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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/698,312	08/18/2020	10748420	00199-0001-19000	1006

108449 7590 07/29/2020
Bookoff McAndrews, PLLC
2020 K Street NW
Suite 400
Washington, DC 20006

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Sean O'SULLIVAN, Princeton, NJ;
CARMA TECHNOLOGY LIMITED, Cork City, IRELAND;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

PATENT
Customer No.: 108449
Attorney Docket No.: 00199-0001-19000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
)
Sean O'SULLIVAN) Group Art Unit: 2648
)
Application No.: 16/698,312) Examiner: Andrew Wendell
)
Filed: November 27, 2019) Confirmation No.: 1006
)
For: SYSTEMS AND METHODS FOR RE-) **VIA EFS WEB**
ALLOCATING VEHICLES IN A)
SHARED TRANSPORT SYSTEM)

MAIL STOP ISSUE FEE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

FEE ADDRESS FOR MAINTENANCE FEE PURPOSES
IN ACCORDANCE WITH 37 C.F.R. 1.363

In accordance with the provisions of 37 C.F.R. 1.363, the fee address set forth below is being supplied for purposes of receiving notices, receipts, and other correspondence relating to the payment of maintenance fees:

CPA GLOBAL
2318 Mill Rd.
12th Floor
Alexandria, VA 22314
Customer No.: 00197

Respectfully submitted,

BOOKOFF McANDREWS, PLLC

Dated: July 13, 2020

By: /Sangwoo Ahn/
Sangwoo Ahn
Reg. No. 76905
(202) 808-3942

Electronic Patent Application Fee Transmittal				
Application Number:		16698312		
Filing Date:		27-Nov-2019		
Title of Invention:		SYSTEMS AND METHODS FOR RE-ALLOCATING VEHICLES IN A SHARED TRANSPORT SYSTEM		
First Named Inventor/Applicant Name:		Sean O'SULLIVAN		
Filer:		Sangwoo Ahn/Victoria Lyon		
Attorney Docket Number:		00199-0001-19000		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	2501	1	500	500

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				500

Electronic Acknowledgement Receipt	
EFS ID:	39979451
Application Number:	16698312
International Application Number:	
Confirmation Number:	1006
Title of Invention:	SYSTEMS AND METHODS FOR RE-ALLOCATING VEHICLES IN A SHARED TRANSPORT SYSTEM
First Named Inventor/Applicant Name:	Sean O'SULLIVAN
Customer Number:	108449
Filer:	Sangwoo Ahn/Victoria Lyon
Filer Authorized By:	Sangwoo Ahn
Attorney Docket Number:	00199-0001-19000
Receipt Date:	13-JUL-2020
Filing Date:	27-NOV-2019
Time Stamp:	12:51:58
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$ 500
RAM confirmation Number	E20207CC52296318
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	IssueFee.pdf	1628722	no	1
			559fba72bfb6d7babaec392a9184824e4e9fa433		
Warnings:					
Information:					
2	Post Allowance Communication - Incoming	Comments.pdf	102139	no	2
			6ff9589c923a8d4f043d51d5d8e93c378bccfcb6		
Warnings:					
Information:					
3	Maintenance Fee Address Change	MaintenanceFee.pdf	77872	no	1
			8d455cbe744adca33cc519640c7828506c083a34		
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	30385	no	2
			1dd26b7be368230a99a745261a9ae89dcc8825de		
Warnings:					
Information:					
Total Files Size (in bytes):			1839118		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

108449 7590 04/14/2020
Bookoff McAndrews, PLLC
2020 K Street NW
Suite 400
Washington, DC 20006

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/698,312	11/27/2019	Sean O'SULLIVAN	00199-0001-19000	1006

TITLE OF INVENTION: SYSTEMS AND METHODS FOR RE-ALLOCATING VEHICLES IN A SHARED TRANSPORT SYSTEM

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$500	\$0.00	\$0.00	\$500	07/14/2020

EXAMINER	ART UNIT	CLASS-SURCLASS
WENDELL, ANDREW	2648	455-041100

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☒ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

1 Bookoff McAndrews, PLLC

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Carma Technology Limited

Cork, Ireland

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☒ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 50-5906

5. Change in Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Sangwoo Ahn/

Date July 13, 2020

Typed or printed name Sangwoo Ahn

Registration No. 76905

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
)
Sean O'SULLIVAN) Group Art Unit: 2648
)
Application No.: 16/698,312) Examiner: Andrew Wendell
)
Filed: November 27, 2019) Confirmation No.: 1006
)
For: SYSTEMS AND METHODS FOR RE-) **VIA EFS WEB**
ALLOCATING VEHICLES IN A)
SHARED TRANSPORT SYSTEM)

MAIL STOP ISSUE FEE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

COMMENTS ON STATEMENT OF REASONS FOR ALLOWANCE

Applicant thanks the Examiner for the Notice of Allowance mailed on April 14, 2020, indicating that claims 2-6, 8-16, and 18-21 are allowed. Without withdrawing any of the allowed claims from issue, Applicant submits these comments.

The Examiner made characterizations and assertions about the claims and the related prior art. Although Applicant agrees with the Examiner's ultimate conclusions that the claims are patentable because the prior art does not teach or suggest the claimed features set forth in the claims, Applicant does not necessarily agree with each or every characterization and assertion contained in the Examiner's statement.

Furthermore, it is understood that the Examiner's characterizations were for purposes of referring to the prior art, and do not in any way imply that the claims are limited by words not actually present in the claims. Therefore, unless expressly noted

otherwise, Applicant declines to subscribe to any statement or characterization contained in the Notice of Allowance and its accompanying Reasons for Allowance.

Should the Examiner disagree with the Applicant's comments on the Reasons for Allowance, the Examiner is invited to contact the undersigned at (202) 808-3942, in order to resolve such disagreement.

Please charge any additional required fees, charge any underpayments, or credit any overpayment, to Deposit Account No. 50-5906.

Respectfully submitted,

BOOKOFF McANDREWS, PLLC

Dated: July 13, 2020

By: /Sangwoo Ahn/
Sangwoo Ahn
Reg. No. 76905
(202) 808-3942



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

108449 7590 04/14/2020
Bookoff McAndrews, PLLC
2020 K Street NW
Suite 400
Washington, DC 20006

EXAMINER

WENDELL, ANDREW

ART UNIT

PAPER NUMBER

2648

DATE MAILED: 04/14/2020

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/698,312	11/27/2019	Sean O'SULLIVAN	00199-0001-19000	1006

TITLE OF INVENTION: SYSTEMS AND METHODS FOR RE-ALLOCATING VEHICLES IN A SHARED TRANSPORT SYSTEM

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$500	\$0.00	\$0.00	\$500	07/14/2020

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

108449 7590 04/14/2020
Bookoff McAndrews, PLLC
2020 K Street NW
Suite 400
Washington, DC 20006

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/698,312	11/27/2019	Sean O'SULLIVAN	00199-0001-19000	1006

TITLE OF INVENTION: SYSTEMS AND METHODS FOR RE-ALLOCATING VEHICLES IN A SHARED TRANSPORT SYSTEM

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$500	\$0.00	\$0.00	\$500	07/14/2020

EXAMINER	ART UNIT	CLASS-SUBCLASS
WENDELL, ANDREW	2648	455-041100

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

1 _____

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☐ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. Change in Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

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NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

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NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/698,312	11/27/2019	Sean O'SULLIVAN	00199-0001-19000	1006
108449	7590	04/14/2020	EXAMINER	
Bookoff McAndrews, PLLC			WENDELL, ANDREW	
2020 K Street NW			ART UNIT	
Suite 400			PAPER NUMBER	
Washington, DC 20006			2648	

DATE MAILED: 04/14/2020

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b) (2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 16/698,312	Applicant(s) O'SULLIVAN, Sean	
	Examiner ANDREW WENDELL	Art Unit 2648	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 4/3/2020.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are 2-6,8-16 and 18-21. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some *c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. ____.

3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892) 2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date ____. 3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material ____. 4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____.	5. ☐ Examiner's Amendment/Comment 6. ☒ Examiner's Statement of Reasons for Allowance 7. ☐ Other _____.
--	--

/ANDREW WENDELL/ Primary Examiner, Art Unit 2648	
---	--

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

Allowable Subject Matter

2. The following is an examiner's statement of reasons for allowance: Regarding claims 2, 12, and 20, claims 2, 12, and 20 are allowed over applicant's remarks filed on 4/3/2020.

The prior art of record fails to teach the claimed subject matter as claimed and substantially connected in claims 2-6 and 8-11; 12-16 and 18-19; and 20-21.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Afzal discloses a session based transportation dispatch. Loabneh discloses a non-emergency transportation dispatching, routing, compliance and auditing software. Tao discloses providing route information to devices during a shared transport service. Rahematpura discloses a network computer system to arrange pooled transport services. Marchio discloses facilitating cross platform transportation arrangements with third party providers. Paul discloses systems for improved shared transportation services and improved queued transportation services.

Lambert discloses ride chaining. Rakah discloses prepositioning empty vehicles based on predicted future demand.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW WENDELL whose telephone number is (571)272-0557. The examiner can normally be reached on Monday-Friday 8:30AM-5PM.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wesley Kim can be reached on 571-272-7867. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <https://ppair-my.uspto.gov/pair/PrivatePair>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 16/698,312
Art Unit: 2648

Page 4

/ANDREW WENDELL/
Primary Examiner, Art Unit 2648
4/9/2020

Notice of References Cited	Application/Control No. 16/698,312	Applicant(s)/Patent Under Reexamination O'SULLIVAN, Sean	
	Examiner ANDREW WENDELL	Art Unit 2648	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20190205812-A1	07-2019	Afzal; Danial	G06N7/005	1/1
*	B	US-20130185109-A1	07-2013	Loabneh; Nohad	G06Q30/018	705/7.15
*	C	US-20160069694-A1	03-2016	Tao; Christine	G01C21/343	701/410
*	D	US-20190137288-A1	05-2019	Rahematpura; Miraj	G08G1/202	1/1
*	E	US-20190073737-A1	03-2019	Marchio; Michael Joseph	G06Q50/30	1/1
*	F	US-20190050880-A1	02-2019	Paul; Sunil	G06Q10/02	1/1
*	G	US-9978282-B2	05-2018	Lambert; Chris	G06Q50/30	1/1
*	H	US-20180211541-A1	07-2018	Rakah; Yaron	G06Q50/30	1/1
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

<i>Index of Claims</i> 	Application/Control No. 16/698,312	Applicant(s)/Patent Under Reexamination O'SULLIVAN, Sean
	Examiner ANDREW WENDELL	Art Unit 2648

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS										
☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47										
CLAIM		DATE								
Final	Original	04/09/2020								
1	2	=								
2	3	=								
3	4	=								
4	5	=								
5	6	=								
6	8	=								
7	9	=								
8	10	=								
9	11	=								
10	12	=								
11	13	=								
12	14	=								
13	15	=								
14	16	=								
15	18	=								
16	19	=								
17	20	=								
18	21	=								

Issue Classification 	Application/Control No. 16/698,312	Applicant(s)/Patent Under Reexamination O'SULLIVAN, Sean
	Examiner ANDREW WENDELL	Art Unit 2648

CPC						
Symbol					Type	Version
G08G	/	1	/	123	F	2013-01-01
G06Q	/	10	/	00	I	2013-01-01
G06Q	/	10	/	025	I	2013-01-01
G06Q	/	50	/	30	I	2013-01-01
G06Q	/	10	/	063112	I	2013-01-01

CPC Combination Sets							
Symbol				Type	Set	Ranking	Version
	/		/				

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	18	
/ANDREW WENDELL/ Primary Examiner, Art Unit 2648	09 April 2020	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	3

Issue Classification 	Application/Control No. 16/698,312	Applicant(s)/Patent Under Reexamination O'SULLIVAN, Sean
	Examiner ANDREW WENDELL	Art Unit 2648

INTERNATIONAL CLASSIFICATION			
CLAIMED			
H04W		4	42
H04B		1	3822
NON-CLAIMED			

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	18	
/ANDREW WENDELL/ Primary Examiner, Art Unit 2648 (Primary Examiner)	09 April 2020 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 3

Issue Classification 	Application/Control No. 16/698,312	Applicant(s)/Patent Under Reexamination O'SULLIVAN, Sean
	Examiner ANDREW WENDELL	Art Unit 2648

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47															
CLAIMS															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	2	10	12												
2	3	11	13												
3	4	12	14												
4	5	13	15												
5	6	14	16												
6	8	15	18												
7	9	16	19												
8	10	17	20												
9	11	18	21												

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	18	
/ANDREW WENDELL/ Primary Examiner, Art Unit 2648 (Primary Examiner)	09 April 2020 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 3

<i>Search Notes</i> 	Application/Control No. 16/698,312	Applicant(s)/Patent Under Reexamination O'SULLIVAN, Sean
	Examiner ANDREW WENDELL	Art Unit 2648

CPC - Searched*		
Symbol	Date	Examiner
H04W 4/42, 4/44, 4/46, 4/48, 4/80, 4/04, 4/046	04/08/2020	/AW/
H04B 7/2693, 1/3822	04/08/2020	/AW/
G06Q 10/063112, 10/00, 50/30, 10/025	04/08/2020	/AW/
G08Q 1/123	04/08/2020	/AW/

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
East Search	04/08/2020	/AW/
East Search	04/09/2020	/AW/

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
	PG Pub and Inventor Text Search	04/09/2020	/AW/

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L4	44138	sullivan.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/04/09 14:11
L5	0	4 and (shared adj2 transport and pick adj2 up and drop adj2 off and user and intervention)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/04/09 14:11
L6	0	4 and (shared adj2 transport and pick adj2 up and drop adj2 off)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/04/09 14:11
L14	8341	o'sullivan.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/04/09 14:39
L15	27	14 and (shared adj2 transport and pick adj2 up and drop adj2 off and user and intervention)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/04/09 14:39
S16	159114	(G08G1/123 or G06Q10/063112 or G06Q10/00 or G06Q50/30 or G06Q10/025 or H04W4/42 or H04W4/44 or H04W4/46 or H04W4/48 or H04W4/80 or H04W4/04 or H04W4/046 or H04B7/2693 or H04B1/3822).cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/04/08 11:32

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	3	(shared adj2 transport and pick adj2 up and drop adj2 off).clm.	US-PGPUB; USPAT	OR	ON	2020/04/09 14:06
L2	0	(shared adj2 transport and pick adj2 up and drop adj2 off and "not" and user and intervention).clm.	US-PGPUB; USPAT	OR	ON	2020/04/09 14:09
L3	1	(shared adj2 transport and pick adj2 up and drop adj2 off and user and intervention).clm.	US-PGPUB; USPAT	OR	ON	2020/04/09 14:09

4/9/2020 3:15:35 PM

C:\Users\awendell\Documents\EAST\Workspaces\16698312.wsp

Electronic Acknowledgement Receipt	
EFS ID:	39052116
Application Number:	16698312
International Application Number:	
Confirmation Number:	1006
Title of Invention:	SYSTEMS AND METHODS FOR RE-ALLOCATING VEHICLES IN A SHARED TRANSPORT SYSTEM
First Named Inventor/Applicant Name:	Sean O'SULLIVAN
Customer Number:	108449
Filer:	Sangwoo Ahn/Victoria Lyon
Filer Authorized By:	Sangwoo Ahn
Attorney Docket Number:	00199-0001-19000
Receipt Date:	03-APR-2020
Filing Date:	27-NOV-2019
Time Stamp:	08:05:06
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no				
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment/Req. Reconsideration-After Non-Final Reject	Amendment.pdf	108989 a9ccc3ff41c1a08a4445ee60dbc26e747f008e00	no	16
Warnings:					

Information:	
Total Files Size (in bytes):	108989
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>	

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
	)	
Sean O'SULLIVAN	)	Group Art Unit: 2648
	)	
Application No.: 16/698,312	)	Examiner: Andrew Wendell
	)	
Filed: November 27, 2019	)	Confirmation No.: 1006
	)	
For: SYSTEMS AND METHODS FOR	)	<u>VIA EFS WEB</u>
RE-ALLOCATING VEHICLES IN	)	
A SHARED TRANSPORT	)	
SYSTEM	)	

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

REPLY TO OFFICE ACTION

In reply to the Non-Final Office Action mailed on January 22, 2020, from which the period for reply extends through April 22, 2020, Applicant amends the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims beginning on page 2 of this Reply.

Remarks follow the claim amendments section of this Reply.

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Canceled)

2. (Original) A method of re-allocating vehicles in a shared transport system, the method comprising:

receiving, by the shared transport system, a transport request from a transport user device of a transport user, wherein the transport request includes a pick-up location and a drop-off location;

identifying, by the shared transport system, a first transport provider device of a first transport provider in proximity to the pick-up location received in the transport request;

transmitting, by the shared transport system, the transport request to the first transport provider device of the first transport provider;

detecting, by the shared transport system, that the first transport provider has accepted the transport request;

transmitting, by the shared transport system, transport instructions to the first transport provider device, the transport instructions comprising the pick-up location and the drop-off location;

determining, by the shared transport system, that the first transport provider did not pick up the transport user; and

re-allocating, by the shared transport system and without transport user intervention, a second transport provider to the transport user.

3. (Currently Amended) The method of claim 2, wherein the determining, by the shared transport system, that the first transport provider did not pick up the transport user comprises:

determining an estimated arrival time of the first transport provider at the pick-up location; and

detecting a divergence between location information of the first transport provider device and location information of the transport user device ~~at the estimated arrival time~~.

4. (Original) The method of claim 3, wherein the determining, by the shared transport system, that the first transport provider did not pick up the transport user further comprises:

upon detecting the divergence, transmitting a verification request to the first transport provider device; and

receiving a verification response from the first transport provider device, the verification response confirming that the first transport provider did not pick up the transport user.

5. (Currently Amended) The method of claim 3, wherein the determining, by the shared transport system, that the first transport provider did not pick up the transport user further comprises:

determining that the transport user is within a predetermined proximity to the pick-up location ~~at the estimated arrival time~~ based on the location information of the transport user device.

6. (Original) The method of claim 3, wherein the location information of the first transport provider device and the location information of the transport user device are determined using a data communication network technology.

7. (Canceled)

8. (Original) The method of claim 2, further comprising:
recording, by the shared transport system, that the first transport provider did not pick up the transport user in a registry of missed pick-ups.

9. (Original) The method of claim 8, further comprising:
determining, by the shared transport system, a rating of the first transport provider based on missed pick-up data associated with the first transport provider in the registry of missed pick-ups.

10. (Original) The method of claim 2, wherein the re-allocating, by the shared transport system and without transport user intervention, a second transport provider to the transport user comprises:

identifying, by the shared transport system, a second transport provider device of the second transport provider in proximity to the pick-up location received in the transport request;

transmitting, by the shared transport system, the transport request to the second transport provider device of the second transport provider;

detecting, by the shared transport system, that the second transport provider has accepted the transport request; and

transmitting, by the shared transport system, transport instructions to the second transport provider device, the transport instructions comprising the pick-up location and the drop-off location.

11. (Original) The method of claim 2, wherein the identifying, by the shared transport system, a first transport provider device of a first transport provider in proximity to the pick-up location received in the transport request comprises:

receiving location information of the first transport provider device, wherein the location information has been determined by the first transport provider device using a global positioning system (GPS) technology.

12. (Original) A system for re-allocating vehicles in a shared transport system, the system comprising:

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, configure the processor to perform a plurality of functions comprising:

receiving, by the shared transport system, a transport request from a transport user device of a transport user, wherein the transport request includes a pick-up location and a drop-off location;

identifying, by the shared transport system, a first transport provider device of a first transport provider in proximity to the pick-up location received in the transport request;

transmitting, by the shared transport system, the transport request to the first transport provider device of the first transport provider;

detecting, by the shared transport system, that the first transport provider has accepted the transport request;

transmitting, by the shared transport system, transport instructions to the first transport provider device, the transport instructions comprising the pick-up location and the drop-off location;

determining, by the shared transport system, that the first transport provider did not pick up the transport user; and

re-allocating, by the shared transport system and without transport user intervention, a second transport provider to the transport user.

13. (Currently Amended) The system of claim 12, wherein the determining, by the shared transport system, that the first transport provider did not pick up the transport user comprises:

determining an estimated arrival time of the first transport provider at the pick-up location; and

detecting a divergence between location information of the first transport provider device and location information of the transport user device ~~at the estimated arrival time.~~

14. (Original) The system of claim 13, wherein the determining, by the shared transport system, that the first transport provider did not pick up the transport user further comprises:

upon detecting the divergence, transmitting a verification request to the first transport provider device; and

receiving a verification response from the first transport provider device, the verification response confirming that the first transport provider did not pick up the transport user.

15. (Currently Amended) The system of claim 13, wherein the determining, by the shared transport system, that the first transport provider did not pick up the transport user further comprises:

determining that the transport user is within a predetermined proximity to the pick-up location ~~at the estimated arrival time~~ based on the location information of the transport user device.

16. (Original) The system of claim 13, wherein the location information of the first transport provider device and the location information of the transport user device are determined using a data communication network technology.

17. (Canceled)

18. (Original) The system of claim 12, wherein the re-allocating, by the shared transport system and without transport user intervention, a second transport provider to the transport user comprises:

identifying, by the shared transport system, a second transport provider device of the second transport provider in proximity to the pick-up location received in the transport request;

transmitting, by the shared transport system, the transport request to the second transport provider device of the second transport provider;

detecting, by the shared transport system, that the second transport provider has accepted the transport request; and

transmitting, by the shared transport system, transport instructions to the second transport provider device, the transport instructions comprising the pick-up location and the drop-off location.

19. (Original) The system of claim 12, wherein the identifying, by the shared transport system, a first transport provider device of a first transport provider in proximity to the pick-up location received in the transport request comprises:

receiving location information of the first transport provider device, wherein the location information has been determined by the first transport provider device using a global positioning system (GPS) technology.

20. (Original) 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 re-allocating vehicles in a shared transport system, the plurality of functions comprising:

receiving, by the shared transport system, a transport request from a transport user device of a transport user, wherein the transport request includes a pick-up location and a drop-off location;

identifying, by the shared transport system, a first transport provider device of a first transport provider in proximity to the pick-up location received in the transport request;

transmitting, by the shared transport system, the transport request to the first transport provider device of the first transport provider;

detecting, by the shared transport system, that the first transport provider has accepted the transport request;

transmitting, by the shared transport system, transport instructions to the first transport provider device, the transport instructions comprising the pick-up location and the drop-off location;

determining, by the shared transport system, that the first transport provider did not pick up the transport user; and

re-allocating, by the shared transport system and without transport user intervention, a second transport provider to the transport user.

21. (Currently Amended) The non-transitory computer readable medium of claim 20, wherein the determining, by the shared transport system, that the first transport provider did not pick up the transport user comprises:

determining an estimated arrival time of the first transport provider at the pick-up location; and

detecting a divergence between location information of the first transport provider device and location information of the transport user device ~~at the estimated arrival time.~~

REMARKS

Applicant submits this Reply in response to the Non-Final Office Action mailed on January 22, 2020 ("Office Action").

I. Status of the Claims

By this Reply, Applicant amends claims 3, 5, 13, 15, and 21 and cancels claims 7 and 17. The originally-filed specification and drawings fully support the subject matter of the amended claims. Claims 2-6, 8-16, and 18-21 are pending in this application, of which claims 2, 12, and 20 are independent.

II. Interview Summary and Overcoming of 112 & 103 Rejections

Applicant sincerely thanks Examiner Wendell for the courtesies extended during the interview of March 16, 2020. The Examiner and Applicant's representative discussed the Section 112 rejections. The Examiner agreed that the previously-disputed limitations of claims 2, 4, 8, and 10 are supported by the specification (i.e., in the sections cited by the Applicant's representative in the interview agenda), and that proposed claim 3 also overcomes the Section 112 rejections. The Examiner further stated that the claims would overcome the Section 103 rejections based on the withdrawal of the Section 112 rejections.

The claims and remarks presented herein are consistent with the interview discussion. Applicant thus requests favorable consideration of the current claims.

III. Section 112 Rejections

In the Office Action, claims 2-21 were rejected under 35 U.S.C. § 112(a) as allegedly failing to comply with the written description requirement. (Office Action at pages 2-3.)

Applicant does not necessarily agree with these rejections. However, in order to advance prosecution of this application, Applicant has amended claims 3, 13, and 21, and canceled claims 7 and 17 to address the concerns raised in the Office Action. Applicant submits that the present set of claims, which include original claims and newly-amended claims, are fully supported by the specification. The chart below lists the disputed claim limitations and corresponding sections in the specification:

Claim #	Disputed limitations	Relevant section(s) of the specification
Claim 2	determining, by the shared transport system, that the first transport provider did not pick up the transport user; and re-allocating, by the shared transport system and without transport user intervention, a second transport provider to the transport user.	Pages 21-22 of the specification states: "If the Driver 13 left the Pick-up Point area without picking up the Rider 10 (the Shared Transport Marketplace 12 could know this due to the divergence in location information between the GPS phone 11 and the Sat Nav Tracker 17, as shown in Figs. 10a, 10b, 11a and 11b) ... if the Demand Route was still needed, the Rider 10 and Driver 13 would be queried on their next action; for example, if the Rider wished to re-submit their Transport Demand Request ... the Rider's request would receive higher prioritization." Page 51 of the specification states: "automatically re-allocating and rescheduling a missed pick-up to other available transport capacity in the registry of transport."
Claim 3,	detecting a divergence	Page 21 of the specification states:

as amended	between location information of the first transport provider device and location information of the transport user device.	“If the Driver 13 left the Pick-up Point area without picking up the Rider 10 (the Shared Transport Marketplace 12 could know this due to the divergence in location information between the GPS phone 11 and the Sat Nav Tracker 17 , as shown in Figs. 10a, 10b, 11a and 11b).”
Claim 4	upon detecting the divergence, transmitting a verification request to the first transport provider device; and receiving a verification response from the first transport provider device, the verification response confirming that the first transport provider did not pick up the transport user.	Pages 21-22 of the specification states: “If the Driver 13 left the Pick-up Point area without picking up the Rider 10 (the Shared Transport Marketplace 12 could know this due to the divergence in location information between the GPS phone 11 and the Sat Nav Tracker 17, as shown in Figs. 10a, 10b, 11a and 11b), the Shared Transport Marketplace 12 could send messages to the Driver 13 and Rider 10 verifying that this was their intent. ”
Claim 8	recording, by the shared transport system, that the first transport provider did not pick up the transport user in a registry of missed pick-ups.	Page 51 of the specification states: “providing a registry of missed pick-ups which is updated whenever the Transport Provider fails to pick up the Transport User. ”
Claim 10	the re-allocating, by the shared transport system and without transport user intervention, a second transport provider to the transport user comprises: identifying, by the shared transport system, a second transport provider device of the second transport provider in proximity to the pick-up location received in the transport request; transmitting, by the shared transport system, the transport request to the second transport provider device of	Pages 21-22 of the specification states: “If the Driver 13 left the Pick-up Point area without picking up the Rider 10 (the Shared Transport Marketplace 12 could know this due to the divergence in location information between the GPS phone 11 and the Sat Nav Tracker 17, as shown in Figs. 10a, 10b, 11a and 11b) ... if the Demand Route was still needed, the Rider 10 and Driver 13 would be queried on their next action; for example, if the Rider wished to re-submit their Transport Demand Request ... the Rider’s request would receive higher prioritization. ” Page 51 of the specification states: “ automatically re-allocating and

	the second transport provider; detecting, by the shared transport system, that the second transport provider has accepted the transport request; and transmitting, by the shared transport system, transport instructions to the second transport provider device, the transport instructions comprising the pick-up location and the drop-off location.	rescheduling a missed pick-up to other available transport capacity in the registry of transport.”
--	--	---

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the Section 112 rejections.

IV. Section 103 Rejection

In the Office Action, claims 2-3, 7, 11-13, 17, and 19-21 were rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Cappel (US 2002/0011940) in view of Sprigg (US 2008/0125967). (Office Action at pages 4-6.)

A proper obviousness rejection requires consideration of each and every element set forth in the claim. MPEP § 2143.03. In the Office Action, the Office did not consider the following limitations recited in independent claims 2, 12, and 20:

determining, by the shared transport system, that the first transport provider did not pick up the transport users; and
re-allocating, by the shared transport system and without transport user intervention, a second transport provider to the transport user.

Further, none of the cited references teaches the above limitations. That is, neither Cappel nor Sprigg teaches the steps of “determining ... that the first transport

provider did not pick up the transport users” and “re-allocating ... a second transport provider to the transport user.”

For at least these reasons, Applicant respectfully requests reconsideration and withdrawal of the Section 103 rejections.

V. Conclusion

The Office Action contains characterizations of the claims and the related art with which the applicant does not necessarily agree. Unless expressly noted otherwise, applicant declines to subscribe to any statement or characterization in the Office Action.

In discussing the specification, claims, and drawings in this Reply, it is to be understood that Applicant is in no way intending to limit the scope of the claims to any exemplary embodiments described in the specification or abstract and/or shown in the drawings. Rather, Applicant is entitled to have the claims interpreted broadly to the maximum extent permitted by statute, regulation, and applicable case law.

In view of the foregoing remarks, Applicant submits that the claims satisfy the written description requirement under 35 U.S.C. § 112(a), and that the claims are not obvious under 35 U.S.C. § 103. Applicant therefore respectfully requests withdrawal of the Section 112 and Section 103 rejections, and timely allowance of the pending claims. If the Examiner believes a telephone conversation might advance prosecution, the Examiner is invited to call Applicant's undersigned representative at (202) 808-3942.

Application No.: 16/698,312
Attorney Docket No.: 00199-0001-19000

Please grant any extensions of time required to enter this response and charge any additional required fees to Deposit Account No. 50-5906. In addition, the Commissioner is hereby authorized to charge any additional fees due and any other fees due under 37 C.F.R. § 1.16 or § 1.17 during the pendency of this application to Deposit Account No. 50-5906.

Respectfully submitted,

BOOKOFF McANDREWS, PLLC
Customer Number: 108,449

Dated: April 3, 2020

By: /Sangwoo Ahn/
Sangwoo Ahn
Reg. No. 76,905
202-808-3942



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/698,312	11/27/2019	Sean O'SULLIVAN	00199-0001-19000

CONFIRMATION NO. 1006

PUBLICATION NOTICE



OC000000115740205

108449
Bookoff McAndrews, PLLC
2020 K Street NW
Suite 400
Washington, DC 20006

Title:SYSTEMS AND METHODS FOR RE-ALLOCATING VEHICLES IN A SHARED TRANSPORT SYSTEM

Publication No.US-2020-0098261-A1

Publication Date:03/26/2020

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publicly available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently <https://portal.uspto.gov/pair/PublicPair>. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/698,312	11/27/2019	Sean O'SULLIVAN	00199-0001-19000	1006
108449	7590	03/20/2020		
Bookoff McAndrews, PLLC 2020 K Street NW Suite 400 Washington, DC 20006			EXAMINER WENDELL, ANDREW	
			ART UNIT	PAPER NUMBER
			2648	
			NOTIFICATION DATE	DELIVERY MODE
			03/20/2020	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

KRoss@bomcip.com
eofficeaction@appcoll.com
usptomail@bomcip.com

<i>Applicant-Initiated Interview Summary</i>	Application No. 16/698,312		Applicant(s) O'SULLIVAN, Sean	
	Examiner ANDREW WENDELL		Art Unit 2648	AIA (FITF) Status No

All participants (applicant, applicants representative, PTO personnel):

(1) ANDREW WENDELL. (3) ____.

(2) Sangwoo Ahn. (4) ____.

Date of Interview: 16 March 2020.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: ____.

Issues Discussed ☐101 ☒112 ☐102 ☒103 ☐Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: 2-21.

Identification of prior art discussed: Cappel (US 2002/0011940) and Sprigg (US 2008/0125967).

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

We discussed the 112 rejection. Applicant's representative pointed to the sections in the specification that corresponded to the 112 rejections. Examiner agreed that the specification does support the claim limitations and therefore would overcome the prior art of record as well..

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/ANDREW WENDELL/ Primary Examiner, Art Unit 2648	
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Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) 1.133 Interviews

Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiners responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicants correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,-
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicants record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiners version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, Interview Record OK on the paper recording the substance of the interview along with the date and the examiners initials.



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/698,312	11/27/2019	Sean O'SULLIVAN	00199-0001-19000	1006
108449	7590	01/22/2020		
Bookoff McAndrews, PLLC 2020 K Street NW Suite 400 Washington, DC 20006			EXAMINER WENDELL, ANDREW	
			ART UNIT	PAPER NUMBER
			2648	
			NOTIFICATION DATE	DELIVERY MODE
			01/22/2020	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

KRoss@bomcip.com
eofficeaction@appcoll.com
usptomail@bomcip.com

Office Action Summary	Application No. 16/698,312	Applicant(s) O'SULLIVAN, Sean	
	Examiner ANDREW WENDELL	Art Unit 2648	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 11/27/2019.
 ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☒ Claim(s) 2-21 is/are pending in the application.
 5a) Of the above claim(s) ____ is/are withdrawn from consideration.

6) ☐ Claim(s) ____ is/are allowed.

7) ☒ Claim(s) 2-21 is/are rejected.

8) ☐ Claim(s) ____ is/are objected to.

9) ☐ Claim(s) ____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10) ☐ The specification is objected to by the Examiner.

11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
Certified copies:
 a) ☐ All b) ☐ Some** c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
 Paper No(s)/Mail Date ____.

3) ☐ Interview Summary (PTO-413)
 Paper No(s)/Mail Date ____.

4) ☐ Other: ____.

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112(a):

(a) IN GENERAL.—The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.

The following is a quotation of the first paragraph of pre-AIA 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 2-21 are rejected under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor or a joint inventor, or for pre-AIA the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claims 2, 12, and 20, Examiner cannot find support for “determining, by the shared transport system, that the first transport provider did not pick up the transport user; and re-allocating, by the shared transport system and without transport user intervention, a second transport provider to the transport user” in applicant’s specification.

Regarding claims 3, 13, and 21, examiner cannot find support for “detecting a divergence between location information of the first transport provider device and location information of the transport user device at the estimated arrival time.”

Regarding claims 4 and 14, examiner cannot find support for “upon detecting the divergence, transmitting a verification request to the first transport provider device; and receiving a verification response from the first transport provider device, the verification response confirming that the first transport provider did not pick up the transport user.”

Regarding claims 7 and 17, examiner cannot find support for “detecting a divergence between location information of the first transport provider device and location information of the transport user device at a predetermined time period after the estimated arrival time.”

Regarding claim 8, examiner cannot find support for “recording, by the shared transport system, that the first transport provider did not pick up the transport user in a registry of missed pick-ups.”

Regarding claims 10 and 18, examiner cannot find support for “a second transport provider to the transport user comprises identifying, by the shared transport system, a second transport provider device of the second transport provider in proximity to the pick-up location received in the transport request; transmitting, by the shared transport system, the transport request to the second transport provider device of the second transport provider; detecting, by the shared transport system, that the second transport provider has accepted the transport request; and transmitting, by the shared transport system, transport instructions to the second transport provider device, the transport instructions comprising the pick-up location and the drop-off location.”

Claim Rejections - 35 USC § 103

4. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

5. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2-3, 7, 11-13, 17, and 19-21 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Cappel (US Pat Pub# 2002/0011940) in view of Sprigg (US Pat Pub# 2008/0125967).

Regarding claims 2, 12, and 20, Cappel teaches a method of re-allocating vehicles in a shared transport system, the method comprising receiving, by the shared transport system, a transport request from a transport user device of a transport user, wherein the transport request includes a pick-up location and a drop-off location (Figs. 1-3 and Sections 0044 and 0050-0056); identifying, by the shared transport system, a first transport provider device of a first transport provider in proximity to the pick-up location received in the transport request (Figs. 1-3 and Sections 0044 and 0050-0056); transmitting, by the shared transport system, the transport request to the first transport provider device of the first transport provider (Figs. 1-3 and Sections 0044 and 0050-

0056); transmitting, by the shared transport system, transport instructions to the first transport provider device, the transport instructions comprising the pick-up location and the drop-off location (Figs. 1-3 and Sections 0044 and 0050-0056). Cappel fails to specifically to teach accepting a request.

Sprigg teaches detecting, by the shared transport system, that the first transport provider has accepted the transport request (Figs. 1-6 and Section 0042).

Therefore, it would have been obvious at the time of the invention to one of ordinary skill in the art at the time the invention was made to incorporate accepting a request as taught by Sprigg into Cappel's system in order to improve convenience for the user (Section 0005).

Regarding claims 3, 13, and 21, the combination including Cappel teaches wherein the determining, by the shared transport system, comprises determining an estimated arrival time of the first transport provider at the pick-up location (Figs. 1-3 and Sections 0044 and 0050-0056).

Regarding claims 7 and 17, the combination including Cappel teaches determining an estimated arrival time of the first transport provider at the pick-up location (Figs. 1-3 and Sections 0044 and 0050-0056).

Regarding claims 11 and 19, the combination including Cappel teaches wherein the identifying, by the shared transport system, a first transport provider device of a first transport provider in proximity to the pick-up location received in the transport request comprises receiving location information of the first transport provider device, wherein the location information has been determined by the first transport provider device using

a global positioning system (GPS) technology (Figs. 1-3 and Sections 0044 and 0050-0056).

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW WENDELL whose telephone number is (571)272-0557. The examiner can normally be reached on Monday-Friday 8:30AM-5PM.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wesley Kim can be reached on 571-272-7867. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <https://ppair-my.uspto.gov/pair/PrivatePair>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access

Application/Control Number: 16/698,312
Art Unit: 2648

Page 7

to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ANDREW WENDELL/
Primary Examiner, Art Unit 2648
1/16/2020

<i>Notice of References Cited</i>	Application/Control No. 16/698,312	Applicant(s)/Patent Under Reexamination O'SULLIVAN, Sean	
	Examiner ANDREW WENDELL	Art Unit 2648	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20080125967-A1	05-2008	SPRIGG; Stephen A.	G01C21/343	701/422
	B					
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

<i>Search Notes</i> 	Application/Control No. 16/698,312	Applicant(s)/Patent Under Reexamination O'SULLIVAN, Sean
	Examiner ANDREW WENDELL	Art Unit 2648

CPC - Searched*		
Symbol	Date	Examiner
H04W 4/42, 4/44, 4/46, 4/48, 4/80, 4/04, 4/046	01/11/2020	/AW/
H04B 7/2693, 1/3822	01/11/2020	/AW/
G06Q 10/063112, 10/00, 50/30, 10/025	01/11/2020	/AW/
G08Q 1/123	01/11/2020	/AW/

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
East Search	01/11/2020	/AW/
East Search	01/12/2020	/AW/
East Search	01/13/2020	/AW/
East Search	01/16/2020	/AW/

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<i>Search Notes</i> 	Application/Control No. 16/698,312	Applicant(s)/Patent Under Reexamination O'SULLIVAN, Sean
	Examiner ANDREW WENDELL	Art Unit 2648

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	150396	(G08G1/123 or G06Q10/063112 or G06Q10/00 or G06Q50/30 or G06Q10/025 or H04W4/42 or H04W4/44 or H04W4/46 or H04W4/48 or H04W4/80 or H04W4/04 or H04W4/046 or H04B7/2693 or H04B1/3822).cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/01/08 09:35
S2	34	((("7877204") or ("20010037174") or ("20020011940") or ("20020034292") or ("20020135515") or ("20030040944") or ("20040049424") or ("20040106399") or ("20040124977") or ("20050172148") or ("20070135078") or ("20070179792") or ("20080270019") or ("20080277183")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/01/11 19:16
S3	21	shar\$3 adj2 transport\$5 same (("not" or no) with (pickup or pick adj2 up))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/01/12 16:29
S4	372	shar\$3 adj2 transport\$5 and (("not" or no) with (pickup or pick adj2 up or show))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/01/12 16:40
S5	70	((("not" or no) with (pickup or pick adj2 up or show)) same ((re adj2 allocat\$3 or reassign\$3 or re adj2 assign\$3 or replac\$3) with (ride or transport\$5 or driver))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/01/13 09:28
S6	69	((("not" or no) with (pickup or pick adj2 up or show)) same ((re adj2 allocat\$3 or reassign\$3 or re adj2 assign\$3 or replac\$3) with (vechile or car or automobile))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/01/13 10:27
S7	27	shar\$3 adj2 transport\$5 same (pickup or pick adj2 up) same (drop adj2 off or dropoff) same (request\$3 or order\$3 or demand\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/01/13 11:42

S8	1927	(shar\$3 with (transport\$5 or ride)) and ((re adj2 allocat\$3 or reassign\$3 or re adj2 assign\$3 or replac\$3) with (ride or transport\$5 or driver))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/01/13 11:53
S9	288	S8 and ("not" or no) with (pickup or pick adj2 up or show))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/01/13 11:53
S10	42	(shar\$3 with (transport\$5 or ride)) same (pickup or pick adj2 up) same (drop adj2 off or dropoff) same (request\$3 or order\$3 or demand\$3) same (accept\$3 or approv\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/01/13 13:02
S11	2	("20080125967").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/01/16 15:44
S12	1762	divergence same (location\$1 or position\$1) same (estimat\$3 or predict\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/01/16 16:15
S13	15	S12 and (shar\$3 with (transport\$5 or ride))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/01/16 16:16
S14	64501	((("not" or no or miss\$2) with (pickup or pick adj2 up or show)) same (record\$3 or sav\$3 or stor\$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/01/16 16:29
S15	389	S14 and (shar\$3 with (transport\$5 or ride))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/01/16 16:30

EAST Search History (Interference)

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1/ 16/ 2020 4:55:40 PM

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Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)

Approved for use through 11/30/2020. OMB 0651-0031

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	16/698,312
	Filing Date	2019-11-27
	First Named Inventor	Sean O'SULLIVAN
	Art Unit	2648
	Examiner Name	Andrew Wendell
	Attorney Docket Number	00199-0001-19000

U.S.PATENTS							Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	
/A.W/	1	7877204	B2	2011-01-25	Sprigg		
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Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	
/A.W/	1	20010037174	A1	2001-11-01	Dickerson		
/A.W/	2	20020011940	A1	2002-01-31	Cappel		
/A.W/	3	20020034292	A1	2002-03-21	Tuoriniemi et al.		
/A.W/	4	20020135515	A1	2002-09-26	Rankin et al.		
/A.W/	5	20030040944	A1	2003-02-27	Hileman		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	16/698,312
	Filing Date	2019-11-27
	First Named Inventor	Sean O'SULLIVAN
	Art Unit	2648
	Examiner Name	Andrew Wendell
	Attorney Docket Number	00199-0001-19000

/A.W/	6	20040049424	A1	2004-03-11	Murray et al.	
/A.W/	7	20040106399	A1	2004-06-03	Ki	
/A.W/	8	20040124977	A1	2004-07-01	Biffar	
/A.W/	9	20050172148	A1	2005-08-04	Ying	
/A.W/	10	20070135078	A1	2007-06-14	Ljung	
/A.W/	11	20070179792	A1	2007-08-02	Kramer	
/A.W/	12	20080270019	A1	2008-10-30	Anderson et al.	
/A.W/	13	20080277183	A1	2008-11-13	Huang et al.	

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FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ²	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵
/A.W/	1	2002073546	WO	A2	2002-09-19	Andersen et al.		

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	16/698,312
	Filing Date	2019-11-27
	First Named Inventor	Sean O'SULLIVAN
	Art Unit	2648
	Examiner Name	Andrew Wendell
	Attorney Docket Number	00199-0001-19000

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
/A.W/	1	CHI-CHUNG TAO, "Dynamic Taxi-sharing Service Using Intelligent Transportation System Technologies," 2007, IEEE, 007 International Conference on Wireless Communications, Networking and Mobile Computing Wireless Communications, Networking and Mobile Computing, pp. 3209-3212.	
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Examiner Signature	/ANDREW WENDELL/		Date Considered 01/11/2020
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<p>¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.</p>			

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	16/698,312
	Filing Date	2019-11-27
	First Named Inventor	Sean O'SULLIVAN
	Art Unit	2648
	Examiner Name	Andrew Wendell
	Attorney Docket Number	00199-0001-19000

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Sangwoo Ahn/	Date (YYYY-MM-DD)	2019-11-27
Name/Print	Sangwoo Ahn	Registration Number	76905

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Bibliographic Data

Application No: 16/698,312

Foreign Priority claimed: ☐ Yes ☒ No

35 USC 119 (a-d) conditions met: ☐ Yes ☒ No ☐ Met After Allowance

Verified and Acknowledged:

Examiner's Signature

Initials

Title:

SYSTEMS AND METHODS FOR RE-ALLOCATING VEHICLES
IN A SHARED TRANSPORT SYSTEM

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
11/27/2019	455	2648	00199-0001-19000
RULE			

APPLICANTS

CARMA TECHNOLOGY LIMITED, Cork City, IRELAND

INVENTORS

Sean O'SULLIVAN Princeton, NJ, UNITED STATES

CONTINUING DATA

This application is a CON of 16198000 11/21/2018

16198000 is a CON of 15998864 08/17/2018

15998864 is a CON of 12924487 09/28/2010 PAT 10083608

12924487 is a DIV of 12069656 02/12/2008 PAT 7840427

12069656 has PRO of 60900808 02/12/2007

FOREIGN APPLICATIONS

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12/17/2019

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Bookoff McAndrews, PLLC

2020 K Street NW

Suite 400

Washington, DC 20006

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
16/698,312	11/27/2019	3617	785	00199-0001-19000	20	3

CONFIRMATION NO. 1006

FILING RECEIPT



0000000113430046

108449
Bookoff McAndrews, PLLC
2020 K Street NW
Suite 400
Washington, DC 20006

Date Mailed: 12/19/2019

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Inventor(s)

Sean O'SULLIVAN, Princeton, NJ;

Applicant(s)

CARMA TECHNOLOGY LIMITED, Cork City, IRELAND;

Power of Attorney: The patent practitioners associated with Customer Number 108449

Domestic Priority data as claimed by applicant

This application is a CON of 16/198,000 11/21/2018
which is a CON of 15/998,864 08/17/2018
which is a CON of 12/924,487 09/28/2010 PAT 10083608
which is a DIV of 12/069,656 02/12/2008 PAT 7840427
which claims benefit of 60/900,808 02/12/2007

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

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The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/698,312**

Projected Publication Date: 03/26/2020

Non-Publication Request: No

Early Publication Request: No

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Title

SYSTEMS AND METHODS FOR RE-ALLOCATING VEHICLES IN A SHARED TRANSPORT SYSTEM

Preliminary Class

104

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

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NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop

technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 16/698,312	
APPLICATION AS FILED - PART I							
(Column 1)		(Column 2)		SMALL ENTITY		OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA		RATE(\$)	FEE(\$)		RATE(\$)
BASIC FEE <small>(37 CFR 1.16(a), (b), or (c))</small>	N/A	N/A		N/A	75		N/A
SEARCH FEE <small>(37 CFR 1.16(k), (l), or (m))</small>	N/A	N/A		N/A	330		N/A
EXAMINATION FEE <small>(37 CFR 1.16(o), (p), or (q))</small>	N/A	N/A		N/A	380		N/A
TOTAL CLAIMS <small>(37 CFR 1.16(i))</small>	20	minus 20 =	*	x 50 =	0.00	OR	
INDEPENDENT CLAIMS <small>(37 CFR 1.16(h))</small>	3	minus 3 =	*	x 230 =	0.00		
APPLICATION SIZE FEE <small>(37 CFR 1.16(s))</small>	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				0.00		
MULTIPLE DEPENDENT CLAIM PRESENT <small>(37 CFR 1.16(j))</small>					0.00		
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	785		TOTAL
APPLICATION AS AMENDED - PART II							
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	MINUS	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)	RATE(\$)
	Total <small>(37 CFR 1.16(i))</small>	*	Minus	**	x	=	OR x
	Independent <small>(37 CFR 1.16(h))</small>	*	Minus	***	x	=	OR x
	Application Size Fee <small>(37 CFR 1.16(s))</small>						OR
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>						OR
				TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY	
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	MINUS	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)	RATE(\$)
	Total <small>(37 CFR 1.16(i))</small>	*	Minus	**	x	=	OR x
	Independent <small>(37 CFR 1.16(h))</small>	*	Minus	***	x	=	OR x
	Application Size Fee <small>(37 CFR 1.16(s))</small>						OR
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>						OR
				TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.							



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/698,312	11/27/2019	Sean O'SULLIVAN	00199-0001-19000	1006
108449	7590	12/19/2019	EXAMINER	
Bookoff McAndrews, PLLC 2020 K Street NW Suite 400 Washington, DC 20006			ART UNIT	PAPER NUMBER
			2648	
			NOTIFICATION DATE	DELIVERY MODE
			12/19/2019	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

KRoss@bomcip.com
eofficeaction@appcoll.com
usptomail@bomcip.com

<i>Decision Granting Request for Prioritized Examination (Track I)</i>	Application No. 16/698,312	Applicant(s) O'SULLIVAN, Sean	
	Examiner BRIAN W BROWN	Art Unit OPET	AIA (FITF) Status No
<p>1. THE REQUEST FILED <u>27 November 2019</u> IS GRANTED .</p> <p>The above-identified application has met the requirements for prioritized examination</p> <p>A. ☒ for an original nonprovisional application (Track I).</p> <p>B. ☐ for an application undergoing continued examination (RCE).</p> <p>2. The above-identified application will undergo prioritized examination. The application will be accorded special status throughout its entire course of prosecution until one of the following occurs:</p> <p>A. filing a <u>petition for extension of time</u> to extend the time period for filing a reply;</p> <p>B. filing an <u>amendment to amend the application to contain more than four independent claims, more than thirty total claims</u>, or a multiple dependent claim;</p> <p>C. filing a <u>request for continued examination</u> ;</p> <p>D. filing a notice of appeal;</p> <p>E. filing a request for suspension of action;</p> <p>F. mailing of a notice of allowance;</p> <p>G. mailing of a final Office action;</p> <p>H. completion of examination as defined in 37 CFR 41.102; or</p> <p>I. abandonment of the application.</p> <p>Telephone inquiries with regard to this decision should be directed to BRIAN BROWN at (571)272-5338. In his/her absence, calls may be directed to Petition Help Desk at (571) 272-3282.</p>			
/BRIAN W BROWN/ Petitions Examiner, OPET			

TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	Not Yet Assigned
Filing Date	Concurrently Herewith
First Named Inventor	Sean O'SULLIVAN
Title	SYSTEMS AND METHODS FOR RE-ALLOCATING VEHICLES IN A SHARED TRANSPORT SYSTEM
Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned
Attorney Docket Number	00199-0001-19000

SIGNATURE of Applicant or Patent Practitioner

Signature	/Sangwoo Ahn/	Date (Optional)	November 27, 2019
Name	Sangwoo Ahn	Registration Number	76905
Title (if Applicant is a juristic entity)	Authorized Representative		
Applicant Name (if Applicant is a juristic entity)	Carma Technology Ltd.		

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.



*Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number

Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)



I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above:

108449

OR



I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:



The address associated with the above-mentioned Customer Number

OR



The address associated with Customer Number:

OR



Firm or
Individual Name

Address

City

State

Zip

Country

Telephone

Email

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

Carma Technology Ltd.



Inventor or Joint Inventor (title not required below)



Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)



Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)



Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature

Date (Optional)

Name

Lawrence Mulligan

Title

Chief Executive Officer

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.



Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re § 1.53(b) continuation application of	)	
U.S. Application No. 16/198,000:	)	Parent Art Unit: 2648
	)	
Sean O'SULLIVAN	)	
	)	Parent Examiner: Eugene Yun
Application No.: Not Yet Assigned	)	
	)	
Filed: Concurrently Herewith	)	Confirmation No.: Not Yet Assigned
	)	
For: SYSTEMS AND METHODS FOR RE-	)	
ALLOCATING VEHICLES IN A	)	<u>VIA EFS-WEB</u>
SHARED TRANSPORT SYSTEM	)	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. § 1.97(b)

Pursuant to 37 C.F.R. §§ 1.56 and 1.97(b), Applicant brings to the attention of the Examiner the documents on the attached IDS Form PTO/SB/08. This Information Disclosure Statement is being filed concurrently with the above-referenced application.

Copies of the U.S. patents and patent publications are not enclosed. The listed foreign patent document and non-patent literature document are of record in prior Application No. 15/998,864 filed on August 17, 2018, and Application No. 12/924,487 filed on September 28, 2010, respectively, upon which Applicant relies for the benefits provided in 35 U.S.C. § 120. Accordingly, copies of the foreign patent document and non-patent literature document are not enclosed.

Applicant respectfully requests that the Examiner consider the listed documents and indicate that they were considered by making appropriate notations on the attached form.

This submission does not represent that a search has been made or that no better art exists and does not constitute an admission that each or all of the listed documents are material or constitute "prior art." If the Examiner applies any of the documents as prior art against any claim in the application and Applicant determines that the cited documents do not constitute "prior art" under United States law, Applicant reserves the right to present to the U.S. Patent and Trademark Office the relevant facts and law regarding the appropriate status of such documents.

Applicant further reserves the right to take appropriate action to establish the patentability of the disclosed invention over the listed documents, should one or more of the documents be applied against the claims of the present application.

If there is any fee due in connection with the filing of this Statement that is not otherwise provided with this filing, please charge the fee to Deposit Account No. 50-5906.

Respectfully submitted,

BOOKOFF McANDREWS, PLLC
Customer Number: 108449

Dated: November 27, 2019

By: /Sangwoo Ahn/
Sangwoo Ahn
Reg. No. 76905
(202) 808-3942

Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)

Approved for use through 11/30/2020. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		2019-11-27
	First Named Inventor	Sean O'SULLIVAN	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	00199-0001-19000	

U.S.PATENTS							Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	
	1	7877204	B2	2011-01-25	Sprigg		
If you wish to add additional U.S. Patent citation information please click the Add button.							Add
U.S.PATENT APPLICATION PUBLICATIONS							Remove
Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	
	1	20010037174	A1	2001-11-01	Dickerson		
	2	20020011940	A1	2002-01-31	Cappel		
	3	20020034292	A1	2002-03-21	Tuoriniemi et al.		
	4	20020135515	A1	2002-09-26	Rankin et al.		
	5	20030040944	A1	2003-02-27	Hileman		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		2019-11-27
	First Named Inventor	Sean O'SULLIVAN	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	00199-0001-19000	

6	20040049424	A1	2004-03-11	Murray et al.	
7	20040106399	A1	2004-06-03	Ki	
8	20040124977	A1	2004-07-01	Biffar	
9	20050172148	A1	2005-08-04	Ying	
10	20070135078	A1	2007-06-14	Ljung	
11	20070179792	A1	2007-08-02	Kramer	
12	20080270019	A1	2008-10-30	Anderson et al.	
13	20080277183	A1	2008-11-13	Huang et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button.

FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ²	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵
	1	2002073546	WO	A2	2002-09-19	Andersen et al.		

If you wish to add additional Foreign Patent Document citation information please click the Add button.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		2019-11-27
	First Named Inventor	Sean O'SULLIVAN	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	00199-0001-19000	

NON-PATENT LITERATURE DOCUMENTS			Remove
Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
	1	CHI-CHUNG TAO, "Dynamic Taxi-sharing Service Using Intelligent Transportation System Technologies," 2007, IEEE, 007 International Conference on Wireless Communications, Networking and Mobile Computing Wireless Communications, Networking and Mobile Computing, pp. 3209-3212.	
If you wish to add additional non-patent literature document citation information please click the Add button			Add
EXAMINER SIGNATURE			
Examiner Signature			Date Considered
<p>*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.</p>			
<p>¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.</p>			

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		2019-11-27
	First Named Inventor	Sean O'SULLIVAN	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	00199-0001-19000	

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Sangwoo Ahn/	Date (YYYY-MM-DD)	2019-11-27
Name/Print	Sangwoo Ahn	Registration Number	76905

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		SYSTEMS AND METHODS FOR RE-ALLOCATING VEHICLES IN A SHARED TRANSPORT SYSTEM		
First Named Inventor/Applicant Name:		Sean O'SULLIVAN		
Filer:		Sangwoo Ahn/Victoria Lyon		
Attorney Docket Number:		00199-0001-19000		
Filed as Small Entity				
Filing Fees for Track I Prioritized Examination - Nonprovisional Application under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	75	75
UTILITY SEARCH FEE	2111	1	330	330
UTILITY EXAMINATION FEE	2311	1	380	380
REQUEST FOR PRIORITIZED EXAMINATION	2817	1	2000	2000
Pages:				
Claims:				
Miscellaneous-Filing:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
PUBL. FEE- EARLY, VOLUNTARY, OR NORMAL	1504	1	0	0
PROCESSING FEE, EXCEPT PROV. APPLS.	2830	1	70	70
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				2855

Electronic Acknowledgement Receipt	
EFS ID:	37882890
Application Number:	16698312
International Application Number:	
Confirmation Number:	1006
Title of Invention:	SYSTEMS AND METHODS FOR RE-ALLOCATING VEHICLES IN A SHARED TRANSPORT SYSTEM
First Named Inventor/Applicant Name:	Sean O'SULLIVAN
Customer Number:	108449
Filer:	Sangwoo Ahn/Victoria Lyon
Filer Authorized By:	Sangwoo Ahn
Attorney Docket Number:	00199-0001-19000
Receipt Date:	27-NOV-2019
Filing Date:	
Time Stamp:	15:47:51
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$2855
RAM confirmation Number	E2019AQF48140035
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal of New Application	Transmittal.pdf	82083	no	3
			68f2604e7df5285f60ace2b3bcbee27af07f491a		
Warnings:					
Information:					
2	TrackOne Request	Track1.pdf	137930	no	2
			825cc3cef0d6415785c1ab07922413d3f55c9388		
Warnings:					
Information:					
3	Specification	Specification.pdf	9244403	no	62
			92b88a396dfb241159c220b4f40ee725356758e7		
Warnings:					
Information:					
4	Drawings-only black and white line drawings	OriginalDrawings.pdf	2461538	no	32
			5d2eeaf99a5b108faa433a88850ac569e287d568		
Warnings:					
Information:					
5	Application Data Sheet	ADS.pdf	1874431	no	9
			f67590f8b363acc25d0b2cbbc33c23a8c94113a2		
Warnings:					
Information:					
6	Oath or Declaration filed	Dec.pdf	1617093	no	1
			ee9644920c3eb69c09e79d8594dd9a39d19735c3		
Warnings:					
Information:					

7	Preliminary Amendment	Prelim..pdf	103460	no	14
			3badf307db84df9b4b842c572b0d7c09f429449e		
Warnings:					
Information:					
8	Drawings-only black and white line drawings	ReplacementSheets.pdf	136047	no	32
			8bfaecdc6ce56bd12a88c1f8e49073bb42eeca647		
Warnings:					
Information:					
9	Power of Attorney	POA.pdf	198260	no	2
			698e4dc32ceb3dcb30f1cadaa86cfc91d855977f		
Warnings:					
Information:					
10	Transmittal Letter	IDSTransmittal.pdf	82381	no	2
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Warnings:					
Information:					
11	Information Disclosure Statement (IDS) Form (SB08)	SB08.pdf	1054074	no	5
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Warnings:					
Information:					
12	Fee Worksheet (SB06)	fee-info.pdf	40232	no	2
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Information:					
Total Files Size (in bytes):			17031932		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re § 1.53(b) continuation application of	)	
U.S. Application No. 16/198,000:	)	Parent Art Unit: 2648
	)	
Sean O'SULLIVAN	)	
	)	Parent Examiner: Eugene Yun
Application No.: Not Yet Assigned	)	
	)	
Filed: Concurrently Herewith	)	Confirmation No.: Not Yet Assigned
	)	
For: SYSTEMS AND METHODS FOR	)	
RE-ALLOCATING VEHICLES IN A	)	<u>VIA EFS-WEB</u>
SHARED TRANSPORT SYSTEM	)	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

**TRANSMITTAL OF TRACK ONE PRIORITIZED EXAMINATION CONTINUATION
PATENT APPLICATION FILED UNDER 37 CFR § 1.53(b)**

This is a request for filing a continuation application under 37 CFR §1.53(b) of pending prior U.S. Application No. 16/198,000 filed on November 21, 2018, which is a continuation of U.S. Application No. 15/998,864 filed on August 17, 2018, which is a continuation of U.S. Application No. 12/924,487 filed on September 28, 2010, which is a division of 12/069,656 filed on February 12, 2008, which claims priority to U.S. Provisional Application No. 60/900,808 filed on February 12, 2007, which are incorporated herein by reference in their entireties.

Enclosed is a new continuation application, including the following:

1. A complete copy of prior U.S. Application No. 16/198,000 filed on November 21, 2018, including the specification, claims, and abstract (62 pages), and drawings (32 sheets).
2. Application Data Sheet (ADS) in accordance with 37 CFR § 1.76 (9 pages).
3. Executed Declaration (1 page).
4. Preliminary Amendment (14 pages).
5. Power of Attorney and Transmittal (2 pages).

6. Certification and Request for Prioritized Examination under 37 CFR 1.102(e) (2 pages).
7. Information Disclosure Statement (2 pages) and SB/08 (5 pages).
8. The total required fees of \$2855.00, as set forth below, are being paid electronically by credit card at the time of filing.

Filing fees are being paid electronically as follows:

Search Fee					\$660	\$ 660.00
Examination Fee					\$760	\$ 760.00
	Number of Claims		Basic	Extra		
Total Claims	20	-	20		x \$100	\$ 0.00
Independent Claims	3	-	3		x \$460	\$ 0.00
☐ Presentation of Multiple Dep. Claim(s)					\$820	
Size Fee: EFS-Web Filing		(108 pages X .75 – 100) ÷ 50 = 0*			\$ 0.00	
Total Application Pages		0* x 400 = \$0				
(specification, drawings, printed sequence or computer listing, preliminary amendment)		*Rounded up to next whole number				
Track 1 Request					\$ 4,000.00	
Track 1 Processing Fee					\$ 140.00	
Late Declaration Surcharge					\$160	\$ 0.00
Subtotal					\$ 5560.00	
Reduction by 1/2 if small entity					- 2780.00	
Basic Filing Fee for Electronic Small Entity					\$75	\$ 75.00
TOTAL FEES DUE					\$ 2855.00	

This application has been assigned to **Carma Technology Limited**. The assignment document will be recorded separately. Please accord this application an application number and filing date.

If there is any fee due in connection with the filing of this application that is not otherwise provided with this filing, please charge the fee to Deposit Account No. 50-5906. In addition, the Commissioner is hereby authorized to charge any additional fees due and any other fees due under 37 C.F.R. § 1.16 or § 1.17 during the pendency of this application to Deposit Account No. 50-5906.

Please address all correspondence with respect to this application to: **Bookoff McAndrews, PLLC, Customer No. 108449.**

Respectfully submitted,

BOOKOFF McANDREWS, PLLC
Customer Number: 108449

Dated: November 27, 2019

By: /Sangwoo Ahn/
Sangwoo Ahn
Reg. No. 76905
(202) 808-3942

**CERTIFICATION AND REQUEST FOR PRIORITIZED EXAMINATION
UNDER 37 CFR 1.102(e) (Page 1 of 1)**

First Named Inventor:	Sean O'SULLIVAN	Nonprovisional Application Number (if known):	
Title of Invention:	SYSTEMS AND METHODS FOR RE-ALLOCATING VEHICLES IN A SHARED TRANSPORT SYSTEM		

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS PRIORITIZED EXAMINATION FOR THE ABOVE-IDENTIFIED APPLICATION.

1. The processing fee set forth in 37 CFR 1.17(i)(1) and the prioritized examination fee set forth in 37 CFR 1.17(c) have been filed with the request. The publication fee requirement is met because that fee, set forth in 37 CFR 1.18(d), is currently \$0. The basic filing fee, search fee, and examination fee are filed with the request or have been already been paid. I understand that any required excess claims fees or application size fee must be paid for the application.
2. I understand that the application may not contain, or be amended to contain, more than four independent claims, more than thirty total claims, or any multiple dependent claims, and that any request for an extension of time will cause an outstanding Track I request to be dismissed.
3. The applicable box is checked below:

I. ☒ Original Application (Track One) - Prioritized Examination under § 1.102(e)(1)

- i. (a) The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a). This certification and request is being filed with the utility application via EFS-Web.
---OR---
(b) The application is an original nonprovisional plant application filed under 35 U.S.C. 111(a). This certification and request is being filed with the plant application in paper.
- ii. An executed inventor's oath or declaration under 37 CFR 1.63 or 37 CFR 1.64 for each inventor, or the application data sheet meeting the conditions specified in 37 CFR 1.53(f)(3)(i) is filed with the application.

II. ☐ Request for Continued Examination - Prioritized Examination under § 1.102(e)(2)

- i. A request for continued examination has been filed with, or prior to, this form.
- ii. If the application is a utility application, this certification and request is being filed via EFS-Web.
- iii. The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a), or is a national stage entry under 35 U.S.C. 371.
- iv. This certification and request is being filed prior to the mailing of a first Office action responsive to the request for continued examination.
- v. No prior request for continued examination has been granted prioritized examination status under 37 CFR 1.102(e)(2).

Signature /Sangwoo Ahn/	Date November 27, 2019
Name (Print/Typed) Sangwoo Ahn	Practitioner Registration Number 76905
Note: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required.*	
☒ *Total of <u>1</u> forms are submitted.	

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Figure 1. Shared Transport Network System

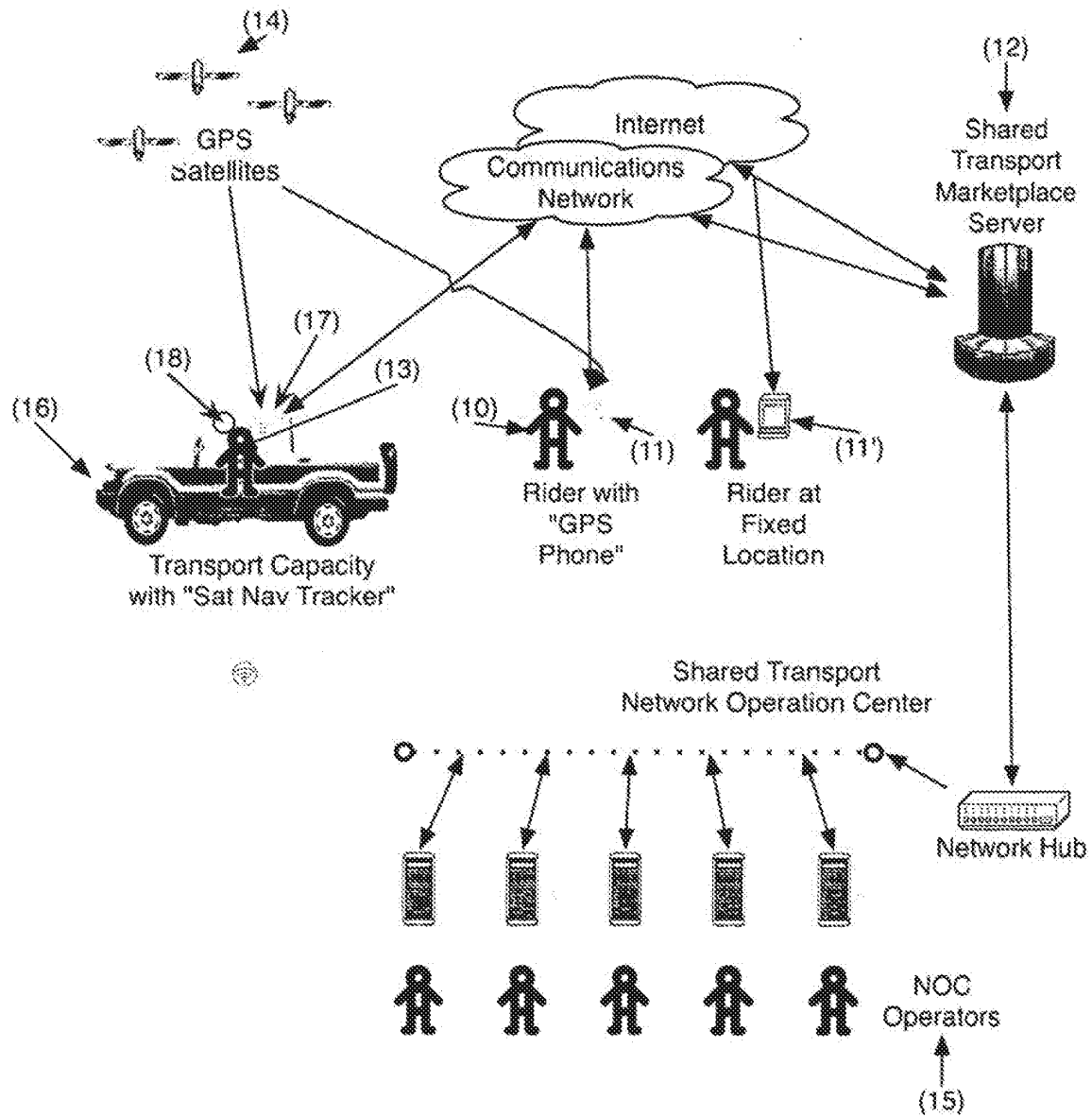


Figure 2. Transport Capacity Computing and Communications Components

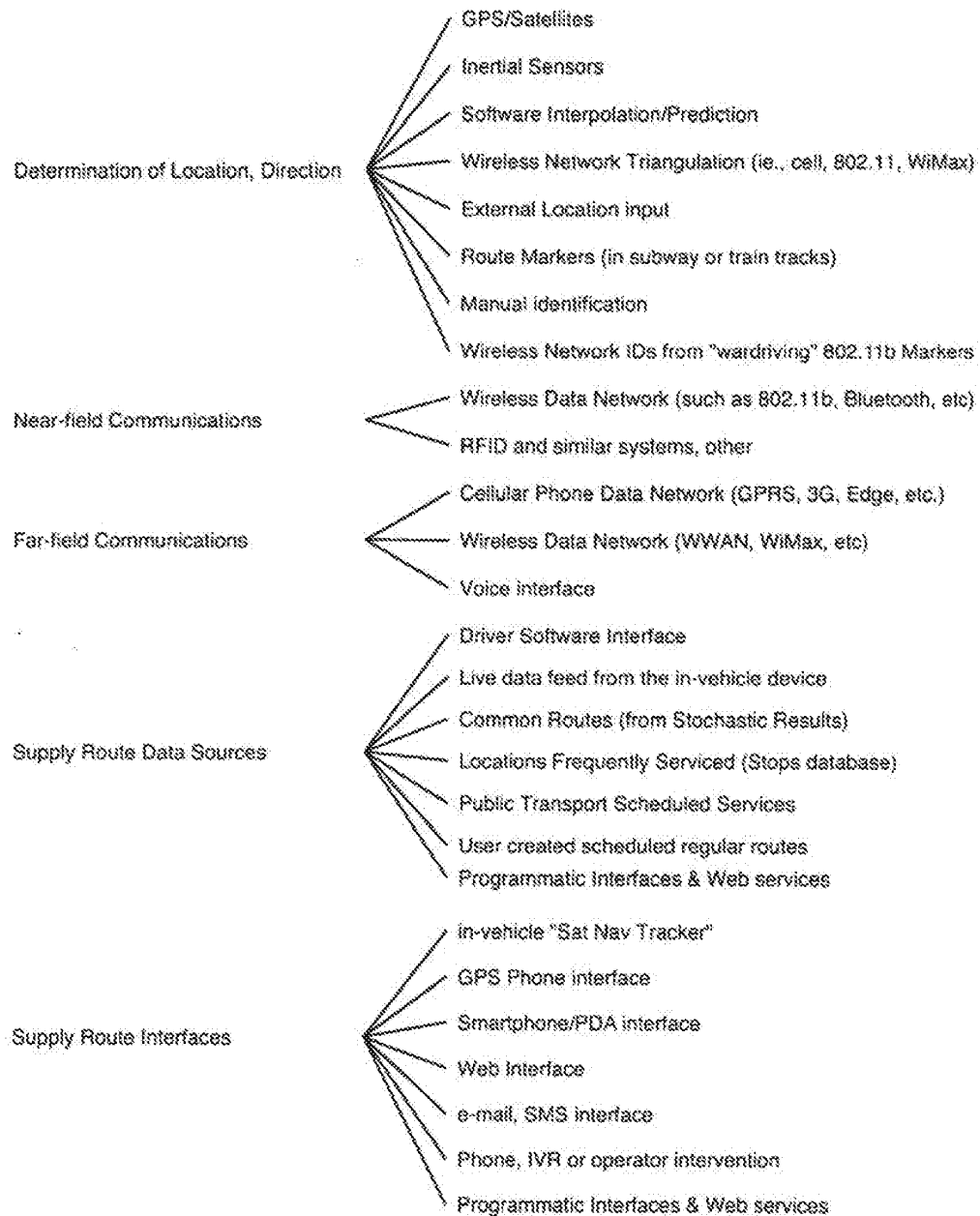


Figure 3. Rider Technology Components and Information Elements

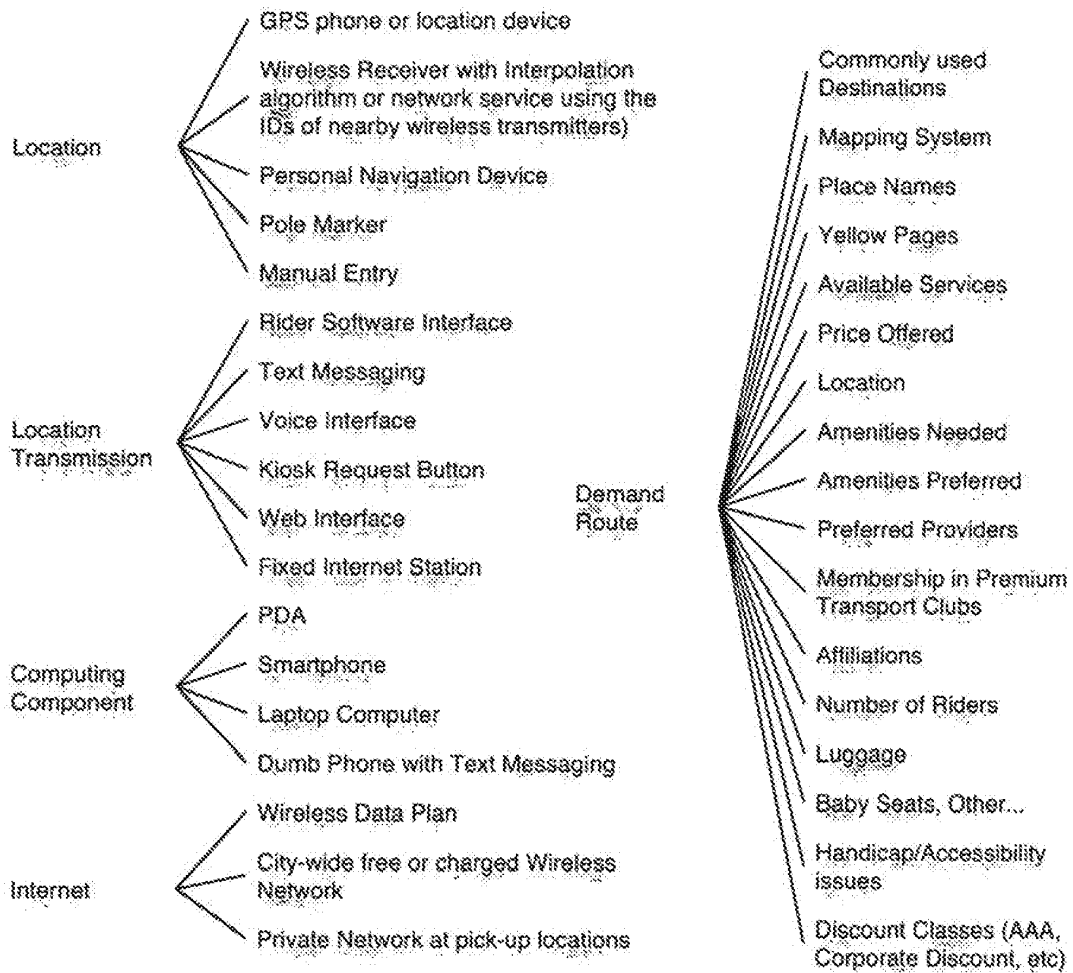


Figure 4. Shared Transport Marketplace

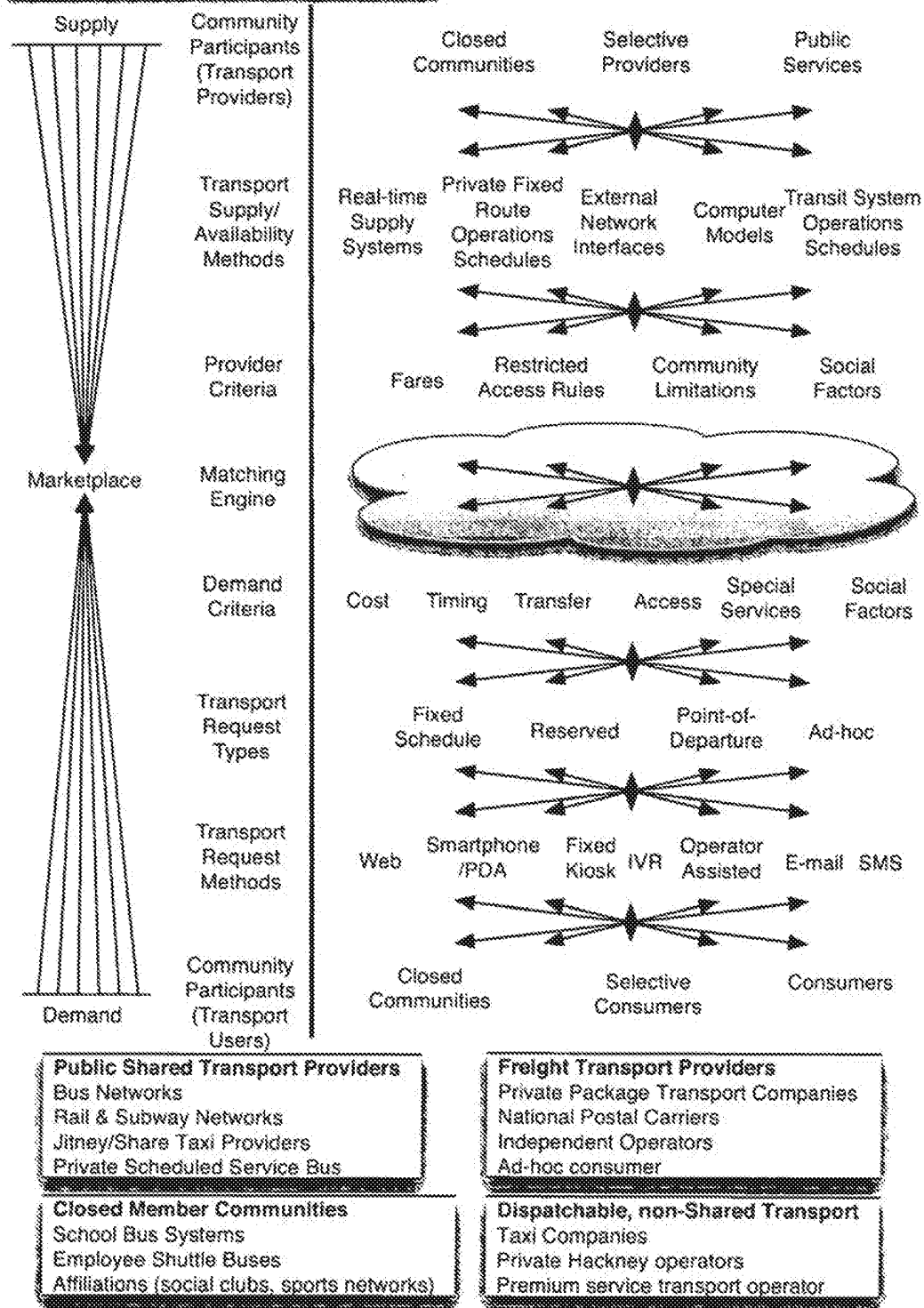
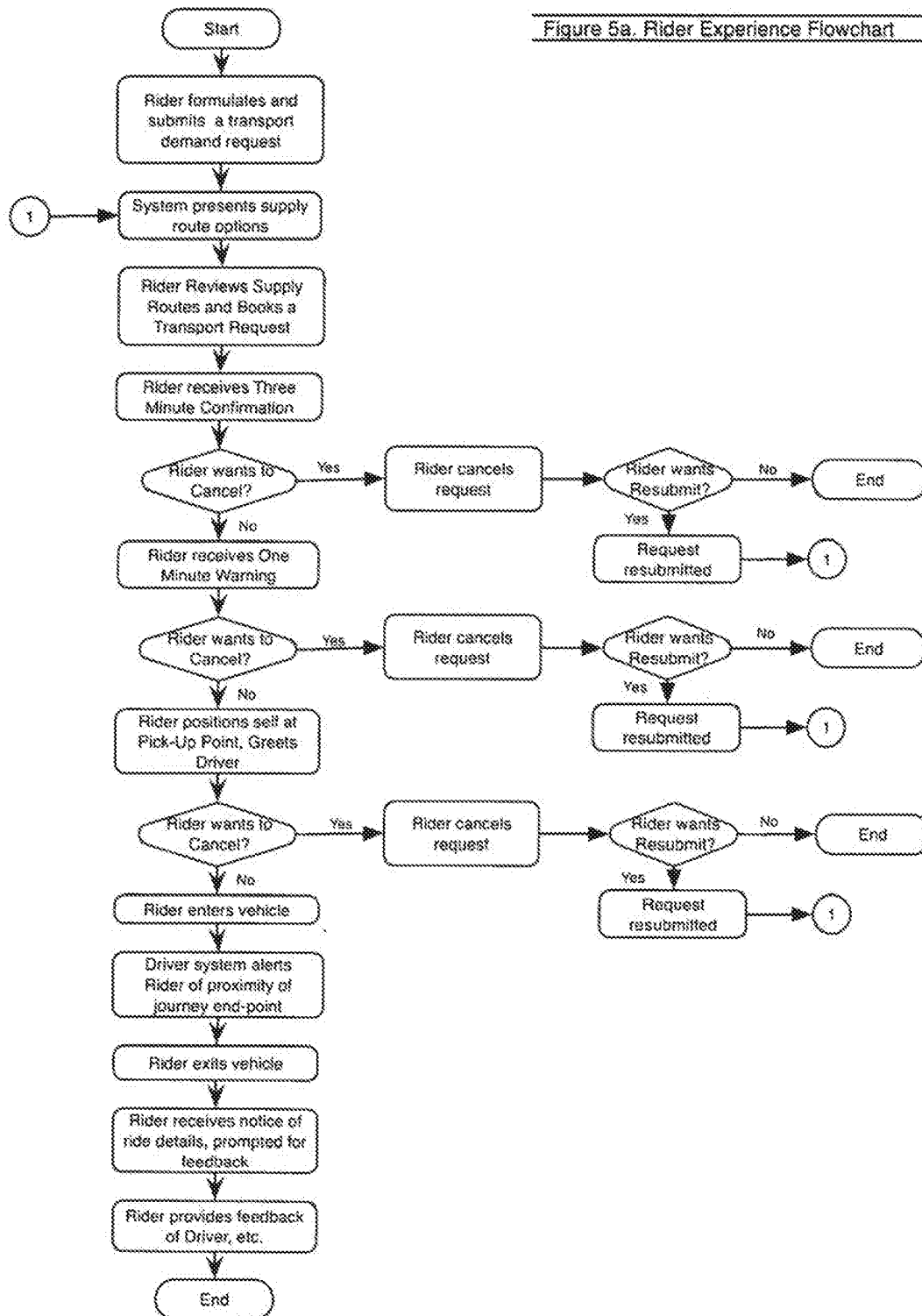
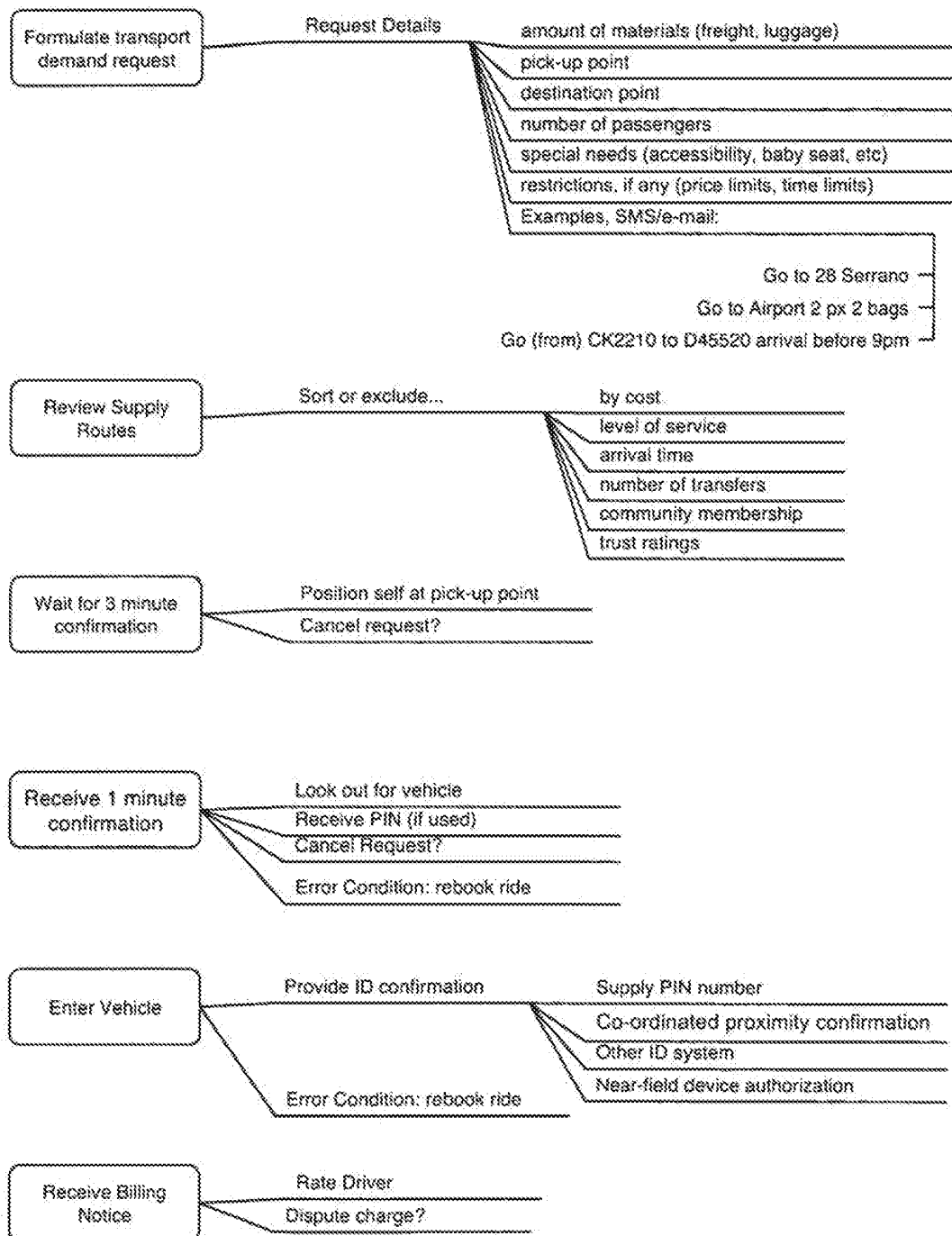


Figure 5a. Rider Experience Flowchart



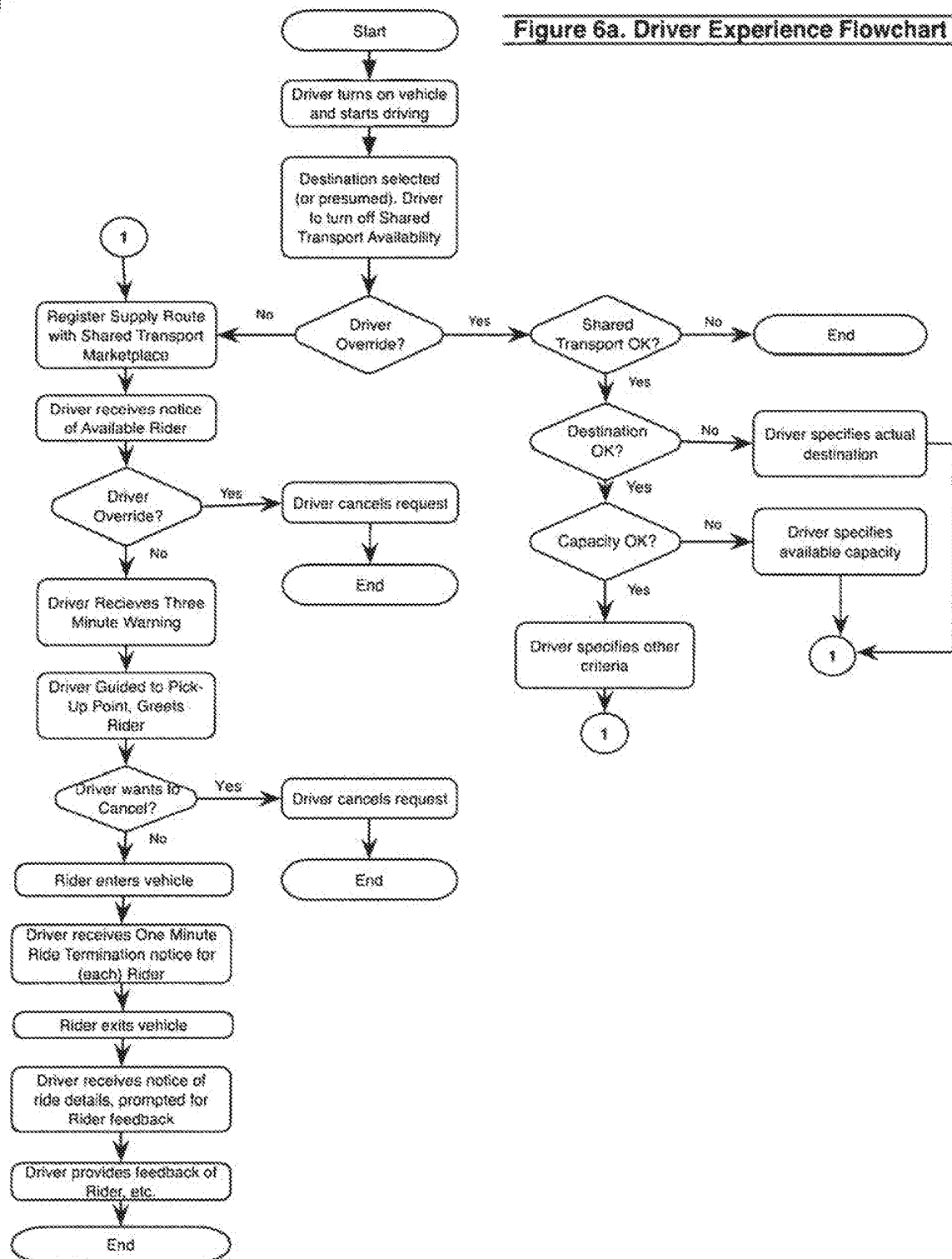
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Figure 5b. Rider Experience, Functional Options Data and Action Details



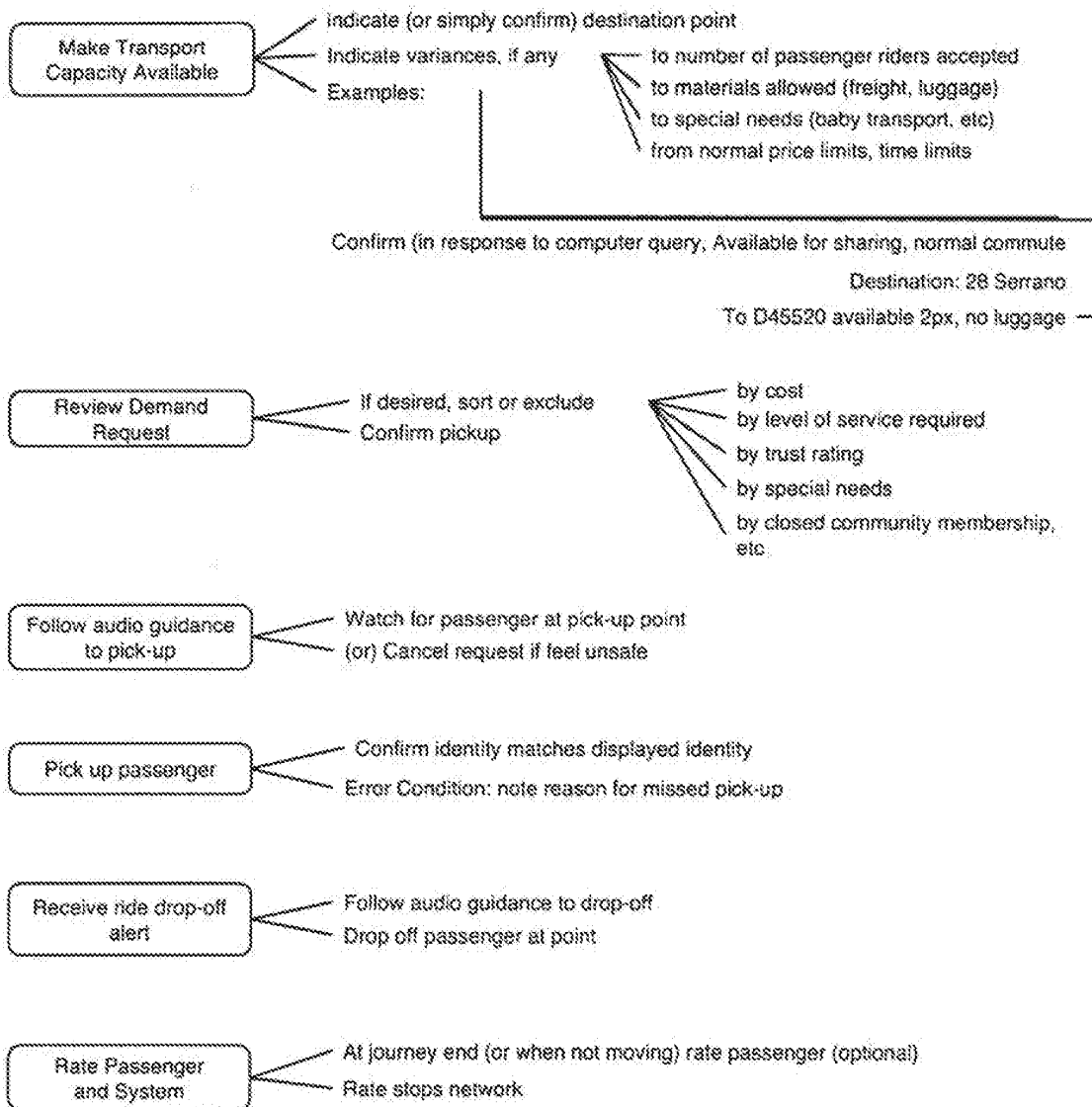
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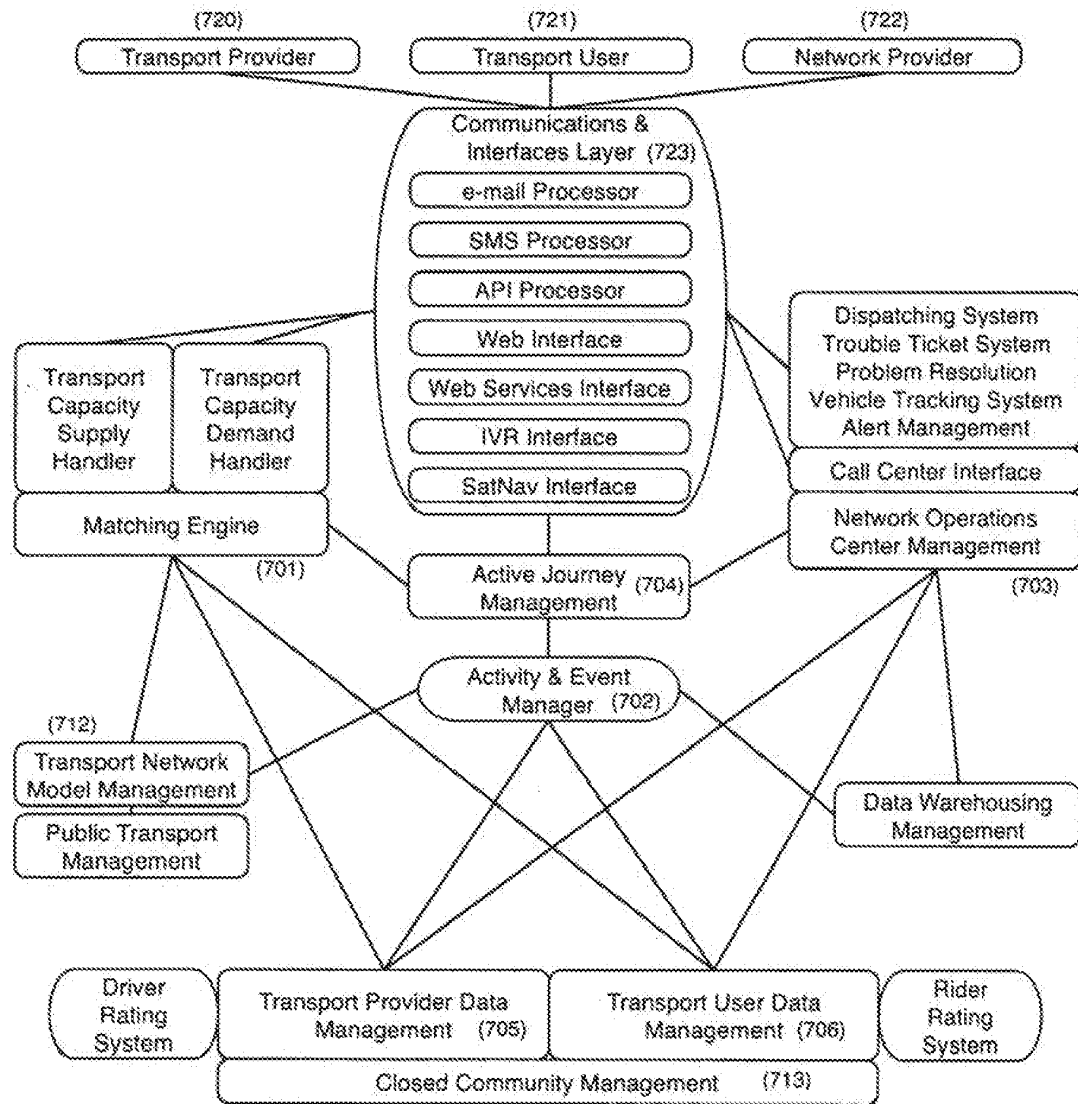


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Figure 6b. Driver Experience - Functional Options



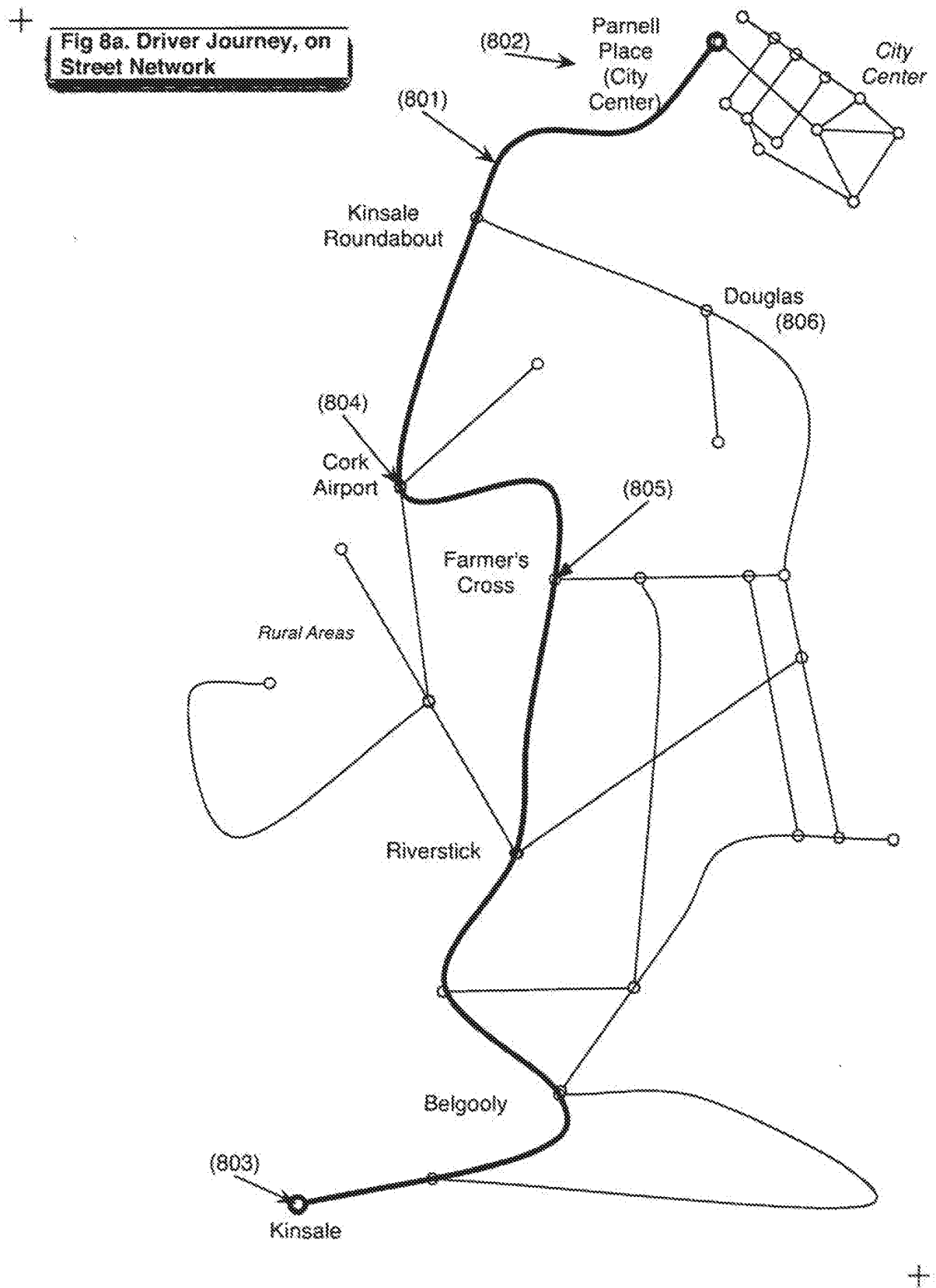
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RIDER DB (707) - Preferences - Placenames - Transactions - Audit Trail - Activity - Ratings - Routes - Communities	DRIVER DB (708) - Preferences - Placenames - Transactions - Audit Trail - Activity - Ratings - Routes - Communities	NETWORK MODEL DB (710) - Stops - Transit Times - Distances - Stochastic model info - Visualization info	Activity & Event Manager Driver Event Handling Rider Event Handling Interface with Billing System External Ticketing Interfaces
		JOURNEYS DB (709) - Journey Activity	Transport Management Stochastic Analyzer (711) Geography Manager Public Transport Model Visualization Models

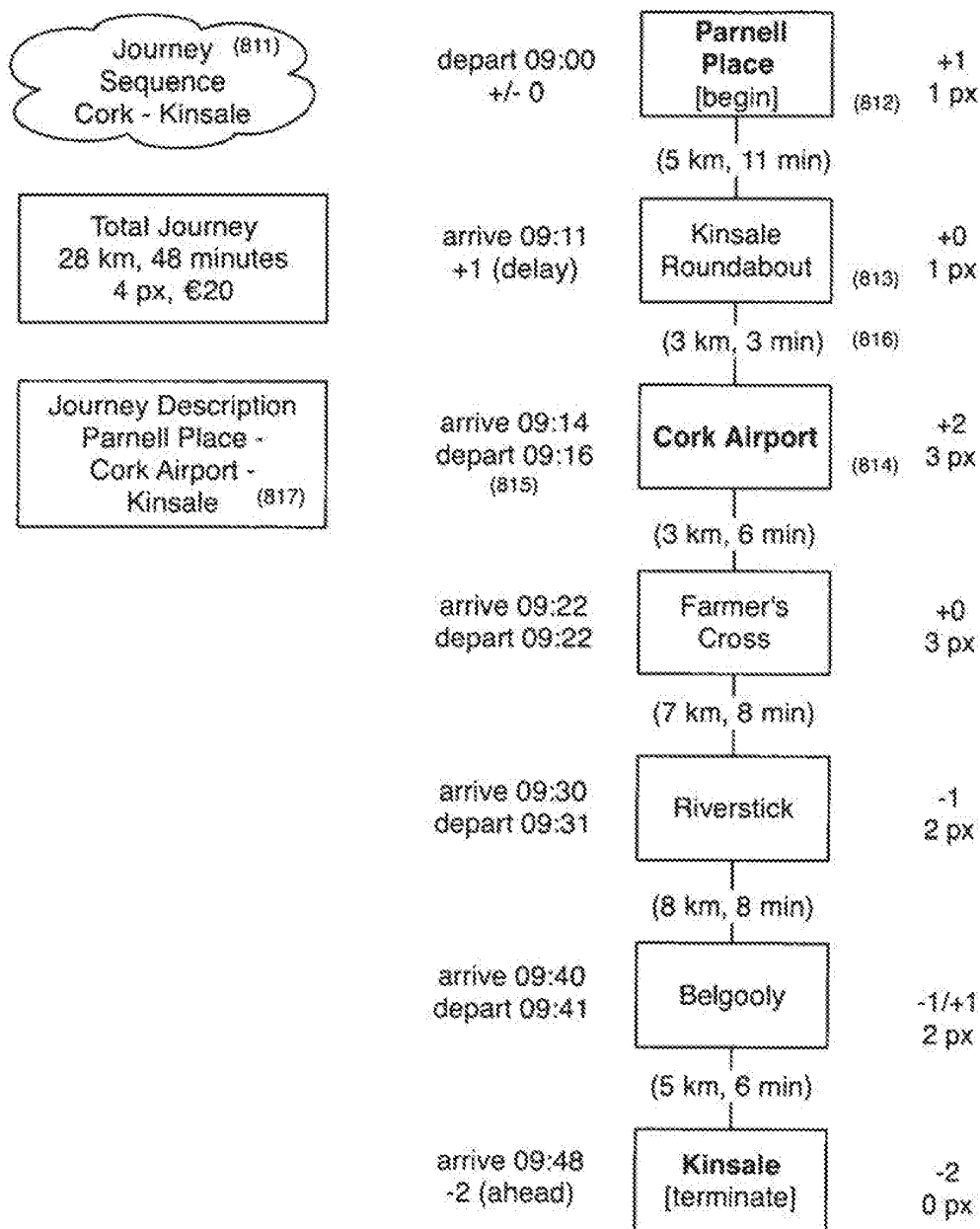
Fig 7. Shared Transport Marketplace Server & Subsystems

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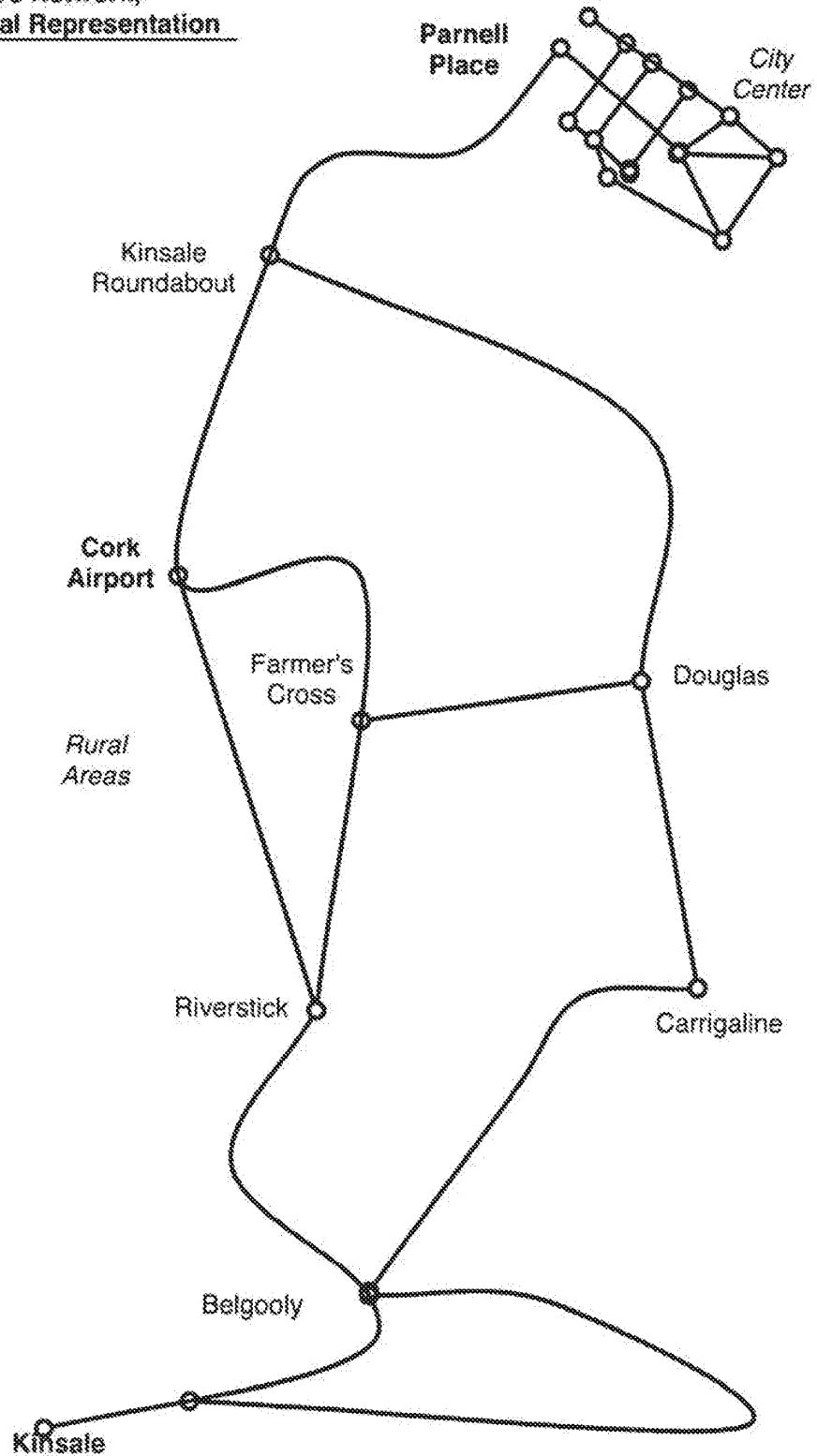
Fig 8b. Driver Journey Logical Characterization



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Fig 9a. Active Network,
Geographical Representation



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Figure 9b. Active Transport Network,
Logical Presentation

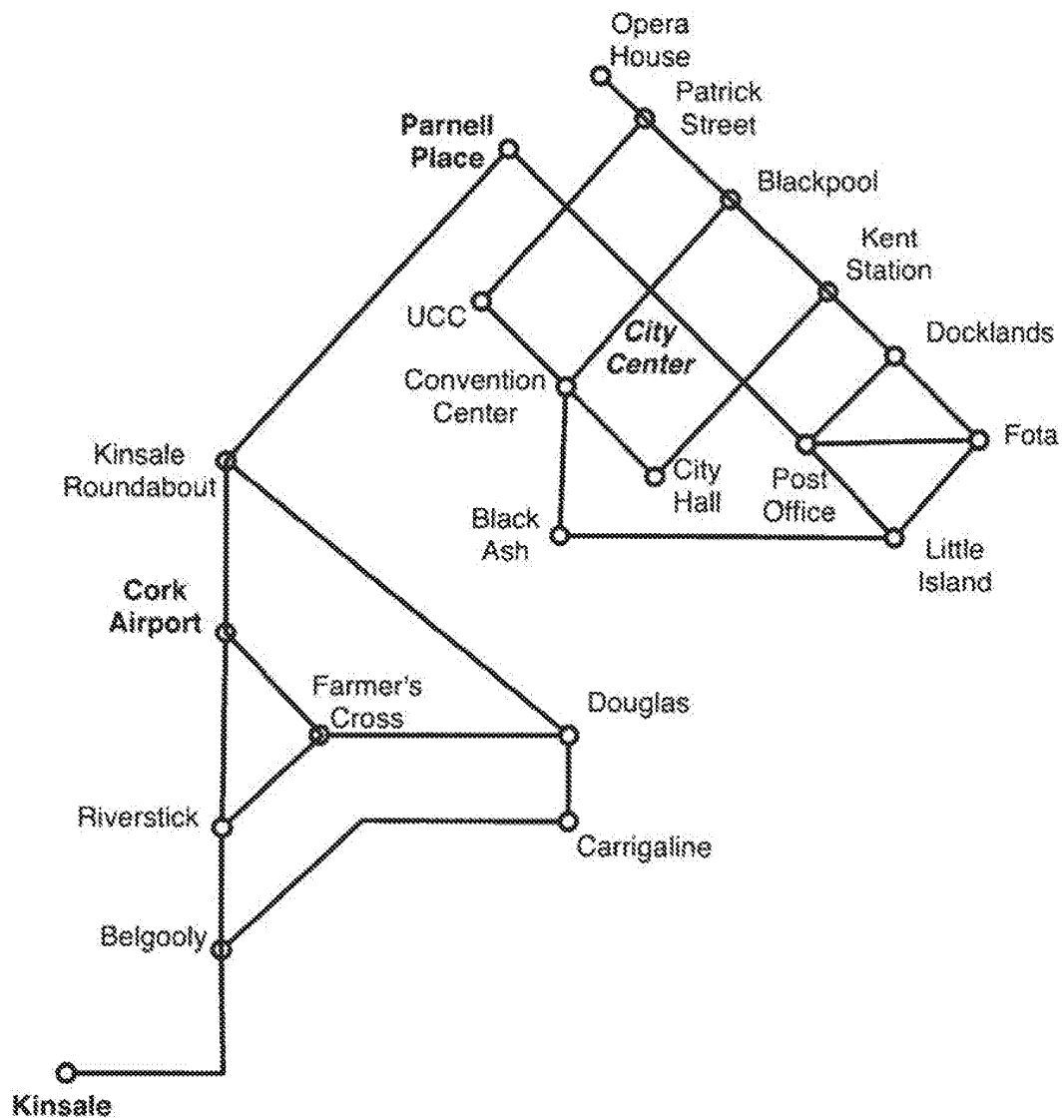
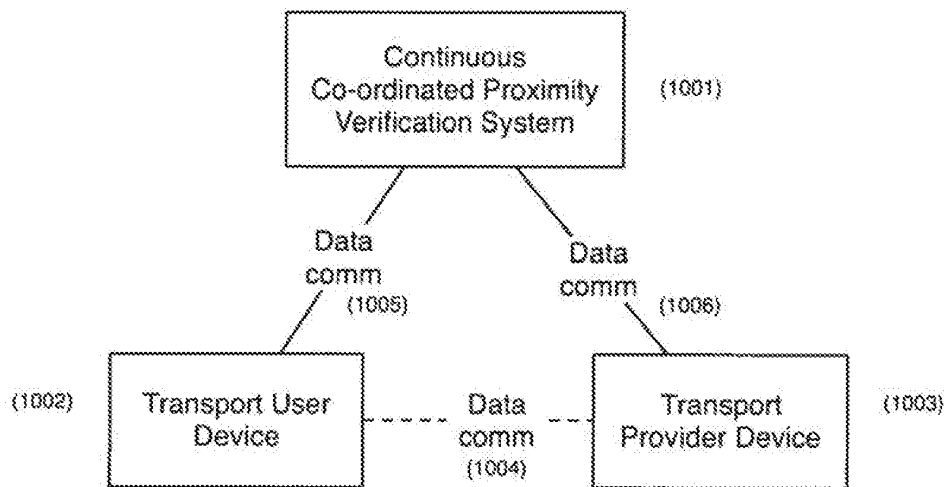


Figure 10a. Elements and communication channels for Continuous Co-ordinated Proximity by independent verification of position



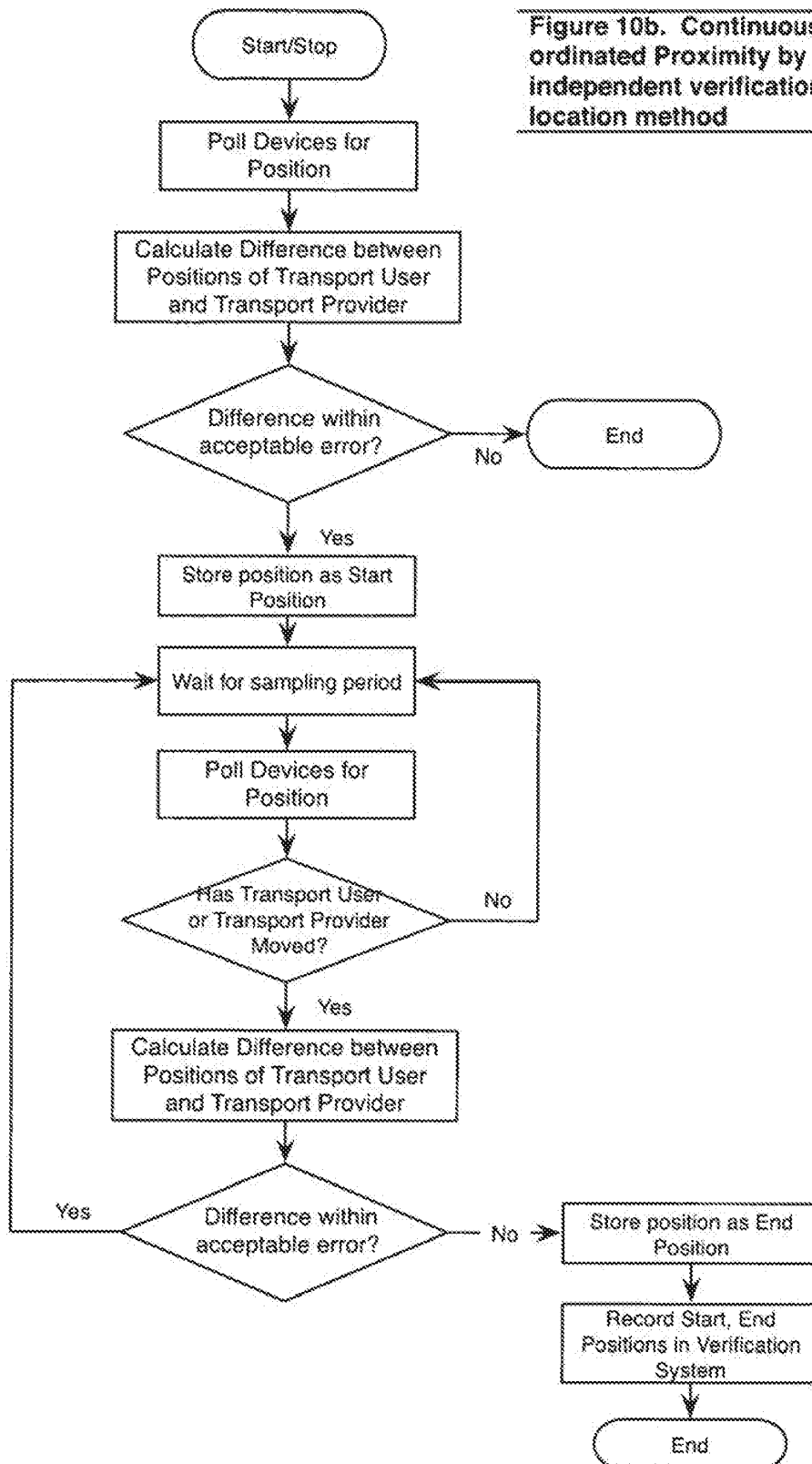
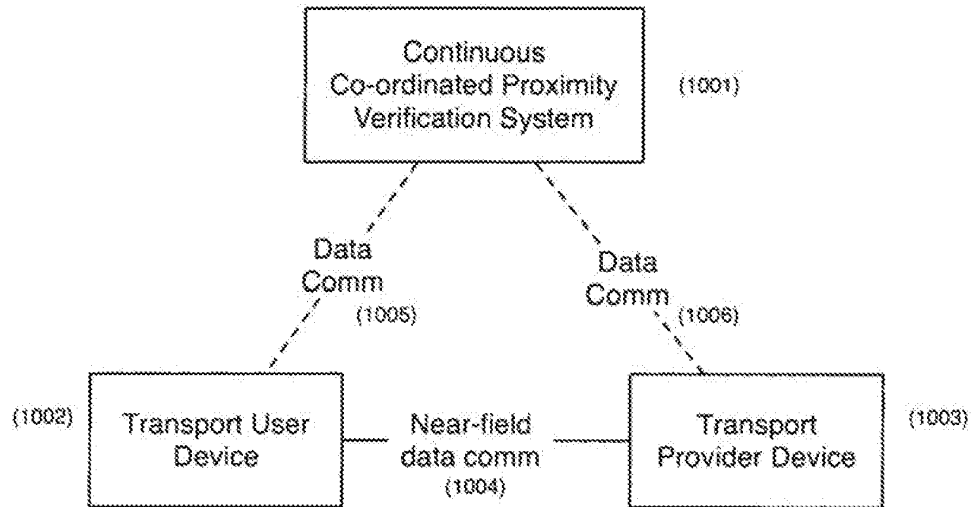


Figure 10b. Continuous Coordinated Proximity by using independent verification of location method

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Figure 11a. Elements and data communications links in Continuous Co-ordinated Proximity by verification of near-field communications link method



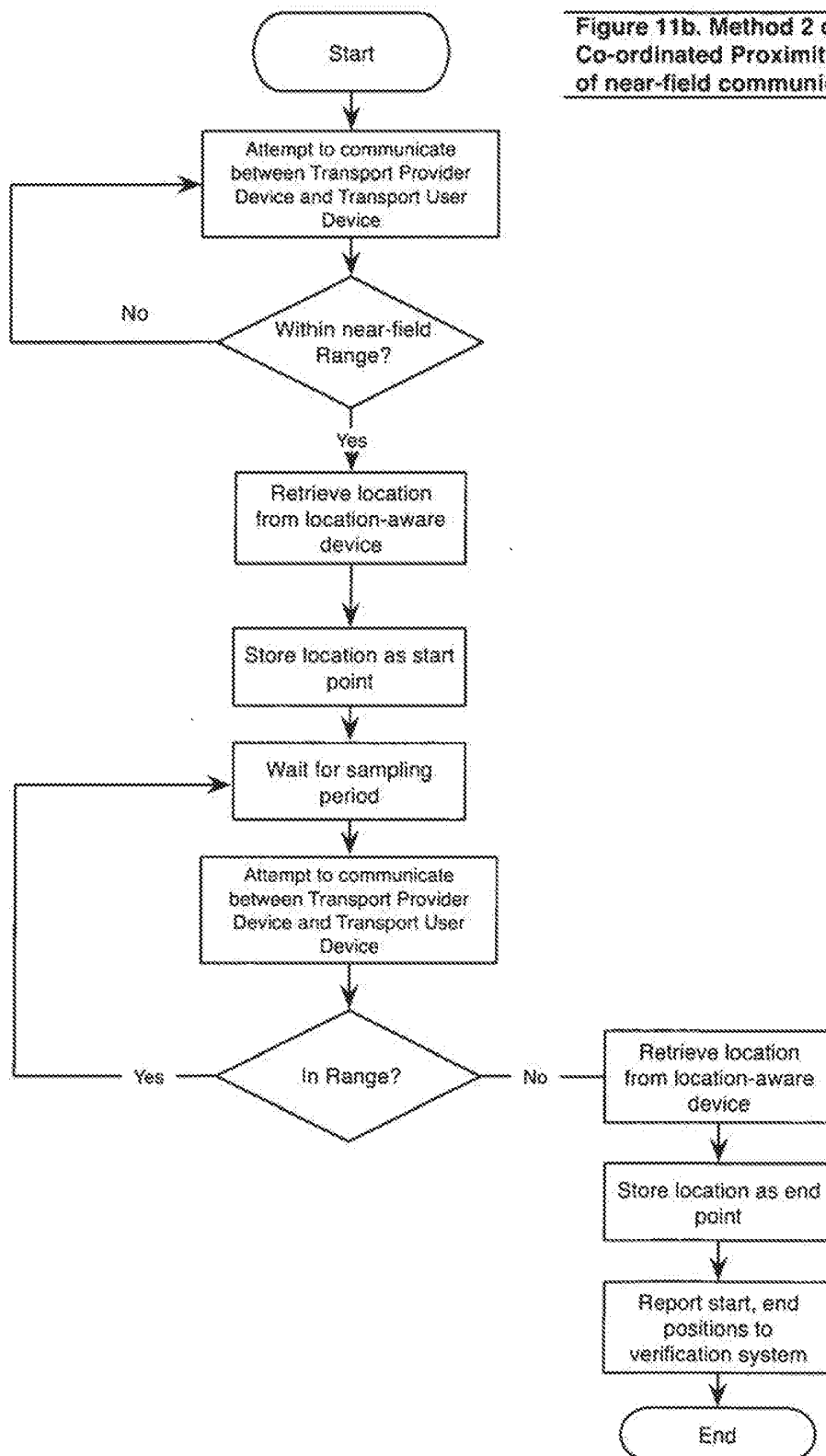


Figure 11b. Method 2 of Continuous Co-ordinated Proximity via verification of near-field communications link

Fig 12a. Access Control System

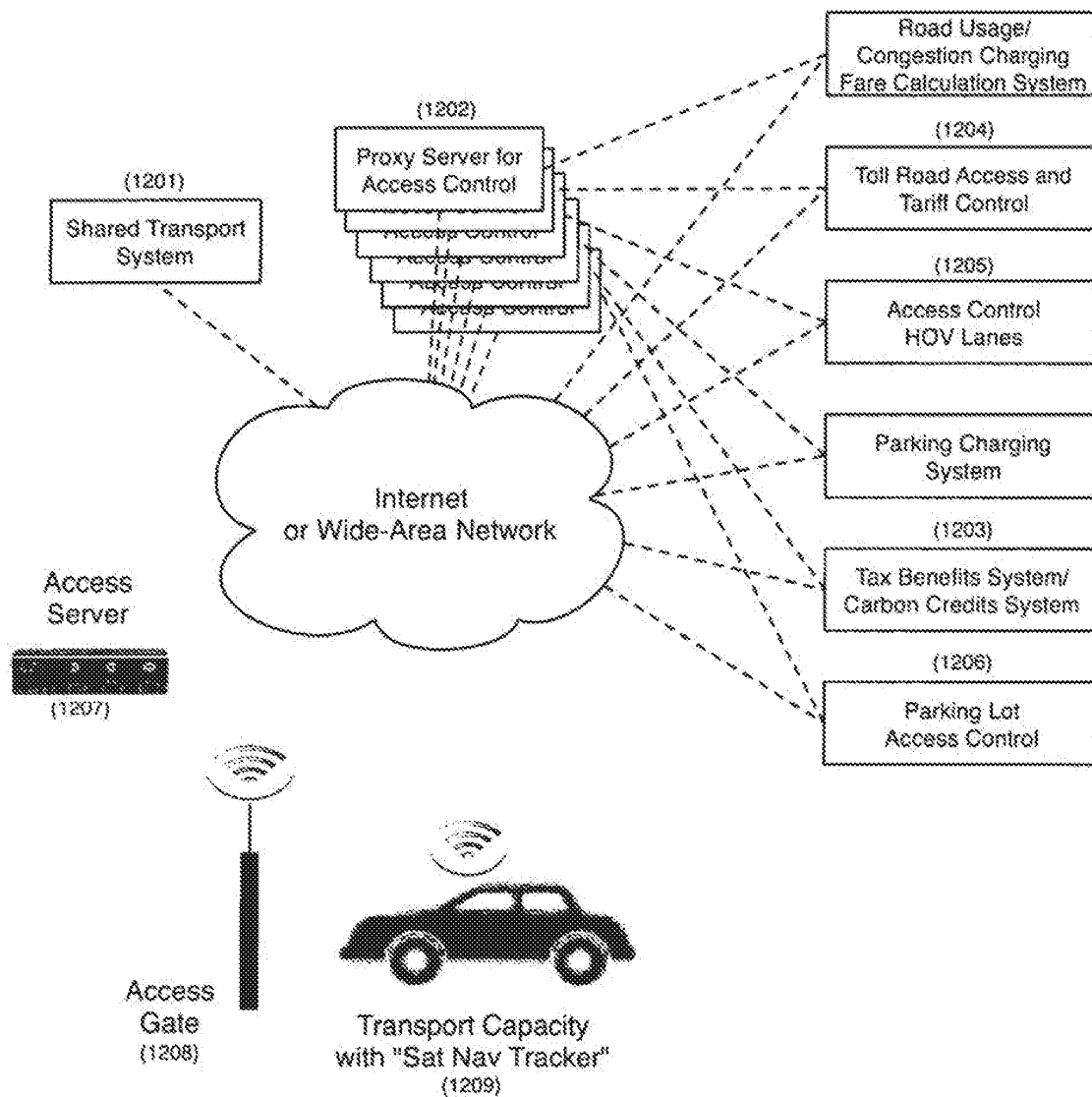


Fig 12b. Access Control System, Server Push Method, Server-side Logic

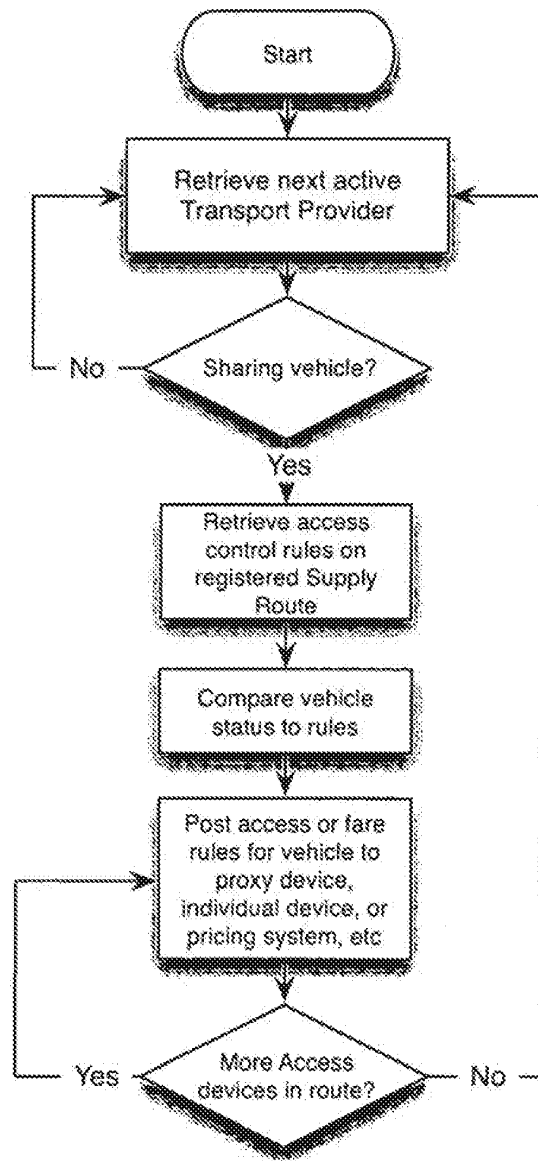


**Fig 12c. Access Control System,
Server Push Method, Client-side Logic**

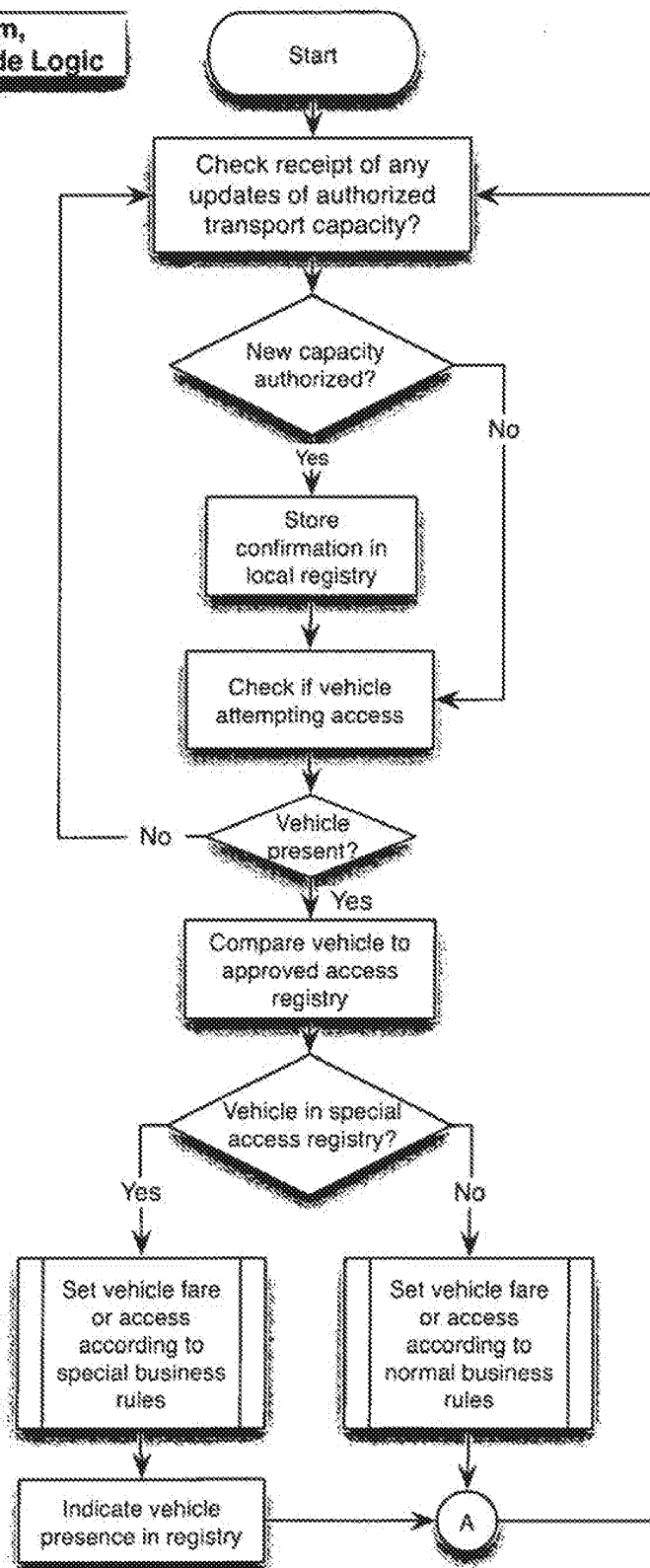


Fig 12d. Access Control System, Client Pull Method, Central Server-Side Logic

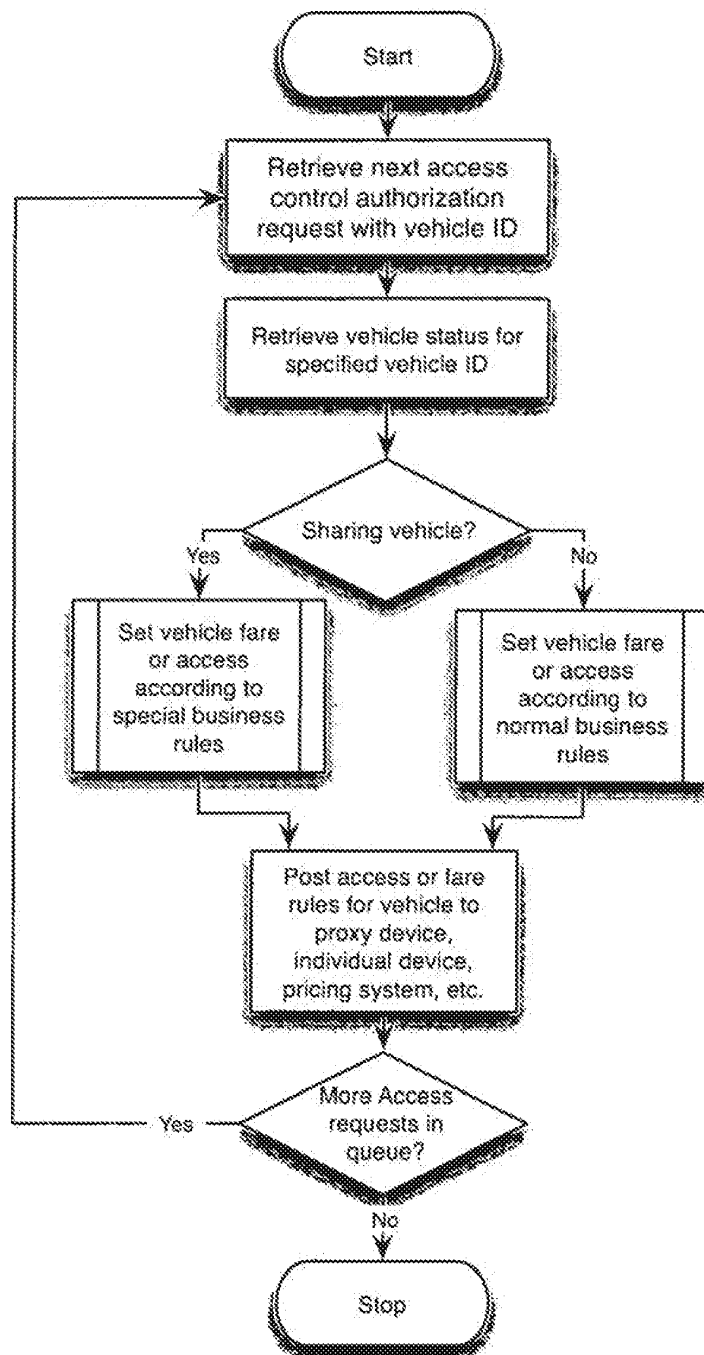


Fig 12e. Access Control System, Client Pull Method, Client-side Logic

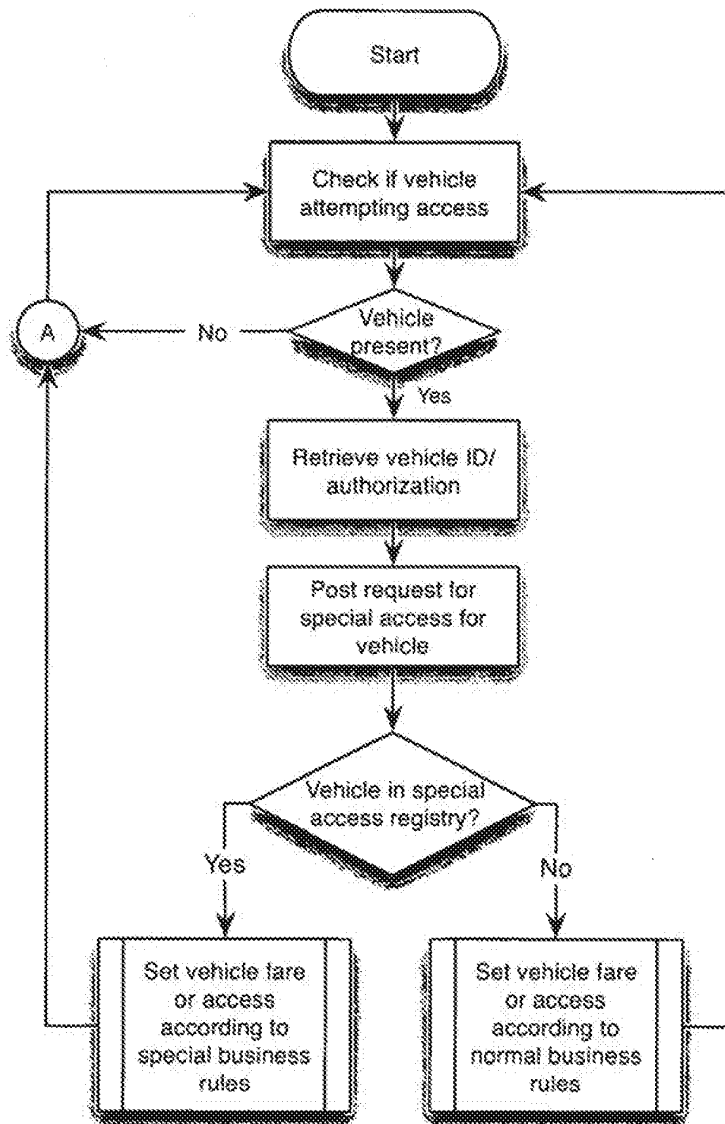
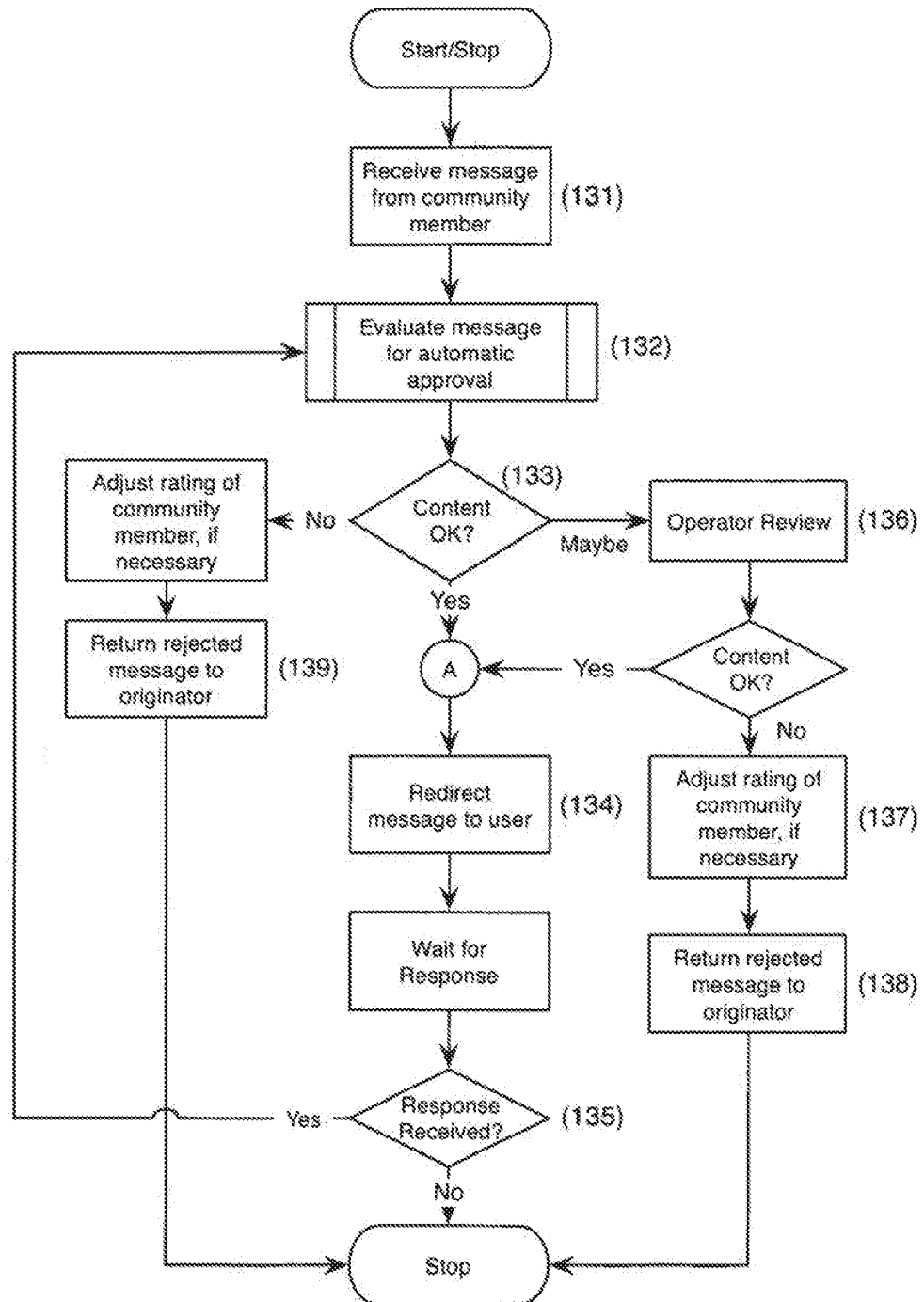


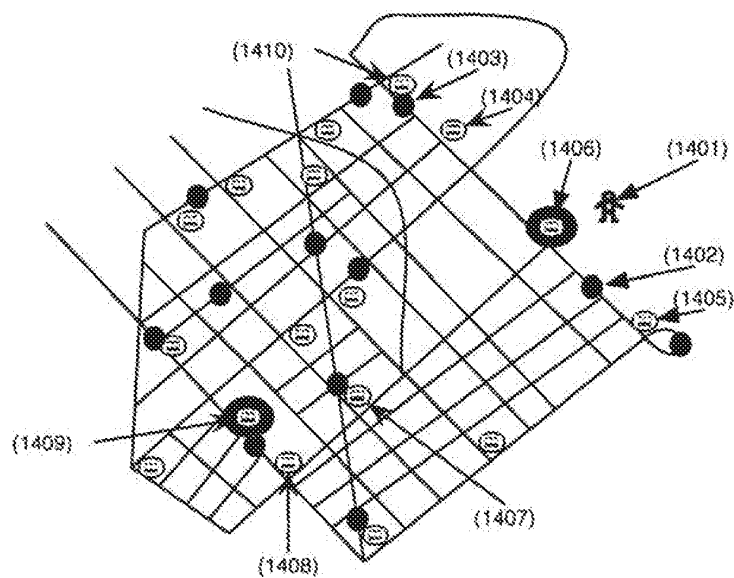
Fig 13. Transport Community Proxy Message Service



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**Figure 14a. Full Street, Active
Capacity and Node Representation**

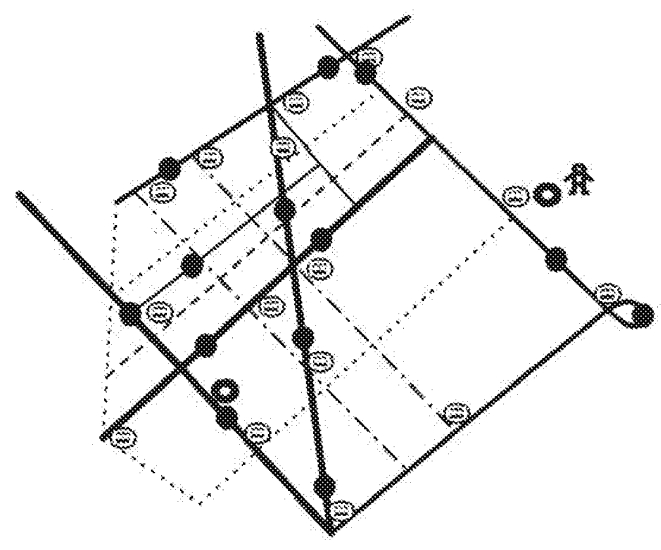
-  Pick-up/Destination Location
-  Start/Destination Points
-  Active Transport Capacity
-  Transport User



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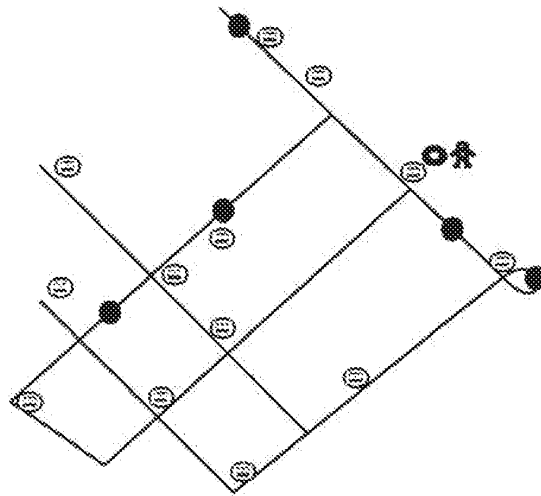
Figure 14b. Network, Active Street and Capacity Representation



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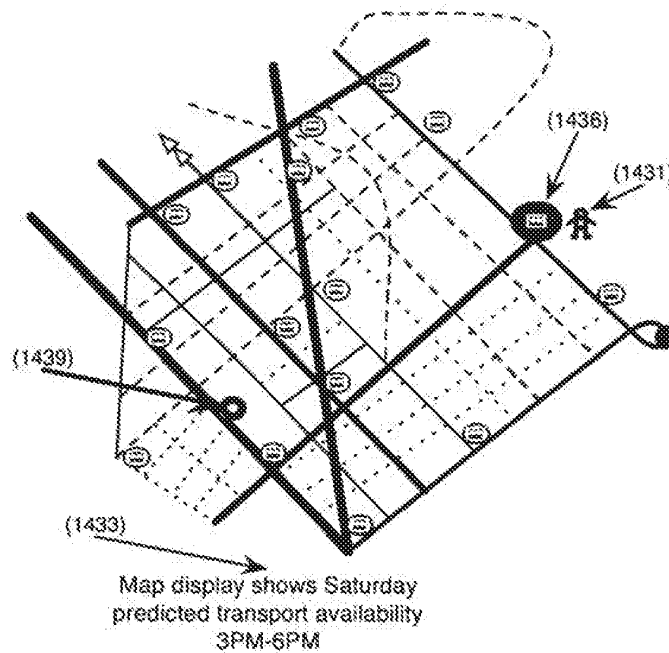
Figure 14c. Network, Active Zero Transfer
Street and Capacity Representation from
Specific Start Point



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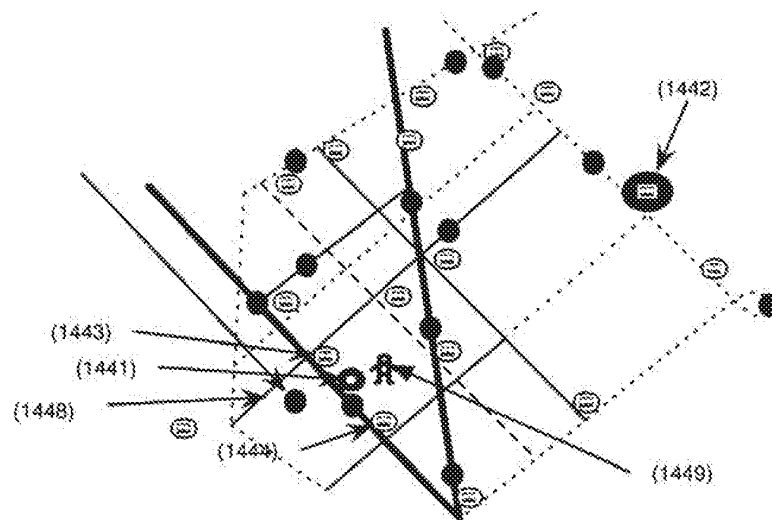
Figure 14d. Stochastic Network, Time of Day Capacity Representation

-  Pick-up/Destination Location
-  Start/Destination Points
-  Active Transport Capacity
-  Transport User
-  Infrequent Service (15+ min wait)
-  Infrequent Service (10 min wait)
-  Frequent Service (5 min wait)
-  Frequent Service (2 min wait)



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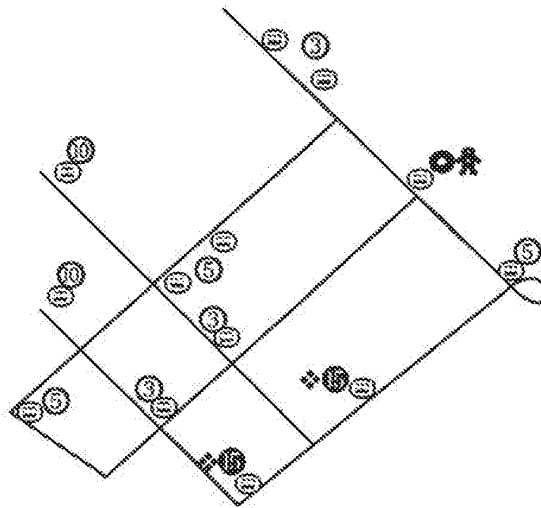
Figure 14e. Stochastic Network, Active
Street and Capacity Representation,
Specific Departure Point, Outbound



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Figure 14f. Network, Wait time and Transfer Representation



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Figure 14g. Stochastic Network, Tabular Representation of Time of Day Capacity

Start Point: 2142 14th Ave. (1471)
 Destination: 200 Broadway, Troy (1472) (1475)

Time of Day	Departure Location	Availability
5:00am-6:30am	13 th St	⑤ minutes
	15 th St	no service
6:30am-7:30am	13 th St	⑤ minutes
	15 th St	⑩ minutes
7:30am-8:30am	13 th St	⑤ minutes
	15 th St	⑤ minutes
(1473) 8:30am-10:00am (1474)	13 th St	⑤ minutes
	15 th St	⑤ minutes
10:00am-4:30pm	13 th St	⑩ minutes
	15 th St	⑮ minutes
4:30pm-7:30pm	13 th St	⑤ minutes
	15 th St	⑤ minutes
7:30pm-10:30pm	13 th St	⑤ minutes
	15 th St	⑮ minutes
10:30pm-2:30am	13 th St	⑮ minutes
	15 th St	① hour
2:30am-5:00am	13 th St	no service
	15 th St	no service

Figure 14h. Combination Real-time & Stochastic Network Departure Board for Shared Transport Network

Start Point: 2142 14th Ave

Destination (via points)	Departure Location	Departure (estimated)
Troy City Center	13 th St	⊙ minutes
Rensselaer (State St, Watervliet)	15 th St	⊙ minutes
Cohoes (Green Island, Watervliet)	13 th St	(every ⊙ minutes)
Albany Street	13 th St	(every ⊙ minutes)
Broadway	15 th St	(every ⊙ minutes)

Diagram annotations: Arrows point from the table to various locations. (1481) and (1485) point to the start point. (1483) points to the Troy City Center row. (1486) points to the Rensselaer row. (1487) points to the Broadway row. (1482) and (1488) point to the Albany Street row.

Figure 14i. Real-time Journey Planner for Shared Transport Network, Fixed Start & Destination Points, Tabular Representation

Start Point: Essex Fells, NJ (1491)
 Destination: 222 E 32nd St, New York (1492)
 Departure Time: Now (9:22am), Distance: 22 miles

Options (1493)	Departure / Arrival	Departure (estimated) (1494)	Cost	Arrival Time
Option 1: Shared Transport	Roseland Ave / 3rd Av & 32nd	③ minutes (1495)	\$7.80	10:15 am
Option 2: Shared Transport + Path + Subway (1496)	Bloomfield Ave / Park Ave & 34th	(every ⑥ minutes) (1497)	\$6.50	10:38 am
Option 3: Bus + Shared Transport	Bloomfield Ave / 2 nd Ave & 32nd	(every ① hour, next 9:35 am)	\$6.20	10:45 am

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	00199-0001-19000
		Application Number	
Title of Invention	SYSTEMS AND METHODS FOR RE-ALLOCATING VEHICLES IN A SHARED TRANSPORT SYSTEM		
<p>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</p>			

Secrecy Order 37 CFR 5.2:

☐	Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)
--------------------------	---

Inventor Information:

Inventor	1				Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Sean		O'SULLIVAN			
Residence Information (Select One) • US Residency Non US Residency Active US Military Service						
City	Princeton	State/Province	NJ	Country of Residence	US	
Mailing Address of Inventor:						
Address 1	174 Nassau Street					
Address 2	#3000					
City	Princeton	State/Province	NJ			
Postal Code	08542	Country i	US			
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.						
Add						

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).			
☐ An Address is being provided for the correspondence Information of this application.			
Customer Number	108449		
Email Address	docketing@bomcip.com	Add Email	Remove Email

Application Information:

Title of the Invention	SYSTEMS AND METHODS FOR RE-ALLOCATING VEHICLES IN A SHARED TRANSPORT SYSTEM		
Attorney Docket Number	00199-0001-19000	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	32	Suggested Figure for Publication (if any)	

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	00199-0001-19000
		Application Number	
Title of Invention	SYSTEMS AND METHODS FOR RE-ALLOCATING VEHICLES IN A SHARED TRANSPORT SYSTEM		

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer number will be used for the Representative Information during processing.

Please Select One:	☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	108449		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	16198000	2018-11-21

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number		00199-0001-19000	
		Application Number			
Title of Invention		SYSTEMS AND METHODS FOR RE-ALLOCATING VEHICLES IN A SHARED TRANSPORT SYSTEM			

Prior Application Status		Pending		Remove	
Application Number		Continuity Type		Prior Application Number	
16198000		Continuation of		15998864	
Prior Application Status		Patented		Remove	
Application Number		Continuity Type		Prior Application Number	
15998864		Continuation of		12924487	
Prior Application Status		Patented		Remove	
Application Number		Continuity Type		Prior Application Number	
12924487		Division of		12069656	
Prior Application Status		Expired		Remove	
Application Number		Continuity Type		Prior Application Number	
12069656		Claims benefit of provisional		60900808	

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)ⁱ the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Application Number		Country ⁱ		Filing Date (YYYY-MM-DD)		Access Code ^j (if applicable)	

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	00199-0001-19000
		Application Number	
Title of Invention	SYSTEMS AND METHODS FOR RE-ALLOCATING VEHICLES IN A SHARED TRANSPORT SYSTEM		

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013. NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	00199-0001-19000
		Application Number	
Title of Invention	SYSTEMS AND METHODS FOR RE-ALLOCATING VEHICLES IN A SHARED TRANSPORT SYSTEM		

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	00199-0001-19000
		Application Number	
Title of Invention	SYSTEMS AND METHODS FOR RE-ALLOCATING VEHICLES IN A SHARED TRANSPORT SYSTEM		

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.			
Applicant 1		<input type="button" value="Remove"/>	
<p>If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.</p>			
		<input type="button" value="Clear"/>	
☐ Assignee	Legal Representative under 35 U.S.C. 117		Joint Inventor
Person to whom the inventor is obligated to assign.		Person who shows sufficient proprietary interest	
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:			
<div style="border: 1px solid black; height: 20px; width: 100%;"></div>			
Name of the Deceased or Legally Incapacitated Inventor: <div style="border: 1px solid black; width: 400px; height: 20px;"></div>			
If the Applicant is an Organization check here. ☒			
Organization Name	CARMA TECHNOLOGY LIMITED		
Mailing Address Information For Applicant:			
Address 1	Republic of Work		
Address 2	12 South Mall		
City	Cork City	State/Province	
Country	IE	Postal Code	T12 RD43
Phone Number		Fax Number	
Email Address			
Additional Applicant Data may be generated within this form by selecting the Add button. <input type="button" value="Add"/>			

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	00199-0001-19000
		Application Number	
Title of Invention	SYSTEMS AND METHODS FOR RE-ALLOCATING VEHICLES IN A SHARED TRANSPORT SYSTEM		

Assignee	1			
Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.				
				<input type="button" value="Remove"/>
If the Assignee or Non-Applicant Assignee is an Organization check here. ☐				
Prefix	Given Name	Middle Name	Family Name	Suffix
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Mailing Address Information For Assignee including Non-Applicant Assignee:				
Address 1	<input type="text"/>			
Address 2	<input type="text"/>			
City	<input type="text"/>	State/Province	<input type="text"/>	
Country ⁱ	<input type="text"/>	Postal Code	<input type="text"/>	
Phone Number	<input type="text"/>	Fax Number	<input type="text"/>	
Email Address	<input type="text"/>			
Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.				<input type="button" value="Add"/>

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). However, if this Application Data Sheet is submitted with the **INITIAL** filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Sangwoo Ahn/		Date (YYYY-MM-DD)	2019-11-27
First Name	Sangwoo	Last Name	Ahn	Registration Number
				76905
Additional Signature may be generated within this form by selecting the Add button.				<input type="button" value="Add"/>

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	00199-0001-19000
		Application Number	
Title of Invention	SYSTEMS AND METHODS FOR RE-ALLOCATING VEHICLES IN A SHARED TRANSPORT SYSTEM		

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	RIDE HAILING WITH OPTIMAL PICK-UP POINTS IN SHARED TRANSPORT SYSTEM
-----------------------	---

As the below named inventor, I hereby declare that:

This declaration is directed to: ☐ The attached application, or

☒ United States application or PCT international application number 16/198,000

filed on 2018-11-21

The above-identified application was made or authorized to be made by me.

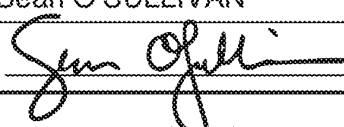
I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

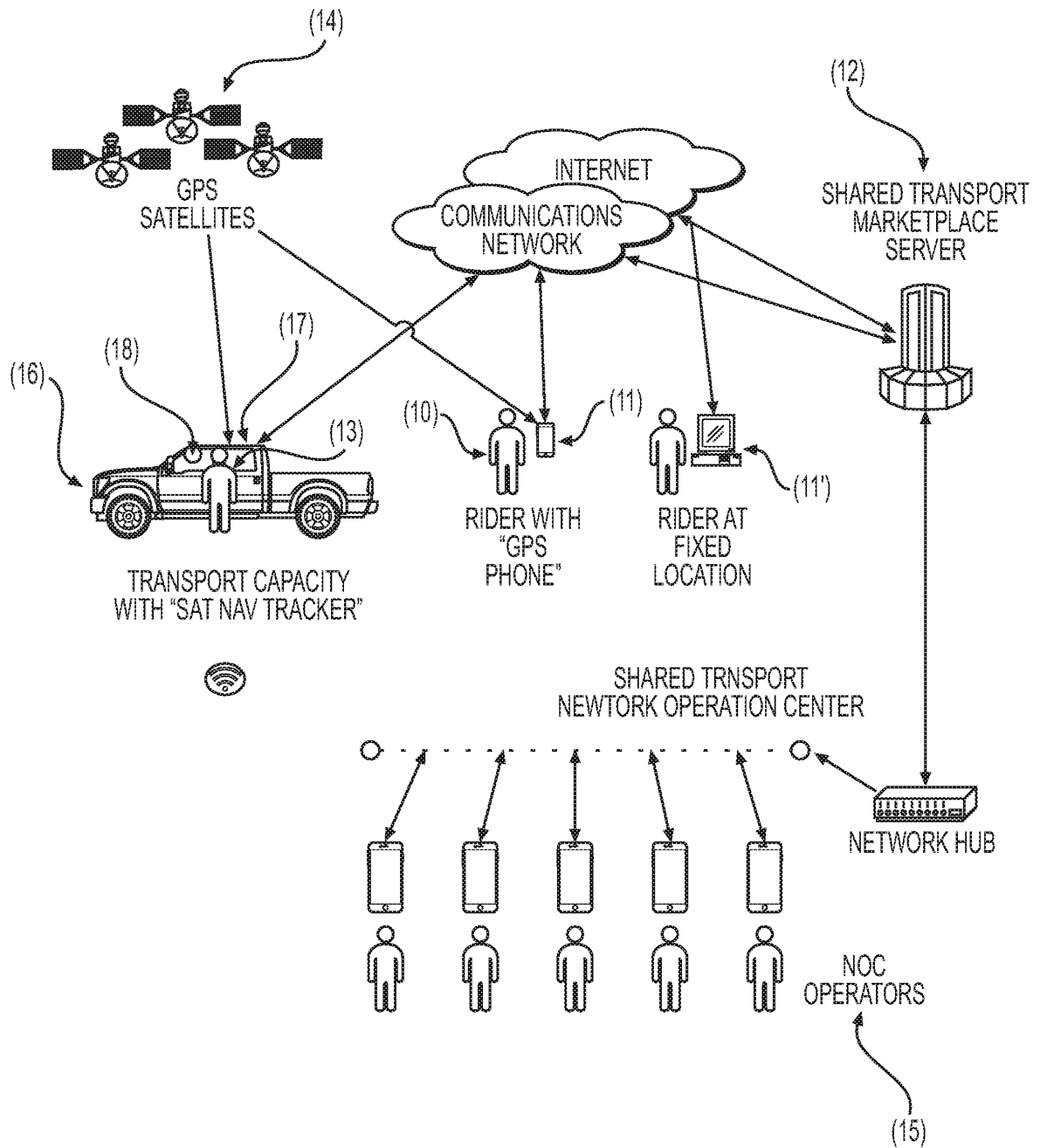
Inventor: Sean O'SULLIVAN Date (Optional) : _____Signature: 

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

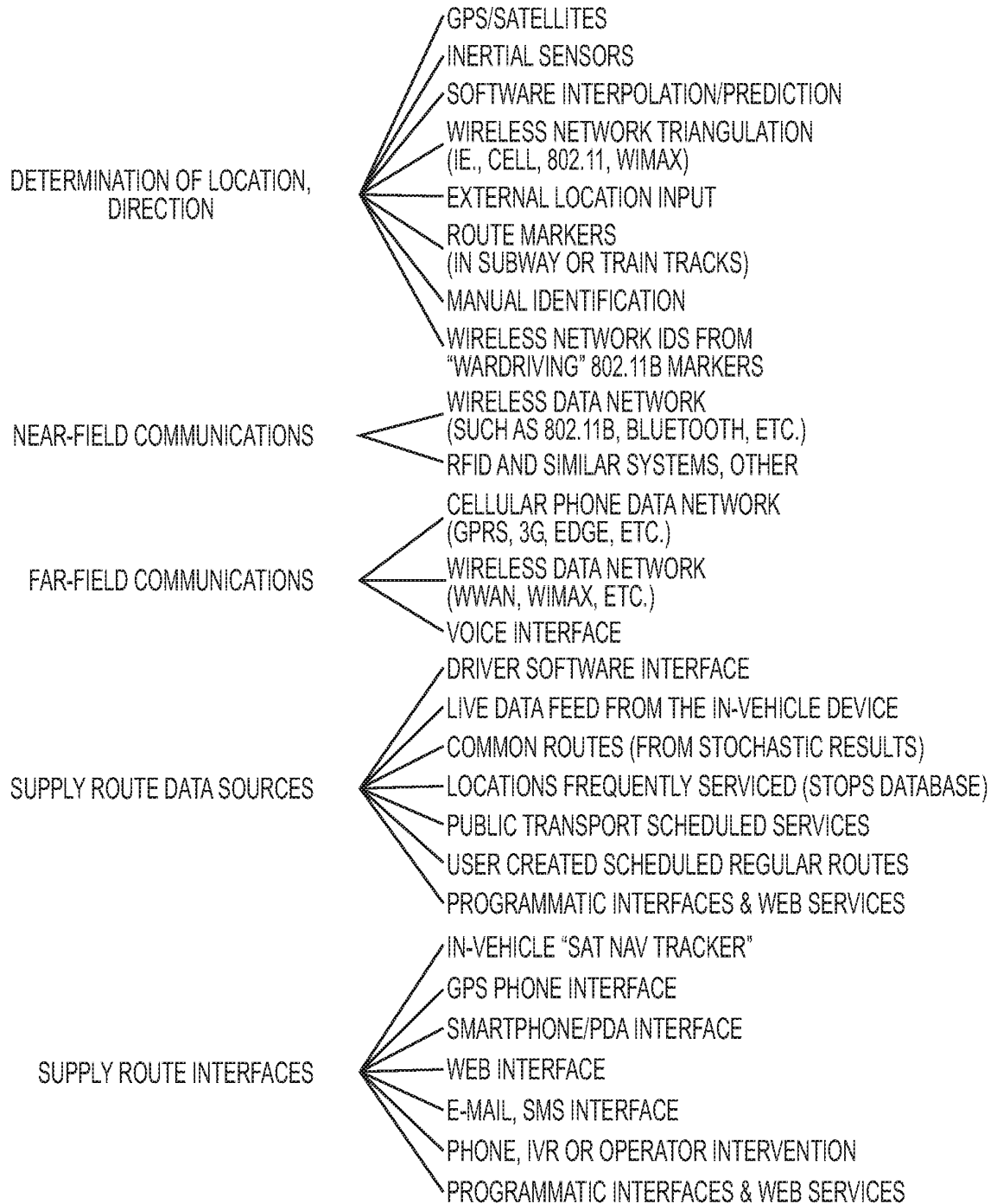
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

FIGURE 1. SHARED TRANSPORT NETWORK SYSTEM



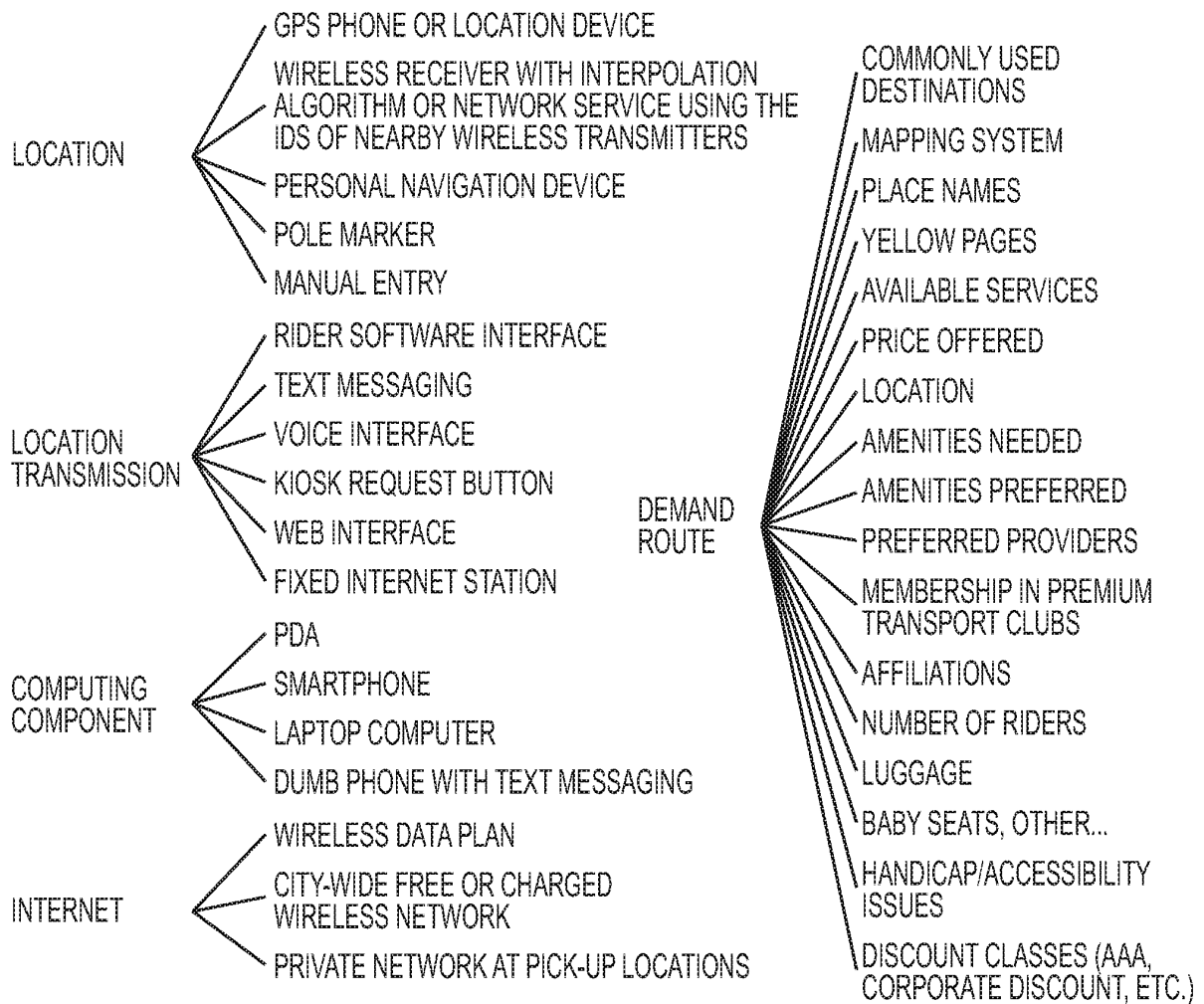
Replacement Sheet

FIGURE 2. TRANSPORT CAPACITY COMPUTING AND COMMUNICATIONS COMPONENTS



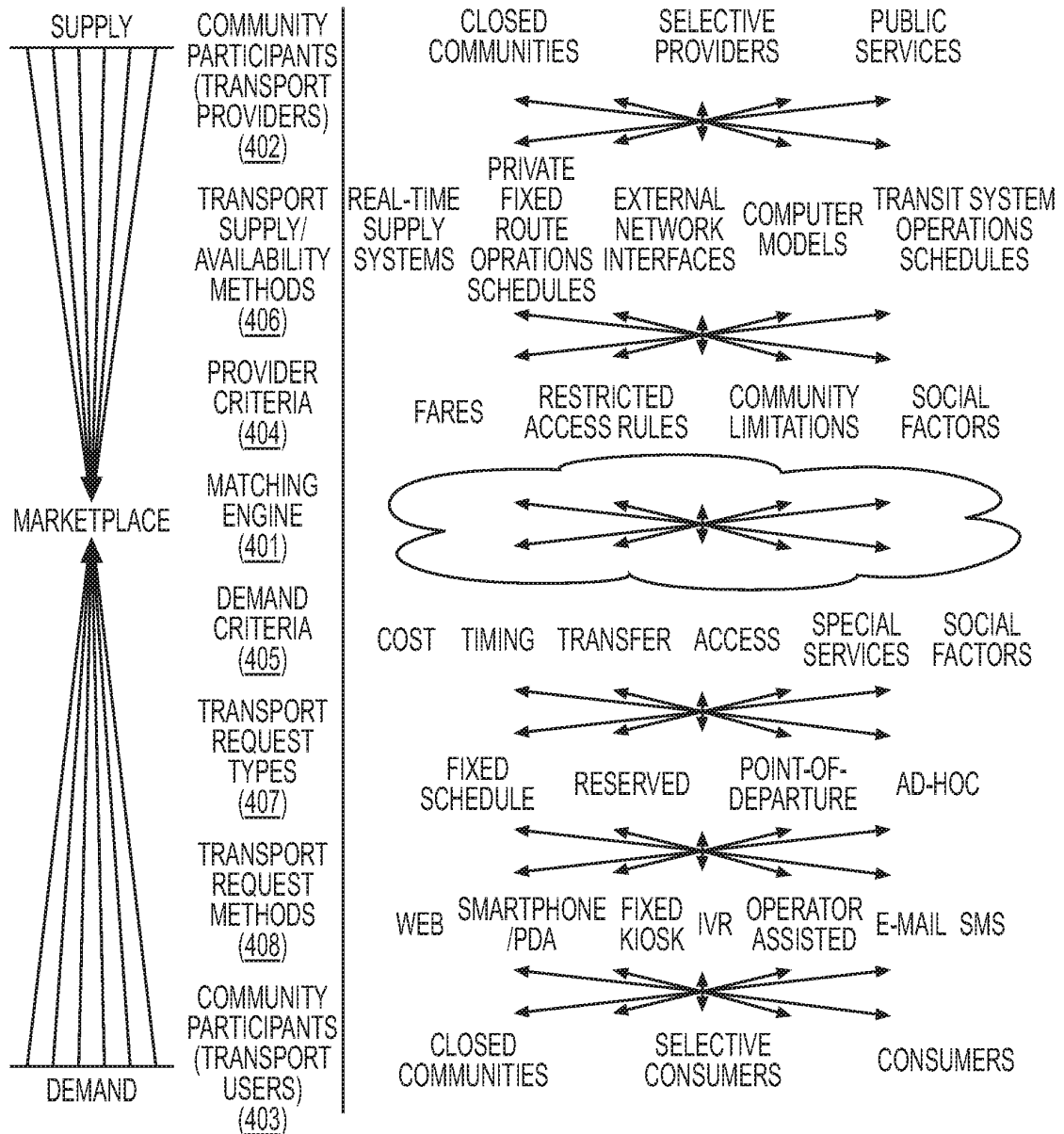
Replacement Sheet

FIGURE 3. RIDER TECHNOLOGY COMPONENTS AND INFORMATION ELEMENTS



Replacement Sheet

FIGURE 4. SHARED TRANSPORT MARKETPLACE



PUBLIC SHARED TRANSPORT PROVIDERS

BUS NETWORKS
RAIL & SUBWAY NETWORKS
JITNEY/SHARE TAXI PROVIDERS
PRIVATE SCHEDULED SERVICE BUS

CLOSED MEMBER COMMUNITIES

SCHOOL BUS SYSTEMS
EMPLOYEE SHUTTLE BUSES
AFFILIATIONS (SOCIAL CLUBS, SPORTS NETWORKS)

FREIGHT TRANSPORT PROVIDERS

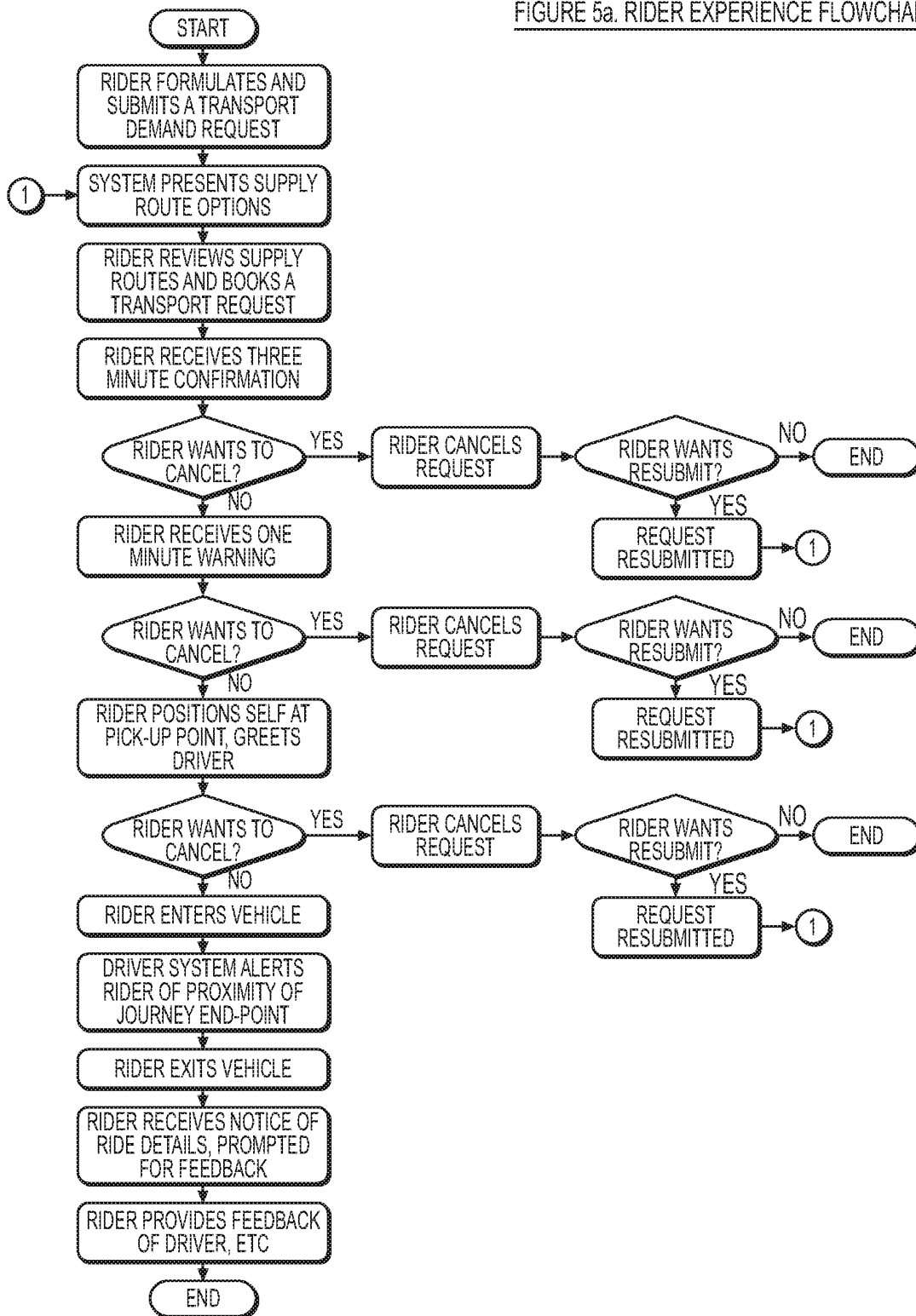
PRIVATE PACKAGE TRANSPORT COMPANIES
NATIONAL POSTAL CARRIERS
INDEPENDENT OPERATORS
AD-HOC CONSUMER

DISPATCHABLE, NON-SHARED TRANSPORT

TAXI COMPANIES
PRIVATE HACKNEY OPERATORS
PREMIUM SERVICE TRANSPORT OPERATOR

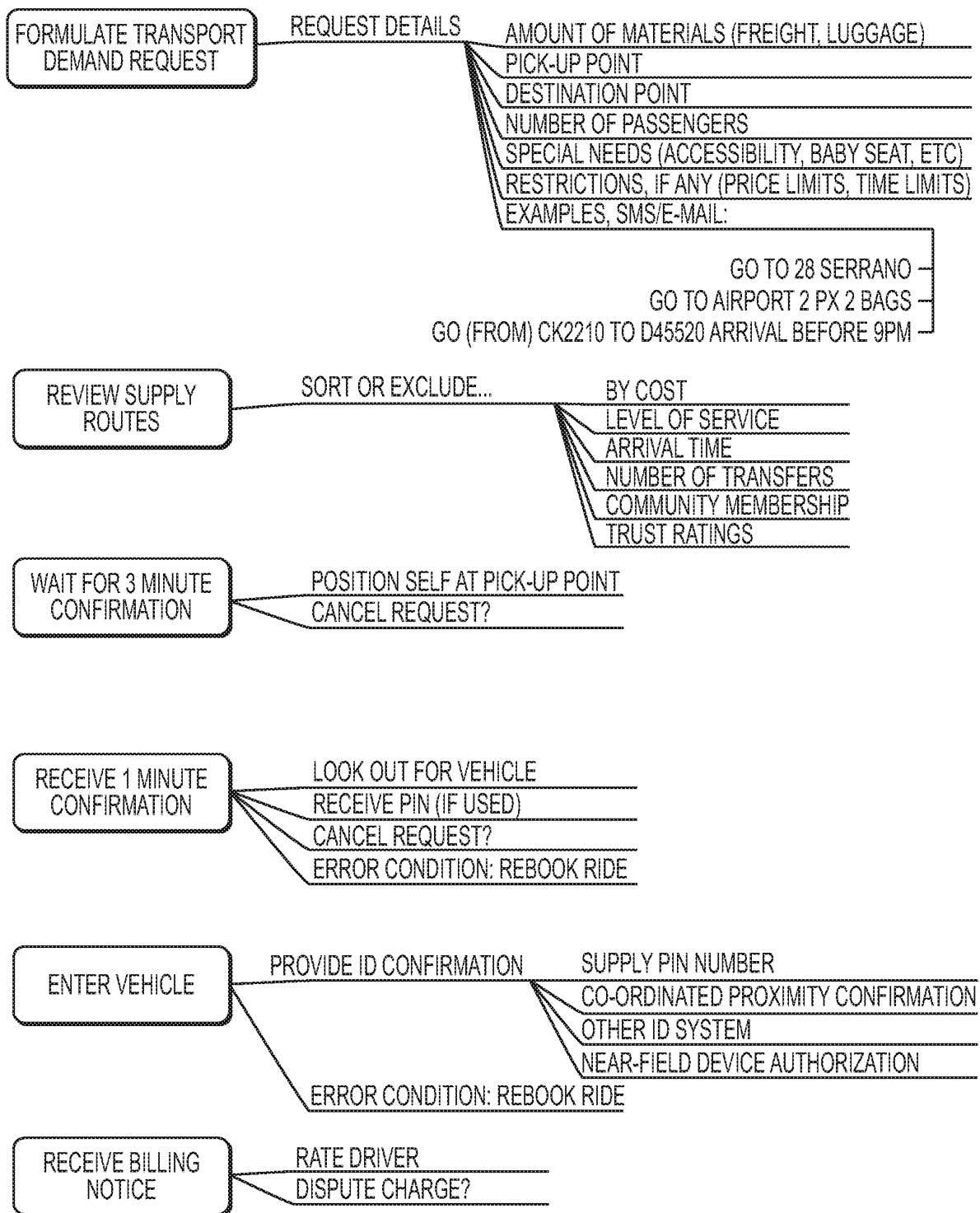
Replacement Sheet

FIGURE 5a. RIDER EXPERIENCE FLOWCHART



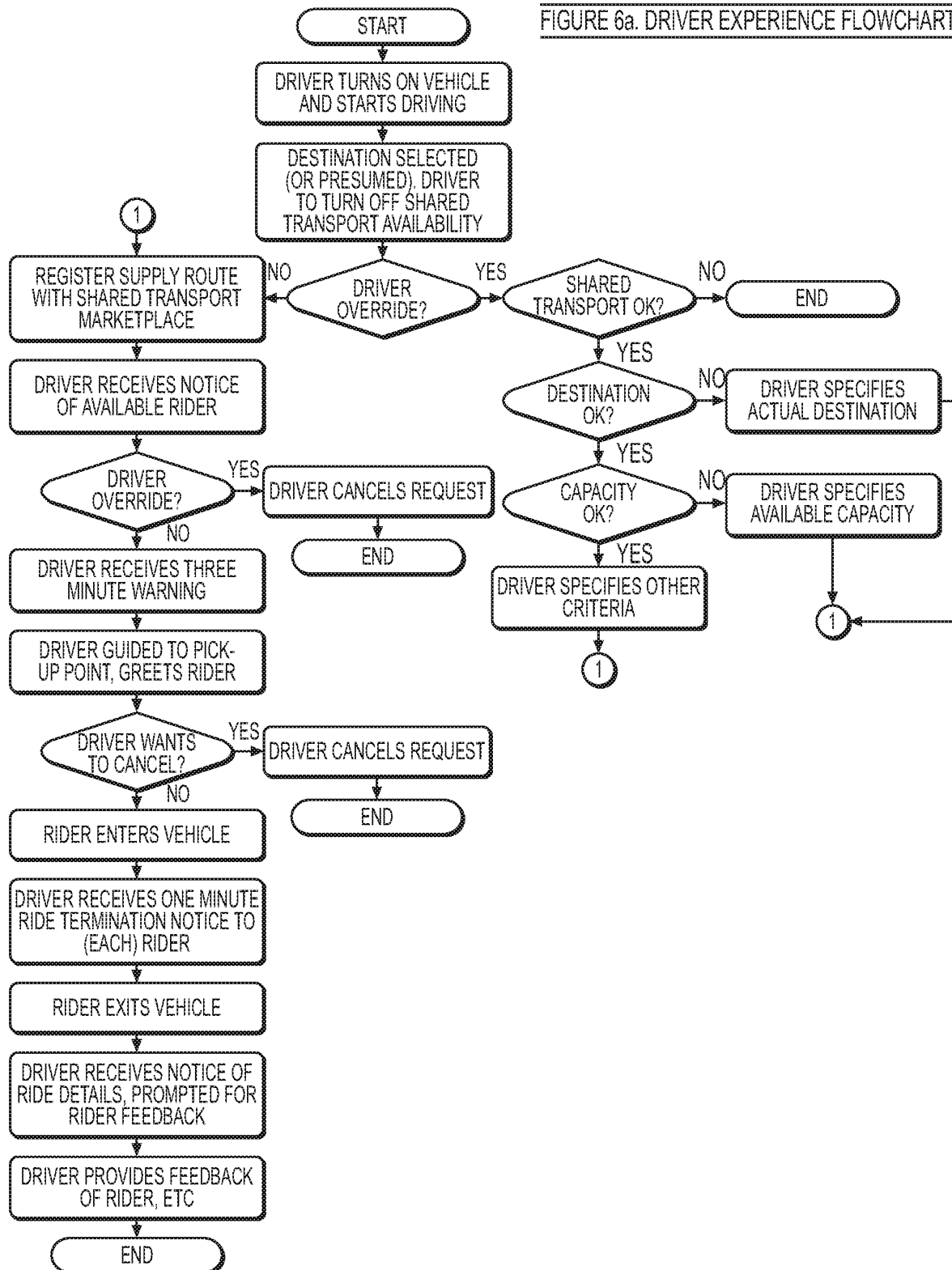
Replacement Sheet

FIGURE 5b. RIDER EXPERIENCE, FUNCTIONAL OPTIONS DATA AND ACTION DETAILS



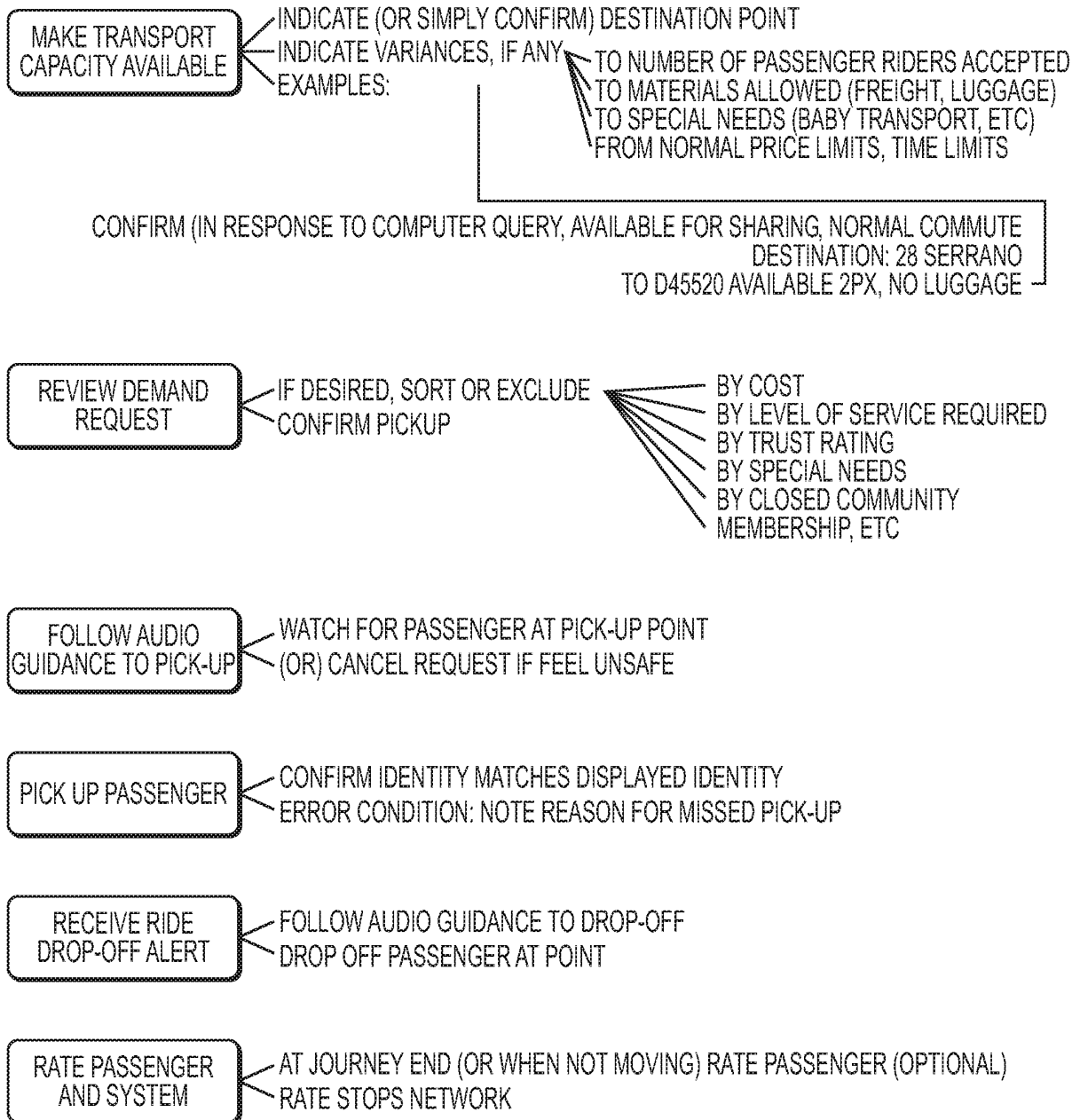
Replacement Sheet

FIGURE 6a. DRIVER EXPERIENCE FLOWCHART

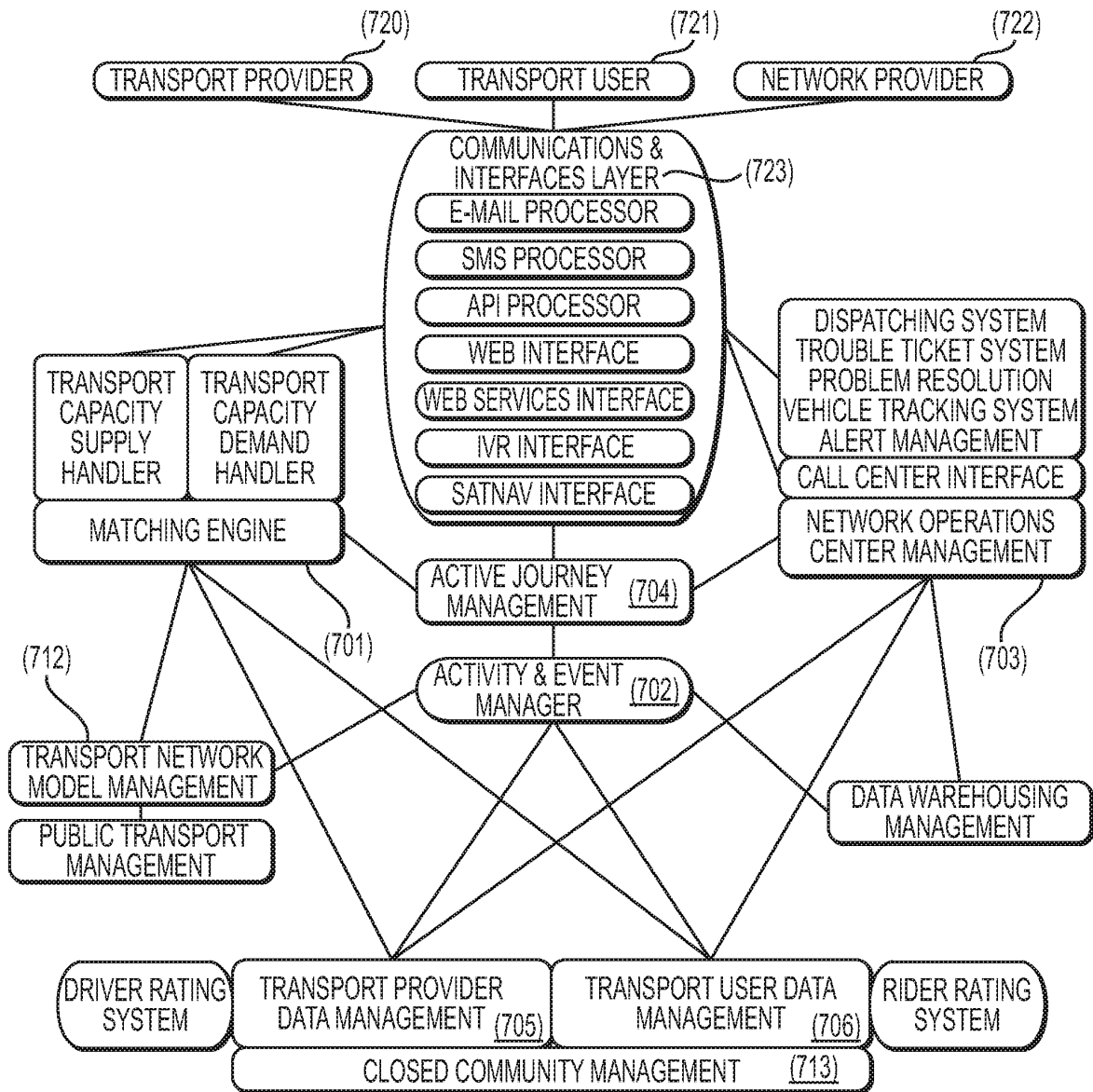


Replacement Sheet

FIGURE 6b. DRIVER EXPERIENCE - FUNCTIONAL OPTIONS



Replacement Sheet

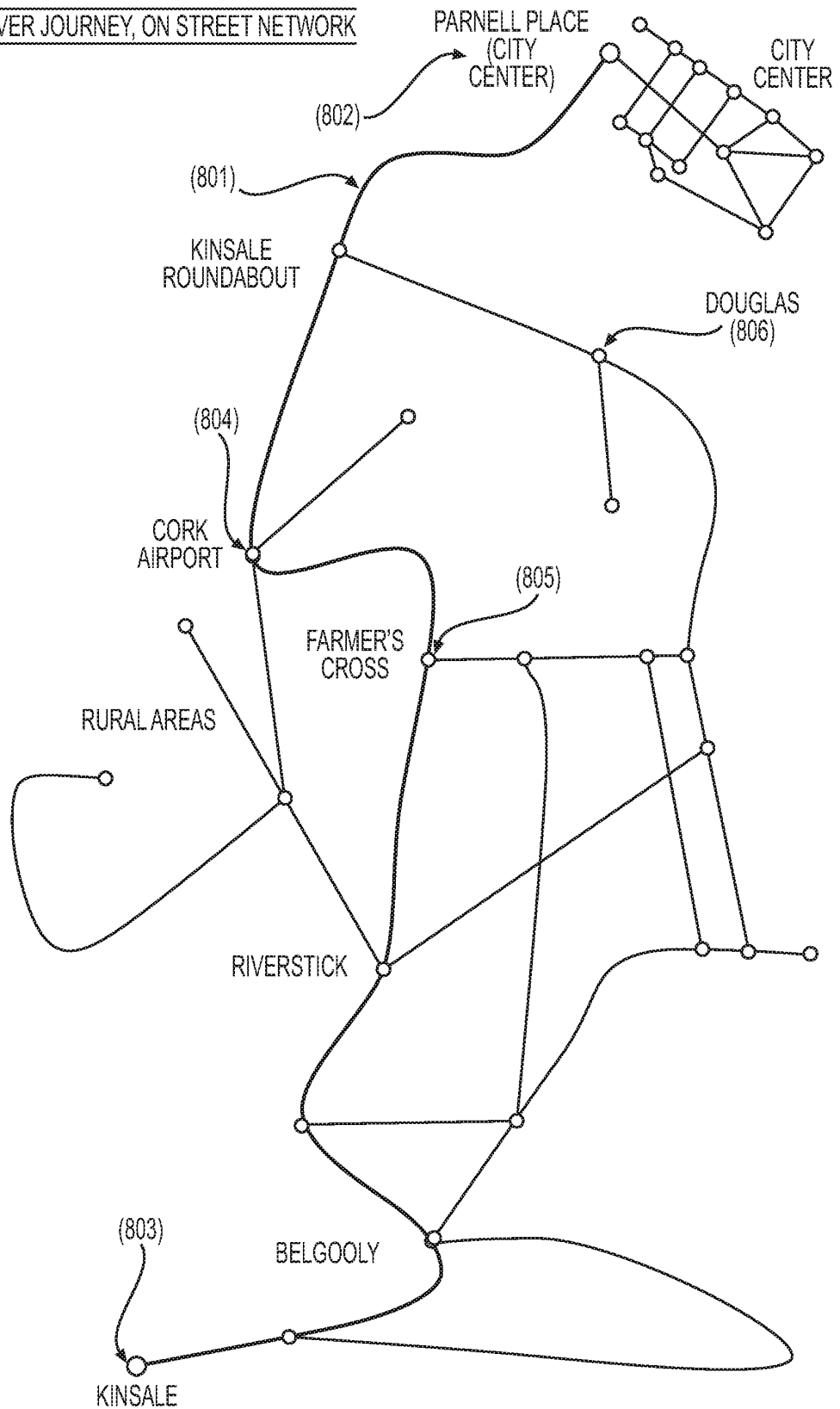


<u>RIDER DB (707)</u>	<u>DRIVER DB (708)</u>	<u>NETWORK MODEL DB</u>	<u>ACTIVITY & EVENT MANAGER</u>
-PREFERENCES	-PREFERENCES	-STOPS (710)	DRIVER EVENT HANDLING
-PLACENAMES	-PLACENAMES	-TRANSIT TIMES	RIDER EVENT HANDLING
-TRANSACTIONS	-TRANSACTIONS	-DISTANCES	INTERFACE WITH BILLING SYSTEM
-AUDIT TRAIL	-AUDIT TRAIL	-STOCHASTIC MODEL	EXTERNAL TICKETING INTERFACES
-ACTIVITY	-ACTIVITY	INFO	
-RATINGS	-RATINGS	<u>-VISUALIZATION INFO</u>	<u>TRANSPORT MANAGEMENT</u>
-ROUTES	-ROUTES	<u>JOURNEYS DB (709)</u>	STOCHASTIC ANALYZER (711)
-COMMUNITIES	-COMMUNITIES	-JOURNEY ACTIVITY	GEOGRAPHY MANAGER
			PUBLIC TRANSPORT MODEL
			VISUALIZATION MODELS

FIGURE 7. SHARED TRANSPORT MARKETPLACE SERVER & SUBSYSTEMS

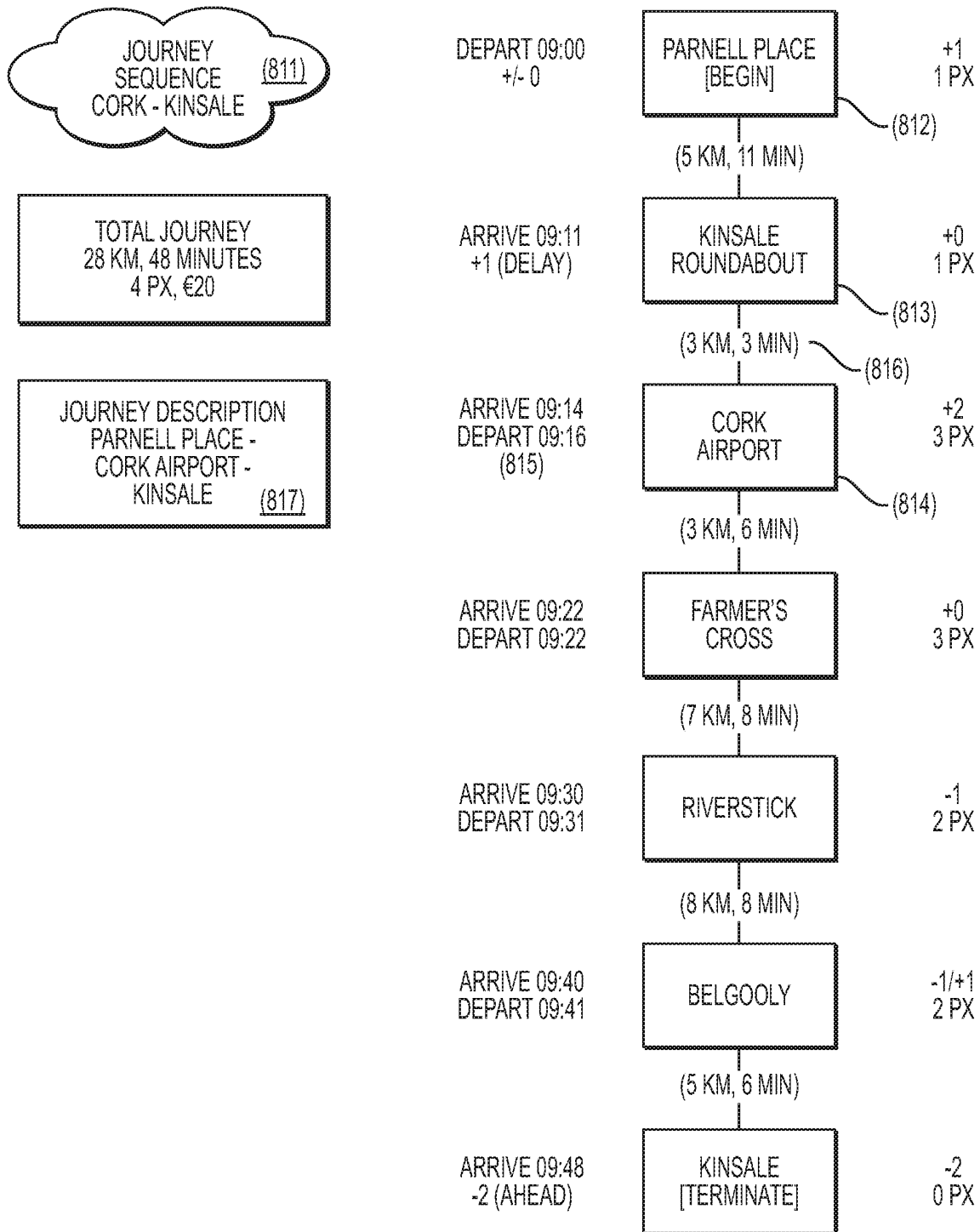
Replacement Sheet

FIGURE 8a. DRIVER JOURNEY, ON STREET NETWORK



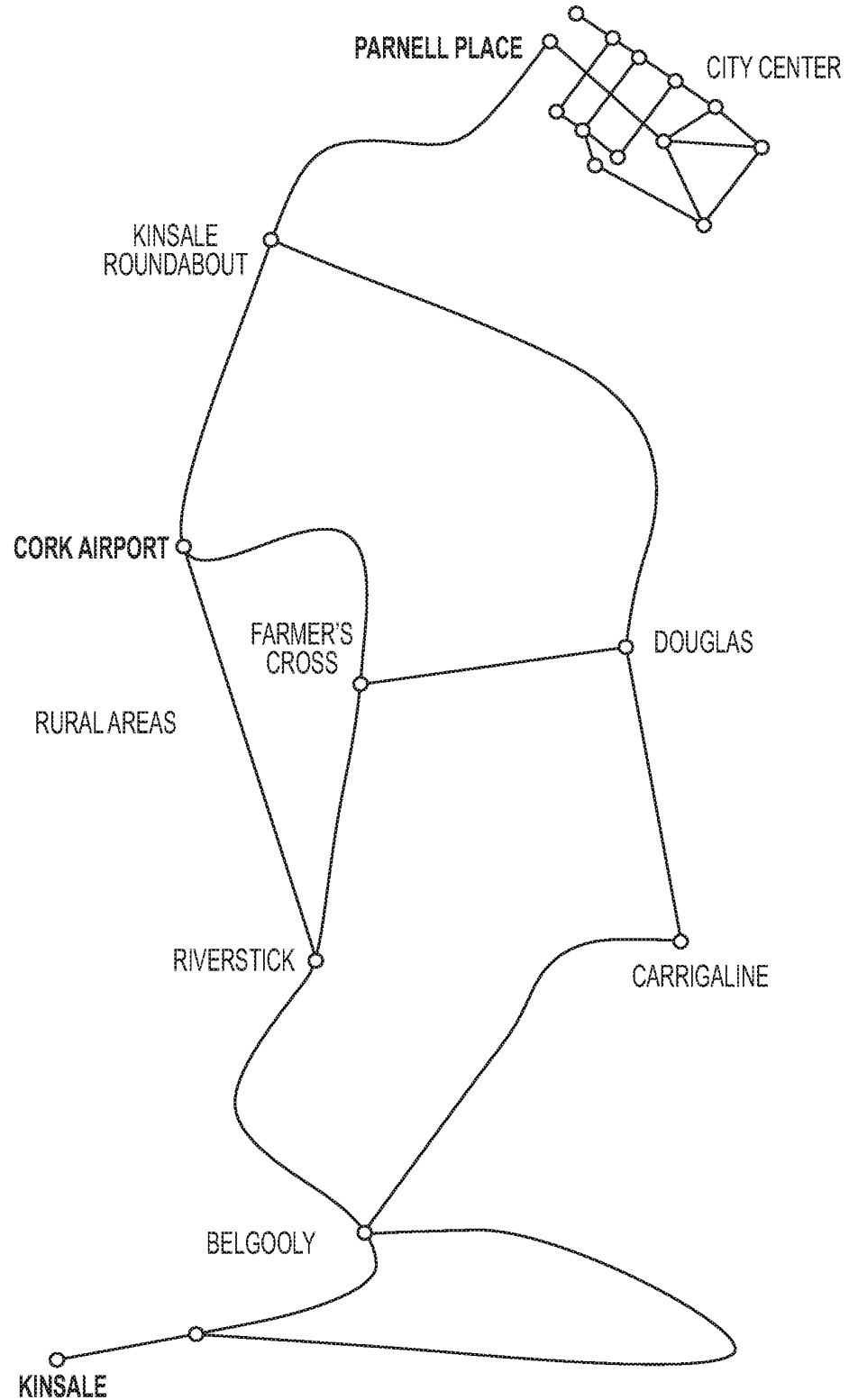
Replacement Sheet

FIGURE 8b. DRIVER JOURNEY LOGICAL CHARACTERIZATION



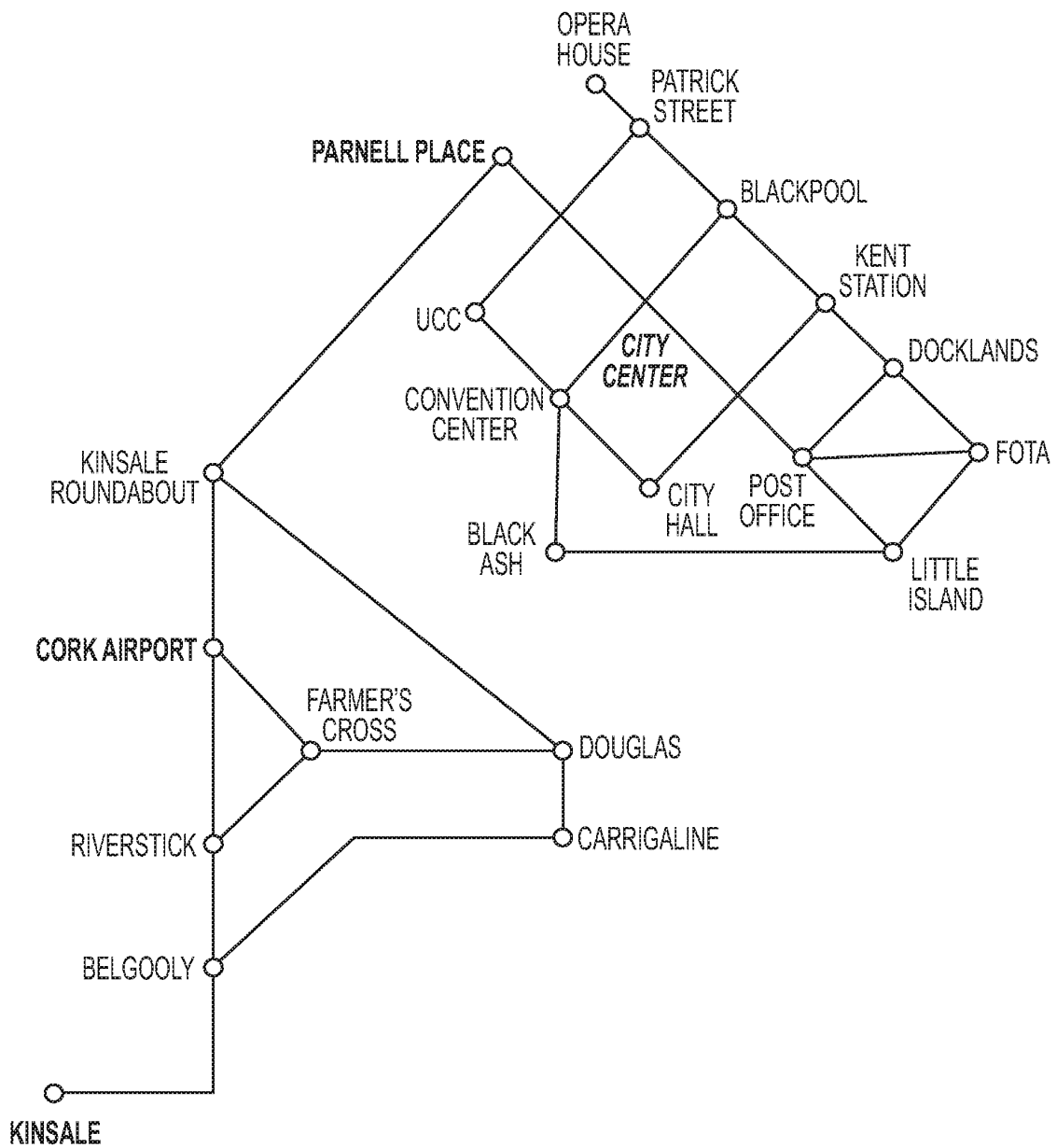
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FIGURE 9a. ACTIVE NETWORK, GEOGRAPHICAL REPRESENTATION



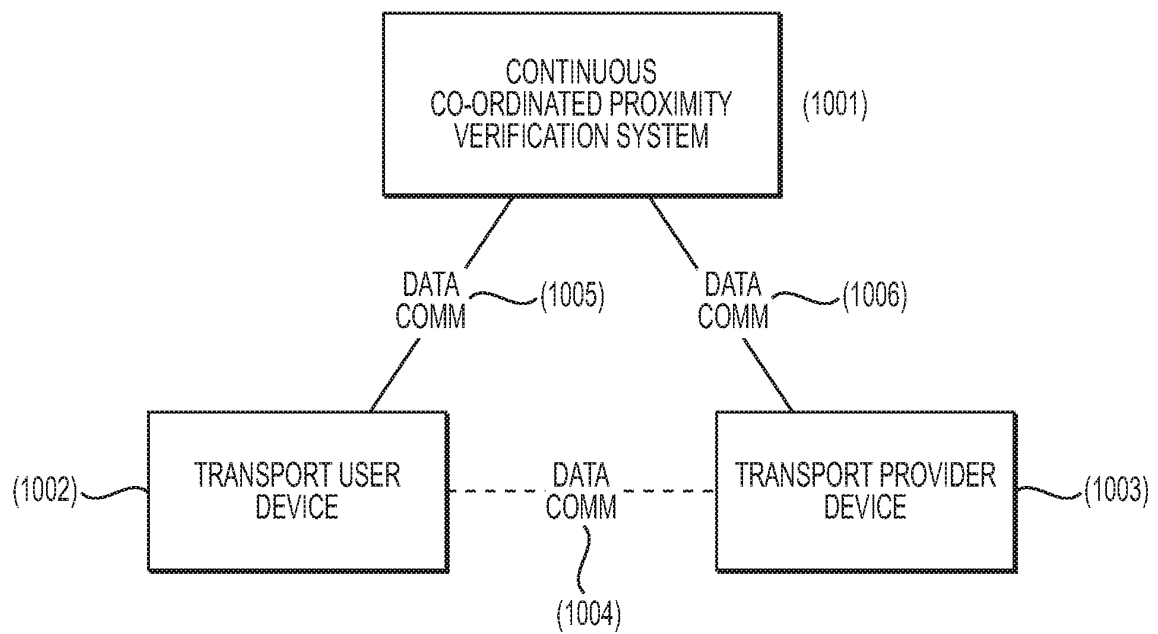
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FIGURE 9b. ACTIVE TRANSPORT NETWORK, LOGICAL PRESENTATION

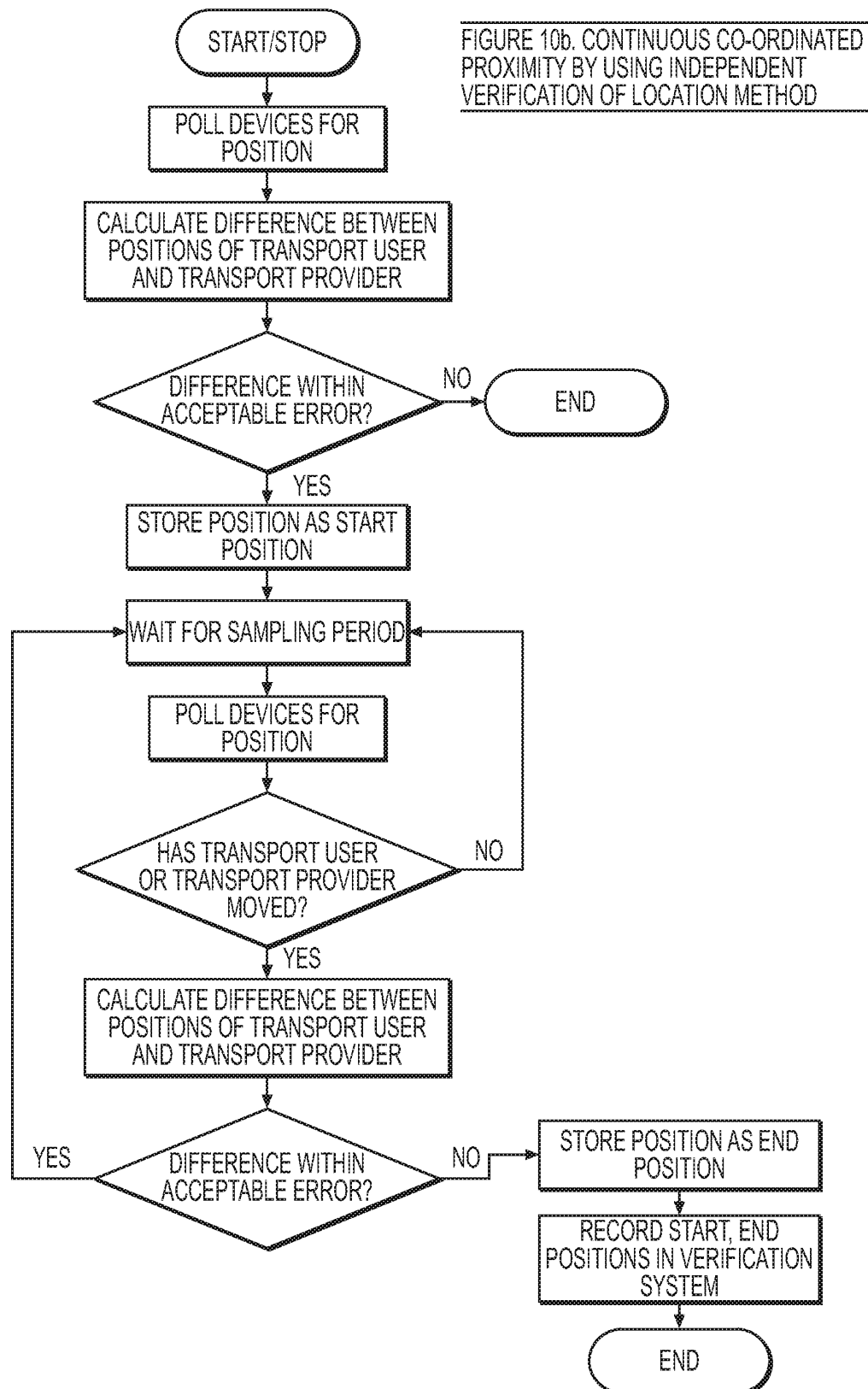


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FIGURE 10a. ELEMENTS AND COMMUNICATION CHANNELS FOR CONTINUOUS CO-ORDINATED PROXIMITY BY INDEPENDENT VERIFICATION OF POSITION

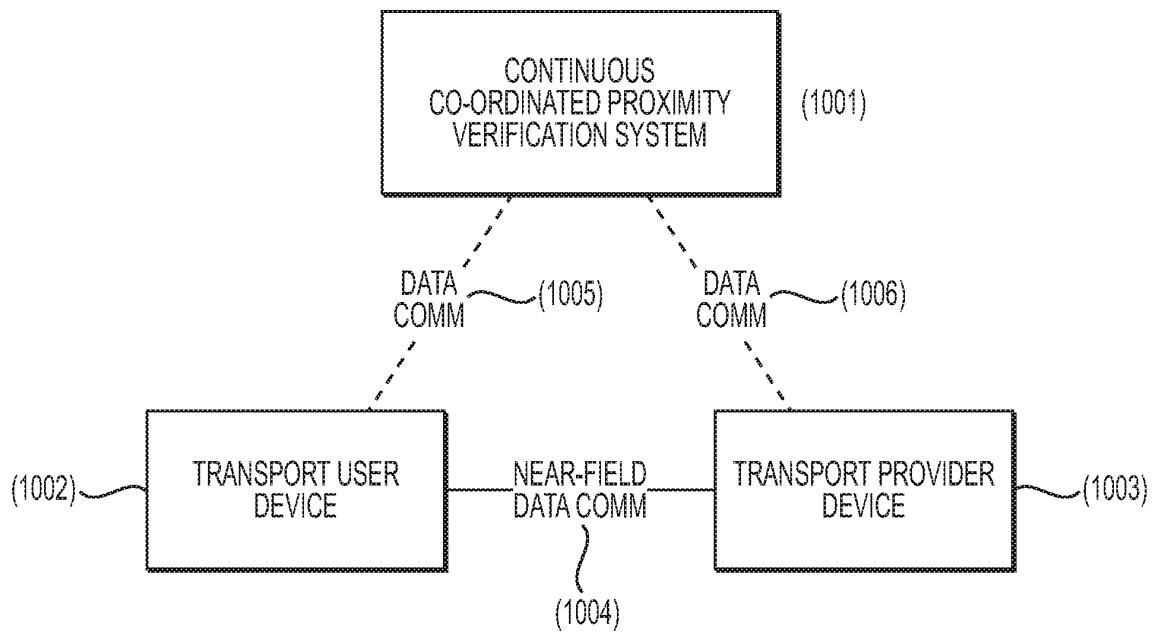


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FIGURE 11a. ELEMENTS AND DATA COMMUNICATIONS LINKS IN CONTINUOUS CO-ORDINATED PROXIMITY BY VERIFICATION OF NEAR-FIELD COMMUNICATIONS LINK METHOD



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FIGURE 11b. METHOD 2 OF CONTINUOUS
CO-ORDINATED PROXIMITY VIA VERIFICATION
OF NEAR-FIELD COMMUNICATIONS LINK

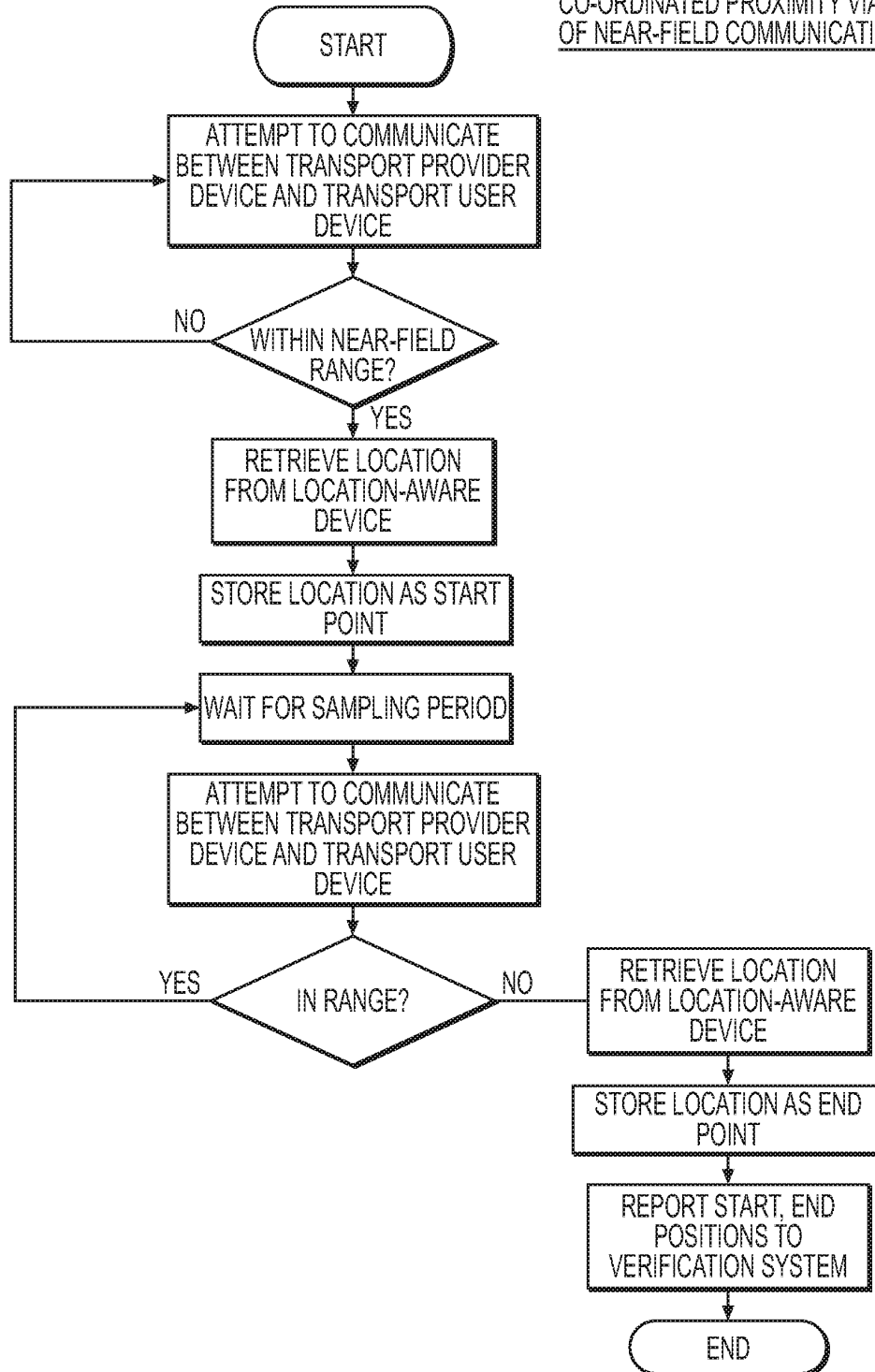
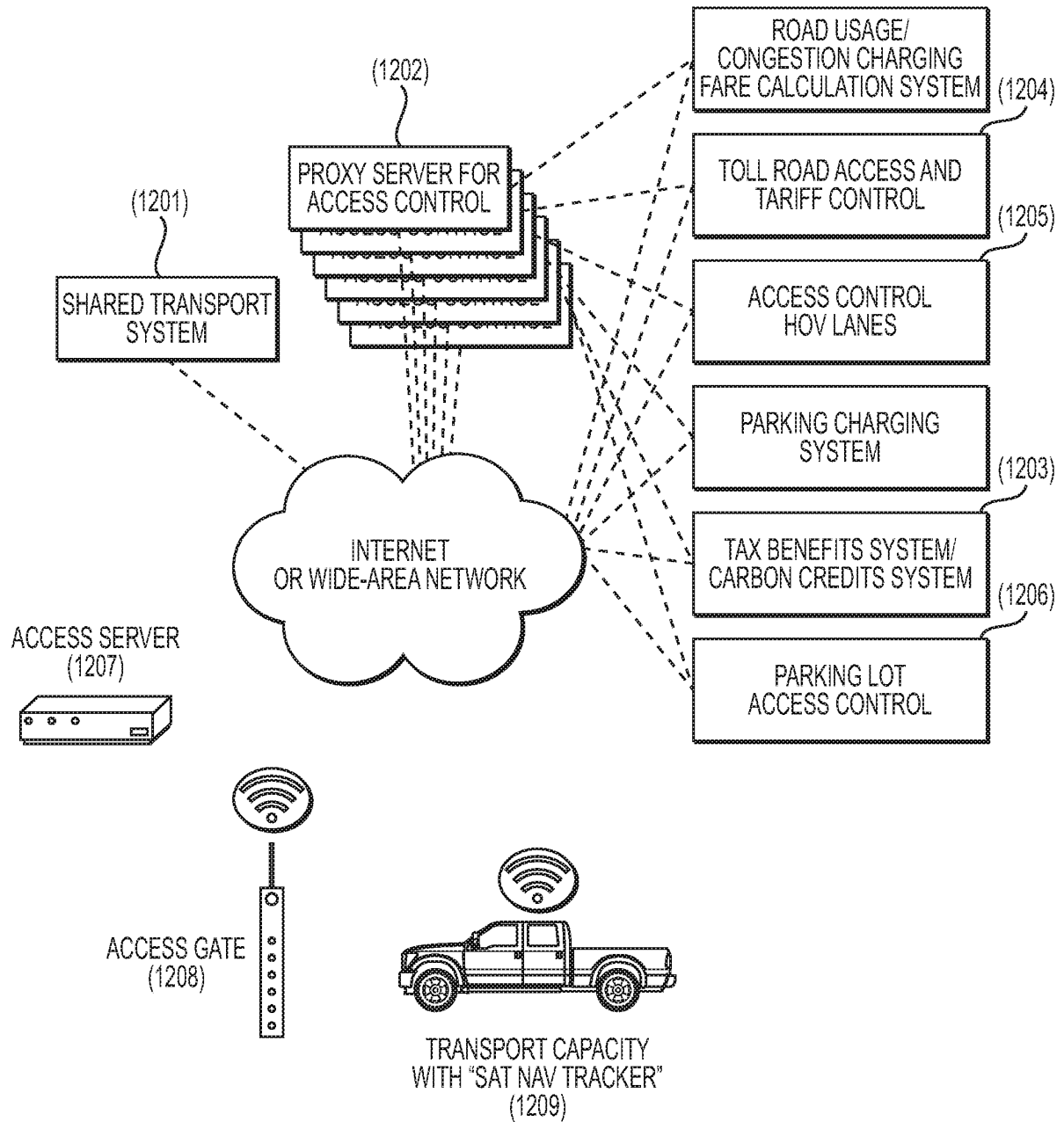
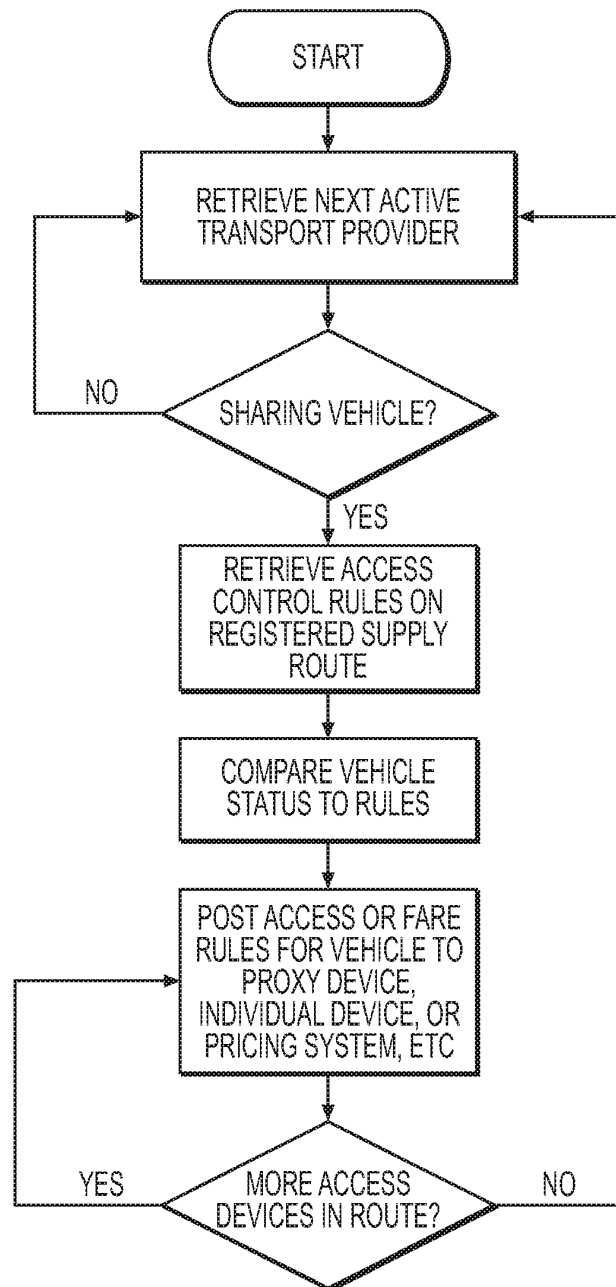


FIGURE 12a. ACCESS CONTROL SYSTEM



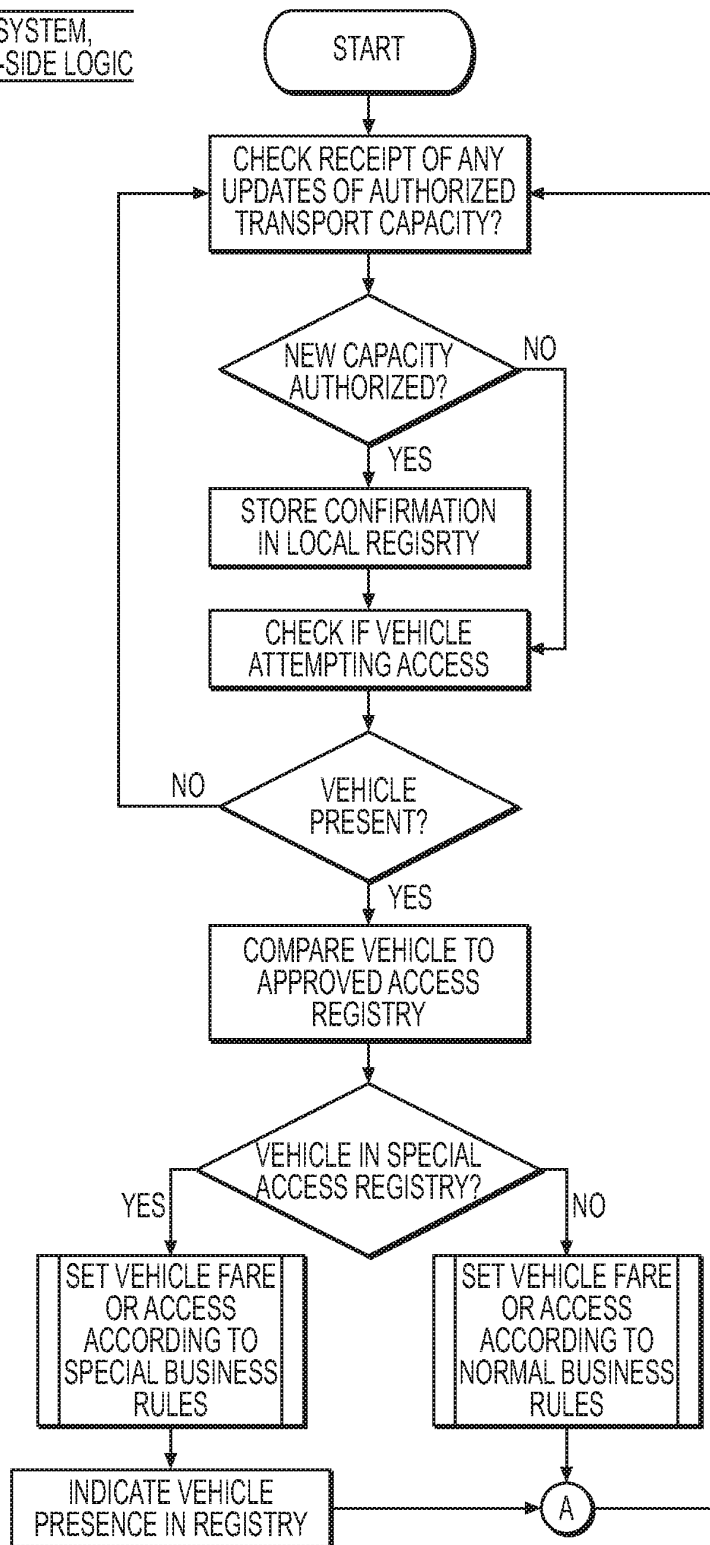
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FIGURE 12b. ACCESS CONTROL SYSTEM, SERVER PUSH METHOD, SERVER-SIDE LOGIC



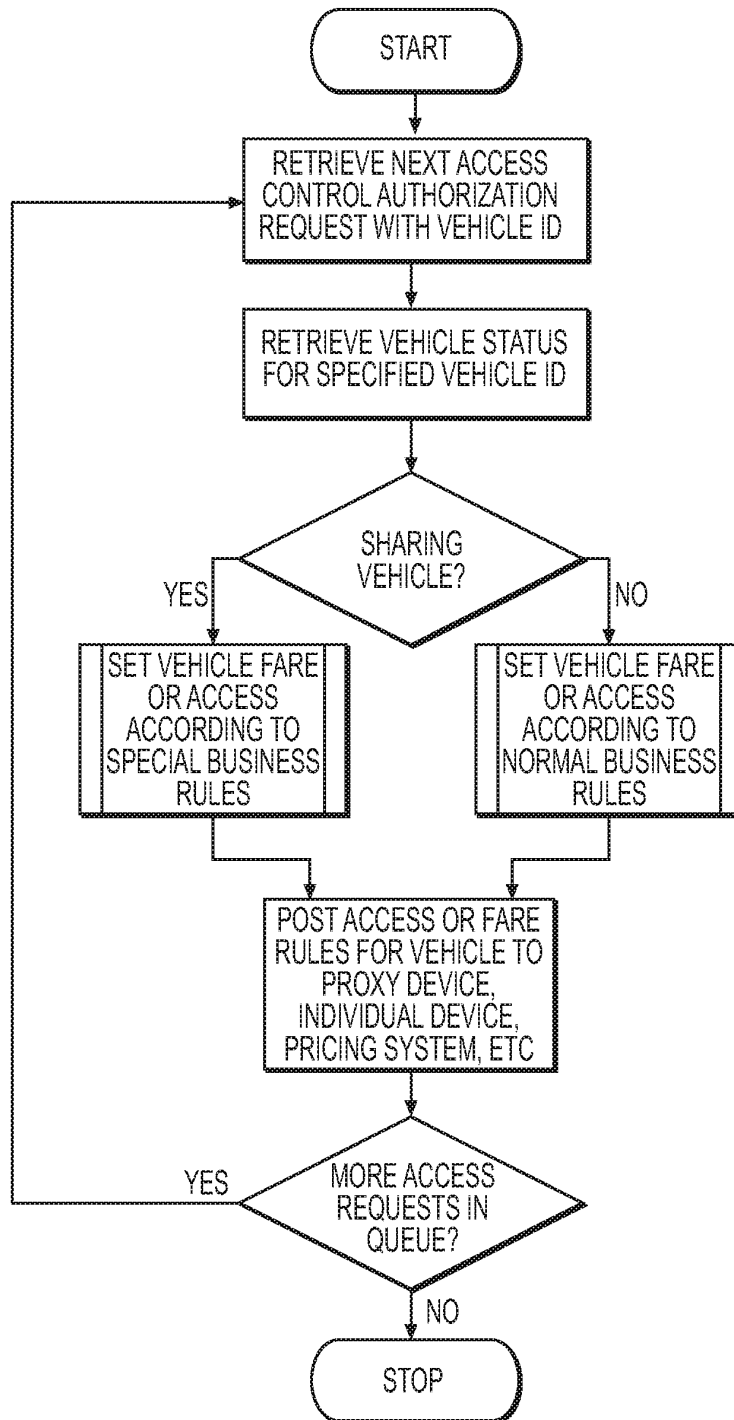
Replacement Sheet

FIGURE 12c. ACCESS CONTROL SYSTEM,
SERVER PUSH METHOD, CLIENT-SIDE LOGIC



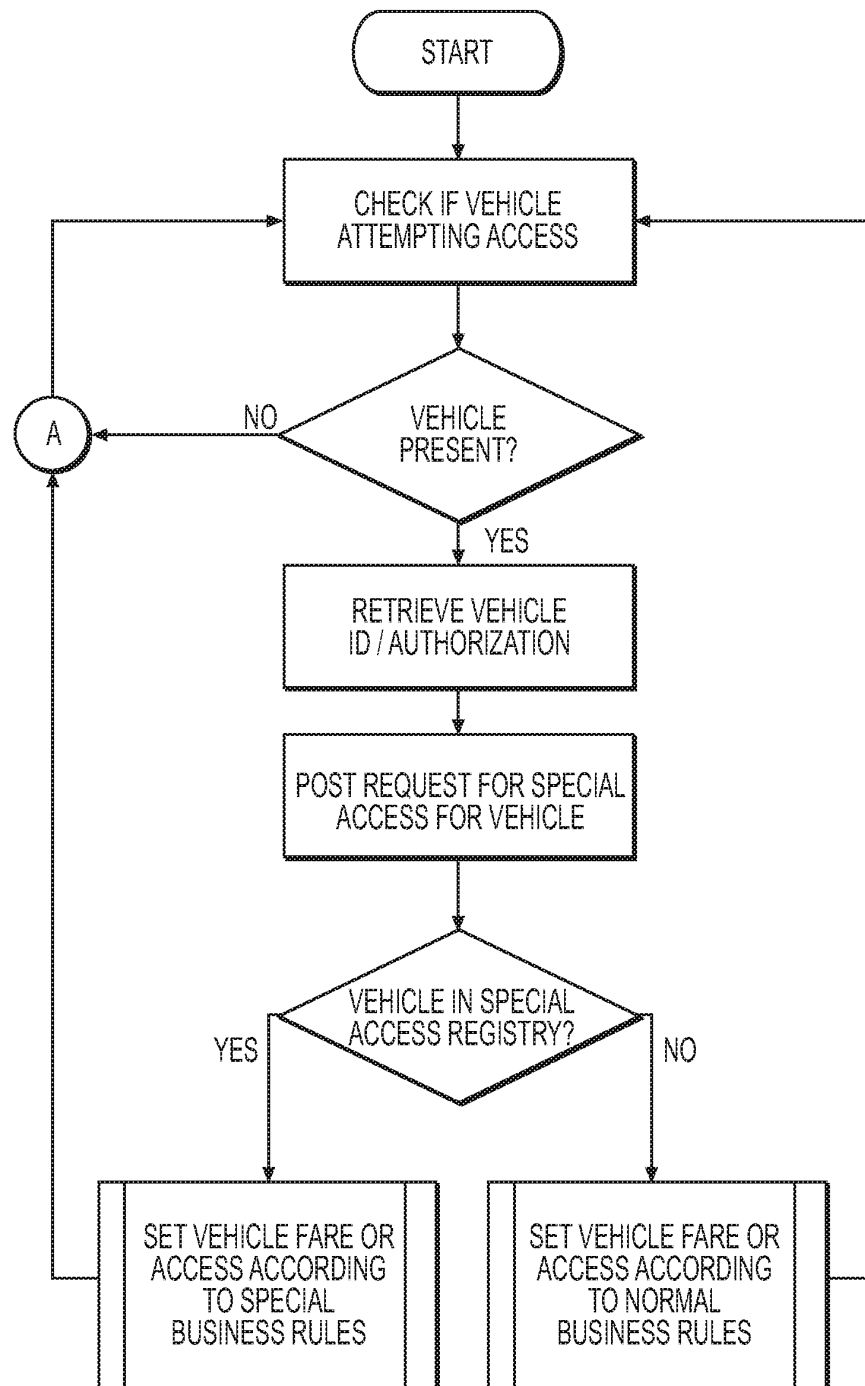
Replacement Sheet

FIGURE 12d. ACCESS CONTROL SYSTEM, CLIENT PULL METHOD, CENTRAL SERVER-SIDE LOGIC



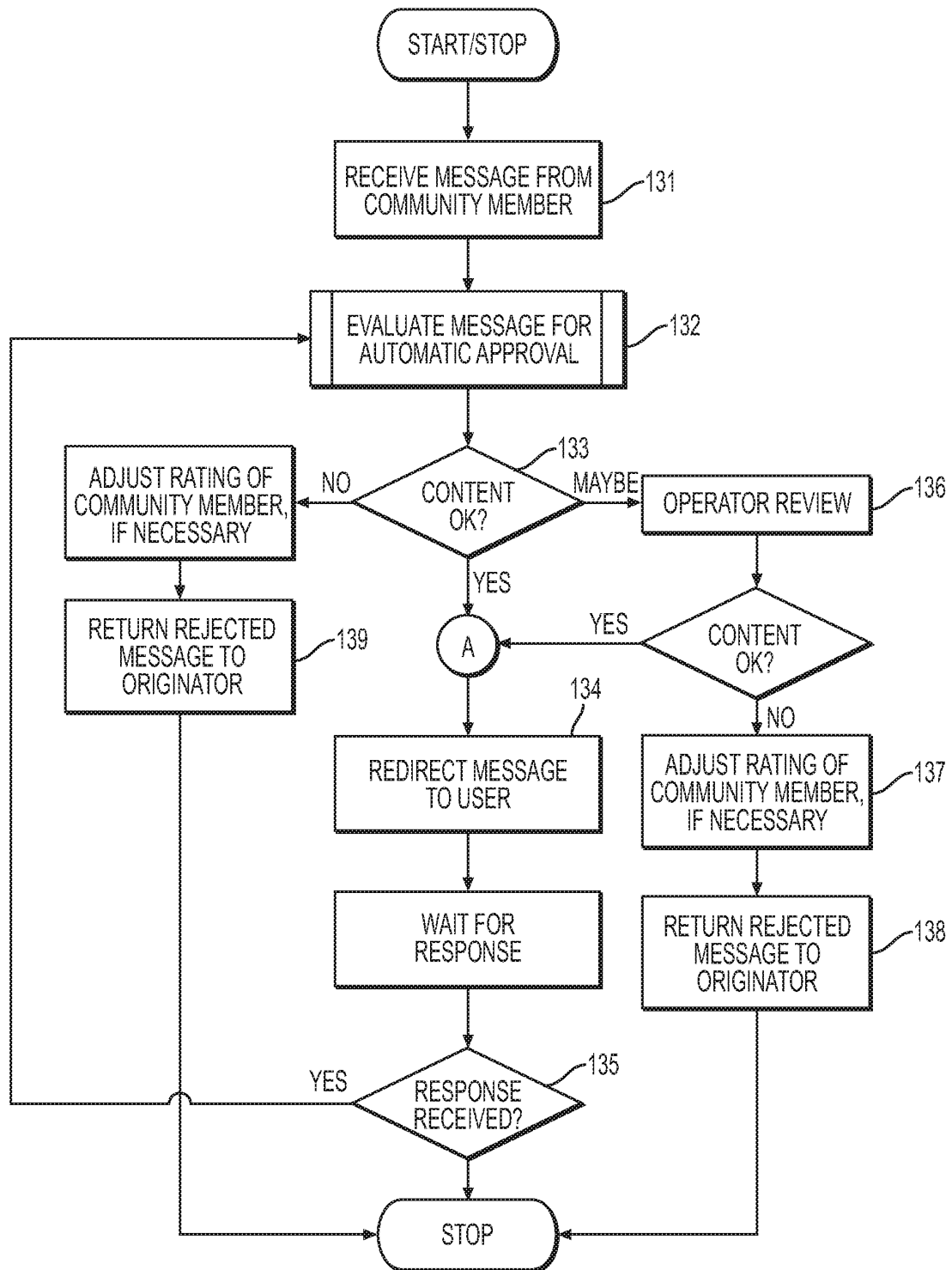
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FIGURE 12e. ACCESS CONTROL SYSTEM, CLIENT PULL METHOD, CLIENT-SIDE LOGIC



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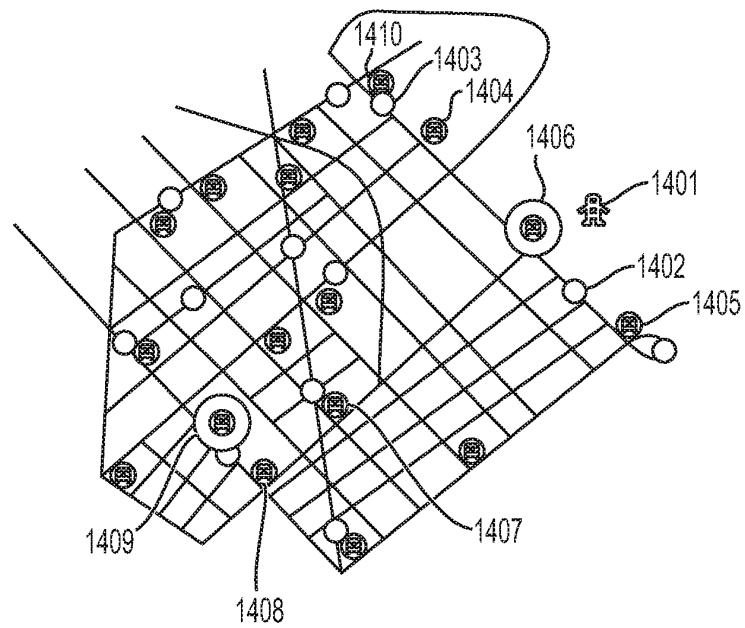
FIGURE 13. TRANSPORT COMMUNITY PROXY MESSAGE SERVICE



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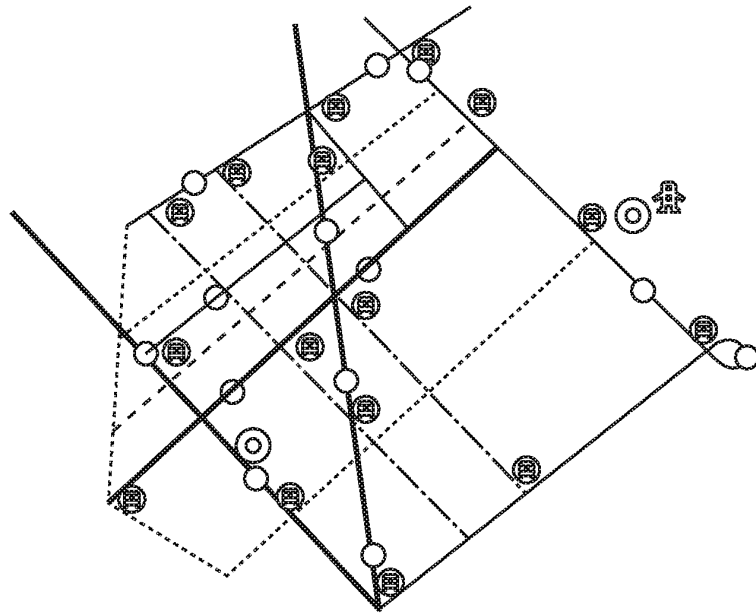
FIGURE 14a. FULL STREET, ACTIVE
CAPACITY AND NODE REPRESENTATION

-  PICK-UP / DESTINATION LOCATION
-  START / DESTINATION POINTS
-  ACTIVE TRANSPORT CAPACITY
-  TRANSPORT USER



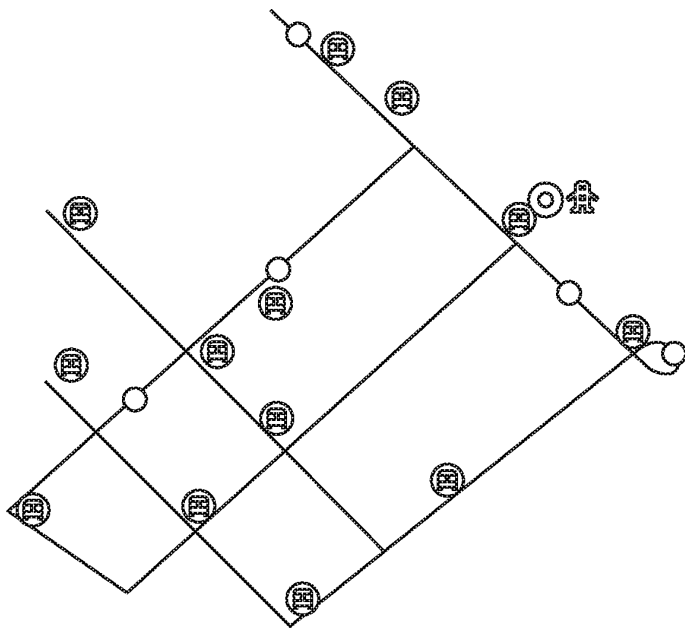
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FIGURE 14b. NETWORK, ACTIVE STREET AND
CAPACITY REPRESENTATION



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FIGURE 14c. NETWORK, ACTIVE ZERO TRANSFER
STREET AND CAPACITY REPRESENTATION FROM
SPECIFIC START POINT



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FIGURE 14d. STOCHASTIC NETWORK, TIME
OF DAY CAPACITY REPRESENTATION

-  PICK-UP / DESTINATION LOCATION
-  START / DESTINATION POINTS
-  ACTIVE TRANSPORT CAPACITY
-  TRANSPORT USER
- INFREQUENT SERVICE (15+ MIN WAIT)
- INFREQUENT SERVICE (10 MIN WAIT)
- FREQUENT SERVICE (5 MIN WAIT)
- FREQUENT SERVICE (2 MIN WAIT)

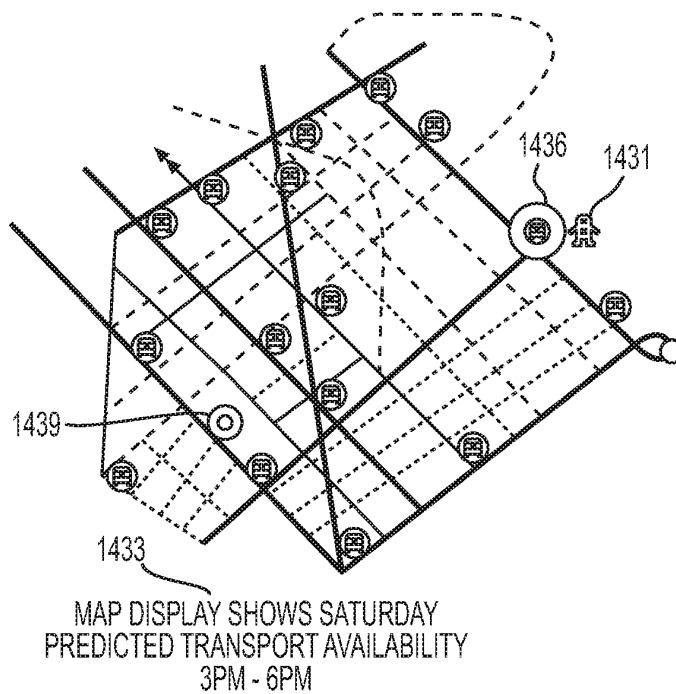
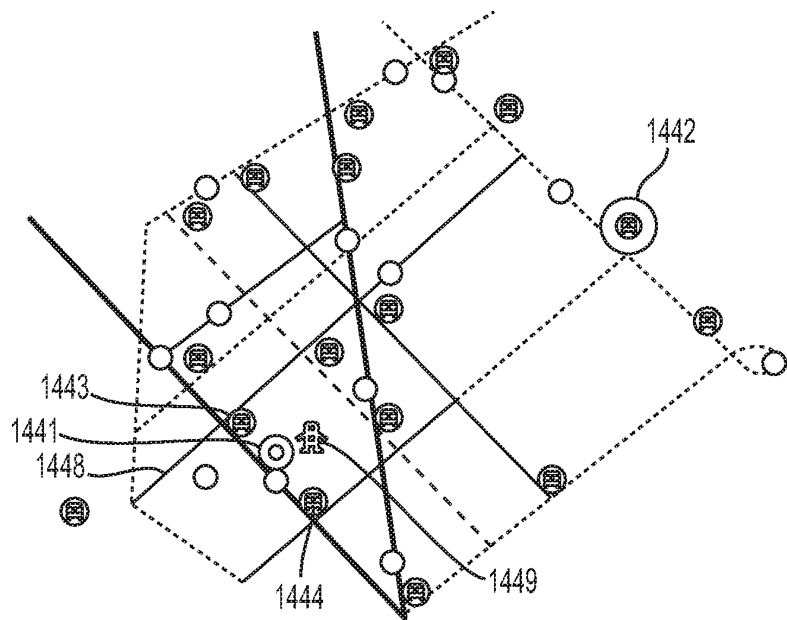
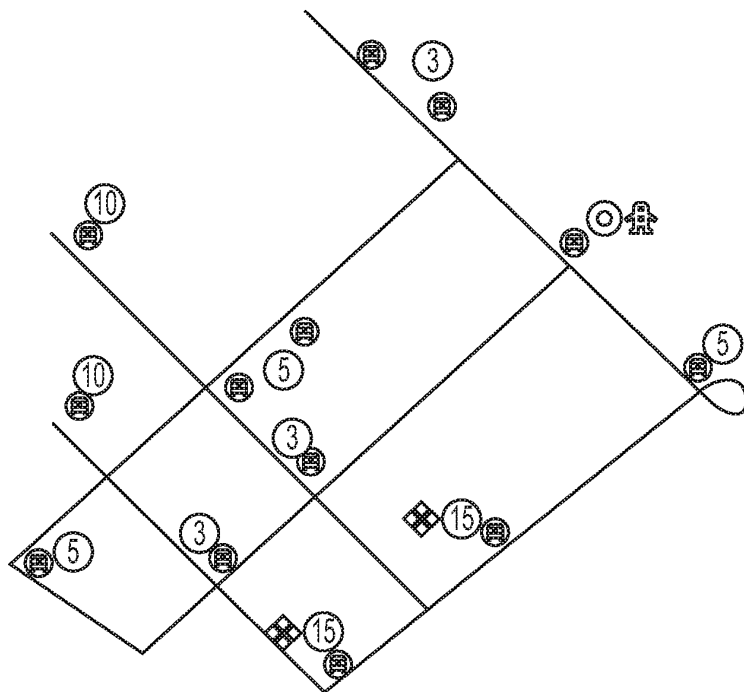


FIGURE 14e. STOCHASTIC NETWORK, ACTIVE
STREET AND CAPACITY REPRESENTATION,
SPECIFIC DEPARTURE POINT, OUTBOUND



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FIGURE 14f. NETWORK, WAIT TIME AND TRANSFER
REPRESENTATION



Replacement Sheet

FIGURE 14g. STOCHASTIC NETWORK, TABULAR REPRESENTATION OF TIME OF DAY CAPACITY

START POINT: 2142 14TH AVE;
DESTINATION: 200 BROADWAY, TROY

(1471) (1472) (1475)

TIME OF DAY	DEPARTURE LOCATION	AVAILABILITY
5:00AM-6:30AM	13 TH ST	⑮ MINUTES
	15 TH ST	NO SERICE
6:30AM-7:30AM	13 TH ST	⑤ MINUTES
	15 TH ST	⑩ MINUTES
7:30AM-8:30AM	13 TH ST	③ MINUTES
	15 TH ST	⑤ MINUTES
(1473) 8:30AM-10:00AM (1474)	13 TH ST	⑤ MINUTES
	15 TH ST	⑤ MINUTES
	13 TH ST	⑩ MINUTES
10:00AM-4:30PM	15 TH ST	⑮ MINUTES
	13 TH ST	⑤ MINUTES
4:30PM-7:30PM	15 TH ST	⑤ MINUTES
	13 TH ST	⑤ MINUTES
7:30PM-10:30PM	13 TH ST	⑤ MINUTES
	15 TH ST	⑮ MINUTES
10:30PM-2:30AM	13 TH ST	⑮ MINUTES
	15 TH ST	① HOUR
2:30AM-5:00AM	13 TH ST	NO SERVICE
	15 TH ST	NO SERVICE

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FIGURE 14h. COMBINATION REAL-TIME & STOCHASTIC NETWORK DEPARTURE BOARD FOR SHARED TRANSPORT NETWORK

START POINT: 2142 14TH AVE (1481)

DESTINATION (VIA POINTS)	DEPARTURE LOCATION	DEPARTURE (ESTIMATED)
TROY CITY CENTER	13 TH ST	③ MINUTES (1483)
RENSSELAER (STATE ST, WATERVLIET)	15 TH ST	⑤ MINUTES (1485)
COHOES (GREEN ISLAND, WATERVLIET)	13 TH ST	(EVERY ⑤ MINUTES) (1486)
ALBANY STREET	13 TH ST	(EVERY ⑤ MINUTES)
BROADWAY	15 TH ST	(EVERY ③ MINUTES) (1487)

(1482) (1488)

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FIGURE 14i. REAL-TIME JOURNEY PLANNER FOR SHARED TRANSPORT NETWORK, FIXED START & DESTINATION POINTS, TABULAR REPRESENTATION

START POINT: ESSEX FELLS, NJ
 DESTINATION: 222 E 32ND ST, NEW YORK
 DEPARTURE TIME: NOW (9:22AM), DISTANCE: 22 MILES

OPTIONS (1493)	DEPARTURE/ ARRIVAL	DEPARTURE (ESTIMATED)	COST	ARRIVAL TIME
OPTION 1: SHARED TRANSPORT	ROSELAND AVE/ 3RD AVE & 32ND	③ MINUTES	\$7.80	10:15 AM
OPTION 2: SHARED TRANSPORT + PATH + SUBWAY (1498)	BLOOMFIELD AVE/ PARK AVE & 34TH	(EVERY ⑤ MINUTES)	\$6.50	10:38 AM
OPTION 3: BUS + SHARED TRANSPORT	BLOOMFIELD AVE/ 2ND AVE & 32ND	(EVERY ① HOUR, NEXT 9:35 AM)	\$6.20	10:45 AM

SHARED TRANSPORT SYSTEM AND SERVICE NETWORK

This application claims priority of Provisional Patent Application 60/900,808 filed February 12, 2007 and is a division of Serial Number 12/069,656 filed February 12, 2008.

This invention relates to a ground transportation network. More particularly, this invention relates to a ground transportation network matching individuals with transport capacity on a supply and demand basis.

Transport capacity, for example cars, often travel long distances with minimal load (i.e., SUVs on daily commutes with only the driver occupying the vehicle). Such capacity is disused because of a number of reasons, including (a) an occasional need for greater capacity causes consumers to buy excess transportation capacity, (b) variations in schedule and destinations traveled create non-matched transportation needs compared with other household members, (c) lack of knowledge of trusted users who could conveniently use this excess capacity, and (d) difficulty in providing an economic benefit to incentivize the driver to share their excess capacity. Meanwhile, the driver of a vehicle often has no choice but to use a personal transport vehicle (despite the high costs involved) because of lack of accessibility, inconvenient scheduling, or multiple interchanges required if they were to rely on public transport systems.

Proposals have been made, for example, in US Patent 6,697,730, to use a central assigning system and communications devices adapted to be associated with vehicles for transmitting information from the vehicles to the central assigning system, and for receiving information from the central assigning system. In the 1990s, the US Department of Transportation designated this "Dynamic Ridesharing" area a specific

area of research interest, under the designation ATIS8 as part of the National ITS Architecture, and has proposed methods for transactions, interchange of billing data, and the like. Such systems, if implemented, would represent advances over methods in common practice, however, it is believed the invention described herein makes such systems more practical and useful because of the following significant innovations and claims: methods to reduce the workload/steps necessary on the driver and the rider to make this system more convenient; methods to improve the trustability of drivers and riders, increasing the likelihood people will use this system; a hardware device which would communicate visually to external riders; automatic determination and registration of transport capacity destination and capacity, increasing availability of shared transport vehicles; methods to characterize and publish information about "ad-hoc" transport capacity in manners similar to traditional, centrally controlled transit systems, in order to increase trust and ridership in the system; and an ad-hoc nature to the proposed system which enables casual use by registered users.

The inefficient use of transport capacity results in approximately 3-4 times as many cars on the road as would be necessary if capacity were only 50% occupied. This has the additional implications created by the excess consumption of fuel in potential environment problems (CO₂ pollution and global warming) as well as geopolitical problems (for example, many countries including the United States could be energy self-sufficient if they used their existing transportation capacity only 40% better (versus the 200+% better that could theoretically be achieved).

In cities such as Los Angeles, the transportation network is largely dysfunctional (i.e., the average worker spends 1.6 hours of their day in unproductive and costly

commuting via personal car on congested highways). Additionally, such a consumer cannot rely on public transit because mass transit "doesn't take them from where they live to where they work".

Inadequate "feeder systems" for the public transit network mean that billions of dollars are spent creating subway and rail systems that are massively underused, in terms of persons transported per hour versus the potential capacity of these rail systems. The flexibility of highway and road networks, along with the critical mass of car penetration and the marketplace dynamic of urban real estate value, however, means that wherever a highway is built, personal transport cars will soon fill it, creating further urban sprawl, with all the societal and ecological disadvantages that implies.

Personal transport cars are common, among other reasons, because (a) the lack of availability of mass transit networks to serve the home or destination of the driver, (b) the inconvenience of waiting a long or unknown period of time for public transit, (c) fear of traveling with strangers or fear in waiting for long periods at public transit points.

Many large cities have successfully implemented mass transit systems which are widely used by people from a wide variety of socio-economic backgrounds (i.e., London, New York, Madrid, Tokyo). While even these systems can be improved, these examples show that if a Shared Transport system exists with sufficient timeliness and advantages, it will be widely used. These cities provide transit systems because these systems reduce their cost for infrastructure (i.e., building ever-larger and more inefficient highways) and increases productivity for their citizens and the companies in their region.

So, cities have long sought to provide mass transit systems which take people from where they live to where they work and/or where they shop. However, since the popularization of highways in the 1950s in the US, cities have become increasingly suburban. Highway systems do not complement mass transit systems and, in fact, work against mass transit systems by enabling urban sprawl to the point where mass transit infrastructure is unsustainable (at the extremities of a city center, due to lack of population density) and unattractive (because of inconvenient intermodal interchange). As fewer people use mass transit, less routes are supportable, less area is reachable via mass transit, and thus more people need to rely on relatively costly and ecologically damaging individual transport, resulting in the mass transit system itself imploding with a lack of critical mass, while personal transport systems simultaneously suffer through massive over-congestion.

It is an object of the invention to provide a system that enables regular highway traffic and privately owned personal transport systems to augment and enable public mass transit networks.

It is another object of the invention to match a need to move individuals and/or goods from one geographic point to another geographic point ("Transport Demand") with an unrelated driver's unused transportation capacity.

It is another object of the invention to provide riders and transport providers with information services and content that adequately enable the use and expansion of such a system.

Briefly, the invention provides a network system that matches the supply and demand of transportation services by incorporating unused transportation capacity (i.e.,

empty seats) with a real-time allocation and matching service that enables individuals and goods to conveniently hire that capacity with attractive pricing, rapid responsiveness, better information availability and trusted security.

The network system incorporates telecommunications and computing technology to match the supply of excess transport capacity with the demand for personal transport. In areas where a critical mass of transport providers can be established, this system aims to provide pick-up and drop-off service to within a few hundred yards to the majority of locations in the covered area, with response/waiting times of 3-15 minutes under optimal circumstances. In addition, different levels of service can be provided, including the provision of transport for goods, persons with special needs, and persons or goods within closed communities of transit providers.

The network system ("Shared Transport System") demonstrates how interconnecting personal communication devices and computer networks with personal and corporate Shared Transport vehicles can (1) provide revenue streams to drivers who share their vehicle, (2) provide security through the provision of track-ability and identification of both drivers and Riders, (3) provide "feeder systems" for public transit networks, (4) provide trusted networks of pre-approved providers to accommodate scheduled services for special needs cases, such as children or physically disabled persons, and (5) provide a variety of service levels for those who need more than just commuter style transport.

It is believed that an efficient use of the network system would mean that a significant fraction of those households with two or more cars would no longer require the additional car, and that a smaller portion of a national economy will be devoted to

widening and expanding a country's highway networks and importation of energy sources such as oil.

The below "Shared Transport System" accomplishes this aim by enabling private transport vehicles to serve as an extension of the mass transit system. Where no mass transit is available, or is inefficient, private transport vehicles can act as a public transport mechanism. Where mass transit is available and cost effective and timely, private transport vehicles act as a feeder network to the public transit system.

In situations such as a daily commute, predictable trends will flow from the data generated by this shared ride system, and will enable rapid and flexible route allocation that will enable public or private mass transit providers the capability to offer new transit services, such as bus routes, that are determined via stochastic measurement. A rapidly responsive and timely public transit network will result in increasing numbers of public transit riders and recreate the market parameters that are needed for mass transit systems to gain critical mass in ever changing and expanding markets.

Whereas, many systems exist for measurement of traffic over specific sections of road network (loop detection systems, video camera monitoring systems), the bulk of these systems are infrastructure dependent and typically measure the transport throughput of a given road segment, without capability to evaluate the total journey of the vehicle. It is well known, as well, that GPS systems could be used for the generation of road usage charging systems that are anticipated to come into use in the next several years. There are also systems in use, or proposed, that allow traffic speeds to be measured (and displayed on interactive maps) by the collection of data about the speed of a vehicle ("probe vehicles") to characterize the speed of segments in a traffic

network. However, the advantage of the present system is that it uses the speed, journey start and end points, intermediate destinations, spare vehicle capacity, and vehicle type characteristics of registered transport capacity to automatically generate specific information about journey capabilities between any point in the covered road network. The availability of this information is believed to be critical to the success of user acceptance of this method of transport.

A current drawback to carpooling systems, that of lack of information about the availability of services and timing between locations, can be overcome through the display of the available transport capacity.

Current mass transport systems, typically run by governmental organizations, provide schematic diagrams of the locations served by these networks, and timetables of operations. These schematic diagrams give confidence to the transport user that there is a steady flow of available capacity that they can rely upon. With this confidence, the transport user can elect to rely on public transport rather than purchase a car or second car for their household. However, carpool systems have had no equivalent, because these carpools are traditionally organized between a small group of tightly associated individuals.

The present system generates schematic and geographic maps indicating coverage areas, and is also capable of indicating typical availability and travel times at a variety of times throughout the day or week, based off a model of historic usage and travel times ("stochastic model").

Another drawback to current carpooling systems, due primarily to the difficulty of co-ordination and lack of computing and communications capabilities, is that they

assume the transport user must go to the same destination, or along the route of the transport provider. This is often suboptimal, as transport is often a "last mile" problem, and if one transport provider moved the transport user to another location where they could get directly home (using either public transport or the present system), the use of transport capacity could be made much more efficient, and vastly extend the possible reach and combinations of destinations. The present system, because of its ad-hoc nature and computational network model, can provide these transfer instructions to the transport user, and, importantly, providing graphical presentation of the reach of the transport network, giving confidence to the user that they won't be stranded.

Above was mentioned the issue of fear of traveling with strangers in public transit systems. The below system incorporates a security verifying and rating system to provide that the strangers in Shared Transport systems are trustworthy. For example, (a) bad drivers (those with excess points or driving convictions) are not allowed to participate in the system, (b) drivers with continually risky behavior are identified through a real-time rating mechanism available to riders and the in-car computer measurement system, (c) drivers who do not pick up riders are rated for their proclivity for failing to do so, (d) riders are rated for unusual behavior through a rating mechanism available to drivers, and (e) riders who refuse rides or miss rides are rated for their proclivity for doing so.

Alongside the issue of trustable strangers is the issue of anonymity. Riders or drivers may be concerned about their safety if a stranger knows how to contact them via their phone. Thus, the below system incorporates a mechanism allowing riders and drivers to contact each other through their phones without knowing the other's phone

number or full name, yet still allowing, for example, a driver to message a rider that a hat was left in the vehicle.

These and other objects and advantages of the invention will become more apparent from the following detailed description taken in conjunction with the accompanying drawings wherein:

Fig. 1 schematically illustrates a network system in accordance with the invention;

Fig. 2 provides a table of the transport capacity computing and communications components of the network system in accordance with the invention;

Fig. 3 provides a table of the rider technology components and rider demand request details of the network system in accordance with the invention;

Fig. 4 graphically illustrates the marketplace actors, their modes of access, information options and specification for operations of the network system in accordance with the invention;

Fig. 5a graphically represents the steps of the rider in using the network system in accordance with the invention (Rider Experience);

Fig. 5b provides a table of some functional options of information specification and actions of the rider in accordance with the Rider Experience;

Fig. 6a graphically represents a flow chart of the experience of a driver (Driver Experience) in accordance with the invention;

Fig. 6b presents a table of some functional options within the driver experience and subsystems in using the network system in accordance with the Driver Experience;

Fig. 7 graphically illustrates various components, subsystems and databases required for an optimal implementation of the invention;

Fig. 8a graphically represents the geographic track of a driver on their journey between a journey start point and the journey destination, shown as a dark solid line from Parnell Place to Kinsale;

Fig. 8b logically represents the driver's journey of Fig 8a with certain intermediate destination points of the driver's journey summarized, along with activity at each point and the variation of timing as expected by the shared transport active management system for that time of day on that route;

Fig. 9a shows a representation of the shared transport network at a moment in time, where active capacity is available (or expected to be available);

Fig. 9b shows a logical representation of the shared transport network displaying each stop using compact orthogonal and diagonal lines rather than geographic lines to emphasize the city center network's interconnections, to minimize distances in the rural areas and to present the network in a more readable format;

Fig 10a shows elements and data communication channels used to determine continuous co-ordinated proximity using a method where it is desired to have independent confirmation of the positional location;

Fig 10b represents the logic between elements of Fig 10 to determine and report on when and where the elements are in continuous co-ordinated proximity;

Fig 11a shows elements and data communications channels used to determine continuous co-ordinated promixity using a method where it is desired to use near-field communications as means for verifiable proximity;

Fig 11b represents the logic between elements of Fig 11a to determine and report on when and where the elements are in continuous co-ordinated proximity;

Fig 12a graphically illustrates elements of an Access Control System that would allow restricted or favorably charged access to road or parking resources depending on acceptable business rules for each type of use in accordance with the invention;

Fig 12b shows the server-side logic of the Access Control System where this authentication is, in the preferred implementation, pushed to the local device (where such information needs to be processed in real-time);

Fig 12c shows the client-side logic of the Access Control System where this authentication is, in the preferred implementation, pushed to the local device (where such information needs to be processed in real-time);

Fig 12d shows the central server-side logic of the Access Control System where this authentication is pulled from the server or cached servers (may be more appropriate in certain applications or for after-the-fact tariffs, etc);

Fig 12e shows the client-side logic of the Access Control System where this authentication is pulled from the server or cached servers (may be more appropriate in certain applications or for after-the-fact tariffs);

Fig 13 shows the logic of a communication system which proxies messages between a transport user and transport provider, providing as well an operator intervention and automatic rating adjustment to the user's trust level if inappropriate content is requested to be transferred;

Fig 14a graphically illustrates a geographical representation of an example shared transport network at a fixed moment in time, with pick-up locations and active vehicles in the shared transport network shown on a street map;

Fig 14b graphically illustrates a geographically simpler representation of the above network with all the street network segments that cannot be reached reduced out of the diagram to make it easier for the transport user to see what service is available;

Fig 14c graphically illustrates a representation of the above network with only those locations that are directly reachable without transfers, and only those vehicles that are relevant to the starting location of the transport user;

Fig 14d graphically illustrates a representation of the above network, showing the capacities and capabilities of the overall shared transport network, based on a stochastic model, which therefore is used to illustrate the capacity and capability of the network on average, at various day-parts, or using other criteria as specified by the system or by the user;

Fig 14e graphically illustrates a representation of the above network, coded with colors, icons, text, and/or line thickness to indicate the number of transfers, wait time, and potentially other factors, necessary for the transport user to reach their destination;

Fig 14f shows a representation of the above network, showing times of arrival for a given departure point, and whether a transfer was necessary from that point;

Fig 14g provides a table presentation of the above network, showing time of day output of a hypothetical stochastic model for a set journey start and end point;

Fig 14h provides a table presentation of the above network, showing a real time "Departure Board" for a given start point in a combined stochastic and real-time traffic and capacity model of the network; and

Fig 14i provides a table presentation of the above network, showing a real time "Journey Planner" for a given start location and destination location, with information including the available transport options, pricing, and arrival times using the transport method.

Referring to Fig 1., a person 10 desiring transportation service ("Rider") has a personal communications device 11, optimally equipped with location information ("GPS Phone"), and uses this device 11, optimally equipped with a software layer with transport intelligence ("Rider Software Interface"), to signal a transportation marketplace network ("Shared Transport Marketplace") 12 with a demand interest for a particular start-point ("Pick-up Point") and endpoint ("Destination Point", and together, the "Demand Route"). The Rider 10 has previously registered with the Shared Transport Marketplace 12, providing whatever registration details are necessary to contact and verify the identification of the Rider 10.

Alternatively, the Rider 10' may employ a fixed communications device 11' in order to communicate with the Shared Transport Marketplace 12.

At the same time, all vehicles that wish to provide transportation services which are in transit ("Transport Capacity") have a navigation device, typically using GPS or other location finding technology, with built-in or external data communication capability, typically using cellular phone or wide area wireless data networks ("Sat Nav Tracker"), running a software layer with a Shared Transport interface ("Driver Software Interface").

When 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. Alternatively, if the Driver is not engaged in a traditional route, the driver is prompted for their destination, or possibly is shown a list of riders possibly headed in the same general (or likely) direction as the Driver, for the Driver to consider sharing, if the Driver's destination is not known. This Transport Capacity would be then registered with the Shared Transport Marketplace 12.

The Shared Transport Marketplace 12, which is also accessible by any internet terminal, provides to the Rider 10 and to the Driver 13 information about Transport Capacity and Transport Demand. Optimally, this marketplace 12 is automatically populated with Supply Routes of public transport (buses, trains, commuter bus lines), to provide the Rider 10 with a variety of service types and prices to choose from. Additionally, given the on-demand nature of rides and personal transport, stochastic models can populate the Supply Routes and Demand Routes, in order to enable the Rider 10 and Driver 13 to make better transport decisions. For example, a Rider 10 in a subdivision of 500 homes at 8:30am on a weekday may poll for a Demand Route and see that the only options available from his house to his destination, e.g., Dublin, are a bus that leaves in 90 minutes for €4 or a taxi that could be available in 10 minutes for €35. Given these options, the Rider 10 would possibly be forced to choose a taxi. However, if the stochastic model indicates that 60 cars depart from that subdivision for Dublin every weekday morning between 8am and 9am, the Rider 10 could be provided the information that, with 90% certainty, a Supply Route would be available in 4 minutes

for €4.50. (That is, the Driver of this car in that subdivision simply has not turned on his car yet, and would only be in the subdivision for 2 minutes before leaving it for the highway. Therefore, the value of stochastic probable route offerings dramatically increases the quality of the information provided to a prospective Rider; and thus also increases the likelihood of Riders choosing to use Shared Transport in general). Means of displaying this capacity and providing useful decision-making ability to the Transport User are described in further detail below.

The Driver 13 could pre-register a specific price for a given transit route, or could change their price on-the-fly for a route to reflect the supply and demand for that Route, and the class of service provided (for example, charging more for a Rider who has excess luggage, or for direct point-to-point service by taxi transport, or for inclusion of in-vehicle wireless Internet access in places where that service is available).

Normally, however, pricing for a route would be determined by means such as per mile default rates, the number of seats occupied and other preset fixed and variable charges (zoned pricing, etc). While it is anticipated that some users of this system, particularly those Drivers with minibuses or even buses, could use it for profit-making routes, it is thought that normally the individual consumer user will simply be recovering some or most of their transport costs. Some applications may offer services without any charge or billing whatsoever.

One of the possible means, and the most likely, of determining positioning for the Sat Nav Tracker device 17 and the GPS Phone 11 is through the use of a GPS 14 or Magellan satellite as indicated in Fig. 1. Other means for determining position include

the use of cell phone towers to determine location, position look-up from WiFi hotspot data services, etc.

Use may also be made of the Internet as indicated in Fig. 1, as one of the means of communicating to and from users and drivers and from fixed kiosks to register trip requests.

The Rider 10, depending upon the mode preferred and the equipment available, can select a Pick-Up Point and Destination Point through a variety of functionally equivalent methods, including (1) calling a person or voice-response system via telephone whom they can tell verbally or through a DTMF IVR system; (2) using SMS via telephone, or e-mail, with text indication of Demand Route (i.e., "Go Home", or "Go from 12 Marlboro St to Albany Airport"); (3) via an Internet web interface or dedicated kiosk; or (4) via a GPS Phone with an intelligent and data-driven software interface.

The Rider 10, upon submitting a Demand Route into the Shared Transport Marketplace 12, could be presented with a sorted list of the 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.

The Destination Point could also be specified by category or purpose, in order to increase the transport availability and options for the Rider. For example, if the Rider just wants to go to a shopping center, and there are 10 shopping centers in various directions, they could register the general category, and make their selection from the available transport options at that point. This could also be limited by brand, such as Starbucks coffee shops or RadioShack electronics stores; or, in the case of purpose,

the Rider could register a request to see a particular movie, regardless of the cineplex where the film was playing.

In the event that the Rider 10 has a Rider Software Interface on their phone 11, the Rider 10 selects from the options available to them. A message is sent to the nearest appropriate Transport Capacity. The Driver 13 is automatically guided to the pick-up point, optimally through the Sat Nav Tracker 17 display unit with verbal instructions. A Driver Software Interface determines if the Driver 13 is complying with the pick-up request, optimally based off the vehicle's movement and a period of time for the Driver 13 to automatically accept or deny the request ("Reserved Capacity").

In the event that the Rider 10 does not have a Rider Software Interface, the Rider can receive/respond to a message of available capacity via the means most conveniently appropriate to them (i.e., verbally, via text message, selecting at the Internet web site, and the like).

Confirmation is then sent to the Rider 10 via a message which optionally directs Rider to an alternate nearby optimal Pick-up Point in order to maximize transport efficiency. For example, if the Rider made a request on an infrequently used street, the Rider may be directed to walk a block or two to a Pick-up Point where Transport Capacity is available.

At any time up to the proximity alert warning period ("Three Minute Warning"), the Shared Transport Marketplace 12 will be working to optimize available capacity and services and will substitute Riders and Drivers, create multiple Riders at the same Pick-up Point to fill the Transport Capacity more efficiently, and the like. The Shared Transport Marketplace 12 will also monitor the Transport Capacity to see if any new

capacity has become available which offers a superior service and/or a lower price option to the Rider 10 (for example, if capacity is introduced which reduces the number of transfers necessary).

At the time of the Three Minute Warning, a message is sent to the Driver Software Interface and the Rider(s) with the information pertinent to the pick-up destination and the Riders. The Driver Software Interface then guides the Driver, optimally through audible cues, directly to the Pick-up Point.

At the time when the Rider needs to be in queue ("One Minute Warning"), the Shared Transport Marketplace will optimally automatically confirm from the Rider's GPS Phone 11 that the Rider is positioned within a certain proximity to the Pick-up Point ("Reasonable Rider Proximity"). If the Rider is not within Reasonable Rider Proximity, the Demand Route request is rescheduled and the Driver is informed that the Rider is not available ("Rider No Show").

At or before the One Minute Warning Time, a message would optimally be sent to indicate to the Rider to be on the lookout for the Transport Capacity, along with the specific color, model, picture and/or other identifying characteristics of the transport capacity that was arriving. If necessary, the Rider would also be provided with a PIN to verify their identity and booking.

Communications between the Sat Nav Tracker 17 and the communications network or the GPS Phone 11 can be accomplished from any one or a combination of a variety of direct or indirect data communications networks, including commonly used wide area networks such as GPRS, 3G, and other cellular communications traffic; 802.11 Wifi or Bluetooth or other similar local data communications networks (in

conjunction with, relayed and/or proxied by longer range communications networks as necessary), and other wide area networking techniques such as WiMax and other technologies that will be introduced in the marketplace from time to time.

Referring to Fig. 7, rider transactions and events are logged by the Shared Transport Marketplace (see elements 702, 704, 706, 707, 709), and if a disproportionately high percentage of Rider Demand Route requests result in Rider No Shows (for example, more than 1 out of 10) ("Unreliable Rider"), then the Rider 10 is tested for Reasonable Rider Proximity at earlier times, such as the Three Minute Warning period, and the Driver 13 will not be notified to pick-up this class of Unreliable Rider, unless the Unreliable Rider is already at the Pick-up Point, until such time as Rider No Shows passes a standard reliability as approved by the Shared Transport Marketplace.

Likewise, as illustrated in Fig. 7, a History for Driver transactions is logged by the Shared Transport Marketplace 12 (see elements 702,704,705,708,709). If the Rider 10 is waiting at the Pick-up Point and for whatever reason the Driver 13 does not pick up the Rider 10 ("Driver No Show") and/or is consistently late in picking up Riders, the Driver 13 would be measured for timeliness and Driver No Show rating ("Unreliable Driver"). Such lateness should include reasonable adjustments for consistently gridlocked locations such as city centers, as would be indicated through stochastic measurement of other Driver performance at the same Pick-up Point. The Driver 13 would likewise be expected to measure up to a higher level of performance to overcome an earlier unreliability, or the Driver 13 would be ranked lower ("Star Ratings"), matched less frequently, and/or possibly expelled from the Shared Transport Marketplace 12.

Although Riders/Drivers remain anonymous, system rankings are available, and Riders have the ability to only request Transport Capacity from Drivers with specified quality Star Ratings, and the like.

Transport Capacity optimally would have an external indicator ("Route ID Display"), optimally a bright display that is about the size and position of the passenger's side sun visor in a car, preferably mounted on the interior of the car, that optimally presents a visual confirmation of the route identification to the external Rider, so that as the Transport Capacity approaches, the Rider can begin approaching the Transport Capacity. While this Route ID 18 is somewhat analogous to the function served by a Bus Route Information display, the Route ID Display 18 has the following additional functions more necessary for a point-to-point, rider-by-rider shared transport network: Route ID Display 18 can be triggered automatically to become visually distinctive as it approaches a Rider Pick-up Point (analogous to the flashing lights of a School Bus as it stops to pick up children). As there could be hundreds of vehicles on the road that also provide Transport Capacity, this distinctive display serves the unique function of distinguishing the Dispatched Transport Capacity which has been matched to the Demand Route from other Transport Capacity which may be on the same road at the same time. In a low-tech, lower function incarnation, this could simply be a placard sticker with a fixed ID number.

As the Transport Capacity comes within a viewable distance ("50 meter display"), the Route ID Display 18 could show the particular Demand Route information and/or other Identification information (Personalized Route ID Information), for example, the readable distance ("20 meter display"), the Route ID Display could show the particular

Demand Route information and/or other Identification information (Personalized Route ID Information), for example, the Nickname(s) of the Rider(s) being picked up, the Destination Point(s) of the Demand Route(s), and the like.

As Transport Capacity approaches the Pick-up Point, the Driver would position the vehicle at the Pick-up Point, and optimally the Driver would be presented with a picture of the Rider(s) and the identification name of each Rider ("Nickname"). If the Rider does not match their picture, the Driver would choose to refuse the shared ride, and would submit, through the Driver Software Interface, the reason for denying the ride. (At this point, an operator of the Shared Transport Marketplace 12 would attempt to contact the Rider through the information provided with their registration details to see if there was a human error or to see if the Rider's GPS Phone had been stolen, in order to disable future Shared Transport Services). If a PIN were provided to the Rider, the Rider would be prompted by the driver to enter the PIN (or the driver would enter it himself), and the match would thus be verified, or the match could also be verified through the method of Continuous Co-ordinated Proximity, described below.

Upon a match-up of Rider 10 and Driver 13, Rider would enter the Transport Capacity vehicle ("In Process Journey"). The Shared Transport Marketplace 12 would then optimally verify, through the location information in the Sat Nav Tracker 17 and in the GPS Phone 11, that the Rider and Driver were indeed at the same location.

If the Driver 13 left the Pick-up Point area without picking up the Rider 10 (the Shared Transport Marketplace 12 could know this due to the divergence in location information between the GPS Phone 11 and the Sat Nav Tracker 17, as shown in Figs. 10a, 10b, 11a and 11b), the Shared Transport Marketplace 12 could send messages to

the Driver 13 and Rider 10 verifying that this was their intent; for example, if the Rider 10 had suddenly changed their mind, perhaps to go back to their house to get their umbrella. However, if the Demand Route was still needed, the Rider 10 and Driver 13 would be queried on their next action; for example, if the Rider wished to re-submit their Transport Demand request. In that case, the Rider's request would receive higher prioritization in the event there is a queue of Riders at the same location, so that the Rider would not have to return to the end of the queue.

When the Driver 13 approached the Rider Destination, and possibly at points along the way, the Rider 10 and Driver 13 could be polled for their location information to verify that the ride was progressing ("Continuous Co-ordinated Proximity" elements and methods of which are illustrated in Figs. 10a and 10b). Processing and communications could be done either locally (using software inside the Transport Capacity vehicle, in Driver Software Interface and Rider Software Interface, and communicating via near-field communications inside the Transport Capacity vehicle using software in Driver Software Interface and Rider Software Interface, via communications technologies such as Bluetooth, 802.11, RFID or their equivalents) or via network polling to Sat Nav Tracker 17 or GPS Phone 11, or a similar combination of methods and communications. The delivery of the transport service could be proven beyond a reasonable doubt through the continuous co-ordinated proximity between the Driver and the Rider according to the verification of simultaneous geographic proximity as illustrated in Fig 10b. At the end of this journey, a message would be send to Rider with the details and any billing information about the journey.

An alternative method of verification of continuously co-ordinated proximity would be to use the establishment and continuance of near-field communications as the primary consideration for determining start point of ride sharing experience, and use the breaking of this near-field communications between the Sat Nav Tracker 17 and the GPS Phone 11 (in cases other than power-off or reset of devices) to establish the verified termination point of the journey. The elements involved in this method are shown in Figure 11a, with the methodology shown in Figure 11b.

Alternately, in a low-tech (and only partially verifiable) implementation of the above, the verification of the Rider pick-up and delivery could be accomplished through the use of a PIN transmitted to the Rider, the entry of that PIN by the driver, and a lack of negative confirmation when the Rider is presented with the journey summary information.

Important aspects of the above system that were not mentioned in the above narrative: Trusted Drivers and Trusted Riders are a large part of the viability of any Shared Transport System. In order to improve on the quality of this trust, and to provide security assurance to Riders and Drivers, certain behaviors would prompt alert conditions, especially those related to security or safety. For example, when a Transport Demand is established which results in an In-Process Journey which is terminated before or at a different point than the established Destination Point, this information is logged and could further be used to generate, for example, automated phone calls to verify the intent of the Rider & Driver, including prompting the Rider or Driver for verification of pass codes ("Favorite Color") which would be established upon user registration. If a Rider or Driver was unable to verify their Favorite Color, human

intervention and responses and queries (from Network Operators, optimally, at a Network Operations Center (15), as shown in Figure 1) could escalate the situation response as appropriate, even initiating vehicle tracking and dispatching security personnel if appropriate.

Other methods of assuring that the Shared Transport System developed and maintained good social and safety standards would be a comprehensive ratings system. At the end of each journey, as the Rider leaves the vehicle, they are messaged with the details and cost of their journey on their GPS phone 11 (via SMS, e-mail, or via a special application or web page, for example). This message also could prompt the Rider to rate the Driver, for example, with 1 to 5 stars, on one or more scales (safety, comfort, social factors). A sufficiently low rating (for example, 1 star), could be used to automatically "blacklist" that Rider from ever matching with the Driver again (using the Matching Engine 701, as shown in Figure 7, in conjunction with the rating systems of the Transport Provider Management System 705 and the Transport User Management System 706).

Likewise, at the end of the driver's journey, as they stop their vehicle, they would be automatically prompted to rate the Rider(s) that they had carried on their Supply Route. Using the same or similar criteria, they would provide their feedback to the system about the rider. A sufficiently low rating would probably also prompt more requests for information, such as why the rating was so low.

Such an automatic feedback system would help police the network for bad behavior and thus encourage more responsible behavior on the part of everyone using the network.

The network system may also be provided with the following capabilities.

Real-time Self-correcting network redundancy elimination:

System feedback, in real-time, to a driver that another public vehicle or Shared Transport vehicle is available within set criteria (ie., with destination < 1/4 mile of theirs, with 0 or 1 transfers, with maximum of a 5 minute wait). If interested, the driver would receive the location/directions to a car park that is in-route.

Period benefit cost/time analysis:

System log periodically (weekly/monthly, for example) compares transit network availability with actual usage data from an in-car navigational unit and provides a trip-by-trip summary of which trips would have benefited through use of the Shared Transport Marketplace, what the cost/time savings would have been if the user had dropped their car at a Park & Ride; also, what the EARNINGS would have been if the user had picked up available fares (plus/minus 5 minutes); also, generic trip data about the average speed, journey time, CO₂ generated and gas consumed.

Additionally, network capacity demand can be used to calculate any possible public subsidy or tax credit benefit that can be awarded to potential drivers in exchange for their availability on their normal transit routes.

Identity Verification system:

Personal communications device could show the picture and name identification of the driver responding to pickup request.

Service Provider (Driver) display shows the picture of the Rider 10 (service requester in case of cargo or concierge) requesting pickup service.

Rider/Driver Proxy Messaging System

Normally Riders and Drivers would have no need or use for contacting each other directly; however, there could be a few circumstances where it would be useful for one to contact the other, such as in the event of a lost or found item in a car, or perhaps in certain rare cases where they need to reach each other to arrange exact transport details. Normally these users of the system may desire to keep their contact details and full identity information (such as name, e-mail or phone number) private.

Fig. 13 shows a message proxy system that would enable communications between members of the community without losing this identity, and also, importantly, disabling any inappropriate content or contact between community members as well as adjusting the rating of any community member as necessary.

In normal usage, the system would function as illustrated in Fig. 13. For example, if a Driver 13 identifies lost items left in their vehicle, they could choose a function on the in-vehicle device (or via a web page), to send a message to the Rider 10. The system 12 would then receive this message 131, evaluate the content for appropriate content 132, and if it could automatically determine this, would redirect the message 134 on to the Rider 10, coding the message with a unique identifier so that it would know to respond to the Driver 13 if the Rider 10 responds. If the system could not automatically approve the content of the message, the operator would review the content 136, and if the content was OK, the message would be passed on, but if not, the message would be rejected 138 and the Driver may receive a rating adjustment 137 and message to reflect the inappropriate use of the system. If the Driver's misuse of the system was sufficiently untrustworthy, the operator may choose to restrict the Driver's messaging

capabilities, blacklist the Driver 13 for future matches with this Rider 10, or make other adjustments to the Driver's ratings.

The network could generate near real-time messages using SMS, e-mail, or voice messages for example, or could, using a similar technique, proxy a phone call if desired and appropriate.

Friends & Family Transit network

Riders and Drivers can restrict Transport Capacity and Transport Demand matches to operate only inside closed communities of members, if desired. Such closed communities could be, for example, employees of a company, students and parents at a given school, or membership in a given social or sports association. These closed communities could be defined inside the various interfaces available as part of the Shared Transport Marketplace 12, including web pages, or could in fact be authenticated from other means, such as all those members of the Shared Transport Marketplace who had e-mail addresses ending in @mycompany.com or @myuniversity.edu.

The Network System could also allow users to tag drivers or riders as "friends and family" post ride, over the web in displays of private network drivers, or through e-mail opt-in.

Existing internet social communities could be used to instantly pre-populate the social communities that the user would want to make their Transport Capacity or Transport Demand known to, to help advertise and expand the reach of the Shared Transport network, or to match exclusively, or preferably, within the social community.

These "friends & family" designations would become part of the criteria used to rank available drivers and riders, where the rider or driver has a preference. Similarly, a rider or driver can tag the other as "not again", which could rank these alternatives lower or completely "blacklist" a Rider or Driver from matching directly with each other in the future.

Scheduled rides confirmation:

For rides which are pre-scheduled, software on the user device or through the network software will offer periodic warnings and require confirmation from a Rider a preset advance notification time (say 15 minutes) in advance of pickup, then again a preset nearby notification time (say three minutes) before pickup. The Rider has the option to delay or cancel pickup. The Driver is not routed off course or dispatch information sent until and unless rider confirms such pre-scheduled intent.

Advantages of shared transport system and service network

The invention thus provides a system that has the following advantages which have benefits to the area of public transport:

A. A matching system for transportation capacity with transportation demand. The System maintains a matrix of journey time and cost estimates for the nodes (pick-up and drop-off points). Next available capacity, and estimated travel time between each of these nodes is maintained.

B. A characterization method for summarizing transport capacity for individual drivers. Vehicles delivering transport services to commuters (trains, buses, planes) have long used the characterization of "stops" to summarize their transport network services in a way that the consumer could relate to (for example, the #6 subway line,

stopping at 34th St, Grand Central Station, 49th St, etc. However, for an individual driver on their personal daily commute, the typical characterization of a route is the start and end address. This characterization makes the matching of a driver journey difficult for a passenger. The introduction of computers or GPS systems to the problem doesn't necessarily make the solution any easier, as computers and GPS systems will often just reduce an address down to its geographic co-ordinates (latitude/longitude), or represent a drivers' route as a stream of latitude/longitude points.

The system herein described provides an automatic way of converting the computer's representation of a driver's route into a format which is more usable for further analysis and presentation. Figure 8a graphically illustrates an example driver's journey from their work location (Parnell Place, in City Center 802) to their home location (Kinsale 803, in the rural areas). The GPS unit of a car, when recording (or calculating) the driver's exact route, would represent this journey as a a set of co-ordinates. However, for the purposes of establishing a shared transport network, it is useful to establish a network of pick-up and drop-off points (nodes), so that Riders and Drivers can be guided to places that are safe and convenient and comfortable for both the Riders and Drivers. This network of stops can, for example, be pregenerated from existing databases of stops from existing bus networks, entered using traditional GIS systems, or in fact created by the in-vehicle system 17.

The route of the driver's journey is shown in Figure 8a as a dark line (801) moving from the north of the map towards the south of the map. The system calculates the places where the route of this line intersects a stop node, and thus can present the journey at the end of the route in the format of a very useful and concise set of major

stops, rather than an incomprehensible list of addresses or geographic co-ordinates. For example, the driver's route 801 can automatically indicate that the path of this route is from Parnell Place 802 to Cork Airport 804 to Farmer's Cross 805.

Furthermore, once the geographic representation is abstracted to stop nodes, it is possible to show the driver's route in a variety of alternate presentations, such as the presentation shown in Fig 8b. Here, we see the journey described with an abstraction of the journey start and end-points 811, where the start point is characterized by the town name; and we see a graphical presentation of boxes summarizing activity at each stop along the journey; and we can also see a level of characterizations. A busy city route may actually have many dozens of stops it could theoretically stop on if there were people waiting at the stop, but perhaps only the most major stops (as coded separately using operator intervention or data entry, for example) would be shown in order to present the information more clearly. The major stops of a route, as shown in 817, may not necessarily even include the start point or end point if they are not where the likely traffic would be, for example.

As shown in the elapsed time between stops 816, it becomes manageable to represent travel times between nodes using driver's journeys when organized as a stream of stop nodes. Likewise, stop nodes makes it easier to characterize capacity and frequency of travel between locations.

As graphically illustrated in Figure 9a, using the automatically generated driver's stop nodes to measure and predict capacity, it is also possible to show the real-time transport capacity of the shared transport network, and/or the predicted capacity from the stochastic transport capacity network model. This particular representation shows

the same network model as Figure 8a, but trimmed to only show those segments and nodes in the network that have active transport capacity on them at the time the user displays the model. This method of graphically presenting the reach of the transport network dramatically improves the confidence that a user would have in the shared transport model, knowing that they can get from one place to another, and knowing, through the stochastic model, what the availability would be at a different time of day.

Traditional transport networks have known this for a long time, of course, and so maps of network capacity have long been available on public transport systems, although they have not yet been applied usefully to carpooling systems or this invention of public shared transport. Traditional public transport networks have also sought to make their transport more understandable by simplifying the geographic maps into quasi-geographic schematic representations that enhance readability and information display by distorting the geographic accuracy in certain manners (using only orthogonal and diagonal lines, for example). The system could generate schematic maps automatically (several such programs and techniques are known in academia) using as its source the dynamically created transport network as generated by the real time and/or stochastic shared transport node model. An example of this schematization of a shared transport network is shown in Figure 9b, using the model of the 9a network.

C. An active monitoring system for generation of usage/demand data for point-to-point routing of participating vehicles. The system looks for overlaps of capacity and seeks to eliminate redundant capacity (within certain distance criteria, transfers criteria and timing criteria) by suggesting route changes or route termination. For example, if five cars were on the route to the same destination, the system could inform the cars

that the quality of shared transport service on their route was high, and could suggest that one or more cars pull over into a Park & Ride (for the Driver to become a Rider in another vehicle's car, as it would be far more economical than driving himself in a single occupancy vehicle to the same destination). Alternately, this monitoring system's data reporting and analysis can be used to suggest the generation of new routes, or on-the-fly routes, for public transport when enough demand capacity exists to create transport routes which bypass crowded city centers or, minimally, can skip stops on an existing route (generating express routes by selecting appropriate Riders to get on the transport capacity).

D. An active monitoring system for generation of traffic flow data; combined with a central information repository, gives real time network for traffic flow throughout a metropolitan area. . The system as described has the capability to enable any of the Transport Capacity vehicles to act as "traffic probes", reporting on throughput and delays in traffic. The system would use this data internally in order to better predict arrival time of Transport Capacity at the Rider's Pick-up Point, but this data could also be shared with the general transport community at large as a substitute for other means that they may normally use to determine road traffic (loop detectors, video cameras, traffic probes, etc).

E. A system to generate matches between route capacity and timing and Transport Demands, from usage data. Regular traffic between nodes and subsets of nodes is gathered by this system continually (Fig 7, elements 709, 710, 711, 712). The system 12 can thus tell a user who wishes to go from one point to the next how to best get there using the available transport capacity via it's matching engine (element 701).

A graphic illustration is shown in Fig. 14a. In this case, a Transport User 1401 wants to go from the departure point 1406 to the arrival location 1409. Active Transport Capacity 1402 and 1403 both pass by 1406 (as known by the system by the declaration of their Supply Routes. Whereas Transport Capacity 1402 has registered a route of 1405, 1406, 1407, 1408, Transport Capacity 1403 has registered a route of 1410, 1404, 1406, 1407, 1408, 1409. All other considerations being equal, the matching engine 701 would thus match the transport request between stop 1406 and stop 1409 using Transport Capacity 1403.

As other vehicles regularly travel between the nodes 1410, 1404, 1406 and 1409 at this time of day and day of week, the system would be able to reliably calculate how much time will elapse until the vehicle has arrived at the Transport User 1401's pick-up point, and would start the notification processes as detailed in the system appropriately. The system could also tell the Transport User 1401 at what time they would arrive at their destination 1409.

If Transport Capacity 1403 did not make their service available to Transport User 1401, the geographic scope of the search could be widened and the User could be alerted that an option exists that would get them to a drop-off location 1408 rather than the desired 1409 drop-off location, and the user could choose to accept this transport instead.

As illustrated in Fig. 4, Transport Capacity and Transport Demand will have a variety of providers (402) and users (403), with a potentially complex set of requirements and preferences (404, 405). The matching engine (401) provides the

Transport User with a means to display and/or automatically book the best options available.

F. Display methods to show available transport capacity and options to Transport Users. While no working system currently exists for the kind of real-time shared transport envisioned by this invention, the closest computing systems that perform a similar function are those car-sharing or carpooling schemes which attempt to match riders by destination and origin, for the purpose of establishing one-time or regular commuting matches. A major weakness of current state-of-the-art systems for carpooling is the limited representational capability of these systems, as it is usually difficult to find if there are any services on offer in a given neighborhood or area, to a given neighborhood or area. Current state of the art systems assume that no transfers are possible between shared transport providers or public transport, and work best when all of the users of the system have a common shared destination or origin (for example, commuters to a given campus, students at a university, or (when trips are to be made across country), members of a given urban area). The present system, however, generates a number of representations of transport capacity which will give encouragement to transport users and providers that service is possible using the present system.

From the live usage data of the system, maps can be presented which show the real-time capacity of the system. As graphically presented in Fig 14a, live maps could be displayed which show the real time transport capacity of the network and the stops in the network. However, these maps by themselves do not provide a sufficient quality of information to give confidence in the likelihood of a user being able to get from their

start point (1406) to their destination point (1409). Fig 14b demonstrates a more useful presentation of the street network, which begins to inform a user how they would use the shared transport network to reach their chosen destination, or what kind of service availability they would have using the system.

Until a certain critical mass is achieved in a given geography, transfers to non-commercial private transport vehicles will be limited, and so it is important to also be able to show representations of the transport system showing all possible destinations where no transfers are necessary. This is graphically illustrated in Figure 14c.

G. A prediction system to generate available route capacity and timing from summary usage data. Traffic data is essentially stochastic, and therefore this system provides predictions of transport capacity between points in a way that can be useful to transport users in matching their transport needs and in providing them with useful information that makes them grow to trust the system and make better transport decisions. Because the nature of this system is extremely ad-hoc, few bookings will be matched far in advance for a specific transport capacity. The best capacity for the journey is the capacity flowing by the transport user as they need it. While this approach enables a large number of advantages, the central weakness to this approach is in the uncertainty of a booking, both in terms of its timing and the provider of the service. Therefore, it is particularly important that this system provide excellent information services which overcome these uncertainties.

As mentioned above, usage data for this system is continually gathered. Beyond the use of this real-time information for the benefit of matching is the categorization of this usage data into a transport model (Figure 7, items 701, 702, and 702). This

transport model would contain day part information for traffic capacity flows. Thus, even if a transport demand were made that did not currently have transport capacity available, the model would be able to stochastically determine the likelihood of service, at any part of the day. This is graphically depicted in Figure 14d, where the historical availability of transport capacity is represented by lines in the street network. Of course, instead of using a street map presentation of wait times or capacity, a logical schematic of the network amongst transport stops could also be formatted to similarly display timeliness and throughput. As shown (1434), the map or schematic could be shown for any day or time period.

In many uses, of course, a tabular representation is preferable and augments the understanding of a network, and from the generated capacity model, tables such as that presented in Fig 14g would be generated to approximate the appearance of timetable schedules of traditional transport providers, such as city bus or subway networks. These timetables would of course be based off the ad-hoc transport capacity as driven by transport providers over time. These forms of definitive and statistically useful information will help transport users gain the confidence in the viability of shared transport, as well as be aware of better options that they may want to consider. For example, referencing the combination of Fig 14g for tabular data and Fig 14e for graphical presentation of a given transport user 1449, we can see that the tabular presentation shows that from the start point 1471 of the transport user (1441 on the map), to the destination point 1472 (1442 on the map), the general availability would be better at location 1443 (1473), where the average waiting period 1475 being less than

that at location 1444 (1474). However, for the most common commuting hours (7:30-10am and 4:30-7pm), the availability is similar.

Of course, in some cases drivers could be guided off their normal route to pick up passengers, and the system would be capable of doing that, but in most cases, it would be more desirable to pick up passengers without inconveniencing or disorienting the driver.

It can be readily appreciated how the availability of this information would enable users to make better commuting choices. In the table shown in Fig 14g, only two stops were shown and the rows were broken up by time of day and subdivided by stop; naturally, this information could be extended if desired into a larger array, or shown in a format of stops as columns, stops as rows with cells displaying average frequencies; or other typical timetable schedules.

The directionality of the transport traffic is also a major factor in the display of this stochastic information, and as shown in Fig 14e, the reverse route for a commuter transport user 1441 when returning home could appear very different graphically, depending on transport capacity usage history, from the opposite direction. Fig 14e also shows how a combination of historical data plus real-time data can be used to provide a blend of information to the transport user. This presentation of a blend of statistically generated timetables as well as real-time presentation of capacity would also be essential to the operations center staff in helping transport users understand their options as well as influencing any marketing or operations plans they would have to expand the network, and could also be used to help determine automatically if there

are any unusual activities such as road closings or traffic jams, where the historical data and the real-time data varied significantly.

Using this system it can be extremely useful to display the combination of statistical transport models with real-time information in tabular format. Fig 14h graphically illustrates one form of a "departure board" for a shared transport network. Departure boards, as seen often in airports, train stations and other transport hubs, provide the answer to the question "where can I go from here?".

Shared transport would provide a new opportunity for departure boards to be used in corporate campuses, lobbies, and other places where public transport has traditionally underserved the population. Shared transport departure boards could combine public transport information, private shuttle services, and shared transport services. While a preferred form of a departure board would be a separate physical display, it is of course possible to have departure boards take the form of web pages, a frame within web pages, or special "widget/gadget" style small programs that people could run on their portable phones or personal computing devices.

However, in the case where the transport service is not provided by scheduled services, the provision of a statistical transport model in conjunction with a real-time network is essential to providing this information, particularly in cases where the transport is leaving from within a campus (or housing subdivision) and moving out of range quickly. In a case where 15 vehicles leave a subdivision and head to a city center between the hours of 7:30 and 8:00am daily, it could be approximated that one vehicle moves between this journey's start and end points once every two minutes.

Consider again Fig 14e, where a transport user 1449 would like to find out what the availability of capacity is between start point 1441 and destination point 1442. Some transport capacity 1448 is positioned in a parking garage near the city center and also intends to go to destination 1442. As the transport capacity 1448 turns on their vehicle, they may only be within the area close to start point 1441 for a minute and two. As a result, if most of the transport capacity were coming from similar location, the transport user 1449 may not see the possible destinations until a few moments before they became available for matching, if at all.

As departure boards also serve the function of advertising the availability of transport options, the shared transport departure board would be under-representing the possible answers to the question "where can I go from here?" unless it includes a statistical model in the presentation of the departure board. Fig 14h shows a table combining real time network information with statistical network information. Here, Fig 14h is a tabular representation of Fig 14e, and the transport user 1449 wants to go from 1441/1481 to 1442/1482. Estimated departure times 1485 show two forms of numbers, perhaps graphically displayed with different characteristics, with real-time information for actual vehicles shown as indicated in 1486 and statistically established timing shown as in 1487.

Note also the departure board format would display major intermediate journey nodes 1488, as discussed above and calculated and characterized automatically by the system. Oftentimes, an end destination 1485 is not known by a viewer, and the intermediate points 1488 are the points of interest. As the purpose of the departure board is to improve the perception and communication of transport options, the

characterization of the path of stops , described above in the description of Figures 8a and 8b, further improves the transport user's information experience.

H. A journey planner for a shared transport network. Journey Planners, which show best available routes between start point 1491 and destination point 1492 as well as cost and schedule information, are a well-known concept for public transport, but have not been used to describe non-scheduled transport services. As shown in Fig 14i, the Journey Planner would operate similarly to existing public transport network journey planners, but would also incorporate the statistical model of available shared transport 1495, and real-time shared transport information to provide best possible combinations between 1493, 1494 to provide the user with the widest range of useful options.

I. As the Shared Transport network expands, more transport capacity will become available regularly on certain routes. The system as described would be fully aware of which routes have underutilized capacity, and would also be aware of transport users previously registered transport demands. Whereas normal public transport networks don't appear to have any awareness of who is using their services, the present system would communicate with its transport users to let them know about expanded hours of quality service (for example, less than 10 minute wait for services), and/or expansions of service into new outlying areas for that user, etc.

J. Governmental agencies and local authorities have long sought to encourage the use of carpooling, using incentives such as HOV (high occupancy vehicle) lanes, discounted tolls, and tax deductions for the use of public transport means. In the near future it is anticipated that further incentives may be brought to bear, given the extreme shortages of oil which are expected in the years of 2011 and beyond, as well as the

increased awareness of global warming. In addition, companies and organizations who are pressed for parking spaces are highly motivated to try to get their workers to carpool, and sometimes provide free or premium location car parking spaces to those who carpool. To increase the effectiveness and efficiency and compliance with these measures, it is anticipated that automated means may be desirable to authenticate the use of the vehicle in shared transport applications, as shown in Figure 12a.

In this access control system, a vehicle 1209 would approach an "access gate" 1208, for example, a toll booth 1204 or a parking lot access gate 1206. Whether the system was a server push or client pull system (Fig 12b, Fig 12c, Fig 12d, or Fig 12e), the information about the Shared Transport status and business rules would be processed at the Access Server 1207, and, if access was permissible, the gate 1208 would be lifted, allowing free or discounted access to the resources of the company or governmental agency. In fact, no gate 1208 would necessarily be required, as the system could be a tolling system which simply charges a different rate depending on the occupancy of the car, etc.

Throughout the year that the car is used, the usage of the car could be measured in terms of the percentage of time it was used for shared transport, and this could, if it passed a certain threshold, qualify the transport provider to benefit from certain tax benefits, carbon credits, and the like.

K. A trust system for managing networks of Transport Providers with varying trust characteristics. As shown in Fig. 7, the Transport Providers/Drivers are managed by a system 705 which considers their ratings (as provided to the system by an Activity and Event Manager 702) and their community memberships 713. This enables, as shown in

Fig 4, the Matching Engine 401 to consider matching transport demands with a variety of Transport Providers 402 and Provider criteria 404.

L. A self-correcting trust system for feedback of Rider response to Driver performance. As shown in Fig.7, when a Journey has been matched between a Transport Provider 720 (Driver) and a Transport User 721 (Rider), the Journey is actively managed by the system 704. As part of this process, the Rider is prompted to provide a measurement of trustability to the Driver. This event 702 is then passed on to the self-correcting trust system within the Transport Provider Data Management system 705.

M. A self-correcting trust system for managing Driver preferences of various Riders. Likewise, as shown in Fig 7, the Transport Provider is prompted to provide a measurement of trustability to the Transport User. This event 702 is then passed on to the self-correcting trust system within the Transport User Data Management system 706.

N. A modification of the above system to allow it to be used to transport goods and merchandise by having the Transport User send packages instead of using the system for personal transport., but otherwise using a similar Shared Transport Marketplace for matching transport need and rating of providers.

O. The Driver can also be driving a bus (whether a private or public transport service), a taxi, and the like.

Referring to Fig. 2, the transport capacity computing and communications components of the network system include components for (1) location and direction, many of which can supplement the locational accuracy where GPS technology is not

functional or is less desired (for example, underground transport forms would be more likely to use fixed position "markers" to determine the location of the transport capacity, and in the same underground transport situation, the GPS Phone would ideally be equipped with 802.11b technology and a reference database of positional location of underground wireless 802.11b or similar local wireless networking broadcasting devices in order to determine location and facilitate data communications); (2) Far-field communications list some of the communications methods used to facilitate interaction with the Shared Transport Marketplace, including the possibility of using voice or IVR interaction with a system operator rather than data networking; (3) Near-field communications detail methods would could be used to communicate between Rider and Driver computing/communication devices (preferred in order to reduce data congestion and airtime charges); (4) supply routes include those information sources and database of commonly used and widely known location names that will feed the Shared Transport Marketplace with available and potentially available transport capacity from the Driver and public transport sources; and (5) Demand route, which includes several possible methods of requesting a route by a Rider. The devices and inputs used by each of these five components are as listed.

Referring to Fig. 3, the rider technology components of the network system include components for (1) Location, that is, several methods for determining the exact position of the Rider for communication to the Shared Transport Marketplace; (2) Location transmission, that is, the interface that the Rider uses to transmit his Demand Request; (3) Computing Component, that is, the device that the Rider uses to transmit his Demand Request; (4) Internet, that is, either the broad Internet or a limited Intranet

which enables the data transmissions between the Shared Transport Marketplace and the Rider; and (5) Demand Route, which includes many of the databases and the pricing and membership models which enable a given Rider to take advantage of a variety of possible types of Transport Capacity. In addition, the devices and inputs used by each of these five components are as listed.

Referring to Fig. 4, the multiple uses and operations of the network system are shown graphically and include components for (1) Supply Side Routes, which include the databases of providers of shared transport services, (2) Demand Side Routes 407, which include a subset of possible methods for a Transport User 403 to request a Route, (3) Request Methods 408 and Availability Methods 406, which include a variety of methods which could be used to communicate between the Rider, Driver, and the network system. The Matching Engine 401 would consider the availability of transport capacity, provider criteria 404 and transport demand criteria 405 in providing ideal matches for the request.

Referring to Fig. 5a, the experience of a rider in using the network system are shown as a flowchart and are believed to be self-explanatory, as they have been described in text above. Use of specific references to time, ie., "Three Minute Confirmation", are completely configurable by the user and would be changed either automatically or manually to reflect different modes of transport and interchange or uses of the general system. The accompanying table, Fig 5b., provides further specifics on data and usage of the functions in the flowchart of Fig 5a. The experiences may stored in memory and printed out.

Referring to Fig. 6a, the experiences of a Driver in using the network system is shown as a flowchart and are believed to be self-explanatory, as they have been described in the text above. The experiences may stored in memory and printed out. The accompanying table, Fig. 6b, provides further specifics on data and usage of the functions in the flowchart of Fig 6a.

Referring to Fig. 7, the Shared Transport Marketplace will be composed of a number of computer servers networked together to perform the data and communications functions as specified. Communications interfaces 723 will enable the system to communicate automatically between other automated computer systems, to individuals via computer interfaces, to individuals via telephonic interfaces, Sat-nav units, and the like.

Continuous Co-ordinated Proximity System

In order to improve the user experience and the rapidity of verification of transport user ID and thus reduce the delay of loading people or goods into a transport vehicle, it would be desirable to have means to quickly verify the identity of the transport user for the transport provider, in order to know that the passenger is a paying and trustable passenger, as well as to confirm the drop-off location of the transport user.

Referring to Fig. 10a, the elements necessary to determine if there exists continuous co-ordinated proximity are the monitoring and verification system 1001, a Transport User Device 1002 and a Transport Provider Device 1003. Each of the devices 1002 and 1003 would need to have a means to determine their location. Additionally, for the "independent verification" method, there would need to be far-range data communication means 1005 and 1006. Optionally, there can also be

communications between the devices 1002 & 1003 via a far-range or near-field data communications means.

Referring to Fig. 10b, the logic necessary for a central server to determine if there exists continuous co-ordinated proximity by the method of independent verification is shown in the flowchart.

Referring to Fig. 11a, the elements necessary to determine if there exists continuous co-ordinated proximity via verification of near-field communications link are the the monitoring and verification system 1101, a Transport User Device 1102 and a Transport Provider Device 1103. Additionally, for this "near-field communications verification" method, there would be near-field data communication means 1104 between devices 1102 & 1103. Optionally, there can also be communications between one or more of the devices 1102 & 1103 via a far-range communications means 1105 or 1106. In the near-field communications method, one or more of the devices 1102 and 1103 need to have a means to determine location. The logic for the determination of continuous proximity, as shown in Fig 11b, would run on either device 1102 or 1103, though more likely on the Transport Provider device 1103. The communications with the Monitoring and Verification system 1101 would be between the device running the logic as shown in Fig. 11b. In the event that the data does not need to be communicated real-time, or in service areas where there isn't continuous data communications capacity, the logic system could cache the start and end positions of the transport service between devices 1102 and 1103, or a plurality of other such transport services, and when the logic system does come into networking contact of Monitoring system 1101, the entire cache could then be transmitted.

Using such a cache system would have the following benefits: reducing the data communications expenses by sending less transmissions, increasing the areas of service to include those areas where data communications is unavailable, and, where no far-field communications are needed at all, reducing the hardware requirements of a continuous co-ordinated proximity service. In this case, the transport provider would have to, perhaps daily, come in contact with a near-field communications network.

Hardware and Software Components

Transport User Device

Optimally, a GPS phone with an ability to display graphics, serving the primary functions of enabling Transport User to book travel, receive updates on travel information, confirm bookings and receive activity receipts, provide proof of identity and location, as well as update trust ratings on providers in the network.

Transport Provider Device

Minimally, a GPS phone with an ability to display graphics. Optimally, a personal navigation device or built-in sat-nav unit, serving the primary functions of enabling transport provider to advertise spare transport capacity, route the driver to pick-up locations, confirm or cancel bookings, provide proof of identity and location, update trust ratings on transport users and suitability of geographic locations.

Network Operations Center

Computers and Display systems networked to the Shared Transit Marketplace Server, with telecommunications capacity for call center and operations staff, serving the primary functions of enabling the booking of travel and conveyance of information about network services, customer inquiries, management of physical and logical and

transportation network capacity and organization, and the business management of transport operations.

Shared Transit Marketplace Server

A network of computers attached to the Internet and telecommunications services. Providing automated functions for the Network Operations Center, Transport Users and Transport Providers, including matching demands, refining trustability ratings, optimizing capacity and efficient throughput of the system.

Characteristics of the Shared Transport Marketplace Method

- a) providing an electronic registry of capacity containing a plurality of geographic locations, where one or more electronic devices in each of a plurality of transport vehicles registers the spare transport capacity and location information of the vehicles via wireless data communications to the registry of capacity,
- b) providing an electronic registry of demand, where the transport demand needs of a plurality of individuals or items is registered by a plurality of means to the registry of demand by the transport user,
 - i. where such plurality of individuals or items can include registration via Internet web pages and Internet applications, via SMS messages, via e-mail, via IVR systems, via telephone operators, via applications or web pages running on handheld wireless devices such as location-aware phones, and the like
 - ii. where such demand can be limited to a set of rules not just between start and destination locations and needed capacity of seats or space, but also

include such limitations as requirements for the transport provider to be of a certain level of experience, gender, or membership in certain closed communities, or for the transport capacity to have certain conveniences or services, such as baby seats, wheelchair access.

(a) where such closed communities may include persons associated with a certain company, university, social group, or Internet social networking community, for example.

iii. where such demand can include destination locations that are specified by purpose of journey or type of destination, increasing the availability and timeliness of transport options to the transport user.

(a) where such type of destination could be specified to be any typical consumer or business category, such as supermarket, shopping mall, coffee shop, or a specific brand of these,

(b) where such purpose of journey could be one or a combination of factors, such as to see a specific movie title, regardless of the cineplex where it was showing.

c) providing a central processing capability in each or in a plurality of geographies to provide one or more matches of the transport capacity with the transport demand,

i. according to any specific limitations the demand may restrictively preset, and any predetermined trustability parameters set by the transport demand and the transport capacity.

- (a) including trust parameters, such as the sex or experience of the transport provider or transport user
- (b) including demand requirements, such as the availability of a child seat or wheelchair access
- (c) including trust parameters restricting matches to those within a set of pre-approved transport providers or transport users from a given company
- (d) including trust parameters restricting matches to those with membership in a pre-defined social group, club, or Internet community.
- (e) including trust parameters restricting matches to those with sufficiently high transport community ratings,
 - 1. providing a self-correcting system to the community of transport capacity providers and transport users to continuously update transport provider and transport user ratings,
- d) providing a means of automated communication with the transport capacity to confirm the availability and willingness of the capacity to transport the demand; and likewise providing a means of automated communication with the transport demand to confirm the booking details of the capacity;
 - i. providing a means to direct the transport capacity to the geographic position of the transport demand(s), and automatically redirecting the transport capacity to the meeting point location of the transport demand if transport capacity needs to be re-routed,

- ii. describing booking details to the transport demand of the transport capacity including such possibilities as, the time and location of the pickup along with identifying characteristics of the transport capacity and booking confirmation information.
 - (a) where, depending on the timeliness reliability rating of the transport user, notice of the transport capacity must be confirmed at an earlier time than otherwise required.
- e) providing a means of tracking the pick-up and delivery of the transport demand by the transport capacity
 - i. automatically re-allocating and rescheduling a missed pick-up to other available transport capacity in the registry of transport
 - ii. providing a registry of missed pick-ups which is updated whenever the Transport Provider fails to pick up the Transport User who was in position at the Transport Start, where the missed-pick-up registry is used as a factor in the rating system for the transport Provider.
 - iii. providing a report of missed pick-up to a network operations center to provide for manual intervention if necessary.
 - iv. providing a means of verifying and vetting the truth and authorization of the transport provider and the transport user
 - (a) where such means of verification of the pick-up of the transport capacity by the transport provider can be accomplished by methods including

1. entry of a PIN (personal identification number) provided by the transport user to the transport provider and entered on the in-vehicle system.
 1. where such PIN could be generated automatically and communicated to the transport user upon confirmation of the transport capacity via automated communications (SMS or e-mail or IVR) in the booking details.
 2. near-field communications between the in-vehicle system and the transport user's personal communications device (or other ID, including payment ID), verifying the transport demand's physical presence.
 3. automatic determination of continuous proximity between the transport capacity's geographic location with the transport demand's geographic location, by periodic confirmation by the central tracking system of the location of the in-vehicle device and the personal communication device.
 4. interaction, either through data or through verbal communication, between the network operations center and the transport provider and the transport user, using predetermined pass codes to confirm the identity and testimony of the transport provider and the transport user.
2. providing the transport user's proof of delivery to the destination location by the registration of route positions and timing of the transport

capacity via automatic communication between the in-vehicle device, by the confirmation of the transport provider and the transport user.

1. where the confirmation of the transport provider and the transport user can be automatically provided by electronic devices, or by the co-ordinated proximity method, or by the breaking of near-field communications between the transport user and the transport provider, or by a services message receipt which remains uncontested at the destination location.

Characteristics of the network operations center

- f) bringing service irregularities to the attention of operations personnel,
- g) alerting such personnel to events from missed pick-ups to occasions, such as a transport provider who is off-route from the destination location of the transport capacity ("errant vehicle").
- h) providing automated escalation of response, depending on safety and security preferences and needs, whereby potentially dangerous situations are rapidly escalated for manual intervention of operators at the network operations center or security or public safety personnel,
- i) providing an ability to continuously track the physical location of an errant vehicle and the transport capacity.
- j) providing the capability of booking services to those who don't use more automated means, with the network operations personnel booking the request, or answering requests for information, for the telephone caller.

Additional Secondary Registry of Transport Capacity

An additional secondary registry of transport capacity may be added to the system

- to allow transport capacity to see both the shared transport network data and network data of public and private transportation network operators,

- to show the transport user whichever network services best fits their demand

- to book transport capacity on the shared transport network or with public and private operators.

- i. providing similar notification and cashless transaction benefit to users of both public transport and shared transport.

- (a) where the public or private transport operator has an existing system with PIN authorization, or an integrated ticketing system compatible with the shared transport system, providing necessary authorization and PIN to the transport user.

- (b) where the public or private transport operator has no existing system for PIN authorization, providing the transport operator with the in-vehicle device, or a commercial version of the same.

- ii. enabling the benefit of reduced tax consequences for those governmental entities that allow pre-tax deductions or credits for transportation expenses as detailed.

The transport capacity can be registered automatically, by simple movement of the vehicle indicating the direction and destination of the transport capacity:

- where the destination of the vehicle is predetermined by a route or schedule pre-registered by the transport capacity;

- where the destination of the vehicle is determined by comparing its position and timing to predetermined schedules associated with that vehicle

The usage of the system by transport providers and transport users can be tracked:

- providing a registry of service credits provided by transport providers and transport users, including,

i. interchanging services with all other members of the network, providing documentation to eliminate taxable consequences where local laws permit,

ii. reducing effective cost for the transport user where local laws permit by providing the transport user with an authorization system to credit the service credit system from their pre-tax income, either directed by the employer or by the employee,

iii. providing a detail and registry of usage which qualifies transport providers and transport users with information means sufficient to satisfy governmental laws to qualify for any tax credits or means for preferential road allowances and privileges which may be enabled through legislation,

(a) means for preferential road allowances shall include such preferential treatment such as access to HOV lanes, reduced or eliminated cost for such governmental programs as congestion charging, road usage charging, toll road access, parking and preferred-location parking.

(b) qualification for tax credits could include the computation of carbon benefits, vehicle registration taxes, annual road charges of using the invention over traditional means of transport.

(c) whereby information means to satisfy governmental authorization could include such means as real-time access to a central or proxy servers,

1. real-time access control including such things as barrier gate authorization at tolls, reduced charges for road usage when the vehicle contains more transport users or transport capacity, access to HOV lanes, or in parking lots.

iv. providing access control information for private or governmental users for parking or entry gates,

(a) whereby the approval of the access to restricted, preferred parking, or reduced charges for such, could be determined via real-time or near-real time access to the central registry (or its proxy), or an on-board device authorized by the activity of the transport capacity.

The system for tracking the usage of system by transport providers and transport users may comprise

- measuring the volume of journeys between a plurality of locations, where the volume of spare transport capacity is continually monitored by wireless communications with the location-aware vehicles,
- storing this information in a stochastic data model, which can then predict available capacity and demand between any point in the covered geographic regions of the network by time of day, day of week, and day of year,
- providing transport users and transport providers with means to retrieve information about the likely availability of transport capacity and transport

demand between any given start and destination locations, at a specific time of day or in general.

This latter system may also be provided with system means to retrieve information via real-time display on web pages, via SMS/e-mail, via IVR or operator-assisted verbal conveyance of this information. The information may be periodically sent to the transport user, or sent to the transport user when triggered by new services or higher quality options appearing in areas where the user has registered an interest or previously travelled using the system.

The system also provides for showing real-time, variable transport capacity on a display. To this end, the system:

- provides a registry which is able to store and display a series of destinations and times from any given departure area, along with other specifics
 - i. including public and private transport operations
 - ii. including departure points within a departure area (that is, gates, bays, or geographically distinct pick-up points in densely populated areas, modal interchange points, and campuses).
 - iii. displaying major intermediate locations served by the individual routes
- shows the plurality of transport capacities passing the departure area
 - i. where the display could be placed in the lobby of a corporate campus as a visual reminder as people leave work that there are other transport options available to them

ii. where the display could be shown as a web page, a frame or portal within a web page, or as a component of a user's configurable home page, portal, or social networking community,

iii. where the display could also be mounted as a conventional real-time passenger Information display at or near a conventional bus or public transport stop, with the added shared transport information displayed.

- shows the real-time departure needs of registered Transport Demands, as a means of stimulating Transport Capacity market for more capacity.

- calculates and displays a real-time network map of available transport in the shared transport network, where such map is a graphic representation (like a subway network of a city) of the available destinations reachable by the transport network.

The display of transport capacity may include the stochastic availability of transport capacity between locations, such as, for example, average availability of spare capacity every 5 minutes between 8am and 9am from Portarlinton to Dublin.

The transport capacity has the ability to provide one or a plurality of ratings for the transport demand, after the demand has been satisfied. These ratings of the transport provider and transport user can be affected by issues, such as their proclivity to miss reserved meetings or not pay for their transport usage.

The transport capacity can visually signal its arrival at a meeting place by distinctive, externally visible indicators, e.g. one or a plurality of light emitting devices attached to the side of the vehicle's navigational system which faces in the direction of the driver's trajectory and/or the side of the navigational system which is in the direction

of the face of the car, or attached to the rear side of the passenger's side sun visor of the car, or triggered by an in-vehicle system, but would use built-in external lights of the vehicle displaying in a set pattern to indicate pertinent information.

The externally visible indicator could also contain a particular message which would match with a code corresponding with the transport capacity's details. The message could be the name of a passenger or destination of the transport capacity or could contain a portion of a confidential Personal Identification Number that the transport capacity would have received in its confirmation message of the transport capacity.

Automatic verification of the delivery of transport services by independent confirmation of continuous co-ordinated proximity can be performed. For example, two different devices, one possessed by the transport provider, and the other by the transport user, with each having separately determined but accurate location and time information (for example, GPS phones) can be asserted to be verifiably in transit with each other through their continuous co-ordinated proximity. This assertion could be used as a verification of services provided or services used for the time and distance spent in transit, with related charges. This enables billing for the delivered service.

Further, two different devices can be used, one possessed by the transport provider, and the other by the transport user, with at least one having accurate location information, but both having a means to determine their continuous proximity to each other. One example of a means of determining continuous proximity would be the continuous presence of a near field wireless link (such as two devices with bluetooth or 802.11b).

Where both devices have live wireless data transmission capabilities to some central server, to provide independent confirmation of continuous proximity with link, reducing possibilities of fraud.

The invention thus provides a system that enables regular highway traffic and privately owned personal transport systems to augment and enable public mass transit networks.

The invention also provides a system that can match a rider's needs to move from one geographic point to another geographic point with an unrelated driver's unused transportation capacity.

The invention further provides an ad-hoc shared transport system for matching transport capacity with transport demand across a plurality of transport providers and a plurality of transport users.

What is claimed is:

1. A method comprising the steps of
 - providing a transport user device for identifying a transport user;
 - providing a transport provider device for identifying a transport provider;
 - triggering registration of the start of a transport journey in response to a communication of said transport user device and said transport provider device with each other,
 - performing a continuous coordinated proximity monitoring to verify the identity of a transport user and a transport provider vehicle, and
 - triggering registration of the end of said transport journey through communication of said transport user device and said transport provider device with each other.
33. A method as set forth in claim 1 further comprising the steps of polling each of said devices to determine their positions, calculating differences between the determined positions and determining that a journey has ended in response to said differences being outside of an acceptable range.
34. A method as set forth in claim 1 further comprising the steps of having said devices communicate with each other using a near-field communication means, and determining that a journey has ended in response to said devices being outside of a range.

Abstract of the Disclosure

The network system triggers registration of the start of a transport journey in response to a communication of a transport user device and a transport provider device with each other, performs a continuous coordinated proximity monitoring to verify the identity of a transport user and a transport provider vehicle, and triggers registration of the end of the transport journey through communication of the transport user device and the transport provider device with each other.

#403947

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re § 1.53(b) continuation application of	)	
U.S. Application No. 16/198,000:	)	Parent Art Unit: 2648
	)	
Sean O'SULLIVAN	)	
	)	Parent Examiner: Eugene Yun
Application No.: Not Yet Assigned	)	
	)	
Filed: Concurrently Herewith	)	Confirmation No.: Not Yet Assigned
	)	
For: SYSTEMS AND METHODS FOR RE-	)	
ALLOCATING VEHICLES IN A	)	<u>VIA EFS-WEB</u>
SHARED TRANSPORT SYSTEM	)	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

PRELIMINARY AMENDMENT

Prior to examination, please amend this application as follows:

Amendments to the Drawings begin on page 2.

Amendments to the Specification begin on page 3.

Amendments to the Claims are reflected in the listing of claims beginning on page 4.

Remarks begin on page 14.

Attachments: Third-two (32) sheets of Replacement Drawings.

AMENDMENTS TO THE DRAWINGS:

Please replace the previously-filed sheets of drawings of Figures 1-14i with the attached thirty-two (32) replacement sheets.

AMENDMENTS TO THE SPECIFICATION:

Please replace the title with the following amended title:

- - ~~SHARED TRANSPORT SYSTEM AND SERVICE NETWORK~~ SYSTEMS AND METHODS FOR RE-ALLOCATING VEHICLES IN A SHARED TRANSPORT SYSTEM

- -

Please amend the first paragraph on page 1 of the specification as follows:

This application is a continuation of and claims the benefit of priority to U.S. Nonprovisional Patent Application No. 16/198,000, filed November 21, 2018, which is a continuation of and claims the benefit of priority to U.S. Nonprovisional Patent Application No. 15/998,864, filed August 17, 2018, which is a continuation of and claims the benefit of priority to U.S. Nonprovisional Patent Application No. 12/924,487, filed September 28, 2010, now U.S. Patent No. 10,083,608, issued September 25, 2018, which is a division of and claims the benefit of priority to U.S. Nonprovisional Patent Application No. 12/069,656, filed February 12, 2008, now U.S. Patent No. 7,840,427, issued November 23, 2010, which claims priority of to U.S. Provisional Patent Application No. 60/900,808, filed February 12, 2007, which are incorporated herein by reference in their entireties ~~and is a division of Serial Number 12/069,656 filed February 12, 2008.~~

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Canceled)

2. (New) A method of re-allocating vehicles in a shared transport system, the method comprising:

receiving, by the shared transport system, a transport request from a transport user device of a transport user, wherein the transport request includes a pick-up location and a drop-off location;

identifying, by the shared transport system, a first transport provider device of a first transport provider in proximity to the pick-up location received in the transport request;

transmitting, by the shared transport system, the transport request to the first transport provider device of the first transport provider;

detecting, by the shared transport system, that the first transport provider has accepted the transport request;

transmitting, by the shared transport system, transport instructions to the first transport provider device, the transport instructions comprising the pick-up location and the drop-off location;

determining, by the shared transport system, that the first transport provider did not pick up the transport user; and

re-allocating, by the shared transport system and without transport user intervention, a second transport provider to the transport user.

3. (New) The method of claim 2, wherein the determining, by the shared transport system, that the first transport provider did not pick up the transport user comprises:

determining an estimated arrival time of the first transport provider at the pick-up location; and

detecting a divergence between location information of the first transport provider device and location information of the transport user device at the estimated arrival time.

4. (New) The method of claim 3, wherein the determining, by the shared transport system, that the first transport provider did not pick up the transport user further comprises:

upon detecting the divergence, transmitting a verification request to the first transport provider device; and

receiving a verification response from the first transport provider device, the verification response confirming that the first transport provider did not pick up the transport user.

5. (New) The method of claim 3, wherein the determining, by the shared transport system, that the first transport provider did not pick up the transport user further comprises:

determining that the transport user is within a predetermined proximity to the pick-up location at the estimated arrival time based on the location information of the transport user device.

6. (New) The method of claim 3, wherein the location information of the first transport provider device and the location information of the transport user device are determined using a data communication network technology.

7. (New) The method of claim 2, wherein the determining, by the shared transport system, that the first transport provider did not pick up the transport user comprises:

determining an estimated arrival time of the first transport provider at the pick-up location; and

detecting a divergence between location information of the first transport provider device and location information of the transport user device at a predetermined time period after the estimated arrival time.

8. (New) The method of claim 2, further comprising:
recording, by the shared transport system, that the first transport provider did not pick up the transport user in a registry of missed pick-ups.

9. (New) The method of claim 8, further comprising:

determining, by the shared transport system, a rating of the first transport provider based on missed pick-up data associated with the first transport provider in the registry of missed pick-ups.

10. (New) The method of claim 2, wherein the re-allocating, by the shared transport system and without transport user intervention, a second transport provider to the transport user comprises:

identifying, by the shared transport system, a second transport provider device of the second transport provider in proximity to the pick-up location received in the transport request;

transmitting, by the shared transport system, the transport request to the second transport provider device of the second transport provider;

detecting, by the shared transport system, that the second transport provider has accepted the transport request; and

transmitting, by the shared transport system, transport instructions to the second transport provider device, the transport instructions comprising the pick-up location and the drop-off location.

11. (New) The method of claim 2, wherein the identifying, by the shared transport system, a first transport provider device of a first transport provider in proximity to the pick-up location received in the transport request comprises:

receiving location information of the first transport provider device, wherein the location information has been determined by the first transport provider device using a global positioning system (GPS) technology.

12. (New) A system for re-allocating vehicles in a shared transport system, the system comprising:

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, configure the processor to perform a plurality of functions comprising:

receiving, by the shared transport system, a transport request from a transport user device of a transport user, wherein the transport request includes a pick-up location and a drop-off location;

identifying, by the shared transport system, a first transport provider device of a first transport provider in proximity to the pick-up location received in the transport request;

transmitting, by the shared transport system, the transport request to the first transport provider device of the first transport provider;

detecting, by the shared transport system, that the first transport provider has accepted the transport request;

transmitting, by the shared transport system, transport instructions to the first transport provider device, the transport instructions comprising the pick-up location and the drop-off location;

determining, by the shared transport system, that the first transport provider did not pick up the transport user; and
re-allocating, by the shared transport system and without transport user intervention, a second transport provider to the transport user.

13. (New) The system of claim 12, wherein the determining, by the shared transport system, that the first transport provider did not pick up the transport user comprises:

determining an estimated arrival time of the first transport provider at the pick-up location; and

detecting a divergence between location information of the first transport provider device and location information of the transport user device at the estimated arrival time.

14. (New) The system of claim 13, wherein the determining, by the shared transport system, that the first transport provider did not pick up the transport user further comprises:

upon detecting the divergence, transmitting a verification request to the first transport provider device; and

receiving a verification response from the first transport provider device, the verification response confirming that the first transport provider did not pick up the transport user.

15. (New) The system of claim 13, wherein the determining, by the shared transport system, that the first transport provider did not pick up the transport user further comprises:

determining that the transport user is within a predetermined proximity to the pick-up location at the estimated arrival time based on the location information of the transport user device.

16. (New) The system of claim 13, wherein the location information of the first transport provider device and the location information of the transport user device are determined using a data communication network technology.

17. (New) The system of claim 12, wherein the determining, by the shared transport system, that the first transport provider did not pick up the transport user comprises:

determining an estimated arrival time of the first transport provider at the pick-up location; and

detecting a divergence between location information of the first transport provider device and location information of the transport user device at a predetermined time period after the estimated arrival time.

18. (New) The system of claim 12, wherein the re-allocating, by the shared transport system and without transport user intervention, a second transport provider to the transport user comprises:

identifying, by the shared transport system, a second transport provider device of the second transport provider in proximity to the pick-up location received in the transport request;

transmitting, by the shared transport system, the transport request to the second transport provider device of the second transport provider;

detecting, by the shared transport system, that the second transport provider has accepted the transport request; and

transmitting, by the shared transport system, transport instructions to the second transport provider device, the transport instructions comprising the pick-up location and the drop-off location.

19. (New) The system of claim 12, wherein the identifying, by the shared transport system, a first transport provider device of a first transport provider in proximity to the pick-up location received in the transport request comprises:

receiving location information of the first transport provider device, wherein the location information has been determined by the first transport provider device using a global positioning system (GPS) technology.

20. (New) 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 re-allocating vehicles in a shared transport system, the plurality of functions comprising:

receiving, by the shared transport system, a transport request from a transport user device of a transport user, wherein the transport request includes a pick-up location and a drop-off location;

identifying, by the shared transport system, a first transport provider device of a first transport provider in proximity to the pick-up location received in the transport request;

transmitting, by the shared transport system, the transport request to the first transport provider device of the first transport provider;

detecting, by the shared transport system, that the first transport provider has accepted the transport request;

transmitting, by the shared transport system, transport instructions to the first transport provider device, the transport instructions comprising the pick-up location and the drop-off location;

determining, by the shared transport system, that the first transport provider did not pick up the transport user; and

re-allocating, by the shared transport system and without transport user intervention, a second transport provider to the transport user.

21. (New) The non-transitory computer readable medium of claim 20, wherein the determining, by the shared transport system, that the first transport provider did not pick up the transport user comprises:

determining an estimated arrival time of the first transport provider at the pick-up location; and

detecting a divergence between location information of the first transport provider device and location information of the transport user device at the estimated arrival time.

REMARKS

By this Preliminary Amendment, Applicant amends the specification to insert reference to related applications, to which this application claims the benefit of priority. Additionally, Applicant submits replacement drawing sheets that include clear versions of Figures 1-14i. The replacement drawing sheets submitted herewith contain no new matter. Furthermore, Applicant cancels claim 1 and adds claims 2-21. The claims are fully supported by the application as-filed and contain no new matter.

This application claims the benefit of an earlier filed U.S. nonprovisional patent application. To the extent that the claims in this application have the same or similar terms to those in the parent application, Applicant hereby rescinds any disclaimers originating from arguments made during prosecution of the parent application. Applicant invites the Examiner to revisit the relevant prior art of the parent application. *Hakim v. Cannon Avent Group*, 479 F.3d 1313 (Fed. Cir. 2007).

If there is any fee due in connection with the filing of this Amendment that is not otherwise provided herewith, please charge the fee to Deposit Account No. 50-5906.

Respectfully submitted,

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