, the provider characteristics being received from a transport provider device of the transport provider," under Petitioners' and Patent Owner's proposed constructions that I was asked to consider, given all of these characteristics are received from the vehicle driver's communicator device.[16]

[16] I was also asked to consider Olmi (and further as modified in view of Gaspard as I discuss below) under the assumption that neither Petitioners' nor Patent Owner's proposed construction is applied to this phrase. Under that assumption, my opinions do not change as Olmi, including as modified herein, still discloses the "provider characteristics" phrase under any reasonable interpretation of the term consistent with the language of the claims of the '138 patent, its specification, and from my review of the prosecution history for the '138 patent (EX1004), for the same reasons that I explain herein. Meaning, the Olmi system and method (including as modified

"the provider characteristics including a current location or planned route and an available space or capacity of the transport provider, the provider characteristics being received from a transport provider device of the transport provider"
Petitioners' Construction: "The provider characteristics including (1) a current location or planned route, and (2) an available space or capacity of the transport provider, each received from the transport provider device of the transport provider." **Patent Owner's Construction: "Some of the provider characteristics are provided by the transport provider device of the transport provider."** Above, I discuss how Olmi discloses "a current location or planned route, and "an available space or capacity of the transport provider," as required by Petitioners' proposed construction. (EX1005, 34-35 (discussing "position," "itinerary," and "capacity").) Additionally, as I discuss above, in Olmi, all of the provider characteristics are provider from the driver's "communicator device in his vehicle to submit his car pool intended itinerary specification." (*Id.*, 35.)

in light of Gaspard) still discloses the claimed "provider characteristics" phrase in a manner consistent with the '138 patent.

104. It is also my opinion that Olmi's method/system identifies a transport provider "based on comparing provider characteristics of the transport provider with the first transport request." For example, Olmi describes an "intelligent grouping module," which tracks "current vehicle itinerary data fields." (*Id.*, 34-35.) The intelligent grouping module "constantly scans the journey requests database for journey request records." (*Id.*, 35.) Once the intelligent grouping module identifies a journey request, the module "copies the data from this journey request record with the objective of intelligently grouping the traveller or travellers 19 to which the record relates into a transit vehicle or vehicles" and matches a traveller to a driver based on "current geographic position of the transit vehicle," whether "[t]he transit vehicle has a sufficient quantity of available passenger places for the number of travellers specified in this journey request," and "the type" of transit vehicle. (*Id.*, 35-36; *see also id.*, 9 ("this car pooling configuration provides a very effective means of matching prospective passengers with car pool drivers having compatible itineraries").) "If no transit vehicles are currently available that satisfy these three search criteria, the intelligent grouping module will wait a few minutes, and then search again, repeating until a suitable transit vehicle is found." (*Id.*, 36.) Therefore, to identify a driver, Olmi performs matching ("comparing") between the record of a

transit vehicle ("provider characteristics of the transport provider") and the journey request record ("with the first transport request").

105. As I explain above in [1.pre] and [1.a], in the Olmi-Gaspard combination, a person of ordinary skill in the art would have been motivated to implement the method/system of Olmi to facilitate the transportation of goods. (*See* my discussion for claim elements [1.pre] and [1.a].) In this method/system, as I discuss with respect to [1.a], a journey request would indicate any requirements for the good (e.g., volume and/or weight) (the "transport request" would have included "needed space or capacity for the first good") to the central computer system. (*See* my discussion for claim element [1.a].) In such a system, a person of ordinary skill in the art would have been motivated to implement the transit vehicle record ("provider characteristics of the transport provider" and "received from a transport provider device") to include not only the information described in Olmi, such as available traveller capacity, but also capacity for goods like described in Gaspard ("an available space or capacity of the transport provider"). This way, Olmi's grouping module can properly match requests containing requirements for goods with vehicles having capacity to transport the goods ("based on comparing provider characteristics of the transport provider with the first transport request"). In fact, Olmi already contemplates such an implementation by accounting for passenger luggage or other goods. (*See, e.g.*, EX1005, 16 ("the journey request will allow

travellers to specify their luggage requirements, so that travellers with luggage can be found a suitable transit vehicle").) Similarly, in Gaspard, when evaluating a request to find a driver, the method/system examines the freight requirements to find a suitable driver. (EX1006, 7:35-39, 11:17-22 ("freight requirements for a freight transportation request"), 11:66-12:4 ("each new transportation request is evaluated" for "available freight requirements").) Therefore, having read Olmi and Gaspard, a person of ordinary skill would have been motivated to implement such a combination that accommodates the transportation of goods.

106. For reasons similar to those I discuss above for claim elements [1.pre] and [1.a], a person of ordinary skill in the art would have had a reasonable expectation of success implementing such a combination of Olmi and Gaspard. (*See* my discussion for claim elements [1.pre] and [1.a].) First, Olmi and Gaspard describe similar transportation methods and systems. (*See* my discussion for claim elements [1.pre] and [1.a].) Second, the combination would have required nothing more than a combination of known prior art elements (e.g., a method/system for transporting travellers having luggage (like in Olmi) and a method/system for transporting passengers and freight (like in Gaspard)) using known programming methods (e.g., implementing data structures to include additional information about freight capacity and requirements and matching based on such characteristics) without changing their respective functions to achieve a predictable result.

107. For example, similar to my discussion above regarding modifying journey requests, a person of ordinary skill in the art would have recognized that such a combination would have required modifying transit vehicle records at the data-structure level to specify the space or capacity available to transport goods rather than (or in addition to) the number of passengers. One way to do that is to replace (or supplement) a passenger count field with fields for cargo dimensions or capacity. The matching module in the Olmi-Gaspard method/system could then perform a simple comparison of the space or capacity fields in the journey requests and vehicle records as part of its matching process, consistent with how Olmi operates for matching travellers and vehicles based on the number of passengers and their luggage requirements. (EX1005, 35-36 (describing the use of data fields (3) and (4) to determine available capacity to carry passengers).) Such changes are well within the capabilities of a person of ordinary skill in the art.

d) [1.c] sending, by the shared transport system, the first transport request to the transport provider device;

108. In my opinion, the Olmi-Gaspard combination discloses/suggests this limitation.

109. For example, as I discuss above for claim elements [1.a] and [1.b], in the Olmi-Gaspard method/system, both drivers and passengers submit information to Olmi's central computer system, which define their respective itineraries. (*See*

my discussion above for limitations [1.a] and [1.b].) As I discuss above for claim element [1.b], based on the itineraries, the method/system also performs intelligent grouping processes that match vehicles/drivers having a predetermined vehicle journey with a request to transport passengers and/or goods and facilitating the transportation of the passengers/goods along the vehicle's journey route. (EX1005, 15-20 (§§5.5-5.6), 21-27 (§5.7), 35-39.) ***Related to this process, Olmi describes its central computer system ("shared transport system") sending journey requests to devices of potential drivers ("sending…the first transport request to the transport provider device").*** (EX1005, 31 ("a single central controlling computer 15 orchestrates all transit vehicles 21 and travellers 19").) For example, "when a passenger makes a journey request, the controlling computer system sends this request to all car pool vehicles that have itinerary commitments that are compatible to the itinerary of the passenger." (*Id.*, 45.) According to Olmi, this process could proceed as follows:

> 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 request** 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. The passenger may then try another car on the list.

(*Id.*, 43-44.)

110. As I explained above in [1.pre] through [1.b], in the Olmi-Gaspard combination, the method/system of Olmi would have been implemented such that it can transport goods. (*See* my discussion above for limitations [1.pre] through [1.b].) In this method/system, as I discuss with respect to [1.b], the grouping module would have matched requests containing freight requirements with vehicles having capacity to transport the freight. In such a method/system, a person of ordinary skill in the art would have been motivated to send the journey request to the matching vehicle(s) that can accommodate the freight requirements, consistent with the teachings in both Olmi (as discussed above) and Gaspard relating to sending such information to the vehicle(s). (EX1005, 43-45; EX1006, ("Once the host 140 has generated the route schedule in step 240, the host 140 transmits the generated route schedule to the vehicle 150 and the vehicle 150 begins to travel the route.").) In fact, in order for the driver to be informed of the match and perform the transport, the driver must be provided with information, such as the journey request, that facilitates the transport. The journey request will provide all the details needed to complete

the transport of the freight, and therefore a person of ordinary skill in the art would have recognized the benefit of providing the journey request to the matched driver.

111. For reasons similar to those I discuss above for claim elements [1.pre] through [1.b], a person of ordinary skill in the art would have had a reasonable expectation of success implementing such a combination of Olmi and Gaspard, which describe similar transportation methods and systems. (*See* my discussion above for limitations [1.pre] through [1.b].) In fact, the combination would have required nothing more than a combination of known prior art elements (e.g., a method/system for transporting travellers having luggage (like in Olmi) and a method/system for transporting passengers and freight (like in Gaspard)) using known programming methods (e.g., sending journey requests to vehicle devices, as described in both Olmi and Gaspard) without changing their respective functions to achieve a predictable result. Here, the combination would have merely required the use of conventional data transmission systems to transmit data, as already contemplated by Olmi and Gaspard. (EX1005, 13-14 (describing conventional vehicles, data transmission systems, computer systems, communicator devices (e.g., cellular telephone), and positioning systems (e.g., GPS)); EX1006, 7:53-8:48 (describing conventional vehicles, communication systems, computer and terminal systems, and location systems (e.g., GPS)).) Such technology was well within the capabilities of a person of ordinary skill in the art.

e) [1.d] sending, by the shared transport system, first transport instructions to the transport provider device upon determining that the transport provider has accepted the first transport request;

112. In my opinion, the Olmi-Gaspard combination discloses/suggests this limitation.

113. It is my opinion that Olmi discloses "that the transport provider has accepted the first transport request." For example, as explained in Olmi, "[a]s 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." (EX1005, 43.) The driver can either "accept this journey request by pressing the appropriate key or button on his communicator device," or if the driver "does not respond to the request within a short time, the controlling computer system assumes that the driver has declined the request." (*Id.*)

114. Additionally, as explained in Olmi, "once the passenger finds a car pool driver who accepts his journey request" ("upon determining that the transport provider has accepted the first transport request"), the "street navigation module in the controlling computer system then proceeds to direct the vehicle driver along this route by means of real-time electronic street navigation instructions exhibited on his communicator device" ("sending, by the shared transport system, first transport

instructions to the transport provider device"). (*Id.*, 44.) For example, Olmi explains the operation of the "street navigation module" as follows:

> The street navigation module in the controlling computer system then proceeds to **direct the vehicle driver along this route** by means of real-time electronic **street navigation instructions** exhibited on his communicator device. These navigation instructions will be similar to those given by existing in-car satellite navigation systems: "take the next left", "take the third exit on the roundabout", and so forth. By using the electronic street navigation module and the electronic positioning system the controlling computer system can **guide the vehicle driver to the waiting prospective passenger with pinpoint precision**.

(*Id.*)

115. As I explain above in [1.pre] through [1.c], in the Olmi-Gaspard combination, the method/system of Olmi would have been implemented such that it can transport goods. (*See* my discussion for claim limitations [1.pre] through [1.c].) In this method/system, as discussed with respect to [1.c], the computer system sends the journey request to the matching vehicle(s) that can accommodate the freight requirements. (*See* my discussion for claim limitation [1.c].) In such a method/system, once a vehicle accepts the journey request to transport goods, a

person of ordinary skill in the art would have been motivated to send the navigation instructions to the vehicle, consistent with the teachings in both Olmi (as discussed above) and Gaspard relating to sending such instructions. (EX1005, 44; EX1006, 8:1-10 (the host provides information to the vehicle, including "directions for the driver of the vehicle").) This way, the vehicle can quickly and easily navigate to the pick-up location of the freight with "pinpoint precision," (EX1005, 44), helping ensure that the freight is properly and timely picked up and that the vehicle remains on schedule. Staying on schedule preserves predictable pickup and delivery windows, which maintains shipper trust and reduces missed or late deliveries. It also enables efficient routing and load planning, minimizing idle time and operational costs.

116. For reasons similar to those I discuss above for claim elements [1.pre] through [1.c], a person of ordinary skill in the art would have had a reasonable expectation of success implementing such a combination of Olmi and Gaspard, which describe similar transportation methods and systems. (*See* my discussion for claim limitations [1.pre] through [1.c].) Indeed, the combination would have required nothing more than a combination of known prior art elements (e.g., a method/system for transporting travellers having luggage (like in Olmi) and a method/system for transporting passengers and freight (like in Gaspard)) using known programming methods (e.g., sending navigation instructions to vehicle

devices, as described in both Olmi and Gaspard) without changing their respective functions to achieve a predictable result. As discussed above, Olmi and Gaspard disclose such navigation instructions, and a person of ordinary skill in the art would have recognized that those instructions could be applied to freight in the same ways to achieve the same operational benefits.

f) [1.e] determining, by the shared transport system, that the transport provider has picked up the first good;

117. In my opinion, the Olmi-Gaspard combination discloses/suggests this limitation.

118. Olmi discloses that the controlling computer system determines ("determining, by the shared transport system") when the passenger enters the car pool vehicle ("that the transport provider has picked up the" passenger). For example, according to Olmi, "[o]nce the passenger is spotted and enters the car pool vehicle, the journey can commence." (EX1005, 44; *see also id.*, 83 ("the controlling computer system could monitor car pool journeys in real time as they progress to their destination").)

119. Additionally, to facilitate "automatic fare charging," Olmi describes a "method of verifying that the passenger was **actually picked up** and conveyed in accordance with this request before the charge is levied on the passenger." (*Id.*, 79.) Olmi explains that this is "particularly necessary in car pooling, otherwise a car pool

driver could accept a passenger journey request, automatically receive payment for providing carriage, but not actually bother to pick up and deliver his passenger." (*Id.*)

120. Olmi addresses this problem by confirming that the "car pool vehicle did indeed travel to the passenger pick-up point." (*Id.*, 80.) To do this, the "controlling computer system" can "examin[e] the electronic positioning data coming from the communicator device in the car pool vehicle":

> In car pooling, perhaps the easiest way of verifying that an accepted journey request has actually been carried out is by **examining the electronic positioning data coming from the communicator device in the car pool vehicle**. Using this data, the controlling computer system can **determine whether the car pool vehicle did indeed travel to the passenger pick-up point** and did indeed trravel to the passenger destination point. **This is ample evidence for verification.**

(*Id.*, 80.)

121. As I explain above in [1.pre] through [1.d], in the Olmi-Gaspard combination, the method/system of Olmi would have been implemented such that it can transport goods. (*See* my discussion for claim limitations [1.pre] through [1.d].) In this method/system, as discussed with respect to [1.d], the computer system sends the vehicle navigation instructions to the location of the freight for pick-up. In such

a method/system, a person of ordinary skill in the art would have been motivated to have the controlling computer system determine when the good has been picked up, for example, to monitor progress of a journey and/or to facilitate "automatic fare charging," consistent with Olmi's disclosures discussed above. (EX1005, 44, 79-80, 83.) As a result, the controlling computer system can be kept apprised of when the transport starts—enabling effective scheduling and resource management—while the shipper receives timely notice of departures or delays and is assured that pickup occurred before any automatic charge is applied, which is particularly important when the shipper is not present at the pickup location. This verification reduces billing disputes and supports reliable service and customer confidence.

122. In my opinion, Gaspard supports this implementation, because the host "posts the route schedule when it is generated (i.e., in Step 240) and as it is updated (i.e., in step 260) so that the posted route schedule is accessible over the network from any remote terminal 120 including at least…the freight terminal F, and the vehicle 150." (EX1006, 8:38-43.) For example, according to Gaspard, the host "receives actual arrival and departure times from the vehicle 150 as the vehicle 150 travels to destinations on the route," including when it arrives and departs the "warehouse in Town A," which is the pick-up location for the freight. (*Id.*, 8:11-18.) The "arrival time is transmitted, either automatically or manually by the driver of vehicle 150, to the host 140." (*Id.*) Accordingly, the arrival/departure timestamps

received and recorded by the host provide an indication that the freight was picked up, and thus enable the host to verify pickup for scheduling, tracking, and automatic charging purposes.

123. Accordingly, based on these teachings of Olmi and Gaspard, a person of ordinary skill in the art would have been motivated to configure the Olmi-Gaspard method/system such that the central computer system determines ("determining, by the shared transport system") when the freight has been picked up ("that the transport provider has picked up the first good").

124. For reasons similar to those I discuss above for claim elements [1.pre] through [1.d], a person of ordinary skill in the art would have had a reasonable expectation of success implementing such a combination of Olmi and Gaspard, which describe similar transportation methods and systems. (*See* my discussion for claim limitations [1.pre] through [1.d].) Indeed, the combination would have required nothing more than a combination of known prior art elements (e.g., a method/system for transporting travellers having luggage (like in Olmi) and a method/system for transporting passengers and freight (like in Gaspard)) using known programming methods (e.g., providing information to the central computer system that enables it to determine whether pick-up has occurred) without changing their respective functions to achieve a predictable result.

125. In my opinion, a person of ordinary skill in the art would have recognized multiple, predictable ways to implement this pick-up verification. For example, consistent with Gaspard, the vehicle could transmit GPS-based arrival and departure timestamps for the pick-up location to the central system, which the system could use to infer that the freight was picked up. (EX1006, 8:11-18, 8:38-43.) Alternatively, consistent with Olmi, conventional GPS tags or smart-card technology associated with the freight could signal when the item is aboard, providing an independent confirmation of pickup. (EX1005, 79-81.) Both approaches are routine implementations that would increase verification reliability and reduce billing and scheduling disputes.

g) [1.f] determining, by the shared transport system, progress of the delivery of the first good based on determining a location of the transport provider device;

126. In my opinion, the Olmi-Gaspard combination discloses/suggests this limitation.

127. For example, for "increasing security," Olmi explains that the "controlling computer system could monitor car pool journeys in real time as they progress to their destination" to identify any "deviation from the intended route." (EX1005, 83.) Olmi further explains that the "location of the…driver will be known through the incoming electronic positioning data." (*Id.*; *see also id.*, 42 ("The

controlling computer system always knows the car pool vehicle's current location through data obtained from the electronic positioning system."), Fig. 6 ("Incoming Electronic Positioning Data").) Therefore, in my opinion, the Olmi-Gaspard method/system, which transports goods (e.g., freight), discloses "determining, by the shared transport system, progress of the delivery of the first good based on determining a location of the transport provider device".

128. A person of ordinary skill in the art would have also been motivated to implement this feature based on Gaspard's teachings. For example, Gaspard explains that the host can track arrival and departure times of vehicles for every destination along their routes. (EX1006, 8:11-20.) These times may be "transmitted" "automatically" from the vehicle and "at other positions along the route" "with respect to the GPS 170." (*Id.*; *see also id.*, 8:31-36 ("the vehicle 150 can transmit actual times to the host 140").) This information allows the host to "post[] the route schedule when it is generated (i.e., in step 240) and as it is updated (i.e., in step 260) so that the posted route schedule is accessible over the network." (*Id.*, 8:38-44.)

129. Figures 3a-3e show "examples of schedules generated by the host 140 and accessible by the terminals 120." (*Id.*, 9:7-9, Figs. 3a-3e.) These schedules are updated to reflect vehicle arrival and departure for destinations. For example, the "complete column 320 indicates whether the vehicle 150 has arrived and/or departed

from the corresponding destination." (*Id.*, 9:27-30.) Additionally, according to Gaspard, the vehicle may be "equipped with a global positioning system 170," such that "vehicle positioning data (i.e., the vehicle location, speed, etc.) determined by the global positioning system 170 and/or other electronic equipment (i.e., speedometer, etc.) on the vehicle 150 is transmitted over the network 110 to the host 140." (*Id.*, 10:36-51.) The vehicle positioning data "can be used by the host 140 (i.e., using a suitable algorithm) to update and post nearly instantaneous scheduling data 360." (*Id.*) Accordingly, as these schedules reflect, the host, which is a "shared transport system," "determine[es]…progress of the delivery of the first good based on determining a location of the transport provider device."

130. As I explain above for claim limitations [1.pre] through [1.e], in the Olmi-Gaspard combination, the method/system of Olmi would have been implemented such that it can transport goods. (*See* my discussion of claim elements [1.pre] through [1.e].) In such a method/system, a person of ordinary skill in the art would have been motivated to configure the controlling computer system to determine the progress of the delivery of the good based on the location of the driver, consistent with the teachings of Olmi and Gaspard discussed above. For example, consistent with Olmi's teachings, determining transport progress would have "increase[ed] security" because "inexplicable deviation[s] could be identified and result in "an alert to a human operator" to investigate. (EX1005, 83.) Such a feature

would help ensure that goods are not lost, stolen, or otherwise off the expected route. Additionally, consistent with Gaspard's teachings, such a feature would allow the system to continually monitor progress of the transport so that the freight shipper remains continually informed. (EX1006, 10:36-51.)

131. For reasons similar to those discussed above for claim elements [1.pre] through [1.e], a person of ordinary skill in the art would have had a reasonable expectation of success implementing such a combination of Olmi and Gaspard, which describe similar transportation methods and systems. (*See* my discussion of claim elements [1.pre] through [1.e].) Indeed, the combination would have required nothing more than a combination of known prior art elements (e.g., a method/system for transporting travellers having luggage (like in Olmi) and a method/system for transporting passengers and freight (like in Gaspard)) using known programming methods (e.g., determining transport progress using conventional software programming and data storage systems based on conventional GPS technology used to indicate vehicle location, as described in Olmi and Gaspard) without changing their respective functions to achieve a predictable result.

h) [1.g] updating, by the shared transport system, the provider characteristics associated with the transport provider upon determining that the transport provider has accepted the first transport request;

132. In my opinion, the Olmi-Gaspard combination discloses/suggests this limitation.

133. It is my opinion that the Olmi-Gaspard combination discloses "determining that the transport provider has accepted the first transport request" for the same reasons I discuss above for claim element [1.d]. (*See* my discussion for limitation [1.d].) Additionally, based on the teachings of Olmi (including as modified based on the teachings of Gaspard), a person of ordinary skill in the art would have understood that (or been motivated to implement) the controlling computer system, such that, upon such a determination ("upon"), it updates the "transit vehicle record" to reflect the "number of passengers" (or, in the Olmi-Gaspard combination, freight capacity) "currently being conveyed in the transit vehicle" ("updating, by the shared transport system, the provider characteristics associated with the transport provider").

134. Indeed, this is necessary to ensure that the method/system in the Olmi-Gaspard combination can properly facilitate transport of travellers and goods (e.g., freight) based on current capacity information. As Olmi explains, when searching for a suitable transit vehicle, one of the "criteria" that must be satisfied is that the

"transit vehicle has a sufficient quantity of available passenger places for the number of travellers specified in this journey request." (EX1005, 35-36.) To that end, the "number of available passenger places is found by subtracting the value in data field (4)," which is the amount "currently being conveyed in the transit vehicle," "from the value in data field (3)," which is the "capacity of the transit vehicle." (*Id.*, 34-36.) If field (4) was not updated upon determining that the driver has accepted the journey request, the method/system would not operate as intended.

135. If field (4) is not updated upon acceptance, the system may erroneously treat reserved capacity as available and attempt to schedule additional journey requests into already-committed space, resulting in double-booking, routing conflicts, and service failures. Updating field (4) upon acceptance is therefore necessary to ensure accurate capacity accounting, efficient allocation of vehicles, and reliable operation of the method/system for transporting freight. Therefore, in my opinion, Olmi discloses this claim element, or at least would have been motivated to implement this element, because it ensures proper function and efficiency of the method/system for transporting freight.

136. For reasons similar to those I discuss above for claim elements [1.pre] through [1.f], a person of ordinary skill in the art would have had a reasonable expectation of success implementing such a combination of Olmi and Gaspard, which describe similar transportation methods and systems. (*See* my discussion of

claim elements [1.pre] through [1.f].) The combination would have required nothing more than a combination of known prior art elements (e.g., a method/system for transporting travellers carrying goods (like in Olmi) and a method/system for transporting passengers and freight (like in Gaspard)) using known programming methods (e.g., software changes to update data structures to reflect when traveller and/or freight capacity is reserved upon acceptance of a journey request by the driver) without changing their respective functions to achieve a predictable result of a method/system that updates provider capacity characteristics when the provider accepts a journey request. As a person of ordinary skill in the art would have recognized, this combination could have been achieved by updating a field similar to field (4) in Olmi, which tracks the "number of passengers currently being conveyed in the transit vehicle," except instead of (or in addition to) tracking passengers, the field would track the freight currently being conveyed.

i) **[1.h] receiving, by the shared transport system, a second transport request from a second transport user device for delivery of a second good, wherein the second transport request includes a second pick-up location, a second drop-off location, and a second needed space or capacity for the second good;**

137. In my opinion, the Olmi-Gaspard combination discloses/suggests this limitation for reasons similar to those I discuss above for claim element [1.a].

138. As I discuss for limitations [1.a] through [1.g], the Olmi-Gaspard method/system includes a central computer system that, for example, receives, schedules, facilitates, and monitors the progress of journey requests from travellers and/or shippers of goods for transport via vehicles. (*See* my discussion of claim limitations [1.a] through [1.g].) For the reasons I discuss below, a person of ordinary skill in the art would have been motivated to configure such a system to accommodate multiple journey requests for one vehicle, and therefore discloses "receiving, by the shared transport system, a second transport request from a second transport user device for delivery of a second good, wherein the second transport request includes a second pick-up location, a second drop-off location, and a second needed space or capacity for the second good."

139. Based on the teachings of Olmi, if the capacity permits, such vehicles can accommodate multiple journey requests. In fact, as Olmi explains, this is one of the objectives of "car pooling schemes." (EX1005, 3.) In such schemes, "commuters with similar itineraries organise themselves so that they can travel in a single vehicle driven by one of the commuters." (*Id.*; *see also id.*, 6 (explaining the benefits of car pooling with multiple passengers), 73-74 ("The intelligent grouping module aims to place new passengers in transit vehicles with the highest itinerary compatibility").) Accordingly, for car pooling, Olmi explains that the "car pool intended itinerary specification will include details of the vehicle itinerary that the

car pool driver intends to follow, and will usually include related information such as the number of available passenger seats in the car pool vehicle." (*Id.*, 12; *see also id.*, 34 (vehicle record information includes "passenger capacity of the transit vehicle (excluding the driver); that is, the total number or designated passenger places (seated or standing) in the vehicle" and "number of passengers currently being conveyed in the transit vehicle").) As I discuss for claim element [1.g], this information is used by the intelligent grouping module to identify vehicles that have available capacity to satisfy the requirements of a journey request, given vehicle capacity may change as the number of journey requests accepted by the vehicle driver increase. (*Id.*, 36 (one "search criteria" is whether the "vehicle has a sufficient quantity of available passenger places for the number of travellers specified in this journey request").) Therefore, Olmi discloses accommodating multiple journey requests for travellers in one vehicle.

140. Similarly, Gaspard's method/system is configured such that vehicles can accommodate multiple requests to transport freight. For example, Gaspard explains that "[o]nce a transportation request is received at the host," the host will examine "route[s] [that] already exist[], and "determine whether additional…freight…can be added." (EX1006, 7:32-39; *see also id.*, 7:45-50 (host may receive "freight requests" over a period of time), 7:53-62 ("with each passenger and/or freight request, the host 140 may re-examine already issued schedules to see

if the current passenger and/or freight request can be fitted into an existing schedule to make an existing schedule even more profitable").) Gaspard further explains how vehicles in its system can accommodate multiple freight requests for existing routes:

> Once all available existing routes pertinent to the received transportation request are retrieved, stage 410 is entered to ascertain…**whether or not the existing transportation request (these requests can be one or several) can be added to existing routes**. If they can be added to existing routes, then stage 420 is entered and these additional transportation requests are added to the existing routes.

(*Id.*, 11:10-17.)

141. According to Gaspard, "this determination" checks whether there is space available on a given route that satisfy the "freight requirements for a freight transportation request from a requested pick up to a requested destination." (*Id.*, 11:17-22.) If "**freight space is available**,…the process of the present invention adds the new request to existing routes." (*Id.*, 11:23-25.) Gaspard further explains this process with respect to Figure 5:

> In FIG. 5 and in each 410, 430, and 450, **each new transportation request is evaluated** as to available passenger seats in stage 510, **available freight requirements (i.e., volume and weight) in stage 520**, profitability in stage 530 and, if the answer is yes to all

> three, then adding (stage 420), modification (stage 440), or creation (stage 450) is entered.

(*Id.*, 11:66-12:4, FIG. 5.)

142. In my opinion, in view of Olmi's and Gaspard's teachings, a person of ordinary skill in the art would have been motivated to configure the central computer of the Olmi-Gaspard system to accept multiple journey requests for transporting different goods—whether with the same or different pickup and drop-off locations—and to assign those requests to the same vehicle based on the vehicle's available capacity. As Gaspard explains, adding passengers and freight to "existing routes" increases the "profitability" of those routes. (EX1006, 3:10-17.) Adding freight to existing routes in such a manner additionally addresses "the need to have freight delivered, especially in outlying areas," which "can change dramatically over short periods of time and can therefore be difficult to schedule in advance." (*Id.*, 1:39-53.)

143. Olmi describes similar incentives for accommodating multiple journey requests in one vehicle. For example, Olmi explains that the "incentive for a driver…is monetary." (EX1005, 46.) As Olmi explains, when a driver conveys more, "the fee received by the driver would be proportionally higher." (*Id.*; *see also id.*, 46 ("a car driver can thus make a good profit from his journey by providing carriage to a series of passengers, or a group of passengers travelling together").)

Olmi also recognizes that such an approach "cut[s] traffic levels," (*id.*, 3), and reduces pollution, (*id.*, 6).

144. For reasons similar to those I discuss above for claim elements [1.pre] through [1.g], a person of ordinary skill in the art would have had a reasonable expectation of success implementing such a combination of Olmi and Gaspard, which describe similar transportation methods and systems. (*See* my discussion for claim elements [1.pre] through [1.g].) In fact, the combination would have required nothing more than a combination of known prior art elements (e.g., a method/system for transporting travellers having luggage (like in Olmi) and a method/system for transporting passengers and freight (like in Gaspard)) using known programming methods (e.g., conventional software and hardware features for multiple journey requests to transport goods, consistent with Olmi's and Gaspard's teachings) without changing their respective functions to achieve a predictable result.

145. A person of ordinary skill in the art would have recognized that one predictable implementation of such a system would have operated as described above for claim element [1.a], because Olmi and Gaspard, as well as the Olmi-Gaspard combination, handle each request in the same manner. For example, consistent with Olmi's teachings, the system could receive multiple journey requests—each with identical or differing pickup and drop-off locations and capacity requirements—and perform intelligent grouping to "search[] the transit vehicle

current itineraries database for transit vehicle records that satisfy" certain criteria, including "sufficient quantity of available…space" and compatible routes. (EX1005, 35-36.)

146. Therefore, for the reasons I discuss above, the Olmi-Gaspard combination discloses/suggests "receiving, by the shared transport system" (e.g., central computer system) "a second transport request from a second transport user device" (e.g., new request provided by a second shipper) "for delivery of a second good" (e.g., second good sought to be delivered by second shipper) "wherein the second transport request includes a second pick-up location, a second drop-off location, and a second needed space or capacity for the second good" (e.g., the new request including similar types of request information as other requests, such as pickup/destination locations and capacity requirements), as recited in claim 1.

j) [1.i] determining, by the shared transport system, that the transport provider is available for the delivery of the second good based on comparing the updated provider characteristics associated with the transport provider with the second transport request; and

147. In my opinion, the Olmi-Gaspard combination discloses/suggests this claim element for the same reasons I discuss above for claim elements [1.b] and [1.h].

148. My analysis for claim element [1.b] demonstrates how the central computer system in the Olmi-Gaspard method/system identifies a potential driver

that complies with the transport provider's and the first journey request's characteristics for transporting a first good, as determined via the intelligent grouping module. My analysis for claim element [1.h] explains how this method/system works for a second journey request to transport a second good. Consistent with my analysis for claim element [1.g], determining whether the vehicle can accommodate the second request is based on an updated vehicle record.

149. For example, as I explain for claim element [1.g], in the Olmi-Gaspard method/system, the controlling computer system would update a transit vehicle's record to reflect the current capacity to transport goods and/or passengers by storing a capacity of the vehicle and tracking the number of passengers and/or volume or weight of goods conveyed in the transit vehicle. As explained for claim elements [1.b] and [1.h], for each journey request that is received (e.g., a first journey request, a second journey request, etc.), the controlling computer system in the Olmi-Gaspard method/system could perform the same intelligent grouping processes ("determining, by the shared transport system") to search the transit vehicle current itineraries database for transit vehicle records that satisfy certain criteria, including sufficient quantity of available space to carry the good along a route. Therefore, the controlling computer system can determine whether the vehicle transporting a first good has available capacity to transport a second good ("that the transport provider is available for the delivery of the second good") by comparing the characteristics

of a second request to transport the second good, such as capacity requirements (e.g., volume/weight of good), to the vehicles record that was updated to reflect the vehicle's current available capacity following acceptance of the first request to transport the first good ("based on comparing the updated provider characteristics associated with the transport provider with the second transport request").

150. A person of ordinary skill in the art would have been motivated to implement such a method/system for reasons similar to those I discuss above for claim element [1.h], including increased profitability, the need to deliver goods, reduce traffic, and reduce pollution. Such a method/system achieves these objectives by accommodating multiple journey requests for goods in one vehicle, which requires intelligently comparing journey requirements (e.g., volume/weight of good) and vehicle limitations (e.g., capacity), as discussed above. A person of ordinary skill in the art would have also had a reasonable expectation of success implementing such a combination of Olmi and Gaspard, which describe similar transportation methods and systems. The combination would have required nothing more than a combination of known prior art elements (e.g., a method/system for transporting travellers having luggage (like in Olmi) and a method/system for transporting passengers and freight (like in Gaspard)) using known programming methods (e.g., conventional software and hardware features for accommodating multiple journey requests to transport goods, consistent with Olmi's and Gaspard's

teachings) without changing their respective functions to achieve a predictable result.

k) [1.j] sending, by the shared transport system, the second transport request to the transport provider device.

151. In my opinion, the Olmi-Gaspard combination discloses/suggests this claim element for reasons similar to those I discuss for claim element [1.c], given the central computer system in the Olmi-Gaspard method/system handles all journey requests in the same manner. That is, if the method/system identifies a vehicle that can accommodate journey request to transport a good, the central computer system sends the transport request to the vehicle. (*See* my discussion for claim limitation [1.c].)

2. Claim 2: The method of claim 1, wherein the transport provider device includes global positioning system (GPS) technology.

152. In my opinion, the Olmi-Gaspard combination discloses/suggests this claim element. As I discuss for claim element [1.pre], based on Olmi's teachings, the Olmi-Gaspard method/system describes using an "electronic positioning system," "such as the American GPS," for determining a vehicle's geographic location. (EX1005, 14). Additionally, 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.) Therefore, in my opinion, Olmi discloses that a vehicle driver's communicator device ("transport provider device") has GPS capability ("includes global positioning system (GPS) technology").

3. Claim 3: The method of claim 2, wherein determining the location of the transport provider device comprises utilizing the GPS technology.

153. In my opinion, the Olmi-Gaspard combination discloses/suggests this claim element. As I discuss above for claim element [1.pre] and Claim 2, based on Olmi's teachings, the electronic positioning system of the Olmi-Gaspard combination uses the vehicle communicator device's GPS capabilities. (EX1005, 31). As discussed for claim element [1.f], for "increasing security," Olmi explains that the "controlling computer system could monitor car pool journeys in real time as they progress to their destination" to identify any "deviation from the intended route." (*Id.*, 83.) Olmi further explains that the "location of the…driver will be known through the incoming electronic positioning data" (e.g., GPS data). (*Id.*) Therefore, Olmi discloses that GPS technology is used to determine the location of the vehicle ("determining the location of the transport provider device comprises utilizing the GPS technology").

4. Claim 10

a) [10.pre] A computer system for transporting a good using a shared transport system, the system comprising:

b) [10.a] a memory having processor-readable instructions stored therein; and

c) [10.b] a processor configured to access the memory and execute the processor-readable instructions, which when executed by the processor configures the processor to perform a plurality of functions, including functions to:

154. I have been asked to assume that the preamble of claim 10, [10.pre], is limiting. Under that assumption, it is my opinion that Olmi in view of Gaspard discloses/suggests the preamble for claim 10 ([10.pre]) and the features of claim elements [10.a]-[10.b] to perform the method claimed in claim 10, as I explain below.

155. As I discuss for limitation [1.pre], the Olmi-Gaspard combination discloses/suggests a transportation ecosystem communication system ("computer system") including a controlling computer system and a wireless network with a central computer system ("shared transport system") through which potential passengers and drivers may be connected, via their respective mobile devices, for transporting passengers and goods ("transporting a good"). (*See* my discussion for limitation [1.pre].)

156. In my opinion, the Olmi-Gaspard combination also discloses/suggests "a memory having processor-readable instructions stored therein" and "a processor configured to access the memory and execute the processor-readable instructions, which when executed by the processor configures the processor to perform a plurality of functions," including the functions recited in limitations [10.b.i]-[10.b.x]. For example, Olmi discloses that its central controlling computer system is a "data-processing system" that may "compris[e] a set of distributed…computer processors," and 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.) Gaspard also discloses that the invention includes a "host computer" that has an "individual internal memory" and a "process step 220" for creating a route. (EX1006, 6:15-27; *id.*, 4:37-38; *id.*, FIG. 4.) As a person of ordinary skill in the art would have understood, a data-processing system with computer processors and a computer that performs processing steps necessarily include one or more processors for executing instructions. Accordingly, a person of ordinary skill in the art would have therefore understood that the Olmi-Gaspard system includes "a processor configured to…execute the processor-readable instructions, which when executed by the processor configures the processor to perform a plurality of functions."

157. A person of ordinary skill in the art would have also understood that the Olmi-Gaspard system includes "a memory having processor-readable instructions stored therein." In fact, Olmi 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.) Gaspard further explains that the invention also provides for a system that is suitable with "any type of terminal 120 (e.g., cellular phones, digital phones, fascimile machines, etc.) and any number of terminals," where each terminal and host computer can have an "individual internal memory." (EX1006, 6:19-31.) Gaspard explains that the memory can be "random access memory (RAM), read only memory (ROM), any suitable form of storage disk (e.g., magnetic tape, hard disk, floppy disk, ZIP disk, etc.), or any combination thereof. Furthermore, the memory 145 can be a single memory or separate memories, and can reside within the host 140 or the terminals 120 or independently thereof with separate access thereto." (*Id.*, 6:31-37.) In fact, memory is required for storing instructions that will be executed by a processor. Without memory to store the instructions, the instructions could not be retained and therefore not executed by the processor, as required by the teachings of Olmi and Gaspard. Therefore, the Olmi-Gaspard system would have had processing instructions stored in machine-readable hardware/memory ("a memory having processor-readable instructions stored therein").

158. Additionally, a person of ordinary skill in the art would have understood that the Olmi-Gaspard system's processor (i.e., the processor of the central computer system) would necessarily be configured to access the memory ("a processor configured to access the memory") in order to execute the instructions and perform the functionalities disclosed by Olmi and Gaspard, as discussed above. Such an understanding of Olmi's and Gaspard's disclosures would have been consistent with a person of ordinary skill in the art' understanding of computer-implemented systems/processes as described by Olmi and Gaspard. This is how computer processors work: A processor executes instructions by fetching them from memory.

(1) [10.b.i] receive, by the shared transport system, a first transport request from a first transport user device for delivery of a first good, wherein the first transport request includes a first pick-up location, a first drop-off location and a first needed space or capacity for the first good;

(2) [10.b.ii] identify, by the shared transport system, a transport provider based on comparing provider characteristics of the transport provider with the first transport request, the provider characteristics including a current location or planned route and an available space or capacity of the transport provider, the provider characteristics being received from a transport provider device of the transport provider;

(3) [10.b.iii] send, by the shared transport system, the first transport request to the transport provider device;

(4) [10.b.iv] send, by the shared transport system, first transport instructions to the transport provider device upon determining that the transport provider has accepted the first transport request;

(5) [10.b.v] determine, by the shared transport system, that the transport provider has picked up the first good;

(6) [10.b.vi] determining, by the shared transport system, progress of the delivery of the first good based on determining a location of the transport provider device;

(7) [10.b.vii] update, by the shared transport system, the provider characteristics associated with the transport provider upon determining that the transport provider has accepted the first transport request;

(8) [10.b.viii] receive, by the shared transport system, a second transport request from a second transport user device for delivery of a second good, wherein the second transport request includes a second pick-up location, a second drop-off location, and a second needed space or capacity for the second good;

(9) [10.b.iv] determine, by the shared transport system, that the transport provider is available for the delivery of the second good based on comparing the updated provider characteristics associated with the transport provider with the second transport request; and

(10) [10.b.x] send, by the shared transport system, the second transport request to the transport provider device.

159. The language in limitations [10.b.i]-[10.b.x] is similar to the language in limitations [1.a]-[1.j]. (*See* §XII (claims 1 and 10).) Accordingly, in my opinion, the Olmi-Gaspard combination discloses/suggests limitations [10.b.i]-[10.b.x] for the same reasons as I discuss above for limitations [10.pre]-[10.b] (addressing claimed system/processor/memory) and respectively limitations [1.a]-[1.j] (addressing the same "functions" recited in claim 10). Therefore, the Olmi-Gaspard combination discloses/suggests the recited system of claim 10.

5. Claim 11: The computer system of claim 10, wherein the transport provider device includes global positioning system (GPS) technology.

160. In my opinion, the Olmi-Gaspard combination discloses/suggests claim 11 for the same reasons as I discuss for claims 2 (which includes language similar to claim 11) and 10 (claim 11 depends from claim 10). (*See* my discussion for claims 2 and 10.)

6. Claim 12: The computer system of claim 11, wherein determining the location of the transport provider device comprises utilizing the GPS technology.

161. In my opinion, the Olmi-Gaspard combination discloses/suggests claim 12 for the same reasons as I discuss for claims 3 (which includes language similar to claim 12) and 10 (claim 11 depends from claim 10). (*See* my discussion for claims 3 and 10.)

7. Claim 18

a) [18.pre] A non-transitory computer readable medium comprising processor-readable instructions which, when executed by a processor, configure the processor to perform a plurality of functions for transporting a good using a shared transport system, the plurality of functions comprising:

162. I have been asked to assume that the preamble of claim 18 is limiting. Under that assumption, it is my opinion that Olmi in view of Gaspard discloses/suggests the limitations therein. My analysis for limitations [10.pre]-[10.b] demonstrates how the Olmi-Gaspard combination discloses/suggests similar

features. For example, my discussion for claim limitations [10.pre]-[10.b] demonstrates how the Olmi-Gaspard combination discloses/suggests a "processor" and "memory" with "instructions," which is "[a] non-transitory computer readable medium comprising processor-readable instructions." Additionally, as I discuss for claim limitations [10.pre]-[10.b], those instructions are executed by the processor in the Olmi-Gaspard method/system to allow for the matching between passengers and drivers to coordinate transporting goods ("which, when executed by a processor, configure the processor to perform a plurality of functions for transporting a good using a shared transport system"). Therefore, for the same reasons I discuss for limitations [10.pre]-[10.b], the Olmi-Gaspard combination discloses/suggests limitation [18.pre]. (*See* my discussion for claim limitations [10.pre]-[10.b].) Additionally, for the reasons provided below, the Olmi-Gaspard combination discloses/suggests the "processor" configured to perform the plurality of functions as recited in claim 18.

b) **[18.a] receiving, by the shared transport system, a first transport request from a first transport user device for delivery of a first good, wherein the first transport request includes a first pick-up location, a first drop-off location and a first needed space or capacity for the first good;**

c) **[18.b] identifying, by the shared transport system, a transport provider based on comparing provider characteristics of the transport provider with the first transport request, the provider characteristics including a current location or planned route and an available space or capacity of the transport provider, the provider characteristics being received from a transport provider device of the transport provider;**

d) **[18.c] sending, by the shared transport system, the first transport request to the transport provider device;**

e) **[18.d] sending, by the shared transport system, first transport instructions to the transport provider device upon determining that the transport provider has accepted the first transport request;**

f) **[18.e] determining, by the shared transport system, that the transport provider has picked up the first good;**

g) **[18.f] determining, by the shared transport system, progress of the delivery of the first good based on determining a location of the transport provider device;**

h) [18.g] updating, by the shared transport system, the provider characteristics associated with the transport provider upon determining that the transport provider has accepted the first transport request; receiving, by the shared transport system, a second transport request from a second transport user device for delivery of a second good, wherein the second transport request includes a second pick-up location, a second drop-off location, and a second needed space or capacity for the second good;

i) [18.h] determining, by the shared transport system, that the transport provider is available for the delivery of the second good based on comparing the updated provider characteristics associated with the transport provider with the second transport request; and

j) [18.i] sending, by the shared transport system, the second transport request to the transport provider device.

163. The language in limitations [18.a]-[18.j] is similar to the language in limitations [1.a]-[1.j]. Accordingly, it is my opinion that the Olmi-Gaspard combination discloses/suggests limitations [18.a]-[18.j] for the same reasons as I discuss above for limitation [18.pre] (addressing claimed system/processor/memory) and respectively limitations [1.a]-[1.j] (addressing same "functions" recited in claim 18). Therefore, the Olmi-Gaspard combination discloses/suggests the functions recited in claim 18.

B. The Combination of Olmi, Gaspard, and Thomas Discloses or Suggests the Limitations of Claims 4 and 13

1. Claim 4: The method of claim 1, wherein determining the location of the transport provider device comprises

periodically polling location information associated with the transport provider device.

2. Claim 13: The computer system of claim 10, wherein determining the location of the transport provider device comprises periodically polling location information associated with the transport provider device.

164. In my opinion, Olmi in view of Gaspard and Thomas discloses/suggests these claims. As I discuss for claim element [1.pre] and claim 2, based on Olmi's teachings, the Olmi-Gaspard method/system describes using an "electronic positioning system," "such as the American GPS," for determining a vehicle's geographic location ("determining the location of the transport provider device"). (EX1005, 14; *see also id.*, 31.) Olmi does not explicitly disclose determining this location by "periodically polling location information associated with the transport provider device." A person of ordinary skill in the art, however, would have been motivated to implement these claims based on the teachings of Thomas.

165. Thomas relates to a "location monitoring system 100," as shown in Figure 1 below, (EX1013, 2:58-59), that is "suitable for tracking delivery…or vehicles," (*id.*, 9:5-6). In this system, "location monitoring server 102 manages location information pertaining to a plurality of mobile units 104," which "are typically attached to objects, such as people, vehicles, or containers." (*Id.*, 2:59-63.) The "mobile unit (client device, mobile communications device or mobile computing device) is, for example, one of a pager, mobile phone, personal digital

assistant, or reduced size portable computing device." (*Id.*, 9:24-27.) And the "location information can…be obtained by a variety of methods," including "GPS." (*Id.*, 3:18-46.) According to Thomas, "[l]ocation information associated with the mobile units 104 is…delivered to the location monitoring server 102 through the wireless network 106 and the Internet 108," which is stored in a "location database 110." (*Id.*, 3:1-6.)

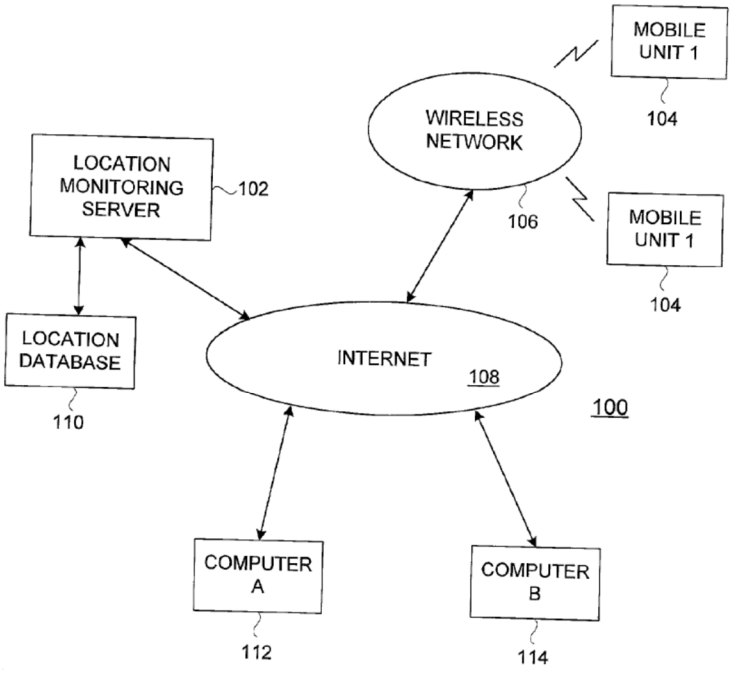

FIG. 1

(*Id.*, Fig. 1.)

166. Thomas explains that the "determination of the location of the client device can…be **triggered or invoked by…a location monitoring server** (or other remote server) using any of a variety of ways (used separately or in combination)."

(*Id.*, 4:53-60.) For example, Thomas describes polling for such location information:

> As yet still another alternative, **the location monitoring server or some other server could send a request for location information to a client device and thus invoke the acquisition of the current location on the client device**. In this regard, **the request for the location information could be sent to the client devices only when such information is being remotely monitored by another**.

(*Id.*, 4:44-52.)

167. Thus, Thomas discloses "periodically polling location information associated with the transport provider device."

168. Based on these teachings, a person of ordinary skill in the art would have been motivated to consider and implement the teachings of Thomas in the Olmi-Gaspard method/system described above, such that the central system "periodically poll[s] location information associated with the transport provider device." As I discuss above for claim element [1.pre], the Olmi-Gaspard method/system is a transport system that accommodates goods. (*See* my discussion for claim limitation [1.pre].) And as I explain for claim element [1.f], the Olmi-Gaspard method/system is enabled to monitor the progress of transports. (*See* my discussion for claim limitation [1.F].)

169. In my opinion, Thomas describes a system that a person of ordinary skill in the art would have considered when implementing the Olmi-Gaspard method/system. For example, consistent with the Olmi-Gaspard combination, Thomas explains that its system "is suitable for tracking delivery…or vehicles." (EX1013, 9:5-6.) For example, "if the homeowner is impatiently waiting for the delivery, they can access the location of the truck or person that is to perform the delivery or service." (*Id.*, 9:13-16; *see also id.*, 5:19-23 ("The server-side location monitoring processing is able to provide viewers (e.g., registered viewers at the remote computers) with location or position of the one or more mobile units (or associated objects) of interest."); 9:21-24.)

170. A person of ordinary skill in the art would have recognized the benefits of using server-initiated requests for location information in the context of the Olmi-Gaspard method/system. For example, Thomas explains that "[s]uch techniques would also facilitate conservation of power utilization on the client device as well as network bandwidth." (*Id.*, 4:50-52; *see also id.*, 9:48-51 ("Another advantage of the invention is that mobile computing devices providing location monitoring capabilities are small (e.g., wearable) and offer low power consumption (e.g., long battery life).").) This is because location information is only provided by the client device when, for example, "such information is being remotely monitored by another." (*Id.*, 4:47-50.) In the Olmi-Gaspard system, a shipper remotely

monitoring a vehicle delivering goods would often not require continuous real-time tracking, which consumes substantially more power and network bandwidth. Rather, the shipper may only require periodic or on-demand location updates, because monitoring goods more commonly emphasizes efficiency, cost, and occasional verification, whereas monitoring travellers may emphasize safety and more immediate schedule expectations. Accordingly, a person of ordinary skill in the art would have been motivated to adopt Thomas's server-initiated, power-conserving location-reporting techniques for determining and providing location information within the Olmi-Gaspard system.

171. In my opinion, a person of ordinary skill in the art would have also had a reasonable expectation of success in implementing such a combination, especially given it would have involved the application of known technologies (e.g., known shared transport systems for transporting goods, as disclosed by the Olmi-Gaspard combination, and techniques for determining location information, as described in Thomas) according to known software and hardware techniques (e.g., known software and hardware features for requesting, obtaining, communicating, and determining location information, consistent with the teachings of Thomas). For example, the Olmi-Gaspard combination and Thomas rely on software and hardware technology for obtaining, communicating, and determining mobile device location (e.g., GPS, known communication networks and protocols) that would have been

well known to a person of ordinary skill in the art and enabled implementation of the combination with a reasonable expectation of success. (EX1006, 7:44-8:55.) Such a combination would have predictably resulted in an Olmi-Gaspard-Thomas method/system in which a shared transport system is configured to periodically poll location information.

C. The Combination of Olmi, Gaspard, and Wolfe Discloses or Suggests the Limitations of Claim 9

1. Claim 9: The method of claim 1, further comprising: determining, by the shared transport system, that the transport provider has delivered the first good based on one of i) receiving a confirmation from the transport provider device or the transport user device and ii) determining that a coordinated proximity between the first good and the transport provider device no longer exists.

172. In my opinion, Olmi in view of Gaspard and Wolfe discloses/suggests this limitation. Olmi describes reaching a destination, (EX1005, 45), and monitoring the location of drivers in real time as they progress to their destinations, (*id.*, 79-80, 83). Gaspard similarly describes tracking when a vehicle has arrived to and departed from a destination. (EX1006, 9:63-66.) Neither Olmi nor Gaspard explicitly discloses "determining, by the shared transport system, that the transport provider has delivered the first good" based on one of the two options recited in claim 9: "i) receiving a confirmation from the transport provider device or the transport user device and ii) determining that a coordinated proximity between the first good and

the transport provider device no longer exists." A person of ordinary skill in the art, however, would have been motivated to implement such a feature based on the teachings of Wolfe.

173. Wolfe describes a "method and apparatus for providing a proof of delivery verification for freight transportation systems," (EX1007, Abstract), which have "the capability and flexibility to transport large amounts of goods to multiple destinations efficiently," (*id.*, [0004]). The elements involved in providing a proof of deliver verification include a "vehicle 100," such as a "tractor-trailer," "a pick-up truck, a courier vehicle," etc. (*Id.*, [0019].) Vehicle 100 comprises a "mobile communication terminal [or MCT]…for communicating with a remote station 102," which comprises a "central processing center" that "serves as a central communication point between all vehicles having an MCT." (*Id.*, [0020].) Additionally, the "location of vehicle 100 may be determined by position detector 202," which may be "a Global Position Satellite (GPS) receiver," (*id.*, [0030]), and "transmitted to remote station 102 when needed," (*id.*, [0031]).

174. Similar to the Olmi-Gaspard combination, the method in Wolfe involves a "carrier 110" receiving "details of the shipment…, such as the location of the shipper, the date and time of the pick-up, the location of the destination, the desired date and time of delivery, and the amount and type of goods to be transported." (*Id.*, [0022].) "[A]t this time, an electronic record of the expected

delivery may be created by carrier 110," or "remove station 102," "and stored in a database." (*Id.*, [0023].) A carrier 110 vehicle can then be "dispatched to shipper 106 to pick up the shipment." (*Id.*, [0024].) The goods are then picked up, transported, and delivered to the destination. (*Id.*, [0025]-[0028].)

175. According to Wolfe, at this point, a "validation request message may then be transmitted via the MCT to remote station 102, indicating delivery of the goods." (*Id.*, [0028]; *see also id.*, [0053] ("vehicle operator enters the shipment code into MCT 200 and transmits a validation request message to remote station 102 indicating delivery of goods identified by the bill of lading or other identifying information"), FIG. 3.) The message may include, for example, "the shipment code and information to identify the shipment, such as a vehicle identification number, a purchase order number, or a bill of lading number." (*Id.*, [0053].) Once the message is received, the remote station 102 "examines it to determine whether the arrival of vehicle 100 corresponds to an expected delivery," (*id.*, [0054]), and if "an expected shipment record matches the verification request message, the arrival of vehicle 100 is validated, and a proof of delivery verification is generated," (*id.*, [0055]). The remote station 102 can then provide the "proof of deliver verification…to an interested party, such as shipper 106," and can "immediately send an invoice." (*Id.*, [0028]; *see also id.*, [0064].)

176. Accordingly, it is my opinion that Wolfe discloses "determining, by the shared transport system, that the transport provider has delivered the first good" by the remote station 102 matching the verification request message to an expected shipment record to create a proof of delivery verification, and that determination is based on remote station 102 receiving a validation request message indicating delivery of goods, which discloses "receiving a confirmation from the transport provider device."

177. In my opinion, based on Wolfe's teachings, a person of ordinary skill in the art would have been motivated to implement the Olmi-Gaspard method/system such that the central computer system determines that drivers have delivered goods ("determining, by the shared transport system, that the transport provider has delivered the first good") based on the method described in Wolfe ("based on…receiving a confirmation from the transport provider device"). Such an implementation would have increased shippers' confidence that goods actually reached their destination, reduced delivery disputes by providing verifiable proof of delivery, and improved operational efficiency by more precisely identifying when capacity is freed so the system can reassign vehicles, optimize routing, and reduce idle time. In fact, as Wolfe explains, its verification technique allows for "quickly providing a proof of delivery verification to various parties involved in the transportation of goods." (*Id.*, [0010]-[0011].)

178. Consistent with Olmi's teachings, such an implementation would have also reduced fraud when using an "automatic fare charging" system liked described in Olmi. (EX1005, 79-80.) As Olmi explains, in such automatic fare charging systems, there "needs to be some method of verifying that the passenger was actually picked up and conveyed in accordance with this request before the charge is levied on the passenger," because a "driver could accept a passenger journey request, automatically receive payment for providing carriage, but not actually bother to pick up and deliver his passenger." (*Id.*) This same risk exists in the Olmi-Gaspard method/system, which is configured to deliver goods. To utilize automatic fare charging in such a method/system, there must be sufficient verification that the good was actually picked up and conveyed before the charge is levied.

179. Olmi's solution to this problem is to "examin[e] the electronic positioning data coming from the communicator device in the car pool vehicle," which the "controlling computer system" can use to "determine whether the car pool vehicle did indeed travel to the passenger pick-up point and did indeed travel to the passenger destination point." (*Id.*, 79-80.) Integrating the teachings of Wolfe would provide an additional level of verification, because, along with examining positioning data, as described in Olmi, the system can also obtain confirmation of delivery from the driver to determine whether the good has been delivered, as described in Wolfe.

180. In my opinion, a person of ordinary skill in the art would have had a reasonable expectation of success implementing such a combination of Olmi, Gaspard, and Wolfe, which describe similar transportation methods and systems. In fact, the combination would have required nothing more than a combination of known prior art elements (e.g., a method/system for transporting travellers and items (like in the Olmi-Gaspard system described with respect to claim 1) and a method/system for confirming goods have been delivered (like in Wolfe)) using known programming methods (e.g., conventional software and hardware features for communicating that a good was delivered and/or conventional technology for transmitting a message, as discussed in Wolfe) without changing their respective functions to achieve a predictable result.

181. Therefore, for the reasons I discuss above, the Olmi-Gaspard-Wolfe combination discloses/suggests this claim.

X. CONCLUSION

182. 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.