PATENT
Customer No.: 108449
Attorney Docket No.: 00199-0001-25000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re § 1.53(b) continuation application of U.S. Application No. 16/983,598:	)	Parent Art Unit: 2648
Sean O'SULLIVAN	)	Parent Examiner: Andrew Wendell
Application No.: Not Yet Assigned	)	
Filed: Herewith	)	Confirmation No.: Not Yet Assigned
For: SYSTEMS AND METHODS FOR MATCHING PICK-UP REQUESTS WITH TRANSPORT PROVIDERS, TRACKING TRIP PROGRESS, AND ENABLING PROVIDER RATINGS	)	***VIA EFS-WEB***

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. 16/983,598, filed August 3, 2020, which is a continuation of U.S. Application No. 16/698,312, filed on November 27, 2019, which is a continuation of 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 divisional of U.S. Application No. 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. 16/983,598, as filed on August 3, 2020., 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 (20 pages) and replacement drawings (32 sheets).

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 (14 pages).

8. The total required fees of $3210.00, 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					$700	$ 700.00
Examination Fee					$800	$ 800.00
	Number of Claims		Basic	Extra		
Total Claims	20	-	20		x $100	$ 0.00
Independent Claims	3	-	3		x $460	$ 0.00
Size Fee: EFS-Web Filing Total Application Pages (specification, drawings, printed sequence or computer listing, preliminary amendment)	(146 pages X .75 – 100) ÷ 50 = 1* 1* x 420 = $420 *Rounded up to next whole number					$ 420.00
Track 1 Request						$ 4,200.00
Track 1 Processing Fee						$ 140.00
Subtotal						$ 6260.00
Reduction by 1/2 if small entity						- 3130.00
Basic Filing Fee for Electronic Small Entity					$80	$ 80.00
TOTAL FEES DUE						$ 3210.00

This application has been assigned to **Carma Technology Corporation**. 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

Dated: April 21, 2021

By: /Joel S. Simon/
Joel S. Simon
Reg. No. 70,271
(202) 808-3560

PTO/AIA/14 (02-18)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	00199-0001-25000
	Application Number	
Title of Invention	SYSTEMS AND METHODS FOR MATCHING PICK-UP REQUESTS WITH TRANSPORT PROVIDERS, TRACKING TRIP PROGRESS, AND ENABLING PROVIDER RATINGS	

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.

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	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 MATCHING PICK-UP REQUESTS WITH TRANSPORT PROVIDERS, TRACKING TRIP PROGRESS, AND ENABLING PROVIDER RATINGS		
Attorney Docket Number	00199-0001-25000	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	32	Suggested Figure for Publication (if any)	

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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	16/983598	2020-08-03

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	00199-0001-25000
	Application Number	
Title of Invention	SYSTEMS AND METHODS FOR MATCHING PICK-UP REQUESTS WITH TRANSPORT PROVIDERS, TRACKING TRIP PROGRESS, AND ENABLING PROVIDER RATINGS	

Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
16/983598	Continuation of	16/698312	2019-11-27	10748420	2020-08-18
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
16/698312	Continuation of	16/198000	2018-11-21	10593206	2020-03-17
Prior Application Status	Pending				Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
16/198000	Continuation of	15/998864	2018-08-17		
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
15/998864	Continuation of	12/924487	2010-09-28	10083608	2018-09-25
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
12/924487	Division of	12/069656	2008-02-12	7840427	2010-11-23
Prior Application Status	Expired				Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
12/069656	Claims benefit of provisional	60/900808	2007-02-12		
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.					Add

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).

			Remove
Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	00199-0001-25000
	Application Number	
Title of Invention	SYSTEMS AND METHODS FOR MATCHING PICK-UP REQUESTS WITH TRANSPORT PROVIDERS, TRACKING TRIP PROGRESS, AND ENABLING PROVIDER RATINGS	

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

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

☐ 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	00199-0001-25000
	Application Number	
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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.

PTO/AIA/14 (02-18)
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	Application Number	
Title of Invention	SYSTEMS AND METHODS FOR MATCHING PICK-UP REQUESTS WITH TRANSPORT PROVIDERS, TRACKING TRIP PROGRESS, AND ENABLING PROVIDER RATINGS	

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 — Remove

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.

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:

Name of the Deceased or Legally Incapacitated Inventor:

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. 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.

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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.

Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

Signature:

Remove

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	/Joel S. Simon/			Date (YYYY-MM-DD)	2021-04-21
First Name	Joel S.	Last Name	Simon	Registration Number	70271

Additional Signature may be generated within this form by selecting the Add button. Add

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	00199-0001-25000
	Application Number	
Title of Invention	SYSTEMS AND METHODS FOR MATCHING PICK-UP REQUESTS WITH TRANSPORT PROVIDERS, TRACKING TRIP PROGRESS, AND ENABLING PROVIDER RATINGS	

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 CooperationTreaty.

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.

Doc Code: TRACK1.REQ
Document Description: TrackOne Request

PTO/AIA/424 (04-14)

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):	Not Yet Assigned
Title of Invention:	SYSTEMS AND METHODS FOR MATCHING PICK-UP REQUESTS WITH TRANSPORT PROVIDERS, TRACKING TRIP PROGRESS, AND ENABLING PROVIDER RATINGS		

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 /Joel S. Simon/	Date 2021-04-21
Name (Print/Typed) Joel S. Simon	Practitioner Registration Number 70271

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 1 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.
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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

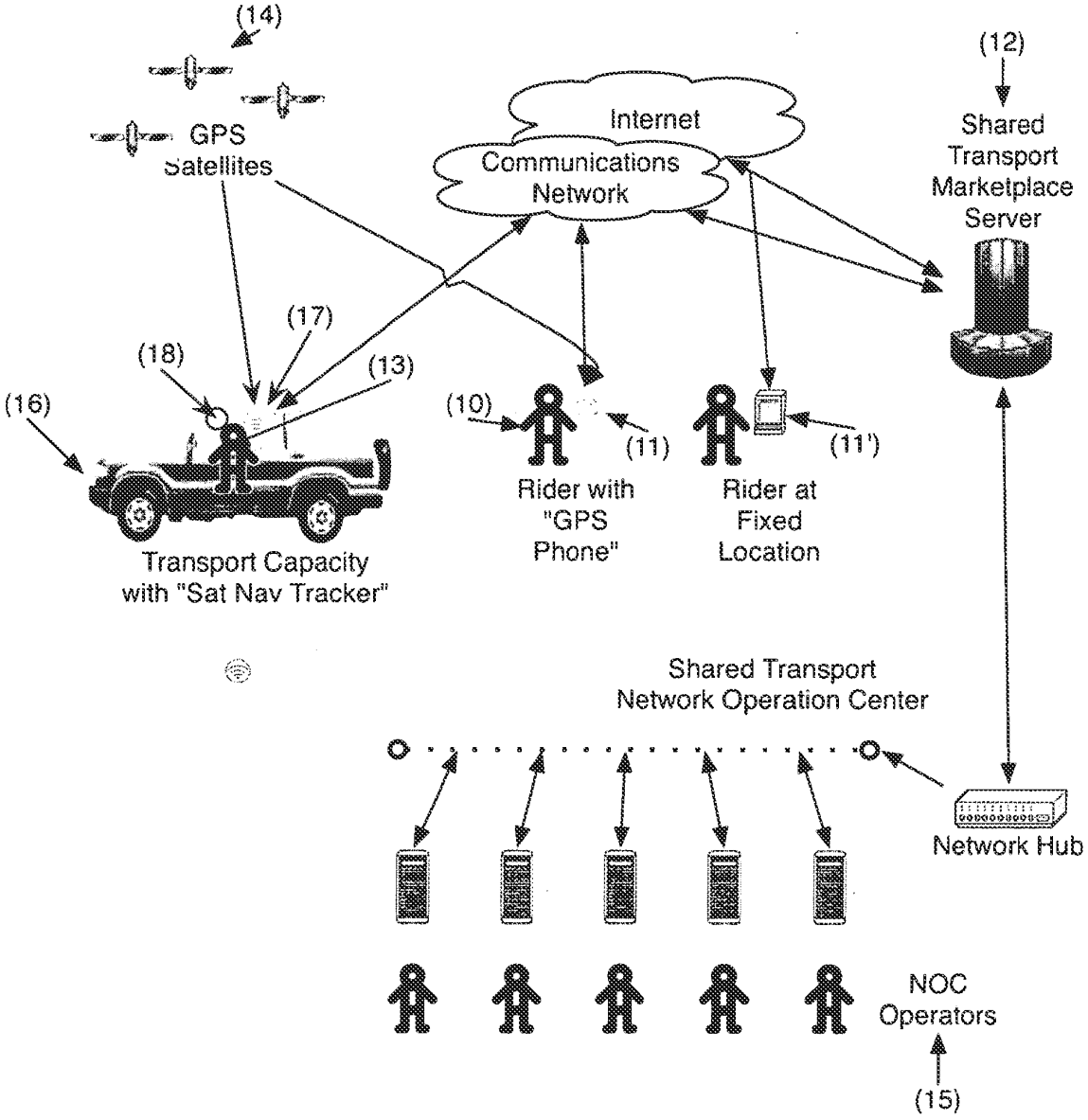


Figure 2. Transport Capacity Computing and Communications Components

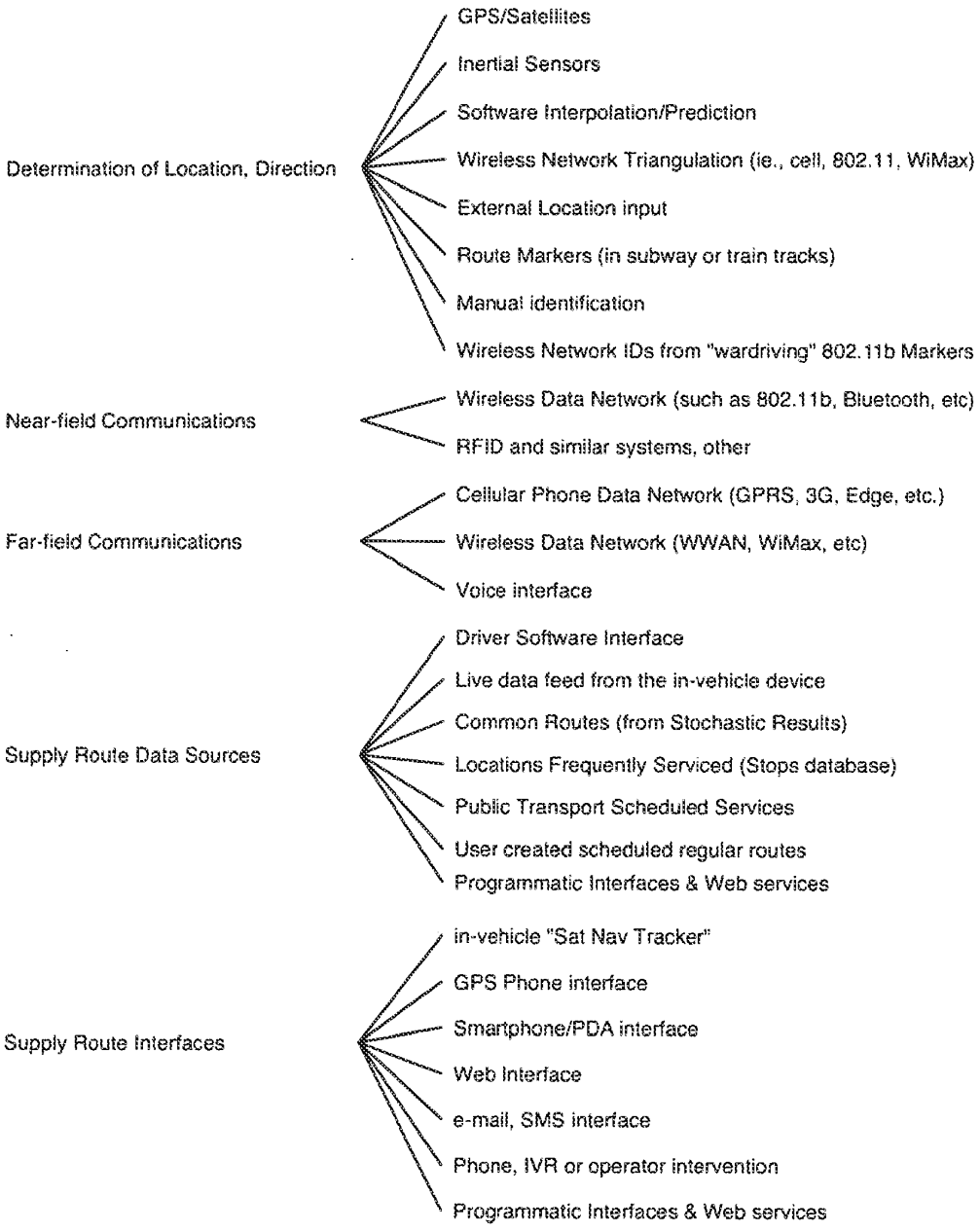


Figure 3. Rider Technology Components and Information Elements

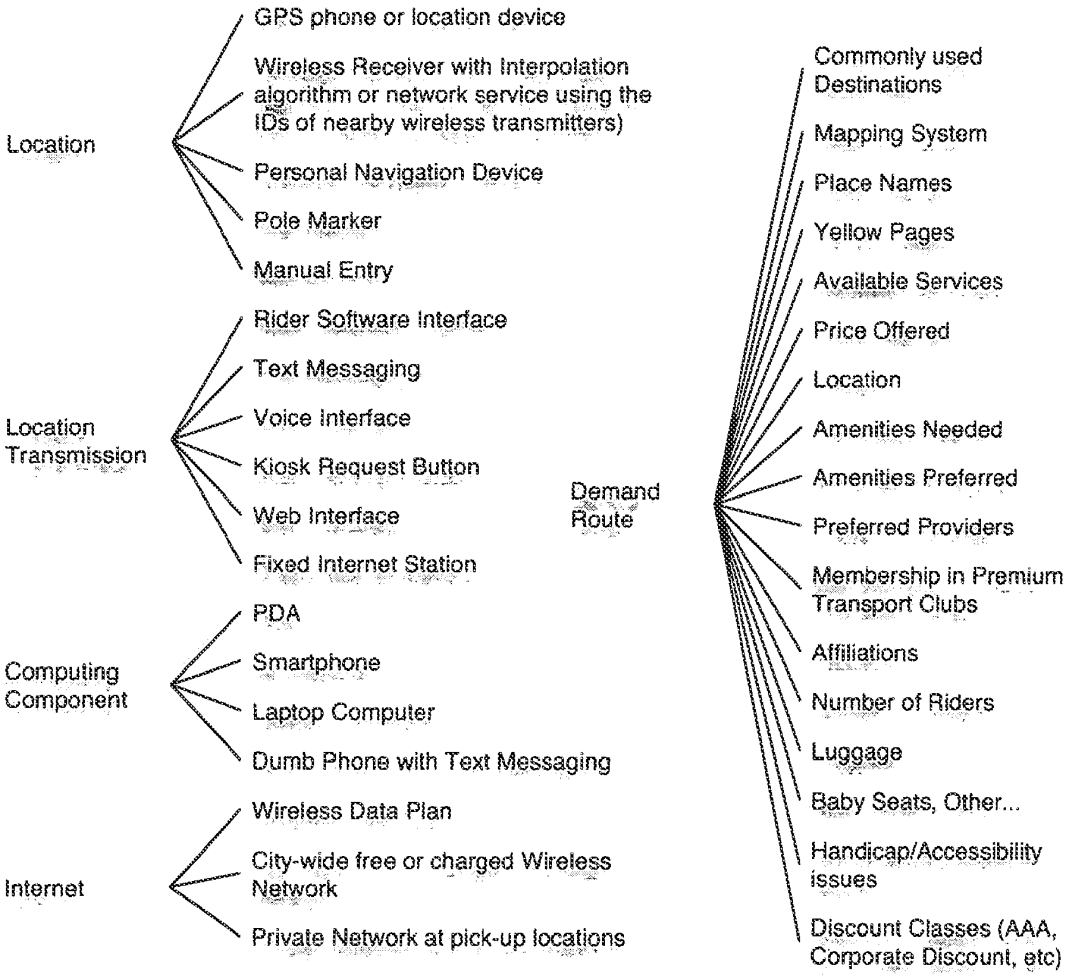
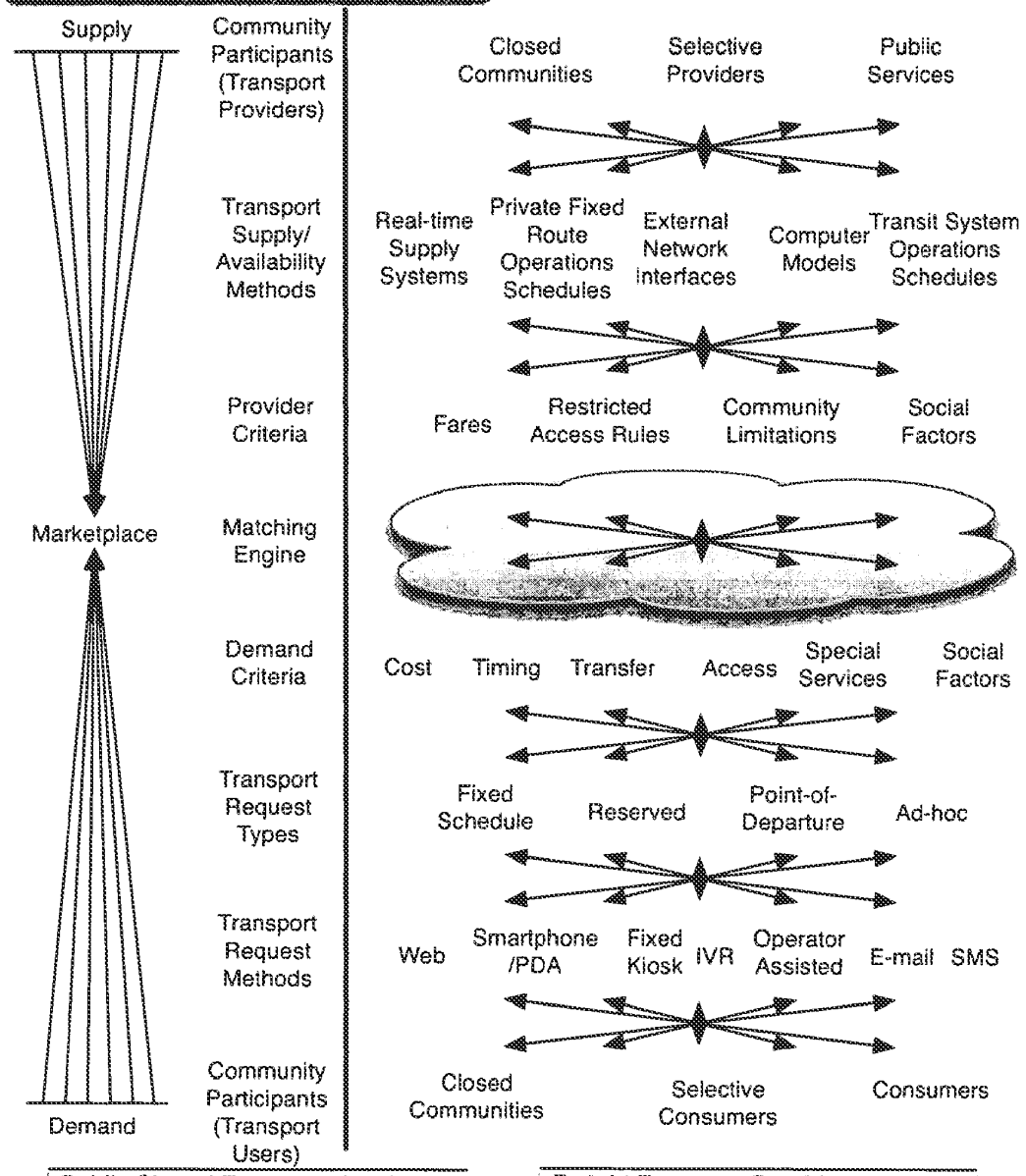


Figure 4. Shared Transport Marketplace



Public Shared Transport Providers
Bus Networks
Rail & Subway Networks
Jitney/Share Taxi Providers
Private Scheduled Service Bus

Freight Transport Providers
Private Package Transport Companies
National Postal Carriers
Independent Operators
Ad-hoc consumer

Closed Member Communities
School Bus Systems
Employee Shuttle Buses
Affiliations (social clubs, sports networks)

Dispatchable, non-Shared Transport
Taxi Companies
Private Hackney operators
Premium service transport operator

Figure 5a. Rider Experience Flowchart

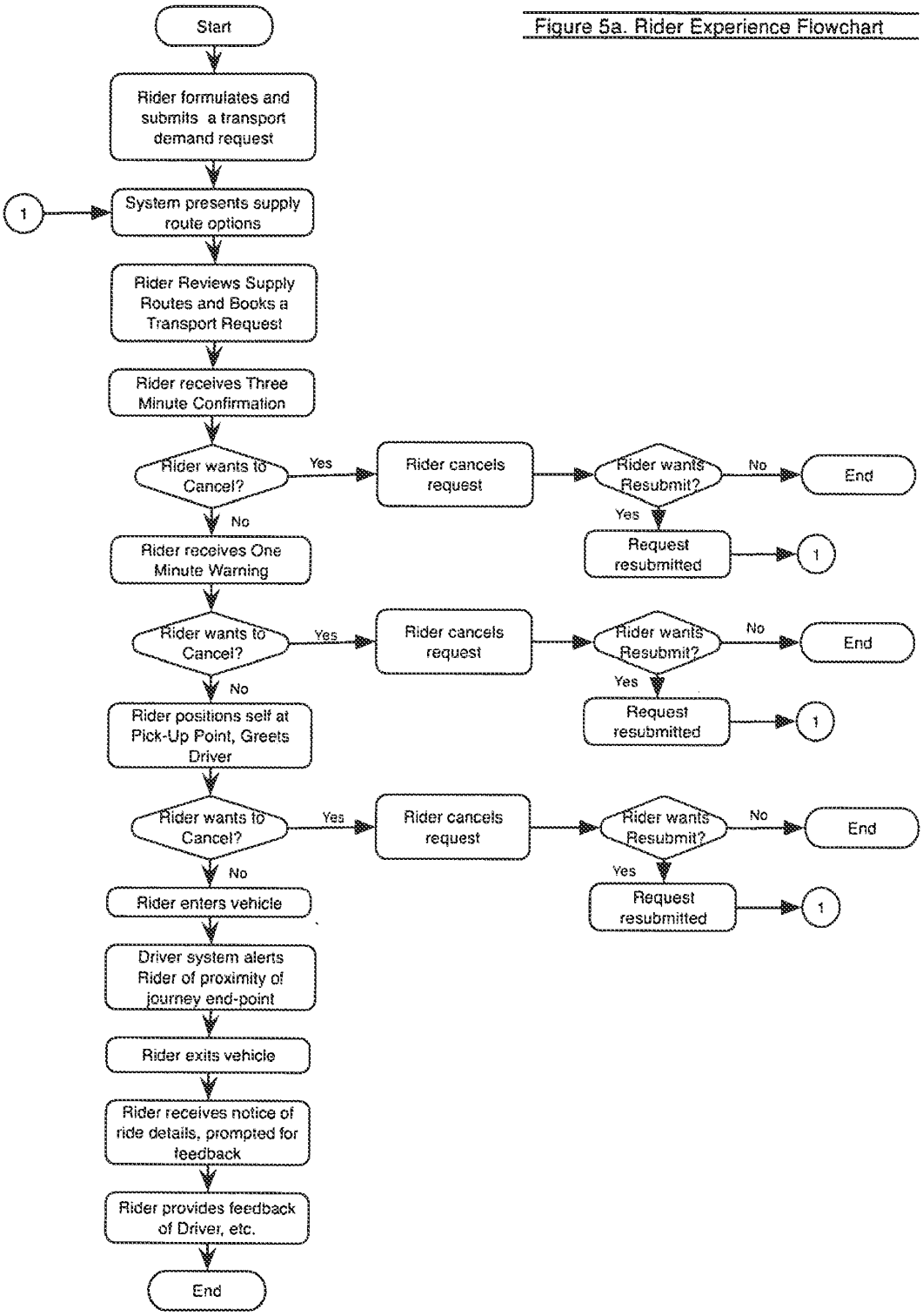
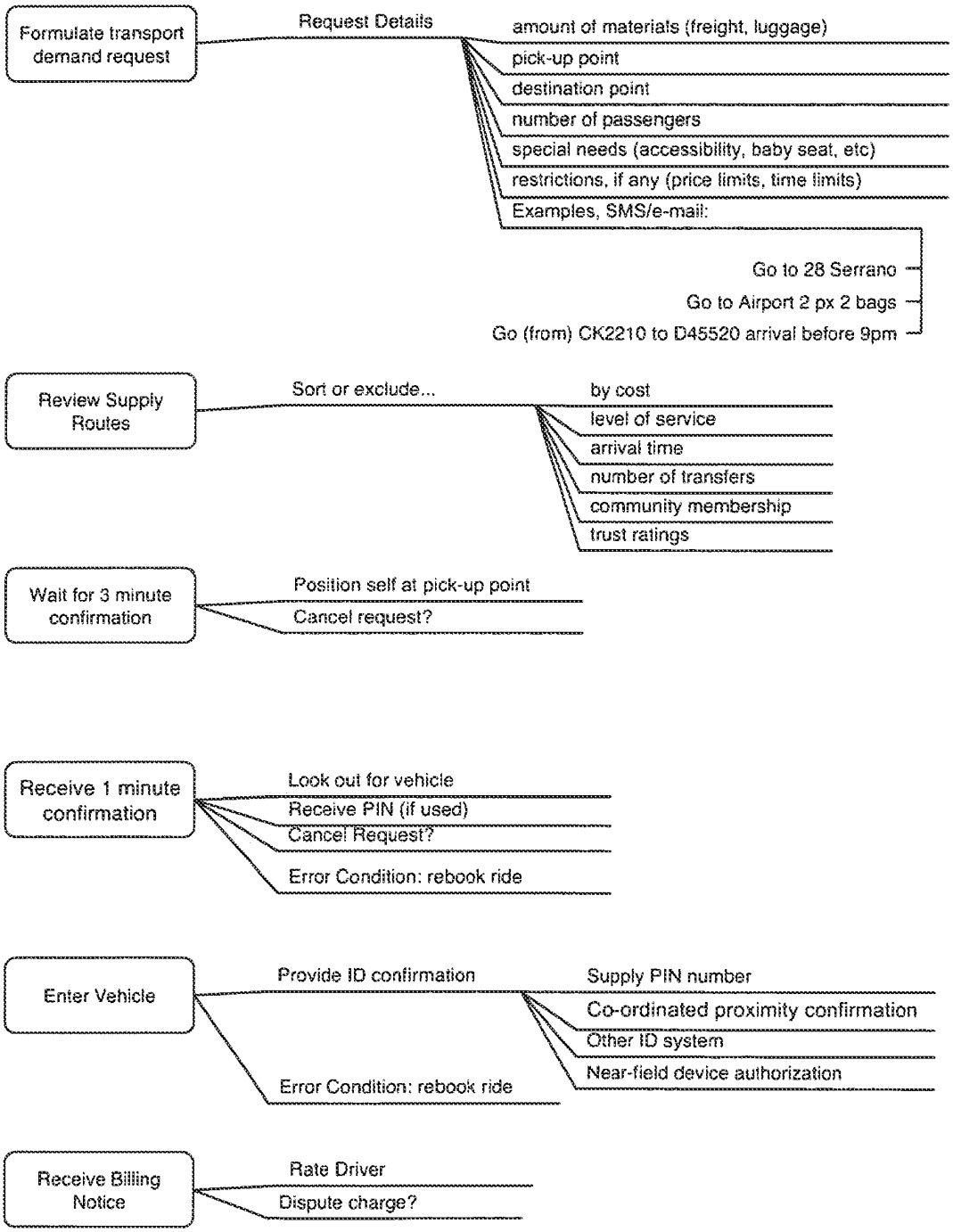


Figure 5b. Rider Experience, Functional Options Data and Action Details



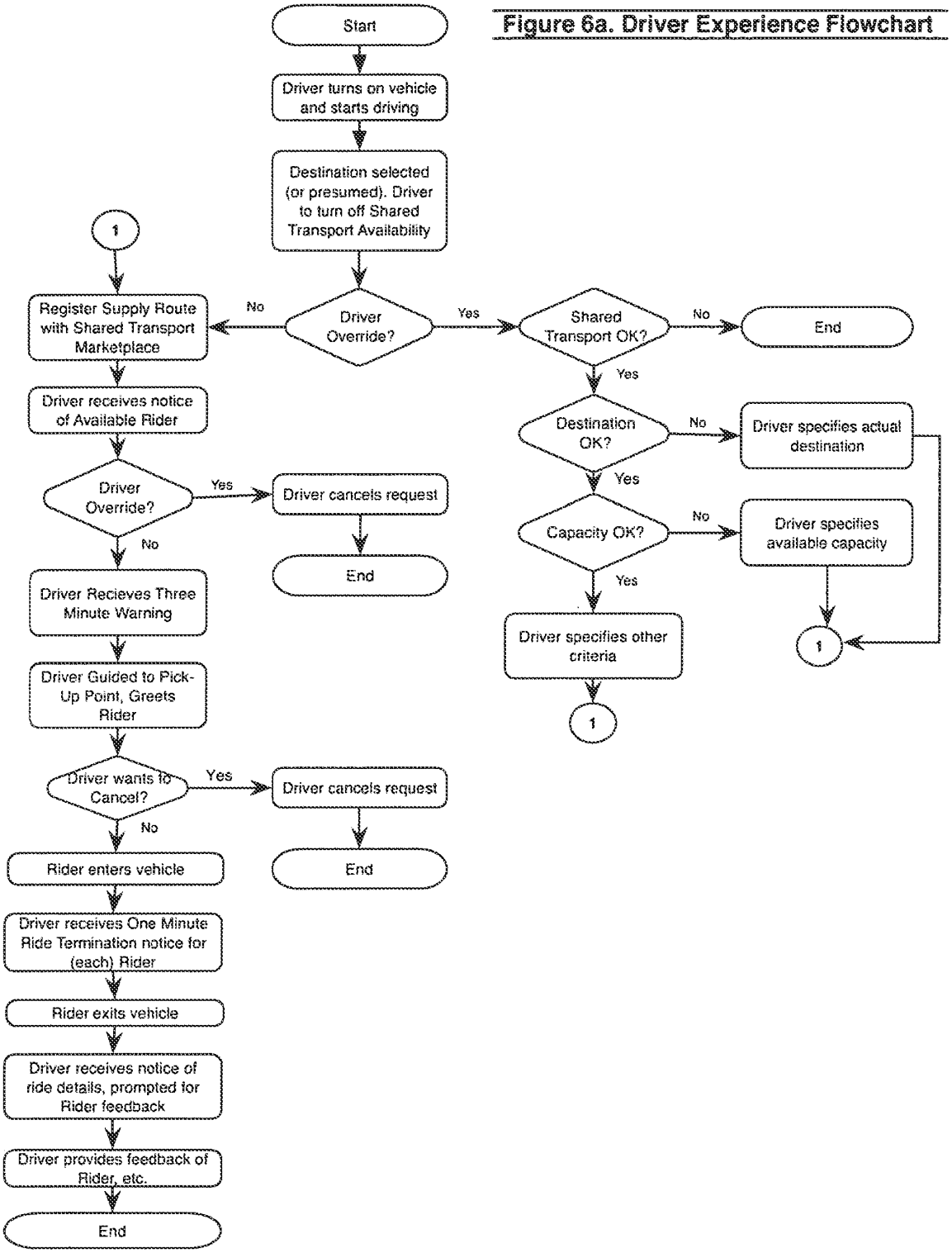
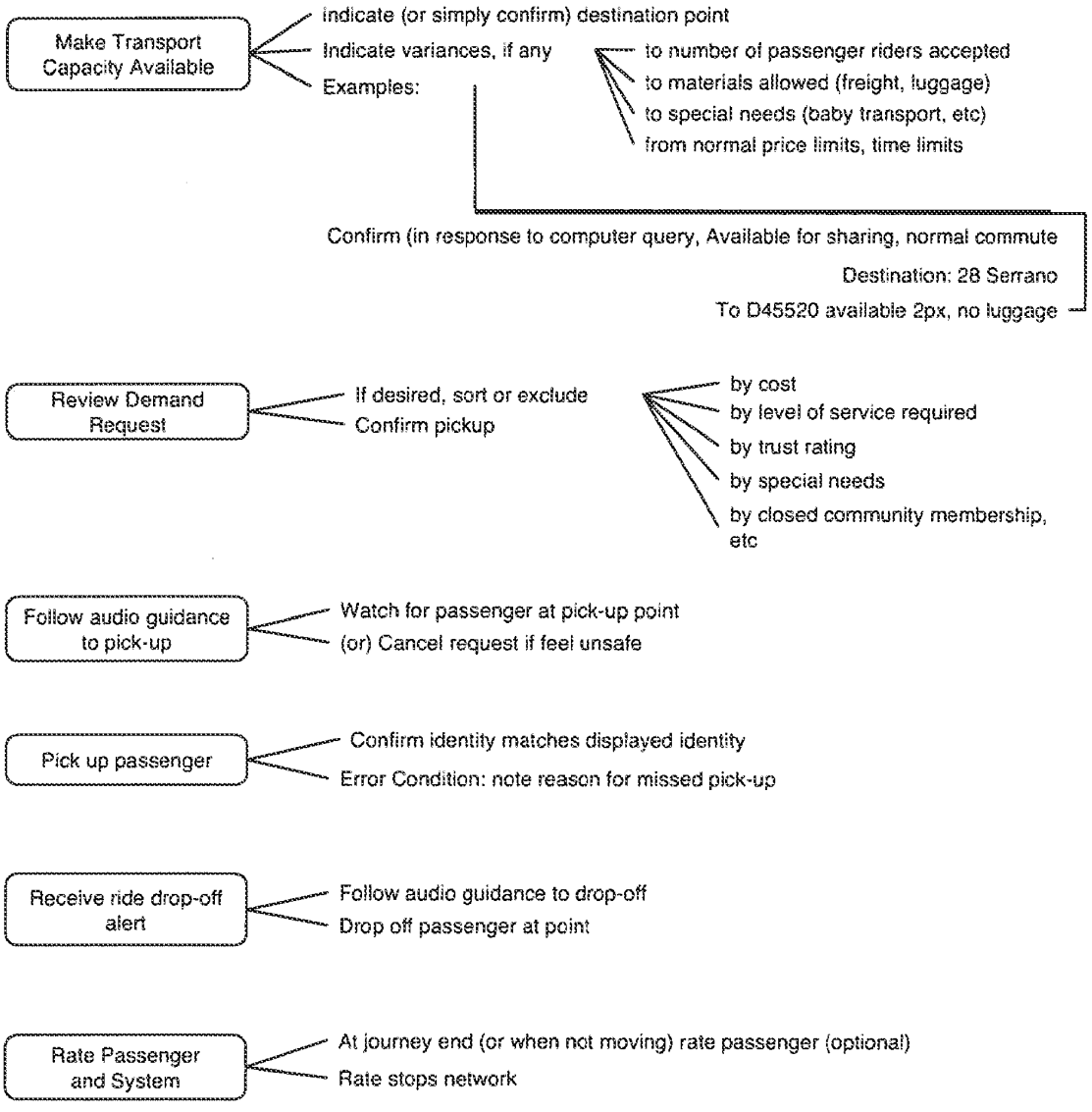
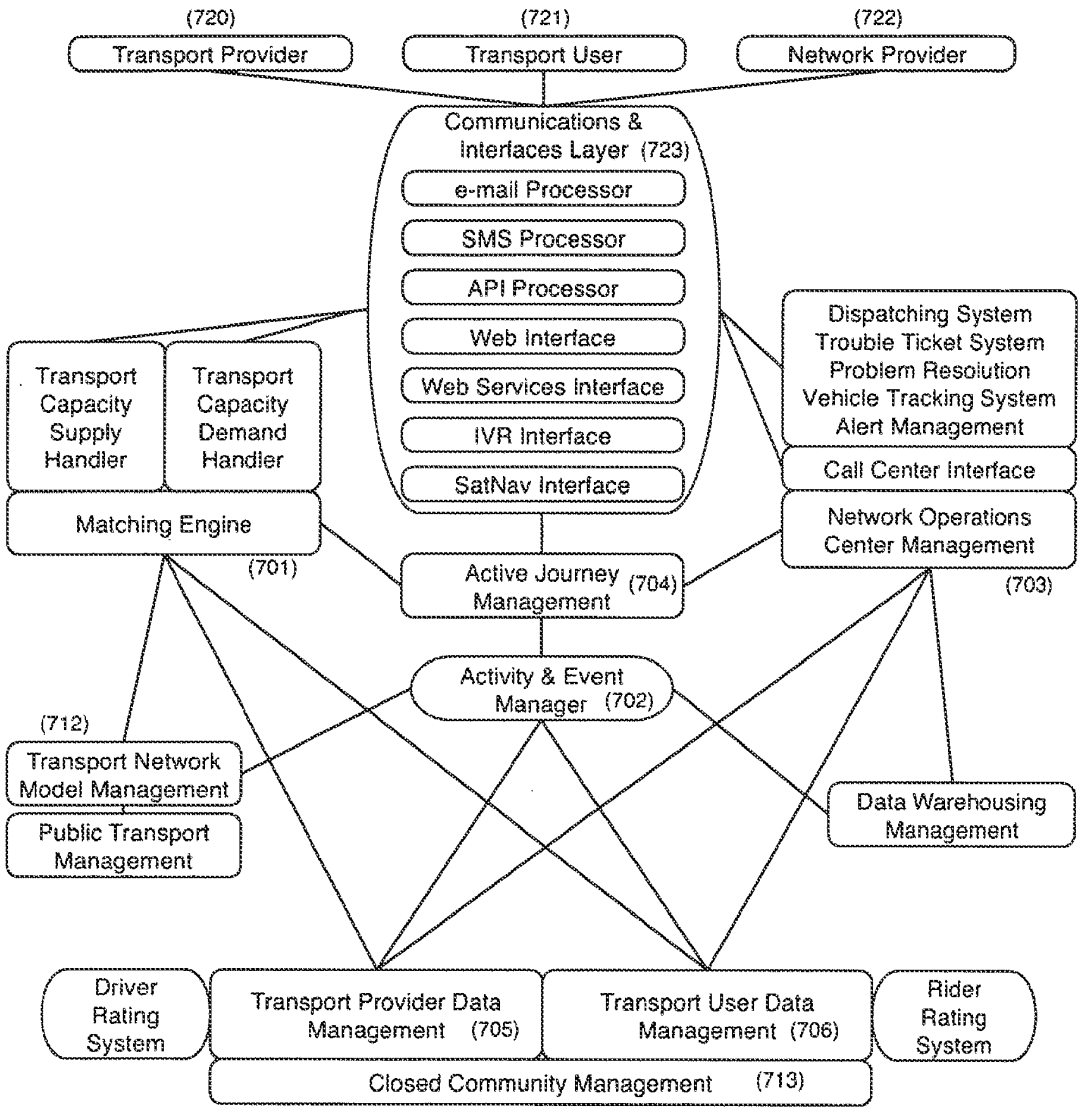


Figure 6a. Driver Experience Flowchart

Figure 6b. Driver Experience - Functional Options





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

Fig 7. Shared Transport Marketplace Server & Subsystems

Fig 8a. Driver Journey, on Street Network

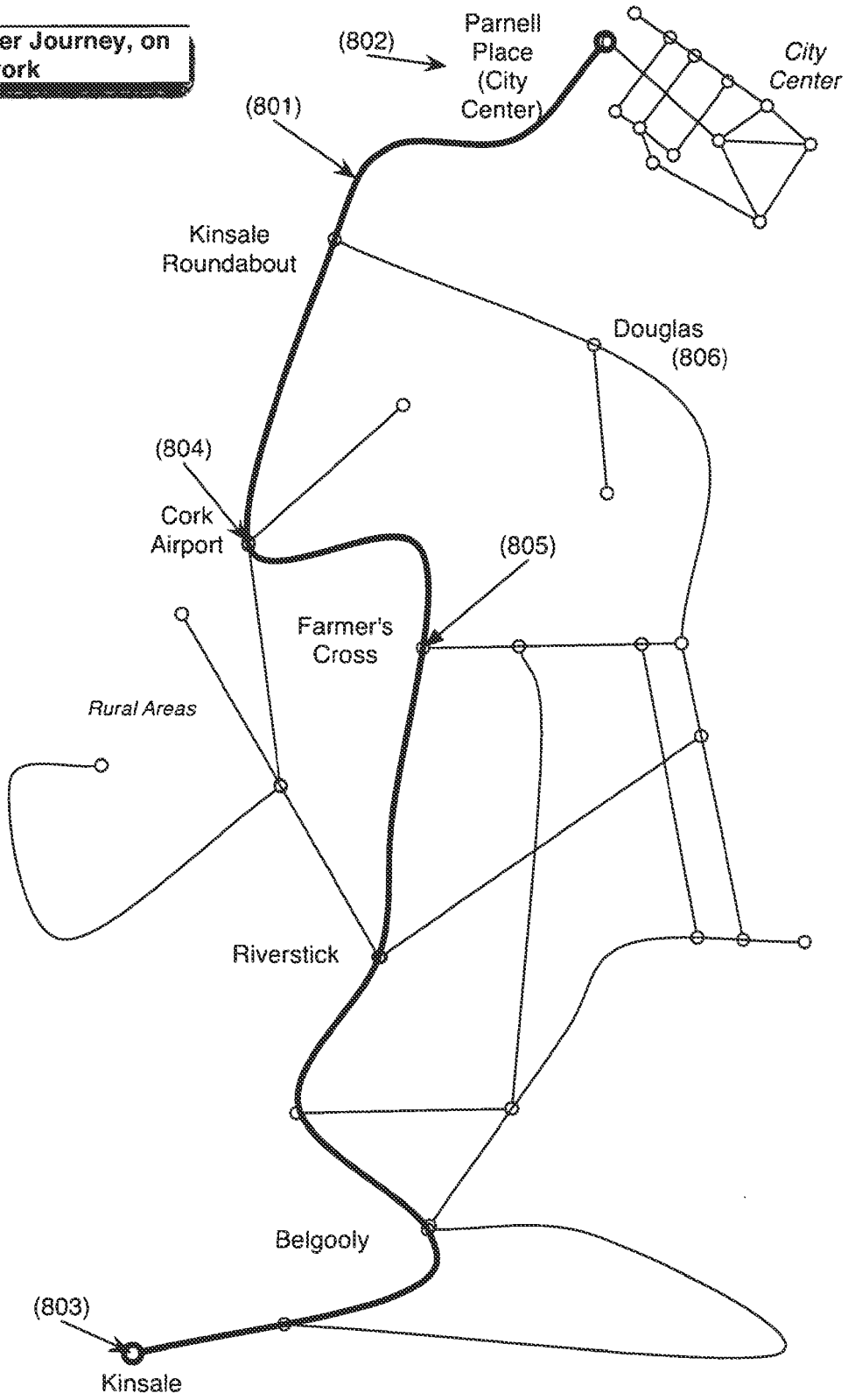


Fig 8b. Driver Journey Logical Characterization

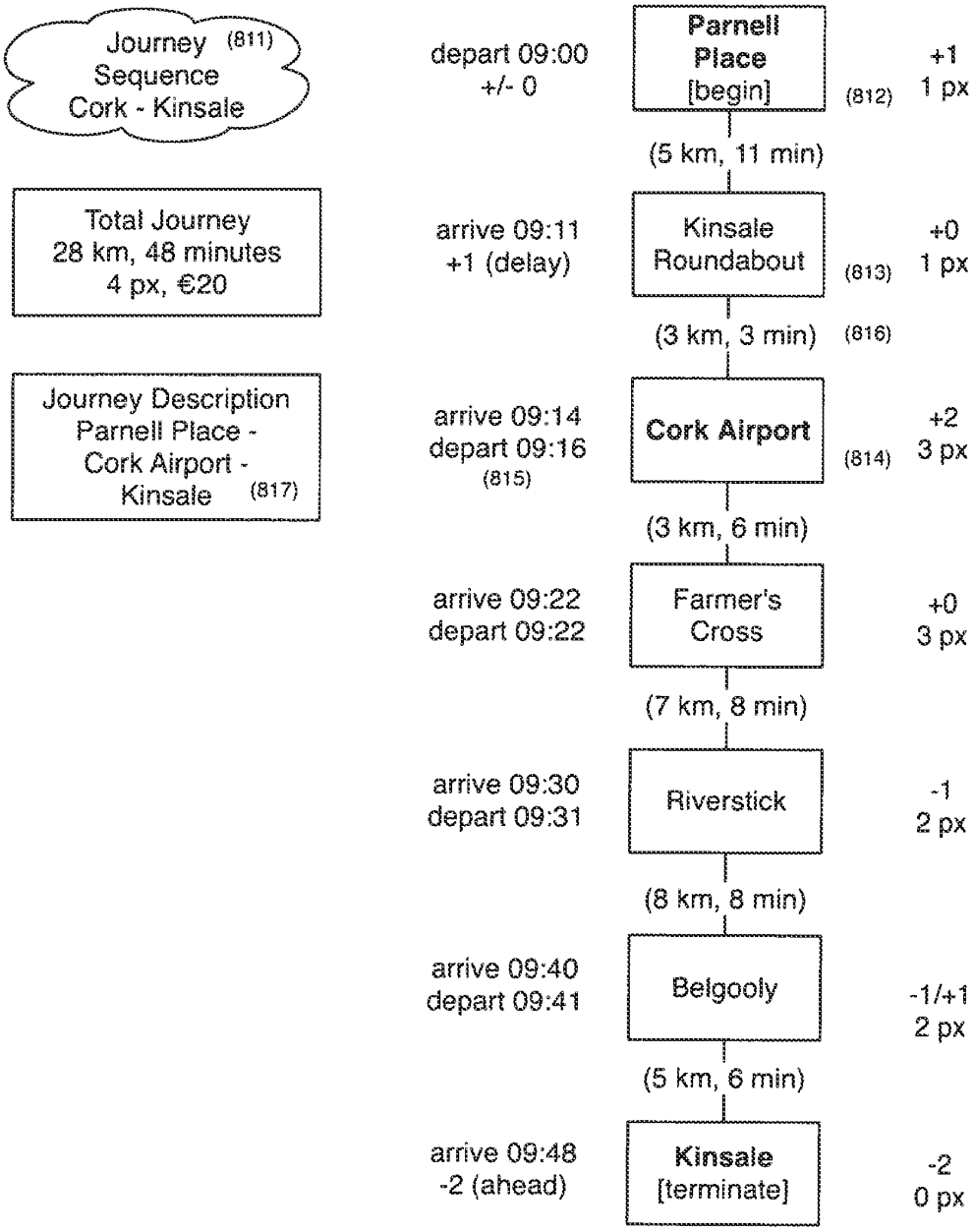


Fig 9a. Active Network, Geographical Representation

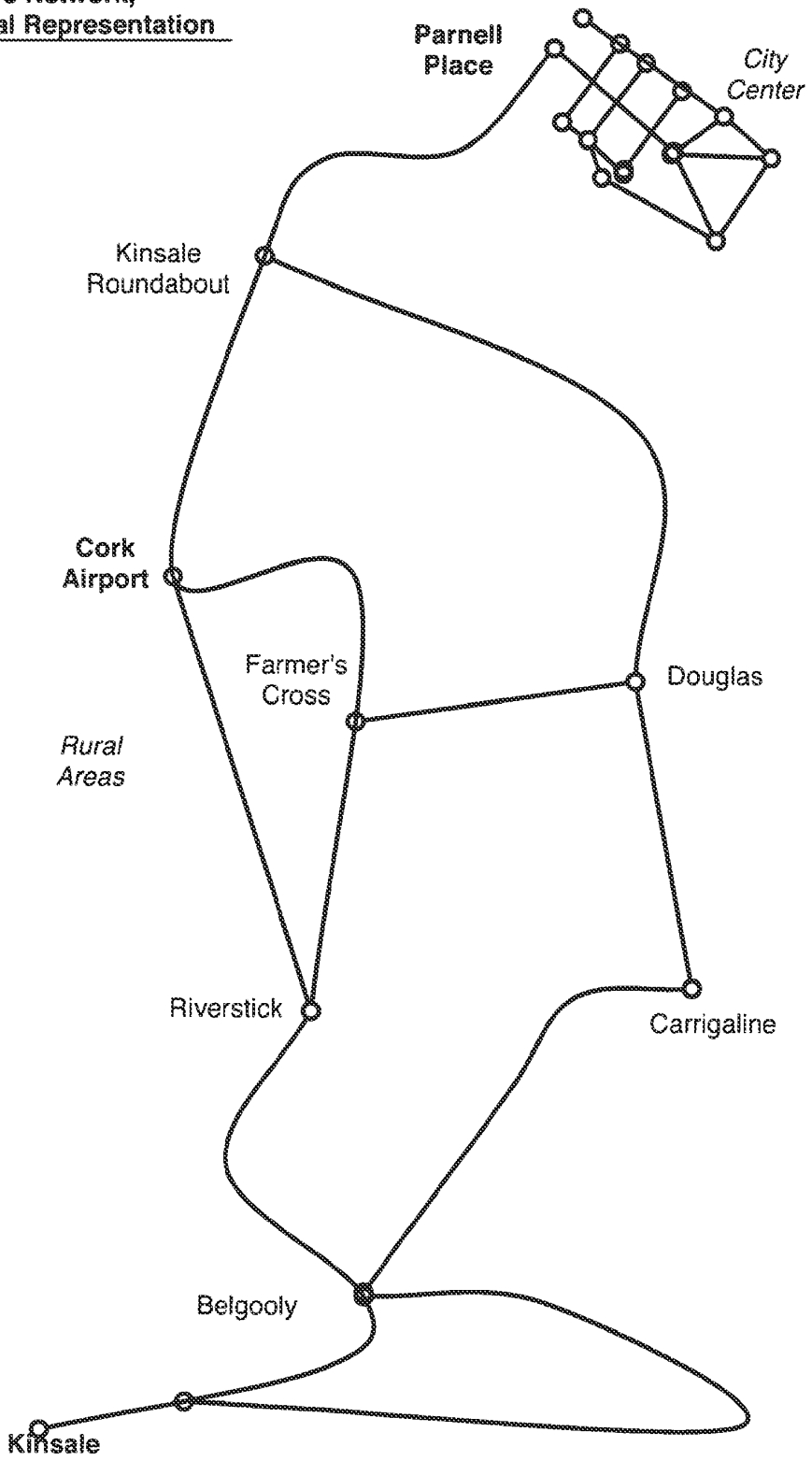


Figure 9b. Active Transport Network, Logical Presentation

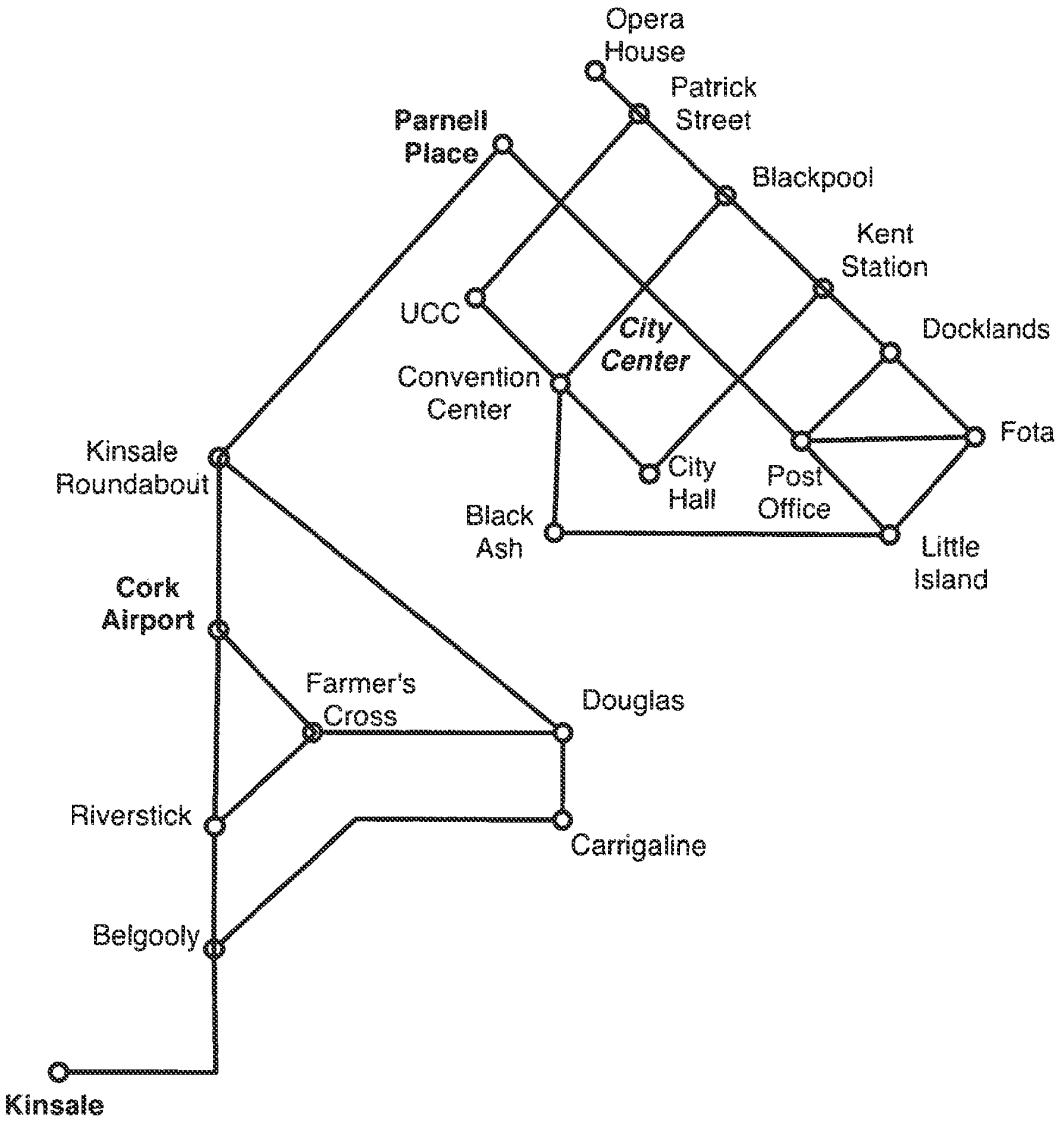
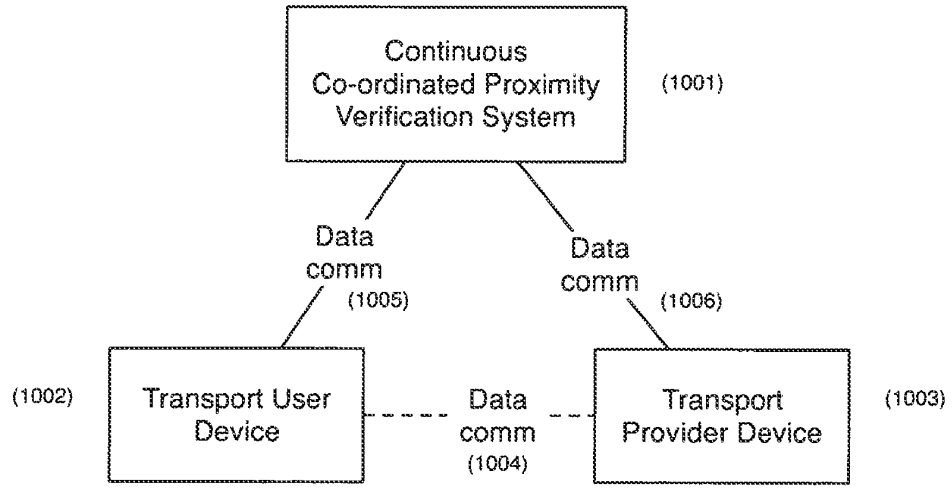


Figure 10a. Elements and communication channels for Continuous Co-ordinated Proximity by independent verification of position



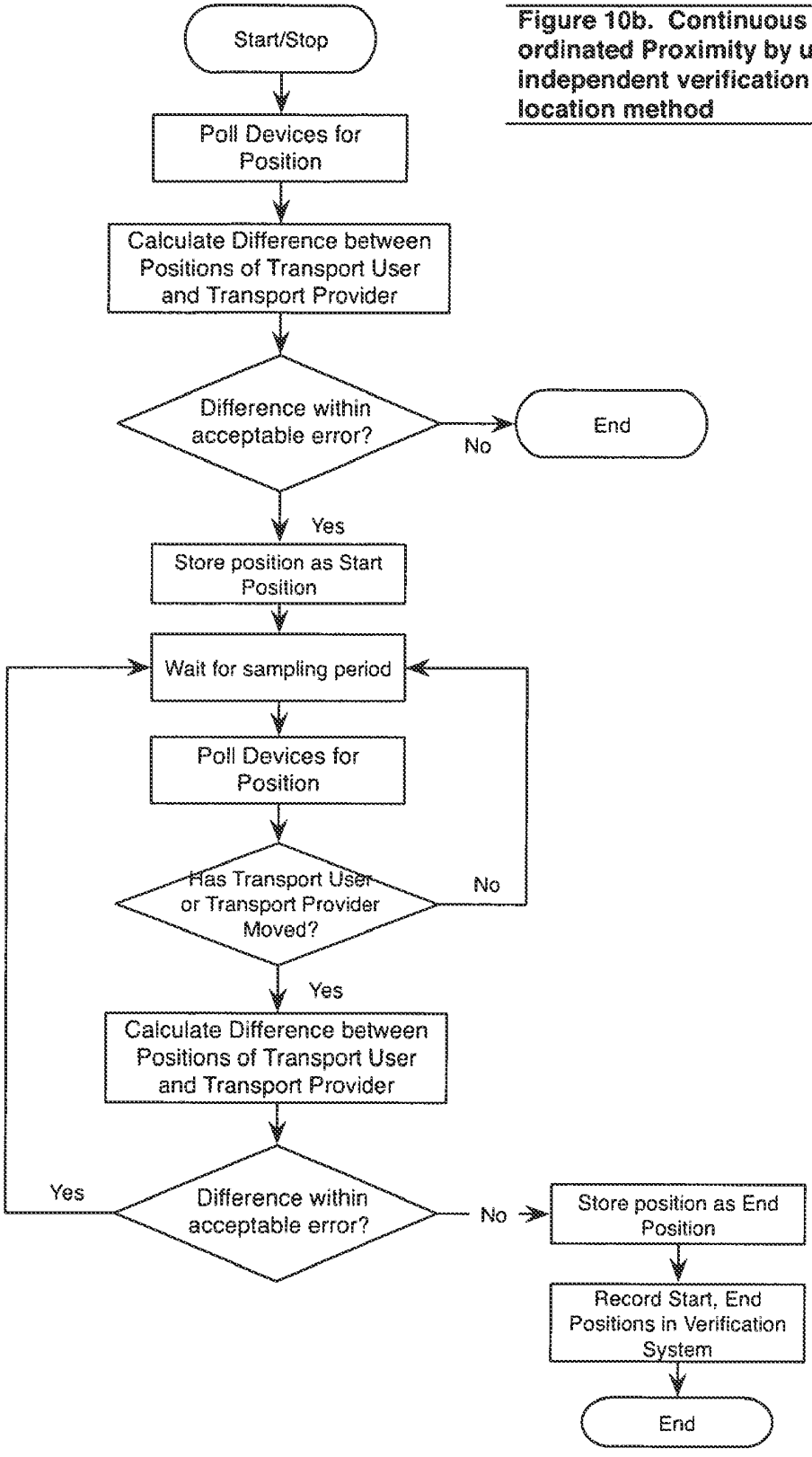
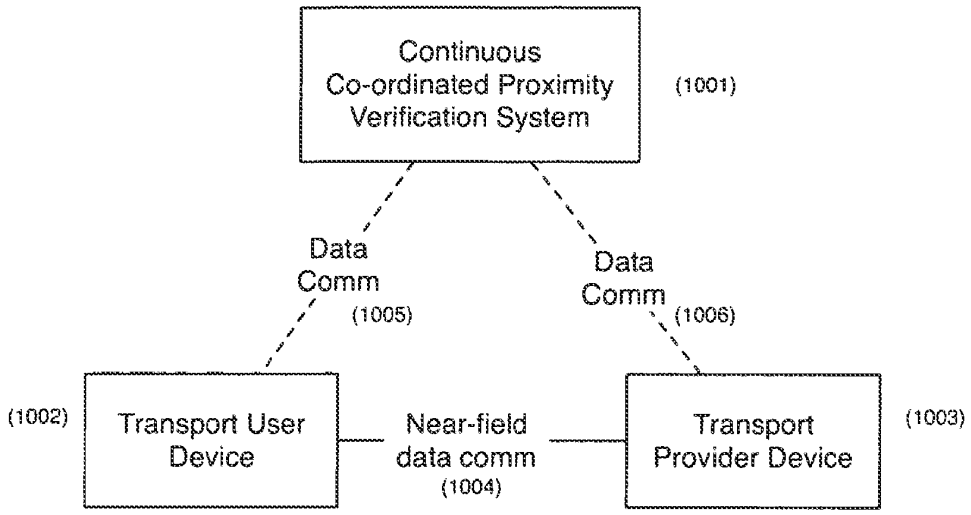


Figure 10b. Continuous Co-ordinated Proximity by using independent verification of location method

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



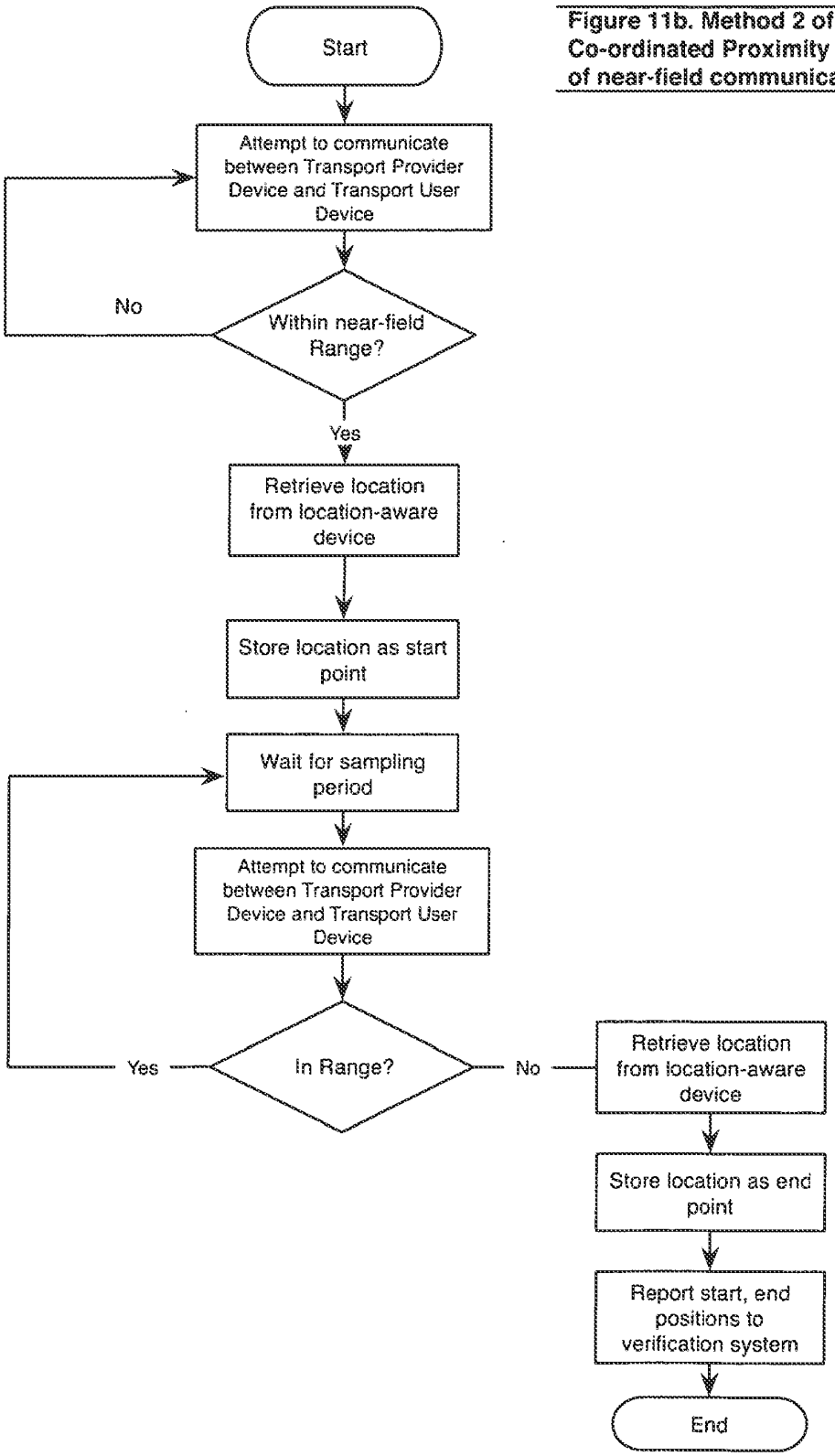


Figure 11b. Method 2 of Continuous Co-ordinated Proximity via verification of near-field communications link

Fig 12a. Access Control System

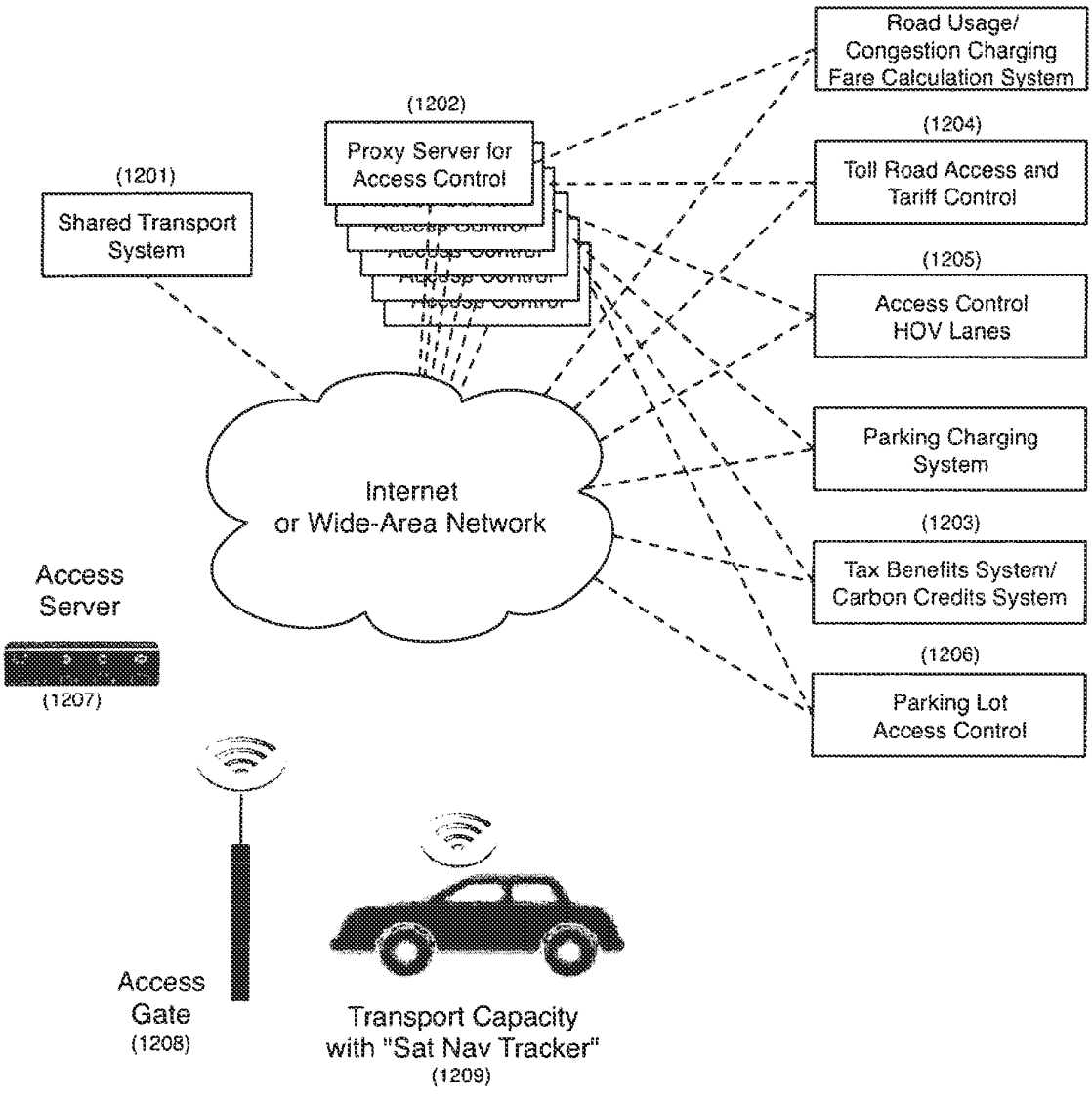


Fig 12b. Access Control System, Server Push Method, Server-side Logic

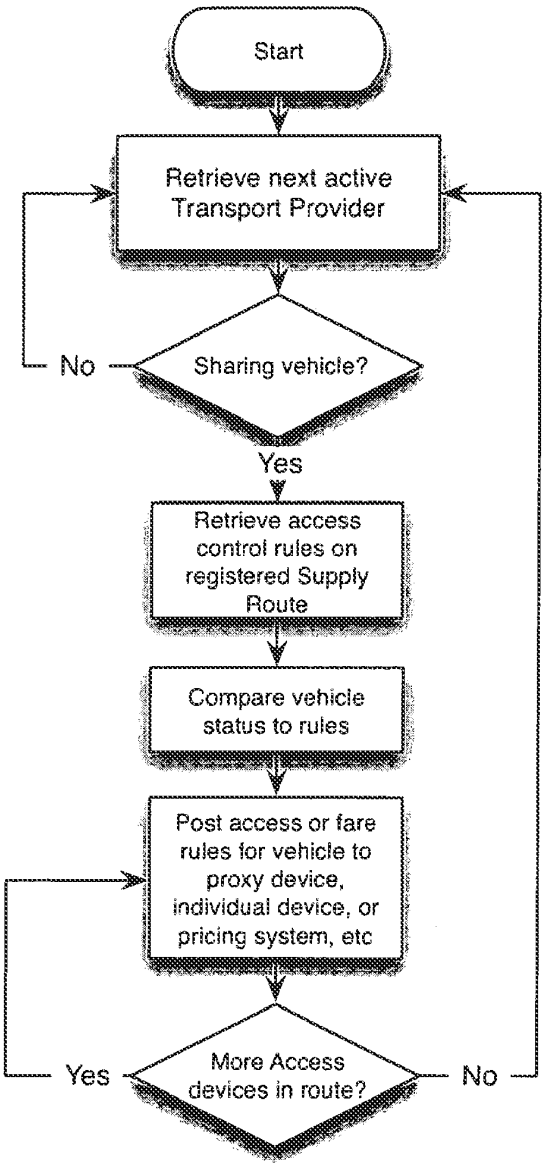


Fig 12c. Access Control System, Server Push Method, Client-side Logic

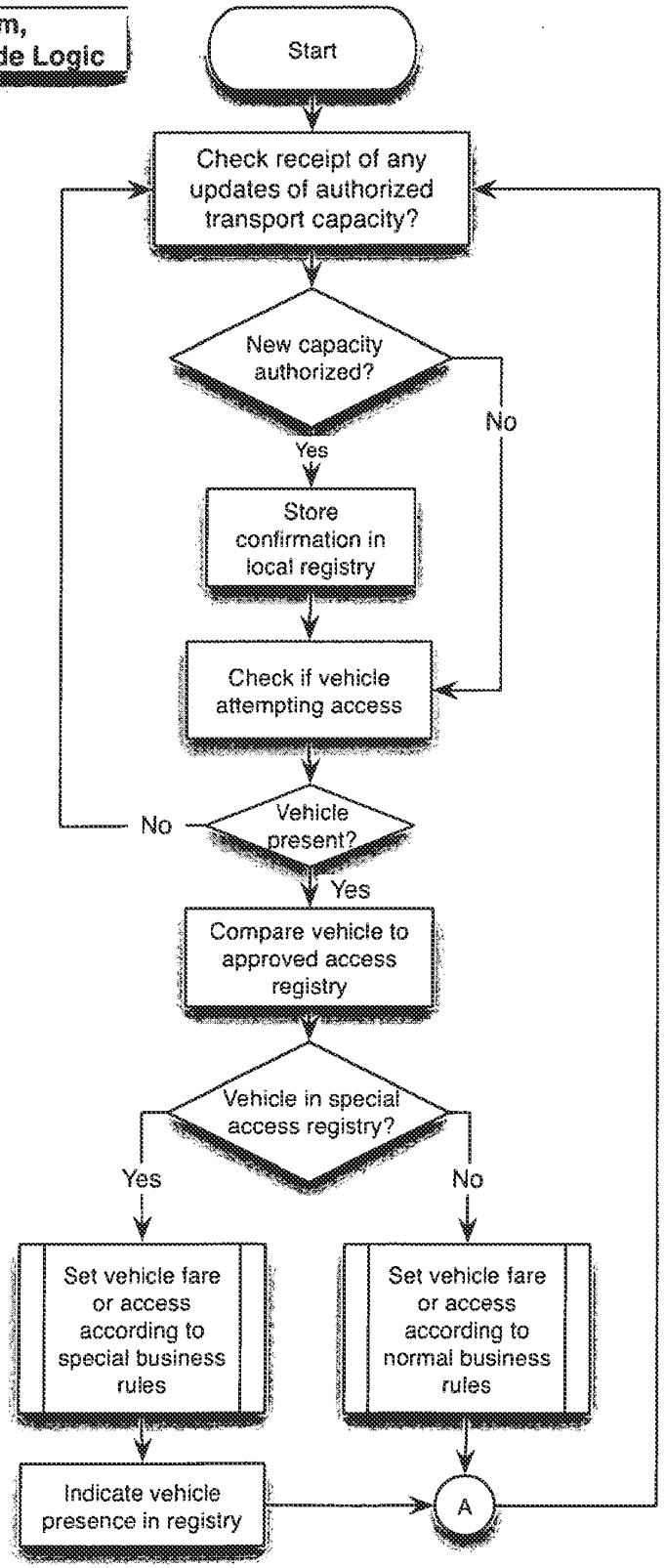


Fig 12d. Access Control System, Client Pull Method, Central Server-Side Logic

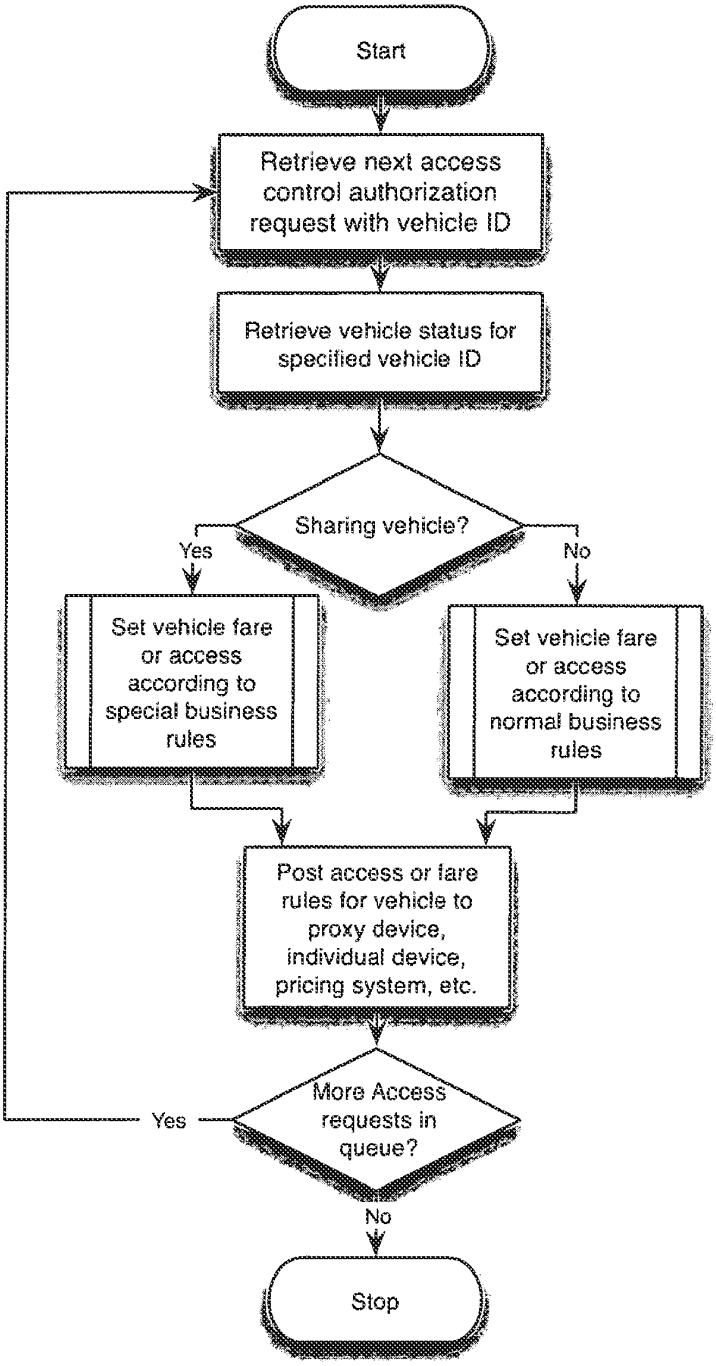


Fig 12e. Access Control System, Client Pull Method, Client-side Logic

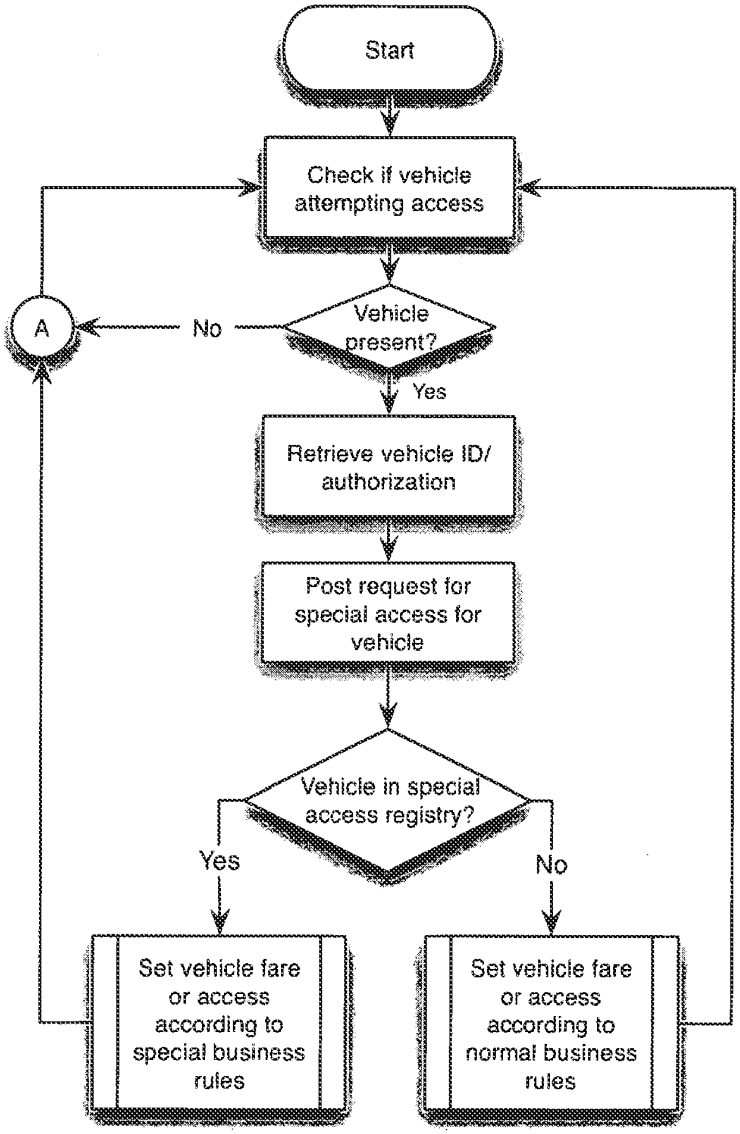


Fig 13. Transport Community Proxy Message Service

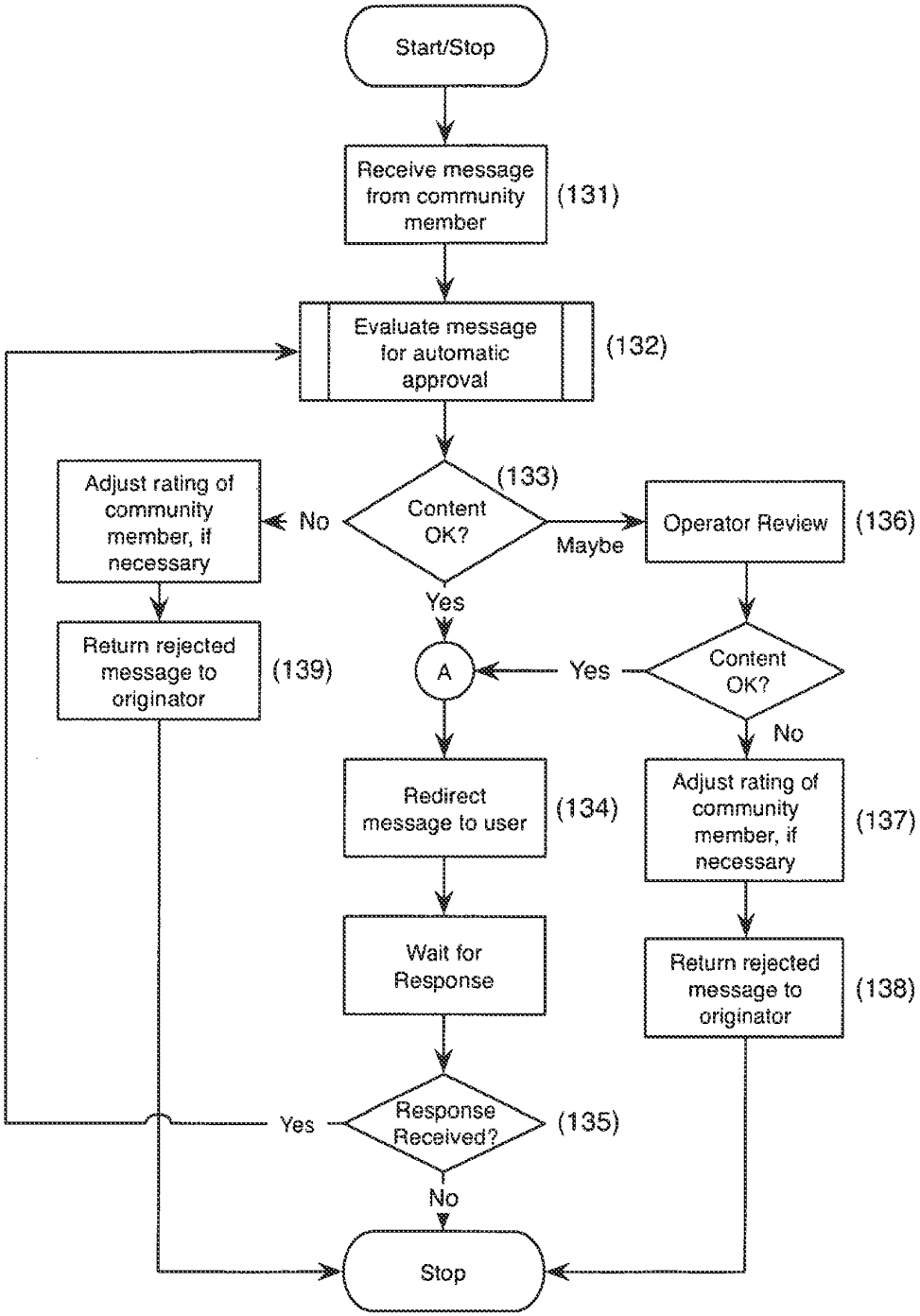


Figure 14a. Full Street, Active Capacity and Node Representation

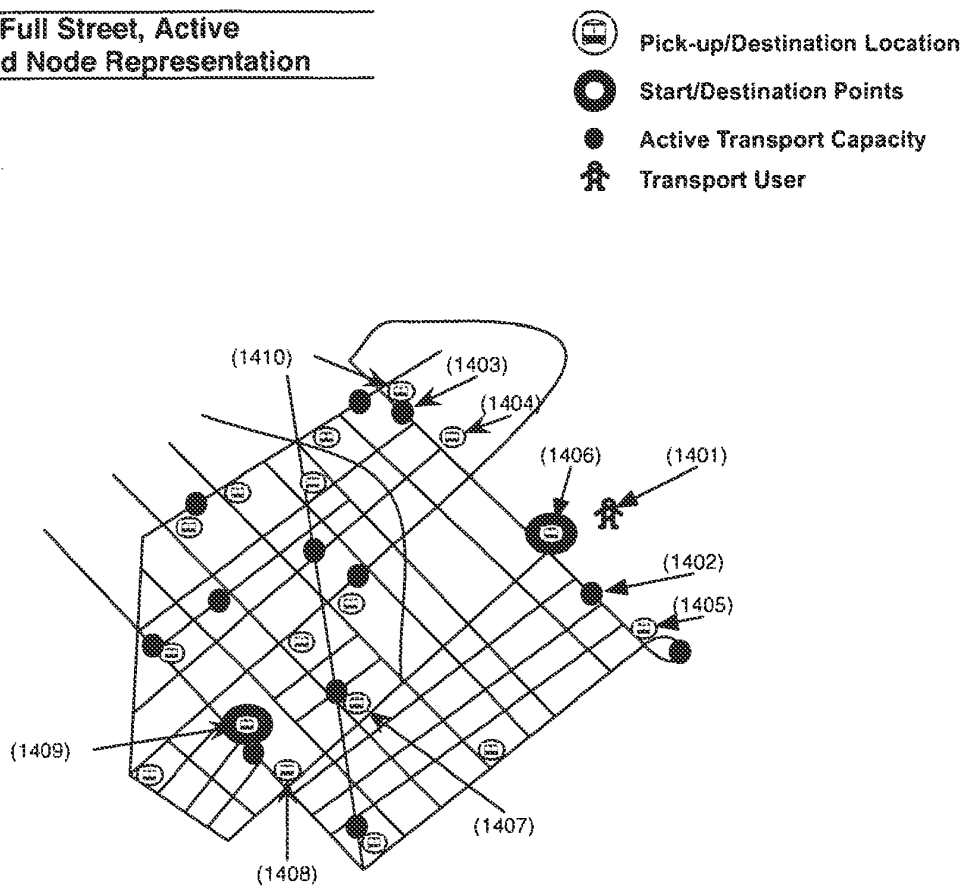


Figure 14b. Network, Active Street and Capacity Representation

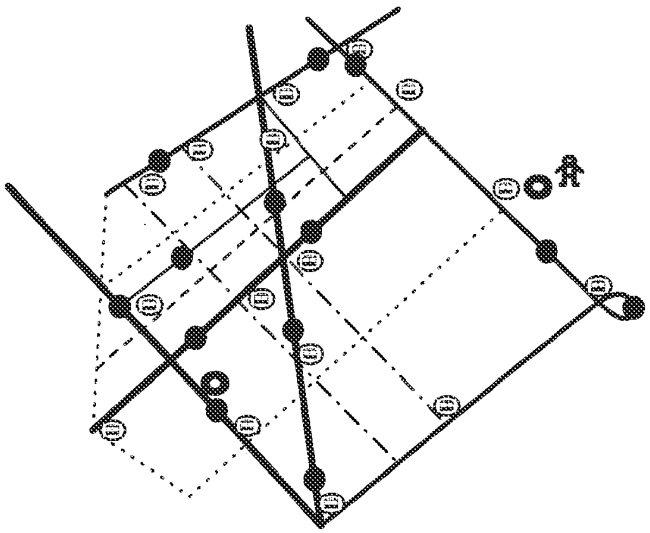


Figure 14c. Network, Active Zero Transfer Street and Capacity Representation from Specific Start Point

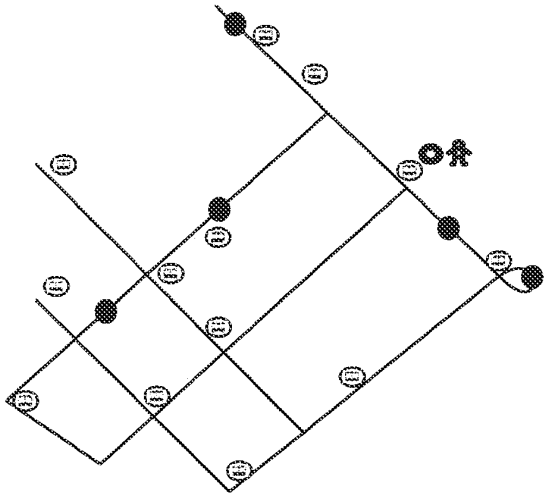


Figure 14d. Stochastic Network, Time of Day Capacity Representation

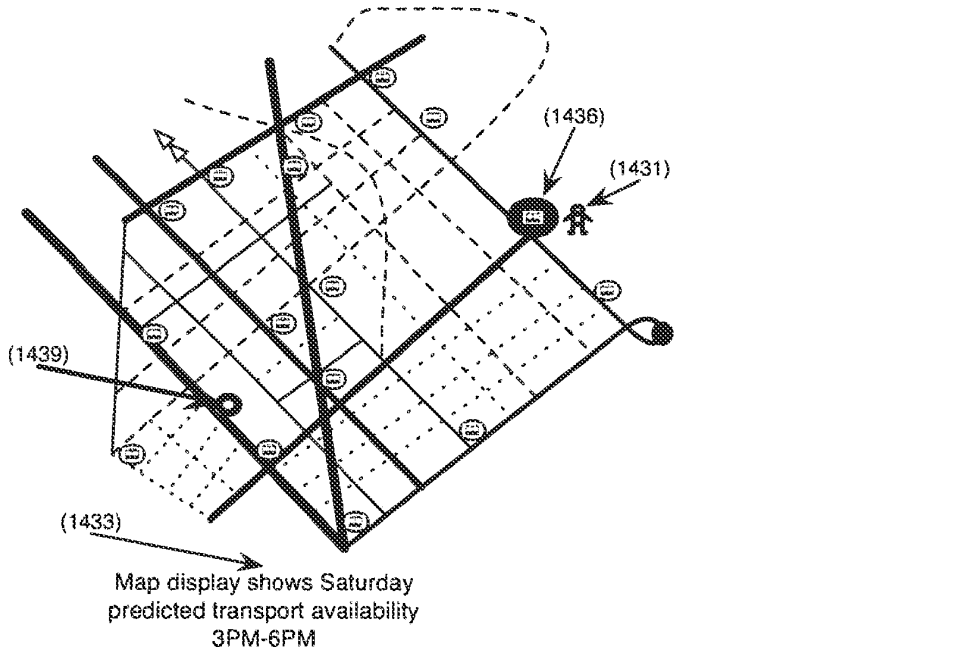


Figure 14e. Stochastic Network, Active Street and Capacity Representation, Specific Departure Point, Outbound

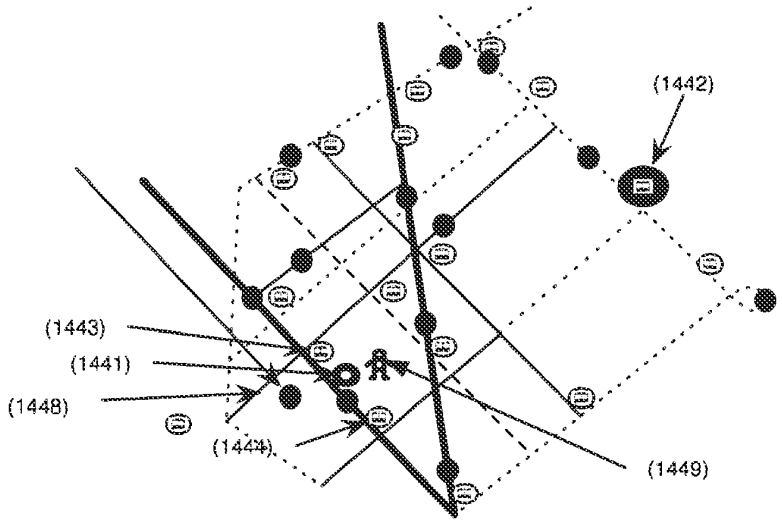


Figure 14f. Network, Wait time and Transfer Representation

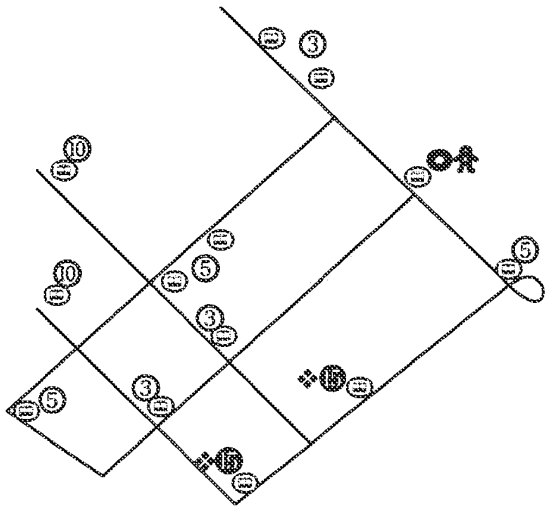


Figure 14g. Stochastic Network, Tabular Representation of Time of Day Capacity

(1471)

(1472)

Start Point: 2142 14th Ave;

Destination: 200 Broadway, Troy

(1475)

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

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

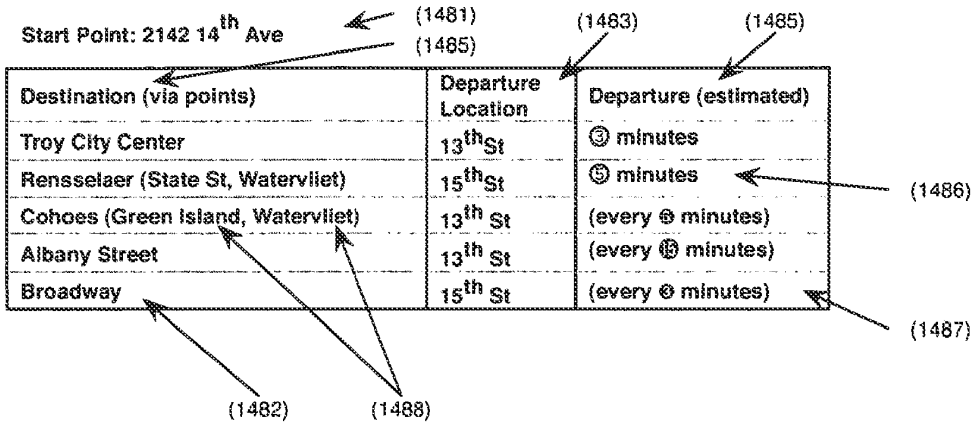


Figure 14i. Real-time Journey Planner for Shared Transport Network, Fixed Start & Destination Points, Tabular Representation

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

(1494) (1495) (1496) (1497)

Options (1493)	Departure / Arrival	Departure (estimated)	Cost	Arrival Time
Option 1: Shared Transport	Roseland Ave / 3rd Av & 32nd	③ minutes	$7.80	10:15 am
Option 2: Shared Transport + Path + Subway (1498)	Bloomfield Ave / Park Ave & 34th	(every ⑮ 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

PTO/AIA/01 (06-12)
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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.

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 inconvenient; 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 (CO_2 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 used 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 simulaneous 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, CO_2 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 allows 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 transpor 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 underutilitized 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 Fib 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.

Continous 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 continous 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 Portarlington 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.

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Application Number	Not Yet Assigned
Filing Date	Concurrently Herewith
First Named Inventor	Sean O'SULLIVAN
Title	SYSTEMS AND METHODS FOR MATCHING PICK-UP REQUESTS WITH TRANSPORT PROVIDERS, TRACKING TRIP PROGRESS, AND ENABLING PROVIDER RATINGS
Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned
Attorney Docket Number	00199-0001-25000

SIGNATURE of Applicant or Patent Practitioner

Signature	/Joel S. Simon/	Date (Optional)	2021-04-21
Name	Joel S. Simon	Registration Number	70271
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.

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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

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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)

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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		

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PATENT
Customer No. 108449
Attorney Docket No. 00199-0001-25000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re § 1.53(b) continuation application of U.S. Application No. 16/983,598:	
Sean O'SULLIVAN	Parent Art Unit: 2648
Application No.: Not Yet Assigned	Parent Examiner: Andrew Wendell
Filed: Herewith	Confirmation No.: Not Yet Assigned
For: SYSTEMS AND METHODS FOR MATCHING PICK-UP REQUESTS WITH TRANSPORT PROVIDERS, TRACKING TRIP PROGRESS, AND ENABLING PROVIDER RATINGS	***VIA EFS WEB***

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 19.

Attachments: Thirty-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 MATCHING PICK-UP REQUESTS WITH TRANSPORT PROVIDERS, TRACKING TRIP PROGRESS, AND ENABLING PROVIDER RATINGS - -

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. 16/983,598, filed August 3, 2020, which is a continuation of and claims the benefit of priority to U.S. Nonprovisional Patent Application No. 16/698,312, filed November 27, 2019, now U.S. Patent No. 10,748,420, issued August 18, 2020, which is a continuation of and claims the benefit of priority to U.S. Nonprovisional Patent Application No. 16/198,000, filed November 21, 2018, now U.S. Patent No. 10,593,206, issued March 17, 2020, 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. (Cancelled)

2. (New) A method implemented by at least one processor of a shared transport system, the method comprising:

receiving, from a transport user application operating on a transport user device corresponding to a transport user, a pick-up request for at least one person or item, the pick-up request identifying a pick-up location and a drop-off location for the at least one person or item;

identifying one or more transport providers available to service the pick-up request, based on information from a transport provider application operating on one or more transport provider devices corresponding to the identified one or more transport providers;

transmitting the pick-up request to a transport provider device corresponding to a transport provider, the transport provider being one of the identified one or more transport providers;

causing the transport provider device to display, via the transport provider application, one or more of the pick-up location or a transport user rating score associated with the transport user;

receiving an indication of an acceptance of the pick-up request;

causing the transport provider device to display, via the transport provider application, at least: (1) navigation instructions from a location of the transport provider to the pick-up location, the location determined based on GPS position data of the transport provider device; and (2) information descriptive of the at least one person or item;

causing the transport user device to display, via the transport user application:

information descriptive of one or more of the transport provider, a transport provider vehicle associated with the transport provider, or a transport provider rating score associated with the transport provider;

an estimated cost associated with servicing the pick-up request;

an estimated time associated with arrival of the at least one person or item at the drop-off location; and

location information of the transport provider based on the GPS position data of the transport provider device;

receiving an indication, based on the GPS position data of the transport provider device, that the transport provider is approaching the pick-up location;

in response to receiving the indication that the transport provider is approaching the pick-up location, causing the transport user device, via the transport user application, to display a notification indicative of the approaching transport provider;

receiving, from the transport provider device, an indication that the at least one person or item has been picked up;

causing the transport provider device, via the transport provider application, to display navigation directions to the drop-off location based on the GPS position data of the transport provider device;

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

tracking progress of travel of the transport provider along a route from the pick-up location to the drop-off location based on one or more of the GPS position data of the transport provider device or GPS position data of the transport user device;

receiving an indication that the transport provider has delivered the at least one person or item to the drop-off location from at least one of the transport provider device or the transport user device;

transmitting trip summary data associated with the pick-up request to the transport user device, the trip summary data displayable via the transport user application and including a cost for servicing the pick-up request and a transport provider rating prompt soliciting the transport user to provide a rating value for the transport provider;

receiving the rating value for the transport provider from the transport user device via the transport user application;

updating the transport provider rating score of the transport provider based on the received rating value for the transport provider; and

causing the cost for servicing the pick-up request to be charged to a payment method associated with the transport user.

3. (New) The method of claim 2, wherein:

the pick-up request is for at least one person; and

the method further comprises:

determining one or more of (i) whether the at least one person is remote from the pick-up location or (ii) whether an alternative pick-up location is located near the pick-up location; and

in response to determining one or more of that the at least one person is remote from the pick-up location or that an alternative pick-up location is located near the pick-up location, one or more of (i) modifying the pick-up location to be the alternative pick-up location, or (ii) causing the transport user device to display, via the transport user application, navigation directions to the pick-up location based on GPS position data of the transport user device.

4. (New) The method of claim 2, further comprising:

causing the transport provider device to display, via the transport provider application, an estimated time associated with arrival of the transport provider at the pick-up location.

5. (New) The method of claim 4, wherein the estimated time associated with arrival of the transport provider at the pick-up location includes one or more of an estimated

time of arrival of the transport provider at the pick-up location or an estimated time remaining until arrival of the transport provider at the pick-up location.

6. (New) The method of claim 2, further comprising:

causing at least one of the transport user device or the transport provider device to display, via the transport user application or the transport provider application, respectively, an interface configured to generate, transmit, and receive messages to and from an other of the at least one of the transport user device or the transport provider device, wherein contact information of the transport user and of the transport provider are anonymized.

7. (New) The method of claim 2, further comprising:

determining that the transport provider has failed to pick up the at least one person or item; and

in response to determining that the transport provider has failed to pick up the at least one person or item, re-allocating the pick-up request to a different transport provider so as to replace the transport provider with the different transport provider.

8. (New) The method of claim 2, further comprising:

monitoring the progress of travel of the transport provider along the route from the pick-up location to the drop-off location for anomalies, wherein the shared transport system is configured to transmit an anomaly notification to one or more of the transport user device, the transport provider device, or one or more devices associated with

safety personnel in response to detection of an anomaly in the progress of the travel of the transport provider.

9. (New) The method of claim 2, wherein the cost for servicing the pick-up request accounts for any tolls or fees encountered by the transport provider during the travel.

10. (New) The method of claim 2, wherein the indication of the acceptance of the pick-up request is one or more of received from transport user device, received from the transport provider device, or based on a determination of coordinated proximity between the transport user device and the transport provider device.

11. (New) The method of claim 2, further comprising:

transmitting a transport user rating prompt to the transport provider device, the transport user rating prompt soliciting the transport provider to provide a rating value for the transport user via the transport provider application;

receiving the rating value for the transport user from the transport provider device via the transport provider application; and

updating the transport user rating score of the transport user based on the received rating value for the transport user.

12. (New) A shared transport system, comprising:

a memory storing instructions; and

a processor operatively connected to the memory, and configured to execute the instructions to perform operations including:

receiving, from a transport user application operating on a transport user device corresponding to a transport user, a pick-up request for at least one person or item, the pick-up request identifying a pick-up location and a drop-off location for the at least one person or item;

identifying one or more transport providers available to service the pick-up request, based on information from a transport provider application operating on one or more transport provider devices corresponding to the identified one or more transport providers;

transmitting the pick-up request to a transport provider device corresponding to a transport provider, the transport provider being one of the identified one or more transport providers;

causing the transport provider device to display, via the transport provider application, one or more of the pick-up location or a transport user rating score associated with the transport user;

receiving an indication of an acceptance of the pick-up request;

causing the transport provider device to display, via the transport provider application, at least: (1) navigation instructions from a location of the transport provider to the pick-up location, the location determined based on GPS position

data of the transport provider device; and (2) information descriptive of the at least one person or item;

causing the transport user device to display, via the transport user application:

information descriptive of one or more of the transport provider, a transport provider vehicle associated with the transport provider, or a transport provider rating score associated with the transport provider;

an estimated cost associated with servicing the pick-up request;

an estimated time associated with arrival of the at least one person or item at the drop-off location; and

location information of the transport provider based on the GPS position data of the transport provider device;

receiving an indication, based on the GPS position data of the transport provider device, that the transport provider is approaching the pick-up location;

in response to receiving the indication that the transport provider is approaching the pick-up location, causing the transport user device, via the transport user application, to display a notification indicative of the approaching transport provider;

receiving, from the transport provider device, an indication that the at least one person or item has been picked up;

causing the transport provider device, via the transport provider application, to display navigation directions to the drop-off location based on the GPS position data of the transport provider device;

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

tracking progress of travel of the transport provider along a route from the pick-up location to the drop-off location based on one or more of the GPS position data of the transport provider device or GPS position data of the transport user device;

receiving an indication that the transport provider has delivered the at least one person or item to the drop-off location from at least one of the transport provider device or the transport user device;

transmitting trip summary data associated with the pick-up request to the transport user device, the trip summary data displayable via the transport user application and including a cost for servicing the pick-up request and a transport provider rating prompt soliciting the transport user to provide a rating value for the transport provider;

receiving the rating value for the transport provider from the transport user device via the transport user application;

updating the transport provider rating score of the transport provider based on the received rating value for the transport provider; and

causing the cost for servicing the pick-up request to be charged to a payment method associated with the transport user.

13. (New) The system of claim 12, wherein:

the pick-up request is for at least one person; and

the operations further include:

determining one or more of (i) whether the at least one person is remote from the pick-up location or (ii) whether an alternative pick-up location is located near the pick-up location; and

in response to determining one or more of that the at least one person is remote from the pick-up location or that an alternative pick-up location is located near the pick-up location, one or more of (i) modifying the pick-up location to be the alternative pick-up location, or (ii) causing the transport user device to display, via the transport user application, navigation directions to the pick-up location based on GPS position data of the transport user device.

14. (New) The system of claim 12, wherein:

the operations further include causing the transport provider device to display, via the transport provider application, an estimated time associated with arrival of the transport provider at the pick-up location; and

the estimated time associated with arrival of the transport provider at the pick-up location includes one or more of an estimated time of arrival of the transport provider at the pick-up location or an estimated time remaining until arrival of the transport provider at the pick-up location.

15. (New) The system of claim 12, wherein the operations further include:

causing at least one of the transport user device or the transport provider device to display, via the transport user application or the transport provider application, respectively, an interface configured to generate, transmit, and receive messages to and from an other of the at least one of the transport user device or the transport provider device, wherein contact information of the transport user and of the transport provider are anonymized.

16. (New) The system of claim 12, wherein the operations further include:

determining that the transport provider has failed to pick up the at least one person or item; and

in response to determining that the transport provider has failed to pick up the at least one person or item, re-allocating the pick-up request to a different transport provider so as to replace the transport provider with the different transport provider.

17. (New) The system of claim 12, wherein the operations further include:

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

18. (New) The system of claim 12, wherein the cost for servicing the pick-up request accounts for any tolls or fees encountered by the transport provider during the travel.

19. (New) The system of claim 12, wherein the indication of the acceptance of the pick-up request is one or more of received from transport user device, received from the transport provider device, based on a determination of coordinated proximity between the transport user device and the transport provider device.

20. (New) A non-transitory computer readable medium comprising instructions that are executable by a processor to perform operations including:

receiving, from a transport user application operating on a transport user device corresponding to a transport user, a pick-up request for at least one person or item, the pick-up request identifying a pick-up location and a drop-off location for the at least one person or item;

identifying one or more transport providers available to service the pick-up request, based on information from a transport provider application operating on one or more transport provider devices corresponding to the identified one or more transport providers;

transmitting the pick-up request to a transport provider device corresponding to a transport provider, the transport provider being one of the identified one or more transport providers;

causing the transport provider device to display, via the transport provider application, one or more of the pick-up location or a transport user rating score associated with the transport user;

receiving an indication of an acceptance of the pick-up request;

causing the transport provider device to display, via the transport provider application, at least: (1) navigation instructions from a location of the transport provider to the pick-up location, the location determined based on GPS position data of the transport provider device; and (2) information descriptive of the at least one person or item;

causing the transport user device to display, via the transport user application:

information descriptive of one or more of the transport provider, a transport provider vehicle associated with the transport provider, or a transport provider rating score associated with the transport provider;

an estimated cost associated with servicing the pick-up request;

an estimated time associated with arrival of the at least one person or item at the drop-off location; and

location information of the transport provider based on the GPS position data of the transport provider device;

receiving an indication, based on the GPS position data of the transport provider device, that the transport provider is approaching the pick-up location;

in response to receiving the indication that the transport provider is approaching the pick-up location, causing the transport user device, via the transport user application, to display a notification indicative of the approaching transport provider;

receiving, from the transport provider device, an indication that the at least one person or item has been picked up;

causing the transport provider device, via the transport provider application, to display navigation directions to the drop-off location based on the GPS position data of the transport provider device;

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

tracking progress of travel of the transport provider along a route from the pick-up location to the drop-off location based on one or more of the GPS position data of the transport provider device or GPS position data of the transport user device;

receiving an indication that the transport provider has delivered the at least one person or item to the drop-off location from at least one of the transport provider device or the transport user device;

transmitting trip summary data associated with the pick-up request to the transport user device, the trip summary data displayable via the transport user application and including a cost for servicing the pick-up request and a transport provider rating prompt soliciting the transport user to provide a rating value for the transport provider;

receiving the rating value for the transport provider from the transport user device via the transport user application;

updating the transport provider rating score of the transport provider based on the received rating value for the transport provider; and

causing the cost for servicing the pick-up request to be charged to a payment method associated with the transport user.

21. (New) The non-transitory computer readable medium of claim 20, wherein the operations further include:

transmitting a transport user rating prompt to the transport provider device, the transport user rating prompt soliciting the transport provider to provide a rating value for the transport user via the transport provider application;

receiving the rating value for the transport user from the transport provider device via the transport provider application; and

updating the transport user rating score of the transport user based on the received rating value for the transport user.

REMARKS

By this Preliminary Amendment, Applicant amends the specification to insert reference to the related applications, for which the benefit of priority is claimed for this application. 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 amended claims are fully supported by the application as-filed. No new matter is added.

Applicant respectfully requests favorable consideration and timely allowance of this application.

This application claims the benefit of earlier filed U.S. nonprovisional patent applications. 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 the prosecution of the parent applications. Applicant invites the Examiner to revisit the relevant prior art of the parent applications. *Hakim v. Cannon Avent Group*, 479 F.3d 1313 (Fed. Cir. 2007).

If the Examiner believes a telephone conversation might advance prosecution, the Examiner is invited to call Applicant's undersigned representative at (202) 808-3560.

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: 108449

Dated: April 21, 2021

By: /Joel S. Simon/
Joel S. Simon
Reg. No. 70,271
(202) 808-3560

FIGURE 1. SHARED TRANSPORT NETWORK SYSTEM

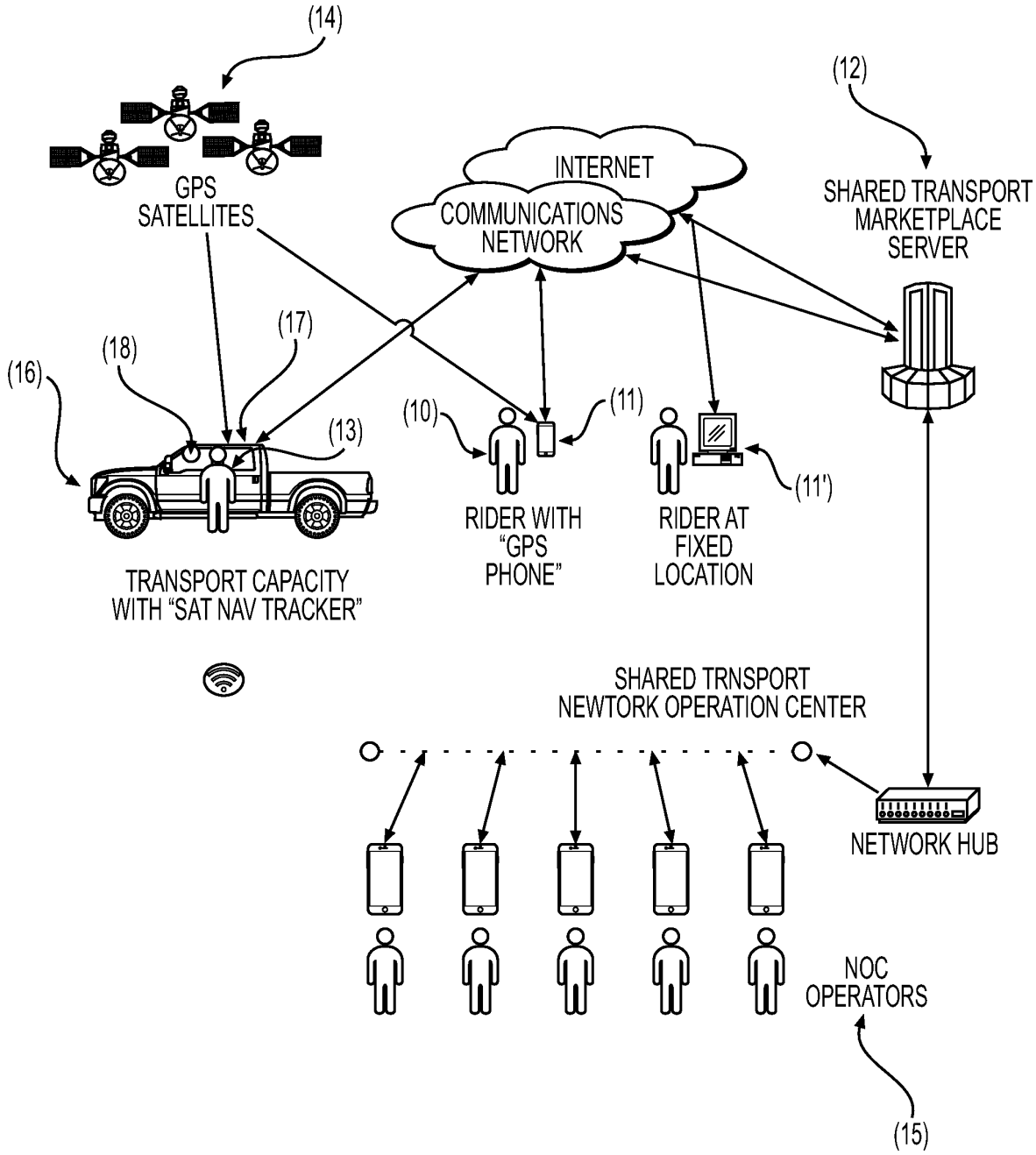


FIGURE 2. TRANSPORT CAPACITY COMPUTING AND COMMUNICATIONS COMPONENTS

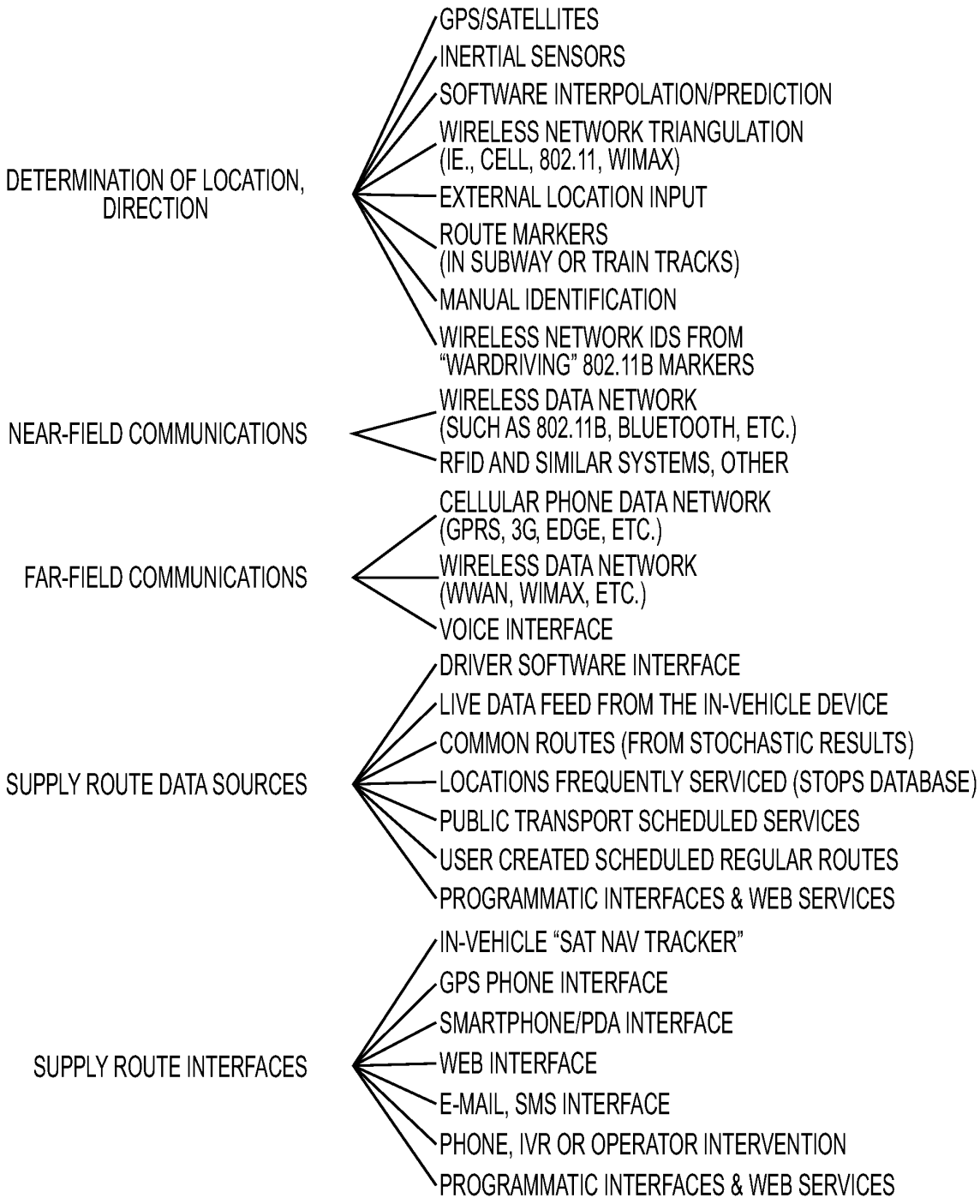


FIGURE 3. RIDER TECHNOLOGY COMPONENTS AND INFORMATION ELEMENTS

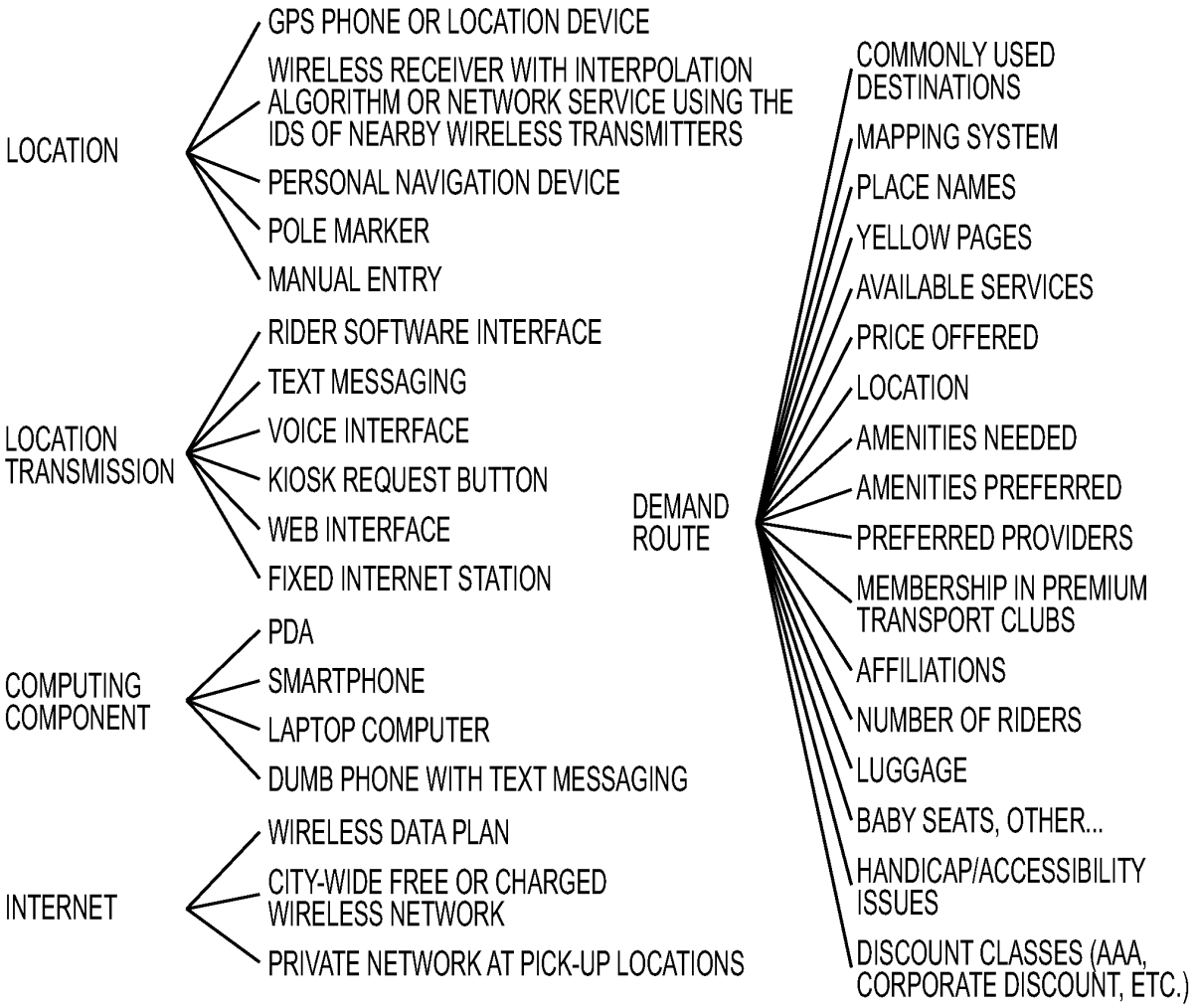
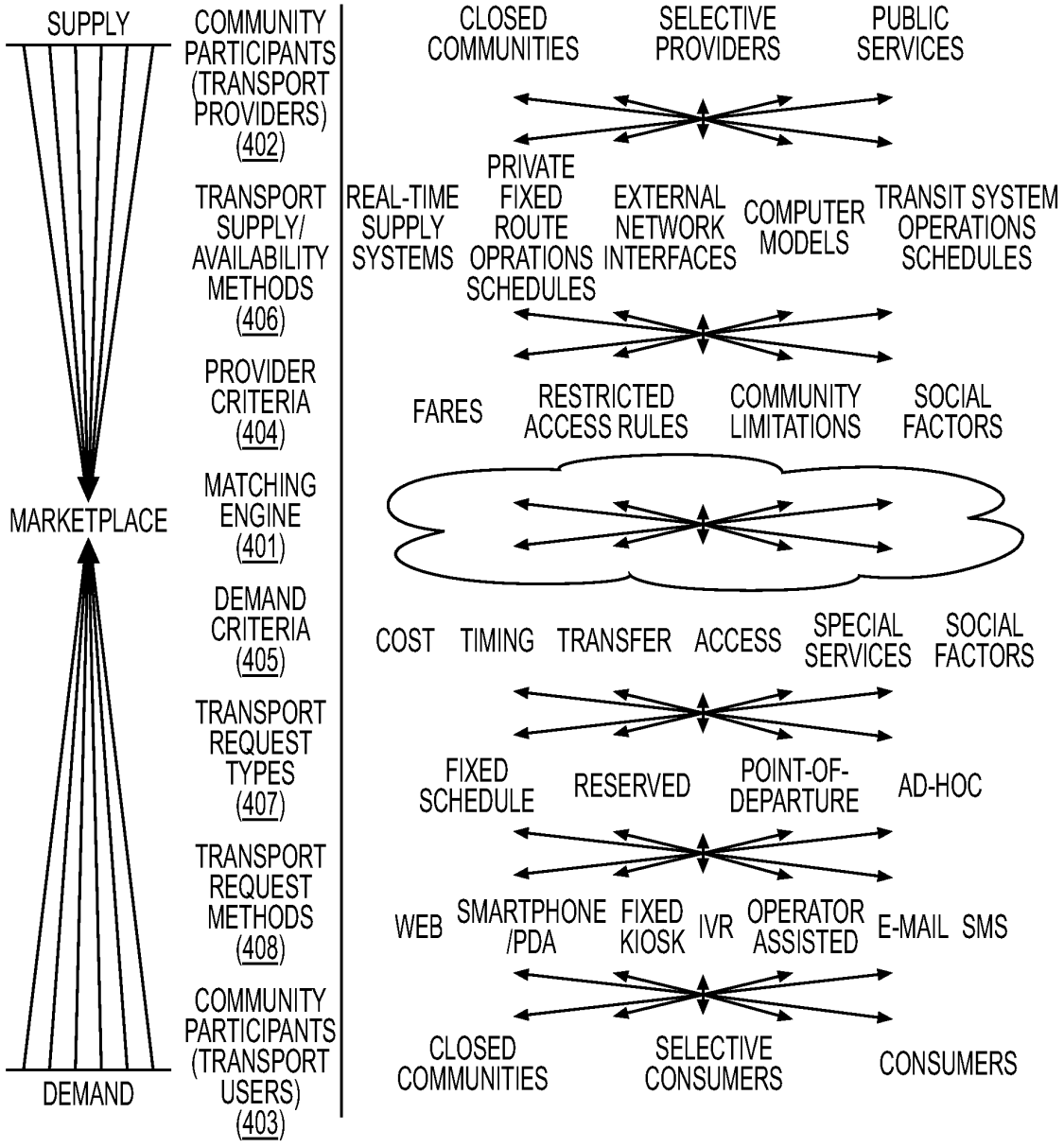


FIGURE 4. SHARED TRANSPORT MARKETPLACE



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

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

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

DISPATCHABLE, NON-SHARED TRANSPORT
TAXI COMPANIES
PRIVATE HACKNEY OPERATORS
PREMIUM SERVICE TRANSPORT OPERATOR

FIGURE 5a. RIDER EXPERIENCE FLOWCHART

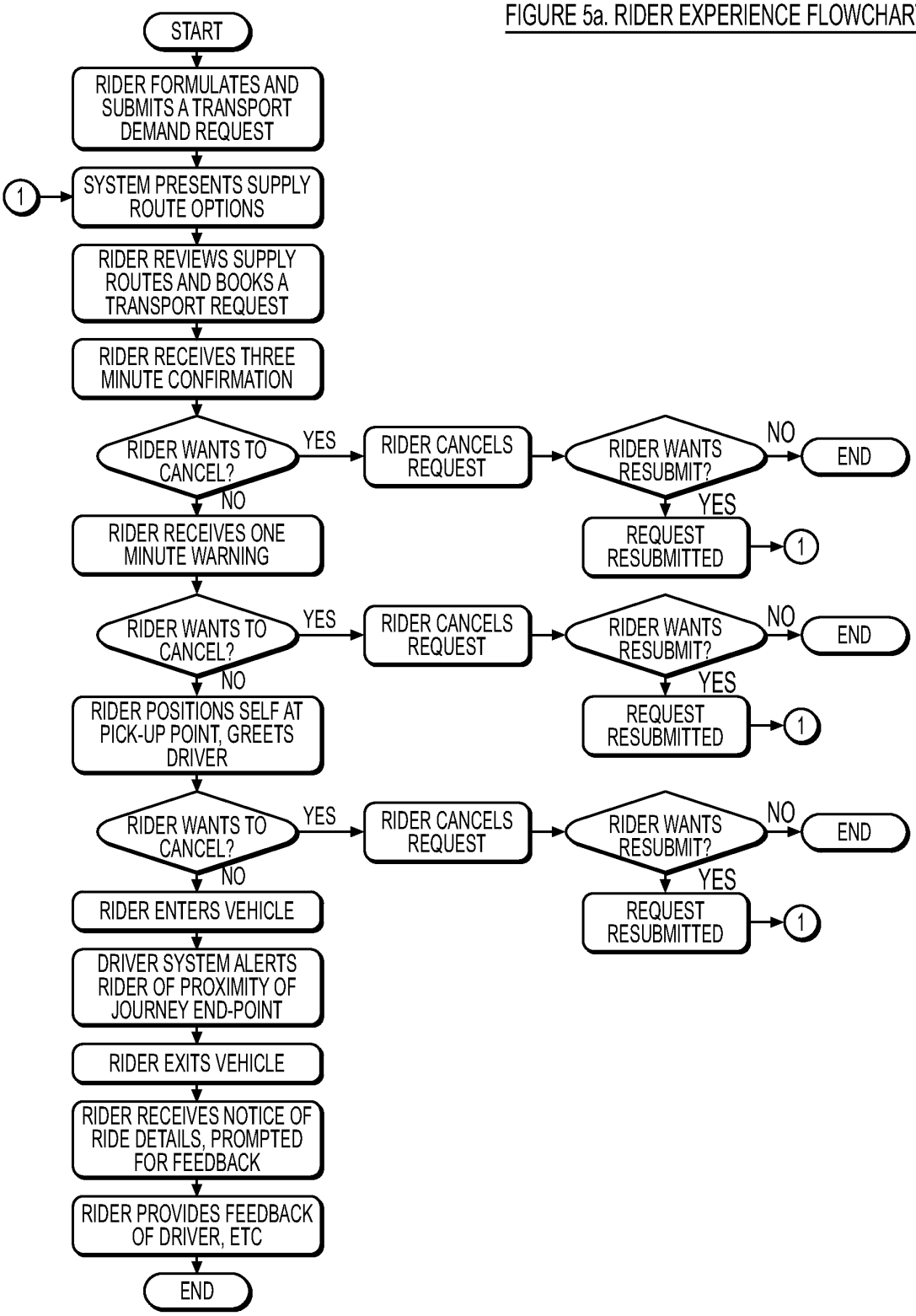


FIGURE 5b. RIDER EXPERIENCE, FUNCTIONAL OPTIONS DATA AND ACTION DETAILS

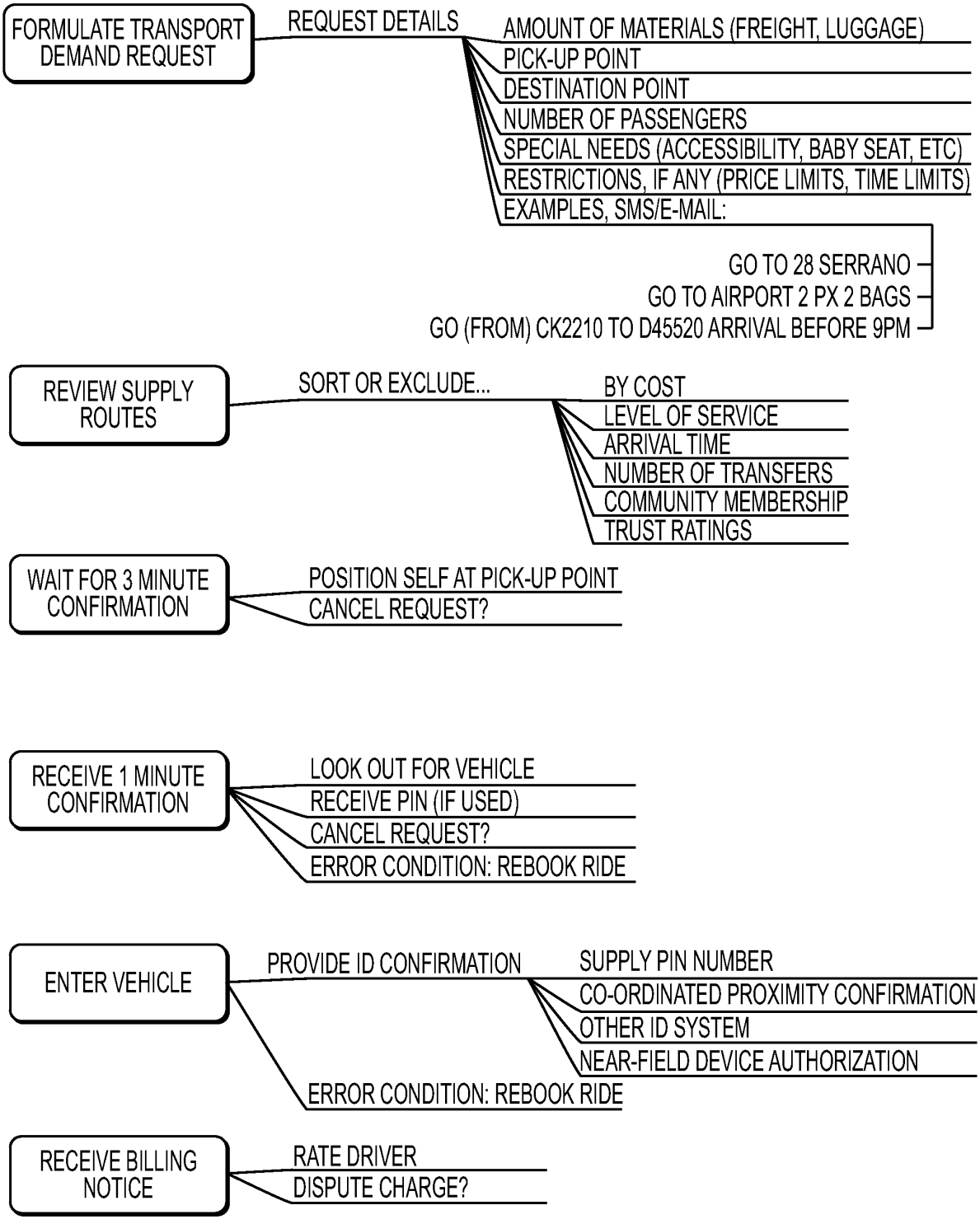


FIGURE 6a. DRIVER EXPERIENCE FLOWCHART

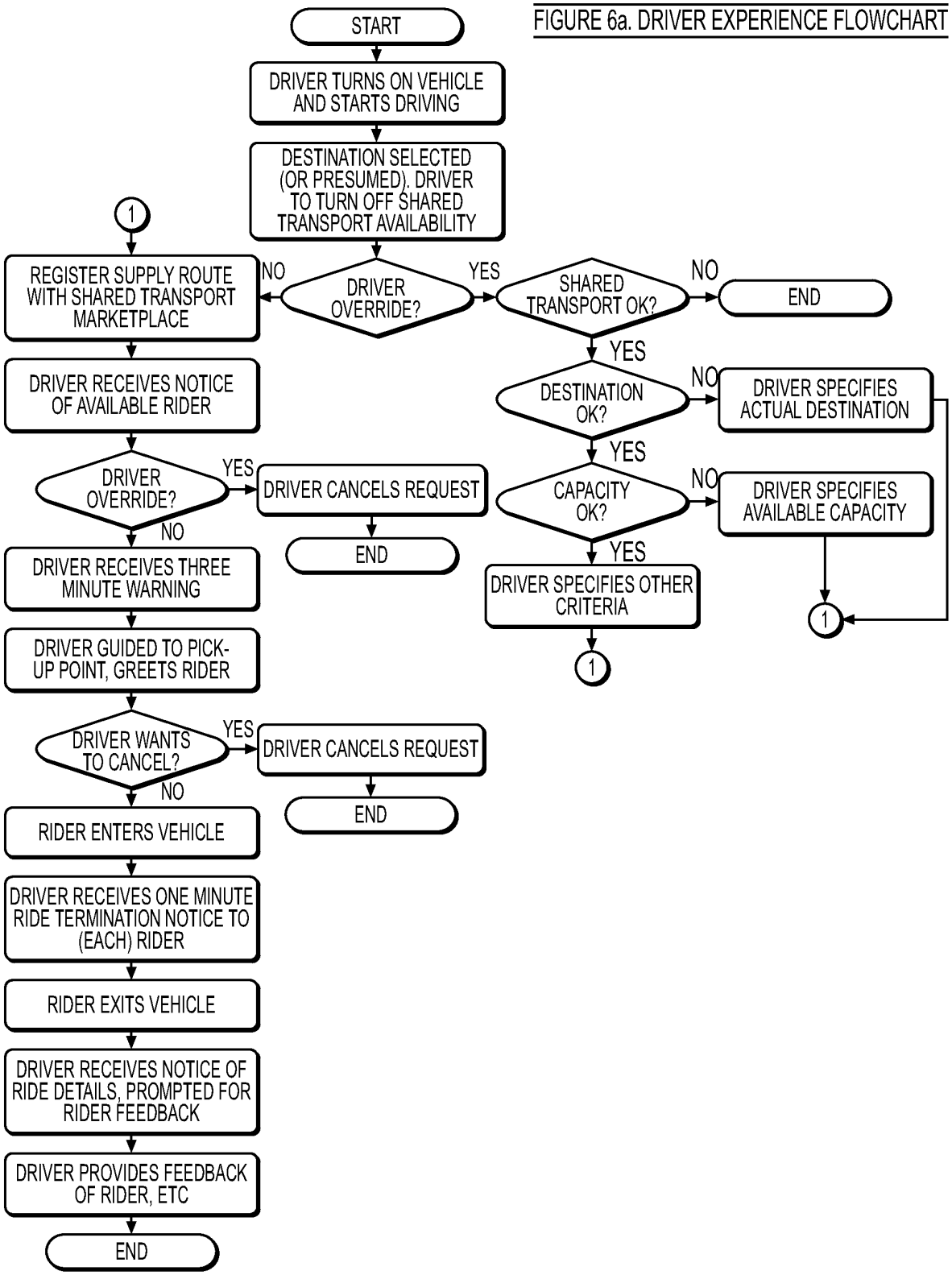
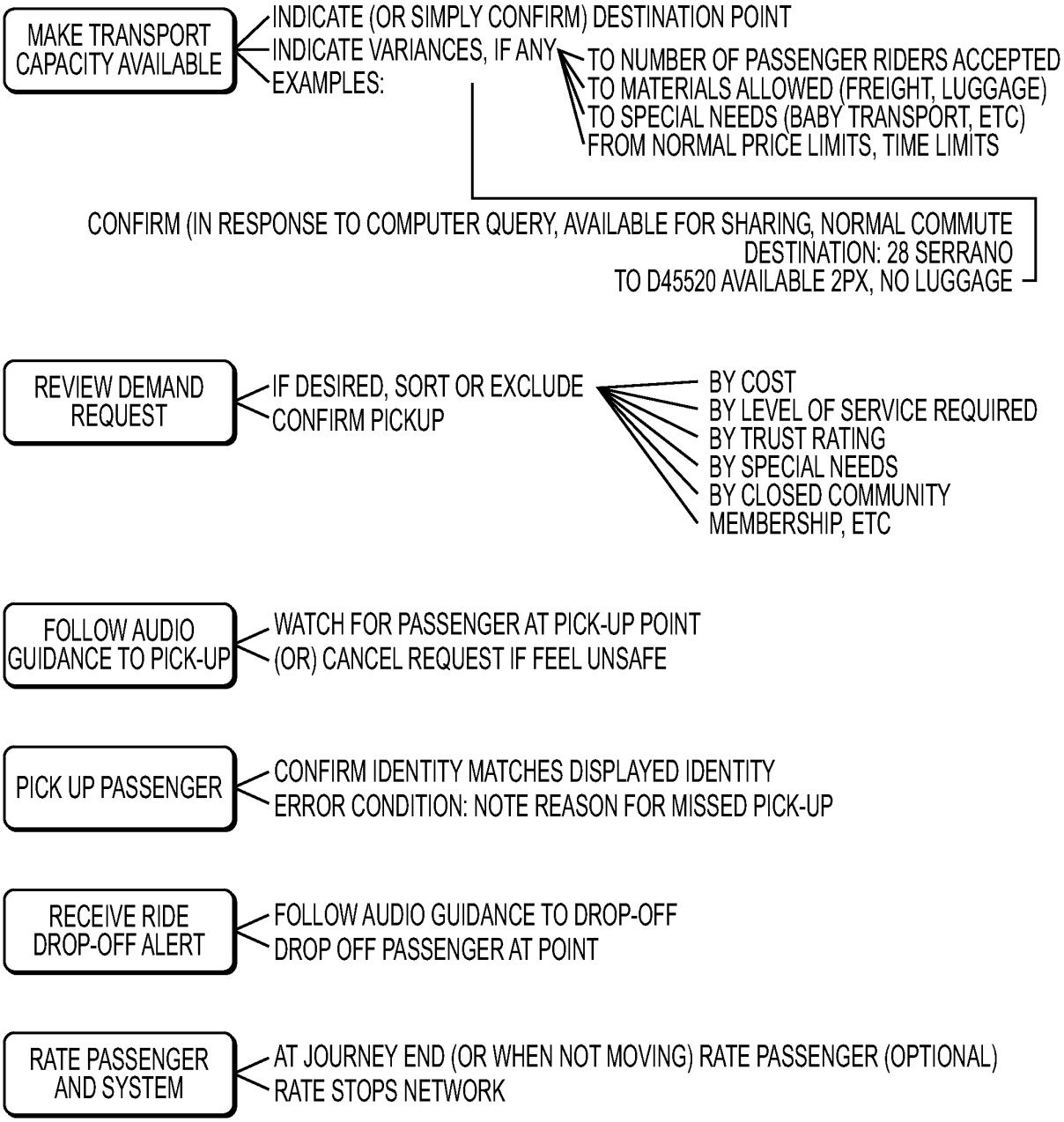
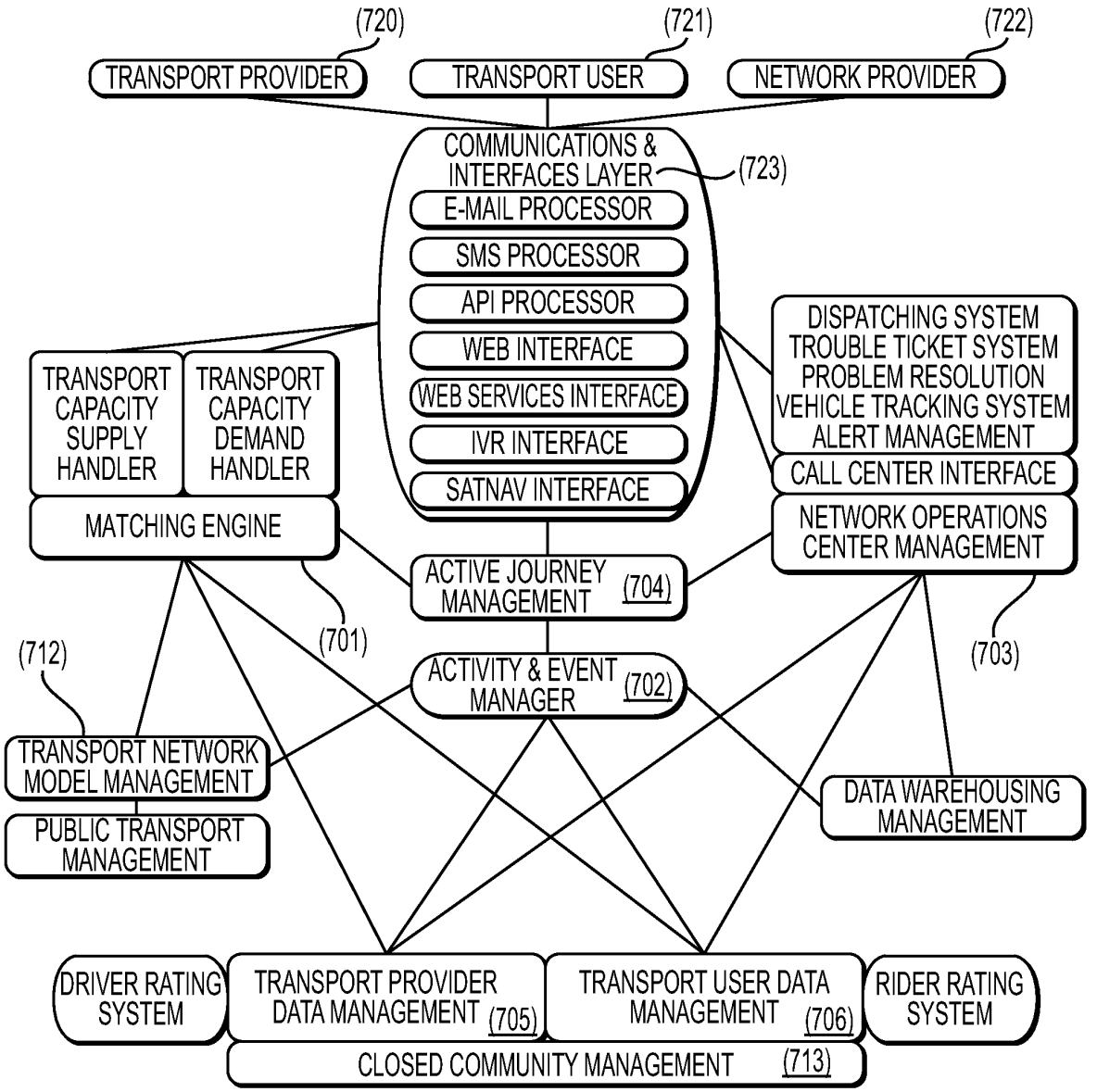


FIGURE 6b. DRIVER EXPERIENCE - FUNCTIONAL OPTIONS





RIDER DB (707)	DRIVER DB (708)	NETWORK MODEL DB	ACTIVITY & EVENT MANAGER
-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 INFO	EXTERNAL TICKETING INTERFACES
-ACTIVITY	-ACTIVITY	-VISUALIZATION INFO	TRANSPORT MANAGEMENT
-RATINGS	-RATINGS	JOURNEYS DB (709)	STOCHASTIC ANALYZER (711)
-ROUTES	-ROUTES	-JOURNEY ACTIVITY	GEOGRAPHY MANAGER
-COMMUNITIES	-COMMUNITIES		PUBLIC TRANSPORT MODEL
			VISUALIZATION MODELS

FIGURE 7. SHARED TRANSPORT MARKETPLACE SERVER & SUBSYSTEMS

FIGURE 8a. DRIVER JOURNEY, ON STREET NETWORK

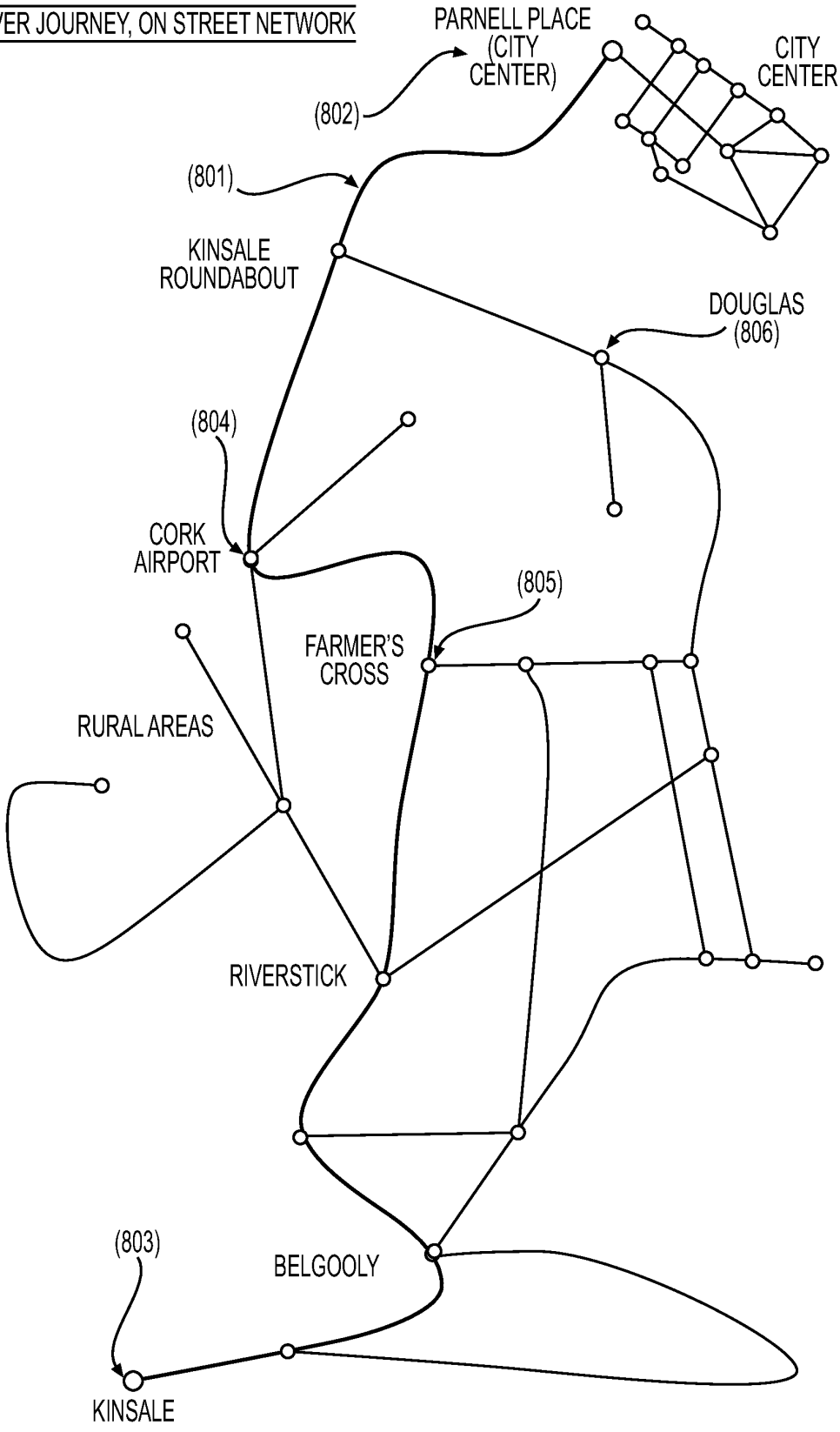


FIGURE 8b. DRIVER JOURNEY LOGICAL CHARACTERIZATION

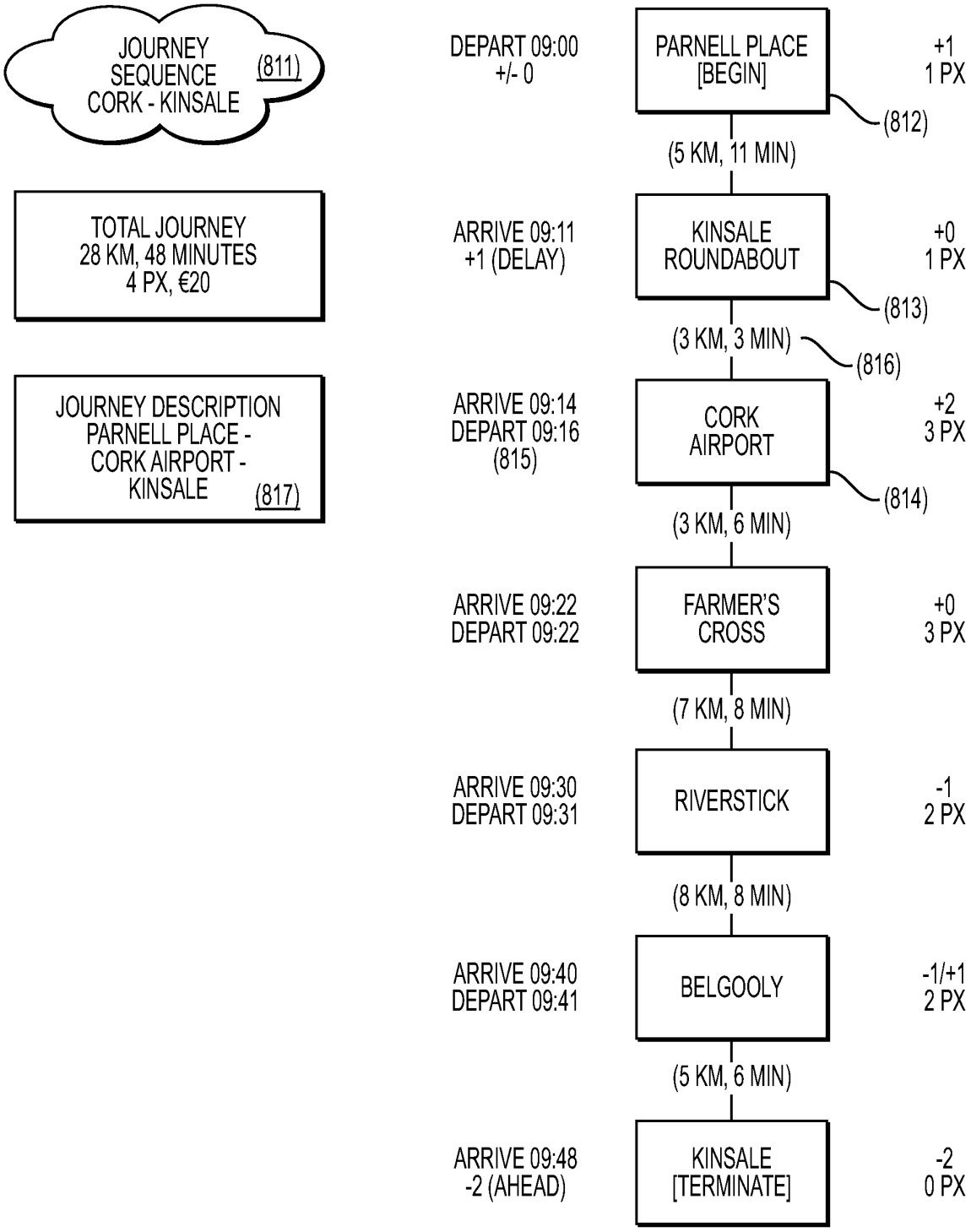


FIGURE 9a. ACTIVE NETWORK, GEOGRAPHICAL REPRESENTATION

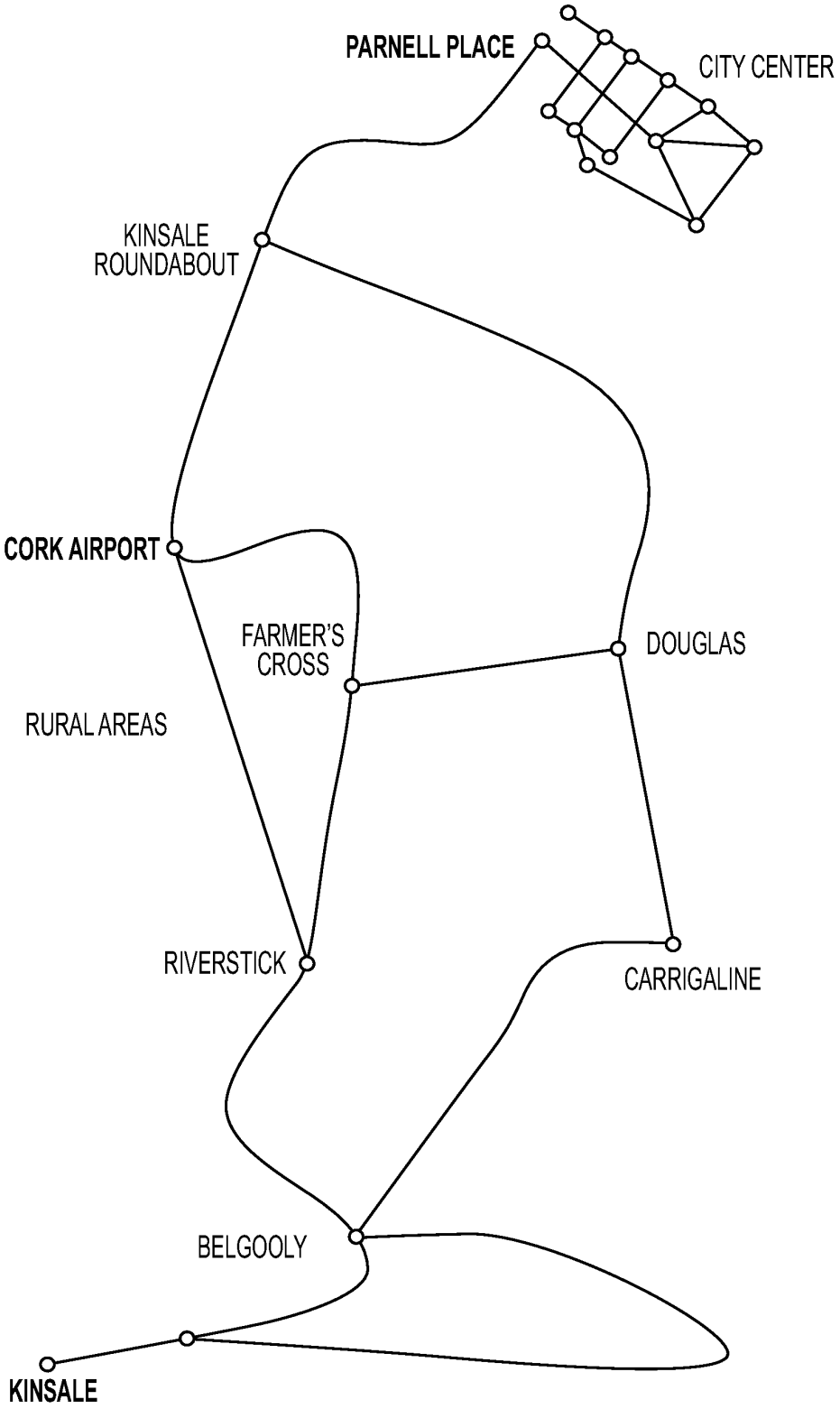


FIGURE 9b. ACTIVE TRANSPORT NETWORK, LOGICAL PRESENTATION

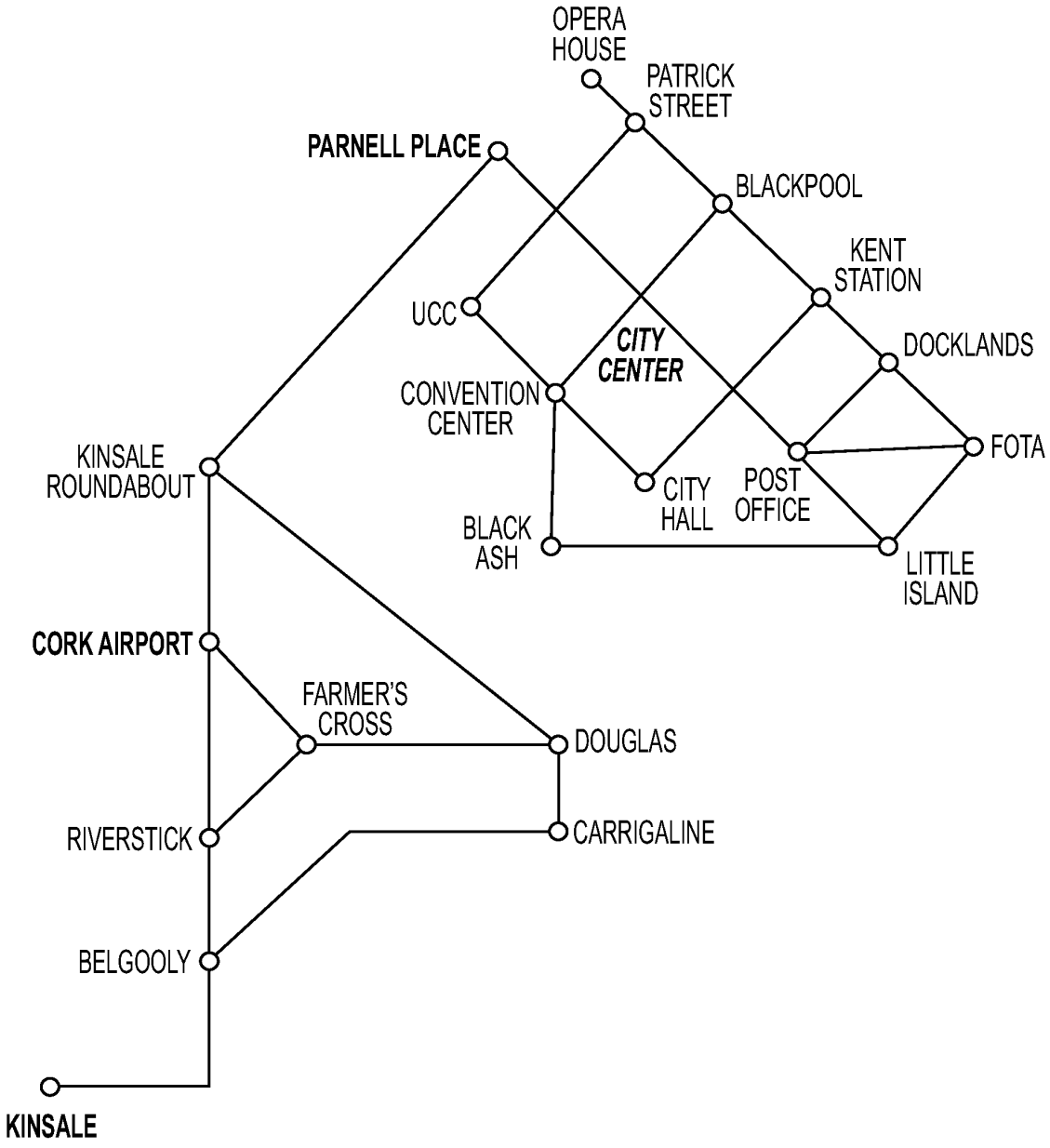
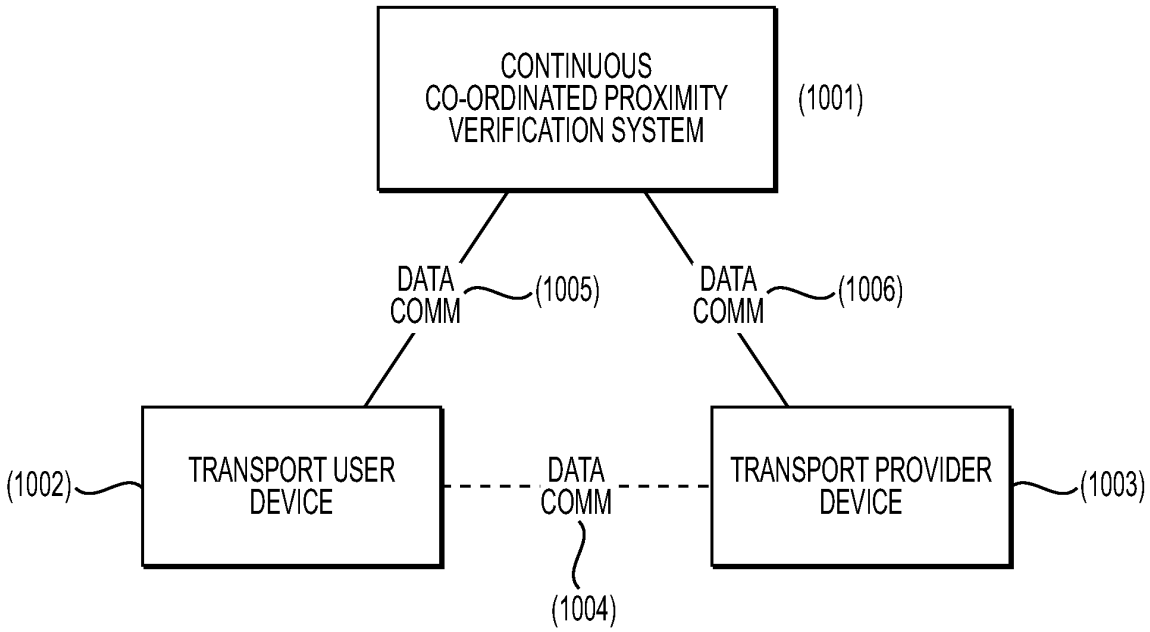


FIGURE 10a. ELEMENTS AND COMMUNICATION CHANNELS FOR CONTINUOUS CO-ORDINATED PROXIMITY BY INDEPENDENT VERIFICATION OF POSITION



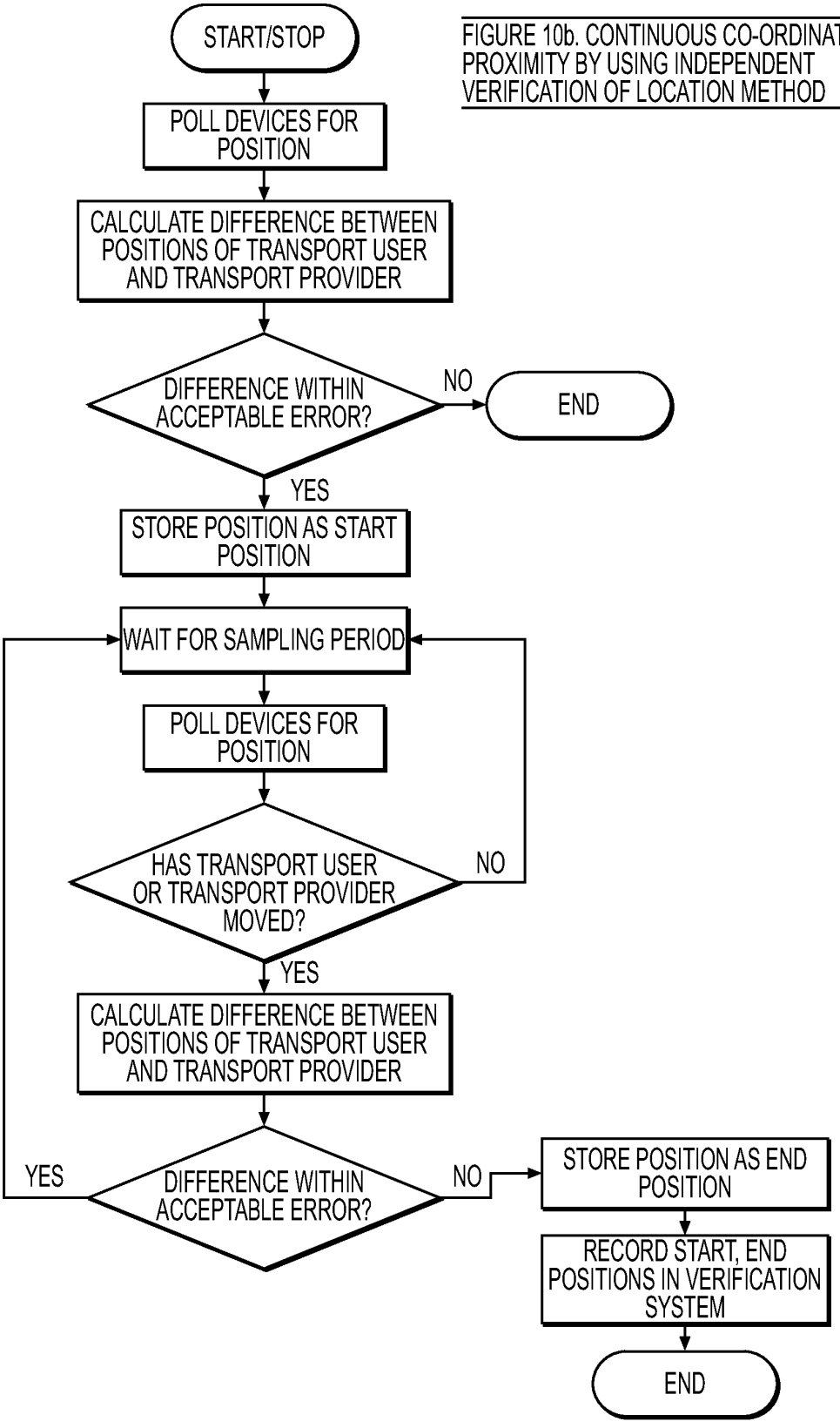


FIGURE 10b. CONTINUOUS CO-ORDINATED PROXIMITY BY USING INDEPENDENT VERIFICATION OF LOCATION METHOD

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

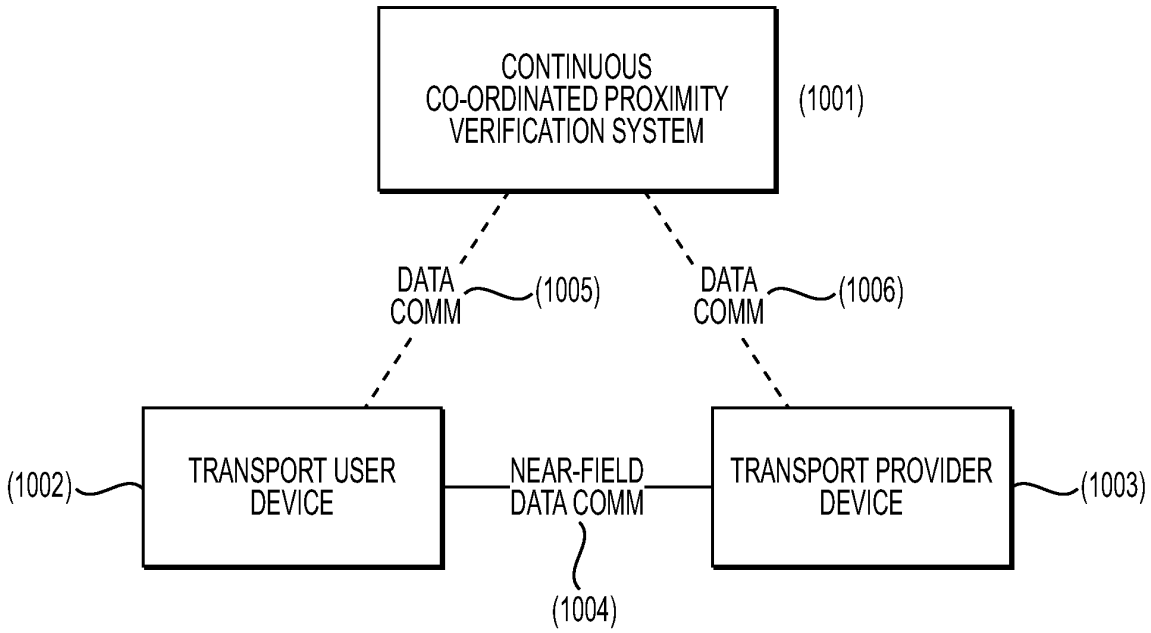


FIGURE 11b. METHOD 2 OF CONTINUOUS CO-ORDINATED PROXIMITY VIA VERIFICATION OF NEAR-FIELD COMMUNICATIONS LINK

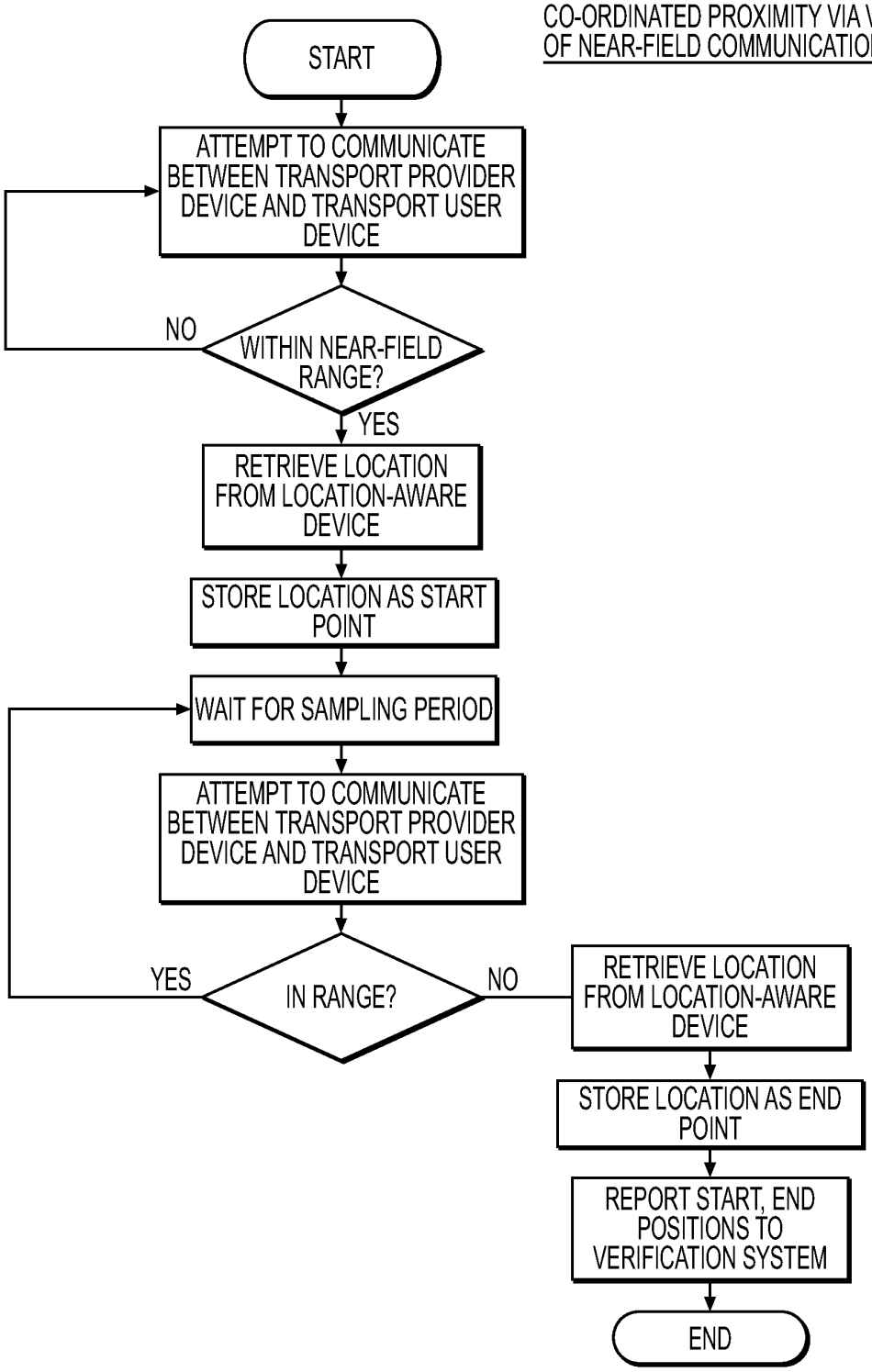


FIGURE 12a. ACCESS CONTROL SYSTEM

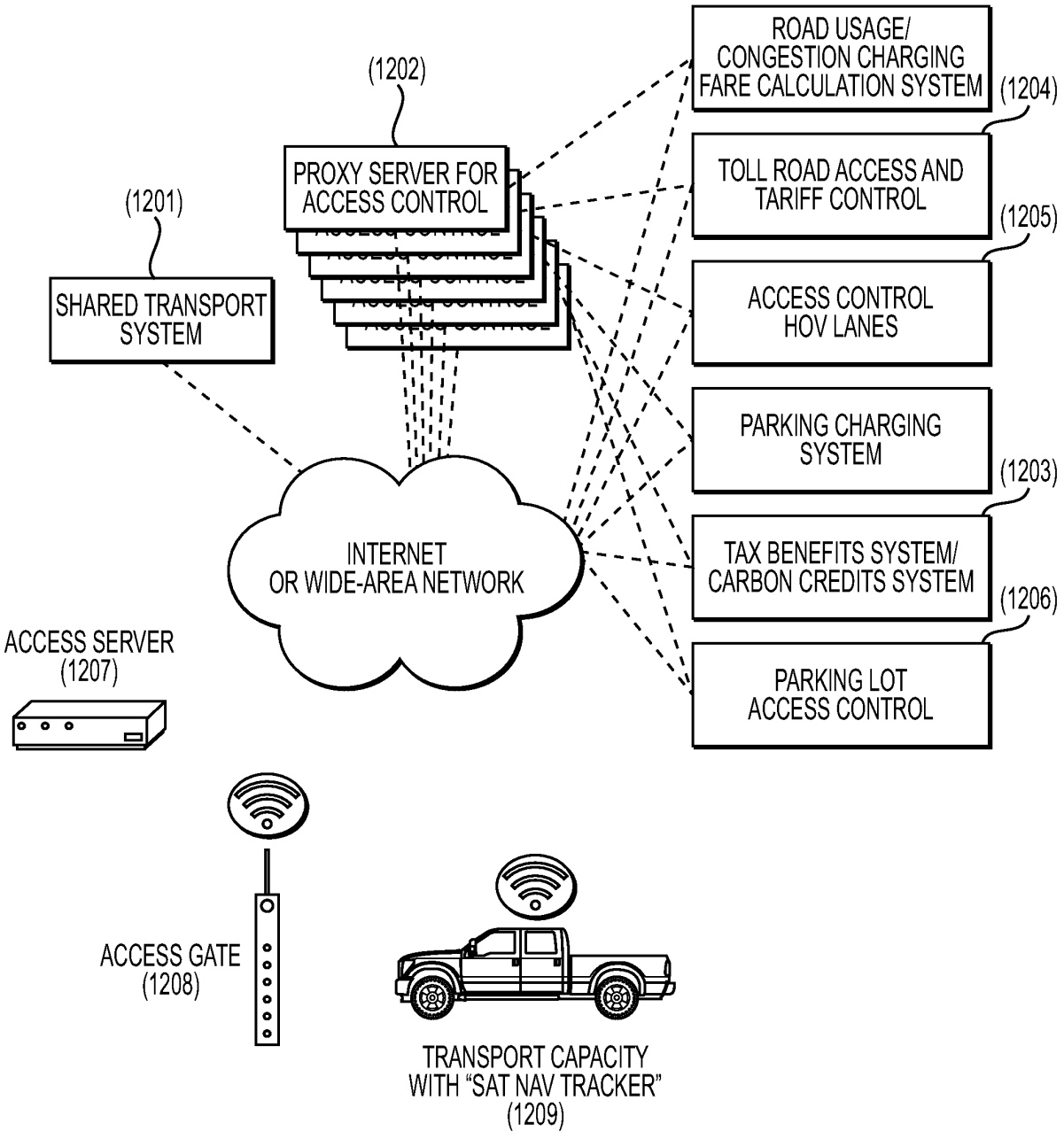


FIGURE 12b. ACCESS CONTROL SYSTEM, SERVER PUSH METHOD, SERVER-SIDE LOGIC

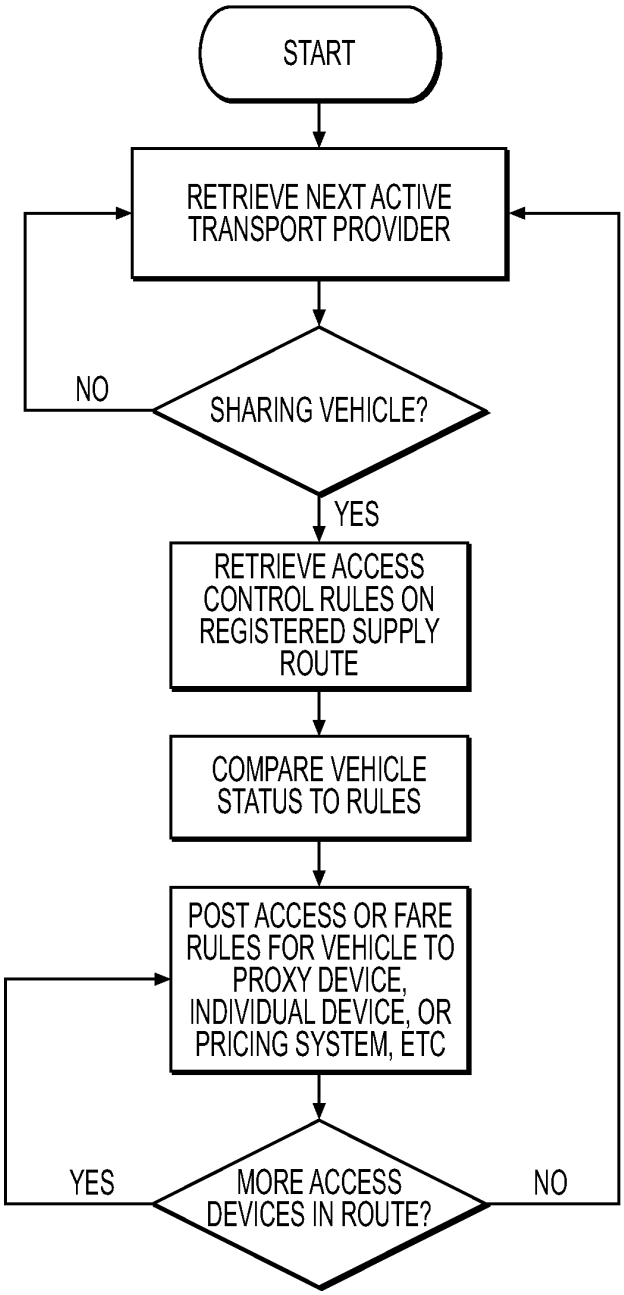


FIGURE 12c. ACCESS CONTROL SYSTEM, SERVER PUSH METHOD, CLIENT-SIDE LOGIC

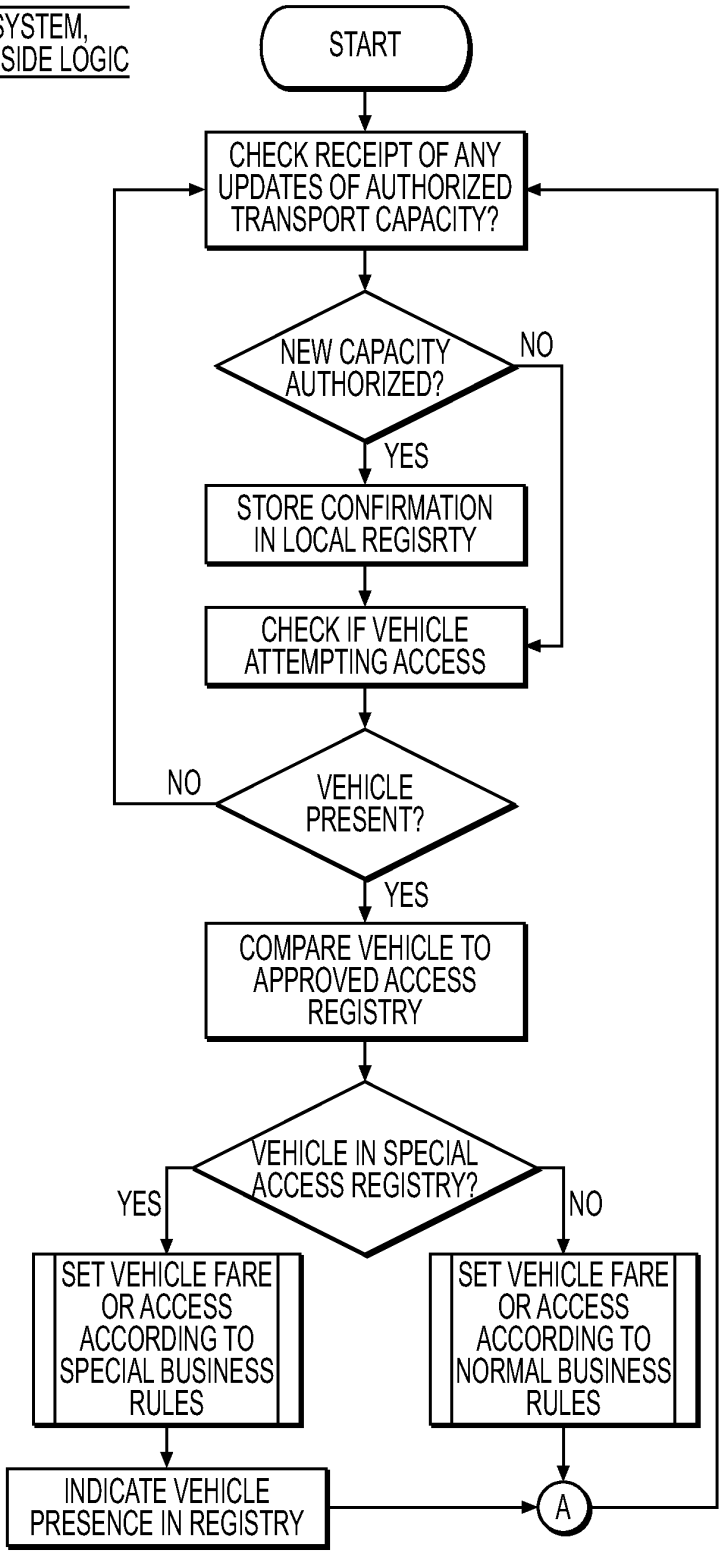


FIGURE 12d. ACCESS CONTROL SYSTEM, CLIENT PULL METHOD, CENTRAL SERVER-SIDE LOGIC

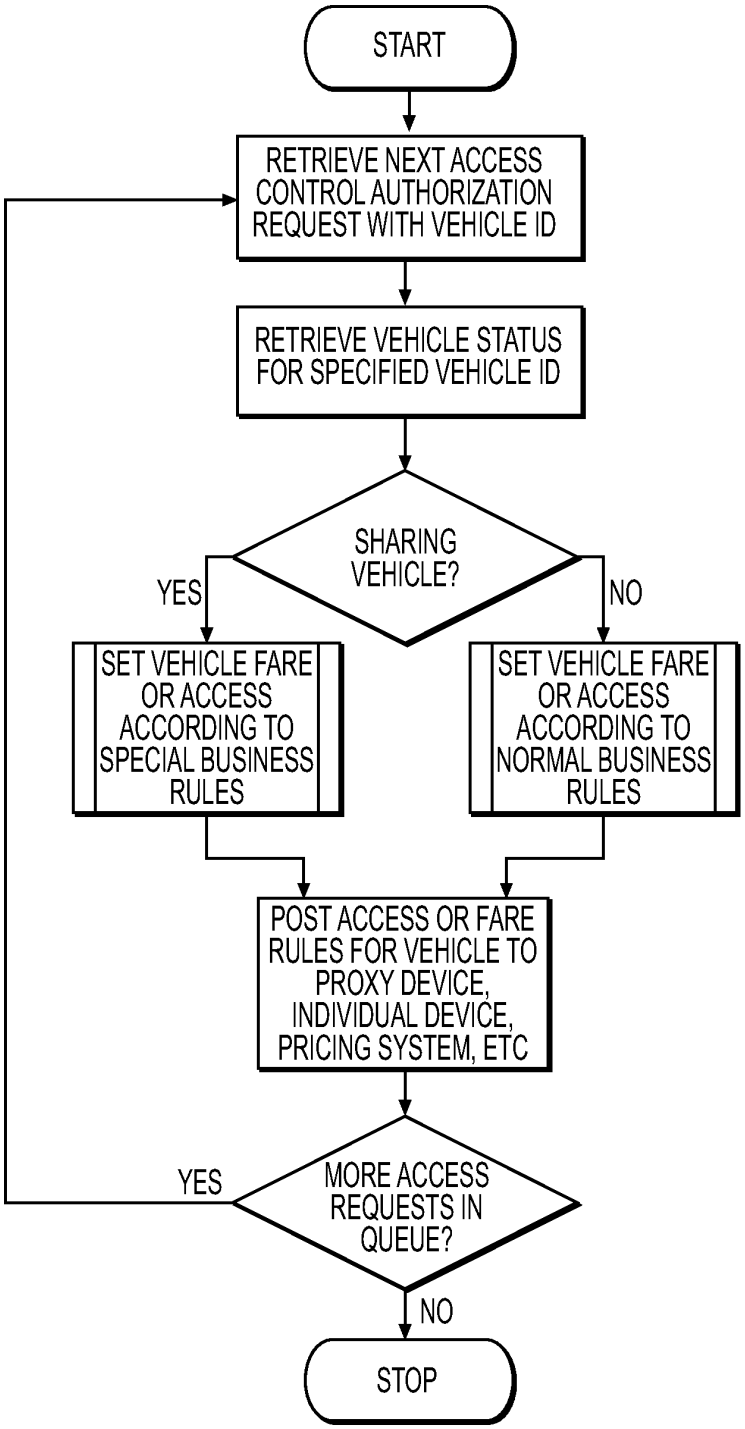


FIGURE 12e. ACCESS CONTROL SYSTEM, CLIENT PULL METHOD, CLIENT-SIDE LOGIC

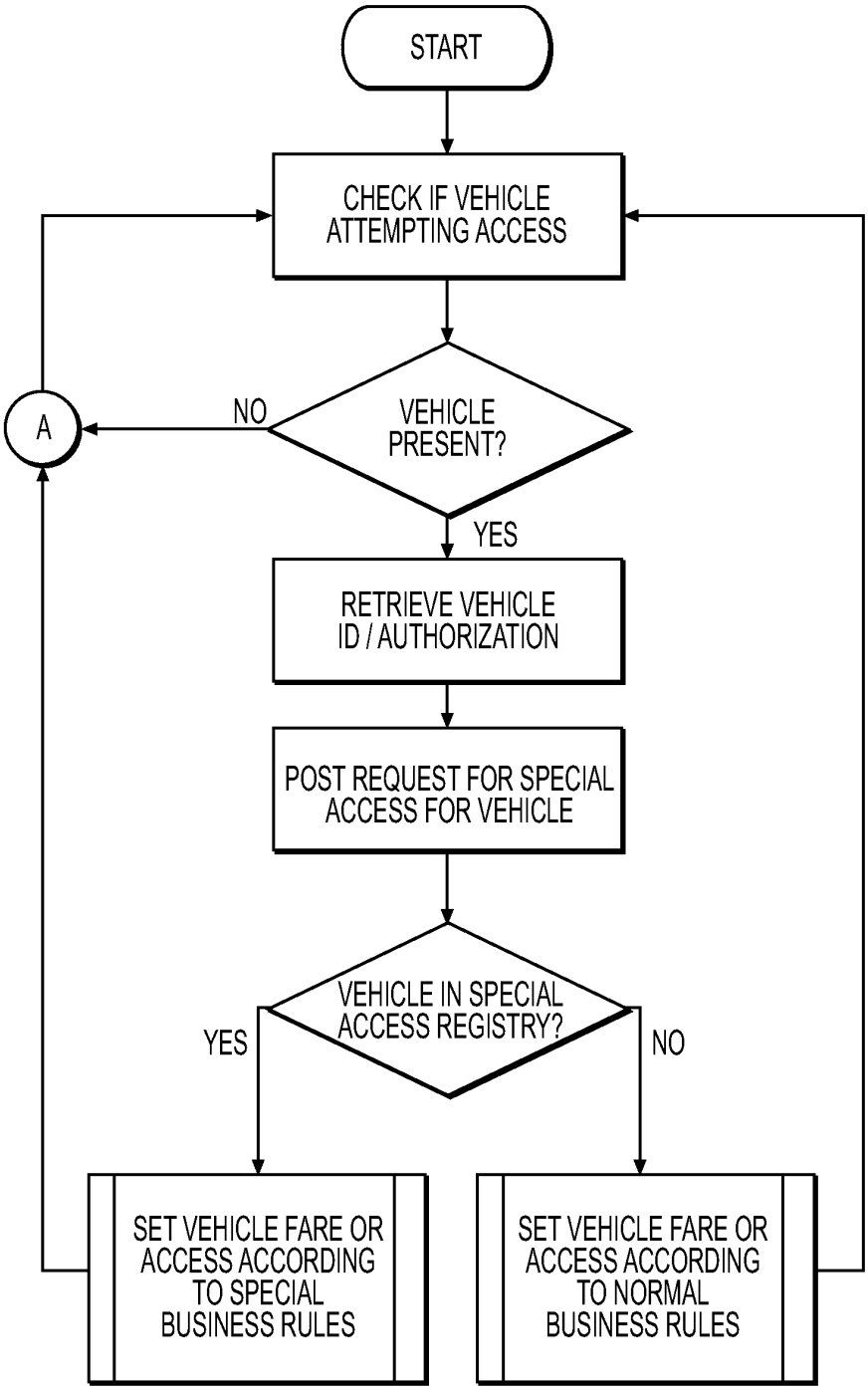


FIGURE 13. TRANSPORT COMMUNITY PROXY MESSAGE SERVICE

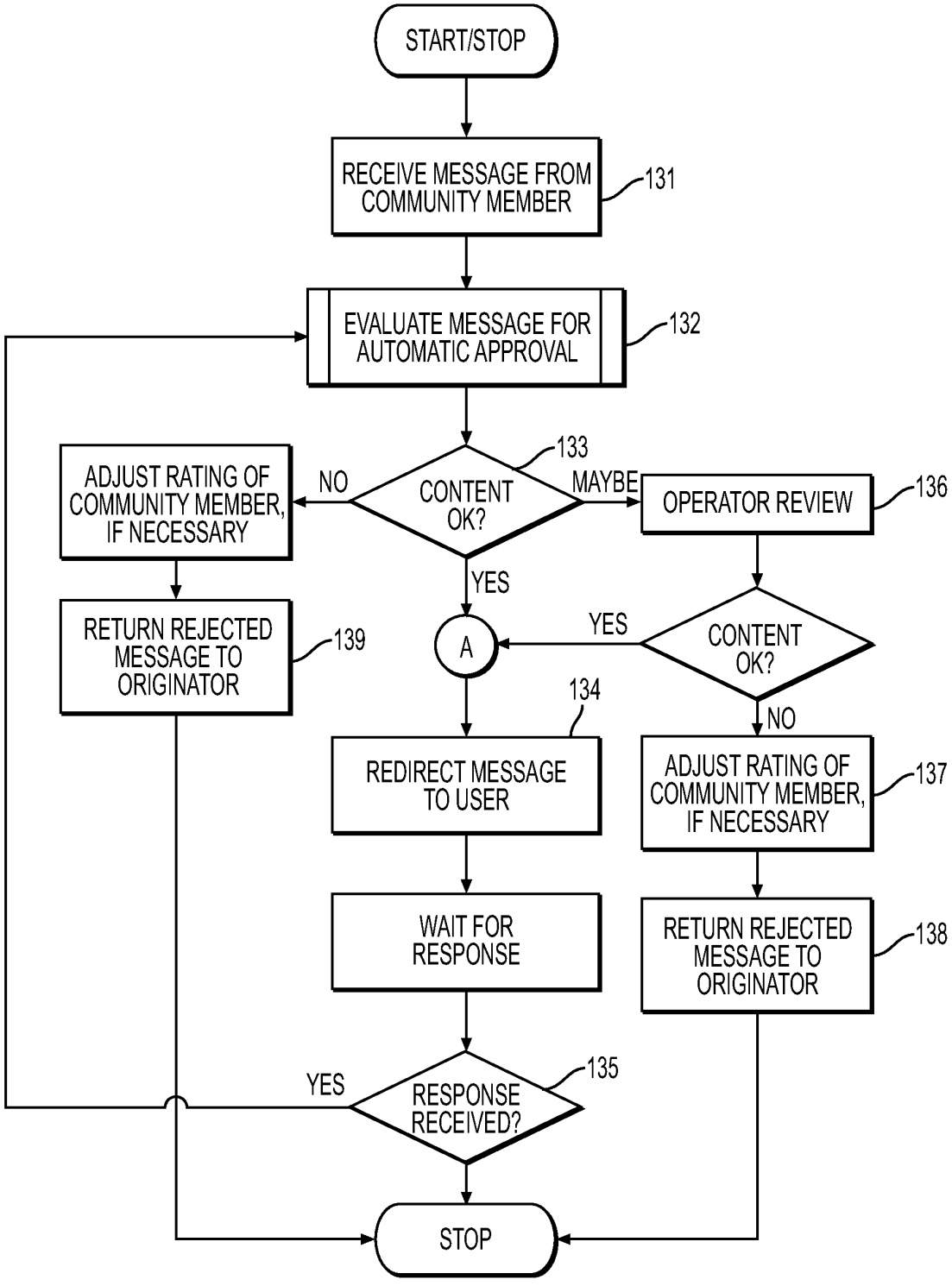


FIGURE 14a. FULL STREET, ACTIVE CAPACITY AND NODE REPRESENTATION

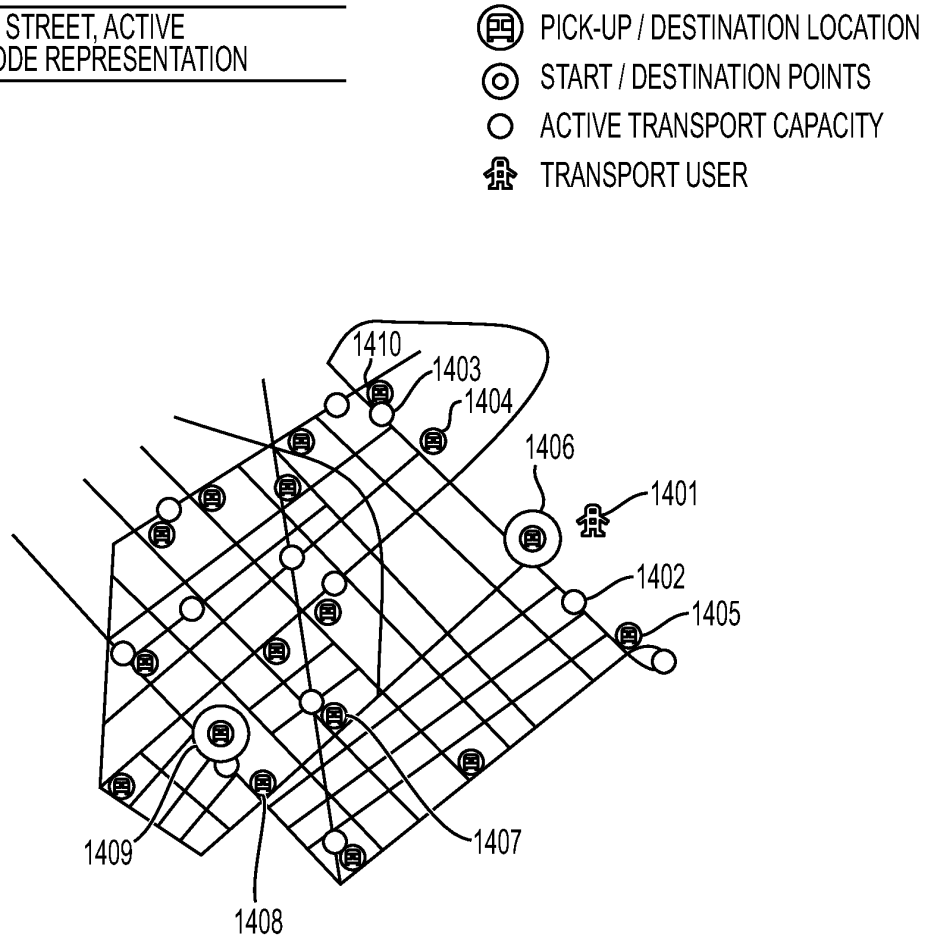


FIGURE 14b. NETWORK, ACTIVE STREET AND CAPACITY REPRESENTATION

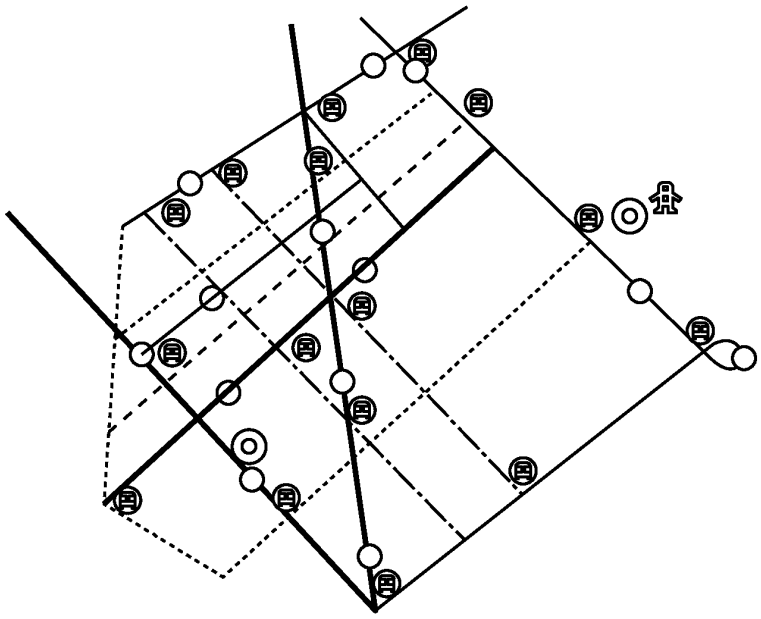


FIGURE 14c. NETWORK, ACTIVE ZERO TRANSFER STREET AND CAPACITY REPRESENTATION FROM SPECIFIC START POINT

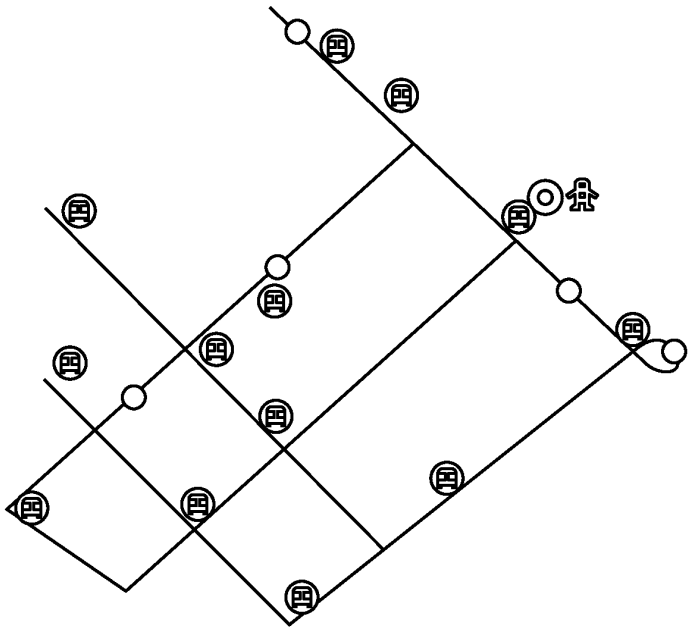


FIGURE 14d. STOCHASTIC NETWORK, TIME OF DAY CAPACITY REPRESENTATION

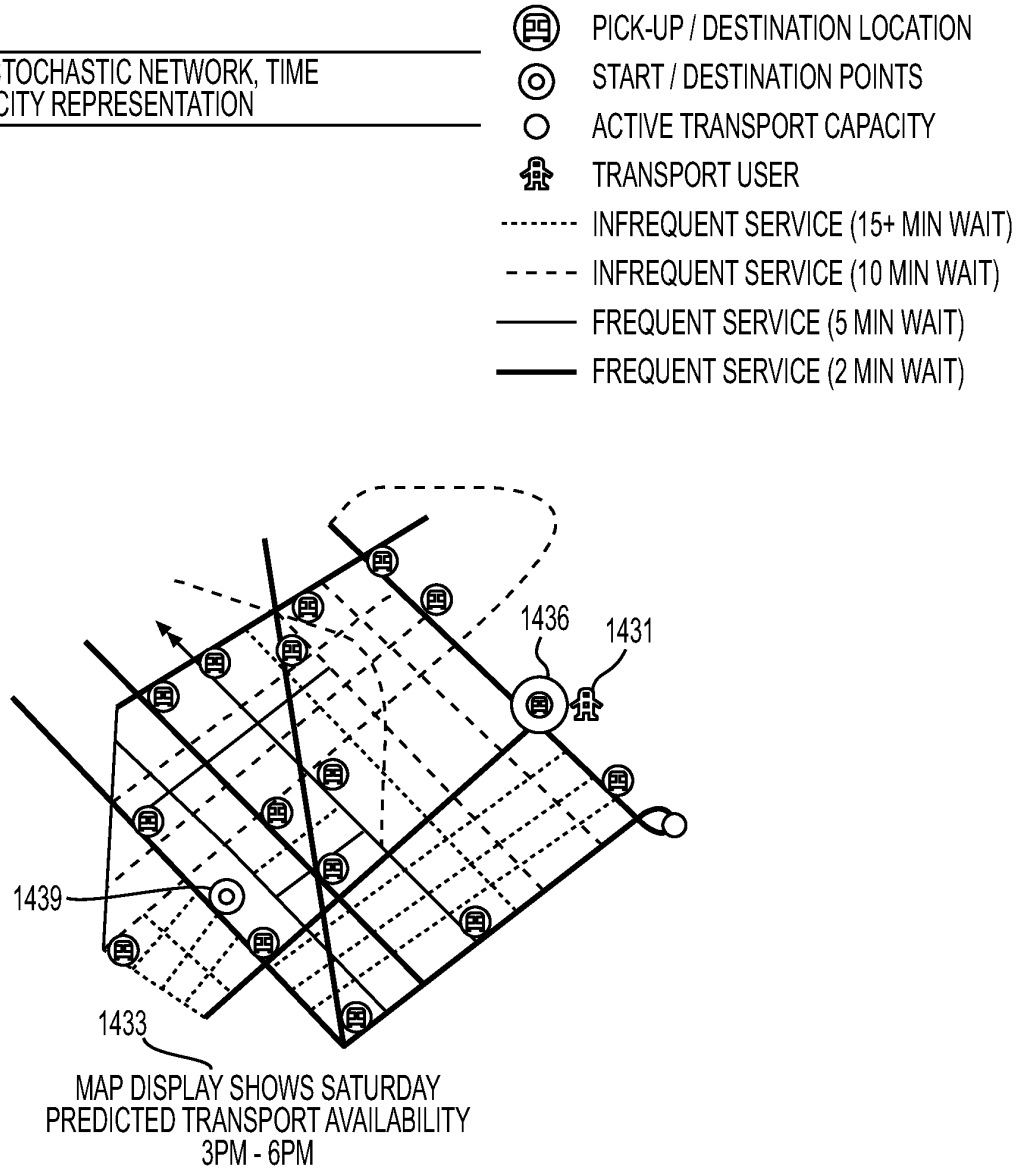


FIGURE 14e. STOCHASTIC NETWORK, ACTIVE STREET AND CAPACITY REPRESENTATION, SPECIFIC DEPARTURE POINT, OUTBOUND

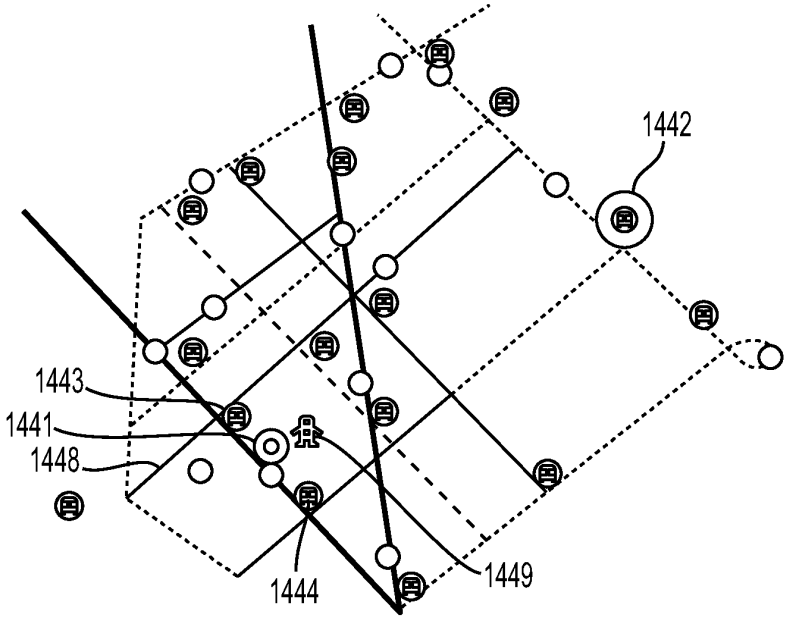


FIGURE 14f. NETWORK, WAIT TIME AND TRANSFER REPRESENTATION

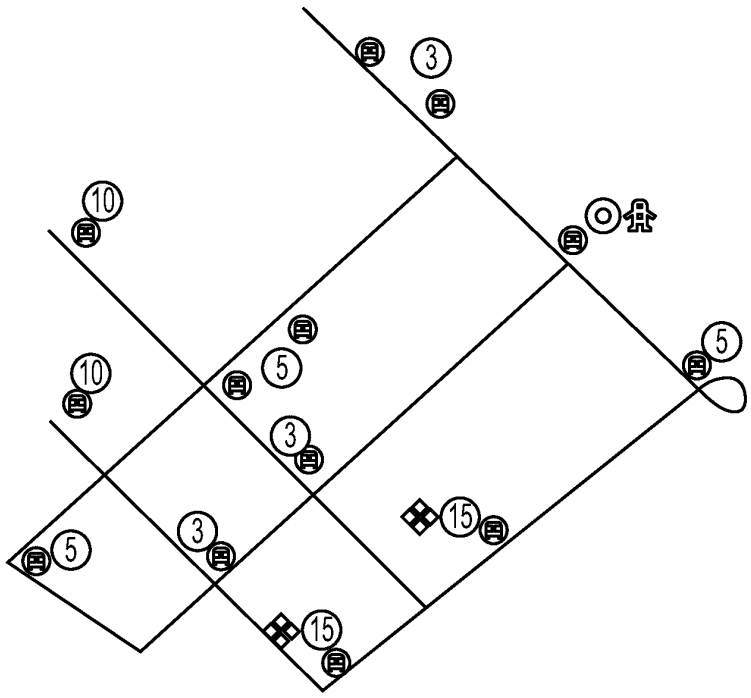


FIGURE 14g. STOCHASTIC NETWORK, TABULAR REPRESENTATION OF TIME OF DAY CAPACITY

(1471) (1472) (1475)

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

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

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

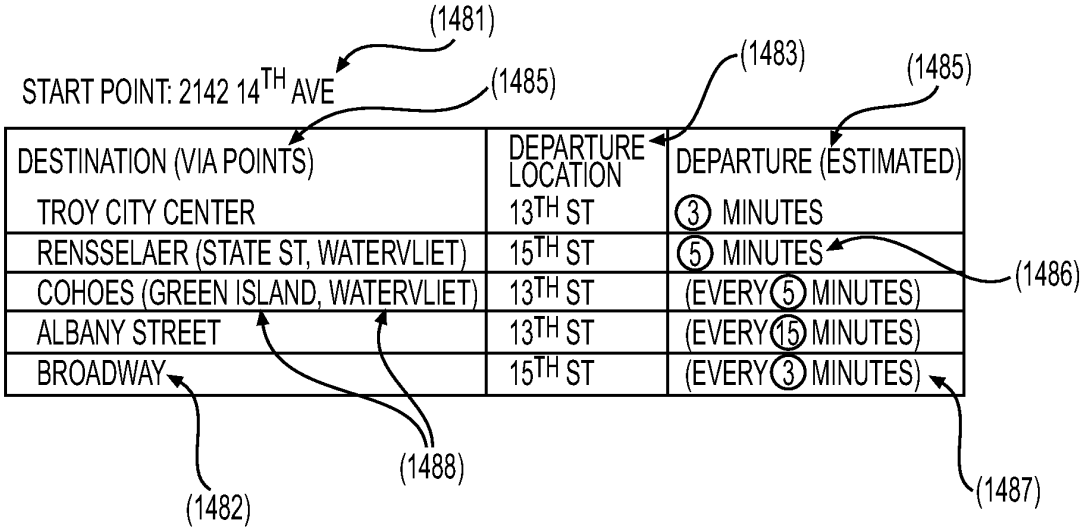
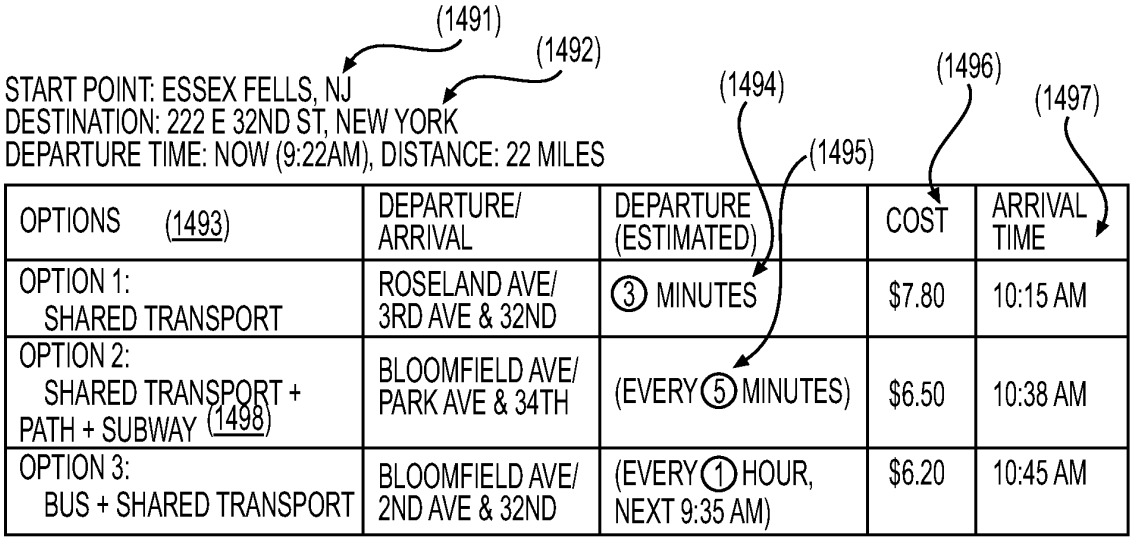


FIGURE 14i. REAL-TIME JOURNEY PLANNER FOR SHARED TRANSPORT NETWORK, FIXED START & DESTINATION POINTS, TABULAR REPRESENTATION



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

PTO/SB/08a (02-18)
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	Application Number	
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	First Named Inventor	Sean O'SULLIVAN
	Art Unit	
	Examiner Name	
	Attorney Docket Number	00199-0001-25000

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	1	2003036498	JP	A	2003-02-07	YAZAKI CORP.		☒
	2	02073546	WO	A2	2002-09-19	ERICSSON TELEFON AB L M [SE], et al.		☐

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

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

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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	/Joel S. Simon/	Date (YYYY-MM-DD)	2021-04-21
Name/Print	Joel S. Simon	Registration Number	70271

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Bibliographic data: JP2003036498 (A) — 2003-02-07

TAXI MANAGING SYSTEM

Inventor(s): MURAMATSU HARUJI; OISHI HIROMOTO ± (MURAMATSU HARUJI, ; OISHI HIROMOTO)

Applicant(s): YAZAKI CORP ± (YAZAKI CORP)

Classification: - **International:** ***G06F17/30; G06Q50/00; G06Q50/30; G08G1/00; G08G1/123; G09B29/00; G09B29/10;*** (IPC1-7): G06F17/30; G06F17/60; G08G1/00; G08G1/123; G09B29/00; G09B29/10

- **cooperative:**

Application number: JP20010221793 20010723

Priority number(s): JP20010221793 20010723

Abstract of JP2003036498 (A)

PROBLEM TO BE SOLVED: To provide a taxi managing system where the empty state of whole taxi vehicles that a taxi company possess can always be grasped without arranging any facility in the taxi company, the appropriate taxi vehicle can be allocated to a person requesting the vehicle when the allocation of the taxi vehicle is requested from a taxi user and operating control data on the taxi vehicle can easily be obtained if need. SOLUTION: In an information managing center, vehicle data on the whole taxi vehicles 1 in the taxi company 2 are stored in a vehicle database 35 so as to grasp them based on the request of the taxi company 2 managing multiple taxi vehicles 1 loading communication units 11 incorporating GPS receivers. Position information on the whole taxi vehicles 1 are periodically polled. The empty situation of the whole vehicles and position data of the whole vehicles are written and rewritten into an empty vehicle database 37 based on position information returned from the whole taxi vehicles 1 whose position information are polled. Empty vehicle information is overlapped on a map based on the empty situation and position information of the whole taxi vehicles 1, and it is transmitted to the taxi company 2.

(19)日本国特許庁（ＪＰ）　(12)**公開特許公報（Ａ）**　(11)特許出願公開番号
特開2003－36498
（P2003－36498A）
(43)公開日　平成15年２月７日(2003.2.7)

(51)Int.Cl.[7]	識別記号	ＦＩ		テーマコード（参考）
Ｇ０８Ｇ　1/123		Ｃ０８Ｇ　1/123	Ａ	２Ｃ０３２
Ｇ０６Ｆ　17/30	１１０	Ｃ０６Ｆ　17/30	１１０Ｆ	５Ｂ０７５
	１７０		１７０Ｃ	５Ｈ１８０
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Ｇ０８Ｇ　1/00		Ｃ０８Ｇ　1/00	Ｄ	

審査請求　未請求　請求項の数８　ＯＬ　（全 17 頁）　最終頁に続く

(21)出願番号　特願2001－221793(P2001－221793)

(22)出願日　平成13年７月23日(2001.7.23)

(71)出願人　000006895
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東京都港区三田１丁目４番28号

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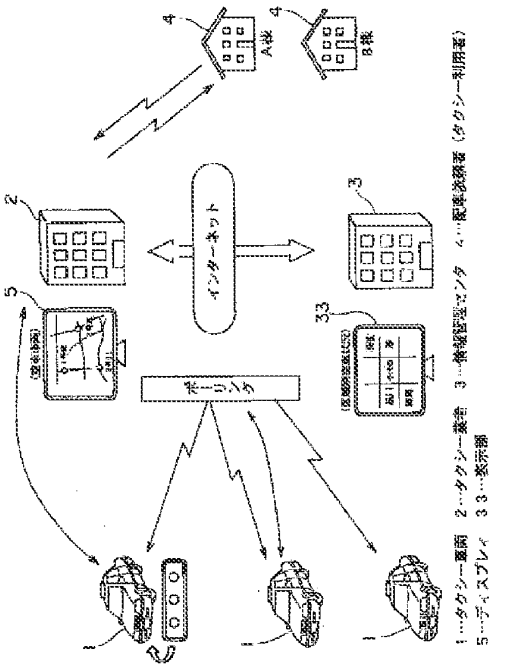
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最終頁に続く

(54)【発明の名称】　タクシー管理システム

(57)【要約】
【課題】　タクシー業者に何の設備も設けることなく、自社の所有する全タクシー車両の空車状態を常に把握でき、タクシー利用者からのタクシー車両の配車依頼があった際に配車依頼者に適切なタクシー車両の配車を行うことができ、必要に応じてタクシー車両の運行管理データを容易に得ることのできるタクシー管理システムを提供すること。
【解決手段】　ＧＰＳ受信機を内蔵した通信ユニット１１を搭載するタクシー車両１を多数台管理するタクシー業者２の依頼に基づき該タクシー業者２の全タクシー車両１の車両データを車両データベース３５に記憶して把握する情報管理センタにおいて，前記全タクシー車両１に対して位置情報のポーリングを定期的に行い、位置情報のポーリングを受けた全タクシー車両１から応答する位置情報に基づいて前記全車両の空車状況、全車両の位置データを空車データベース３７に書込・書換を行い、該全タクシー車両１の空車状況と位置情報に基づいて地図上に空車情報を重畳して前記タクシー業者２に送信するようにする。



【特許請求の範囲】
【請求項１】　ＧＰＳ受信機を内蔵した通信ユニットを搭載するタクシー車両を多数台管理するタクシー業者の依頼に基づき該タクシー業者の全タクシー車両の車両データを車両データベースに記憶して把握する情報管理センタにおいて，前記全タクシー車両に対して位置情報のポーリングを定期的に行い、位置情報のポーリングを受けた全タクシー車両から応答する位置情報に基づいて前記全車両の空車状況、全車両の位置データを空車データベースに書込・書換を行い、該全タクシー車両の空車状況と位置情報に基づいて地図上に空車情報を重畳して前記タクシー業者に送信するようにしたことを特徴とするタクシー管理システム。
【請求項２】　前記全タクシー車両に対して定期的に行う位置情報のポーリングに対し、当該車両が空車のときに応答するようにしたものである請求項１に記載のタクシー管理システム。
【請求項３】　前記全タクシー車両は、タクシー車両のメータ表示フラグが空車ポジションから他のポジションに変更または、他のポジションから空車ポジションに変更になったときに、前記情報管理センタに表示フラグのポジションと表示フラグ変更位置の位置情報を送信すると共に、該位置情報の送信位置から定距離毎に位置情報を送信するようにしたものである請求項１又は２に記載のタクシー管理システム。
【請求項４】　前記全タクシー車両は、タクシー車両のメータ表示フラグが空車ポジションから他のポジションに変更または、他のポジションから空車ポジションに変更になったときに、前記情報管理センタにタクシーメータの情報を送信するようにしたものである請求項１、２又は３に記載のタクシー管理システム。
【請求項５】　前記全タクシー車両のメータ表示フラグの空車ポジションから他のポジションへの変更または、他のポジションから空車ポジションへの変更の際に前記情報管理センタに送信される位置情報及びタクシーメータ情報により、前記タクシー業者からの請求に基づき、営業日報明細票、未収管理票、時間帯別営業収益分布、時間帯別乗車回数分布のいずれかを作成して提供することを特徴とする請求項１、２、３又は４に記載のタクシー管理システム。
【請求項６】　前記タクシー業者にタクシー利用者からタクシー車両の配車依頼が有り、該タクシー業者から前記配車依頼者の位置と空車タクシー車両を特定したタクシー利用者へ配車依頼を受けた前記情報管理センタは、該配車依頼者の位置から該配車依頼者の位置に最も近い空車タクシー車両を検索し、検索した空車タクシー車両に対し前記配車依頼者の位置を地図上に重畳して該配車依頼者の位置周辺の地図を配信して迎車指示を送信して配車依頼を行うようにしたものである請求項１、２、３、４又は５に記載のタクシー管理システム。
【請求項７】　前記迎車指示の送信を受けたタクシー車両において送信されてきた配車依頼者の位置情報を記憶すると共に該配車依頼者の位置情報に基づいて依頼者エリアを演算して設定し、前記ＧＰＳ受信機を内蔵した通信ユニットによって求めた当該タクシー車両の位置が前記タクシー車両において設定した前記依頼者エリア内に進入したときに情報管理センタに依頼者エリア進入信号を送信し、
前記依頼者エリア進入信号を受信した情報管理センタにおいて、当該タクシー車両の配車依頼者先への到着予定時刻を演算し、当該タクシー車両の配車依頼者に対して該到着予定時刻を送信するようにしたことを特徴とする請求項１、２、３、４、５又は６に記載のタクシー管理システム。
【請求項８】　前記情報管理センタがタクシー車両に配車依頼者の位置情報を送信して迎車指示を送信する際に、当該配車依頼者の位置を示す広域道路地図を同時に送信し、前記情報管理センタがタクシー車両から依頼者エリア進入信号を受信することにより当該配車依頼者の周辺道路地図を送信するようにしたものである請求項１、２、３、４、５、６又は７に記載のタクシー管理システム。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、ＧＰＳ受信機を内蔵した通信ユニットを搭載したタクシー車両の空車状況と、位置データを情報管理センタが管理し、タクシー業者では地図上に重畳された自己の所有するタクシー車両の空車情報を備え、タクシー利用者からタクシー業者にタクシー車両の配車依頼があったときに、タクシー業者から情報管理センタに配車依頼者に対してタクシー車両の配車依頼を行い、情報管理センタ側では、各タクシー車両の運行情報を把握し、タクシー業者からの請求により日報等を提供するようにしたタクシー管理システムに関する。
【０００２】
【従来の技術】従来のタクシー管理システムとしては、例えば、特開平１１－２８３１９４号に示されるようなタクシーの到着報知システムがある。この到着報知システムは、顧客へのタクシー到着報知のため、システムコストを軽減し、タクシー運転手の負担を軽減するためのものである。配車依頼を受けて到着したときに、タクシー乗務員が到着スイッチを押すことによってセンタから自動的に相手方に電話連絡するというものである。
【０００３】また、特開平６－１２４１９号に示されるようなタクシー運行管理システムがある。このタクシー運行管理システムは、営業所に備えたタクシーで記憶された情報を読み取り処理するデータ読取り装置によって、読み取った情報を基に日報を作成し分析・統計資料を作成するデータ処理装置を用いて日報、各種統計・分

析資料を作成するものである。

【０００４】

【発明が解決しようとする課題】このため、従来のタクシー管理システムにあっては、タクシー乗務員が到着スイッチを押す操作をしない限り機能しないという問題があった。

【０００５】また、従来のタクシー管理システムにあっては、営業所に設けられたデータ読取り装置を用いて読み取った情報を基に日報を作成し分析・統計資料を作成するデータ処理装置を用いて日報、各種統計・分析資料を作成するため、全てタクシー業者が処理するものとなっていたため、新たな設備が必要となり全てのタクシー業者ができるものになっていないという問題があった。

【０００６】本発明の目的は、タクシー業者に何の設備も設けることなく、自社の所有する全タクシー車両の空車状態を常に把握でき、タクシー利用者からのタクシー車両の配車依頼があった際に配車依頼者に適切なタクシー車両の配車を行うことができ、必要に応じてタクシー車両の運行管理データを容易に得ることのできるタクシー管理システムを提供することにある。

【０００７】

【課題を解決するための手段】上記の目的を達成するために、請求項１に記載のタクシー管理システムは、ＧＰＳ受信機を内蔵した通信ユニットを搭載するタクシー車両を多数台管理するタクシー業者の依頼に基づき該タクシー業者の全タクシー車両の車両データを車両データベースに記憶して把握する情報管理センタにおいて，全タクシー車両に対して位置情報のポーリングを定期的に行い、位置情報のポーリングを受けた全タクシー車両から応答する位置情報に基づいて全車両の空車状況、全車両の位置データを空車データベースに書込・書換を行い、全タクシー車両の空車状況と位置情報に基づいて地図上に空車情報を重畳してタクシー業者に送信するようにしたものである。このように構成することにより、請求項１に記載の発明によると、タクシー業者に何の設備も設けることなく、自社の所有する全タクシー車両の空車状態を常に把握することができる。

【０００８】上記の目的を達成するために、請求項２に記載のタクシー管理システムは、全タクシー車両に対して定期的に行う位置情報のポーリングに対し、タクシー車両が空車のときに応答するようにしたものである。このように構成することにより、請求項２に記載の発明によると、タクシー業者に何の設備も設けることなく、自社の所有する全タクシー車両の空車状態を常に把握でき、タクシー利用者からのタクシー車両の配車依頼があった際に配車依頼者に適切なタクシー車両の配車を行うことができる。

【０００９】上記の目的を達成するために、請求項３に記載のタクシー管理システムは、全タクシー車両を、タクシー車両のメータ表示フラグが空車ポジションから他のポジションに変更または、他のポジションから空車ポジションに変更になったときに、情報管理センタに表示フラグのポジションと表示フラグ変更位置の位置情報を送信すると共に、位置情報の送信位置から定距離毎に位置情報を送信するようにしたものである。このように構成することにより、請求項３に記載の発明によると、空車状態と迎車・賃走開始位置、賃走終了位置を的確に把握することができ、ポーリングだけでなく「空車」の通報の後の追跡、フォローができ、ポーリングの通信費を抑えることができる。

【００１０】上記の目的を達成するために、請求項４に記載のタクシー管理システムは、全タクシー車両を、タクシー車両のメータ表示フラグが空車ポジションから他のポジションに変更または、他のポジションから空車ポジションに変更になったときに、前記情報管理センタにタクシーメータの情報を送信するようにしたものである。このように構成することにより、請求項４に記載の発明によると、常時当該車両の走行距離、請求金額、乗車頻度等を的確に知ることができる。

【００１１】上記の目的を達成するために、請求項５に記載のタクシー管理システムは、全タクシー車両のメータ表示フラグの空車ポジションから他のポジションへの変更または、他のポジションから空車ポジションへの変更の際に前記情報管理センタに送信される位置情報及びタクシーメータ情報により、タクシー業者からの請求に基づき、営業日報明細票、未収管理票、時間帯別営業収益分布、時間帯別乗車回数分布のいずれかを作成して提供するようにしたものである。このように構成することにより、請求項５に記載の発明によると、常時当該車両の走行距離、請求金額、営業状態、乗車頻度等を的確に知ることができる。

【００１２】上記の目的を達成するために、請求項６に記載のタクシー管理システムは、タクシー業者にタクシー利用者からタクシー車両の配車依頼が有り、タクシー業者から配車依頼者の位置と空車タクシー車両を特定したタクシー利用者へ配車依頼を受けた前記情報管理センタは、配車依頼者の位置から配車依頼者の位置に最も近い空車タクシー車両を検索し、検索した空車タクシー車両に対し配車依頼者の位置を地図上に重畳して配車依頼者の位置周辺の地図を配信して迎車指示を送信して配車依頼を行うようにしたものであ。このように構成することにより、請求項６に記載の発明によると、タクシー利用者からのタクシー車両の配車依頼があった際に配車依頼者に最短の時間で迎車し配車依頼者のところに到着することができる。

【００１３】上記の目的を達成するために、請求項７に記載のタクシー管理システムは、迎車指示の送信を受けたタクシー車両において送信されてきた配車依頼者の位置情報を記憶すると共に配車依頼者の位置情報に基づいて依頼者エリアを演算して設定し、ＧＰＳ受信機を内蔵

した通信ユニットによって求めたタクシー車両の位置がタクシー車両において設定した依頼者エリア内に進入したときに情報管理センタに依頼者エリア進入信号を送信し、依頼者エリア進入信号を受信した情報管理センタにおいて、タクシー車両の配車依頼者先への到着予定時刻を演算し、タクシー車両の配車依頼者に対して該到着予定時刻を送信するようにしたものである。このように構成することにより、請求項７に記載の発明によると、タクシー利用者からのタクシー車両の配車依頼があった際に配車依頼者に最短の時間で迎車し配車依頼者のところに到着直前に到着予定時刻を通知することができる。

【００１４】上記の目的を達成するために、請求項８に記載のタクシー管理システムは、情報管理センタがタクシー車両に配車依頼者の位置情報を送信して迎車指示を送信する際に、配車依頼者の位置を示す広域道路地図を同時に送信し、情報管理センタがタクシー車両から依頼者エリア進入信号を受信することにより当該配車依頼者の周辺道路地図を送信するようにしたものである。このように構成することにより、請求項８に記載の発明によると、より正確にタクシー利用者の迎車位置を把握することができ、間違えることなく配車依頼者のところに早く到着することができる。

【００１５】

【発明の実施の形態】以下、本発明に係るタクシー管理システムの実施の形態について説明する。図１は、タクシー管理システムを実施するための送受信関係を示している。

【００１６】図において、タクシー車両１は、タクシー業者２が所有し、このタクシー業者２がタクシー車両１と、このタクシー車両１を運転する運転者を管理している。このタクシー車両１は、ポーリングに基づき車載機器からアンテナを介してタクシー車両１の位置情報、メータ表示フラグのポジション情報、タクシーメータ情報を中継会社を介して情報管理センタ３に送信する。タクシー車両１の位置情報は、タクシー車両１のメータ表示フラグのポジションが空車ポジションのとき、すなわち、タクシー車両１が空車状態の時は、情報管理センタ３からの定期的なポーリングに応答して所定走行距離（例えば、５００ｍ）毎に送信する。したがって、情報管理センタ３からのポーリングが定期的に行われても、タクシー車両１が所定走行距離移動していない場合（例えば、空車にして休息をとっている場合）は、ポーリングに応答しない。

【００１７】また、このタクシー車両１の位置情報は、タクシー車両１のメータ表示フラグのポジションが空車ポジションから他のポジションへ変更になったとき、又は、他のポジションから空車ポジションへ変更になったときに情報管理センタ３に送信する。また、タクシー車両１のメータ表示フラグのポジションが空車ポジションから他のポジションへ変更になった以降、すなわち、タクシー車両１に乗客を乗せた実車の場合には、当該タクシー車両１は空車じゃなく、空車情報としてはデータに入らないため、情報管理センタ３からの定期的なポーリングに対して応答しないようになっている。このタクシー車両１が実車の場合、乗客を降ろした際に他のポジション（賃走ポジション）から空車ポジションへ変更になり、情報管理センタ３に位置情報を送信するので問題はない。このように情報収集に必要な場合のみ送信するようにしてあるため、通信費を低く抑えることができる。

【００１８】この情報管理センタ３では、管理する全タクシー車両１の内、空車状態にあるタクシー車両１を取り出し空車データを作成し、この空車状態にあるタクシー車両１の位置情報を地図に重畳してディスプレイ５に、地図を区域（例えば、東京２３区）別に空車状況を表示する空車データを得ている。この地図に重畳した空車データは、情報管理センタ３からタクシー業者２にインターネットを介して送信される。そして、この空車データの送信を受けたタクシー業者２では、管理する全タクシー車両１の内、空車状態のタクシー車両１の位置情報に基づいて地図上に重畳し空車情報としてディスプレイ５に表示する。

【００１９】また、情報管理センタ３では、管理する全タクシー車両１のメータ表示フラグのポジションが空車ポジションから他のポジション（賃走ポジション）へ変更になったときの位置情報を取り込み、賃走の開始点を把握し、乗客を降ろした際に他のポジション（賃走ポジション）から空車ポジションへ変更になったときの位置情報を取り込み、賃走の終点を把握するようになっており、このタクシー車両１のメータ表示フラグのポジションが空車ポジションになったときのタクシーメータ情報（賃走開始時間、賃走終了時間、走行距離、料金、支払方法、実車地）がタクシー車両１から情報管理センタ３に送信される。これによって実車毎のデータが情報管理センタ３に蓄積され、これを整理することによって各タクシー車両１の運行データを得ることができるようになっている。

【００２０】また、タクシー車両１は、配車依頼者４の依頼者エリア内に進入したときに車載機器からアンテナを介して配車依頼者４の依頼者エリア内に進入したことを示す依頼者エリア進入信号を中継会社を介して情報管理センタ３の制御機器に送信する。

【００２１】タクシー車両１に搭載される車載機器の構成は、図２に示す如き構成となっている。図において、車載機器１１は、ＧＰＳ受信機を内蔵した通信ユニットで、制御ＣＰＵ１２と、制御ＣＰＵ１２によって制御されるＧＰＳ受信機１３と、外部とのやり取りを行うモデムであるＰＣ（通信機器）１５（例えば、携帯電話モジュール等）とによって構成されている。すなわち、制御ＣＰＵ１２には、タクシー車両１の地図上での位置情報をアンテナ１４から受信するＧＰＳ受信機１３とＧＰＳ

受信機１３から入力される位置情報をアンテナ１６から情報管理センタ３に送信するＰＣ１５とが接続されている。さらに、制御ＣＰＵ１２には、ＰＣ（通信機器）１５を介して情報管理センタ３から送信されてきた地図データを表示するディスプレィ１７が接続されている。このディスプレィ１７は、情報管理センタ３からの指示を表示するためのもので、タクシー利用者４からタクシー業者２に通信会社を介してタクシー車両１の配車依頼があった場合、タクシー業者２から情報管理センタ３にタクシー車両１の配車依頼が行われ、情報管理センタ３からタクシー車両１に対し配車依頼を行う際、配車依頼者４の位置を示す広域道路地図の送信を受け、この送信された広域道路地図の上に配車依頼者４を示す位置を記して表示するのに用いられる。また、依頼者エリア進入信号を受信、すなわち、配車依頼者４のエリア内にタクシー車両１が進入したときに、情報管理センタ３から配車依頼者４の周辺位置を示す周辺道路地図の送信を受け、この送信された周辺道路地図の上に配車依頼者を示す位置を記して表示したりする。

【００２２】このディスプレィ１７は、タクシー車両１に必ず設けられているものではなく、タクシー車両１によっては、搭載していない場合もある。このような場合は、情報管理センタ３からの指示は、タクシー車両１に乗車している運転手が所有する携帯電話に行ってもよい。

【００２３】また、ＧＰＳ受信機１３は、複数のＧＰＳ衛星から緯度・経度情報をアンテナ１４を介して受信するものである。また、制御ＣＰＵ１２は、ＧＰＳ受信機１３によって受信した複数のＧＰＳ衛星から緯度・経度情報からタクシー車両１の現在位置（緯度・経度）を演算すると共に、この演算結果を中継会社を介して情報管理センタ３に送信する機能を有している。そして、この制御ＣＰＵ１２には、ＲＯＭ、ＲＡＭが内蔵されている。この内蔵のＲＡＭには、与えられた配車依頼者の位置（緯度・経度）に基づいて、配車依頼者の位置を中心とする所定半径距離が記憶されている。また、この制御ＣＰＵ１２に内蔵のＲＡＭには、広域道路地図及び営業エリア内の各住宅の周辺道路地図を予め格納しておくこともできる。この場合、タクシー利用者からタクシー車両１の配車依頼があったときに情報管理センタ３から広域道路地図及び営業エリア内の各住宅の周辺道路地図をタクシー車両１に送信する必要がなくなる。

【００２４】また、この内蔵のＲＯＭには、与えられた配車依頼者の位置（緯度・経度）に基づいて、配車依頼者の位置を中心に所定半径距離（半径５００ｍ）に基づいて依頼者エリアを演算する処理プログラムが記憶されている。さらに、この内蔵のＲＯＭには、ＧＰＳ受信機１３によって複数のＧＰＳ衛星から受信した緯度・経度情報からタクシー車両１の現在位置（緯度・経度）を演算する制御、複数のＧＰＳ衛星から緯度・経度情報から算出したタクシー車両１の現在位置（緯度・経度）に基づいて、当該タクシー車両１が内蔵ＲＡＭに記憶されている依頼者エリア内に進入したか否かを検出する制御、当該タクシー車両１が内蔵ＲＡＭに記憶されている依頼者エリア内に進入した場合に依頼者エリア進入信号をＰＣ（通信機器）１５を起動して中継会社を介して情報管理センタ３に送信する制御、を行うプログラムが記憶されている。また、ＰＣ（Ｐｕｂｌｉｃ　Ｃｏｍｍｕｎｉｃａｔｉｏｎ）１５は、制御ＣＰＵ１２で演算した結果をアンテナ１６を介して中継会社に送信するもので、例えば、携帯電話モジュール等によって構成されている。ディスプレィ１７は、情報管理センタ３から送信されてきた情報（地図データ）及び制御ＣＰＵ１２に内蔵のＲＡＭに格納してある情報（所定半径距離、地図データ）を表示するものである。

【００２５】一方、情報管理センタ３は、図３に示す如き構成を有している。すなわち、ＣＰＵ３１には、メモリ装置が接続されており、このメモリ装置は、車両データベース３５と、地図データベース３６と、空車データベース３７と、道路情報データベース３８と、データメモリエリア３９とを有している。また、このＣＰＵ３１には、各種データを入力する入力部（キーボード）３２が接続されている。さらに、このＣＰＵ３１には、アンテナ３４が接続されており、このアンテナ３４を使ってＣＰＵ３１は、中継会社を介してタクシー車両１の車載機器から送信されてくる位置情報を受信したり、タクシー車両１が依頼者エリア内に進入したことを示す依頼者エリア進入信号をタクシー車両１の車載機器から受信したときに送信タクシー業者２に送信する機能を有している。また、このＣＰＵ３１には、表示部（ディスプレイ）３３が接続されており、ＣＰＵ３１が受信したタクシー車両１の車載機器から送信されてきた情報を表示する機能を有している。

【００２６】車両データベース３５には、管理する全てのタクシー車両１の車種・形式・車両番号・乗車運転手等の車両データがデータベース化して収納されている。この車両データには、情報管理センタ３で管理するタクシー車両１のＧＰＳ受信機を内蔵した通信ユニット１１の携帯電話番号、車種・形式・車両番号・乗車運転手等がある。また、地図データベース３６は、タクシー営業エリアを網羅し、特定地域を詳細に表示可能なデータで、特に特定の周辺地図を拡大、スクロール表示が可能なものとなっている。また、空車データベース３７は、管理している全タクシー車両１のメータ表示フラグが空車ポジションになっているものの車両Ｎｏ．とそれぞれの車両位置情報（緯度・経度情報）、乗車運転手名が記録されている。道路情報データベース３８は、色々な箇所から収集される道路情報をデータベース化して収納しておくものである。また、データメモリエリア３９は、タクシー車両１等から情報管理センタ３に送信されてく

るデータを一時的に記憶しておくものである。

【００２７】タクシー車両１が配車依頼者４の近くに近づいたとき、どの範囲まで接近したときに依頼者へ通知するかを特定する依頼者への通知範囲は、図４に示す如く設定される。すなわち、配車依頼者Ａ、配車依頼者Ｂ、配車依頼者Ｃ、配車依頼者Ｄ、配車依頼者Ｅ、配車依頼者Ｆ、配車依頼者Ｇ・・・・があり、各配車依頼者Ａ、Ｂ、Ｃ、Ｄ、Ｅ、Ｆ、Ｇ・・・・は、依頼を受けたときに特定され、それぞれの配車依頼者には、依頼者への通知範囲がそのときに与えられる。この依頼者への通知範囲は、タクシー車両１が配車依頼者４に近づいてタクシー配車依頼者４までの到着時刻が所定時間内の位置に近づいたことを意味しており、例えば、配車依頼者４を中心に半径５００ｍ内を指している。実際には、道路の渋滞具合が各配車依頼者近傍の道路状況によって異なるため、各配車依頼者毎に依頼者への通知範囲を設定してもよい。そして、配車依頼者Ａにはエリアａ（半径５００ｍ内）が、配車依頼者Ｂにはエリアｂ（半径５００ｍ内）が、配車依頼者Ｃにはエリアｃ（半径５００ｍ内）が、配車依頼者Ｄにはエリアｄ（半径５００ｍ内）が、配車依頼者Ｅにはエリアｅ（半径５００ｍ内）が、配車依頼者Ｆにはエリアｆ（半径５００ｍ内）が、配車依頼者Ｇにはエリアｇ（半径５００ｍ内）・・・がそれぞれ設けられることになる。

【００２８】そして、配車依頼者の位置情報は、配車依頼を受けたときに依頼者の電話番号によって特定され、それぞれの配車依頼者の位置情報は、図４に示す如く、配車依頼者Ｎｏ．Ａの位置情報は緯度P_{01}、経度Q_{01}、配車依頼者Ｎｏ．Ｂの位置情報は緯度P_{02}、経度Q_{02}、配車依頼者Ｎｏ．Ｃの位置情報は緯度P_{03}、経度Q_{03}、配車依頼者Ｎｏ．Ｄの位置情報は緯度P_{04}、経度Q_{04}、配車依頼者Ｎｏ．Ｅの位置情報は緯度P_{05}、経度Q_{05}、配車依頼者Ｎｏ．Ｆの位置情報は緯度P_{06}、経度Q_{06}、配車依頼者Ｎｏ．Ｇの位置情報は緯度P_{07}、経度Q_{07}、配車依頼者Ｎｏ．・・・・と緯度・経度情報で、データメモリエリア３９に収納される。そして、この配車依頼を受けた依頼者の電話番号によって特定された配車依頼者の位置情報に基づいて、情報管理センタ３のＣＰＵ３１は、各配車依頼者についての依頼者への通知範囲が自動演算され、図４に示す如く、配車依頼者Ｎｏ．Ａのエリアａは緯度P_{11}、経度Q_{11}、配車依頼者Ｎｏ．Ｂのエリアｂは緯度P_{12}、経度Q_{12}、配車依頼者Ｎｏ．Ｃのエリアｃは緯度P_{13}、経度Q_{13}、配車依頼者Ｎｏ．Ｄのエリアｄは緯度P_{14}、経度Q_{14}、配車依頼者Ｎｏ．Ｅのエリアｅは緯度P_{15}、経度Q_{15}、配車依頼者Ｎｏ．Ｆのエリアｆは緯度P_{16}、経度Q_{16}、配車依頼者Ｎｏ．Ｇのエリアｇは緯度P_{17}、経度Q_{17}、依頼者Ｎｏ．・・・・と緯度・経度情報で、データメモリエリア３９に収納される。

【００２９】一方、これらの配車依頼者の位置情報は、情報管理センタ３のＣＰＵ３１によってアンテナ３４を使って中継会社に送信され、この中継会社に送信された配車依頼者の位置情報は、中継会社からタクシー車両１のＧＰＳ受信機を内蔵した通信ユニット（車載機器）１１のアンテナ１６を介して制御ＣＰＵ１２に送信される。この制御ＣＰＵ１２では、送信された配車依頼者の位置情報（緯度・経度情報）に基づいて情報管理センタ３のＣＰＵ３１と同様、各配車依頼者についての依頼者への通知範囲を自動演算し、図４に示す如き情報管理センタ３のデータメモリエリア３９に収納された各配車依頼者への依頼者への通知範囲データ（緯度・経度データ）と同一のデータが各配車依頼者毎にエリアを緯度・経度情報として得られ、タクシー車両１のＧＰＳ受信機を内蔵した通信ユニット（車載機器）１１の制御ＣＰＵ１２に内蔵のＲＡＭに依頼者エリアとして記憶される。

【００３０】このように構成されるタクシー管理システムを用いて、タクシー車両１の空車情報を表示し、タクシー利用者からタクシー車両１の配車依頼があったときのタクシー車両（車載機器）１側、情報管理センタ３側、タクシー業者２側、配車依頼者（タクシー利用者）４側の相互の動作について、図５～図１０に図示のフローチャートを用いて説明する。まず、タクシー業者２においては、ステップ１０２において、情報管理センタ３に対して会員登録の申込を行う。このステップ１０２においてタクシー業者２からの会員申込が行われると、情報管理センタ３側では、ステップ１０４において、会員登録を行う。そして、情報管理センタ３側では、ステップ１０６において、タクシー業者２が管理するタクシー全車の車両データ（メーカー名、車種、初年度登録年月、排気量、グレード、ボディカラー、車体番号、乗車運転手）をタクシー業者２に行う。このステップ１０６においてタクシー全車の車両データの請求を受けると、タクシー業者２は、ステップ１０８において、タクシー業者２が管理するタクシー全車の車両データを情報管理センタ３に提供する。このステップ１０８においてタクシー業者２からタクシー全車の車両データの提供を受けると、情報管理センタ３では、ステップ１１０において、タクシー業者２から提供されたタクシー全車の車両データ（メーカー名、車種、初年度登録年月、排気量、グレード、ボディカラー、車体番号、乗車運転手）を車両データベース３５に登録する。これによって情報管理センタ３は、タクシー業者２の所有する全タクシー車両を把握することになる。

【００３１】情報管理センタ３において、ステップ１１０におけるタクシー全車の車両データの登録が行われると、ステップ１１２において、車両データベース３５に登録したタクシー全車の車両データの確認をタクシー業者２に対して行い、タクシー業者２では、ステップ１１４において、車両データベース３５に登録したタクシー

全車の車両データに間違いがなければ、タクシー全車の車両データの確認の了承を情報管理センタ３に送信する。

【００３２】このタクシー全車の車両データの確認の了承をタクシー業者２から受信すると、情報管理センタ３では、ステップ１１６において、車両データベース３５に登録した全タクシー車両１に対し、位置情報・空車情報のポーリングを順次行う。この情報管理センタ３からの位置情報・空車情報のポーリングを受けると、タクシー車両（車載機器）１においては、タクシー車両１のメータ表示フラグのポジションが空車ポジションである場合に限り、ステップ１１８において、一定の周期で複数のＧＰＳ衛星から送信してくる緯度・経度情報をＧＰＳ受信機１３によって受信し、制御ＣＰＵ１２によってこれらの緯度・経度情報に基づいて演算した現在の位置情報を乗車・空車の情報（空車情報のみ）と共にＰＣ１５を介して情報管理センタ３に送信する。このステップ１１８においてタクシー車両１から位置情報と共に空車情報が送信されると、情報管理センタ３では、ステップ１２０において、車両データベース３５に登録した全タクシー車両についての空車情報、空車タクシー車両の位置情報を受信し、空車データーベース３７に記録される。そして、ステップ１２２において、情報管理センタ３では、この受信・記録した全タクシー車両についての空車情報を空車タクシー車両の位置情報に基づいて地図に重畳してタクシー業者２に送信する。このステップ１２２において情報管理センタ３から地図に重畳した空車タクシー車両の情報を受信したタクシー業者２は、ステップ１２４において、地図データに重畳した空車情報をディスプレイ５に表示する。

【００３３】その後、タクシー車両（車載機器）１は、ステップ１２６において、情報管理センタ３からの位置情報・空車情報のポーリングに対して、タクシー車両１が所定距離（例えば、５００ｍ）走行する毎に一定の周期で複数のＧＰＳ衛星から送信してくる緯度・経度情報をＧＰＳ受信機１３によって受信し、制御ＣＰＵ１２によってこれらの緯度・経度情報に基づいて演算した現在の位置情報をタクシー車両１のＰＣ１５を介して情報管理センタ３に送信する。このタクシー車両１から所定距離走行毎に送信されてくる位置情報・空車情報は、ステップ１２８において、情報管理センタ３で受信され、空車データベース３７に記憶される。このステップ１２８において位置情報・空車情報が受信・記憶されると、再び、ステップ１３０において、情報管理センタ３では、車両データベース３５に登録した全タクシー車両１に対し、位置情報・空車情報のポーリングを順次行う。この情報管理センタ３からの位置情報・空車情報のポーリングを受けると、タクシー車両（車載機器）１においては、タクシー車両１のメータ表示フラグのポジションが空車ポジションである場合に限り、ステップ１３２において、一定の周期で複数のＧＰＳ衛星から送信してくる緯度・経度情報をＧＰＳ受信機１３によって受信し、制御ＣＰＵ１２によってこれらの緯度・経度情報に基づいて演算した現在の位置情報を乗車・空車の情報（空車情報のみ）と共にＰＣ１５を介して情報管理センタ３に送信する。このステップ１３２においてタクシー車両１から位置情報と共に空車情報が送信されると、情報管理センタ３では、ステップ１３４において、車両データベース３５に登録した全タクシー車両についての空車情報、空車タクシー車両の位置情報の受信し、空車データーベース３７に記録されているデータを書換更新する。そして、ステップ１３６において、情報管理センタ３では、この受信・記録した全タクシー車両についての空車情報を空車タクシー車両の位置情報に基づいて地図に重畳してタクシー業者２に送信する。このステップ１３６において情報管理センタ３から地図に重畳した空車タクシー車両の情報を受信したタクシー業者２は、ステップ１３８において、地図データに重畳した空車情報をディスプレイ５に表示する。

【００３４】いま、このような状態で、ステップ１４０において、配車依頼者（タクシー利用者）４が電話等でタクシー業者２に対し配車の依頼を行うと、この配車の依頼をタクシー業者２で受信し、この配車の依頼を受信したタクシー業者２は、ステップ１４２において、配車依頼者４の位置（所在地）と共に配車依頼を情報管理センタ３に送信する。このステップ１４２においてタクシー業者２が送信した配車依頼と配車依頼者４の位置（所在地）をステップ１４４において、情報管理センタ３が受信すると、情報管理センタ３は、配車依頼者４の地図上の位置（所在地）を検索し、ステップ１４６において、会員（タクシー業者）２の管理するタクシー車両１の空車状況の確認を行う。このステップ１４６において会員（タクシー業者）２の管理するタクシー車両１の空車状況の確認を行うと、ステップ１４８において、配車依頼者の位置（所在地）に最も近い空車の検索を行う。このステップ１４８において配車依頼者の位置（所在地）に最も近い空車を検索すると、ステップ１５０において、検索した空車タクシー車両１に対し、配車依頼者４の位置情報（緯度・経度データ）を送信し、配車依頼者４の位置に迎えに行くよう迎車指示を送信する。

【００３５】このステップ１５０において配車依頼者４の位置情報を送信し迎車指示を送信すると、空車タクシー車両１は、ステップ１５２において、配車依頼者４の位置情報を送信し迎車指示を受信し、この受信した配車依頼者４の位置情報に基づいて、依頼者エリアが設定され、配車依頼者についての依頼者への通知範囲が緯度Ｐｏｏ、経度Ｑｏｏというように、緯度・経度情報として自動演算され、設定される。この依頼者エリアは、タクシー車両１のＧＰＳ受信機を内蔵した通信ユニット（車載機器）１１の制御ＣＰＵ１２に内蔵のＲＡＭに記憶さ

れる。このステップ２１６において依頼者エリアが緯度・経度情報として自動演算され設定されると、ステップ１５６において、タクシー車両１は、メータ表示フラグを空車ポジションから迎車ポジションに変更する（この時点で、タクシー車両１は空車でなくなる）。このメータ表示フラグが空車ポジションから迎車ポジションに変更になると、このメータ表示フラグの変更をトリガーとして、タクシー車両１が迎車状態になったことをタクシー車両１の位置情報と共に情報管理センタ３に送信する。

【００３６】このステップ１５６においてタクシー車両１が迎車状態になったことをタクシー車両１の位置情報と共に情報管理センタ３に送信すると、情報管理センタ３では、ステップ１５８において、タクシー車両１の迎車了解の確認を受信し、ステップ１６０において、情報管理センタ３のメモリ装置の空車データベース３７に記憶されている空車データから削除し、迎車データとして登録する。この迎車車両データは、ステップ１６２において、会員（タクシー業者）２に送信される。この送信を受けたタクシー業者２は、ステップ１６４において、配車手配を受信する。

【００３７】さらに、情報管理センタ３では、ステップ１６６において、空車タクシー車両１の配車依頼者４の位置まで到着する予定時刻の演算を行い、その演算結果（到着予定時刻）をタクシー業者２に通知する。この情報管理センタ３からの到着予定時刻を受信する（ステップ１６８）と、タクシー業者２は、ステップ１７０において、配車依頼者４に対し、配車手配車の情報と、到着予定時刻の連絡を行う。このステップ１７０におけるタクシー業者２からの連絡は、ステップ１７２において、配車依頼者４に受信される。

【００３８】さらに、情報管理センタ３で、ステップ１７４において、車両データベース３５に登録した全タクシー車両１に対し、位置情報・空車情報のポーリングを順次行う。ところが、タクシー車両１の位置情報は、メータ表示フラグが空車ポジションに変更になったときに情報管理センタ３に送信され、その後、メータ表示フラグのポジションが「空車」位置に保持されている限り、定距離（例えば、５００ｍ）毎にタクシー車両１から情報管理センタ３に自動発報されるようになっている。そこで、メータ表示フラグのポジションが「空車」位置に変更になって定距離（例えば、５００ｍ）毎にタクシー車両１の位置情報が自動発報されているタクシー車両１に対しては、ステップ１７４において行われる情報管理センタ３からタクシー車両１に対する位置情報・空車情報のポーリングを行わない。このため、ポーリングに係る通信費を削減することができる。

【００３９】この情報管理センタ３からの位置情報・空車情報のポーリングは、メータ表示フラグが空車ポジションに変更になると、その地点からタクシー車両１は定距離（例えば、５００ｍ）毎に情報管理センタ３に位置情報を自動発報しているため、メータ表示フラグのポジションが「空車」位置になっているタクシー車両１に対しては行わない。したがって、情報管理センタ３からの位置情報・空車情報のポーリングを受ける（メータ表示フラグのポジションが空車以外のポジションとなっているタクシー車両１）と、タクシー車両（車載機器）１においては、ステップ１７６において、一定の周期で複数のＧＰＳ衛星から送信してくる緯度・経度情報をＧＰＳ受信機１３によって受信し、制御ＣＰＵ１２によってこれらの緯度・経度情報に基づいて演算した現在の位置情報を乗車・空車の情報（空車情報のみ）と共にＰＣ１５を介して情報管理センタ３に送信する。このステップ１７６においてタクシー車両１から位置情報と共に空車情報が送信されると、情報管理センタ３では、ステップ１７８において、車両データベース３５に登録した全タクシー車両についての空車情報は定距離（例えば、５００ｍ）毎、メータ表示フラグのポジションが空車以外のポジションとなっているタクシー車両の位置情報が受信され、空車データーベース３７に記録される。そして、ステップ１８０において、情報管理センタ３では、この受信・記録した全タクシー車両についての空車情報を空車タクシー車両の位置情報に基づいて地図に重畳してタクシー業者２に送信する。このステップ１８０において情報管理センタ３から地図に重畳した空車タクシー車両の情報を受信したタクシー業者２は、ステップ１８２において、地図データに重畳した空車情報をディスプレイ５に表示する。

【００４０】また、情報管理センタ３で、ステップ１８４において、車両データベース３５に登録した全タクシー車両１に対し、位置情報・空車情報のポーリングを順次行う。ところが、タクシー車両１の位置情報は、メータ表示フラグが空車ポジションに変更になったときに情報管理センタ３に送信され、その後、メータ表示フラグのポジションが「空車」位置に保持されている限り、定距離（例えば、５００ｍ）毎にタクシー車両１から情報管理センタ３に自動発報されるようになっている。そこで、メータ表示フラグのポジションが「空車」位置に変更になって定距離（例えば、５００ｍ）毎にタクシー車両１の位置情報が自動発報されているタクシー車両１に対しては、ステップ１７４において行われる情報管理センタ３からタクシー車両１に対する位置情報・空車情報のポーリングを行わない。このため、ポーリングに係る通信費を削減することができる。

【００４１】この情報管理センタ３からの位置情報・空車情報のポーリングを受けると、タクシー車両（車載機器）１においては、タクシー車両１のメータ表示フラグのポジションが空車以外のポジションである場合に限り、ステップ１８６において、一定の周期で複数のＧＰＳ衛星から送信してくる緯度・経度情報をＧＰＳ受信機

１３によって受信し、制御ＣＰＵ１２によってこれらの緯度・経度情報に基づいて演算した現在の位置情報を乗車・空車の情報（空車情報のみ）と共にＰＣ１５を介して情報管理センタ３に送信する。このステップ１８６においてタクシー車両１から、メータ表示フラグのポジションが空車以外のポジションとなっているタクシー車両についての位置情報と、メータ表示フラグのポジションが空車のポジションであるタクシー車両の空車情報が定距離（例えば、５００ｍ）毎に送信されると、情報管理センタ３では、ステップ１８８において、車両データベース３５に登録した全タクシー車両についての空車情報、空車タクシー車両の位置情報の受信し、空車データーベース３７に記録される。このような繰り返しを行うことにより各タクシー車両１の空車情報、運行情報が情報管理センタ３に収集される。

【００４２】このようにして各タクシー車両１営業が終了すると、タクシー業者２は、情報管理センタ３に対してステップ１９０において、各タクシー車両１毎の営業日報明細の請求を行う。このステップ１９０において営業日報明細の請求が有ると、情報管理センタ３は、ステップ１９２において、図１１に示す如き各タクシー車両１毎の営業日報明細の作成を行い、ステップ１９４において、作成した各タクシー車両１毎の営業日報明細をタクシー業者２に送信する。この営業日報明細には、日報日付、車両コード、乗務員名等が記載され、１日のタクシー車両１の営業状況が示される。このステップ１９４において情報管理センタ３が作成した各タクシー車両１毎の営業日報明細をタクシー業者２に送信する。この情報管理センタ３から送信されると、タクシー業者２は、ステップ１９６において、図１１に示す如き各タクシー車両１毎の営業日報明細を受信する。

【００４３】また、タクシー業者２が、情報管理センタ３に対してステップ１９８において、各タクシー車両１に未収金管理票の請求を情報管理センタ３に行うと、ステップ２００において、各タクシー車両１毎の図１２に示す如き未収金管理票の作成を行う。この未収金管理票は、各タクシー車両１がクレジットカード、チケットカード、プリペイドカード、メンバーズカードで支払った料金が未収金となっているものを表にして出したものである。このステップ２００において各タクシー車両１毎の未収金管理票の作成を行うと、ステップ２０２において、作成した各タクシー車両１毎の未収金管理票をタクシー業者２に送信する。このステップ２０２において情報管理センタ３が作成した未収金管理票をタクシー業者２に送信すると、タクシー業者２は、ステップ２０４において、図１２に示す如き未収金管理票を受信する。

【００４４】また、タクシー業者２が、情報管理センタ３に対してステップ２０６において、各タクシー車両１に時間帯別営業収入分布票の請求を情報管理センタ３に行うと、ステップ２０８において、各タクシー車両１毎の図１３に示す如き時間帯別営業収入分布票の作成を行う。この時間帯別営業収入分布票は、時間帯エリアを２４時間に分け、どこの地区での営業実績がいいかを表にして示したものである。このステップ２０８において時間帯別営業収入分布票の作成を行うと、ステップ２１０において、作成した時間帯別営業収入分布票をタクシー業者２に送信する。このステップ２１０において情報管理センタ３が作成した時間帯別営業収入分布票をタクシー業者２に送信すると、タクシー業者２は、ステップ２１２において、図１３に示す如き時間帯別営業収入分布票を受信する。

【００４５】また、タクシー業者２が、情報管理センタ３に対してステップ２１４において、各タクシー車両１に時間帯別乗車回数分布票の請求を情報管理センタ３に行うと、ステップ２１６において、各タクシー車両１毎の図１４に示す如き時間帯別乗車回数分布票の作成を行う。この時間帯別乗車回数分布票は、時間帯エリアを２４時間に分け、どこの地区での乗車回数が多いかを表にして示したものである。このステップ２１６において時間帯別乗車回数分布票の作成を行うと、ステップ２１８において、作成した時間帯別乗車回数分布票をタクシー業者２に送信する。このステップ２１８において情報管理センタ３が作成した時間帯別乗車回数分布票をタクシー業者２に送信すると、タクシー業者２は、ステップ２２０において、図１４に示す如き時間帯別乗車回数分布票を受信し、フローを終了する。

【００４６】

【発明の効果】以上に説明したように構成されているので、以下のような効果を奏する。

【００４７】請求項１に記載の発明によれば、タクシー業者に何の設備も設けることなく、自社の所有する全タクシー車両の空車状態を常に把握することができる。

【００４８】請求項２に記載の発明によれば、タクシー業者に何の設備も設けることなく、自社の所有する全タクシー車両の空車状態を常に把握でき、タクシー利用者からのタクシー車両の配車依頼があった際に配車依頼者に適切なタクシー車両の配車を行うことができる。

【００４９】請求項３に記載の発明によれば、空車状態と迎車・賃走開始位置、賃走終了位置を的確に把握することができ、ポーリングだけでなく「空車」の通報の後の追跡、フォローができ、ポーリングの通信費を抑えることができる。

【００５０】請求項４に記載の発明によれば、常時当該車両の走行距離、請求金額、乗車頻度等を的確に知ることができる。

【００５１】請求項５に記載の発明によれば、常時当該車両の走行距離、請求金額、営業状態、乗車頻度等を的確に知ることができる。

【００５２】請求項６に記載の発明によれば、タクシー利用者からのタクシー車両の配車依頼があった際に配車

依頼者に最短の時間で迎車し配車依頼者のところに到着することができる。

【００５３】請求項７に記載の発明によれば、タクシー利用者からのタクシー車両の配車依頼があった際に配車依頼者に最短の時間で迎車し配車依頼者のところに到着直前に到着予定時刻を通知することができる。

【００５４】請求項８に記載の発明によれば、より正確にタクシー利用者の迎車位置を把握することができ、間違えることなく配車依頼者のところに早く到着することができる。

【図面の簡単な説明】

【図１】タクシー管理システムを実施するための送受信関係を示す図である。

【図２】図１に図示のタクシー車両に搭載される車載機器の構成を示す図である。

【図３】図１に図示の情報管理センタの構成を示す図である。

【図４】図１に図示の配車依頼者の位置及び依頼者エリアの緯度・経度データを示す図である。

【図５】タクシー管理システムを用いて、タクシー車両１の空車情報を表示し、タクシー利用者からタクシー車両１の配車依頼があったときのタクシー車両１側、情報管理センタ３側、タクシー業者２側、配車依頼者（タクシー利用者）４側の相互の動作を示すフローチャートである。

【図６】タクシー管理システムを用いて、タクシー車両１の空車情報を表示し、タクシー利用者からタクシー車両１の配車依頼があったときのタクシー車両１側、情報管理センタ３側、タクシー業者２側、配車依頼者（タクシー利用者）４側の相互の動作を示すフローチャートである。

【図７】タクシー管理システムを用いて、タクシー車両１の空車情報を表示し、タクシー利用者からタクシー車両１の配車依頼があったときのタクシー車両１側、情報管理センタ３側、タクシー業者２側、配車依頼者（タクシー利用者）４側の相互の動作を示すフローチャートである。

【図８】タクシー管理システムを用いて、タクシー車両１の空車情報を表示し、タクシー利用者からタクシー車両１の配車依頼があったときのタクシー車両１側、情報管理センタ３側、タクシー業者２側、配車依頼者（タクシー利用者）４側の相互の動作を示すフローチャートである。

【図９】タクシー管理システムを用いて、タクシー車両１の空車情報を表示し、タクシー利用者からタクシー車両１の配車依頼があったときのタクシー車両１側、情報管理センタ３側、タクシー業者２側、配車依頼者（タクシー利用者）４側の相互の動作を示すフローチャートである。

【図１０】タクシー管理システムを用いて、タクシー車両１の空車情報を表示し、タクシー利用者からタクシー車両１の配車依頼があったときのタクシー車両１側、情報管理センタ３側、タクシー業者２側、配車依頼者（タクシー利用者）４側の相互の動作を示すフローチャートである。

【図１１】情報管理センタが作成する営業日報明細を示す図である。

【図１２】情報管理センタが作成する未収金管理票を示す図である。

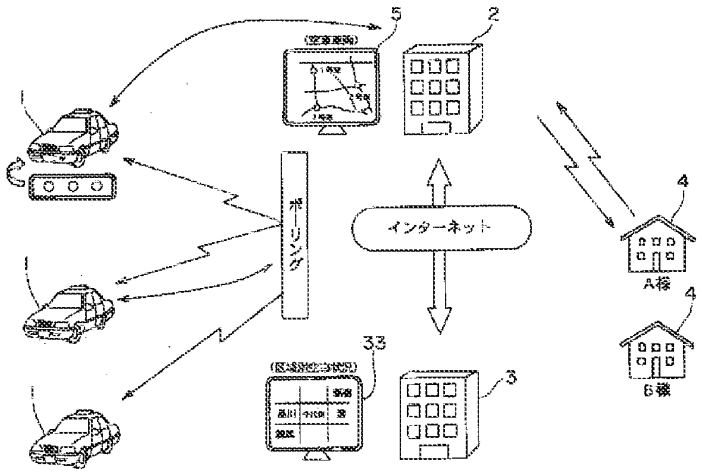
【図１３】情報管理センタが作成する時間帯別営業収入分布票を示す図である。

【図１４】情報管理センタが作成する時間帯別乗車回数分布票を示す図である。

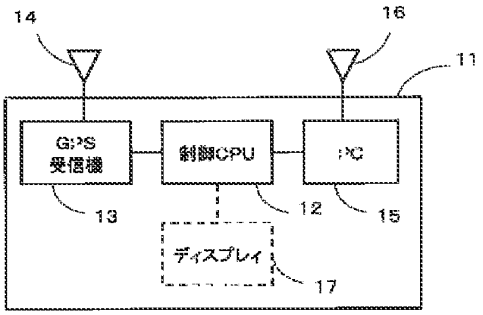
【符号の説明】

１……タクシー車両
２……タクシー業者
３……情報管理センタ
４……配車依頼者（タクシー利用者）
１１……通信ユニット（車載機器）
１２……制御ＣＰＵ
１３……ＧＰＳ受信機
１５……ＰＣ
１７……ディスプレィ
３１……ＣＰＵ
３２……入力部
３３……表示部
３５……車両データベース
３７……空車データベース

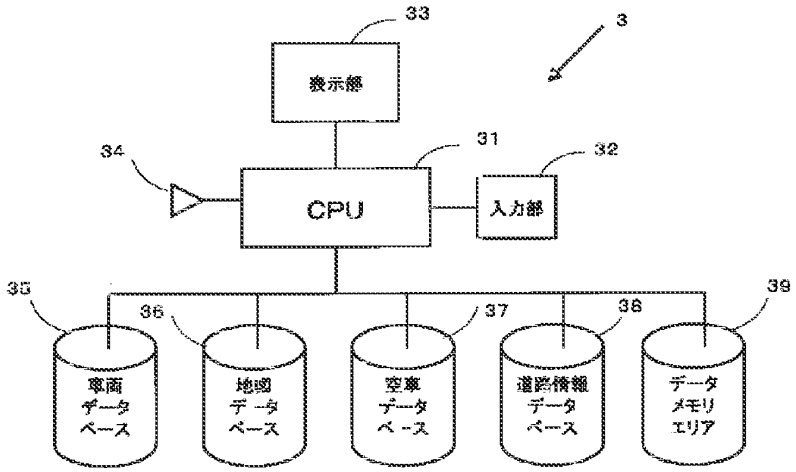
【図1】


5
2
4
インターネット
A様
4
B様
33
3
1…タクシー車両　2…タクシー業者　3…情報管理センタ　4…配車依頼者（タクシー利用者）
5…ディスプレイ　33…表示部

【図2】


14
16
11
GPS
受信機
制御CPU
I/C
13
12
15
ディスプレイ
17

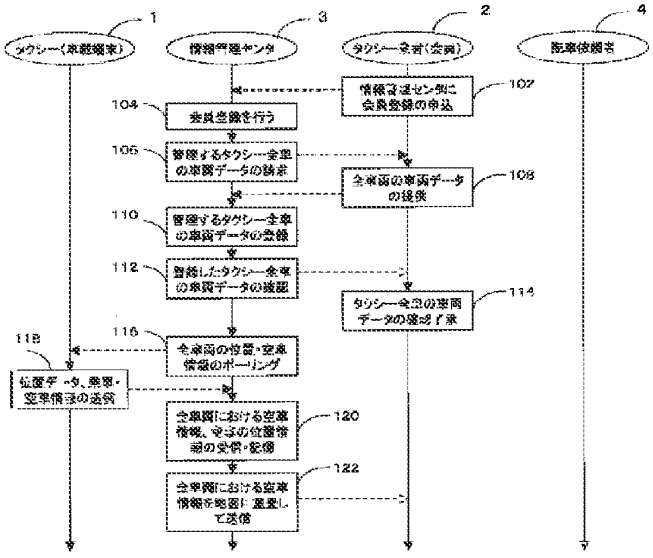
【図3】


33
3
表示部
34
31
32
CPU
入力部
35
36
37
38
39
車両
データ
ベース
地図
データ
ベース
空車
データ
ベース
道路情報
データ
ベース
データ
メモリ
エリア

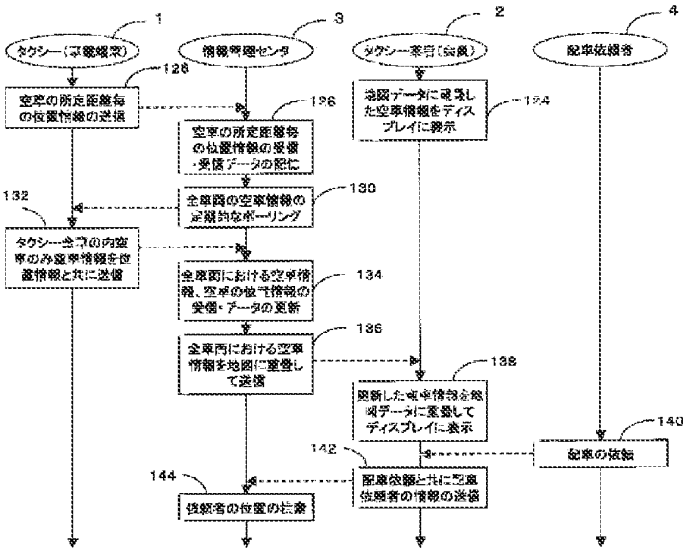
【図4】

配車の依頼者	依頼者位置情報		依頼者への通知範囲		
	緯度	経度	エリア	緯度	経度
A	P_{01}	Q_{01}	a(半径500m内)	P_{11}	Q_{11}
B	P_{02}	Q_{02}	b(半径500m内)	P_{12}	Q_{12}
C	P_{03}	Q_{03}	c(半径500m内)	P_{13}	Q_{13}
D	P_{04}	Q_{04}	d(半径500m内)	P_{14}	Q_{14}
E	P_{05}	Q_{05}	e(半径500m内)	P_{15}	Q_{15}
F	P_{06}	Q_{06}	f(半径500m内)	P_{16}	Q_{16}
G	P_{07}	Q_{07}	g(半径500m内)	P_{17}	Q_{17}
⋮	⋮	⋮	⋮	⋮	⋮

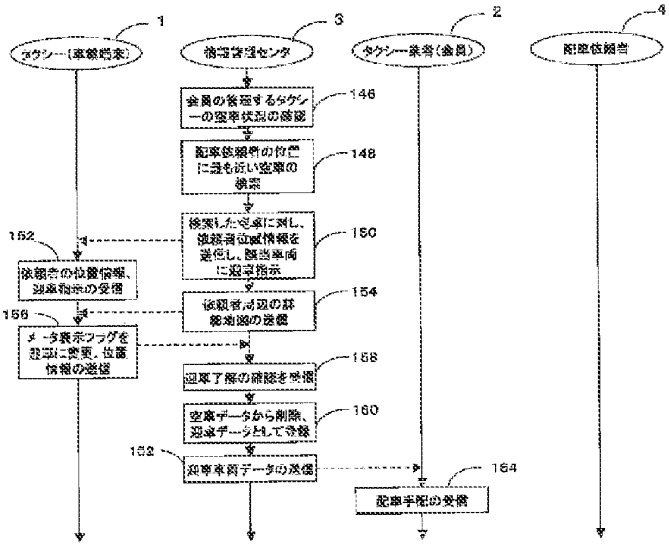
【図5】



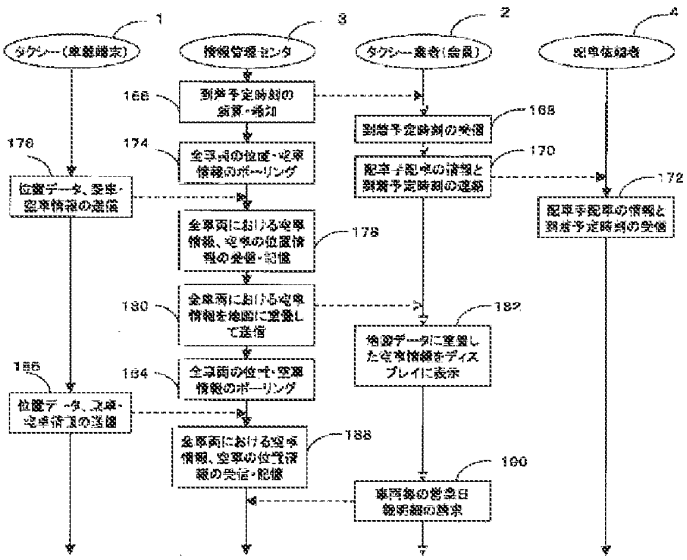
【図6】


1
3
2
4
タクシー(乗務端末)
情報管理センタ
タクシー業者(会員)
配車依頼者
126
空車の所定距離毎の位置情報の送信
空車の所定距離毎の位置情報の受信・受信データの記憶
地図データに重ねた空車情報をディスプレイに表示
124
132
全車両の空車情報の定期的なポーリング
130
タクシー全車の内空車のみ空車情報を位置情報と共に送信
全車両における空車情報、空車の位置情報の受信・データの更新
134
全車両における空車情報を地図に重畳して送信
136
138
受信した空車情報を地図データに重畳してディスプレイに表示
140
配車の依頼
142
配車依頼と共に配車依頼者の情報の送信
144
依頼者の位置の計算

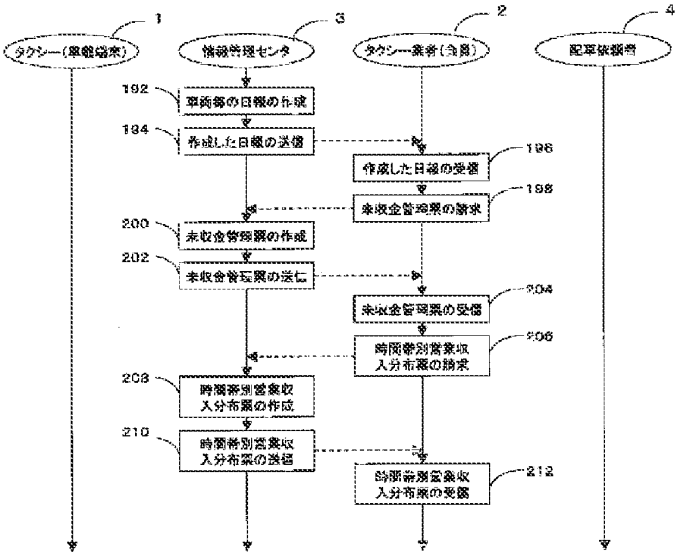
【図7】


1
3
2
4
タクシー(乗務端末)
情報管理センタ
タクシー業者(会員)
配車依頼者
会員の各車するタクシーの空車状況の確認
146
配車依頼者の位置に最も近い空車の検索
148
検索した空車に対し、依頼者位置情報を送信し、該当車両に迎車指示
150
152
依頼者の位置情報、迎車指示の受信
依頼者の近辺の詳細地図の送信
154
156
メータ表示フラグを非表示に変更、位置情報の送信
迎車了解の確認を受信
158
空車データから削除、迎車データとして登録
160
162
迎車車両データの送信
164
配車手配の受信

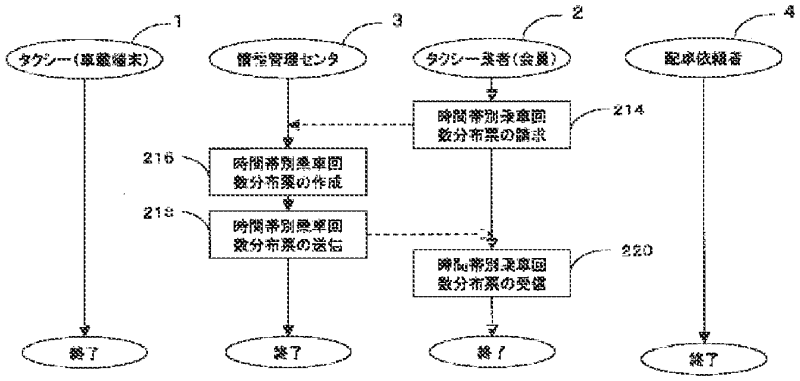
【図8】


1
3
2
4
タクシー(車載端末)
情報管理センタ
タクシー乗客(会員)
配車依頼者
166
到着予定時刻の算出・修正
168
到着予定時刻の受信
174
全車両の位置・空車情報のポーリング
170
配車予配車の情報と到着予定時刻の連絡
176
位置データ、空車・空車情報の送信
172
配車予配車の情報と到着予定時刻の受信
178
全車両における空車情報、空車の位置情報の受信・記憶
180
全車両における空車情報を地図に登録して送信
182
地図データに登録した空車情報をディスプレイに表示
186
位置データ、空車・空車情報の送信
184
全車両の位置・空車情報のポーリング
188
全車両における空車情報、空車の位置情報の受信・記憶
190
車両毎の営業日報明細の請求

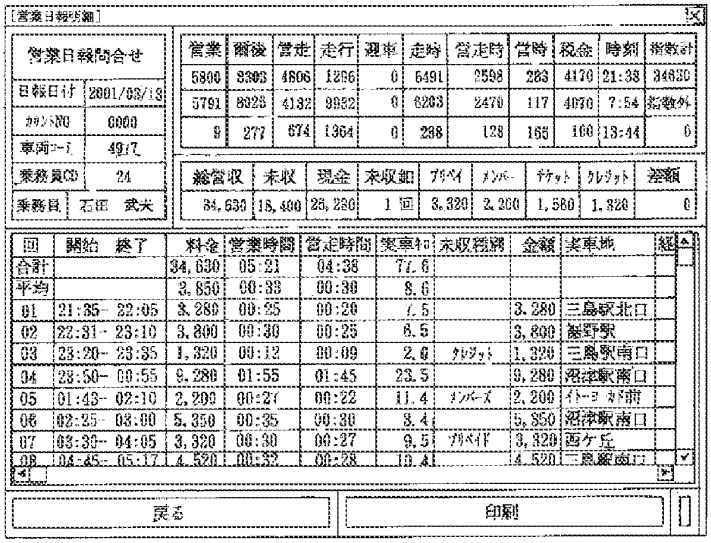
【図9】


1
3
2
4
タクシー(車載端末)
情報管理センタ
タクシー乗客(会員)
配車依頼者
192
車両毎の日報の作成
194
作成した日報の送信
196
作成した日報の受信
198
未収金管理票の請求
200
未収金管理票の作成
202
未収金管理票の送信
204
未収金管理票の受信
206
時間帯別営業収入分布票の請求
208
時間帯別営業収入分布票の作成
210
時間帯別営業収入分布票の送信
212
時間帯別営業収入分布票の受信

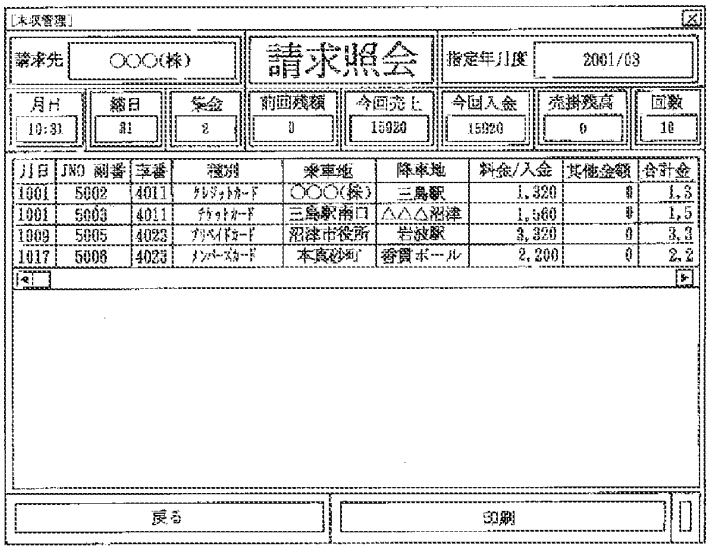
【図10】


1
タクシー(車載端末)
3
管理管理センタ
2
タクシー業者(会員)
4
配車依頼者
214
時間帯別乗車回数分布票の請求
216
時間帯別乗車回数分布票の作成
218
時間帯別乗車回数分布票の送信
220
時間帯別乗車回数分布票の受信
終了
終了
終了
終了

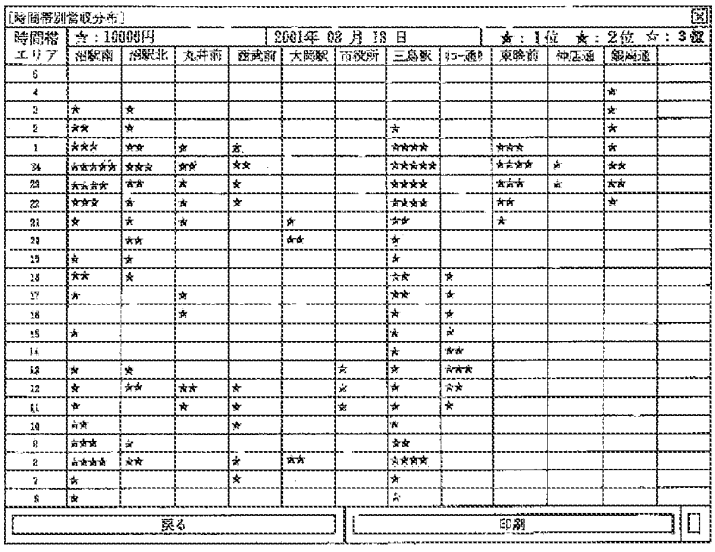
【図11】


営業日報問合せ
日報日付 2001/03/13
ｶｳﾝﾄNO 0000
車両ｺｰﾄﾞ 49ﾌﾘｰ
乗務員CD 24
乗務員 石田 武大
営業 前後 営走 走行 週率 走時 営走時 営時 税金 時刻 稼数計
5800 8303 4806 1256 0 6491 2598 283 4170 21:38 34630
5791 8025 4132 9952 0 6263 2470 117 4070 7:54 拡散外
9 277 674 1364 0 288 128 166 100 13:44 0
総営収 未収 現金 未収額 ﾌﾘﾍﾟｲ ﾒﾝﾊﾞｰ ﾁｹｯﾄ ｸﾚｼﾞｯﾄ 差額
34,630 16,400 25,230 1 回 3,320 3,200 1,560 1,320 0
回 開始 終了 料金 営業時間 営走時間 実車ｷﾛ 未収種別 金額 乗車地
合計 34,630 05:21 04:38 71.6
平均 3,850 00:33 00:30 8.6
01 21:35- 22:05 3,280 00:25 00:20 7.5 3,280 三島駅北口
02 22:31- 23:10 3,800 00:30 00:25 6.5 3,800 裾野駅
03 23:20- 23:35 1,320 00:12 00:09 2.0 ｸﾚｼﾞｯﾄ 1,320 三島駅南口
04 23:50- 00:55 9,280 01:55 01:45 23.5 9,280 沼津駅南口
05 01:43- 02:10 2,200 00:27 00:22 11.4 ﾒﾝﾊﾞｰｽﾞ 2,200 ｲﾄｰﾖｶﾄﾞ前
06 02:25- 03:00 5,350 00:35 00:30 8.4 5,350 沼津駅南口
07 03:38- 04:05 3,320 00:30 00:27 9.5 ﾌﾘﾍﾟｲﾄﾞ 3,320 西ケ丘
08 04:45- 05:17 4,520 00:32 00:28 10.4 4,520 三島駅南口
戻る
印刷

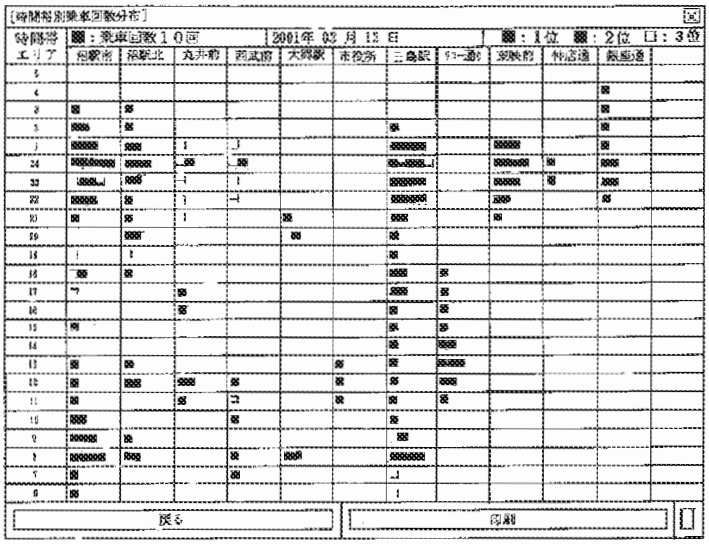
【図12】


[本店管理]
請求先
○○○(株)
請求照会
指定年月度
2001/03
月日
10:31
締日
31
集金
2
前回残額
0
今回売上
15920
今回入金
15920
売掛残高
0
回数
10
月日 JNO 組番 車番 種別 乗車地 降車地 料金/入金 其他金額 合計金
1001 5002 4011 クレジットカード ○○○○(株) 三島駅 1,320 0 1,3
1001 5003 4011 プリペイドカード 三島駅南口 △△△沼津 1,540 0 1,5
1009 5005 4023 プリペイドカード 沼津市役所 岩波駅 3,320 0 3,3
1017 5008 4023 メンバーズカード 本真砂町 香貫ボール 2,200 0 2,2
戻る
印刷

【図13】


[時間帯別営収分布]
時間帯
☆：10000円
2001年 03 月 18 日
★：1位 ★：2位 ☆：3位
エリア 沼駅南 沼駅北 丸井前 産業前 大岡駅 市役所 三島駅 ﾖｰｸﾏﾄ 東映前 仲見通 銀座通
6
4 ★
2 ★ ★ ★
0 ★★ ★ ★ ★
-1 ★★★ ★★ ★ ★ ★★★★ ★★★ ★
-24 ★★★★★ ★★★ ★★ ★★ ★★★★★ ★★★★ ★ ★★
-23 ★★★★ ★★ ★ ★ ★★★★ ★★★ ★ ★★
-22 ★★★ ★ ★ ★ ★★★★ ★★ ★
-21 ★ ★ ★ ★ ★★ ★
-20 ★★ ★★ ★
-19 ★ ★ ★
-18 ★★ ★ ★★ ★
-17 ★ ★ ★★ ★
-16 ★ ★ ★
-15 ★ ★ ★
-14 ★ ★★
-13 ★ ★ ★ ★ ★★★
-12 ★ ★★ ★★ ★ ★ ★ ★★
-11 ★ ★ ★ ★ ★ ★
-10 ★★ ★ ★
-9 ★★★ ★ ★★
-8 ★★★★ ★★ ★ ★★★★
-7 ★ ★ ★
-6 ★ ★
戻る
印刷

【図14】



フロントページの続き

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G09B 29/00		G09B 29/00	A	
			Z	
29/10		29/10	A	

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ND06 ND20 ND22 ND23 ND34
NS01 PQ02 PQ13 PQ69 PR08
UU14 UU16
5H180 AA14 AA15 BB02 BB04 BB15
BB17 EE03 EE06 FF01 FF05
FF10 FF13 FF17 FF22 FF27
FF32

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International Bureau

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PCT

(10) International Publication Number
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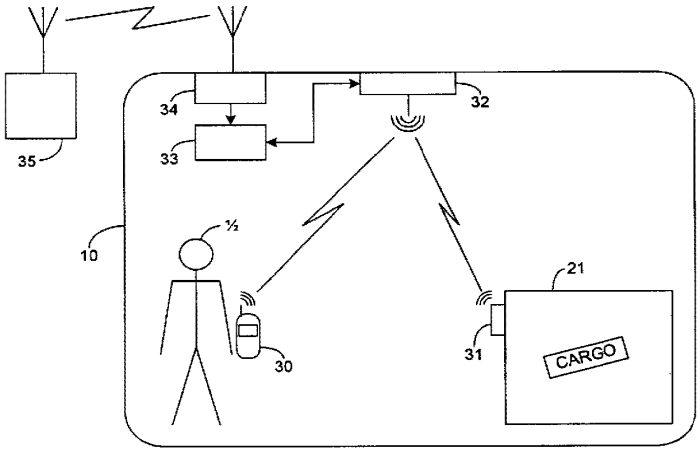
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(54) Title: A METHOD OF AUTOMATIC BILLING FOR A PERSON OR AN OBJECT BEING TRANSPORTED, BY A MEANS OF TRANSPORTATION



(57) Abstract: The invention provides a method of automatic billing a person or an object such as cargo or a piece of luggage being transported, by a means of transportation, a distance from a station of departure to a station of destination, where the travelling person or object has an individual device that can be wirelessly detected and that represents the person or the object. Preferably, the individual device is a Bluetooth device such as a mobile phone, a personal digital assistant (PDA) or other communication device based on short-range radio signals. When the person or object including the individual device is on the means of transportation, the individual device is automatically detected, and the presence board of the individual device is taken to mean that the person or object is also on board. A system checks that billing can actually be performed based on the detected individual device, and the person is preferably asked to confirm, through wireless communication using the individual device, that billing can take place.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

A method of automatic billing for a person or an object being transported, by a means of transportation

Background of the invention

The invention relates to methods of billing a person or an object such as cargo or a piece of luggage being transported, by a means of transportation, a distance from a station of departure to a station of destination.

Systems and methods of prepaid travelling and transportation are known, where a passenger buys a ticket in advance, or where the transportation fare for the cargo or luggage is paid in advance.

Systems and methods of automatic billing are also known. In such known methods the travelling person has eg a personal credit card, which he uses in connection with entering the means of transportation. The credit card can be a general-purpose credit card or it can represent an account, which the travelling person holds with the transporting organisation. This corresponds to the system of prepaid travelling, where the payment is made or confirmed in the "last minute".

Systems are also known where a travelling person enters the means of transportation such as a train, and after the train has left the station of departure, an officer from the transporting organisation will go through the train and sell tickets to passengers, who have just entered the train, and the passengers may pay the fare in cash or using a credit card or other accepted means of payment.

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Summary of the invention

The invention provides a method of automatic billing a person or an object such as cargo or a piece of luggage being transported, by a means of transportation, a distance from a station of departure to a station of destination, where the travelling person or object has an individual device that can be wirelessly detected and that represents the person or the object. Preferably, the individual device is a Bluetooth device such as a mobile phone, a personal digital assistant (PDA) or other communication device based on short-range radio signals. When the person or object including the individual device is on the means of transportation, the individual device is automatically detected, and the presence board of the individual device is taken to mean that the person or object is also on board. A system checks that billing can actually be performed based on the detected individual device, and the person is preferably asked to confirm, through wireless communication using the individual device, that billing can take place.

The invention makes it possible for travelling persons to get on board the means of transportation without having to show a ticket, which might possibly have to be checked for its validity etc. All such formalities are time consuming. The invention makes it possible for passengers to get on board the means of transportation without having to spend time on such time consuming formalities. The time the means of transportation will have to spend at stations of departure will thereby be reduced, since the presence of the passengers in the means of

transportation can be detected after the departure from the station of departure.

The method makes it possible to bill automatically for the journey from a station of departure to a station of destination independent of the chosen route and of stops at intermediate stations. At any intermediate station passengers may disembark the means of transportation and terminate their journey, and new passengers may embark and start their journey.

The invention can be used in virtually any means of transportation: trains, buses, taxis, ships, airplane etc. and in any combination of several means of transportation. Passengers arriving eg by airplane at an airport will often have to travel further by either by a connecting flight or by train, bus or taxi, and the automatic billing method of the invention can be implemented to automatically bill for a combination of different means of transportation. An airport where a sub-distance travelled by airplane starts or ends will thus just be an intermediate station.

Automatic billing with the method of the invention can also be performed for a person's visit to eg a museum, a theatre, an amusement park, a tourist attraction or other fixed installation or facility, where the person's presence, like in the means of transportation, is detected wirelessly by means of his or her individual device representing the person. The billing of such visit can be combined with the billing for person's transportation in connection with his or her visit to the

fixed installation. This makes it easy to make a correct billing for special offers where eg a visit to a fixed installation in combination with transportation to the installation is offered at a special price. Use of combinations of means of transportation can automatically be billed correctly. Examples are special offers such as travels at special times, on special days or a special combination of means of transportation, possibly in combination with a visit to a fixed installation.

The individual device representing the person or the object being transported preferably uses short-range radio signals for communicating with the equipment in the means of transportation for detecting the presence of the device, but other communications techniques can also be used, such as magnetic or inductive detection and infrared communication. When using short-range radio signals for communicating the individual device is preferably a device using the standard Bluetooth protocol. Such devices using the standard Bluetooth protocol are here referred to as Bluetooth devices. Examples of Bluetooth devices are mobile phones, personal digital assistants (PDA's), electronic watches, laptop computers etc.

Naturally, the wireless communication with the individual device must comply with applicable safety regulations. Eg onboard airplanes safety regulations usually do not allow the use of mobile phones, because the long-range radio communication of a mobile phone might interfere with the communication and navigation of the airplane. Thus, when the means of transportation is an airplane, and a mobile

phone with Bluetooth short-range communication is used as the individual device, it should preferably be possible to switch off the functions or circuits of the mobile phone that might disturb eg the communication and navigation of the airplane, which is the traditional long-range communication of the mobile phone, while it should be possible to keep the Bluetooth communication of the mobile phone active.

The billing method of the invention can be used in conjunction with any bonus program of the transporting organisation. Travelling persons will be given a great degree of freedom in planning journeys, and re-routing can be done with very short notice. Final billing can be performed based on a person's total travelling and other activities in a predefined period, eg one month or one year, possibly in accordance with a bonus program.

Brief description of the drawings

Figure 1 shows two possible routes for travelling from a station of departure to a station of destination, and

Figure 2 shows a means of transportation using a preferred embodiment of the invention.

Detailed description of the invention

In figure 1 is shown a station of departure A and a station of destination B. An unbroken arrow from the station of departure A to the station of destination B indicates the direct route to be travelled by a means of transportation. An alternative route from A to B makes

stops at intermediate stations C and D, whereby the distance AB travelled from A to B is divided into sub-distances AC, CD and DB. A station is here defined as a geographical location defining a distance or a sub-distance to be travelled by a means of transportation and where a journey travelling the defined distance or sub-distance can be started or terminated.

Figure 2 shows a cross section through a means of transportation such as a train 10 that can travel the distance AB or the combination of sub-distances AC, CD and DB in figure 1.

Situated within the train is a person 20 carrying a mobile phone 30, and a piece of cargo 21 equipped with a cargo tag 31. The mobile phone 30 and the cargo tag 31 are both capable of communicating using the standard Bluetooth protocol, and each of them has an individual Bluetooth identification code. Also within the train 10 is a Bluetooth station 32, which in the shown embodiment is mounted onto the ceiling of the train, but a handheld Bluetooth station could also be used. A processor 33 is coupled to the Bluetooth station 32 so that bi--directional wired or wireless communication between the processor and the Bluetooth station 32 is possible.

At any suitable time, typically related to time of departure from the station of departure A, the processor 33 causes the Bluetooth station 32 to interrogate for the presence of enabled individual Bluetooth devices in the train, such as mobile phones 30 and cargo tags 31. Enabled Bluetooth devices in the train will thereby be

caused to respond by transmitting an individual Bluetooth device identity code. When the processor receives the Bluetooth device identity codes, a verification ensuring billing of the correct account is performed, and a message may be sent to the mobile phone 30 asking the person 20 to confirm the billing of his account. If the person is travelling on the direct route AB and terminating the journey at the station of destination B, then the billing is done based on the detection of the presence of the person (or rather his Bluetooth mobile phone 30) in the train.

If the person travels from the station of departure A via the intermediate stations C and D to the station of destination B, then the presence of his Bluetooth mobile phone 30 is detected on each of the sub-distances, and the billing is performed for the total distance travelled. In practice, final billing will not be performed until the travelling person has left the train and his personal Bluetooth device is no longer detected as present in the train.

On board the train is also a receiver 34 for receiving geographical information allowing the determination of the distance or sub-distance being actually travelled. The receiver can receive such information from a satellite based global positioning system (GPS) 35 or from a transmitter located along the rails of the sub-distance. Alternatively, the receiver 34 can receive eg GSM cell information identifying the cell in the network in which the mobile phone is operating. In a simpler from the geographical information can be input by a train

officer using a keyboard, or the processor can be pre-programmed with the entire time table including intermediate stations.

Typically, a sequence of actions involving the method of the invention could include all or some of the following steps.

- After possible security check at the station of departure a passenger enters the means of transportation with his or her Bluetooth device enabled, or the cargo or luggage is moved into the luggage or cargo compartment of the train with the attached Bluetooth cargo tag enabled.
- The train leaves the station of departure.
- The billing system detects that the train has left the station of departure.
- The billing system detects the global position of the train with an accuracy sufficient to identify the sub-distance actually being travelled.
- The billing system initiates a procedure for detecting the presence of Bluetooth devices on the train.
- A database in the billing system is updated with detected Bluetooth devices.
- For new passengers, ie passengers not previously detected on the train, the most recently visited station will be recorded as their station of departure.
- For passengers no longer detected on the train the most recently visited station will be recorded as their station of destination.

- When leaving the train the passenger may choose to continue by another means of transportation, eg a bus or an airplane, having a billing system that detects his or her presence in the new means of transportation and records corresponding information.
- The recorded information can be post processed in situations where the passenger has an arrangement with the carrier such as a bonus program.
- A request for signature or approval of the billing can be sent to the Bluetooth device for electronic signature. Approval of the billing by electronic signature may possibly have to be performed for every sub-distance and for every fixed installation visited.
- Final billing is performed based on the total amount of recorded information.

References

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Claims

1. A method of automatic billing for a person or an object being transported, by a means of transportation, a distance (AB) from a station of departure (A) to a station of destination (B), the method comprising
- wirelessly determining the presence, in the means of transportation, of an individual device representing the person or the object being transported by the means of transportation,
- with the person or the object present in the means of transportation, determining the distance actually being travelled by the means of transportation,
- providing price information for the actual distance travelled by the person or the object, and
- based on the price information, billing for the distance travelled by the person or the object.

2. A method according to claim 1, characterized in that
- the distance between the station of departure (A) and the station of destination (B) comprises at least two sub-distances (AC, CD, DB) with at least one intermediate station (C, D) between sub-distances,
- the presence of the person or the object is determined individually for each sub-distance,
- price information is provided for the total distance the person or the object is transported.

3. A method according to any one of claims 1-2, characterized in that the wireless determination of the presence of the person or the object

uses communication devices based on short-range radio signals.

4. A method according to claim 3 c h a r a c t e r - i z e d in that the communication devices communicate using the standard Bluetooth protocol.

5. A method according to any one of claims 1-4, c h a r a c t e r i z e d in that the distance actually being travelled by the means of transportation is determined using a satellite based global positioning system (GPS).

6. A method according to any one of claims 1-5, c h a r a c t e r i z e d in that the distance actually being travelled by the means of transportation is determined using information provided from ground based transmitters related to the distance being travelled.

7. A method according to any one of claims 1-6, c h a r a c t e r i z e d in that the distance actually being travelled by the means of transportation is determined using a predefined time schedule.

8. A method according to any one of claims 1-7, c h a r a c t e r i z e d in that the distance actually being travelled by the means of transportation is determined using inputs from a person operating the means of transportation.

9. A method according to any one of claims 2-8, c h a r a c t e r i z e d in that sub-distances are travelled by different means of transportation.

10. A method according to any one of claims 2-9, c h a r a c t e r i z e d in that sub-distances travelled are operated by different operators.

11. A system for automatic billing for a person or an object being transported, by a means of transportation, a distance (AB) from a station of departure (A) to a station of destination (B), the system comprising
- means for wirelessly determining the presence, in the means of transportation, of an individual device representing the person or the object being transported by the means of transportation,
- means for determining the distance actually being travelled by the means of transportation,
- means for providing price information for the actual distance travelled by the person or the object, and
- means for billing, based on the price information, for the distance travelled by the person or the object.

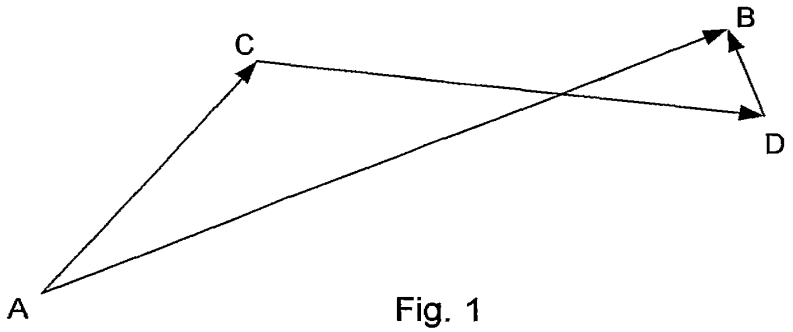


Fig. 1

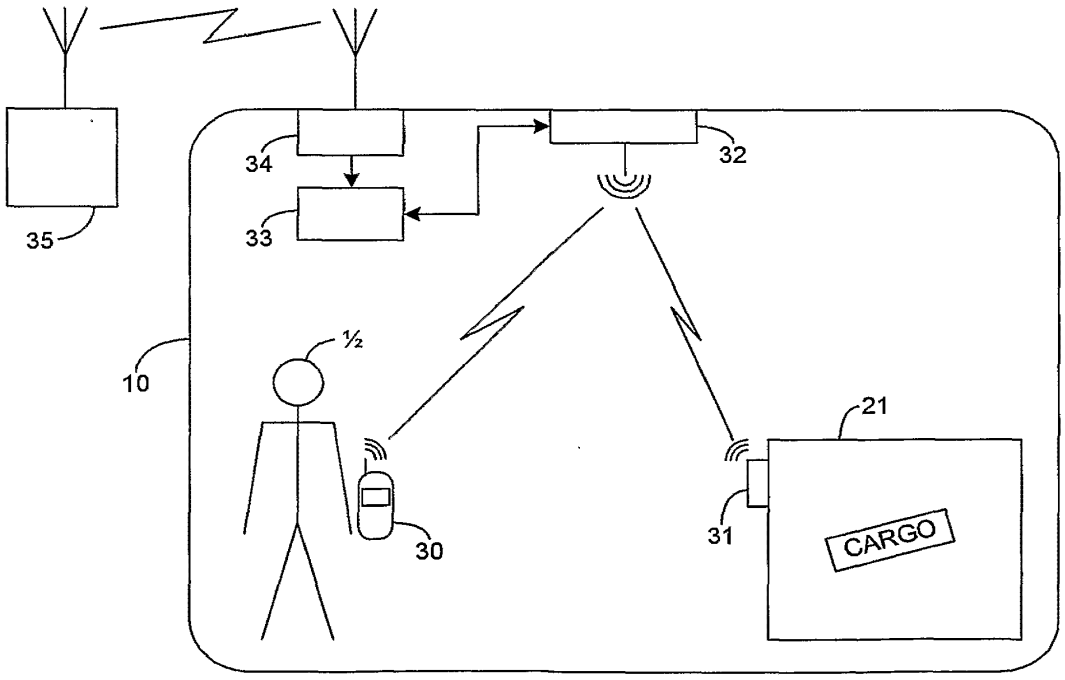


Fig. 2

Electronic Patent Application Fee Transmittal	
Application Number:	
Filing Date:	
Title of Invention:	SYSTEMS AND METHODS FOR MATCHING PICK-UP REQUESTS WITH TRANSPORT PROVIDERS, TRACKING TRIP PROGRESS, AND ENABLING PROVIDER RATINGS
First Named Inventor/Applicant Name:	Sean O'SULLIVAN
Filer:	Joel Stuart Simon/Jeovany Cantillano
Attorney Docket Number:	00199-0001-25000
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	80	80
UTILITY SEARCH FEE	2111	1	350	350
UTILITY EXAMINATION FEE	2311	1	400	400
REQUEST FOR PRIORITIZED EXAMINATION	2817	1	2100	2100
Pages:				
UTILITY APPL SIZE FEE PER 50 SHEETS >100	2081	1	210	210
Claims:				
Miscellaneous-Filing:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
PROCESSING FEE, EXCEPT PROV. APPLS.	2830	1	70	70
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**3210**

Electronic Acknowledgement Receipt	
EFS ID:	42514196
Application Number:	17236491
International Application Number:	
Confirmation Number:	7940
Title of Invention:	SYSTEMS AND METHODS FOR MATCHING PICK-UP REQUESTS WITH TRANSPORT PROVIDERS, TRACKING TRIP PROGRESS, AND ENABLING PROVIDER RATINGS
First Named Inventor/Applicant Name:	Sean O'SULLIVAN
Customer Number:	108449
Filer:	Joel Stuart Simon/Jeovany Cantillano
Filer Authorized By:	Joel Stuart Simon
Attorney Docket Number:	00199-0001-25000
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal of New Application	ConAppTrans.pdf	91629 8de5f5bef82c040123f41c11103153718c63638b	no	3
Warnings:					
Information:					
2	Application Data Sheet	ADS.pdf	1874545 e052c258fc158074259d069b605580f4174e2fc7	no	9
Warnings:					
Information:					
3	TrackOne Request	Track1_Request.pdf	114809 32ffca7faf007671fc562ba1fd0869570bcdf5c3	no	2
Warnings:					
Information:					
4	Specification	Specification.pdf	9300232 16383a9d56996432b32a565a3270b25c0bcc7723	no	62
Warnings:					
Information:					
5	Drawings-only black and white line drawings	Drawings.pdf	16239907 bb4f6ebce1607bad1217e2a71537846d3548781c	no	32
Warnings:					
Information:					
6	Oath or Declaration filed	Declaration.pdf	82944 3138696ad6390949f786c4d30d701a4b26efba0a	no	1
Warnings:					
Information:					

7	Power of Attorney	POA.pdf	256104 dc8c4d8a1f2773c101ffdc95ecd3edb11b4cce3f	no	2
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8		Pre_Amendment.pdf	138102 af43595f85177326db719988381b9bca6d25829b	yes	20

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Preliminary Amendment	1	1
	Drawings-only black and white line drawings	2	2
	Specification	3	3
	Claims	4	18
	Applicant Arguments/Remarks Made in an Amendment	19	20

Warnings:					
Information:					
9	Drawings-only black and white line drawings	Replacement_Drawings.pdf	132472 929c5be78b90065bc211abc0e3e35a75953ec68a	no	32
Warnings:					
Information:					
10	Information Disclosure Statement (IDS) Form (SB08)	SB08.pdf	1057376 c7038b5ff99fdb78d587edd80f853c8d397a2134	no	14
Warnings:					
Information:					
11	Foreign Reference	JP2003036498A.pdf	13703745 bf0e2b8fba31c248706a3667fdfaa696185d44c5	no	18
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Information:					

12	Foreign Reference	WO02073546A2.pdf	539286 1153705148185ba778c36f395544dc16630ffd04	no	15
Warnings:					
Information:					
13	Non Patent Literature	Hu.pdf	25348604 0470c05bae1e612b18235ad3bc427283553dc24	no	142
Warnings:					
Information:					
14	Non Patent Literature	Hyrecar.pdf	4789826 2067776fc966a25ae08d12fdc16e6b45769828fa	no	22
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15	Non Patent Literature	ROORDA.pdf	4624094 50edc3cf269a7e2537dd9b273110cce03632c985	no	6
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16	Non Patent Literature	Tao.pdf	2502813 d89e9b726271330a1badee954b5f103a159f69fb	no	4
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17	Fee Worksheet (SB06)	fee-info.pdf	40332 af2cfcaf3d75241693a186091e23d7744b272a83	no	2
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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.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 17/236,491

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	80		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	350		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	400		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*	x 50 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*	x 240 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	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).			210			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	1040		TOTAL	

APPLICATION AS AMENDED - PART II

AMENDMENT A

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
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Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
Application Size Fee (37 CFR 1.16(s))									
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
Application Size Fee (37 CFR 1.16(s))									
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							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 NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
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OC000000125209091

Date Mailed: 04/29/2021

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Sean O'SULLIVAN, Princeton, NJ;

Applicant(s)

CARMA TECHNOLOGY LIMITED, Cork City, IRELAND;

Assignment For Published Patent Application

Carma Technology Corporation

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

Domestic Priority data as claimed by applicant

This application is a CON of 16/983,598 08/03/2020
which is a CON of 16/698,312 11/27/2019 PAT 10748420
which is a CON of 16/198,000 11/21/2018 PAT 10593206
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.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 04/27/2021

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/236,491**

Projected Publication Date: 08/05/2021

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

SYSTEMS AND METHODS FOR MATCHING PICK-UP REQUESTS WITH TRANSPORT PROVIDERS, TRACKING TRIP PROGRESS, AND ENABLING PROVIDER RATINGS

Preliminary Class

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

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

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Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/236,491	04/21/2021	Sean O'SULLIVAN	00199-0001-25000	7940

108449 7590 06/04/2021

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

EXAMINER	

ART UNIT	PAPER NUMBER
2648	

NOTIFICATION DATE	DELIVERY MODE
06/04/2021	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

Decision Granting Request for Prioritized Examination (Track I)	**Application No.** 17/236,491	**Applicant(s)** O'SULLIVAN, Sean	
	Examiner CHERYL P GIBSON BAYLOR	**Art Unit** OPET	**AIA (FITF) Status** No

1. THE REQUEST FILED 21 April 2021 IS **GRANTED** .

The above-identified application has met the requirements for prioritized examination

A. ☑ for an original nonprovisional application (Track I).
B. ☐ for an application undergoing continued examination (RCE).

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:

A. filing a **petition for extension of time** to extend the time period for filing a reply;

B. filing an **amendment to amend the application to contain more than four independent claims, more than thirty total claims** , or a multiple dependent claim;

C. filing a **request for continued examination** ;

D. filing a notice of appeal;

E. filing a request for suspension of action;

F. mailing of a notice of allowance;

G. mailing of a final Office action;

H. completion of examination as defined in 37 CFR 41.102; or

I. abandonment of the application.

Telephone inquiries with regard to this decision should be directed to CHERYL GIBSON BAYLOR at (571)272-3213. In his/her absence, calls may be directed to Petition Help Desk at (571) 272-3282.

/CHERYL GIBSON BAYLOR/ Paralegal Specialist, OPET	

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.

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(Not for submission under 37 CFR 1.99)

Application Number	17236491
Filing Date	2021-04-21
First Named Inventor	Seam O'SULLIVAN
Art Unit	2648
Examiner Name	Not Yet Assigned
Attorney Docket Number	00199-0001-25000

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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
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	2	5799263		1998-08-25	CULBERTSON; Russell D.	
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	6	6675150		2004-01-06	CAMER; Dorothy	
	7	6919804		2005-07-19	COOK; Kenneth J. et al.	
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	9	7062376		2006-06-13	OESTERLING; Christopher L.	
	10	7080019		2006-07-18	HURZELER; Philip	
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	2	20010056363		2001-12-27	GANTZ; Donald T. et al.	
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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	2003036498	JP	A	2003-02-07	YAZAKI CORP.		X
	2	02073546	WO	A2	2002-09-19	ERICSSON TELEFON AB L M [SE], et al.		☐
	3	2005045549	WO	A2	2005-05-19	MOVIT SYSTEMS LTD [GB], et al.		☐
	4	2006011158	WO	A2	2006-02-02	VIKASH CHANDRA [IN]		☐
	5	2006088703	WO	A2	2006-08-24	MITCHELL CLYDE [US]		☐

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	1	DAILEY D.J., et al., "Seattle Smart Traveler: Dynamic Ridematching on the World Wide Web," Transportation Reseach Part C 7, March 05 1999, pp. 1-17.	
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	Application Number	17236491
	Filing Date	2021-04-21
	First Named Inventor	Seam O'SULLIVAN
	Art Unit	2648
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	00199-0001-25000

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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

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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	/Joel S. Simon/	Date (YYYY-MM-DD)	2021-06-25
Name/Print	Joel S. Simon	Registration Number	70271

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Bibliographic data: JP2003036498 (A) — 2003-02-07

TAXI MANAGING SYSTEM

Inventor(s): MURAMATSU HARUJI; OISHI HIROMOTO ± (MURAMATSU HARUJI, ; OISHI HIROMOTO)

Applicant(s): YAZAKI CORP ± (YAZAKI CORP)

Classification: - **International:** ***G06F17/30; G06Q50/00; G06Q50/30; G08G1/00; G08G1/123; G09B29/00; G09B29/10;*** (IPC1-7): G06F17/30; G06F17/60; G08G1/00; G08G1/123; G09B29/00; G09B29/10

- **cooperative:**

Application number: JP20010221793 20010723

Priority number(s): JP20010221793 20010723

Abstract of JP2003036498 (A)

PROBLEM TO BE SOLVED: To provide a taxi managing system where the empty state of whole taxi vehicles that a taxi company possess can always be grasped without arranging any facility in the taxi company, the appropriate taxi vehicle can be allocated to a person requesting the vehicle when the allocation of the taxi vehicle is requested from a taxi user and operating control data on the taxi vehicle can easily be obtained if need. SOLUTION: In an information managing center, vehicle data on the whole taxi vehicles 1 in the taxi company 2 are stored in a vehicle database 35 so as to grasp them based on the request of the taxi company 2 managing multiple taxi vehicles 1 loading communication units 11 incorporating GPS receivers. Position information on the whole taxi vehicles 1 are periodically polled. The empty situation of the whole vehicles and position data of the whole vehicles are written and rewritten into an empty vehicle database 37 based on position information returned from the whole taxi vehicles 1 whose position information are polled. Empty vehicle information is overlapped on a map based on the empty situation and position information of the whole taxi vehicles 1, and it is transmitted to the taxi company 2.

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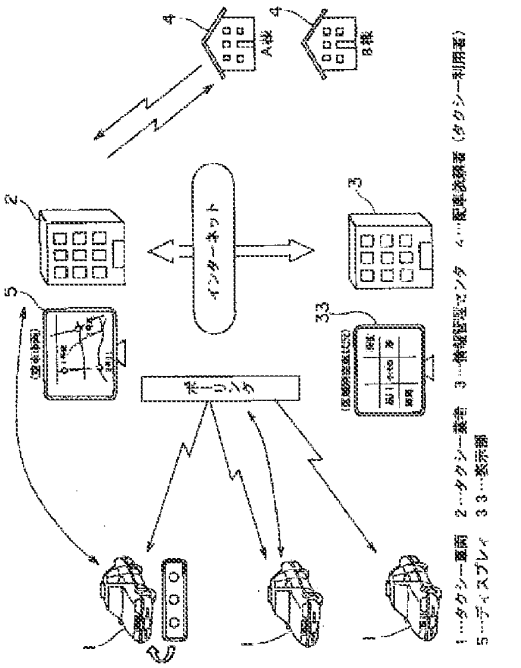
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最終頁に続く

(54)【発明の名称】　タクシー管理システム

(57)【要約】
【課題】　タクシー業者に何の設備も設けることなく、自社の所有する全タクシー車両の空車状態を常に把握でき、タクシー利用者からのタクシー車両の配車依頼があった際に配車依頼者に適切なタクシー車両の配車を行うことができ、必要に応じてタクシー車両の運行管理データを容易に得ることのできるタクシー管理システムを提供すること。
【解決手段】　ＧＰＳ受信機を内蔵した通信ユニット１１を搭載するタクシー車両１を多数台管理するタクシー業者２の依頼に基づき該タクシー業者２の全タクシー車両１の車両データを車両データベース３５に記憶して把握する情報管理センタにおいて，前記全タクシー車両１に対して位置情報のポーリングを定期的に行い、位置情報のポーリングを受けた全タクシー車両１から応答する位置情報に基づいて前記全車両の空車状況、全車両の位置データを空車データベース３７に書込・書換を行い、該全タクシー車両１の空車状況と位置情報に基づいて地図上に空車情報を重畳して前記タクシー業者２に送信するようにする。



【特許請求の範囲】
【請求項１】　ＧＰＳ受信機を内蔵した通信ユニットを搭載するタクシー車両を多数台管理するタクシー業者の依頼に基づき該タクシー業者の全タクシー車両の車両データを車両データベースに記憶して把握する情報管理センタにおいて，前記全タクシー車両に対して位置情報のポーリングを定期的に行い、位置情報のポーリングを受けた全タクシー車両から応答する位置情報に基づいて前記全車両の空車状況、全車両の位置データを空車データベースに書込・書換を行い、該全タクシー車両の空車状況と位置情報に基づいて地図上に空車情報を重畳して前記タクシー業者に送信するようにしたことを特徴とするタクシー管理システム。
【請求項２】　前記全タクシー車両に対して定期的に行う位置情報のポーリングに対し、当該車両が空車のときに応答するようにしたものである請求項１に記載のタクシー管理システム。
【請求項３】　前記全タクシー車両は、タクシー車両のメータ表示フラグが空車ポジションから他のポジションに変更または、他のポジションから空車ポジションに変更になったときに、前記情報管理センタに表示フラグのポジションと表示フラグ変更位置の位置情報を送信すると共に、該位置情報の送信位置から定距離毎に位置情報を送信するようにしたものである請求項１又は２に記載のタクシー管理システム。
【請求項４】　前記全タクシー車両は、タクシー車両のメータ表示フラグが空車ポジションから他のポジションに変更または、他のポジションから空車ポジションに変更になったときに、前記情報管理センタにタクシーメータの情報を送信するようにしたものである請求項１、２又は３に記載のタクシー管理システム。
【請求項５】　前記全タクシー車両のメータ表示フラグの空車ポジションから他のポジションへの変更または、他のポジションから空車ポジションへの変更の際に前記情報管理センタに送信される位置情報及びタクシーメータ情報により、前記タクシー業者からの請求に基づき、営業日報明細票、未収管理票、時間帯別営業収益分布、時間帯別乗車回数分布のいずれかを作成して提供することを特徴とする請求項１、２、３又は４に記載のタクシー管理システム。
【請求項６】　前記タクシー業者にタクシー利用者からタクシー車両の配車依頼が有り、該タクシー業者から前記配車依頼者の位置と空車タクシー車両を特定したタクシー利用者へ配車依頼を受けた前記情報管理センタは、該配車依頼者の位置から該配車依頼者の位置に最も近い空車タクシー車両を検索し、検索した空車タクシー車両に対し前記配車依頼者の位置を地図上に重畳して該配車依頼者の位置周辺の地図を配信して迎車指示を送信して配車依頼を行うようにしたものである請求項１、２、３、４又は５に記載のタクシー管理システム。
【請求項７】　前記迎車指示の送信を受けたタクシー車両において送信されてきた配車依頼者の位置情報を記憶すると共に該配車依頼者の位置情報に基づいて依頼者エリアを演算して設定し、前記ＧＰＳ受信機を内蔵した通信ユニットによって求めた当該タクシー車両の位置が前記タクシー車両において設定した前記依頼者エリア内に進入したときに情報管理センタに依頼者エリア進入信号を送信し、
前記依頼者エリア進入信号を受信した情報管理センタにおいて、当該タクシー車両の配車依頼者先への到着予定時刻を演算し、当該タクシー車両の配車依頼者に対して該到着予定時刻を送信するようにしたことを特徴とする請求項１、２、３、４、５又は６に記載のタクシー管理システム。
【請求項８】　前記情報管理センタがタクシー車両に配車依頼者の位置情報を送信して迎車指示を送信する際に、当該配車依頼者の位置を示す広域道路地図を同時に送信し、前記情報管理センタがタクシー車両から依頼者エリア進入信号を受信することにより当該配車依頼者の周辺道路地図を送信するようにしたものである請求項１、２、３、４、５、６又は７に記載のタクシー管理システム。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、ＧＰＳ受信機を内蔵した通信ユニットを搭載したタクシー車両の空車状況と、位置データを情報管理センタが管理し、タクシー業者では地図上に重畳しされた自己の所有するタクシー車両の空車情報を備え、タクシー利用者からタクシー業者にタクシー車両の配車依頼があったときに、タクシー業者から情報管理センタに配車依頼者に対してタクシー車両の配車依頼を行い、情報管理センタ側では、各タクシー車両の運行情報を把握し、タクシー業者からの請求により日報等を提供するようにしたタクシー管理システムに関する。
【０００２】
【従来の技術】従来のタクシー管理システムとしては、例えば、特開平１１－２８３１９４号に示されるようなタクシーの到着報知システムがある。この到着報知システムは、顧客へのタクシー到着報知のため、システムコストを軽減し、タクシー運転手の負担を軽減するためのものである。配車依頼を受けて到着したときに、タクシー乗務員が到着スイッチを押すことによってセンタから自動的に相手方に電話連絡するというものである。
【０００３】また、特開平６－１２４１９号に示されるようなタクシー運行管理システムがある。このタクシー運行管理システムは、営業所に備えたタクシーで記憶された情報を読み取り処理するデータ読取り装置によって、読み取った情報を基に日報を作成し分析・統計資料を作成するデータ処理装置を用いて日報、各種統計・分

析資料を作成するものである。

【０００４】

【発明が解決しようとする課題】このため、従来のタクシー管理システムにあっては、タクシー乗務員が到着スイッチを押す操作をしない限り機能しないという問題があった。

【０００５】また、従来のタクシー管理システムにあっては、営業所に設けられたデータ読取り装置を用いて読み取った情報を基に日報を作成し分析・統計資料を作成するデータ処理装置を用いて日報、各種統計・分析資料を作成するため、全てタクシー業者が処理するものとなっていたため、新たな設備が必要となり全てのタクシー業者ができるものになっていないという問題があった。

【０００６】本発明の目的は、タクシー業者に何の設備も設けることなく、自社の所有する全タクシー車両の空車状態を常に把握でき、タクシー利用者からのタクシー車両の配車依頼があった際に配車依頼者に適切なタクシー車両の配車を行うことができ、必要に応じてタクシー車両の運行管理データを容易に得ることのできるタクシー管理システムを提供することにある。

【０００７】

【課題を解決するための手段】上記の目的を達成するために、請求項１に記載のタクシー管理システムは、ＧＰＳ受信機を内蔵した通信ユニットを搭載するタクシー車両を多数台管理するタクシー業者の依頼に基づき該タクシー業者の全タクシー車両の車両データを車両データベースに記憶して把握する情報管理センタにおいて，全タクシー車両に対して位置情報のポーリングを定期的に行い、位置情報のポーリングを受けた全タクシー車両から応答する位置情報に基づいて全車両の空車状況、全車両の位置データを空車データベースに書込・書換を行い、全タクシー車両の空車状況と位置情報に基づいて地図上に空車情報を重畳してタクシー業者に送信するようにしたものである。このように構成することにより、請求項１に記載の発明によると、タクシー業者に何の設備も設けることなく、自社の所有する全タクシー車両の空車状態を常に把握することができる。

【０００８】上記の目的を達成するために、請求項２に記載のタクシー管理システムは、全タクシー車両に対して定期的に行う位置情報のポーリングに対し、タクシー車両が空車のときに応答するようにしたものである。このように構成することにより、請求項２に記載の発明によると、タクシー業者に何の設備も設けることなく、自社の所有する全タクシー車両の空車状態を常に把握でき、タクシー利用者からのタクシー車両の配車依頼があった際に配車依頼者に適切なタクシー車両の配車を行うことができる。

【０００９】上記の目的を達成するために、請求項３に記載のタクシー管理システムは、全タクシー車両を、タクシー車両のメータ表示フラグが空車ポジションから他のポジションに変更または、他のポジションから空車ポジションに変更になったときに、情報管理センタに表示フラグのポジションと表示フラグ変更位置の位置情報を送信すると共に、位置情報の送信位置から定距離毎に位置情報を送信するようにしたものである。このように構成することにより、請求項３に記載の発明によると、空車状態と迎車・賃走開始位置、賃走終了位置を的確に把握することができ、ポーリングだけでなく「空車」の通報の後の追跡、フォローができ、ポーリングの通信費を抑えることができる。

【００１０】上記の目的を達成するために、請求項４に記載のタクシー管理システムは、全タクシー車両を、タクシー車両のメータ表示フラグが空車ポジションから他のポジションに変更または、他のポジションから空車ポジションに変更になったときに、前記情報管理センタにタクシーメータの情報を送信するようにしたものである。このように構成することにより、請求項４に記載の発明によると、常時当該車両の走行距離、請求金額、乗車頻度等を的確に知ることができる。

【００１１】上記の目的を達成するために、請求項５に記載のタクシー管理システムは、全タクシー車両のメータ表示フラグの空車ポジションから他のポジションへの変更または、他のポジションから空車ポジションへの変更の際に前記情報管理センタに送信される位置情報及びタクシーメータ情報により、タクシー業者からの請求に基づき、営業日報明細票、未収管理票、時間帯別営業収益分布、時間帯別乗車回数分布のいずれかを作成して提供するようにしたものである。このように構成することにより、請求項５に記載の発明によると、常時当該車両の走行距離、請求金額、営業状態、乗車頻度等を的確に知ることができる。

【００１２】上記の目的を達成するために、請求項６に記載のタクシー管理システムは、タクシー業者にタクシー利用者からタクシー車両の配車依頼が有り、タクシー業者から配車依頼者の位置と空車タクシー車両を特定したタクシー利用者へ配車依頼を受けた前記情報管理センタは、配車依頼者の位置から配車依頼者の位置に最も近い空車タクシー車両を検索し、検索した空車タクシー車両に対し配車依頼者の位置を地図上に重畳して配車依頼者の位置周辺の地図を配信して迎車指示を送信して配車依頼を行うようにしたものであ。このように構成することにより、請求項６に記載の発明によると、タクシー利用者からのタクシー車両の配車依頼があった際に配車依頼者に最短の時間で迎車し配車依頼者のところに到着することができる。

【００１３】上記の目的を達成するために、請求項７に記載のタクシー管理システムは、迎車指示の送信を受けたタクシー車両において送信されてきた配車依頼者の位置情報を記憶すると共に配車依頼者の位置情報に基づいて依頼者エリアを演算して設定し、ＧＰＳ受信機を内蔵

した通信ユニットによって求めたタクシー車両の位置がタクシー車両において設定した依頼者エリア内に進入したときに情報管理センタに依頼者エリア進入信号を送信し、依頼者エリア進入信号を受信した情報管理センタにおいて、タクシー車両の配車依頼者先への到着予定時刻を演算し、タクシー車両の配車依頼者に対して該到着予定時刻を送信するようにしたものである。このように構成することにより、請求項７に記載の発明によると、タクシー利用者からのタクシー車両の配車依頼があった際に配車依頼者に最短の時間で迎車し配車依頼者のところに到着直前に到着予定時刻を通知することができる。

【００１４】上記の目的を達成するために、請求項８に記載のタクシー管理システムは、情報管理センタがタクシー車両に配車依頼者の位置情報を送信して迎車指示を送信する際に、配車依頼者の位置を示す広域道路地図を同時に送信し、情報管理センタがタクシー車両から依頼者エリア進入信号を受信することにより当該配車依頼者の周辺道路地図を送信するようにしたものである。このように構成することにより、請求項８に記載の発明によると、より正確にタクシー利用者の迎車位置を把握することができ、間違えることなく配車依頼者のところに早く到着することができる。

【００１５】

【発明の実施の形態】以下、本発明に係るタクシー管理システムの実施の形態について説明する。図１は、タクシー管理システムを実施するための送受信関係を示している。

【００１６】図において、タクシー車両１は、タクシー業者２が所有し、このタクシー業者２がタクシー車両１と、このタクシー車両１を運転する運転者を管理している。このタクシー車両１は、ポーリングに基づき車載機器からアンテナを介してタクシー車両１の位置情報、メータ表示フラグのポジション情報、タクシーメータ情報を中継会社を介して情報管理センタ３に送信する。タクシー車両１の位置情報は、タクシー車両１のメータ表示フラグのポジションが空車ポジションのとき、すなわち、タクシー車両１が空車状態の時は、情報管理センタ３からの定期的なポーリングに応答して所定走行距離（例えば、５００ｍ）毎に送信する。したがって、情報管理センタ３からのポーリングが定期的に行われても、タクシー車両１が所定走行距離移動していない場合（例えば、空車にして休息をとっている場合）は、ポーリングに応答しない。

【００１７】また、このタクシー車両１の位置情報は、タクシー車両１のメータ表示フラグのポジションが空車ポジションから他のポジションへ変更になったとき、又は、他のポジションから空車ポジションへ変更になったときに情報管理センタ３に送信する。また、タクシー車両１のメータ表示フラグのポジションが空車ポジションから他のポジションへ変更になった以降、すなわち、タクシー車両１に乗客を乗せた実車の場合には、当該タクシー車両１は空車じゃなく、空車情報としてはデータに入らないため、情報管理センタ３からの定期的なポーリングに対して応答しないようになっている。このタクシー車両１が実車の場合、乗客を降ろした際に他のポジション（賃走ポジション）から空車ポジションへ変更になり、情報管理センタ３に位置情報を送信するので問題はない。このように情報収集に必要な場合のみ送信するようにしてあるため、通信費を低く抑えることができる。

【００１８】この情報管理センタ３では、管理する全タクシー車両１の内、空車状態にあるタクシー車両１を取り出し空車データを作成し、この空車状態にあるタクシー車両１の位置情報を地図に重畳してディスプレイ５に、地図を区域（例えば、東京２３区）別に空車状況を表示する空車データを得ている。この地図に重畳した空車データは、情報管理センタ３からタクシー業者２にインターネットを介して送信される。そして、この空車データの送信を受けたタクシー業者２では、管理する全タクシー車両１の内、空車状態のタクシー車両１の位置情報に基づいて地図上に重畳し空車情報としてディスプレイ５に表示する。

【００１９】また、情報管理センタ３では、管理する全タクシー車両１のメータ表示フラグのポジションが空車ポジションから他のポジション（賃走ポジション）へ変更になったときの位置情報を取り込み、賃走の開始点を把握し、乗客を降ろした際に他のポジション（賃走ポジション）から空車ポジションへ変更になったときの位置情報を取り込み、賃走の終点を把握するようになっており、このタクシー車両１のメータ表示フラグのポジションが空車ポジションになったときのタクシーメータ情報（賃走開始時間、賃走終了時間、走行距離、料金、支払方法、実車地）がタクシー車両１から情報管理センタ３に送信される。これによって実車毎のデータが情報管理センタ３に蓄積され、これを整理することによって各タクシー車両１の運行データを得ることができるようになっている。

【００２０】また、タクシー車両１は、配車依頼者４の依頼者エリア内に進入したときに車載機器からアンテナを介して配車依頼者４の依頼者エリア内に進入したことを示す依頼者エリア進入信号を中継会社を介して情報管理センタ３の制御機器に送信する。

【００２１】タクシー車両１に搭載される車載機器の構成は、図２に示す如き構成となっている。図において、車載機器１１は、ＧＰＳ受信機を内蔵した通信ユニットで、制御ＣＰＵ１２と、制御ＣＰＵ１２によって制御されるＧＰＳ受信機１３と、外部とのやり取りを行うモデムであるＰＣ（通信機器）１５（例えば、携帯電話モジュール等）とによって構成されている。すなわち、制御ＣＰＵ１２には、タクシー車両１の地図上での位置情報をアンテナ１４から受信するＧＰＳ受信機１３とＧＰＳ

受信機１３から入力される位置情報をアンテナ１６から情報管理センタ３に送信するＰＣ１５とが接続されている。さらに、制御ＣＰＵ１２には、ＰＣ（通信機器）１５を介して情報管理センタ３から送信されてきた地図データを表示するディスプレィ１７が接続されている。このディスプレィ１７は、情報管理センタ３からの指示を表示するためのもので、タクシー利用者４からタクシー業者２に通信会社を介してタクシー車両１の配車依頼があった場合、タクシー業者２から情報管理センタ３にタクシー車両１の配車依頼が行われ、情報管理センタ３からタクシー車両１に対し配車依頼を行う際、配車依頼者４の位置を示す広域道路地図の送信を受け、この送信された広域道路地図の上に配車依頼者４を示す位置を記して表示するのに用いられる。また、依頼者エリア進入信号を受信、すなわち、配車依頼者４のエリア内にタクシー車両１が進入したときに、情報管理センタ３から配車依頼者４の周辺位置を示す周辺道路地図の送信を受け、この送信された周辺道路地図の上に配車依頼者を示す位置を記して表示したりする。

【００２２】このディスプレィ１７は、タクシー車両１に必ず設けられているものではなく、タクシー車両１によっては、搭載していない場合もある。このような場合は、情報管理センタ３からの指示は、タクシー車両１に乗車している運転手が所有する携帯電話に行ってもよい。

【００２３】また、ＧＰＳ受信機１３は、複数のＧＰＳ衛星から緯度・経度情報をアンテナ１４を介して受信するものである。また、制御ＣＰＵ１２は、ＧＰＳ受信機１３によって受信した複数のＧＰＳ衛星から緯度・経度情報からタクシー車両１の現在位置（緯度・経度）を演算すると共に、この演算結果を中継会社を介して情報管理センタ３に送信する機能を有している。そして、この制御ＣＰＵ１２には、ＲＯＭ、ＲＡＭが内蔵されている。この内蔵のＲＡＭには、与えられた配車依頼者の位置（緯度・経度）に基づいて、配車依頼者の位置を中心とする所定半径距離が記憶されている。また、この制御ＣＰＵ１２に内蔵のＲＡＭには、広域道路地図及び営業エリア内の各住宅の周辺道路地図を予め格納しておくこともできる。この場合、タクシー利用者からタクシー車両１の配車依頼があったときに情報管理センタ３から広域道路地図及び営業エリア内の各住宅の周辺道路地図をタクシー車両１に送信する必要がなくなる。

【００２４】また、この内蔵のＲＯＭには、与えられた配車依頼者の位置（緯度・経度）に基づいて、配車依頼者の位置を中心に所定半径距離（半径５００ｍ）に基づいて依頼者エリアを演算する処理プログラムが記憶されている。さらに、この内蔵のＲＯＭには、ＧＰＳ受信機１３によって複数のＧＰＳ衛星から受信した緯度・経度情報からタクシー車両１の現在位置（緯度・経度）を演算する制御、複数のＧＰＳ衛星から緯度・経度情報から算出したタクシー車両１の現在位置（緯度・経度）に基づいて、当該タクシー車両１が内蔵ＲＡＭに記憶されている依頼者エリア内に進入したか否かを検出する制御、当該タクシー車両１が内蔵ＲＡＭに記憶されている依頼者エリア内に進入した場合に依頼者エリア進入信号をＰＣ（通信機器）１５を起動して中継会社を介して情報管理センタ３に送信する制御、を行うプログラムが記憶されている。また、ＰＣ（Ｐｕｂｌｉｃ　Ｃｏｍｍｕｎｉｃａｔｉｏｎ）１５は、制御ＣＰＵ１２で演算した結果をアンテナ１６を介して中継会社に送信するもので、例えば、携帯電話モジュール等によって構成されている。ディスプレィ１７は、情報管理センタ３から送信されてきた情報（地図データ）及び制御ＣＰＵ１２に内蔵のＲＡＭに格納してある情報（所定半径距離、地図データ）を表示するものである。

【００２５】一方、情報管理センタ３は、図３に示す如き構成を有している。すなわち、ＣＰＵ３１には、メモリ装置が接続されており、このメモリ装置は、車両データベース３５と、地図データベース３６と、空車データベース３７と、道路情報データベース３８と、データメモリエリア３９とを有している。また、このＣＰＵ３１には、各種データを入力する入力部（キーボード）３２が接続されている。さらに、このＣＰＵ３１には、アンテナ３４が接続されており、このアンテナ３４を使ってＣＰＵ３１は、中継会社を介してタクシー車両１の車載機器から送信されてくる位置情報を受信したり、タクシー車両１が依頼者エリア内に進入したことを示す依頼者エリア進入信号をタクシー車両１の車載機器から受信したときに送信タクシー業者２に送信する機能を有している。また、このＣＰＵ３１には、表示部（ディスプレイ）３３が接続されており、ＣＰＵ３１が受信したタクシー車両１の車載機器から送信されてきた情報を表示する機能を有している。

【００２６】車両データベース３５には、管理する全てのタクシー車両１の車種・形式・車両番号・乗車運転手等の車両データがデータベース化して収納されている。この車両データには、情報管理センタ３で管理するタクシー車両１のＧＰＳ受信機を内蔵した通信ユニット１１の携帯電話番号、車種・形式・車両番号・乗車運転手等がある。また、地図データベース３６は、タクシー営業エリアを網羅し、特定地域を詳細に表示可能なデータで、特に特定の周辺地図を拡大、スクロール表示が可能なものとなっている。また、空車データベース３７は、管理している全タクシー車両１のメータ表示フラグが空車ポジションになっているものの車両Ｎｏ．とそれぞれの車両位置情報（緯度・経度情報）、乗車運転手名が記録されている。道路情報データベース３８は、色々な箇所から収集される道路情報をデータベース化して収納しておくものである。また、データメモリエリア３９は、タクシー車両１等から情報管理センタ３に送信されてく

るデータを一時的に記憶しておくものである。

【００２７】タクシー車両１が配車依頼者４の近くに近づいたとき、どの範囲まで接近したときに依頼者へ通知するかを特定する依頼者への通知範囲は、図４に示す如く設定される。すなわち、配車依頼者Ａ、配車依頼者Ｂ、配車依頼者Ｃ、配車依頼者Ｄ、配車依頼者Ｅ、配車依頼者Ｆ、配車依頼者Ｇ・・・・があり、各配車依頼者Ａ、Ｂ、Ｃ、Ｄ、Ｅ、Ｆ、Ｇ・・・・は、依頼を受けたときに特定され、それぞれの配車依頼者には、依頼者への通知範囲がそのときに与えられる。この依頼者への通知範囲は、タクシー車両１が配車依頼者４に近づいてタクシー配車依頼者４までの到着時刻が所定時間内の位置に近づいたことを意味しており、例えば、配車依頼者４を中心に半径５００ｍ内を指している。実際には、道路の渋滞具合が各配車依頼者近傍の道路状況によって異なるため、各配車依頼者毎に依頼者への通知範囲を設定してもよい。そして、配車依頼者Ａにはエリアａ（半径５００ｍ内）が、配車依頼者Ｂにはエリアｂ（半径５００ｍ内）が、配車依頼者Ｃにはエリアｃ（半径５００ｍ内）が、配車依頼者Ｄにはエリアｄ（半径５００ｍ内）が、配車依頼者Ｅにはエリアｅ（半径５００ｍ内）が、配車依頼者Ｆにはエリアｆ（半径５００ｍ内）が、配車依頼者Ｇにはエリアｇ（半径５００ｍ内）・・・がそれぞれ設けられることになる。

【００２８】そして、配車依頼者の位置情報は、配車依頼を受けたときに依頼者の電話番号によって特定され、それぞれの配車依頼者の位置情報は、図４に示す如く、配車依頼者Ｎｏ．Ａの位置情報は緯度P_{01}、経度Q_{01}、配車依頼者Ｎｏ．Ｂの位置情報は緯度P_{02}、経度Q_{02}、配車依頼者Ｎｏ．Ｃの位置情報は緯度P_{03}、経度Q_{03}、配車依頼者Ｎｏ．Ｄの位置情報は緯度P_{04}、経度Q_{04}、配車依頼者Ｎｏ．Ｅの位置情報は緯度P_{05}、経度Q_{05}、配車依頼者Ｎｏ．Ｆの位置情報は緯度P_{06}、経度Q_{06}、配車依頼者Ｎｏ．Ｇの位置情報は緯度P_{07}、経度Q_{07}、配車依頼者Ｎｏ．・・・・と緯度・経度情報で、データメモリエリア３９に収納される。そして、この配車依頼を受けた依頼者の電話番号によって特定された配車依頼者の位置情報に基づいて、情報管理センタ３のＣＰＵ３１は、各配車依頼者についての依頼者への通知範囲が自動演算され、図４に示す如く、配車依頼者Ｎｏ．Ａのエリアａは緯度P_{11}、経度Q_{11}、配車依頼者Ｎｏ．Ｂのエリアｂは緯度P_{12}、経度Q_{12}、配車依頼者Ｎｏ．Ｃのエリアｃは緯度P_{13}、経度Q_{13}、配車依頼者Ｎｏ．Ｄのエリアｄは緯度P_{14}、経度Q_{14}、配車依頼者Ｎｏ．Ｅのエリアｅは緯度P_{15}、経度Q_{15}、配車依頼者Ｎｏ．Ｆのエリアｆは緯度P_{16}、経度Q_{16}、配車依頼者Ｎｏ．Ｇのエリアｇは緯度P_{17}、経度Q_{17}、依頼者Ｎｏ．・・・・と緯度・経度情報で、データメモリエリア３９に収納される。

【００２９】一方、これらの配車依頼者の位置情報は、情報管理センタ３のＣＰＵ３１によってアンテナ３４を使って中継会社に送信され、この中継会社に送信された配車依頼者の位置情報は、中継会社からタクシー車両１のＧＰＳ受信機を内蔵した通信ユニット（車載機器）１１のアンテナ１６を介して制御ＣＰＵ１２に送信される。この制御ＣＰＵ１２では、送信された配車依頼者の位置情報（緯度・経度情報）に基づいて情報管理センタ３のＣＰＵ３１と同様、各配車依頼者についての依頼者への通知範囲を自動演算し、図４に示す如き情報管理センタ３のデータメモリエリア３９に収納された各配車依頼者への依頼者への通知範囲データ（緯度・経度データ）と同一のデータが各配車依頼者毎にエリアを緯度・経度情報として得られ、タクシー車両１のＧＰＳ受信機を内蔵した通信ユニット（車載機器）１１の制御ＣＰＵ１２に内蔵のＲＡＭに依頼者エリアとして記憶される。

【００３０】このように構成されるタクシー管理システムを用いて、タクシー車両１の空車情報を表示し、タクシー利用者からタクシー車両１の配車依頼があったときのタクシー車両（車載機器）１側、情報管理センタ３側、タクシー業者２側、配車依頼者（タクシー利用者）４側の相互の動作について、図５～図１０に図示のフローチャートを用いて説明する。まず、タクシー業者２においては、ステップ１０２において、情報管理センタ３に対して会員登録の申込を行う。このステップ１０２においてタクシー業者２からの会員申込が行われると、情報管理センタ３側では、ステップ１０４において、会員登録を行う。そして、情報管理センタ３側では、ステップ１０６において、タクシー業者２が管理するタクシー全車の車両データ（メーカー名、車種、初年度登録年月、排気量、グレード、ボディカラー、車体番号、乗車運転手）をタクシー業者２に行う。このステップ１０６においてタクシー全車の車両データの請求を受けると、タクシー業者２は、ステップ１０８において、タクシー業者２が管理するタクシー全車の車両データを情報管理センタ３に提供する。このステップ１０８においてタクシー業者２からタクシー全車の車両データの提供を受けると、情報管理センタ３では、ステップ１１０において、タクシー業者２から提供されたタクシー全車の車両データ（メーカー名、車種、初年度登録年月、排気量、グレード、ボディカラー、車体番号、乗車運転手）を車両データベース３５に登録する。これによって情報管理センタ３は、タクシー業者２の所有する全タクシー車両を把握することになる。

【００３１】情報管理センタ３において、ステップ１１０におけるタクシー全車の車両データの登録が行われると、ステップ１１２において、車両データベース３５に登録したタクシー全車の車両データの確認をタクシー業者２に対して行い、タクシー業者２では、ステップ１１４において、車両データベース３５に登録したタクシー

全車の車両データに間違いがなければ、タクシー全車の車両データの確認の了承を情報管理センタ３に送信する。

【００３２】このタクシー全車の車両データの確認の了承をタクシー業者２から受信すると、情報管理センタ３では、ステップ１１６において、車両データベース３５に登録した全タクシー車両１に対し、位置情報・空車情報のポーリングを順次行う。この情報管理センタ３からの位置情報・空車情報のポーリングを受けると、タクシー車両（車載機器）１においては、タクシー車両１のメータ表示フラグのポジションが空車ポジションである場合に限り、ステップ１１８において、一定の周期で複数のＧＰＳ衛星から送信してくる緯度・経度情報をＧＰＳ受信機１３によって受信し、制御ＣＰＵ１２によってこれらの緯度・経度情報に基づいて演算した現在の位置情報を乗車・空車の情報（空車情報のみ）と共にＰＣ１５を介して情報管理センタ３に送信する。このステップ１１８においてタクシー車両１から位置情報と共に空車情報が送信されると、情報管理センタ３では、ステップ１２０において、車両データベース３５に登録した全タクシー車両についての空車情報、空車タクシー車両の位置情報を受信し、空車データーベース３７に記録される。そして、ステップ１２２において、情報管理センタ３では、この受信・記録した全タクシー車両についての空車情報を空車タクシー車両の位置情報に基づいて地図に重畳してタクシー業者２に送信する。このステップ１２２において情報管理センタ３から地図に重畳した空車タクシー車両の情報を受信したタクシー業者２は、ステップ１２４において、地図データに重畳した空車情報をディスプレイ５に表示する。

【００３３】その後、タクシー車両（車載機器）１は、ステップ１２６において、情報管理センタ３からの位置情報・空車情報のポーリングに対して、タクシー車両１が所定距離（例えば、５００ｍ）走行する毎に一定の周期で複数のＧＰＳ衛星から送信してくる緯度・経度情報をＧＰＳ受信機１３によって受信し、制御ＣＰＵ１２によってこれらの緯度・経度情報に基づいて演算した現在の位置情報をタクシー車両１のＰＣ１５を介して情報管理センタ３に送信する。このタクシー車両１から所定距離走行毎に送信されてくる位置情報・空車情報は、ステップ１２８において、情報管理センタ３で受信され、空車データベース３７に記憶される。このステップ１２８において位置情報・空車情報が受信・記憶されると、再び、ステップ１３０において、情報管理センタ３では、車両データベース３５に登録した全タクシー車両１に対し、位置情報・空車情報のポーリングを順次行う。この情報管理センタ３からの位置情報・空車情報のポーリングを受けると、タクシー車両（車載機器）１においては、タクシー車両１のメータ表示フラグのポジションが空車ポジションである場合に限り、ステップ１３２において、一定の周期で複数のＧＰＳ衛星から送信してくる緯度・経度情報をＧＰＳ受信機１３によって受信し、制御ＣＰＵ１２によってこれらの緯度・経度情報に基づいて演算した現在の位置情報を乗車・空車の情報（空車情報のみ）と共にＰＣ１５を介して情報管理センタ３に送信する。このステップ１３２においてタクシー車両１から位置情報と共に空車情報が送信されると、情報管理センタ３では、ステップ１３４において、車両データベース３５に登録した全タクシー車両についての空車情報、空車タクシー車両の位置情報の受信し、空車データーベース３７に記録されているデータを書換更新する。そして、ステップ１３６において、情報管理センタ３では、この受信・記録した全タクシー車両についての空車情報を空車タクシー車両の位置情報に基づいて地図に重畳してタクシー業者２に送信する。このステップ１３６において情報管理センタ３から地図に重畳した空車タクシー車両の情報を受信したタクシー業者２は、ステップ１３８において、地図データに重畳した空車情報をディスプレイ５に表示する。

【００３４】いま、このような状態で、ステップ１４０において、配車依頼者（タクシー利用者）４が電話等でタクシー業者２に対し配車の依頼を行うと、この配車の依頼をタクシー業者２で受信し、この配車の依頼を受信したタクシー業者２は、ステップ１４２において、配車依頼者４の位置（所在地）と共に配車依頼を情報管理センタ３に送信する。このステップ１４２においてタクシー業者２が送信した配車依頼と配車依頼者４の位置（所在地）をステップ１４４において、情報管理センタ３が受信すると、情報管理センタ３は、配車依頼者４の地図上の位置（所在地）を検索し、ステップ１４６において、会員（タクシー業者）２の管理するタクシー車両１の空車状況の確認を行う。このステップ１４６において会員（タクシー業者）２の管理するタクシー車両１の空車状況の確認を行うと、ステップ１４８において、配車依頼者の位置（所在地）に最も近い空車の検索を行う。このステップ１４８において配車依頼者の位置（所在地）に最も近い空車を検索すると、ステップ１５０において、検索した空車タクシー車両１に対し、配車依頼者４の位置情報（緯度・経度データ）を送信し、配車依頼者４の位置に迎えに行くよう迎車指示を送信する。

【００３５】このステップ１５０において配車依頼者４の位置情報を送信し迎車指示を送信すると、空車タクシー車両１は、ステップ１５２において、配車依頼者４の位置情報を送信し迎車指示を受信し、この受信した配車依頼者４の位置情報に基づいて、依頼者エリアが設定され、配車依頼者についての依頼者への通知範囲が緯度Ｐｏｏ、経度Ｑｏｏというように、緯度・経度情報として自動演算され、設定される。この依頼者エリアは、タクシー車両１のＧＰＳ受信機を内蔵した通信ユニット（車載機器）１１の制御ＣＰＵ１２に内蔵のＲＡＭに記憶さ

れる。このステップ２１６において依頼者エリアが緯度・経度情報として自動演算され設定されると、ステップ１５６において、タクシー車両１は、メータ表示フラグを空車ポジションから迎車ポジションに変更する（この時点で、タクシー車両１は空車でなくなる）。このメータ表示フラグが空車ポジションから迎車ポジションに変更になると、このメータ表示フラグの変更をトリガーとして、タクシー車両１が迎車状態になったことをタクシー車両１の位置情報と共に情報管理センタ３に送信する。

【００３６】このステップ１５６においてタクシー車両１が迎車状態になったことをタクシー車両１の位置情報と共に情報管理センタ３に送信すると、情報管理センタ３では、ステップ１５８において、タクシー車両１の迎車了解の確認を受信し、ステップ１６０において、情報管理センタ３のメモリ装置の空車データベース３７に記憶されている空車データから削除し、迎車データとして登録する。この迎車車両データは、ステップ１６２において、会員（タクシー業者）２に送信される。この送信を受けたタクシー業者２は、ステップ１６４において、配車手配を受信する。

【００３７】さらに、情報管理センタ３では、ステップ１６６において、空車タクシー車両１の配車依頼者４の位置まで到着する予定時刻の演算を行い、その演算結果（到着予定時刻）をタクシー業者２に通知する。この情報管理センタ３からの到着予定時刻を受信する（ステップ１６８）と、タクシー業者２は、ステップ１７０において、配車依頼者４に対し、配車手配車の情報と、到着予定時刻の連絡を行う。このステップ１７０におけるタクシー業者２からの連絡は、ステップ１７２において、配車依頼者４に受信される。

【００３８】さらに、情報管理センタ３で、ステップ１７４において、車両データベース３５に登録した全タクシー車両１に対し、位置情報・空車情報のポーリングを順次行う。ところが、タクシー車両１の位置情報は、メータ表示フラグが空車ポジションに変更になったときに情報管理センタ３に送信され、その後、メータ表示フラグのポジションが「空車」位置に保持されている限り、定距離（例えば、５００ｍ）毎にタクシー車両１から情報管理センタ３に自動発報されるようになっている。そこで、メータ表示フラグのポジションが「空車」位置に変更になって定距離（例えば、５００ｍ）毎にタクシー車両１の位置情報が自動発報されているタクシー車両１に対しては、ステップ１７４において行われる情報管理センタ３からタクシー車両１に対する位置情報・空車情報のポーリングを行わない。このため、ポーリングに係る通信費を削減することができる。

【００３９】この情報管理センタ３からの位置情報・空車情報のポーリングは、メータ表示フラグが空車ポジションに変更になると、その地点からタクシー車両１は定距離（例えば、５００ｍ）毎に情報管理センタ３に位置情報を自動発報しているため、メータ表示フラグのポジションが「空車」位置になっているタクシー車両１に対しては行わない。したがって、情報管理センタ３からの位置情報・空車情報のポーリングを受ける（メータ表示フラグのポジションが空車以外のポジションとなっているタクシー車両１）と、タクシー車両（車載機器）１においては、ステップ１７６において、一定の周期で複数のＧＰＳ衛星から送信してくる緯度・経度情報をＧＰＳ受信機１３によって受信し、制御ＣＰＵ１２によってこれらの緯度・経度情報に基づいて演算した現在の位置情報を乗車・空車の情報（空車情報のみ）と共にＰＣ１５を介して情報管理センタ３に送信する。このステップ１７６においてタクシー車両１から位置情報と共に空車情報が送信されると、情報管理センタ３では、ステップ１７８において、車両データベース３５に登録した全タクシー車両についての空車情報は定距離（例えば、５００ｍ）毎、メータ表示フラグのポジションが空車以外のポジションとなっているタクシー車両の位置情報が受信され、空車データーベース３７に記録される。そして、ステップ１８０において、情報管理センタ３では、この受信・記録した全タクシー車両についての空車情報を空車タクシー車両の位置情報に基づいて地図に重畳してタクシー業者２に送信する。このステップ１８０において情報管理センタ３から地図に重畳した空車タクシー車両の情報を受信したタクシー業者２は、ステップ１８２において、地図データに重畳した空車情報をディスプレイ５に表示する。

【００４０】また、情報管理センタ３で、ステップ１８４において、車両データベース３５に登録した全タクシー車両１に対し、位置情報・空車情報のポーリングを順次行う。ところが、タクシー車両１の位置情報は、メータ表示フラグが空車ポジションに変更になったときに情報管理センタ３に送信され、その後、メータ表示フラグのポジションが「空車」位置に保持されている限り、定距離（例えば、５００ｍ）毎にタクシー車両１から情報管理センタ３に自動発報されるようになっている。そこで、メータ表示フラグのポジションが「空車」位置に変更になって定距離（例えば、５００ｍ）毎にタクシー車両１の位置情報が自動発報されているタクシー車両１に対しては、ステップ１７４において行われる情報管理センタ３からタクシー車両１に対する位置情報・空車情報のポーリングを行わない。このため、ポーリングに係る通信費を削減することができる。

【００４１】この情報管理センタ３からの位置情報・空車情報のポーリングを受けると、タクシー車両（車載機器）１においては、タクシー車両１のメータ表示フラグのポジションが空車以外のポジションである場合に限り、ステップ１８６において、一定の周期で複数のＧＰＳ衛星から送信してくる緯度・経度情報をＧＰＳ受信機

１３によって受信し、制御ＣＰＵ１２によってこれらの緯度・経度情報に基づいて演算した現在の位置情報を乗車・空車の情報（空車情報のみ）と共にＰＣ１５を介して情報管理センタ３に送信する。このステップ１８６においてタクシー車両１から、メータ表示フラグのポジションが空車以外のポジションとなっているタクシー車両についての位置情報と、メータ表示フラグのポジションが空車のポジションであるタクシー車両の空車情報が定距離（例えば、５００ｍ）毎に送信されると、情報管理センタ３では、ステップ１８８において、車両データベース３５に登録した全タクシー車両についての空車情報、空車タクシー車両の位置情報の受信し、空車データーベース３７に記録される。このような繰り返しを行うことにより各タクシー車両１の空車情報、運行情報が情報管理センタ３に収集される。

【００４２】このようにして各タクシー車両１営業が終了すると、タクシー業者２は、情報管理センタ３に対してステップ１９０において、各タクシー車両１毎の営業日報明細の請求を行う。このステップ１９０において営業日報明細の請求が有ると、情報管理センタ３は、ステップ１９２において、図１１に示す如き各タクシー車両１毎の営業日報明細の作成を行い、ステップ１９４において、作成した各タクシー車両１毎の営業日報明細をタクシー業者２に送信する。この営業日報明細には、日報日付、車両コード、乗務員名等が記載され、１日のタクシー車両１の営業状況が示される。このステップ１９４において情報管理センタ３が作成した各タクシー車両１毎の営業日報明細をタクシー業者２に送信する。この情報管理センタ３から送信されると、タクシー業者２は、ステップ１９６において、図１１に示す如き各タクシー車両１毎の営業日報明細を受信する。

【００４３】また、タクシー業者２が、情報管理センタ３に対してステップ１９８において、各タクシー車両１に未収金管理票の請求を情報管理センタ３に行うと、ステップ２００において、各タクシー車両１毎の図１２に示す如き未収金管理票の作成を行う。この未収金管理票は、各タクシー車両１がクレジットカード、チケットカード、プリペイドカード、メンバーズカードで支払った料金が未収金となっているものを表にして出したものである。このステップ２００において各タクシー車両１毎の未収金管理票の作成を行うと、ステップ２０２において、作成した各タクシー車両１毎の未収金管理票をタクシー業者２に送信する。このステップ２０２において情報管理センタ３が作成した未収金管理票をタクシー業者２に送信すると、タクシー業者２は、ステップ２０４において、図１２に示す如き未収金管理票を受信する。

【００４４】また、タクシー業者２が、情報管理センタ３に対してステップ２０６において、各タクシー車両１に時間帯別営業収入分布票の請求を情報管理センタ３に行うと、ステップ２０８において、各タクシー車両１毎の図１３に示す如き時間帯別営業収入分布票の作成を行う。この時間帯別営業収入分布票は、時間帯エリアを２４時間に分け、どこの地区での営業実績がいいかを表にして示したものである。このステップ２０８において時間帯別営業収入分布票の作成を行うと、ステップ２１０において、作成した時間帯別営業収入分布票をタクシー業者２に送信する。このステップ２１０において情報管理センタ３が作成した時間帯別営業収入分布票をタクシー業者２に送信すると、タクシー業者２は、ステップ２１２において、図１３に示す如き時間帯別営業収入分布票を受信する。

【００４５】また、タクシー業者２が、情報管理センタ３に対してステップ２１４において、各タクシー車両１に時間帯別乗車回数分布票の請求を情報管理センタ３に行うと、ステップ２１６において、各タクシー車両１毎の図１４に示す如き時間帯別乗車回数分布票の作成を行う。この時間帯別乗車回数分布票は、時間帯エリアを２４時間に分け、どこの地区での乗車回数が多いかを表にして示したものである。このステップ２１６において時間帯別乗車回数分布票の作成を行うと、ステップ２１８において、作成した時間帯別乗車回数分布票をタクシー業者２に送信する。このステップ２１８において情報管理センタ３が作成した時間帯別乗車回数分布票をタクシー業者２に送信すると、タクシー業者２は、ステップ２２０において、図１４に示す如き時間帯別乗車回数分布票を受信し、フローを終了する。

【００４６】

【発明の効果】以上に説明したように構成されているので、以下のような効果を奏する。

【００４７】請求項１に記載の発明によれば、タクシー業者に何の設備も設けることなく、自社の所有する全タクシー車両の空車状態を常に把握することができる。

【００４８】請求項２に記載の発明によれば、タクシー業者に何の設備も設けることなく、自社の所有する全タクシー車両の空車状態を常に把握でき、タクシー利用者からのタクシー車両の配車依頼があった際に配車依頼者に適切なタクシー車両の配車を行うことができる。

【００４９】請求項３に記載の発明によれば、空車状態と迎車・賃走開始位置、賃走終了位置を的確に把握することができ、ポーリングだけでなく「空車」の通報の後の追跡、フォローができ、ポーリングの通信費を抑えることができる。

【００５０】請求項４に記載の発明によれば、常時当該車両の走行距離、請求金額、乗車頻度等を的確に知ることができる。

【００５１】請求項５に記載の発明によれば、常時当該車両の走行距離、請求金額、営業状態、乗車頻度等を的確に知ることができる。

【００５２】請求項６に記載の発明によれば、タクシー利用者からのタクシー車両の配車依頼があった際に配車

依頼者に最短の時間で迎車し配車依頼者のところに到着することができる。

【００５３】請求項７に記載の発明によれば、タクシー利用者からのタクシー車両の配車依頼があった際に配車依頼者に最短の時間で迎車し配車依頼者のところに到着直前に到着予定時刻を通知することができる。

【００５４】請求項８に記載の発明によれば、より正確にタクシー利用者の迎車位置を把握することができ、間違えることなく配車依頼者のところに早く到着することができる。

【図面の簡単な説明】

【図１】タクシー管理システムを実施するための送受信関係を示す図である。

【図２】図１に図示のタクシー車両に搭載される車載機器の構成を示す図である。

【図３】図１に図示の情報管理センタの構成を示す図である。

【図４】図１に図示の配車依頼者の位置及び依頼者エリアの緯度・経度データを示す図である。

【図５】タクシー管理システムを用いて、タクシー車両１の空車情報を表示し、タクシー利用者からタクシー車両１の配車依頼があったときのタクシー車両１側、情報管理センタ３側、タクシー業者２側、配車依頼者（タクシー利用者）４側の相互の動作を示すフローチャートである。

【図６】タクシー管理システムを用いて、タクシー車両１の空車情報を表示し、タクシー利用者からタクシー車両１の配車依頼があったときのタクシー車両１側、情報管理センタ３側、タクシー業者２側、配車依頼者（タクシー利用者）４側の相互の動作を示すフローチャートである。

【図７】タクシー管理システムを用いて、タクシー車両１の空車情報を表示し、タクシー利用者からタクシー車両１の配車依頼があったときのタクシー車両１側、情報管理センタ３側、タクシー業者２側、配車依頼者（タクシー利用者）４側の相互の動作を示すフローチャートである。

【図８】タクシー管理システムを用いて、タクシー車両１の空車情報を表示し、タクシー利用者からタクシー車両１の配車依頼があったときのタクシー車両１側、情報管理センタ３側、タクシー業者２側、配車依頼者（タクシー利用者）４側の相互の動作を示すフローチャートである。

【図９】タクシー管理システムを用いて、タクシー車両１の空車情報を表示し、タクシー利用者からタクシー車両１の配車依頼があったときのタクシー車両１側、情報管理センタ３側、タクシー業者２側、配車依頼者（タクシー利用者）４側の相互の動作を示すフローチャートである。

【図１０】タクシー管理システムを用いて、タクシー車両１の空車情報を表示し、タクシー利用者からタクシー車両１の配車依頼があったときのタクシー車両１側、情報管理センタ３側、タクシー業者２側、配車依頼者（タクシー利用者）４側の相互の動作を示すフローチャートである。

【図１１】情報管理センタが作成する営業日報明細を示す図である。

【図１２】情報管理センタが作成する未収金管理票を示す図である。

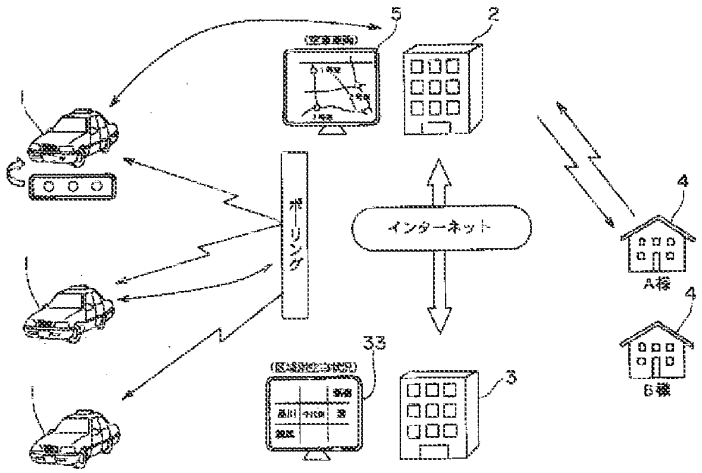
【図１３】情報管理センタが作成する時間帯別営業収入分布票を示す図である。

【図１４】情報管理センタが作成する時間帯別乗車回数分布票を示す図である。

【符号の説明】

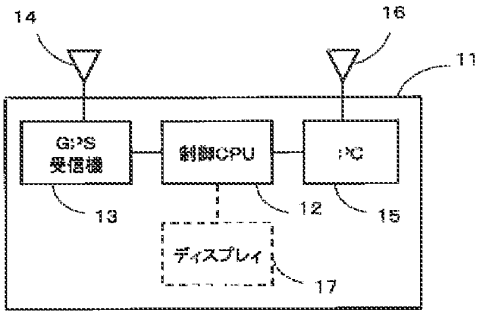
１……タクシー車両
２……タクシー業者
３……情報管理センタ
４……配車依頼者（タクシー利用者）
１１……通信ユニット（車載機器）
１２……制御ＣＰＵ
１３……ＧＰＳ受信機
１５……ＰＣ
１７……ディスプレィ
３１……ＣＰＵ
３２……入力部
３３……表示部
３５……車両データベース
３７……空車データベース

【図1】

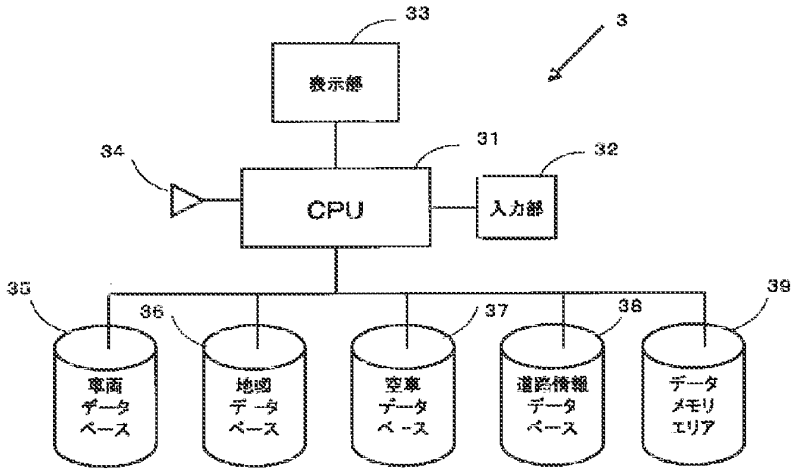


1…タクシー車両　2…タクシー業者　3…情報管理センタ　4…配車依頼者（タクシー利用者）
5…ディスプレイ　33…表示部

【図2】



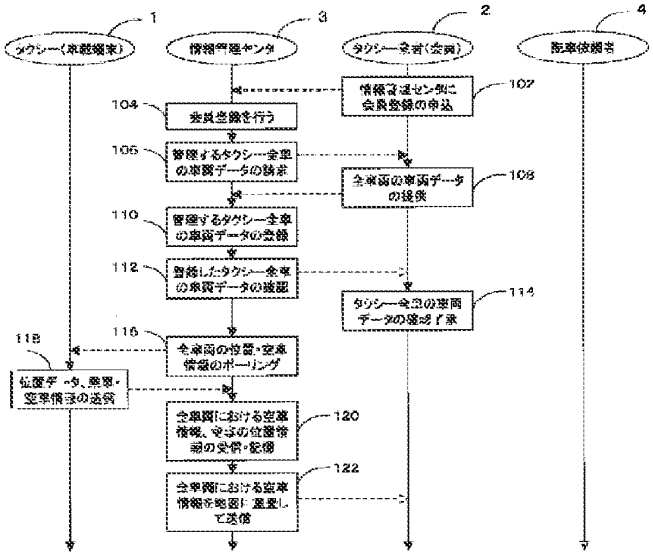
【図3】



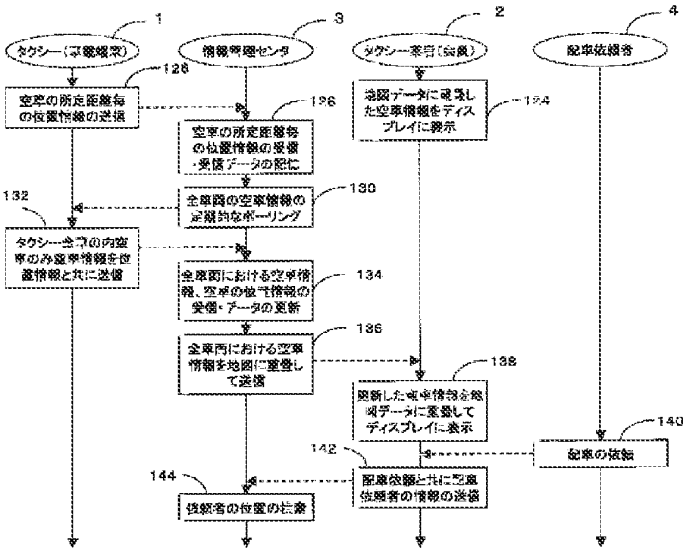
【図4】

配車の依頼者	依頼者位置情報		依頼者への通知範囲		
	緯度	経度	エリア	緯度	経度
A	P_{01}	Q_{01}	a(半径500m内)	P_{11}	Q_{11}
B	P_{02}	Q_{02}	b(半径500m内)	P_{12}	Q_{12}
C	P_{03}	Q_{03}	c(半径500m内)	P_{13}	Q_{13}
D	P_{04}	Q_{04}	d(半径500m内)	P_{14}	Q_{14}
E	P_{05}	Q_{05}	e(半径500m内)	P_{15}	Q_{15}
F	P_{06}	Q_{06}	f(半径500m内)	P_{16}	Q_{16}
G	P_{07}	Q_{07}	g(半径500m内)	P_{17}	Q_{17}
⋮	⋮	⋮	⋮	⋮	⋮

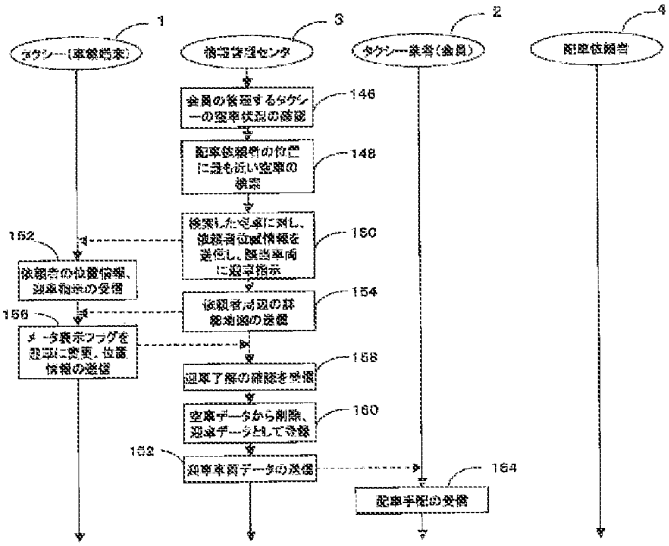
【図5】



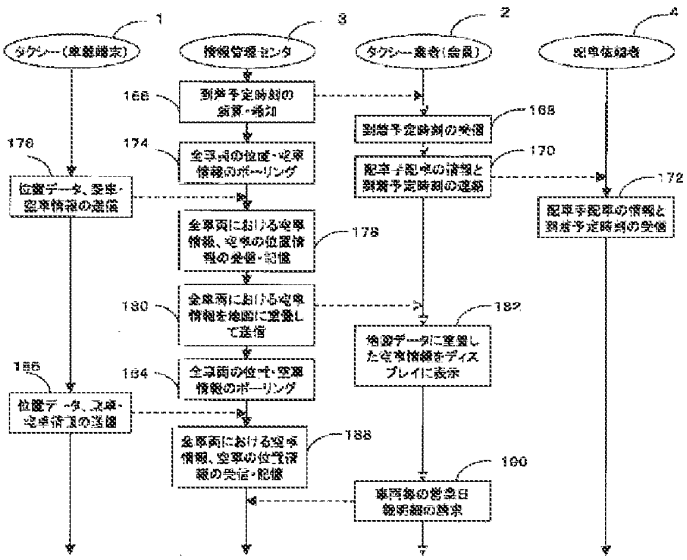
【図6】


1
3
2
4
タクシー(非会員端末)
情報管理センタ
タクシー業者(会員)
配車依頼者
126
空車の所定距離毎の位置情報の送信
空車の所定距離毎の位置情報の受信・受信データの記憶
地図データに重ねた空車情報をディスプレイに表示
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134
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142
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依頼者の位置の計算

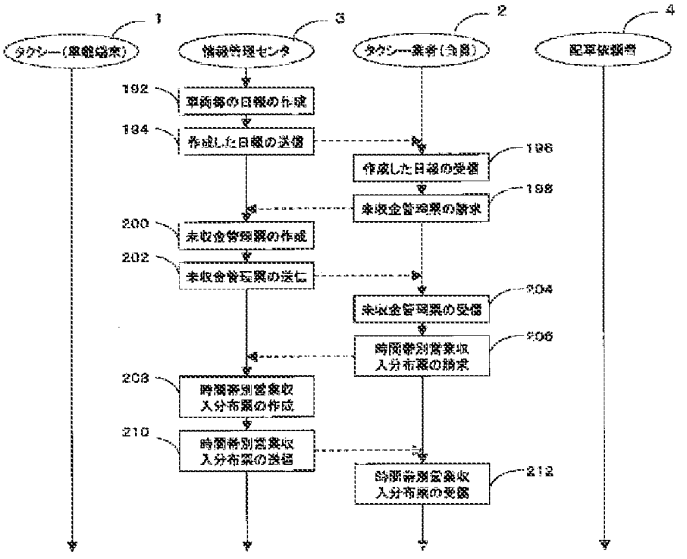
【図7】


1
3
2
4
タクシー(非会員端末)
情報管理センタ
タクシー業者(会員)
配車依頼者
会員の管理するタクシーの空車状況の確認
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検索した空車に対し、依頼者位置情報を送信し、該当車両に迎車指示
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迎車車両データの送信
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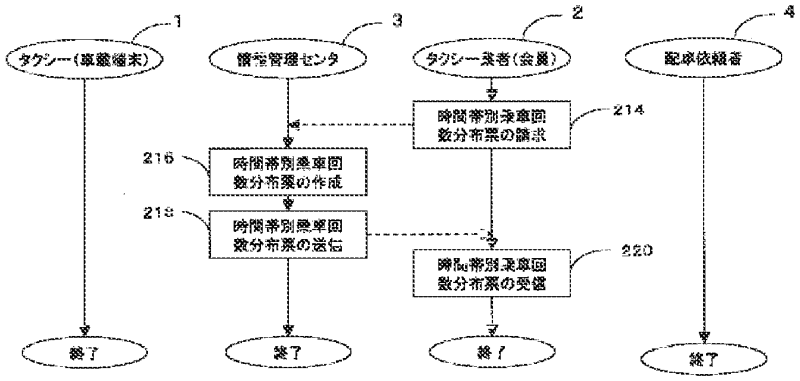
【図8】


1
3
2
4
タクシー(車載端末)
情報管理センタ
タクシー乗客(会員)
配車依頼者
166
到着予定時刻の演算・補正
168
到着予定時刻の受信
174
全車両の位置・空車情報のポーリング
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184
全車両の位置・空車情報のポーリング
188
全車両における空車情報、空車の位置情報の受信・記憶
190
車両毎の営業日報明細の請求

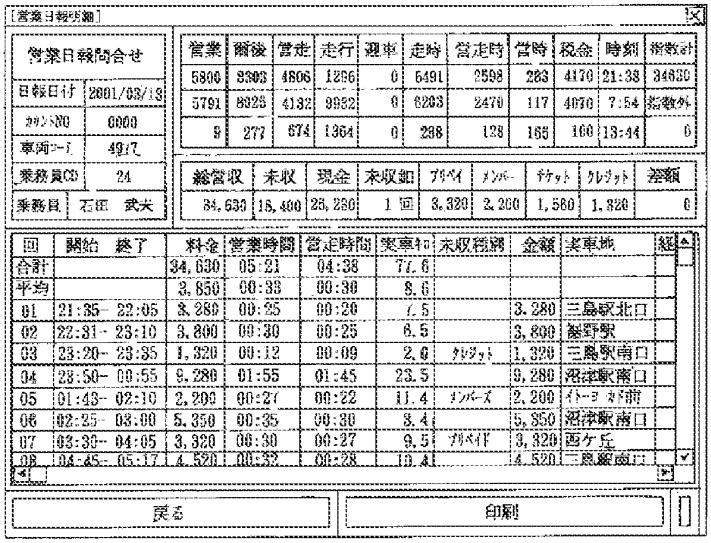
【図9】


1
3
2
4
タクシー(車載端末)
情報管理センタ
タクシー乗客(会員)
配車依頼者
192
車両毎の日報の作成
194
作成した日報の送信
196
作成した日報の受信
198
未収金管理票の請求
200
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202
未収金管理票の送信
204
未収金管理票の受信
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210
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212
時間帯別営業収入分布票の受信

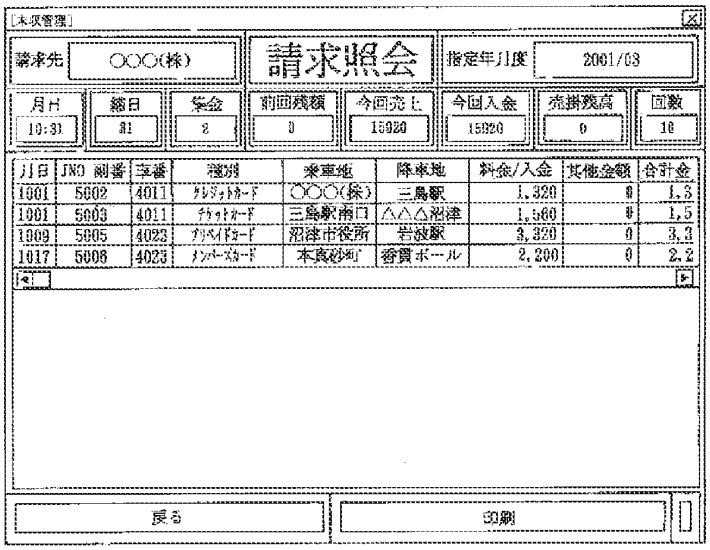
【図10】


1
タクシー(車載端末)
3
営業管理センタ
2
タクシー業者(会員)
4
配車依頼者
214
時間帯別乗車回数分布票の請求
216
時間帯別乗車回数分布票の作成
218
時間帯別乗車回数分布票の送信
220
時間帯別乗車回数分布票の受信
終了
終了
終了
終了

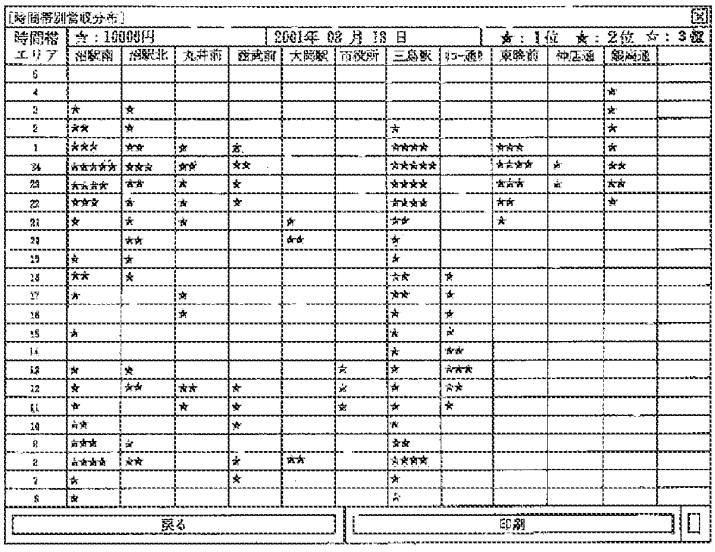
【図11】


営業日報問合せ
日報日付 2001/03/13
ｶｳﾝﾄNO 0000
車両ｺｰﾄﾞ 49ﾅ7
乗務員CD 24
乗務員 石田 武大
営業 前後 営走 走行 週率 走時 営走時 営時 税金 時刻 稼数計
5800 8303 4806 1256 0 6491 2598 283 4170 21:38 34630
5791 8025 4132 9952 0 6263 2470 117 4070 7:54 拡数外
9 277 674 1364 0 288 128 166 100 13:44 0
総営収 未収 現金 未収額 ﾌﾘﾍﾟｲ ﾒﾝﾊﾞｰ ﾁｹｯﾄ ｸﾚｼﾞｯﾄ 差額
84,630 16,400 25,230 1 回 3,320 3,200 1,560 1,320 0
回 開始 終了 料金 営業時間 営走時間 実車ｷﾛ 未収種別 金額 乗車地
合計 34,630 05:21 04:38 71.6
平均 3,850 00:33 00:30 8.6
01 21:35- 22:05 3,280 00:25 00:20 7.5 3,280 三島駅北口
02 22:31- 23:10 3,800 00:30 00:25 6.5 3,800 裾野駅
03 23:20- 23:35 1,320 00:12 00:09 2.0 ｸﾚｼﾞｯﾄ 1,320 三島駅南口
04 23:50- 00:55 9,280 01:55 01:45 23.5 9,280 沼津駅南口
05 01:43- 02:10 2,200 00:27 00:22 11.4 ﾒﾝﾊﾞｰｽﾞ 2,200 ｲﾄｰﾖｶﾄﾞ前
06 02:25- 03:00 5,350 00:35 00:30 8.4 5,350 沼津駅南口
07 03:38- 04:05 3,320 00:30 00:27 9.5 ﾌﾘﾍﾟｲﾄﾞ 3,320 西ケ丘
08 04:45- 05:17 4,520 00:32 00:28 10.4 4,520 三島駅南口
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印刷

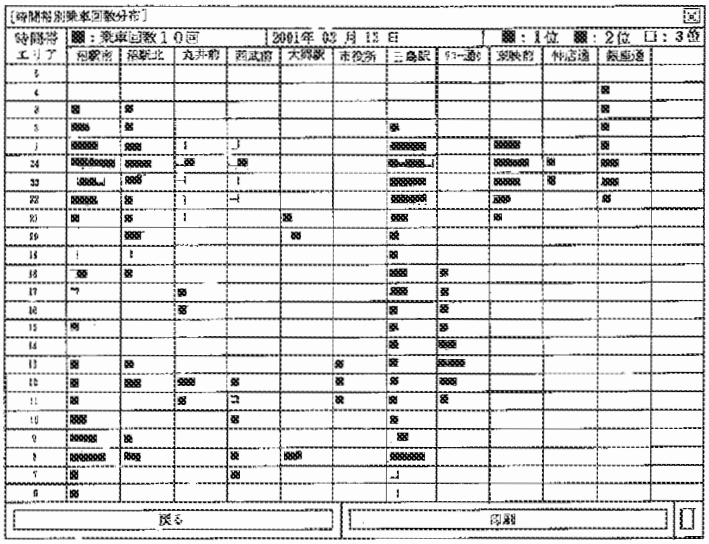
【図12】


[本店管理]
請求先
○○○(株)
請求照会
指定年月度
2001/03
月日
10:31
締日
31
集金
2
前回残額
0
今回売上
15920
今回入金
15920
売掛残高
0
回数
10
月日 JNO 組番 車番 種別 乗車地 降車地 料金/入金 其他金額 合計金
1001 5002 4011 クレジットカード ○○○○(株) 三島駅 1,320 0 1,3
1001 5003 4011 プリペイドカード 三島駅南口 △△△沼津 1,540 0 1,5
1009 5005 4023 プリペイドカード 沼津市役所 岩波駅 3,320 0 3,3
1017 5008 4023 メンバーズカード 本真砂町 香貫ボール 2,200 0 2,2
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印刷

【図13】


[時間帯別営収分布]
時間帯
☆：10000円
2001年 03 月 18 日
★：1位 ★：2位 ☆：3位
エリア 沼駅南 沼駅北 丸井前 産業前 大原駅 市役所 三島駅 ﾖｰｸ通り 東映前 仲見通 銀座通
戻る
印刷

【図14】



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			Z	
29/10		29/10	A	

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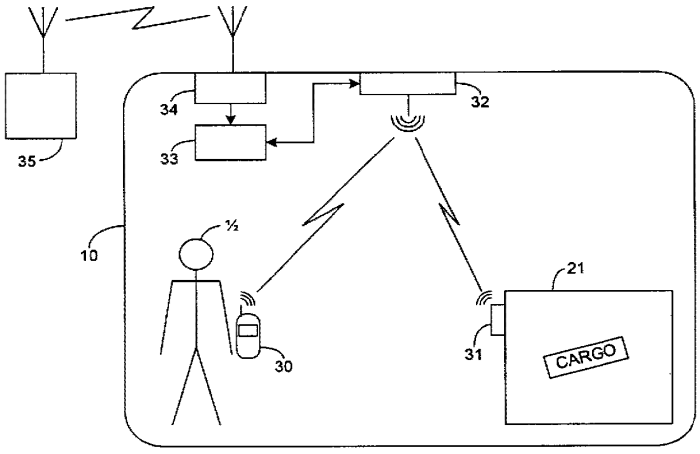
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[Continued on next page]

(54) Title: A METHOD OF AUTOMATIC BILLING FOR A PERSON OR AN OBJECT BEING TRANSPORTED, BY A MEANS OF TRANSPORTATION



(57) Abstract: The invention provides a method of automatic billing a person or an object such as cargo or a piece of luggage being transported, by a means of transportation, a distance from a station of departure to a station of destination, where the travelling person or object has an individual device that can be wirelessly detected and that represents the person or the object. Preferably, the individual device is a Bluetooth device such as a mobile phone, a personal digital assistant (PDA) or other communication device based on short-range radio signals. When the person or object including the individual device is on the means of transportation, the individual device is automatically detected, and the presence board of the individual device is taken to mean that the person or object is also on board. A system checks that billing can actually be performed based on the detected individual device, and the person is preferably asked to confirm, through wireless communication using the individual device, that billing can take place.

WO 02/073546 A2

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

A method of automatic billing for a person or an object being transported, by a means of transportation

Background of the invention

The invention relates to methods of billing a person or an object such as cargo or a piece of luggage being transported, by a means of transportation, a distance from a station of departure to a station of destination.

Systems and methods of prepaid travelling and transportation are known, where a passenger buys a ticket in advance, or where the transportation fare for the cargo or luggage is paid in advance.

Systems and methods of automatic billing are also known. In such known methods the travelling person has eg a personal credit card, which he uses in connection with entering the means of transportation. The credit card can be a general-purpose credit card or it can represent an account, which the travelling person holds with the transporting organisation. This corresponds to the system of prepaid travelling, where the payment is made or confirmed in the "last minute".

Systems are also known where a travelling person enters the means of transportation such as a train, and after the train has left the station of departure, an officer from the transporting organisation will go through the train and sell tickets to passengers, who have just entered the train, and the passengers may pay the fare in cash or using a credit card or other accepted means of payment.

CONFIRMATION COPY

Summary of the invention

The invention provides a method of automatic billing a person or an object such as cargo or a piece of luggage being transported, by a means of transportation, a distance from a station of departure to a station of destination, where the travelling person or object has an individual device that can be wirelessly detected and that represents the person or the object. Preferably, the individual device is a Bluetooth device such as a mobile phone, a personal digital assistant (PDA) or other communication device based on short-range radio signals. When the person or object including the individual device is on the means of transportation, the individual device is automatically detected, and the presence board of the individual device is taken to mean that the person or object is also on board. A system checks that billing can actually be performed based on the detected individual device, and the person is preferably asked to confirm, through wireless communication using the individual device, that billing can take place.

The invention makes it possible for travelling persons to get on board the means of transportation without having to show a ticket, which might possibly have to be checked for its validity etc. All such formalities are time consuming. The invention makes it possible for passengers to get on board the means of transportation without having to spend time on such time consuming formalities. The time the means of transportation will have to spend at stations of departure will thereby be reduced, since the presence of the passengers in the means of

transportation can be detected after the departure from the station of departure.

The method makes it possible to bill automatically for the journey from a station of departure to a station of destination independent of the chosen route and of stops at intermediate stations. At any intermediate station passengers may disembark the means of transportation and terminate their journey, and new passengers may embark and start their journey.

The invention can be used in virtually any means of transportation: trains, buses, taxis, ships, airplane etc. and in any combination of several means of transportation. Passengers arriving eg by airplane at an airport will often have to travel further by either by a connecting flight or by train, bus or taxi, and the automatic billing method of the invention can be implemented to automatically bill for a combination of different means of transportation. An airport where a sub-distance travelled by airplane starts or ends will thus just be an intermediate station.

Automatic billing with the method of the invention can also be performed for a person's visit to eg a museum, a theatre, an amusement park, a tourist attraction or other fixed installation or facility, where the person's presence, like in the means of transportation, is detected wirelessly by means of his or her individual device representing the person. The billing of such visit can be combined with the billing for person's transportation in connection with his or her visit to the

fixed installation. This makes it easy to make a correct billing for special offers where eg a visit to a fixed installation in combination with transportation to the installation is offered at a special price. Use of combinations of means of transportation can automatically be billed correctly. Examples are special offers such as travels at special times, on special days or a special combination of means of transportation, possibly in combination with a visit to a fixed installation.

The individual device representing the person or the object being transported preferably uses short-range radio signals for communicating with the equipment in the means of transportation for detecting the presence of the device, but other communications techniques can also be used, such as magnetic or inductive detection and infrared communication. When using short-range radio signals for communicating the individual device is preferably a device using the standard Bluetooth protocol. Such devices using the standard Bluetooth protocol are here referred to as Bluetooth devices. Examples of Bluetooth devices are mobile phones, personal digital assistants (PDA's), electronic watches, laptop computers etc.

Naturally, the wireless communication with the individual device must comply with applicable safety regulations. Eg onboard airplanes safety regulations usually do not allow the use of mobile phones, because the long-range radio communication of a mobile phone might interfere with the communication and navigation of the airplane. Thus, when the means of transportation is an airplane, and a mobile

phone with Bluetooth short-range communication is used as the individual device, it should preferably be possible to switch off the functions or circuits of the mobile phone that might disturb eg the communication and navigation of the airplane, which is the traditional long-range communication of the mobile phone, while it should be possible to keep the Bluetooth communication of the mobile phone active.

The billing method of the invention can be used in conjunction with any bonus program of the transporting organisation. Travelling persons will be given a great degree of freedom in planning journeys, and re-routing can be done with very short notice. Final billing can be performed based on a person's total travelling and other activities in a predefined period, eg one month or one year, possibly in accordance with a bonus program.

Brief description of the drawings

Figure 1 shows two possible routes for travelling from a station of departure to a station of destination, and

Figure 2 shows a means of transportation using a preferred embodiment of the invention.

Detailed description of the invention

In figure 1 is shown a station of departure A and a station of destination B. An unbroken arrow from the station of departure A to the station of destination B indicates the direct route to be travelled by a means of transportation. An alternative route from A to B makes

stops at intermediate stations C and D, whereby the distance AB travelled from A to B is divided into sub-distances AC, CD and DB. A station is here defined as a geographical location defining a distance or a sub-distance to be travelled by a means of transportation and where a journey travelling the defined distance or sub-distance can be started or terminated.

Figure 2 shows a cross section through a means of transportation such as a train 10 that can travel the distance AB or the combination of sub-distances AC, CD and DB in figure 1.

Situated within the train is a person 20 carrying a mobile phone 30, and a piece of cargo 21 equipped with a cargo tag 31. The mobile phone 30 and the cargo tag 31 are both capable of communicating using the standard Bluetooth protocol, and each of them has an individual Bluetooth identification code. Also within the train 10 is a Bluetooth station 32, which in the shown embodiment is mounted onto the ceiling of the train, but a handheld Bluetooth station could also be used. A processor 33 is coupled to the Bluetooth station 32 so that bi--directional wired or wireless communication between the processor and the Bluetooth station 32 is possible.

At any suitable time, typically related to time of departure from the station of departure A, the processor 33 causes the Bluetooth station 32 to interrogate for the presence of enabled individual Bluetooth devices in the train, such as mobile phones 30 and cargo tags 31. Enabled Bluetooth devices in the train will thereby be

caused to respond by transmitting an individual Bluetooth device identity code. When the processor receives the Bluetooth device identity codes, a verification ensuring billing of the correct account is performed, and a message may be sent to the mobile phone 30 asking the person 20 to confirm the billing of his account. If the person is travelling on the direct route AB and terminating the journey at the station of destination B, then the billing is done based on the detection of the presence of the person (or rather his Bluetooth mobile phone 30) in the train.

If the person travels from the station of departure A via the intermediate stations C and D to the station of destination B, then the presence of his Bluetooth mobile phone 30 is detected on each of the sub-distances, and the billing is performed for the total distance travelled. In practice, final billing will not be performed until the travelling person has left the train and his personal Bluetooth device is no longer detected as present in the train.

On board the train is also a receiver 34 for receiving geographical information allowing the determination of the distance or sub-distance being actually travelled. The receiver can receive such information from a satellite based global positioning system (GPS) 35 or from a transmitter located along the rails of the sub-distance. Alternatively, the receiver 34 can receive eg GSM cell information identifying the cell in the network in which the mobile phone is operating. In a simpler from the geographical information can be input by a train

officer using a keyboard, or the processor can be pre-programmed with the entire time table including intermediate stations.

Typically, a sequence of actions involving the method of the invention could include all or some of the following steps.

- After possible security check at the station of departure a passenger enters the means of transportation with his or her Bluetooth device enabled, or the cargo or luggage is moved into the luggage or cargo compartment of the train with the attached Bluetooth cargo tag enabled.
- The train leaves the station of departure.
- The billing system detects that the train has left the station of departure.
- The billing system detects the global position of the train with an accuracy sufficient to identify the sub-distance actually being travelled.
- The billing system initiates a procedure for detecting the presence of Bluetooth devices on the train.
- A database in the billing system is updated with detected Bluetooth devices.
- For new passengers, ie passengers not previously detected on the train, the most recently visited station will be recorded as their station of departure.
- For passengers no longer detected on the train the most recently visited station will be recorded as their station of destination.

- When leaving the train the passenger may choose to continue by another means of transportation, eg a bus or an airplane, having a billing system that detects his or her presence in the new means of transportation and records corresponding information.
- The recorded information can be post processed in situations where the passenger has an arrangement with the carrier such as a bonus program.
- A request for signature or approval of the billing can be sent to the Bluetooth device for electronic signature. Approval of the billing by electronic signature may possibly have to be performed for every sub-distance and for every fixed installation visited.
- Final billing is performed based on the total amount of recorded information.

References

[1] The Official Bluetooth Website: http://www.bluetooth.com/developer/specification/core.asp

[2] Brent A. Miller, Chatschik Bisdikian: Bluetooth Revealed, Prentice Hall PTR, Prentice-Hall, Inc., Upper Saddle River, NJ 07458, USA, 2000. ISBN 0-13-090294-2.

Claims

1. A method of automatic billing for a person or an object being transported, by a means of transportation, a distance (AB) from a station of departure (A) to a station of destination (B), the method comprising
- wirelessly determining the presence, in the means of transportation, of an individual device representing the person or the object being transported by the means of transportation,
- with the person or the object present in the means of transportation, determining the distance actually being travelled by the means of transportation,
- providing price information for the actual distance travelled by the person or the object, and
- based on the price information, billing for the distance travelled by the person or the object.

2. A method according to claim 1, characterized in that
- the distance between the station of departure (A) and the station of destination (B) comprises at least two sub-distances (AC, CD, DB) with at least one intermediate station (C, D) between sub-distances,
- the presence of the person or the object is determined individually for each sub-distance,
- price information is provided for the total distance the person or the object is transported.

3. A method according to any one of claims 1-2, characterized in that the wireless determination of the presence of the person or the object

uses communication devices based on short-range radio signals.

4. A method according to claim 3 c h a r a c t e r - i z e d in that the communication devices communicate using the standard Bluetooth protocol.

5. A method according to any one of claims 1-4, c h a r a c t e r i z e d in that the distance actually being travelled by the means of transportation is determined using a satellite based global positioning system (GPS).

6. A method according to any one of claims 1-5, c h a r a c t e r i z e d in that the distance actually being travelled by the means of transportation is determined using information provided from ground based transmitters related to the distance being travelled.

7. A method according to any one of claims 1-6, c h a r a c t e r i z e d in that the distance actually being travelled by the means of transportation is determined using a predefined time schedule.

8. A method according to any one of claims 1-7, c h a r a c t e r i z e d in that the distance actually being travelled by the means of transportation is determined using inputs from a person operating the means of transportation.

9. A method according to any one of claims 2-8, c h a r a c t e r i z e d in that sub-distances are travelled by different means of transportation.

10. A method according to any one of claims 2-9, c h a r a c t e r i z e d in that sub-distances travelled are operated by different operators.

11. A system for automatic billing for a person or an object being transported, by a means of transportation, a distance (AB) from a station of departure (A) to a station of destination (B), the system comprising
- means for wirelessly determining the presence, in the means of transportation, of an individual device representing the person or the object being transported by the means of transportation,
- means for determining the distance actually being travelled by the means of transportation,
- means for providing price information for the actual distance travelled by the person or the object, and
- means for billing, based on the price information, for the distance travelled by the person or the object.

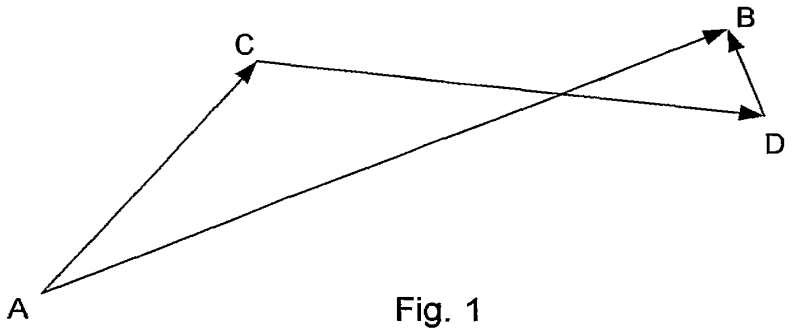


Fig. 1

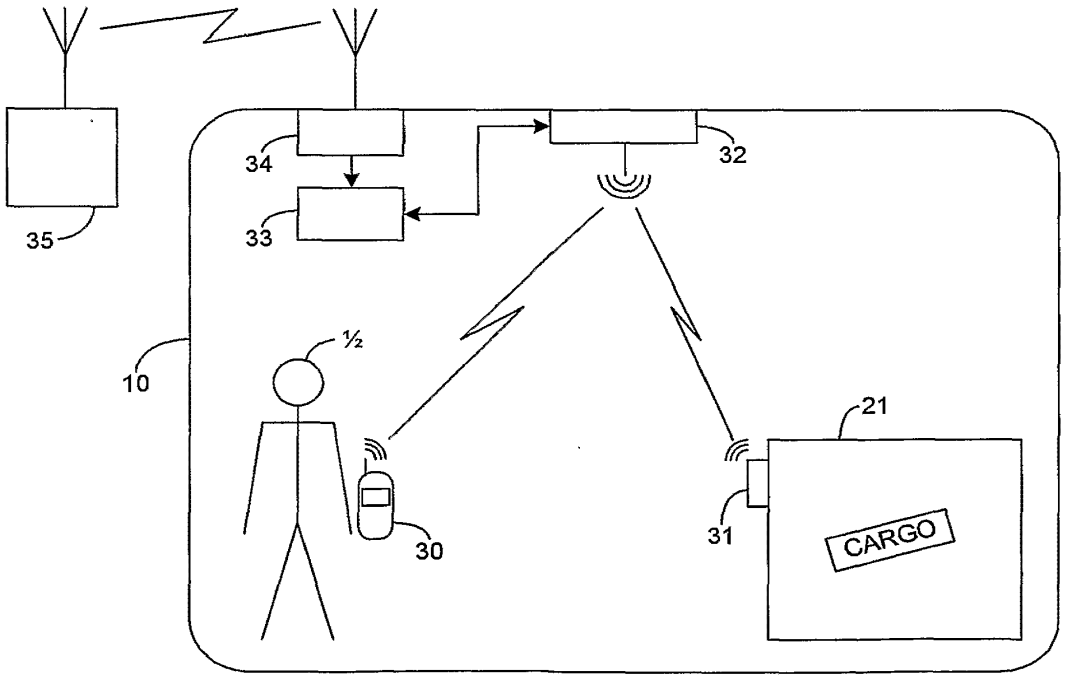


Fig. 2

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(54) Title: COMPUTER SYSTEM AND METHODS OF USING SUCH SYSTEM

(57) Abstract: A processing unit (100) comprising,a case (102) to contain components of the processing unit (100) and a removable cover (102a) allowing a user to gain access to the interior of the case (102), the interior of the case (102) being provided with a movable tray (308) and the components (312, 314, 316, 318, 320, 322, 323) being arranged such that some components (312, 314, 316, 318) are mounted in the tray (308) and other components (312, 314, 316, 318) are mounted such that movement of the tray (308) together with the components (312, 314, 316, 318) mounted thereon provides access to the other components (320, 322, 323).

COMPUTER SYSTEM AND METHODS OF USING SUCH SYSTEM

This invention relates to a computer system in particular, but not exclusively, for use in a vehicle. Applications of the computer system include managing a fleet of vehicles, which may be courier vehicles, providing web-based services to vehicles, which may or may not be courier vehicles and providing mobile web-based services perhaps at variable fees.

Mobile computer systems such as Laptop and Palmtop computers are becoming common as people expect to have access to the services that computer systems provide at all times. These services include entertainment, such as can be provided by Digital Video Discs (DVDs), music from Compact Discs (CDs) and access to the Internet. Further, computer systems are now often used in the course of business, for example in producing word processed documents and in communication via e-mail or electronic facsimile.

Fleets of vehicles are well known and inefficient use of such vehicle fleets has been a problem for many years. A particular cause of inefficiency is causing vehicles to make journeys whilst empty when there is an opportunity for them to make the same journey with a load. If this problem can be alleviated then there is a potential for savings in fuel, savings in wear and tear on the vehicle and potentially a greater chance of satisfying customers that use the fleet of vehicles.

Further, although many computer system components are known it is not easy to use some components in certain environments. In particular the interior of a vehicle, such as a car, can provide a challenging

environment for traditional computer devices, such as a mouse, and the like.

According to a first aspect of the invention there is provided a processing unit comprising a case to contain components of the processing unit and a removable cover allowing a user to gain access to the interior of the case, the interior of the case being provided with a movable tray and the components being arranged such that some components are mounted on the tray and other components are mounted such that movement of the tray together with the components mounted thereon provides access to the other components.

Such a unit is advantageous because it facilitates easy access to the components within the unit. Providing the tray may allow the case to be reduced in size and yet still allow easy access to the components.

Preferably the processing unit is arranged to be placed within a vehicle, such as a car, van, lorry, or the like. A unit according to the invention may be advantageous in such an environment since there will generally be a trend to reduce the size of the unit and thus the advantages of easy access to the components inside the unit may become more apparent.

The tray may be mounted using one or more mounting means which may comprise spring means. Such spring means may comprise springs, resilient materials (e.g. a plastics foam), pneumatics or the like. Generally, the tray will be mounted on the spring means. However, it is equally possible to suspend the tray from the spring means. The spring means is advantageous because it will help protect components mounted on the tray from damage or incorrect operation due to shocks to the unit. It will be appreciated that in a mobile environment as provided by a

vehicle that shocks are much more likely when compared to a static environment such as a building.

The unit may be arranged such that components having moving parts therein are mounted upon the tray. Such an arrangement is advantageous since it is these components that are likely to gain from the shock absorbing nature of the spring means. The examples of components having a moving part include hard drives; optical drives including CD and DVD drives; tape drives; floppy drives, and the like.

The tray may be removable from the unit. It is advantageous to make the tray removable in order to provide greater access to the other components.

The tray may be arranged such that it is pivotably mounted at a first edge region, which provides an arrangement on which movement of the tray constitutes rotation about the pivotable mount.

Conveniently the pivotable mount may be removed and/or the tray may be releasable from the pivotable mount. Such an arrangement is convenient since it allows the tray to be moved and if further access to the other components is required this allows the tray to be removed.

In one embodiment the tray is roughly rectangular, or square, in plan and a mounting means is provided in a region of corners of the rectangle,

In one embodiment a mounting means comprises a rod attached, preferably pivotably attached, to the tray arranged to be received within a guide provided on the case. The guide may comprise a blind bore, or other structure arranged to receive the rod therein. Alternatively, the rod may be hollow and be arranged to receive a guide therein. The rod may

provide the spring means. Alternatively, the spring means may be associated with the guide means.

According to a second aspect of the invention there is provided a processing unit arranged to be fitted in a vehicle and comprising a vehicle monitoring means arranged to determine the position of a vehicle in which the processing unit is fitted and a connection means arranged to allow the processing unit to communicate with a remote computer system.

Conveniently, the vehicle monitoring means comprises a GPS receiver arranged to determine the position of the vehicle. The vehicle monitoring means may be arranged to forward the position of the vehicle (which may be via a processor or other means) to via the connection means to a remote computer system. Alternatively, or additionally, the vehicle monitoring means may be arranged to forward the position of the vehicle to a processor which may be arranged to process the position of the vehicle and generate additional data. For example, the processing unit may be arranged to generate any one or more of the following: speed of the vehicle; average speed of the vehicle; distance travelled by the vehicle (total and/or trip); estimated arrival time; time until arrival; or any other similar data. The processing unit may be arranged to transmit any data that is calculated by the processing unit to the remote computer system. As such the processing unit may provide a unit that forms part of a telematics system.

It may be advantageous to calculate the data within the processing unit in the vehicle because such information may be useful for a driver of the vehicle and processing the data locally may reduce the processing load on the remote computer system. This load could be large as there may be any number of processing units sending data to the remote computer system.

Of course, if the position of the vehicle is transmitted to the remote computer system then the remote computer system may calculate the data mentioned above.

Preferably, the processing unit comprises a display means, which provides a means for information to be displayed to a user thereof. For example, the display means may be arranged to display information to a driver of the vehicle.

The connection means may comprise a GPRS, UMTS, GSM, or any other suitable wireless transmission protocol. Such a connection is convenient because it allows the processing unit to make a connection to a remote computer system whilst on the move and from many parts of the country and indeed the many parts of the world.

Conveniently, the processing unit may be arranged to receive email. Such an arrangement provides a convenient way for the processing unit to receive data from remote computer systems.

The processing unit may comprise one or more hardware components, the or each of component being arranged to perform one or more of the following: receive data, collect data, process data, read data, transmit data.

Advantageously, at least one of the or each hardware components is arranged on a mounting wherein said mounting comprises shock suspension. This is advantageous because, when the processing unit is fitted into a vehicle, the movement of the vehicle may subject the processing unit to jogging which could damage and cause errors in the

performance of any hardware components. Providing shock suspension could protect any hardware components.

The shock suspension could be provided by one or more spring means which may be springs, resilient material (e.g. a plastics foam), pneumatics or the like.

At least one of the hardware components may be arranged on a moveable mounting. This is advantageous as it may allow easier access to some of the hardware components or to other components of the processing unit.

The movable mounting may be hinged and or may be removable from a housing of the processing unit.

According to a third aspect of the invention there is provided a vehicle management system comprising computer system which comprises a location determining means arranged to receive vehicle position data from at least one remote processing unit fitted to a vehicle, an input means arranged to have information input thereto and a processing means arranged to process information provided by the location determining means and the input means, the or each processing unit comprising a connection means arranged to connect the processing unit to the computer system and a computer monitoring means arranged to determine the position of the vehicle in which it is fitted, such that the connection means can pass the vehicle position to the location determining means on the computer system.

According to a fourth aspect of the invention there is provided a computer readable medium containing instructions which when read on to a computer cause that computer to perform the method of the ninth aspect of the invention.

According to a fifth aspect of the invention there is provided a computer readable medium containing instructions which when read on to a computer cause that computer to function as the computer system of the tenth aspect of the invention.

According to a sixth aspect of the invention there is provided a computer readable medium containing instruction which when read onto a computer cause that computer to function as the processing unit of the second aspect of the invention.

The computer readable medium may comprise any one of the following, non-exclusive list, or any other suitable medium: a floppy disc; a CDROM; a DVD ROM/RAM including +RW, +R, -R, -RW; a memory; a memory stick or other memory card; any form of magneto-optical disc; a hard drive; a wire; a transmitted signal (including an Internet download, ftp transfer, or the like).

According to a seventh aspect of the invention there is provided a controller arranged to generate data indicative of the motion of a user's digit said controller comprising a body upon which a motion detection means is mounted, said body being arranged to be temporarily held by one or more digits of a user's hand so as to hold the motion detection means adjacent a digit of that hand.

The body may hold the motion detection means adjacent a thumb of a user's hand. Such an arrangement may provide a convenient controller for a user to operate.

The body may also comprise a digit engaging means arranged to allow a user to hold the controller using one and preferably two fingers of his/her hand.

In a preferred embodiment, the body comprises one or more holes therein, perhaps therethrough. Such holes provide the finger engaging means. The or each hole may be arranged to receive a digit, preferably a finger, of a users hand. Such an arrangement provides a convenient manner to temporarily engage a user's hand.

In perhaps the preferred embodiment the motion detection means comprises a track ball. However, the skilled person will appreciate that the motion detection means may also be other means including a joystick, a touch pad, one or more light beams and/or photo-detectors, or any other suitable means for detecting movement of the digit of a user.

Preferably, the controller is arranged to connect to a computer. As such, the controller may be provided with a connector arranged to connect to a computer. For example, the connector may be a PS2 connector, a USB (Universal Serial Bus) connector, a 9pin serial connector or any other suitable connector. Indeed, the controller may be arranged to connect to a computer, or other device, via a wireless technology. Such wireless technologies include Bluetooth™, other radio links, IRDA, WIFI, or the like.

According to a eighth aspect of the invention there is provided a method of providing access to the internet comprising increasing the fee levied for the access to the Internet as the amount of advertising provided on the connection is reduced.

Advertising provided by this method may be location based as well as non-location based. Examples of location based advertising include advertising restaurants, shops and other services that are available in the locality of the user receiving the advertising.

Conveniently, the amount of advertising is judged on a volume per time basis. For example, the volume may be given by any of the following criteria: the number of adverts, the size of the data (for example in the number of bytes, or the like).

According to a ninth aspect of the invention there is provided a method of managing one or more vehicles comprising providing a computer system having a location determining means arranged to determine the location of a vehicle, an input means arranged to have information input thereto and a processing means arranged to process information provided by the location determining and/or the input means, the method comprising:

causing the location determining means to determine the location of the or each vehicle;

inputting to the input means the location of at least one site that it is desired that at least one vehicle from the fleet should visit;

causing the processing means to compare the location of the or each vehicle and the location of the or each site; and

further causing the processing means to determine, based on the comparison, the route of the or each vehicle in the fleet or

further causing the processing means to display the location of the or each vehicle and the or each site on a display means and

prompting an operator for an input, and further being arranged to receive an input as to the route of the or each vehicle in the fleet.

Such an arrangement is advantageous because it may lead to more efficient use of resources, perhaps resources within a company, or the like. Previously, it has not been readily apparent as to the locations of vehicles and as such they may not have been directed to make the most of their position. If more efficient routing of the vehicle can be achieved then it may be possible to make savings in fuel, make a driver of the vehicle more productive, reduce wear and tear on the vehicle, etc.

In a preferred embodiment, the location determining means collects data from the or each vehicle in order to determine the location thereof. Such a method is more convenient because it helps to automate the process and may make it more accurate and quicker; if the data is sent from the vehicle then it is less likely to be mis-entered and may be entered more quickly.

The, or each, vehicle may be provided with a processing unit which may be capable of connecting to the computer system. The processing unit may comprise a computer, which may be a PC, an Apple, a proprietary design. Indeed, it may be any suitable arrangement of computer.

In one embodiment the or each processing unit connects to the computer system via an Internet connection.

Conveniently, the method connects the processing unit to a Global Positioning System (GPS) receiver and the method may arrange the processing unit to acquire data from the GPS receiver which is sent to the computer system thereby allowing the computer system to determine the location of the or each vehicle. Such a method is convenient because it

provides a convenient yet accurate manner to locate the position of each vehicle. Such a method provides data for the location determining means.

In an alternative, or additional, embodiment the computer system and/or the processing unit may prompt a user thereof for a position.

In yet a further embodiment, the processing unit may be connected to any one or more of the following: gyroscopes, accelerometers, shaft encoders, and any other similar means that allow the position of the vehicle to be determined and/or tracked. The method may cause the processing unit to determine the position of the or each vehicle and send the position to the computer system.

Methods that do not rely on a means external of the computer system/vehicle system may be advantageous because they do not rely on things that are beyond the control of the system (such as GPS satellites).

The method may provide the computer system with a remote access means. The remote access means may constitute the input means and may allow data for at least one site to be entered onto the computer system. Such a remote access means may be advantageous because it allows users that are not in the same location as the computer system to enter sites to the computer system which is likely to make the method more flexible and easier to use.

Conveniently, the remote access means comprises a connection to a network, which may be the Internet. A network connection, and especially an Internet connection, may be advantageous because they are a convenient means of allowing remote connections to be made to the computer system which are familiar to a large number of people and as such may be readily useable.

The method may provide a web site, which may or may not be provided on the computer system, which allows users to input details of the at least one site that it is desired for at least one vehicle from the fleet should visit.

Conveniently, the web site comprises at least one form which users can complete in order to provide details of the at least one site that it is desired for the at least one vehicle to visit. The form provides a user interface that is both easy for a user to operate when compared to other methods and may provide a faster means in which data can be input since it will be quickly apparent to a user what data is required.

In alternative, or additional, embodiments the computer system may prompt a user to input data into the computer system in order that the details of the at least one site that it is desired for the at least one vehicle to visit can be entered onto the system. Such an arrangement may provide for a more flexible method in that it may allow data to be entered by an operator (that may for example receive data via a telephone call) as well as or perhaps instead of via the network connection.

The method may cause the computer system to generate a communication to be sent at least one vehicle of a fleet. The communication may contain instructions that direct the vehicle to one or more sites. The use of such a communication may make the method more efficient and faster than if other means of directing the vehicles to the, or each, site were used.

In perhaps the preferred embodiment, the method is arranged to generate emails which are sent to the processing unit in the or each vehicle. Emails are convenient because they rely on known technology that can be readily implemented.

Conveniently, the method causes the computer system to determine the expected arrival time of the or each vehicle at a site to which the vehicle has been directed. Estimated arrival times can be useful for keeping users of the system informed and may promote user satisfaction of the system.

The computer system may output information as to the location of the or each vehicle. Again, this may promote user satisfaction of the system since he/she will be able to determine the progress of the or each vehicle.

In some embodiments, the location of the or each vehicle may be plotted on a web site. Such an arrangement provides a method that will be readily useable by a large number of users since use of the World Wide Web (or web in short) is becoming commonplace.

The method may cause the computer system to determine the average speed of the or each vehicle of which it is aware. Further, the method may cause the computer system to periodically calculate the estimated arrival time of the vehicle at the site to which it is headed based upon the average speed. Should the estimated arrival time fall outside predetermined parameters then a user of the system may be alerted that the arrival time may not be as expected. The alert may be by any of the following mechanisms: display of an alert on a display of the computer system; posting of the alert on the web site; generation of an email; generation of a text message; or by any other suitable mechanism.

The method may cause the computer system to determine when the or each vehicle arrives at the site to which it has been directed by the system. This determination may by use of the location determining means. In alternative, or additional embodiments, the processing unit

may send a communication to the computer system indicating that the vehicle has arrived at the site.

Conveniently, the method may cause the computer system to record data relating to vehicles that it is monitoring. Such recording is useful since it provides traceability for vehicles that are being managed by the method. Further, the method may be arranged to generate billing from the data that has been recorded in relation to vehicles that are monitored.

In one embodiment the method manages courier vehicles and the billing that is generated by the method may be for the delivery of courier packages. In alternative embodiments, the system may monitor taxis, or other commercial vehicles and billing may be generated according to the journey of the vehicle.

According to an tenth aspect of the invention there is provided a computer system comprising a location determining means arranged to generate vehicle position data for at least one vehicle, an input means arranged to allow data to be input to the computer system, and a processing means arranged to process data input to the input means and vehicle position data determined by the location determining means, the computer system being arranged to process at least one set of vehicle position data together with data of at least one site that has been input to the input means and arranged to:

i. generate a route for the or each vehicle; and/or

ii. display on a display means a prompt to prompt an operator for an input, and further being arranged to receive an input to the input means of a route for the or each vehicle.

An embodiment of the invention is now described by way of example only and with reference to the following Figures of which:

Figure 1 shows a processing unit according to one embodiment of the present invention in a first configuration;

Figure 2 shows the processing unit of Figure 1 in a second configuration;

Figure 3 shows schematically an exploded view of the processing unit of Figure 1;

Figure 4 shows a power supply according to one embodiment of the present invention;

Figure 5a and 5b show views of a mouse arranged according to a first embodiment of the present invention;

Figure 5c and 5d show views of a mouse arranged according to a second embodiment of the present invention;

Figure 6 represents some uses of one aspect of the present invention;

Figure 7 shows a flowchart outlining the processes involved in carrying out one embodiment of the present example;

Figure 1 shows a processing unit 100 adapted to be carried in a car, van, water borne vessel, air borne vessel, or some other vehicle. The unit 100 comprises a substantially cuboid metal casing 102 and a smaller cuboid display means 104. In this example, the metal casing 102 is fabricated

from aluminium. The display means 104 is attached to an upper face of the casing 102 at a hinge 106 along an edge of the display means 104. In the configuration of Figure 1, the display means is folded such that it lies flat against the casing 102. In Figure 2, the display means 104 is shown in the position it would occupy in use of the unit 100 and has been rotated about the hinge 106 such that it stands proud of the casing 102.

Of course, in other embodiments the display means 104 may be provided remote from the casing 102. For example, the casing 102 may be provided in a storage compartment of the vessel (for example the boot of a car) and the display means 104 may be provided adjacent a driver of the vehicle.

The casing 102 further comprises a floppy disc slot 108 and a compact disc slot 110. The floppy disc slot 108 and the compact disc slot 110 are rectangular portions cut out from a side face of the casing 102 and are arranged, in use of the unit 100, to allow discs to be inserted into components arranged behind the slots 108, 110. The casing 102 further comprises a grating portion 302 and a power socket 304, as can be seen in Figure 3. Further, the system comprises an on/off switch and a USB (Universal Serial Bus) port arranged to allow a mouse, or other pointing device, to be used in conjunction with the unit 100 (not shown).

As can be seen in Figure 2, the display means 104 comprises a screen 202, which in this example is a Liquid Crystal Display (LCD) screen. The screen 202, which in the configuration of Figure 1 was not visible as it was lying adjacent to the casing 102, can now be seen by a user of the unit 100.

Figure 3 shows the internal components of the unit 100 in a schematic fashion. The casing 102 is shown to comprise two parts: an upper

shell 102a and a lower shell 102b. The upper shell 102a comprises four faces of the cuboid- the top and three attached side faces. The lower shell 102b comprises the base and the remaining side face of the casing 102. When assembled, the upper shell 102a and the lower shell 102b are held together by screws (not shown), but other fastening devices could equally be used.

The casing 102 houses an upper component rack 308. The upper component rack 308 provides a moveable, and in this case a removable, tray. The rack 308 and the lower shell 102b are arranged to support a number of components. The lower shell 102a of the casing 102 comprises four mounting means 309 arranged to support the weight of the upper component rack. Each mounting means 309 comprises a hollow cylinder providing a blind bore and therefore acts as a guide and houses a helical spring 307 which provides a spring means. Two of the mounting means contain support columns 309a supported within the mounting 309 means 309 on the helical spring 307 contained therein. The support columns 309a are arranged such that they protrude beyond the mounting means and are further arranged such that the upper component rack 308 can be rested thereon. The upper component rack 308 comprises two legs 308a (. Each leg 308a is pivotally mounted on the upper component rack 308 at a pivot point 308b and is suitable sized to be received within the mounting means 309. When the unit 100 is fully assembled, the legs 308a are inserted into two of the support columns 309 and the upper component rack 308 is further supported by the support columns 309a. The springs 307 therefore comprise a suspension means and, in use of the unit 100 damp the vertical vibrations of the upper component rack 308.

Resilient pads 317, such as from felt or other material, are mounted on-top of at least some of the components 312, 314, 316, 318. When the upper shell 102a of the casing is in place on the lower shell 102b with the

upper component rack 308 in place the resilient pads 317 are arranged to contact an under side of the upper shell 102a so aiming to prevent excessive movement of the upper component rack 308.

In use, and in order to gain access to the components, a user removes the upper shell 102a from the lower shell 102b. The upper component rack 308 is then presented to the user and is arranged such that both of the legs 308a is within a mounting means 309 and upper component rack 308 is further supported by the support columns 309a. Since the legs 308a are pivotably mounted upon the upper component rack 308, a user is free to lift the upper component rack 308 from support columns 309a and to rotate the rack 308 about the two legs 308a in order to tilt the rack 308 to gain access to the components on the lower shell 102b. If further access is required then the two legs 308a can be removed from the mounting means 309 so that the upper component rack 308 is removed from the casing 102.

The component rack 306 and the lower shell 102b are arranged to support the following components: a power supply unit (PSU) 312, a Global Positioning System (GPS) unit 314, a Hard Disk Drive (HDD) 316, a Floppy Disc Drive (FDD) 318, a Compact Disc (CD) drive 320, a video driver 322, a motherboard 323. Components such as memory (ROM and RAM) 324, processing apparatus 326 and an Input/Output (I/O) subsystem 328 are mounted upon the motherboard 323. The components communicate via system buses (not shown) to the motherboard 323 as will be appreciated to the person skilled in the art.

Conveniently, the motherboard 323 follows the micro ATX format since this is more compact and perhaps therefore more suitable for providing a processing unit suitable for fitting in a vehicle. One particular supplier of a suitable motherboard is Shuttle.

The components 312-328 are arranged to be easily replaced in the event of failure or if the user wishes to upgrade their system. The PSU 312 is arranged to be adjacent to the grating portion 302 and socket 304. The FDD is arranged to be adjacent to the floppy disc slot 108. The CD Drive 320 is arranged to be adjacent compact disc slot 110.

The power supply unit (PSU) 312 is shown in greater detail in Figure 4. The PSU 312 comprises a metal box 400 incorporating into the box a grill 402, a vent 404 and an input 406. The box 400 houses a cooling fan 408 arranged near the grill 402 and adjacent to the vent 404. In use of the unit 100, the fan 208 operates to cool processing apparatus in the PSU 312. The hot air can escape the casing 102 via the grating portion 302.

The PSU 312 further comprises five outputs as outlined below:

Output V1	+5 Volts DC within 5% over the current range 1 to 14 Amps
Output V2	+12 Volts DC within 5% over the current range 500mA to 4 Amps
Output V3	-12 Volts DC within 10% over the current range 0A to 300mA. Ripple not to exceed 100mV peak to peak
Output V4	-5 Volts DC within 5% over the current range 0A to 200mA. Ripple not to exceed 50mV peak to peak
Output V5	+5 Volts DC standby supply within 5% over the current range 0A to 1.5A. Ripple not to exceed 50mV peak to peak

The skilled person will be aware that the outputs are used for different purposes- for example digital circuits may require a 5 volt input whereas the motors in a disc drive generally require a 12 volt input.

The input voltage is nominally 13.8V (that supplied by a standard car battery). Normal operation is specified at that voltage. However, as it is proposed to run the unit 100 from a car battery, the voltage supplied by which is prone to variation, the unit operates over the range for 10V DC to 18V DC, and will not be damaged by voltages between -23 and +23 volts. It will be appreciated that, in other embodiments, the PSU 312 may be intended for use with trucks and therefore arranged to operate in the range 24-28V, or higher. Further, the PSU 312 may be arranged to be powered by a mains supply of 115V or 230V, with a tap-changer to change between the two.

The PSU 312 is connected to a back-up battery outside the PSU 312, perhaps inside the casing 102. The back-up battery is a Sealed Lead Acid battery, which is provided which a switch to isolate the back-up battery to avoid discharge when the unit 100 is not in use.

There is also provided an Electromagnetic Compatibility (EMC) filter as a hardware module, which enables the PSU 312 to meet the EN55022, AU243 or equivalent standards.

Isolation between the computer circuits and the vehicle display (i.e. the dashboard display in the vehicle) is also provided. The resistance between the input and the output is at least 10Megaohms at 500V DC.

Galvanic isolation between all electrical circuits and the metal work is also provided. Again, the resistance is at least 10Megaohms at 500V DC. The PSU 312 may be arranged for multi-stage charging and to issue warnings if minimum/maximum voltage limits were exceeded.

Figures 5a and 5b show a first embodiment of a controller 500 arranged for use with the unit 100 according to one embodiment of the present invention. Figures 5c and 5d show a second embodiment of such a controller 500a.

Referring first to Figures 5a and 5b, the controller 500 is arranged such that it need not be run over a surface. The controller 500 comprises a body 502 fabricated from a plastics material and arranged to be held in a user's right hand. The body 502 also comprises a first finger hole 504 and a second finger hole 506 passing through the body 502 and as such holes are provided for two digits of a user's hand such that the mouse can be temporarily held by these two digits. The controller 500 further comprises a tracker ball 508, a 'left click' button 510, a 'right click' button 512 and a cable 514.

The first finger hole 504 and the second finger hole 506 are arranged to allow the insertion of the index and middle fingers of user of the controller 500 respectively. In use of the controller 500, the index and middle fingers are so inserted and the thumb and ring finger of the user rest against the external surface of the body 502 of the controller 500.

The 'left click' button 510 is situated inside the first finger hole 504 and is arranged to be actuable by an index finger inserted into the first finger hole 504. The tracker ball 508 and the 'right click' button 512 are operable by the thumb of user. The cable 514 is terminated at a USB connector and is adapted to be connected to USB port of the unit 100.

The controller 500 comprises internal components similar to those found in a standard mouse, which parts will be readily understood by the skilled person. The tracker ball 508 is arranged to provide a signal to the processing apparatus 326 which controls the movement of a pointer on the

screen 202 and the 'right click' button 512 and 'left click' button 510 are operated to perform various functions, such as selecting text, actuating a link to a website, formatting text, selecting an option from a menu, etc.

Referring now to Figures 5c and 5d, the controller 500a is again arranged such that it need not be run over a surface and comprises a body 502a fabricated from a plastics material and arranged to be held in a user's right hand. The body 502a also comprises a first finger hole 504a and a second finger hole 506a passing through the body 502a and as such holes are provided for two digits of a user's hand such that the mouse can be temporarily held by these two digits. The controller 500a further comprises a tracker ball 508a, a 'left click' button 510a, a 'right click' button 512a, a scroll button 513a and a cable 514a.

The first finger hole 504a and the second finger hole 506a are arranged to allow the insertion of the middle and ring fingers of user of the controller 500a respectively. In use of the controller 500a, the middle and ring fingers are so inserted and the thumb, index finger and little finger of the user rest against the external surface of the body 502a of the controller 500a.

The 'left click' button 510a and the 'right click' button 512a are situated beside the tracker ball 508a and are arranged to be actuable by the thumb of a user. The scroll button 513a is arranged to be operable by the index finger of the user. The cable 514a is terminated at a USB connector 515a and is adapted to be connected to USB port of the unit 100.

The tracker ball 508a, 'left click' button 510a and 'right click' button 512a operate as described in relation to the first embodiment of a controller 500. The scroll button 513a is arranged to provide a signal to the processing apparatus 326 which controls the view on the screen 202,

in particular for viewing a document which can not be viewed in its entirety on the screen 202.

In use of the system, the unit 100 can be employed as a multimedia access means as is shown in Figure 6. In one example, CD-ROMS or Digital Video Discs (DVDs) are placed in the CD Drive 320 and the information held thereon displayed on the screen 202. In an alternative example, the screen 202 comprises a touch sensitive screen and displays an electronic representation of a keyboard and the unit 100 is used for word processing, i.e. for composing written documents. In a further example, speech recognition software is provided such that the unit can be controlled by voice commands or documents can be dictated to the screen 202.

Also shown in Figure 6 are a mobile telephone 602 and a computer system 604 often referred to as a server along with a representation of the Internet 600. The mobile telephone 602 comprises appropriate software to communicate with the unit 100 using Bluetooth™ protocols and with the Internet 600 using Wireless Access Protocol (WAP). The computer system 604 comprises a remote data storage device arranged to provide the data stored thereon in reply to request received over the Internet 600. Information can therefore be accessed from the computer system 604 by a user of the unit 100 via the mobile telephone 602. In this example, the processing apparatus 326 is supplied with Bluetooth™ software such that it can communicate wirelessly with peripheral devices equipped with suitable software that are within a certain distance of the unit 100- normally of around 10 meters. In the example of Figure 6, the unit 100 is arranged to access the Internet 600 via the mobile telephone 602. In other embodiments a GSM module (which may also be a UMTS, GPRS, module or the like) which is provided as a unit within the casing 102

A use of the present invention is controlling a fleet of courier vehicles, each of which are fitted with a unit 100. This example use is now described with reference to Figures 7 and 8.

Figure 7 shows a plurality of courier vehicles 700a-700e each carrying an on-board processing unit 100. Each processing unit 100 is arranged to communicate with the computer system 604 via the Internet 600. In this example, the computer system 604 is arranged to form part of a network in conjunction with a keyboard 702 and a mouse 704.

The computer system 604 is arranged to track and control the movements of the vehicles 700a-700e.

The skilled person will appreciate that, in the courier industry, it is often found that a vehicle is carrying a load only around half the time- the vans, trucks, motorcycles, etc, frequently return from a delivery empty. Under the present example, details of each vehicle 700a-700e are stored on the computer system 604 and are utilised to direct, redirect or reassign each vehicle to provide a more efficient system.

In this example, the details stored comprise an identifier number, unique to each courier, a base location, a driver rating (the driver rating provides a measure of the driver's skill and/or training, e.g., where the driver is able to deliver, be it locally, nationally, international, etc). Further, the details comprise the name of the driver, a contact telephone number and a contact email address. The details also comprise information about the vehicle 700a-700e operated by the courier- for example the vehicle type, its registration number and the load it is able to carry- which will be of limited weight and volume. Further the details comprise the real-time location of each of the vehicles 700a-700e as they move and details of any job being performed or due to be performed by the driver of that

vehicle 700a-700e. The location of the vehicle 700a-700e is provided by the GPS unit 314 within the unit 100 and sent to the computer system 604 via a connection to the processing unit and the computer system 604.

The computer system 604 also holds files on the clients and drivers of the system, detailing their activities. Further, the computer system 604 has access to mapping data and to road traffic information.

In the example system described in the flow chart of Figure 8, the courier fleet is in operation with the various vehicles 700a-700e being at dispersed and changing locations. As step 802, the fleet manager, who operates the computer 702, receives a request for a delivery to be carried out from a client. The request is accompanied by the job details, which include details of both the pick-up and the delivery. These details include a contact name, address and phone number, the size of the load to be carried and any additional details. The job is assigned a unique job number, and the details of the job are stored along with the date and the time at which the request was made.

The manager then, in step 804, views the real-time locations, the employment and the capabilities of the vehicles 700a-700e and allocates the job according to which vehicle 700a-700e can carry out the work. The manager emails the details of the of the job along with a map setting out the optimum route from the vehicle's present position to the pick-up point to the unit 100 in the selected, or delivery, vehicle 700a-700e in step 806.

The driver of the delivery vehicle 700a-700e indicates receipt of the instructions by sending an email via the unit 100 in step 808. In step 810, the driver commences the pick-up journey, re-routing if necessary. In step 812, an email is sent to the client advising the position

of the delivery vehicle 700a-700e, along with estimated pick-up and delivery times. The client is also provided with a Personal Identification Number (PIN), which can be used to access the real-time position of the delivery vehicle 700a-700e over the Internet 600.

The progress of the delivery vehicle 700a-700e is monitored by the computer system 604 in step 814. The system in this example monitors the speed of the delivery vehicle 700a-700e using the GPS unit 314 and mapping information. This information is compared to predetermined criteria to ascertain whether the delivery vehicle 700a-700e progressing in a satisfactory manner in step 816. In the example described herein, if the average speed of a delivery vehicle 700a-700e falls below a certain value. The computer system 604 also receives traffic information and uses this to monitor the route ahead of the vehicle and to assess if the route ahead of the delivery vehicle 700a-700e is satisfactory in step 818. If either the traffic conditions or the average speed are not satisfactory, the manager and/or a process running on the computer system 604 is alerted in step 820 and makes a judgement as to whether the Estimated Time of Arrival (ETA) of the delivery vehicle 700a-700e should be amended in step 822. If the ETA is to be amended, the client is sent an email giving the new ETA in step 824.

The delivery vehicle 700a-700e makes its delivery to the appointed contact. In step 826, the computer system 604 receives a confirmation email from the driver of the delivery vehicle 700a-700e. The computer system then records the journey log and the billing details and updates the driver and client activity files in step 824.

A further use of the unit 100 is now described with reference to Figures 9 and 10.

In the example use of the unit 100 now described, the cost of using the unit can be reduced if the user of the unit consents to receiving advertising via the Internet 600.

The skilled person will appreciate that there is usually a cost associated with accessing the Internet 600, which can be the cost of the telephone connection or there may be a subscription fee in place of or in addition to the telephone connection fee.

In this example, the unit 100 is contained within a car 900 undergoing a journey. The unit 100 is connected to the Internet 600 and is in communication with the computer system 604 via the Internet 600. The computer system 604 is arranged to provide services over the Internet 600 to subscribers.

The computer system 604 (again, a server remote from the car) of this example holds the following data:

Subscriber details giving information on each subscriber, who may for example include the driver of the car 100;

Subscriber purchase records, giving information on previous purchases made by each subscriber;

Subscriber banking details, allowing purchases to be made;

The location of each unit 100 as supplied by the GPRS unit 314;

Advertisements categorised by target audience based on location of subscriber and/or subscriber purchase records and/or subscriber details;

Subscriber account details, detailing the payments made for the service provided; and

Web based services, such as web sites, on-line radio, film clips, on-line banking, etc.

Figure 10 schematically shows how a subscriber may choose to reduce their subscription fees. There are three lanes representing separate fee levels. The lowest fee level supplies a service that is interrupted by advertisement at twenty minute intervals. The middle fee level supplies a service that is interrupted by advertisements once every hour. The upper fee level supplies a service that is never interrupted by advertisements. The user is free to change lanes, i.e. to pay a different fee level, whenever they choose. The user is also free to log off the system at any time.

The advertisements may be chosen by the location of the unit 100 (which it should be remembered will be the location of the car 900). This will be suitable for advertisements that concern local service such as restaurants, garages or Sites of Special Scientific Interest. Alternatively, or additionally, the advertisements may be chosen according to a user profile, which may comprise the user's purchase record or other details of the user. These can be used to determine whether a particular user is likely to purchase a particular advertised product.

In this example, the user is charged per minute they are accessing services according to their chosen lane and the associated fee level. The screen 202 is arranged to display the choice of lane. The screen 202 may also be controlled to display the user's account status.

CLAIMS

1. A processing unit comprising a case to contain components of the processing unit and a removable cover allowing a user to gain access to the interior of the case, the interior of the case being provided with a movable tray and the components being arranged such that some components are mounted on the tray and other components are mounted such that movement of the tray together with the components mounted thereon provides access to the other components.

2. A processing unit according to claim 1 in which the processing unit is arranged to be placed within a vehicle.

3. A processing unit according to claim 1 or claim 2 in which the tray is mounted using one or more resilient mounting means.

4. A processing unit according to claim 3 in which components having moving parts therein are mounted upon the tray.

5. A processing unit according to any preceding claim in which the tray may be arranged such that it is pivotably mounted at a first edge region, arranged such that the tray may be rotated about the pivotable mount.

6. A processing unit according to any preceding claim in which the tray is removable from the unit.

7. A processing unit according to any preceding claim in which the tray is roughly rectangular in plan and a mounting means is provided in a region of corners of the rectangle.

8. A processing unit arranged to be fitted in a vehicle and comprising a vehicle monitoring means arranged to determine the position of a vehicle in which the processing unit is fitted and a connection means arranged to allow the processing unit to communicate with a remote computer system.

9. A processing unit according to claim 8 in which the vehicle monitoring means comprises a GPS receiver arranged to determine the position of the vehicle.

10. A processing unit according to claim 8 or 9 in which the vehicle monitoring means is arranged to forward the position of the vehicle via the connection means to a remote computer system.

11. A processing unit according to any of claims 8 to 10 in which the vehicle monitoring means is arranged to forward the position of the vehicle to a processor arranged to process the position of the vehicle and generate additional data.

12. A processing unit according to claim 11 in which the additional data comprises one or more of the following: speed of the vehicle; average speed of the vehicle; distance travelled by the vehicle (total and/or trip); estimated arrival time; time until arrival; or any other similar data.

13. A processing unit according to claim 11 or claim 12 in which the processing unit is arranged to transmit any data that is calculated by the processing unit to the remote computer system.

14. A processing unit according to any of claims 8 to 13 which comprises a display means.

15. A processing unit according to any of claims 8 to 14 in which the connection means comprises one or more of the following: a GPRS, UMTS, GSM.

16. A processing unit according to any of claims 8 to 15 which is arranged to receive email.

17. A processing unit according to any of claims 8 to 16 which comprises one or more hardware components, the or each component being arranged to perform one or more of the following: receive data, collect data, process data, read data, transmit data.

18. A processing unit according to claim 17 in which at least one of the or each hardware components is arranged on a mounting wherein said mounting comprises shock suspension.

19. A processing unit according to claim 18 in which the shock suspension is provided by one or more spring means.

20. A processing unit according to any of claims 17 to 19 in which at least one of the hardware components is arranged on a moveable mounting.

21. A processing unit according to claim 20 in which the movable mounting is hinged and or may be removable from a housing of the processing unit.

22. A vehicle management system comprising computer system which comprises a location determining means arranged to receive vehicle position data from at least one remote processing unit fitted to a vehicle,

an input means arranged to have information input thereto and a processing means arranged to process information provided by the location determining means and the input means, the or each processing unit comprising a connection means arranged to connect the processing unit to the computer system and a computer monitoring means arranged to determine the position of the vehicle in which it is fitted, such that the connection means can pass the vehicle position to the location determining means on the computer system.

23. A computer readable medium containing instructions which when read on to a computer cause that computer to function as the computer system of claim 22.

24. A computer readable medium containing instruction which when read onto a computer cause that computer to function as the processing unit of any of claims 1 to 21.

25. A computer readable medium according to claim 23 or 24 comprising any one of the following: a floppy disc; a CDROM; a DVD ROM/RAM including +RW, +R, -R, -RW; a memory; a memory stick or other memory card; any form of magneto-optical disc; a hard drive; a wire; a transmitted signal.

26. A controller arranged to generate data indicative of the motion of a user's digit said controller comprising a body upon which a motion detection means is mounted, said body being arranged to be temporarily held by one or more digits of a user's hand so as to hold the motion detection means adjacent a digit of that hand.

27. A controller according to claim 26 in which the body is arranged such that when a user holds the body, the motion detection means is adjacent a thumb of a user's hand.

28. A controller according to claim 26 or claim 27 in which the body also comprises a digit engaging means arranged to allow a user to hold the controller using one and preferably two fingers of his/her hand.

29. A controller according to claim 28 in which the body comprises one or more holes therein and/or therethrough as digit engaging means.

30. A controller according to any of claims 26 to 29 in which the motion detection means comprises one or more of the following: a track ball, a joystick, a touch pad, one or more light beams and/or photo-detectors.

31. A controller according to any of claims 26 to 30 which comprise a connector arranged to connect the controller to a computer.

32. A method of providing access to the internet comprising increasing the fee levied for the access to the Internet as the amount of advertising provided on the connection is reduced.

33. A method of providing access to the Internet according to claim 32 in which the advertising provided by this method is location based.

34. A method of providing access to the internet according to claim 32 or claim 33 in which the amount of advertising is judged on a volume per time basis.

35. A method of managing one or more vehicles which is part of a fleet of vehicles comprising providing a computer system having a location determining means arranged to determine the location of a vehicle, an input means arranged to have information input thereto and a processing means arranged to process information provided by the location determining and/or the input means, the method comprising:

causing the location determining means to determine the location of the or each vehicle;

inputting to the input means the location of at least one site that it is desired that at least one vehicle from the fleet should visit;

causing the processing means to compare the location of the or each vehicle and the location of the or each site; and further arranged to do one of:

cause the processing means to determine, based on the comparison, the route of the or each vehicle in the fleet, or

cause the processing means to display the location of the or each vehicle and the or each site on a display means and prompting an operator for an input, and further being arranged to receive an input as to the route of the or each vehicle in the fleet.

36. A method of managing one or more vehicles according to claim 35 in which the location determining means collects data from the or each vehicle in order to determine the location thereof.

37. A method of managing one or more vehicles according to claim 35 or claim 36 in which the, or each, vehicle is provided with a processing unit which may be capable of connecting to the computer system.

38. A method of managing one or more vehicles according to claim 37 in which the or each processing unit connects to the computer system via an internet connection.

39. A method of managing one or more vehicles according to claim 37 or claim 38 in which the method comprises connecting the processing unit to a Global Positioning System (GPS) receiver.

40. A method of managing one or more vehicles according to claim 39 which comprises arranging the processing unit to acquire data from the GPS receiver which is sent to the computer system thereby allowing the computer system to determine the location of the or each vehicle.

41. A method of managing one or more vehicles according to any of claims 35 to 40 in which the computer system and/or the processing unit prompts a user thereof for a position.

42. A method of managing one or more vehicles according to any of claims 35 to 41 in which the processing unit is connected to any one or more of the following: gyroscopes, accelerometers, shaft encoders.

43. A method of managing one or more vehicles according to any of claims 35 to 42 which provides the computer system with a remote access means.

44. A method of managing one or more vehicles according to claim 43 in which the remote access means constitutes the input means and allows data for at least one site to be entered onto the computer system.

45. A method of managing one or more vehicles according to claim 43 or claim 44 in which the remote access means comprises a connection to a network.

46. A method of managing one or more vehicles according to any of claims 35 to 45 which provides a web site, allowing users to input details of the at least one site that it is desired for at least one vehicle from the fleet should visit.

47. A method of managing one or more vehicles according to claim 46 in which the web site comprises at least one form which users can complete in order to provide details of the at least one site that it is desired for the at least one vehicle to visit.

48. A method of managing one or more vehicles according to claim 46 or claim 47 in which the computer system prompts a user to input data into the computer system in order that the details of the at least one site that it is desired for the at least one vehicle to visit can be entered onto the system.

49. A method of managing one or more vehicles according to any of claims 35 to 48 which causes the computer system to generate a communication to be sent at least one vehicle of a fleet.

50. A method of managing one or more vehicles according to claim 49 wherein the communication contains instructions that direct the vehicle to one or more sites.

51. A method of managing one or more vehicles according to any of claims 35 to 50 in which the method is arranged to generate emails which are sent to the processing unit in the or each vehicle.

52. A method of managing one or more vehicles according to any of claims 35 to 51 on which the method causes the computer system to determine the expected arrival time of the or each vehicle at a site to which the vehicle has been directed.

53. A method of managing one or more vehicles according to any of claims 35 to 52 in which the computer system outputs information as to the location of the or each vehicle.

54. A method of managing one or more vehicles according to claim 53 in which the location of the or each vehicle may be plotted on a web site.

55. A method of managing one or more vehicles according to any of claims 35 to 54 which causes the computer system to determine the average speed of the or each vehicle of which it is aware.

56. A method of managing one or more vehicles according to any of claims 35 to 55 which causes the computer system to periodically calculate the estimated arrival time of the vehicle at the site to which it is headed based upon the average speed.

57. A method of managing one or more vehicles according to claim 56 in which, should the estimated arrival time fall outside predetermined parameters, a user of the system is alerted that the arrival time may not be as expected.

58. A method of managing one or more vehicles according to any of claims 35 to 57 which causes the computer system to determine when the or each vehicle arrives at the site to which it has been directed by the system.

59. A method of managing one or more vehicles according to any of claims 35 to 58 which causes the computer system to record data relating to vehicles that it is monitoring.

60. A method of managing one or more vehicles according to any of claims 35 to 59 which is arranged to generate billing from the data that has been recorded in relation to vehicles that are monitored.

61. A method of managing one or more vehicles according to claim 60 which manages courier vehicles and the billing that is generated by the method may be for the delivery of courier packages.

62. A computer system comprising a location determining means arranged to generate vehicle position data for at least one vehicle, an input means arranged to allow data to be input to the computer system, and a processing means arranged to process data input to the input means and vehicle position data determined by the location determining means, the computer system being arranged to process at least one set of vehicle position data together with data of at least one site that has been input to the input means and arranged to:

i. generate a route for the or each vehicle; and/or

ii. display on a display means a prompt to prompt an operator for an input, and further being arranged to receive an input to the input means of a route for the or each vehicle.

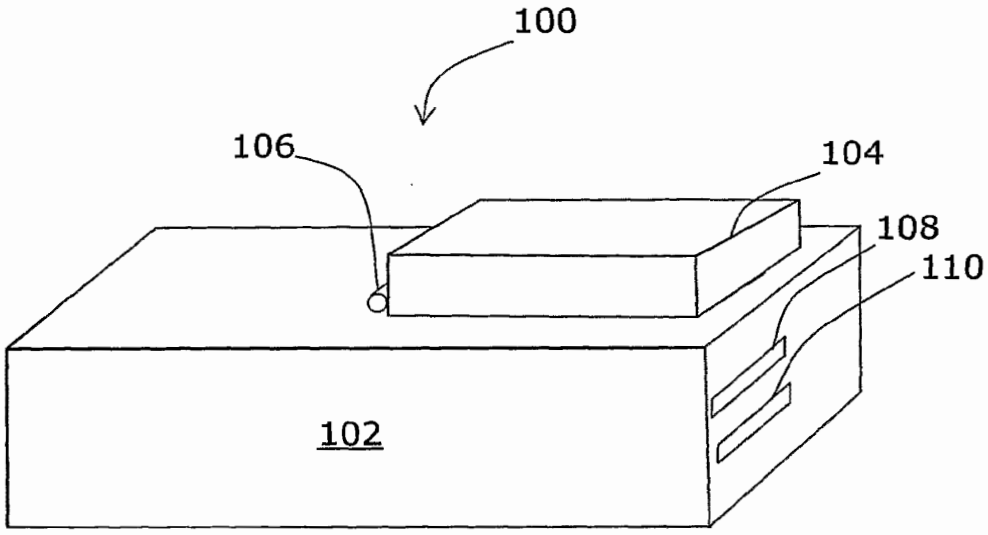


Fig. 1

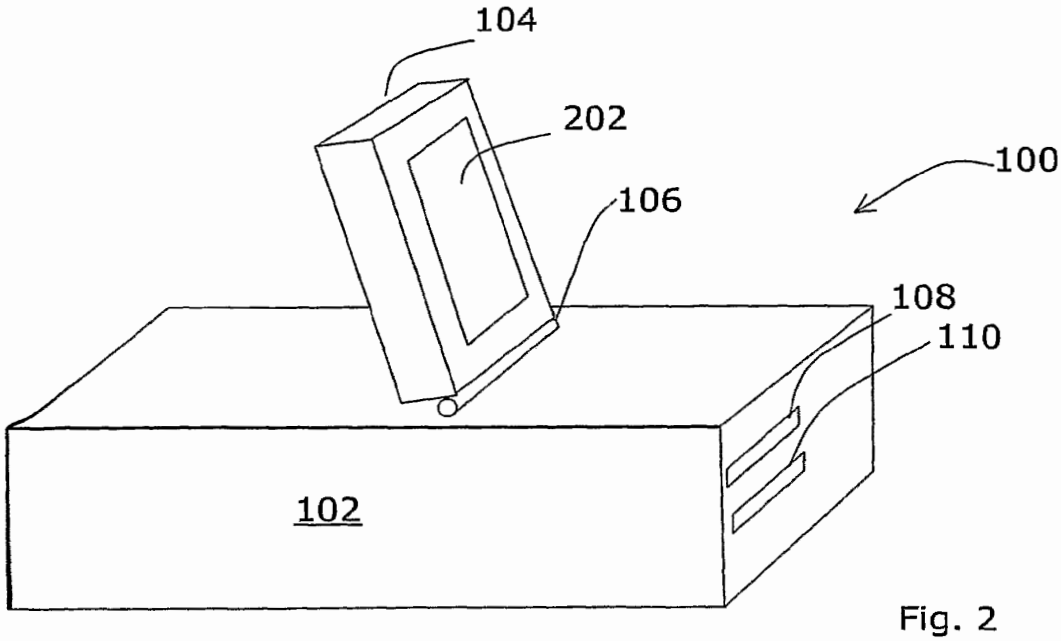


Fig. 2

2/9

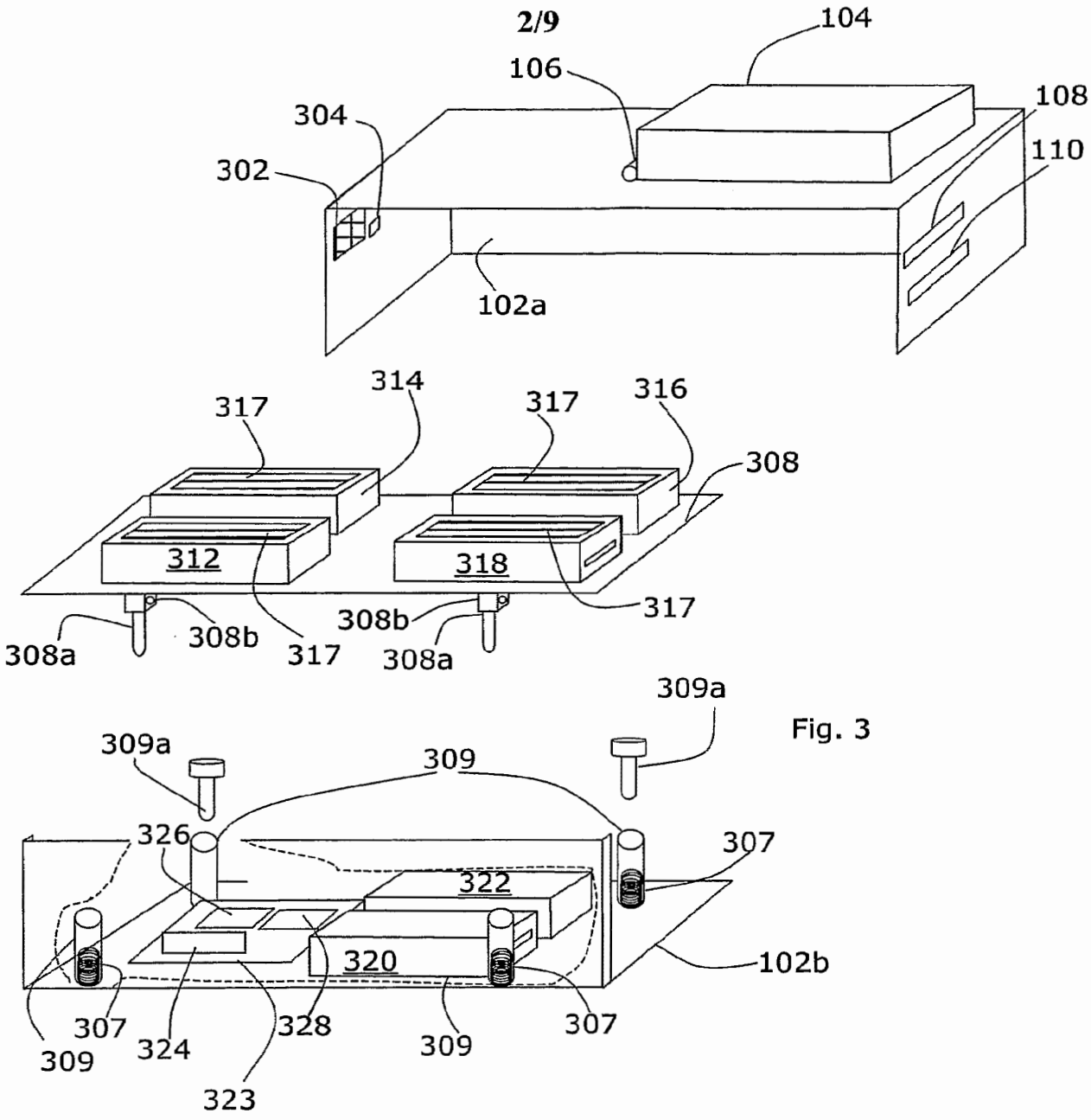

104
106
108
110
304
302
102a
314
317
317
316
308
312
318
317
308b
308a
308b
317
308a
309a
309a
309
326
307
322
320
102b
307
309
324
328
309
307
323

Fig. 3

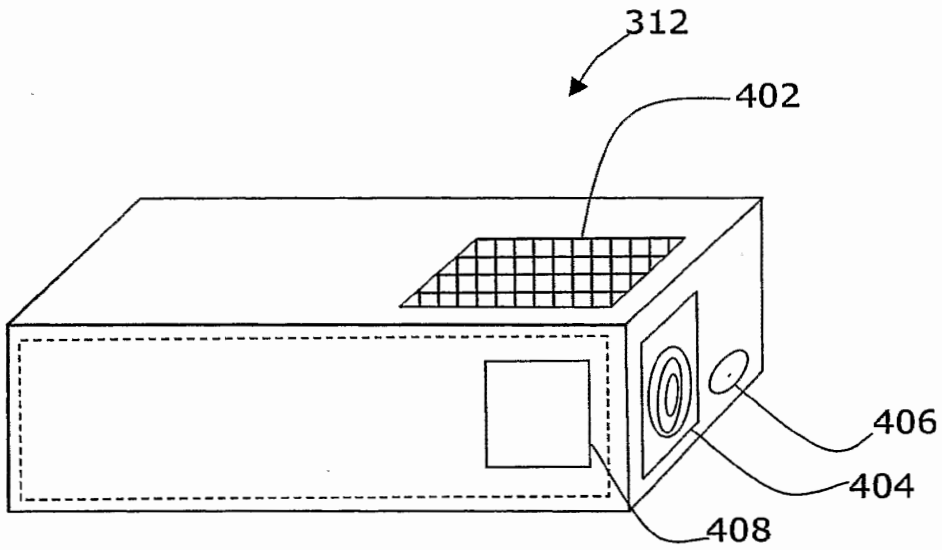

312
402
406
404
408

Fig. 4

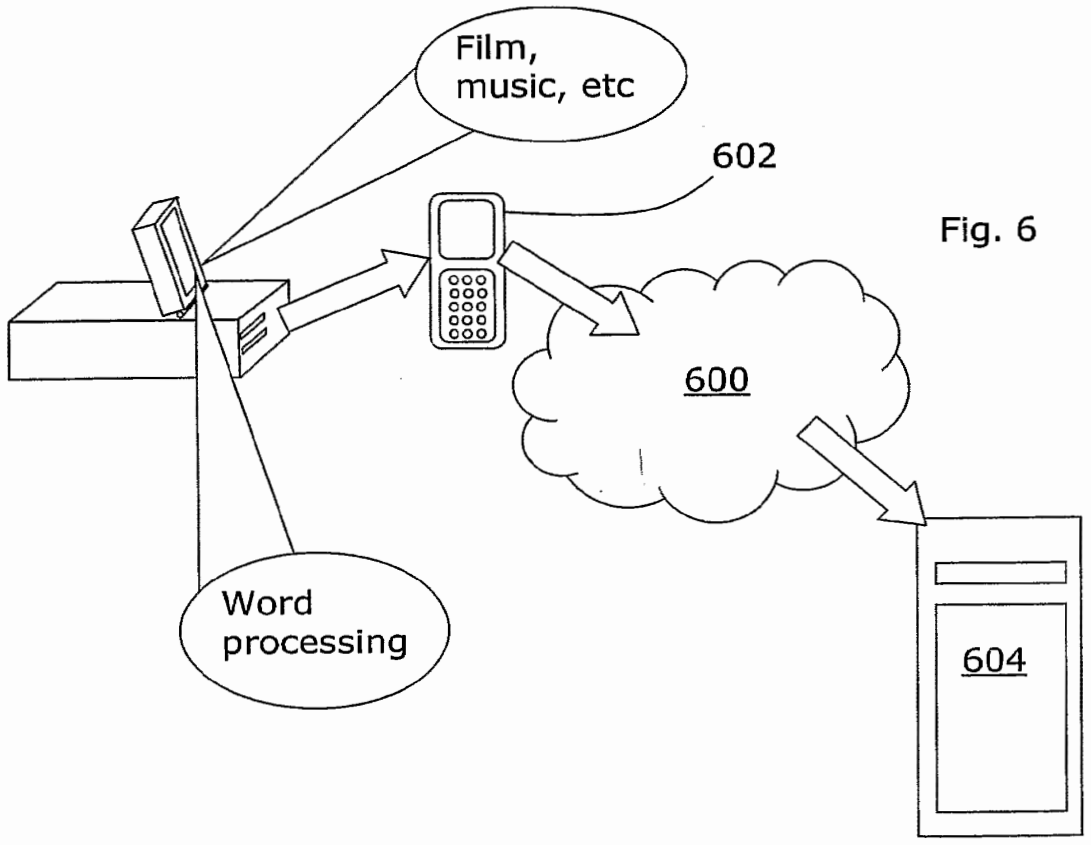

Film,
music, etc
602
600
604
Word
processing

Fig. 6

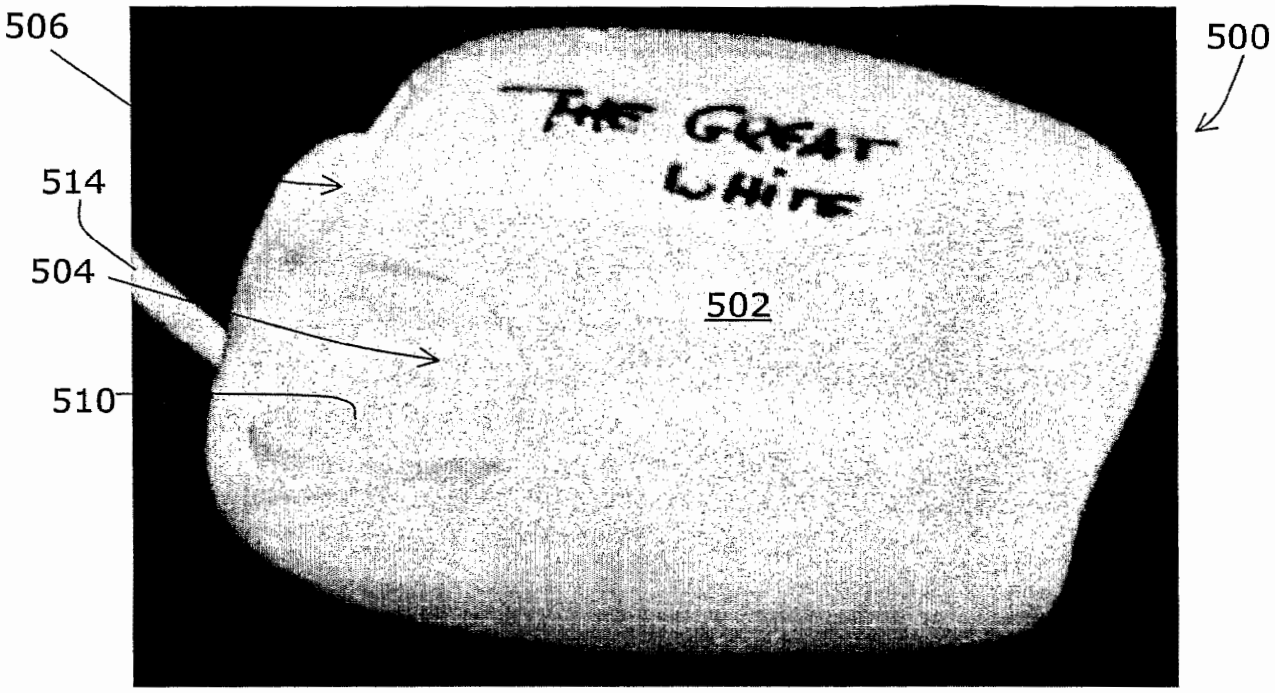


Fig. 5a

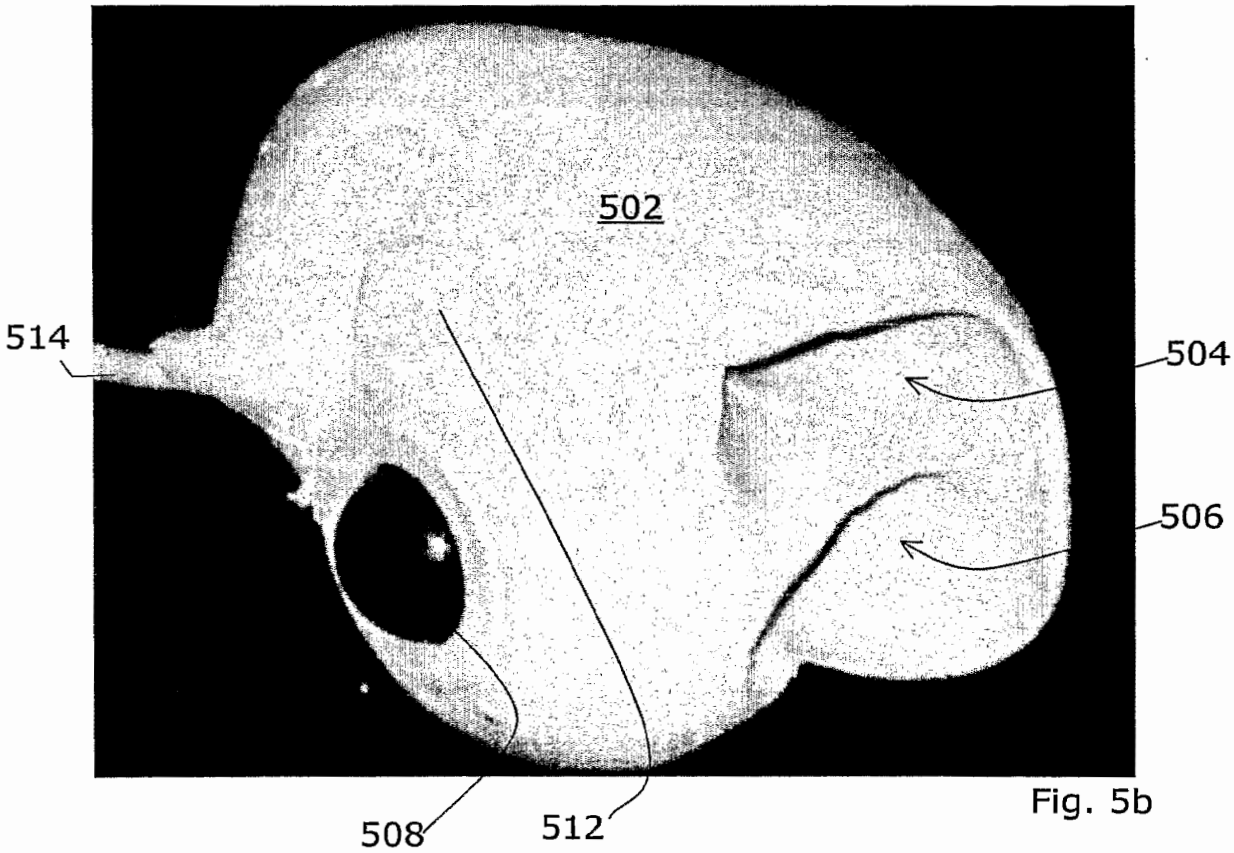


Fig. 5b

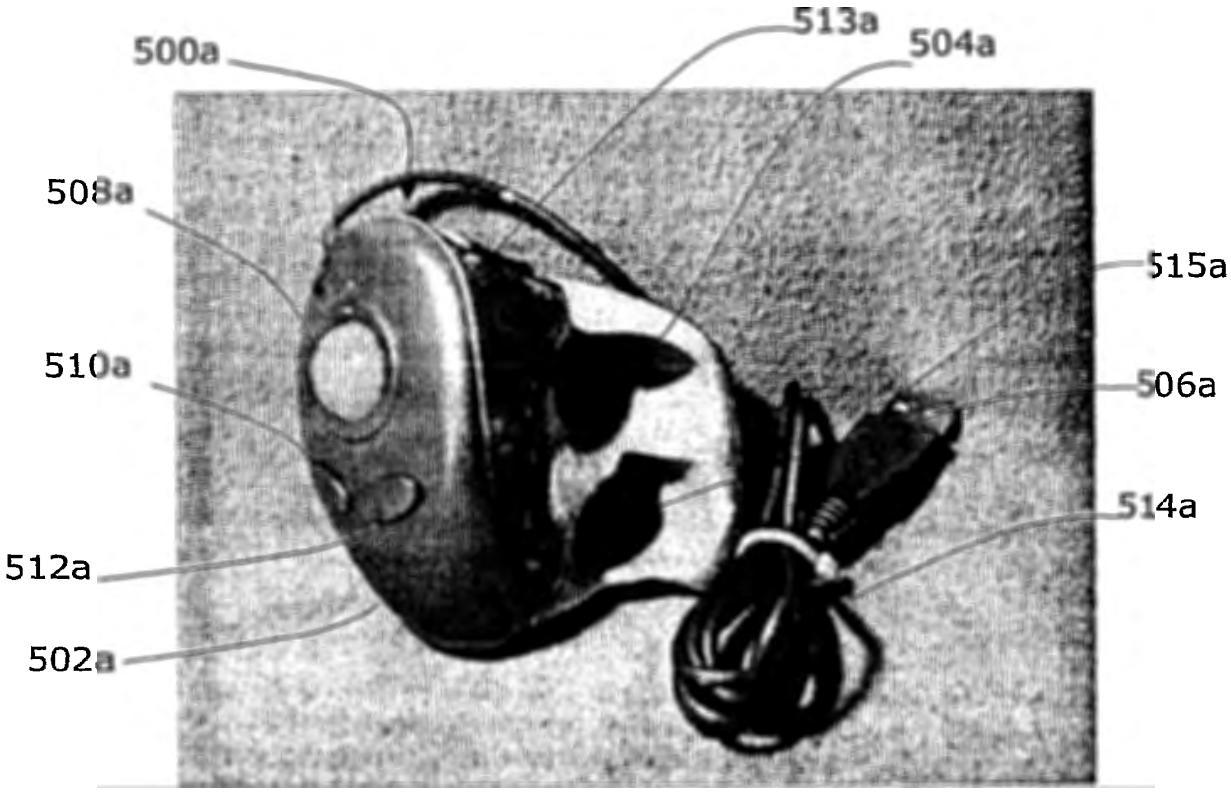

513a
500a
504a
508a
515a
510a
506a
514a
512a
502a

Fig. 5c

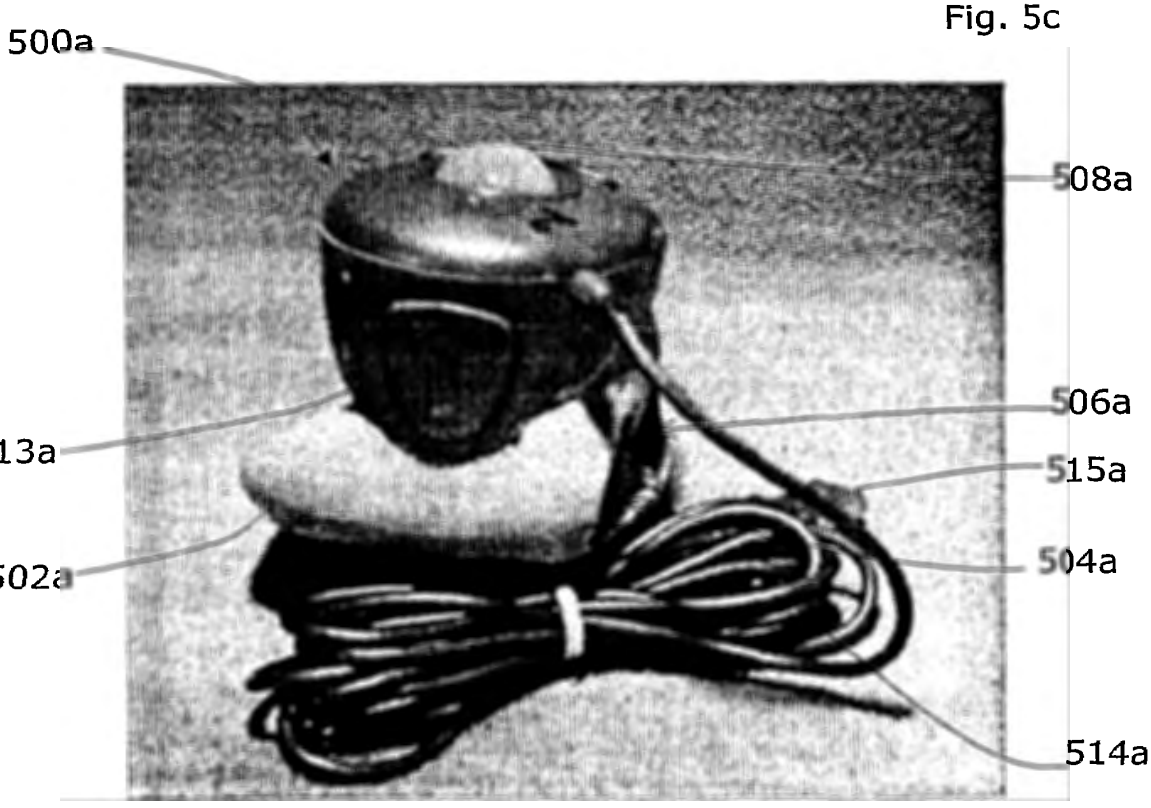

500a
508a
506a
513a
515a
504a
502a
514a

Fig. 5d

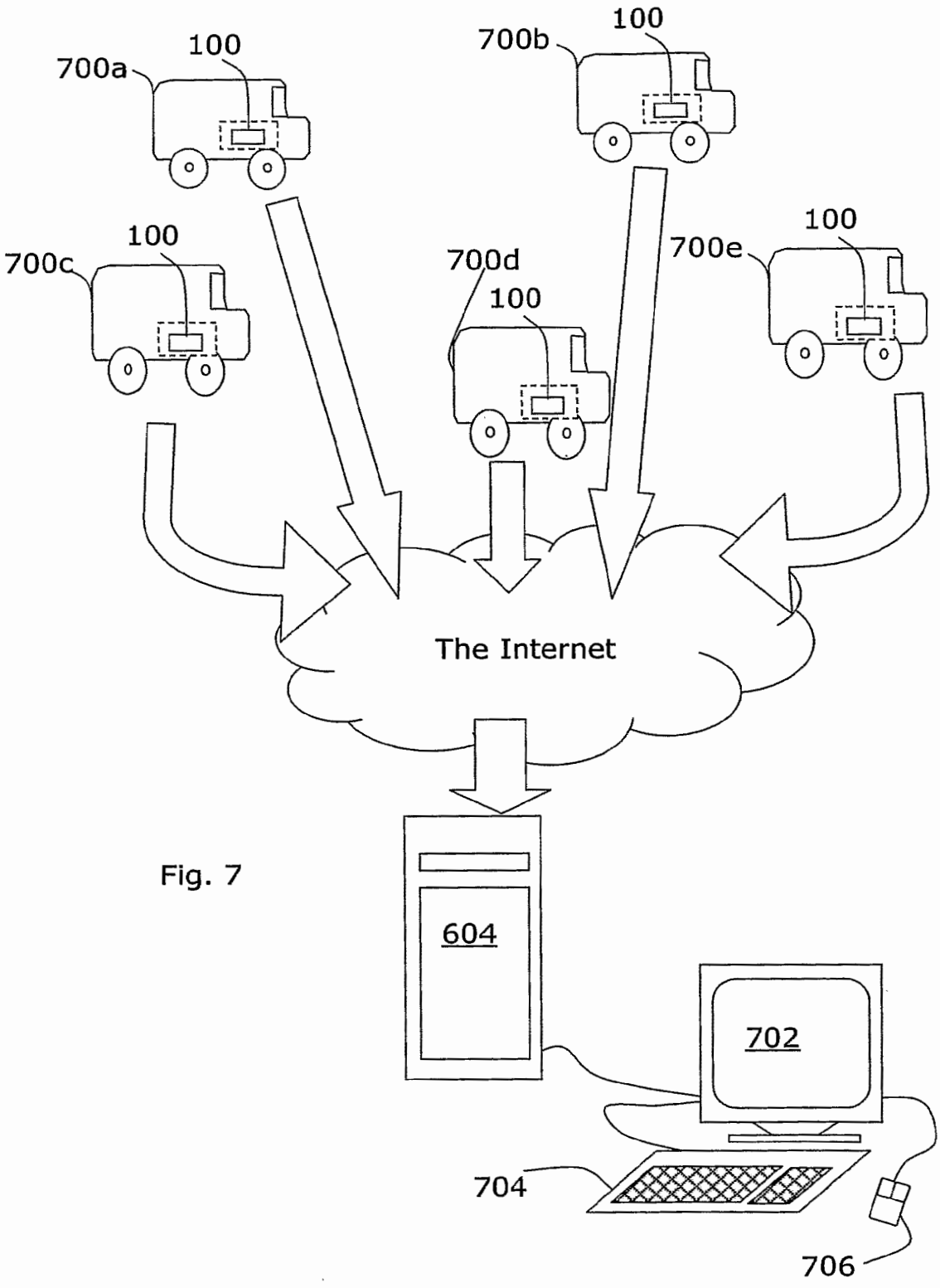

100
700a
100
700b
100
700c
700d
100
700e
100
The Internet
604
702
704
706

Fig. 7

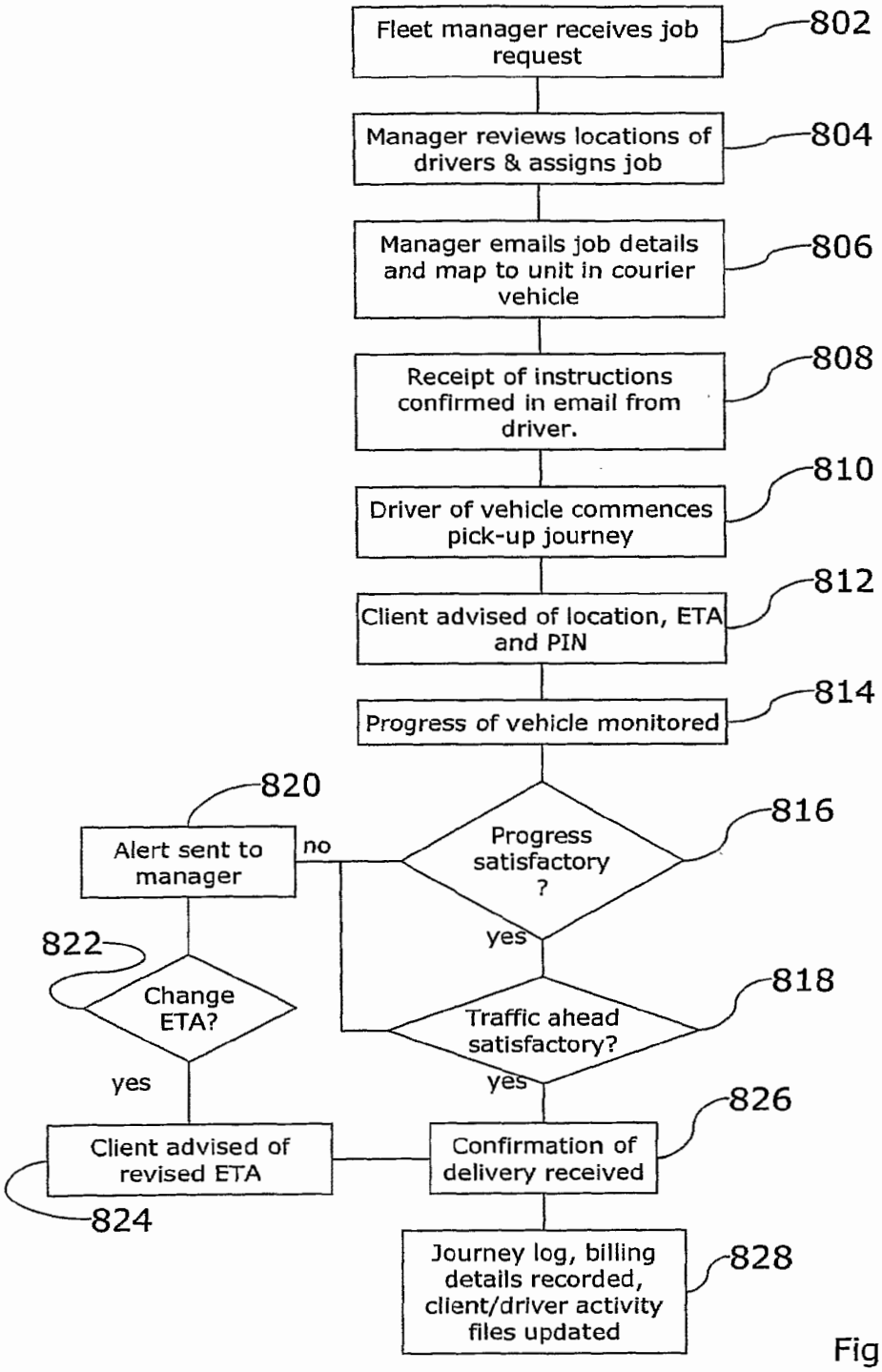

Fleet manager receives job request
802
Manager reviews locations of drivers & assigns job
804
Manager emails job details and map to unit in courier vehicle
806
Receipt of instructions confirmed in email from driver.
808
Driver of vehicle commences pick-up journey
810
Client advised of location, ETA and PIN
812
Progress of vehicle monitored
814
Progress satisfactory ?
816
no
yes
Traffic ahead satisfactory?
818
yes
Confirmation of delivery received
826
Journey log, billing details recorded, client/driver activity files updated
828
Alert sent to manager
820
Change ETA?
822
yes
Client advised of revised ETA
824

Fig. 8

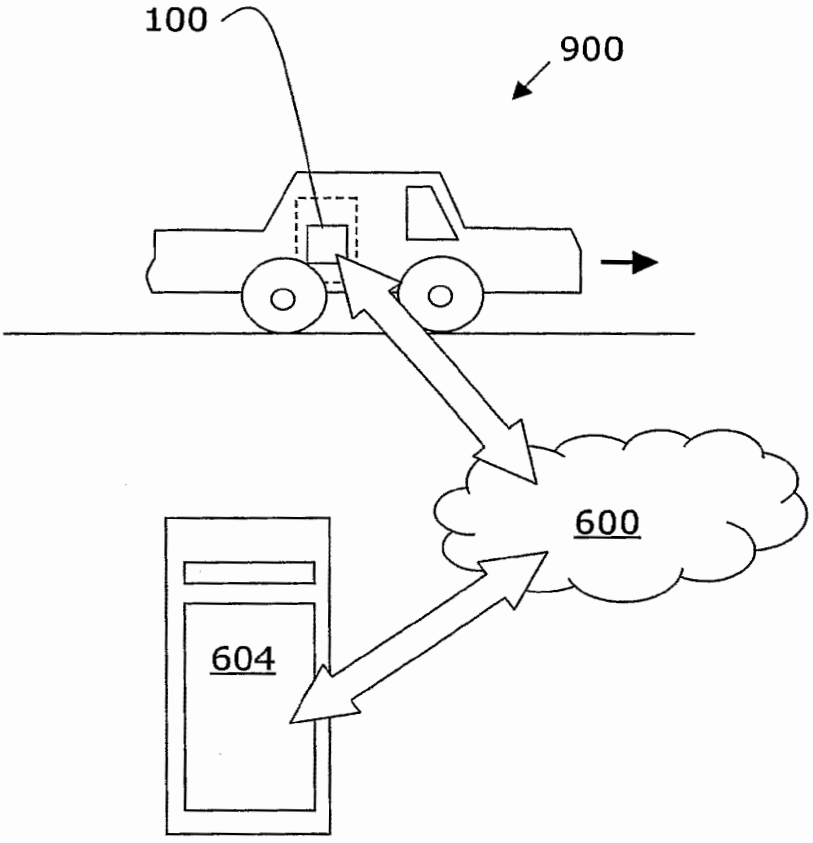


Fig. 9

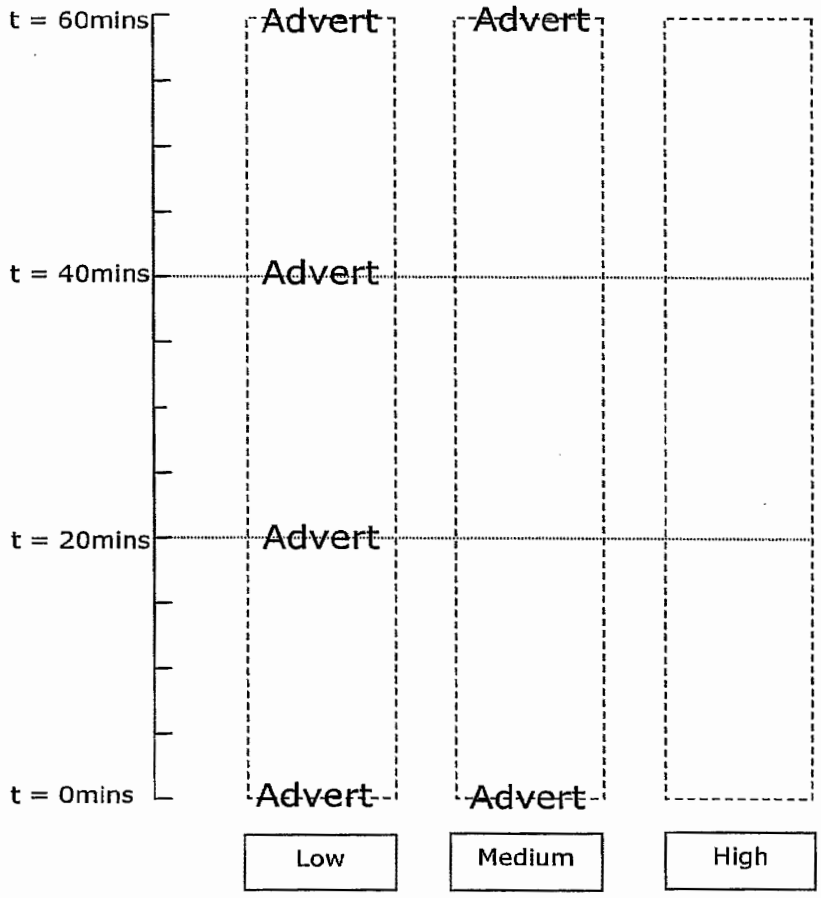

t = 60mins
t = 40mins
t = 20mins
t = 0mins
Advert
Advert
Advert
Advert
Advert
Low
Medium
High

Fig. 10

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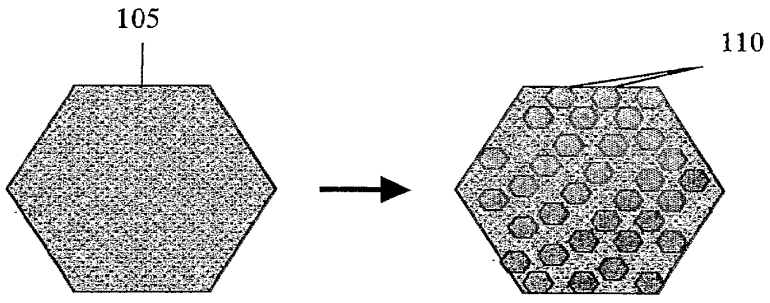
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(54) Title: A METHOD AND SYSTEM OF INTELLIGENT TRANSPORTATIONS



(57) Abstract: A Method and System of Intelligent Transportation providing faster, safer, cleaner, better returns on travel expenditure, comfortable and convenient means of transportation; and offering "price-levels and choice of service" bundles based fast and frequent feedback of user demand. It combines with unique features such as choice to drive or to ride or to drive / ride alone or with desired / favored group of co-travelers with each choice coupled with incentives and rewards. They can suggest their preferred models of vehicles, and their expected travel time etc. that is accommodated within the service level agreements for the subscription level. The system is enabled with navigation assistance, novel approach to incident management, efficient and economical fuelling and vehicle repair and maintenance system, vehicles driven by proficient drivers, traffic management approach to match traffic volume to carriage capacity of road network, etc. The System involves classification of road network for different types and means of commuting, and classification and design of vehicles for effective and efficient operation in the system.

WO 2006/011158 A2

A Method and System of Intelligent Transportation

By

Chandra Vikash

Field of the Invention

The present invention is in the field of transportation and pertains more particularly to a method and system of transportation thus providing effective and efficient traffic management, and giving a consumer complete travel experience according to their choice along with other related services.

Background of the Invention

Customers today have a choice for a product / service in respect of food, clothes, housing, etc. at its microest level. Customers, however, do not have a similar choice in the field of transportation and travel services, for e.g., a choice for a vehicle, with a choice for an infrastructure and with a choice for an environment. Even the company that sells the highest premium segment car, for e.g., does not provide a high quality travel experience that extends beyond the vehicle.

Ideally, in the filed of transportation, three aspects are to be looked into i.e. vehicles, infrastructure and environment, to properly cater to the consumers' need of choice. The consumer would ideally want to choose within options in different areas such as, for e.g., walking / cycling / motorbikes / scooters / automobile; vehicle - rentals / lease – chauffer or self-driven; rickshaw / taxicab / bus/ train, etc., along with other mobility options such as carpooling, car sharing, ridesharing, etc. In respect of goods

transportation, options include enabling the consumer to carry the goods with him or in carts, small and large lorries, trailers, wagon trains, etc.

In the field of transportation of people and or goods over short and long distances, there are significant wastes. In a systemic view, these wastes in the known system of transportation, originates from in-congruencies in the following areas, such as:

1. Traffic volume and carriage capacity of the road section;
2. Traffic flow expectation and vehicle driving quality;
3. Vehicle seating capacity and vehicle occupancy;
4. Vehicle location and passenger / goods location;
5. Vehicle optimal speed range – fuel efficiency, safety, depreciation - and vehicle speed in traffic conditions;
6. Vehicle model / features and consumer preferences;
7. Usage scenarios depicted in advertisements and actual usage scenarios;
8. Vehicle obsolescence – psychological, technological and economic;
9. Recyclability and modularity of a vehicle, sub-assemblies and components for reuse;
10. Vehicle characteristics – weight, optimal speed range, tyre characteristics, ground clearance - and road surface;
11. Vehicle and infrastructure design and accessibility requirements for elderly, children and for disabled;
12. Travel time expectation and vehicle speed;
13. Repair and maintenance complexity of vehicle (compounded by increase electronic / software components) and Information available to private vehicle owners;
14. Supply and demand of road network;
15. Supply and demand of parking stations;
16. Supply and demand of vehicle fuels – Petrol, Diesel, CNG, LNG, Bio-fuel, Hydrogen Fuel Cell, Electric, Solar, Compressed Air, Hybrid etc.;

17. Fueling point - location, time, appropriate fuel type and vehicle location and information available to private vehicle owners;
18. Vehicular pollution and environment's absorption capacity;
19. Traffic signal times and traffic flow;
20. Price points for available service and consumer's willingness to pay;

It should be noted that the undesirability of these wastes is from a consumer point of view even as some of these in-congruencies are exploited by vested interests for value appropriation. Examples are:

1. Lack of appropriate infrastructure and environment for walking and cycling in densely inhabited areas for short trips. This encourages escalating use of automobile for these trips which are not suitable for the purpose i.e. as density of automobile use in the area increases more people feel unsafe to walk or cycle and switch to automobiles;

2. Safety perception in case of uneven collision with a heavier vehicle leads to escalation in size and weight of automobiles;

3. Lack of transparency in prices for proprietary replacement parts, optional fittings, and whether a specific component or sub-assembly needs to be replaced;

4. Lack of transparency in fuel brands which claim mileage and vehicle-life enhancing benefits and the appropriate fuel type for a vehicle;

Existing approaches focus on one hand on packing more strength and features on the vehicle:

a. Greater safety and security for the occupant – more metal protection around the vehicle, airbags, emergency response etc.;

b. Communication for navigation assistance, concierge to find a location or reach there by a less congested route etc.;

c. Online information – stock quotes, weather updates etc. while traveling and while they are stuck in traffic jams.

Alternatively, known methods either focus on the infrastructure alone such as creating more roads, flyovers or my framing more stringent traffic rules.

Another prevailing approach is to circumvent the problem by focusing on mass rapid transit solutions such as underground metro or high capacity bus as a panacea. Even though they are useful on the high-density corridors, their capital cost is high for wider deployment, looking at various factors such as the cost of land acquisition, digging underground in built-up areas in an entire Region and the traffic disruption they cause during their long construction phase. In such a case, they fail to provide door-to-door mobility and to entice commuters away from their private vehicle.

Many urban areas have poly-nucleated development with high dispersion of inhabited areas. Overall, though this approach is a useful complement, it distracts attention from the larger problem of the need for a comprehensive approach.

The above approaches fail to take a systemic view of vehicle-infrastructure-environment elements and the need for an integrated solution for traffic management coupled with consumer choice and satisfaction.

In light of the limitations in the prior art it has occurred to the inventor that a systemic solution for providing better transportation, traffic management and consumer travel choice is needed.

Object of the Invention

One of the objects of this invention is to provide efficient transportation services and complete travel experience to a consumer according to their choice, preferences and affordability.

Another object of this invention is to manage the traffic in such a fashion, which causes less traffic congestion, assures consumers of the travel time, road-safety, etc.

Another object of this invention is to facilitate and enhance the mobility of the consumers or their goods but simultaneously better and efficiently utilizing the available energy resource for such mobility.

Brief description of the Drawings

Fig. 1 is a diagram illustrating classification of Land according to the embodiment of the present invention.

Fig. 2 is a diagram illustrating the laying and classification of the road network according to an embodiment of the present invention.

Fig. 3 is a diagram illustrating the Expressway-Over-Bridge constructed at the Expressway – Street Intersection in accordance with the present invention.

Fig. 4 is a diagram illustrating the structure of an Expressway Station according to the embodiment of the present invention.

Fig. 5 is a diagram illustrating the Light & Slow Vehicles ("LSVs") Port constructed according to embodiment of the present invention.

A Flow Chart illustrating the operation of the System in accordance with the embodiment of the present invention.

Description of the Invention

The present invention provides method and system for providing seamless, door-to-door mobility services for people and for goods for short and long distances at market-mimicking price points.

The inventor provides a unique method and system of intelligent transportation to provide efficient transportation service; complete travel experience to a consumer according to their choice and preferences; manage the traffic in such a fashion, which causes less traffic congestion, assures consumers of the travel time, road-safety, etc. The method and System of the present invention are described in enabling detail below.

Classification of the Land Area:

Layout of the Region and Village/s:

The layout of the Regions and Village(s) in accordance with the present invention can be explained and illustrated with reference to Fig. 1.

According to the present invention, the entire given land 100 under implementation is classified as a Region 105. According to the present invention a Region 105 could be, for example and without limitations, any urban area, rural area, province, country or even a continent. As per the preferred embodiment of the present invention, a given Region 105 should be an area identified on the basis of parameters such as, for e.g. but

without limiting, the area within which a significantly large majority of surface trips begin and terminate.

According to the embodiment of the present invention, in a given Region 105, certain geometrically shaped Villages 110 are formed. As per the preferred embodiment of the present invention, however, and for the purposes of implementing the present invention effectively, Villages 110 should be the areas in the given Region 105 identified on the basis of parameters such as, for e.g. but without limiting, the places where majority of trips begin and terminate. Further, according to the preferred embodiment of the present invention, the Villages 110 should be formed in a hexagonal shape (honeycomb).

According to the preferred embodiment of the present invention, Villages 110 are inhabited areas in a given Region 105 and each Village 110 is normally made up of 4 to 8 sq. kilometers. A Village 110 can also be made up of an area either more than 4-8 sq. kilometers or less than 4-8 sq. kilometers and hence the said distances specified herein should not be seen as a limitation. The area of the Village 110 may also vary depending upon the preferences of the implementers on criteria such as, for e.g., population density in that area and its identity as a single community, etc. and hence the said distances specified herein should not be seen as a limitation.

Laying and Classification of the Road Network:

The layout of the Road Network in accordance with the present invention can be explained and illustrated with certain appropriate figures.

Expressways:

The layout of the Expressways 115 in accordance with the present invention can be explained and illustrated with reference to Fig. 2.

According to the embodiment of the present invention, the Villages 110 formed in accordance with the present invention are bound or connected by interconnected Expressways 115 in any appropriate manner. According to the preferred embodiment of the present invention, the Villages 110 are bound or connected by Expressways 115 on various sides. For the purposes of the preferred embodiment of the present invention in respect of how Villages 110 are bound by Expressways 115, please refer to the illustrated Fig.2.

According to the present invention, Expressways 115 are multi-lane carriageways with exclusive access to Fast and Heavy Vehicles ("HFVs"), for e.g. but not limiting to, cars, vans, buses and trains, and which are further described below in the embodiment of the present invention. According to the present invention, Railways - elevated, surface or underground - are also classified as Expressways 115 in this definition.

According to the embodiment of the present invention, an Expressway 115 gives access only to motorized HFVs. As per the preferred embodiment of the present invention, proper known means for obstructing trespassers, animals, etc. should be along the side-line of the Expressways 115 to avoid these problems. Known means such as construction of walls or fences along the side-line of the Expressways 115 could be used. According to the present invention, the speed limit on the Expressways 115 could be determined after taking into consideration factors including the type of vehicles used on the Expressways 115, safety, etc. According to the preferred embodiment of the present invention, the speed limit on the Expressways 115 could be around 90 kilometers / per hour. The specified speed limit is only an indicative figure and should not be seen as a limitation.

Streets:

The layout of the Streets in accordance with the present invention can be explained and illustrated with reference to Fig. 2.

According to the embodiment of the present invention, a Village 110 so formed in accordance with the present invention comprises of roads and pathways called as Streets 120 laid in any desired manner. According to the preferred embodiment of the present invention, the Village 110 comprises of interconnected Streets 120 laid in a way to create a mesh of Streets 120 in the said Village 110. For the purposes of the preferred embodiment of present invention in respect of laying Streets 120 in a Village 110, please refer to the illustrated Fig.2.

According to the embodiment of the present invention, Streets 120 are multi-lane carriageways for Light and Slow Vehicles ("LSVs") and includes dedicated lanes for pedestrians called as Pathways. LSVs include, for e.g. but without limitation, could be pedestrians, bicycles, very low to zero –pollution scooter, motorcycles, manual or electric rickshaws, golf-carts, etc., and which are further described below in the embodiment of the present invention.

According to the present invention, the speed limit on the Streets 120 could be determined after taking into consideration factors including the vehicles used on the Streets 120, the objects of the invention including using fast, safe and non polluting vehicles on the Streets 120, etc. According to the preferred embodiment of the present invention, however, the speed limit on the Streets 120 could be around 30 kilometers / per hour. The specified speed limit is only an indicative figure and should not be seen as a limitation. They optimize space with option for multiple rules – right side motorized, free overtaking. Lanes can be reserved for a particular class of vehicles e.g. bicycle lane and their width can be customized.

Exceptions to allow HFVs to ply over the Streets 120 can be made possible only in the case of emergencies such as inclement weather conditions with prior intimation through means for street alarm system, for e.g., blinking light indicators, sounds, etc.

Road Network Infrastructure Details:

The Road Network Infrastructure details in accordance with the present invention can be explained and illustrated with appropriate figures.

Expressway-Street Intersection:

The layout and the details of the Expressway – Street Intersection in accordance with the present invention can be explained and illustrated with reference to Fig. 3.

According to the embodiment of the present invention all Expressways 115 in a given Region 105 are interconnected. One or more Expressways 115 may also intersect with Streets 120. At such intersection known means in the industry can be provided to facilitate consumers plying on the Streets 120 to cross the Expressways 115. According to the preferred embodiment of the present invention, an Expressway Over-Bridge ("EOBs") 130 is provided for facilitating the consumers including people and bicycles to crossover the Expressways 115 at such intersection with the aid of staircase, escalators or elevators for upward or downward movements. The EOBs 130 could also be adapted, with necessary modifications, to facilitate the consumers to cross the Expressways 115 under the Expressways 115. According to the preferred embodiment of the present invention, whether the EOBs 130 are to be provided over the Expressways 115 or under the Expressways 115 are determined taking into consideration factors including the topography or the geography of the surrounding area.

Although the EOBs 130 can be powered by traditionally known energy sources, however, according to the preferred embodiment of the present invention, the EOBs 130 are powered by non-conventional energy sources such as solar sheds, batteries, fuel cells, etc.

According to the preferred embodiment of the present invention, at such intersection, in case EOBs 130 is so provided according to the present invention facilitate the consumer to cross the Expressways 115 over the Expressway 115, the EOBs 130 are to be elevated to a height sufficient enough to allow the tallest vehicle that could pass through the Expressway 115. Known technological ways and means could also be adapted to increase or decrease the elevation level of the EOBs 130 at such intersections.

According to the present invention, by providing EOBs 130 at such intersections, a grade separated intersection of Streets 120 and Expressways 115 is provided.

Street-Street Intersection:

According to the preferred embodiment of the present invention, all Streets 120 in a Village 110 are interconnected. Combined with the EOBs 130 all Streets 120 are seamlessly connected for pedestrians and for bicyclists.

Expressway Stations:

The layout and the details of the Expressway Station 135 in accordance with the present invention can be explained and illustrated with reference to Fig. 4.

According to the embodiment of the present invention, as stated earlier, all Expressways 115 in a given Region 105 are interconnected and may intersection each other. According to the embodiment of the present invention, Expressway Stations 135, which are described more in detail below in the embodiment of the present

invention, are typically constructed at such intersections. According to the preferred embodiment of the present invention, Expressway Stations 135 are generally constructed at an elevated level in such a way that it allows incoming HFVs to pass through. According to the embodiment of the present invention, Streets 120 may also terminate at the Expressways 115. However, according to the preferred embodiment of the present invention Streets 120 terminate at Expressway Stations 135. Further, although Expressway Stations 135 can be constructed at such intersections according to the implementers choice, however, according to the preferred embodiment of the present invention, Expressway Stations 135 are typically located at every of 5 -8 kms. The specified distance herein i.e. 5-8 kms. is only an indicative figure and should not be seen as a limitation. Further, Railway stations in the Region 105 are also classified as Expressway Stations 135.

According to the present invention, Expressway Station 135 is a multi-storied building comprising of multi-level parking, vehicle fueling and servicing facility for HFVs. The Expressway Stations 135 also further comprise of facilities for other commercial establishments such as, but not limiting to, office space, retail space, hotels, business centers and transit warehouses, etc.

According to the embodiment of the present invention, the multi-level parking facility may provide for known methods for facilitating parking of HFVs. According to the preferred embodiment of the present invention, however, the multi-level parking facility can be provided to comprise one or more Multi-Level Parking Structures ("MLPS") 160. According to the preferred embodiment of the present invention, each such MLPS 160 can be so designated to stock a specific dimension of HFVs. For the purposes of the preferred embodiment of present invention in respect of MLPS 160, please refer to the illustrated Fig. 4. Further, according to the preferred embodiment of the present invention, such MLPSs 160 can be provided with means for upward and downward movement, including elevators, of the HFVs in a direction that suits the implementer's choice.

Although there are known methods that could be implemented for aiding parking of the HFVs in the multi-level parking facility, parking of the HFVs is preferred, according to the embodiment of the present invention, to be provided for with the aid of a ramp.

According to the present invention, at each story of the Expressway Station 135, provision or means for charging the HFVs are provided. According to the preferred embodiment of the present invention, such provisions or means for charging can be provided in such a manner that each HFVs are connected to a power grid to receive or to send electrical power as required.

According to the present invention, the parking facility provided at the Expressway Stations 135 also comprise multiple fueling points for various fuel sources and types, and carriers fuels such as gasoline, hydrogen fuel cell, electric, bio-fuels, etc. According to the present invention, the Expressway Stations 135 are also equipped with designated areas for fueling / servicing for any type of HFVs.

Light and Slow Vehicle ("LSV") Ports:

The layout and the details of the LSV Port in accordance with the present invention can be explained and illustrated with reference to Fig. 5.

According to the preferred embodiment of the present invention, and as discussed earlier in the embodiment, all Streets 120 in a Village 110 are interconnected. According to the present invention, at intersections including Street-Street intersections, or Street-Expressway intersection or even at an Expressway Station 135, typically, a port called as an LSV Port 165 is constructed. Such LSV Port 165 may be at a ground level (compared to the surrounding area) or at an elevated level, depending upon the implementer's choice. Although according to the present invention LSV Port 165 are typically located at every street corner or at intersections, according to the preferred embodiment of the present invention, an LSV Port 165 should be located

such that at least one LSV Port 165 is located within walking distance from any inhabited area.

According to the present invention, LSV Port 165 are equipped with energy sources for facilitating energy to the LSVs. According to the preferred embodiment of the present invention, however, LSV Port 165 are covered with plastic solar sheets, which are wired to charge LSVs, as required.

According to the present invention LSVs Ports 165 also provide for parking LSVs. According to the embodiment of the present invention, any known means for providing parking can be provided. However, the preferred method for providing parking at the LSV Port 165, according to the embodiment of the present invention, is by providing racks of dimensions suitable for accommodating LSVs including bicycles, golf-carts, etc.

Classification of the Vehicles:

According to the embodiment of the present invention, vehicles to be used in the present invention are classified under two categories i.e. Light and Slow Vehicles ("LSVs") and Heavy and Fast Vehicles ("HFVs").

Light and Slow Vehicles:

According to the embodiment of the present invention, LSVs are very low to zero emission vehicles, which ply on Streets 120. LSVs are further characterized as manual driven / automated guided vehicles- pedestrians, bicycles, very low to zero-pollution scooter, motorcycles, manual or electric rickshaws, golf-carts, etc. According to the present invention, LSVs have low acceleration and a low peak speed. According to the preferred embodiment of the present invention, LSVs should have a low peak speed of

about, but without limiting to, 30 km / hr. According to the present invention, LSVs typically use combination of human solar and electric power to directly power the vehicles or solar sheds, which charge batteries, which in turn power such vehicles.

Heavy and Fast Vehicles:

According to the embodiment of the present invention, HFVs are motorized heavy and fast vehicles, preferably having low to zero emission levels, such as cars, buses, etc running typically on Fuel Cell, CNG, or HSD. HFVs ply on the Expressways 115 and are suited for long distance travel. According to the present invention, HFVs, generally, move from one Expressway Station 135 to another, with zero or very few stops. According to the present invention, HFVs can have varied capacities. According to the preferred embodiment of the present invention, however, HFVs should be of a size and shape with a view to optimize road space. Further, according to the preferred embodiment of the present invention, HFVs are typically having capacities between 4 to 40.

Controlling Systems:

According to the present invention, in a given Region 105, a central information hub called as a Central Information Center ("CIC") is established for providing and handling issues comprising of registration, issue and service of consumer membership / user cards; facilitate enquiry, information, booking and reservation for a near trip or a far trip; central display of all vehicles including HFVs and LSVs in the Region 105 and or Village 110, data processing for the purposes of determining a driver proficiency rating (DPR), route determination and dispatch, transfer of HFVs amongst Expressway Stations 135 based on demand, traffic signal control, traffic violation and incident management; handling the traffic in the given Region 105 or Village 110 and incidental

matters and information thereto, etc. According to the present invention, the CIC can be also be assigned such other responsibilities as per the implementer's choice.

According to the present invention, the CIC will possess, contain, store and process all information / data relevant for the transportation services provided by the Service Provider, which is the subject matter of the present invention, and would further utilize it to provide efficient transportation services, coupled with complete travel experience to a User according to their choice, preferences and affordability, who also face less traffic congestion, and are assured of their travel time, road-safety, etc.. The system facilitates and enhances the mobility of the consumers or their goods but simultaneously better and efficiently utilizing the available energy resource for such mobility.

According to the present invention, the functions or the services rendered / delivered by the CIC can also be performed or delivered with the aid of various channels including establishing one or more local counters at various public and desired locations.

According to the preferred embodiment, however, the functions to be performed, and the services to be delivered, by the CIC, can be bifurcated or handled by separate centers performing respective functions as may be assigned. The preferred details are as under:

Regional Transportation Information Center:

According to the present invention, for a given Region 105, a Regional Transportation Information Center ("R-TIC") is established for providing and handling issues comprising of registration, issue and service of consumer membership cards; facilitate enquiry, information, booking and reservation for a near trip or a far trip, etc. According to the present invention, communication between the R-TIC and the

consumer can be effected through any communication mediums. Further, according to the present invention, the functions or the services rendered by the R-TIC can also be performed or delivered with the aid of various channels including establishing local counters at various public and desired locations.

Regional Traffic Control Station:

According to the present invention, for a given Region 105, a Regional Traffic Control Station ("R-TCS") is established for the purposes of handling the traffic in the given Region 105 and incidental matters and information thereto. According to the present invention, R-TCS performs such functions and looks into issues including central display of all HFVs in the Region 105, data processing for the purposes of determining the Driver Proficiency Rating ("DPR"), route determination and dispatch, transfer of HFVs amongst Expressway Stations 135 based on demand, traffic signal control, traffic violation and incident management, etc.

For determining DPR the parameters include close adherence to the navigation plan, lane, target speed, direction, etc. Any deviations are recorded and the report generated is sent to the R-TIC at the end of the trip. The payment to the User-Driver varies with the DPR. There may be more than one user possessing the DPR, who are willing to drive. Users bid for the driving assignment and the User with the highest DPR gets the assignment. In situations, where no User qualifies, a staff driver is assigned for the trip.

According to the present invention, the R-TCS can also be assigned such other responsibilities as the implementer may choose to.

Village Traffic Control Station:

According to the present invention, for a given Village 110, a Village Traffic Control Station ("V-TCS") is established for the purposes of handling the traffic in the given Village 110 and incidental matter and information thereto. According to the present invention, V-TCS performs such functions and looks into issues including handling central display of all LSVs in the Village 110, transfer of LSVs amongst LSV Port 165 based on demand, traffic signal control, traffic violation and incident management, etc. According to the present invention, the V-TCS can also be assigned such other responsibilities as the implementer may choose to.

System Operation:

The operation of the system can be illustrated with the aid of a flow chart.

Payment Modes and Plans:

According to the present invention, a User can avail of the transportation service, which is the subject matter of present invention, of the Service Provider by various modes comprising of subscription mode, per-trip mode, validity mode, etc. Similarly, according to the present invention, a User can be given an option to pay for the services based on the criteria including the nature of the trip i.e. near trip or a far trip, etc. Similarly, according to the present invention, a User can be provided with various plans for availing of the services of the Service Provider for e.g. Value Plan, Platinum Plan, Gold Plan, Silver Plan, Economy Plan, etc. Additionally, the User can further be given plans for availing the services of the Service Provider based on the Vehicles that they may choose to use for e.g. a high subscription rate for a HFVs, etc. According to the present invention, a User is also given the option for post-paid mode of payment or pre-paid mode of payment, for the purposes of availing the service. Additionally,

according to the present invention, a pre-paid card can also be made available for a visitor User who seeks to avail of the service.

Communication with Central Information Center:

According to the embodiment of the present invention, a User communicates with the CIC (and includes R-TIC, R-TCS or V-TCS as the case may be, hereinafter collectively called as CIC) of the Service Provider with communication means such as telephone, Internet, kiosks, etc. According to the preferred embodiment of the present invention, a communication device is to be made available inside the given Vehicle (including LSVs or HFVs or otherwise) for better communication between the User with the CIC and avail of the phenomenal navigational / transportation services provided by the Service Provider. Additionally, according to the preferred embodiment of the present invention, communication devices can and should also made available at appropriate public places (closed or open) and or at desired places according to the implementer's choice, for the User. Additionally, according to the preferred embodiment of the present invention, a User, who may be an illiterate person, also has an option of communicating with the CIC and availing the services of the Service Provider by visiting a local counter of the CIC opened by the service provider for those purposes.

According to the present invention, the CIC possesses, contains, stores and processes all information / data relevant for the transportation services provided by the Service Provider, which is the subject matter of the present invention, and would further utilize it for providing efficient transportation services, coupled with complete travel experience to a User according to their choice, preferences and affordability; manage the traffic in such a fashion, which causes less traffic congestion, assures User of the travel time, road-safety, etc.; facilitates and enhances the mobility of the User or their goods but simultaneously better and efficiently utilizing the available energy resource

for such mobility.

According to the present invention, a routine or a frequent User can also set default settings of the information relevant for availing the services. According to the present invention, thus, a routine or a frequent User can customize his travel information for a specific customizable itinerary.

Near Trip and Far Trip:

According to the preferred embodiment of the present invention, a travel i.e. starting point to the destination point, of a User is categorized into two i.e. Near Trip ("NT") and Far Trip ("FT"). According to the preferred embodiment of the present invention, a NT is a trip, which is typically less than 5 kms. The specified distance herein i.e. 5 km. is only an indicative figure and should not be seen as a limitation. In certain situations, depending upon the Service Provider's choice, the distance to classify a trip as an NT can be more than 5 kms. According to the preferred embodiment of the present invention, a NT is typically made only on Streets 120 with the aid of LSVs. However, in certain situations, for e.g., emergency, transportation of goods, etc., a NT can be made with the aid of HFVs.

According to the preferred embodiment of the present invention, a Far Trip ("FT") is a trip, which typically exceeds 5 kms. The specified distance herein i.e. 5 km. is only an indicative figure and should not be seen as a limitation. In certain situations, depending upon the Service Provider's choice, the distance to classify a trip as a FT can be more than 5 kms. According to the present invention, a FT is typically a trip between two Expressway stations 135 with no stops at a High Value Plan to very few stops at a Lower Value Plans. According to the preferred embodiment of the present invention, a FT is broken down into a NT from the origin point to the assigned Expressway Station 135; a FT between the assigned Expressway Stations 135 and

another NT to the end point. According to the present invention, such breaking down of a FT into two NTs and a single FT makes the User pay on the actual use basis.

According to the present invention, in case a User intends to halt in between his journey, he may specify the same accordingly. The User may specify various information of his choice including a hotel or restaurant when he intends to halt or while breaking his journey may opt to walk for a specified distance for pleasure purposes or for health purposes before resuming his further journey, etc.

According the preferred embodiment of the present invention, the operation of the System can be illustrated with the aid of the followings steps along with the illustrative flow chart.

Step 0:

The User registers himself with a Service Provider. He chooses from amongst a variety of subscription plans like Platinum, Gold, Silver or Economy, etc., at multiple price points. Service levels such as maximum travel time; vehicle models, telematic services etc., are defined for each subscription plan. Within a specific plan a User can also make preferences about seating arrangement, drive or ride option, list of favored co-travelers, list of telematic services etc., and the mode of payment. A User can update its subscription plan, preferences with prior notice.

A User can make payments by a pre-paid or post paid mode. In post-paid modes, monthly bills are dispatched to the User. Options to pay by cheque, cash, or electronic payments are also available.

Visitors in the Region 105 are issued short duration, pre-paid Member Smart cards. The balance upon completion of their stay is refunded in person or delivered to the visitor address.

All Users have to produce authentic photo-identity proof at the time of registration, which are subsequently verified by the Service Provider.

Upon completion of registration process, a User receives a Member Smart card, which stores detail about their identity. The User subscription details are stored at the CIC.

Step 1:

A User communicates to the CIC for information, buying tickets or making reservations with the aid of any communication means such as phone, computer, kiosks, etc. The User may also avail of the services of the Service Provider manually by visiting any of the local counters opened by the Service Provider for such purposes. They may also set a default option for a routine travel, in which case they need to communicate in case of change in their travel plan.

Step 2:

A User specifies his nearest starting point from the available choices and the destination details for e.g. the area, street address, landmark etc.

Step 3:

A User receives a confirmation of their request and information like boarding location, vehicle number, and seat number about their booking for each segment of their journey. A User can take note of the information or print this e-ticket. At local

counters, a User receives a paper ticket. A User has to carry his Member Smart Card for their identification.

Other Features:

According to the present invention, a User along with providing transportation services is also provided with other advantages and services including travel time assurance, road-safety, etc.

Travel Time Assurance:

According to the present invention, the User can be provided with various services and methods, to assure the User of the travel time, the services comprising, for e.g., compensated the User for loss of the time, etc. According to the present invention, with fewer vehicles and an optimal mix of vehicles of different sizes, the traffic flow is predictable in this system. According to the present invention, a User can set as default settings, according to his preferences and needs, and using a combination of traffic control measures, information including individual vehicle speeds, etc.

On-Road Safety and Security:

According to the present invention, a User is provided better vehicle and passenger safety and security. With fewer vehicles, fewer drivers are needed. Additionally, according to the preferred embodiment of the present invention, the CIC collects, preserves and processes data pertaining to driving information of a User. The said information is utilized by the Service Provider for assigning a rating for a User-Driver called as a Driver Proficiency Rating ("DPR"). Accordingly, the present invention, as preferred, identifies better drivers and offers them the choice and incentives to drive from amongst those who travel on the same route. According to the present invention,

as preferred, the higher DPR, higher compensation is to be paid to such User-Driver. Additionally, according to the present invention, the Service Provider can also monitor Vehicles for their roadworthiness. According to the preferred embodiment of the present invention, with the aid of the CIC, the Service Provider is enabled location and remote management of vehicle in case of emergency.

Road Quality Service Assurance:

According to the present invention, Users pay for using the road (Expressways 115, Streets 120, or otherwise) for the number of miles that they ride at a rate that closely reflects their consumption of the road infrastructure and allied services. In this way, according to the present invention, good quality roads, their upkeep and maintenance, and availability of road space based on demand, is made available to the User.

Clean Environment Assurance:

According to the present invention, with fewer vehicles on roads, pollution is reduced. As every vehicle carries more people than earlier, the present invention provides for vehicle upkeep and upgrade to cleaner fuels and / or vehicle technologies. This facilitates faster absorption and commercialization of alternate fuel technologies and vehicles such as hybrids, fuel cells, solar-electric, bio-fuels etc. Hence, through the present invention, Users are thus assured of clean air services for stretches where User may choose to walk (for health reasons) or need to walk in areas where there is no motor vehicle access.

Favoured Co-Traveler Service:

According to the present invention, Users can choose whether they want to travel alone or select their favored co-traveler. For these purposes, they can create a list of people

or Users can enter profiles of people; they want to travel with. According to the preferred embodiment of the present invention, the favored co-passenger list is approved with mutual consent. According to the present invention, the favoured co-passenger list can be edited, updated by the Users.

Portability:

According to the present invention, User can also avail of personalized services in other Region 105 where this system is implemented.

Environment Friendly:

By implementing this present invention, air-conditioning in vehicles becomes redundant except in extremely hot or cold conditions and for vulnerable Users. This is due to various reasons including the pollution –emission and dust levels significantly decrease.

Healthy and Wholesome:

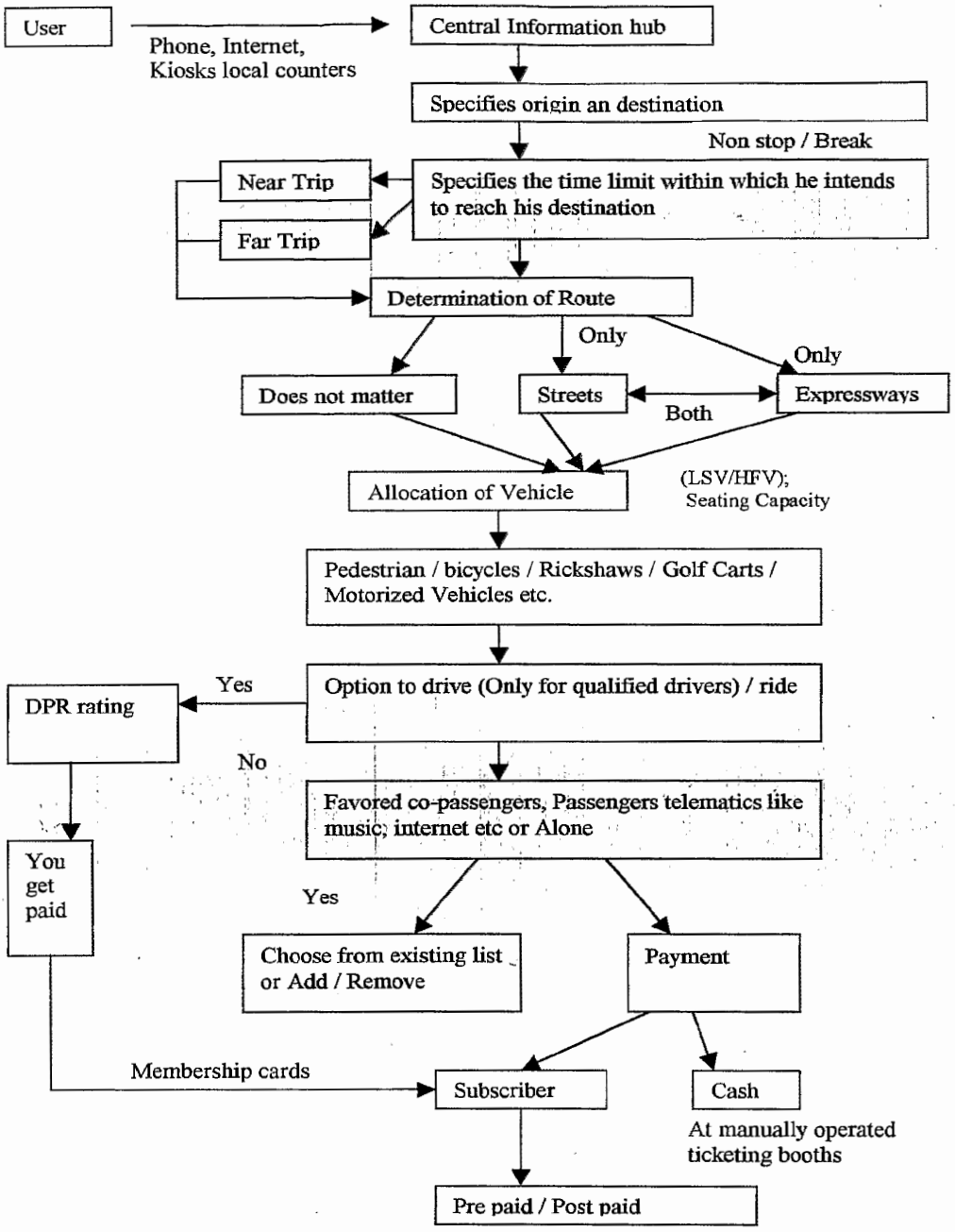
By implementing this present invention, in a wholesome approach to the User's overall needs, they can choose to walk or bicycle comfortable distances in a pedestrian-friendly environment that is included in the overall travel experience.

Freedom: Choice to Ride or to Drive, No Refueling, Repair or Maintenance:

According to the present invention, Users are given freedom to choose when to drive and when to travel as a passenger. According to the present invention, with this freedom, if they like driving and qualify as a good driver i.e. their Driving Proficiency Rating is above a threshold level, they can earn for their service to the system.

Alternatively, according to the present invention, they can just take a ride, with the comfort that the driver has been selected by the system to provide a safe ride.

According to the present invention, Users do not have to take vehicles for refueling. According to the preferred embodiment of the present invention, the Service Provider can constantly monitor the vehicle including the fuelling, performances, etc. This minimizes the chances of a vehicle break down. Further, according to the preferred embodiment of the present invention, the Service Provider in situations like for e.g. break downs, accident, etc. promptly arranges for an alternate vehicle to reach the point of incidence, hospital, etc. as the case may be. According to the present invention, the Service Provider also provides for handling of insurance issues.


User
Phone, Internet,
Kiosks local counters
Central Information hub
Specifies origin an destination
Non stop / Break
Near Trip
Far Trip
Specifies the time limit within which he intends to reach his destination
Determination of Route
Only
Only
Does not matter
Streets
Expressways
Both
Allocation of Vehicle
(LSV/HFV);
Seating Capacity
Pedestrian / bicycles / Rickshaws / Golf Carts / Motorized Vehicles etc.
Yes
DPR rating
Option to drive (Only for qualified drivers) / ride
No
Favored co-passengers, Passengers telematics like music, internet etc or Alone
You get paid
Yes
Choose from existing list or Add / Remove
Payment
Membership cards
Subscriber
Cash
At manually operated ticketing booths
Pre paid / Post paid

I Claim:

1. A method and system of intelligent transportation comprising of:
   Classification of a given land area;
   Laying and classifying road network in the given land area;
   Classification of vehicles;
   A central information hub being means for aiding transport management and related services; and
   A means for locating vehicles and their communication with the central information hub.

2. A method and System of Intelligent transportation as claimed in claim (1) wherein the given land is classified into Regions based on parameters including the area within which significantly large majority of surface trips begin and terminate.

3. A method and System of Intelligent transportation as claimed in claim (1) wherein the said Region is further divided into Villages based on parameters including the area within which majority of surface trips begin and terminate.

4. A method and System of Intelligent transportation as claimed in claim (1) wherein the said Village has a honeycomb-like (hexagonal) shape.

5. A method and System of Intelligent transportation as claimed in claim (1) wherein the said Village is formed based on the population density in a given area.

6. A method and System of Intelligent transportation as claimed in claim (1) wherein the said Village is formed based on identity as a single community.

7. A method and System of Intelligent transportation as claimed in claim (1) wherein the said Village is formed based on a specified area and is spread over an area of 4 to 8 kilometers.

8. A method and System of Intelligent transportation as claimed in claim (1) wherein the road network comprises of a combination of streets and expressways.

9. A method and System of Intelligent transportation as claimed in claim (1) wherein the said Villages are bound by expressways.

10. A method and system of intelligent transportation as claimed in claim (1) wherein the said expressways are multi-lane carriageways with exclusive access to Fast and Heavy Vehicles.

11. A method and system of intelligent transportation as per claim (1), wherein means for obstructions are constructed along the sidelines of the expressways.

12. A method and system of intelligent transportation as per claim 1, wherein the speed limit for a particular on the expressways is determined after taking into consideration factors including the type of vehicles used on the expressways, safety.

13. A method and System of Intelligent transportation as claimed in claim (1) wherein the said Villages comprise of interconnected Streets.

14. A method and system of intelligent transportation as claimed in claim (1) wherein the said Streets are multi-lane carriageways with exclusive access to certain vehicles and include dedicated lanes for pedestrians.

15. A method and system of intelligent transportation as per claim (1), wherein the speed limit on the Streets is controlled taking into consideration specified factors.

16. A method and system of intelligent transportation as claimed in claim (1) wherein the said Streets optimize space with option for multiple rules including lanes being reserved for a particular class of vehicle.

17. A method and System of Intelligent transportation as claimed in claim (1) wherein the all expressways are interconnected.

18. A method and System of Intelligent transportation as claimed in claim (1) wherein at such intersection of street and expressway, Expressway-Over-Bridge is provided as means for crossing the expressway. That provides for a grade-separated intersection with expressway.

19. A method and System of Intelligent transportation as claimed in claim (1) wherein Expressway Station is built at sites, amongst where expressways intersect such that one Expressway is located at every of 5 -8 kms.

20. A method and System of Intelligent transportation as claimed in claim (19) wherein at Expressway Stations are constructed at an elevated level in a way that it allows incoming Heavy and Fast vehicles to pass through.

21. A method and System of Intelligent transportation as claimed in claim (19) wherein such Expressway Stations are located at a suitable distance as per the implementer's choice;

22. A method and System of Intelligent transportation as claimed in claim (19) wherein such Expressway Station facilitates multitasking activities including multi-level

parking, vehicle fueling, servicing facility, and or other commercial establishments including offices, retailers, hotels, warehouses, and or business centers.

23. A method and System of Intelligent transportation as claimed in claim (22) wherein the said multi-level parking structures are designated to stock a specific dimension of vehicle.

24. A method and System of Intelligent transportation as claimed in claim (22) wherein the said multi-level parking structures are provided with means for upward and downward movement of the vehicles in a direction that suits the implementer's choice.

25. A method and System of Intelligent transportation as claimed in claim (22) wherein the said multi-level parking structures are provided with a ramp for aiding entry and exit in the parking facility.

26. A method and System of Intelligent transportation as claimed in claim (19) wherein at such Expressway Stations means for supplying energy sources for the vehicles are provided in such a manner that vehicles are connected to power source to receive or to send power.

27. A method and System of Intelligent transportation as claimed in claim (19) wherein at such Expressway Stations multiple fueling points for various fuel sources and types are provided.

28. A method and System of Intelligent transportation as claimed in claim (1) wherein the road network intersect at a given point including street-street intersection, or street-expressway intersection or even at an expressway station where a street may terminate.

29. A method and System of Intelligent transportation as claimed in claim (28) wherein at such intersections, a street port is built or at an intermediate point such that one street port is available within walking distance from any inhabited area.

30. A method and System of Intelligent transportation as claimed in claim (29) wherein the said port is equipped with various energy sources for the vehicles.

31. A method and System of Intelligent transportation as claimed in claim (29) wherein the said port is covered with photovoltaic panels, which are connected to provide charging to the vehicles.

32. A method and System of Intelligent transportation as claimed in claim (29) wherein the said port provides means for parking vehicles.

33. A method and System of Intelligent transportation as claimed in claim (32) wherein the parking in the port is provided with the aid of racks of dimensions suitable for accommodating vehicles.

34. A method an System of Intelligent transportation as claimed in claim (1) wherein the classification of the vehicles are made as Light and Slow Vehicles ("LSVs") and Heavy and Fast Vehicles ("HFVs").

35. A method and System of Intelligent transportation as claimed in claim (34) wherein Light and Slow Vehicles ("LSVs") are very low to zero emission vehicles and only ply on streets and have low acceleration and a low peak speed of about 30 kms / hr.

36. A method and System of Intelligent transportation as claimed in claim (34) wherein Heavy and Fast Vehicles ("HFVs") are motorized heavy and fast vehicles running on various energy sources.

37. A method and System of Intelligent transportation as claimed in claim (34) wherein Heavy and Fast Vehicles ("HFVs") are motorized heavy and fast vehicles running on a various energy sources and having a low to zero emission levels and are used mostly to ply on expressways, except certain situations.

38. A method and System of Intelligent transportation as claimed in claim (34) wherein Heavy and Fast Vehicles ("HFVs") have varied sitting capacities.

39. A method and system of intelligent transportation as claimed in claim (34), wherein the Light and Slow Vehicles ("LSVs") are used for near or short trips and the Heavy and Fast Vehicles ("HFVs") are used for far or long trips.

40. A method and System of Intelligent transportation as claimed in claim (1) wherein the central information hub is a Central Information Center aiding transportation management and related services.

41. A method and System of Intelligent transportation as claimed in claim (40) wherein the Central Information Center provides and handles transportation management comprising of providing and handling various issues such as registration, issue and service of user membership cards, facilitate enquiry, information, booking and reservation for a near trip or a far trip; central display of vehicles in the area, data processing for the purposes of determining the driver rating, route determination and dispatch, transfer of vehicles amongst various routes based on demand, traffic signal control, traffic violation and incident management; handling the traffic in the given area and incidental matters and information thereto.

42. A method and System of Intelligent transportation as claimed in claim (40) wherein the Central Information Center possesses, contains, stores and or processes all

information and or data relevant for transportation management and related services.

43. A method and System of Intelligent transportation as claimed in claim (40) wherein the Central Information Center possesses, contains, stores and or processes all information and or data relevant for transportation management and related services and utilizes it for providing efficient transportation services, coupled with complete travel experience to a user according to their choice, preferences and affordability, manage the traffic in such a fashion, which causes less traffic congestion, assures consumers of the travel time, road-safety, etc, facilitates and enhances the mobility of the consumers or their goods but simultaneously better and efficiently utilizing the available energy resource for such mobility.

44. A method and System of Intelligent transportation as claimed in claim (43) wherein the Central Information Center provides and handles transportation management by itself or through its local counters.

45. A method and System of Intelligent transportation as claimed in claim (1) wherein the means of positioning and communication with the central hub is made available inside a given vehicle.

46. A method and System of Intelligent transportation as claimed in claim (1) wherein means of communication for a user is also made available at appropriate public places and or at desired places according to the implementer's choice.

47. A method and System of Intelligent transportation as claimed in claim (1) wherein a user can customize his travel information for a specific customizable itinerary.

48. A method and System of Intelligent transportation as claimed in claim (1) wherein a user pays for the transportation service based on various payment modes, value

plans, vehicles, post-paid periodic billing, pre-paid, debit account and or by any combination thereof.

49. A method and System of Intelligent transportation as claimed in claim (1) wherein a travel route of a user is classified into categories comprising of a Far Trip and a Near Trip.

50. A method and Systems of Intelligent transportation as claimed in claim (1) wherein a far trip is typically a trip between two expressway stations with no stops to very few stops.

51. A method and Systems of Intelligent transportation as claimed in claim (1) wherein a near trip is within a Village, to adjoining villages or from an origin point inside a Village to an assigned expressway station.

52. A method of transportation comprising the following steps:

a. Communication of choices of travel by a user to the said central hub by communication means such as type of vehicle etc.;
b. Specifying the origin and/or destination (in certain cases the origin may be automatically communicated;
c. Specifying the time limit within which the user intends to reach his destination;
d. Specifying whether the user intends to drive the said vehicle or needs a professional driver or opts for self drive;
e. Specifying whether the user intends to travel alone or otherwise choose his co-travelers from the available list of specific categories of travelers, or preferred co-traveler's list, which can be further altered by adding, removing co-travelers.;
f. Specifying passenger telematics like music, Internet, etc.;

g. Receiving a confirmatory message containing information like boarding location, vehicle number, and seat number.

53. A method of transportation as claimed in claim (52) wherein a user may is also assisted manually with the aid of local counters opened for those purposes.

54. A method of transportation as claimed in claim (52) wherein the selection of a road network is done by the service provider according to the other specified choices.

55. A method of transportation as claimed in claim (52) wherein a user is given a driving proficiency rating.

56. A method of transportation as claimed in claim (52) wherein a user is can drive the said vehicle if he possesses a satisfactory driving proficiency rating and the same is higher than other co-travelers who have made the option to drive.

57. A method of transportation as claimed in claim (52) wherein a user is paid by the service provider if the user drives a vehicle along with the co-travelers in proportion to their driving proficiency rating.

58. A method of transportation as claimed in claim (52) wherein a visitor opting for a prepaid card is refunded the balance amount on the completion of his stay.

Figure 1

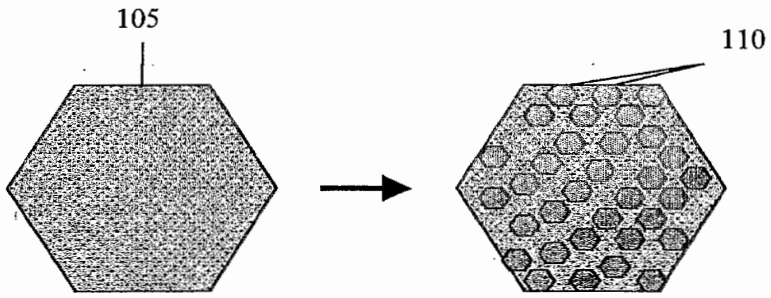


Figure 2

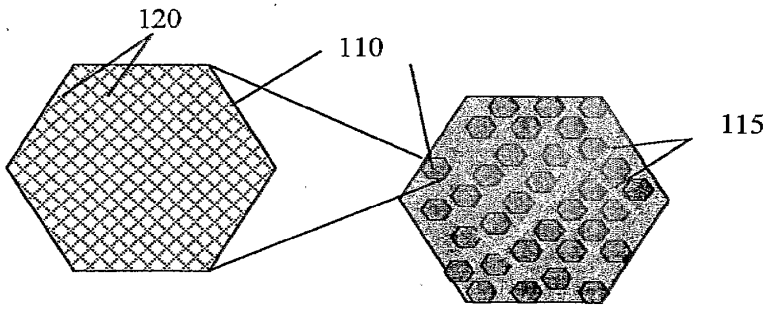


Figure 3

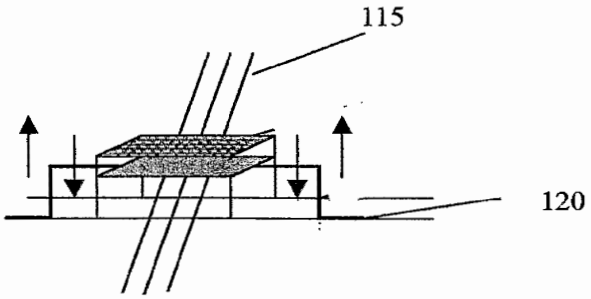


Figure 4

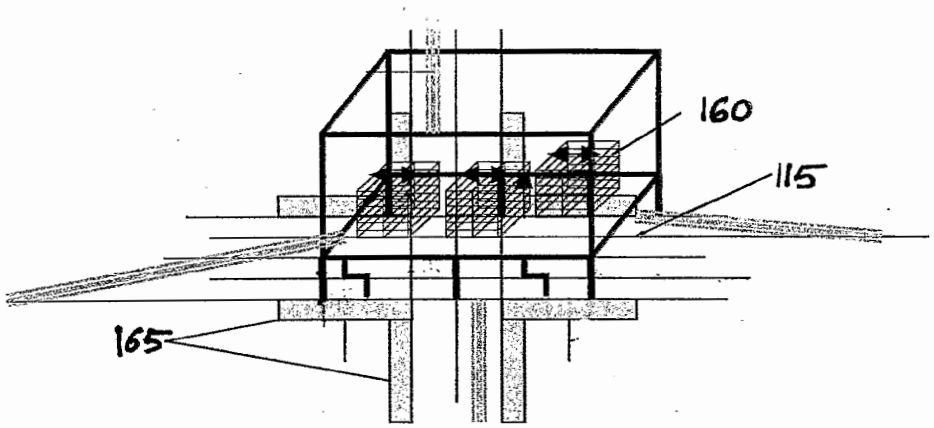
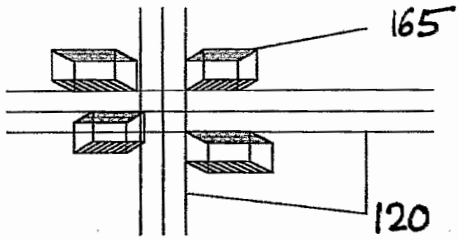


Figure 5



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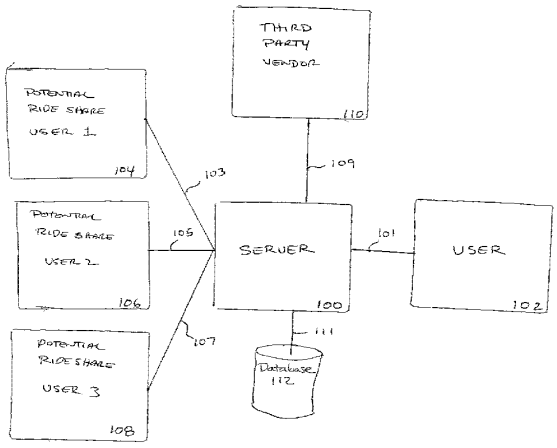
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(54) **Title:** METHOD FOR PROVIDING A COMPREHENSIVE, SEARCHABLE DATABASE OF PROPOSED TRIPS



(57) **Abstract:** The method and system allows for searching of rides leaving from any point and going to any other point in a given region, country or continent, whether by ground vehicle, aircraft or vessel. The method and system allows for personal preferences such as nonsmoking/smoking preference, drive sharing/non-sharing preference, gender preference (including mixed), and specifying other preferences in comment fields. General preferences specify expense sharing arrangement, departure time, pick-up and drop off points, music preferences, and other concerns. The method and system allow multiple riders, different ride recurrences, and also a rider rating system. Confirmations and reminders are sent to riders before scheduled rides and review security procedures and other details. These confirmations and reminders can be forwarded to enhance security of the ride. Macros will be needed to facilitate searches. Micropayments will be charged to verify users.

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METHOD FOR PROVIDING A COMPREHENSIVE, SEARCHABLE DATABASE OF PROPOSED TRIPS

FIELD OF THE INVENTION

[0001] This invention generally relates to a method and system for providing travelers a comprehensive, searchable database to proposed trips spanning any particular region, country or continent. Particularly, it matches travelers with similar travel plans, based on personal traveling preferences and vehicle needs. More particularly, the present invention is directed to software that includes rating and security aspects and facilitates the use of reminders.

BACKGROUND

[0002] In the past, processes that match commuters with similar commutes have provided these riders a convenient method of commuting locally. These previous systems focus their process on "commuting areas" around cities and are therefore best suited for car pooling and local commuting. Travelers who wish to take trips spanning a particular region, country or continent do not benefit from the previous systems.

[0003] In addition, previously known systems do not take into consideration the rider's personal traveling preferences. Previous processes are inflexible and do not provide as many benefits, options or preferences as the present invention. For example, prior processes do not allow a rider to specify a gender or specify different departure times.

[0004] Thus, a need exists to provide a system that matches travelers with compatible travel plans, personal traveling preferences and transportation equipment preferences.

Furthermore, the need exists to provide prospective travelers with a safe and flexible system for selecting a suitable match for trips spanning any particular region, country, or continent.

SUMMARY OF THE INVENTION

[0005] A system that matches travelers with compatible travel plans facilitates a convenient and economical ride for all participants. The present invention is a comprehensive regional and continental rideshare database based on advanced database and server technology. The software can cover all of North America and any other region, island or continent. The present invention is not limited to any specific geographical area and can be used for a large or small geographical region. The ridesharing database produced by this software, searchable by origin and destination, date range of departure and gender, offers the only effective continental and regional rideshare database currently available. The software can be applied to vehicles of any type, aircraft, and vessels.

[0006] The software can offer a vast selection of rides up to three months in advance. In addition, while other sites leave rider identity and security to chance, the software provides substantial security, so that a user can be confident about the identity of the person behind the posting and the other riders.

[0007] Also, the software can be accessed from the comfort of a user's own computer, wherever he or she can be, and the site can be instructed to remind a user of new interesting listings.

[0008] The software saves money and time, provides convenience, and improves the environment, by reducing pollution and traffic congestion. The software also provides company

to lonely drivers and extra drivers needed for longer rides, reducing the risk of accidents on long drives.

[0009] Finally, the software can be used to move vehicles, vessels or aircraft from any town to any other town in the region or continent. The owner of the device can opt not to go on the ride and make this clear in a comment field. Also, a disabled owner could travel along on such a ride.

[0010] The present invention matches travelers with compatible travel plans, personal traveling preferences and vehicle, aircraft and vessel needs. In return, riders benefit by sharing a convenient ride, sharing travel expenses and saving time. In addition, the region, country or continent also benefits from reduced pollution and reduced congestion of the roads, waterways and sky. The present invention is continent-wide, and the current site covers the USA and Canada, as well as the territories and possessions of each.

[0011] Through the use of a real-time third-party micro-payment system with which the present invention interacts, the present invention can verify that each user is "real", in the sense that each user can have access to credit directly, or through another person with credit. Users cannot be fictitious.

[0012] To further enhance security, the present invention uses user IDs, passwords and 128-bit encryption. The present invention can also collects ID information from each user, including home address, telephone number, email address, birth date, gender, and driver's license number and state. The present invention also collects vehicle information, including make, year, model, license number, state of registration, name of owner, color and condition. In the case of each student, the present invention asks for a student ID number and the name of his

or her college and campus name. The invention can be modified to permit the use of other forms of identification, such as passports or identity cards.

[0013] The current invention sends to each rider a detailed email confirmation covering rider contact information and the details of the ride. The ride confirmation also provides many helpful suggestions for the ride, including security recommendations. Each rider can forward the confirmation email to a close friend or parent, to further enhance security.

[0014] The present invention reminds the rider of each accepted ride approximately one day before the ride departs. For rides scheduled more than one week in advance, an additional reminder can be sent one week before the ride departs. Emails can be encrypted.

[0015] These, and other aspects of the present invention, are described in the following brief and detailed description of the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] FIGS. 1-23 are diagrams depicting one implementation of the present system and method regarding a registration process by a rider;

[0017] FIGS. 24-37 are diagrams showing one application of the system in posting a ride;

[0018] FIGS. 38-48 are diagrams depicting the first rider acceptance within the system of the present invention;

[0019] FIGS. 49-68 are diagrams depicting the second rider acceptance within the system of the present invention;

[0020] FIGS. 69-82 are diagrams depicting the third rider acceptance within the system of the present invention;

[0021] FIGS. 83-86 are diagrams illustrating one implementation of accessing a rating system for riders through the system of the present invention;

[0022] FIGS. 87-89 are diagrams illustrating one implementation of a ride reminder for the second ride acceptance; and

[0023] FIG. 90 is an exemplary schematic block diagram depicting one embodiment of the system of the present invention.

DETAILED DESCRIPTION

[0024] The many shortcomings of processes previously available to commuters for obtaining ride sharing information can be overcome by the use of the present invention. For example, the previous process such as that found in U.S. Patent Publication 20010056363 to Gantz presents information with a map display of potential ridesharing partners. The present invention, however, does not use a map. The present invention lists rides leaving from a departure town (or area designated by a particular postal code) and going to a destination town (or postal code area). Each area expands beyond the town (or zip code area) inputted, when a full page of rides does not appear. The first search covers only the specific departure town and destination town. Then the wider search occurs.

[0025] The previous process "evaluates" applications filed by users. The current invention takes data from users and automatically presents it to other users. The present process can utilize an ID verification process. An example includes verifying driver's licenses. Examples concerning students include verifying student IDs or adding student face book or direction information.

[0026] The previous process provides an anonymous "communication route" between the users. The present invention, however, does not provide for communication between the users during the ride identification, ride review and ride selection process. Rather, all relevant information is listed at the site and the site communicates to each user. Users cannot

communicate until the ride is accepted. Users can communicate directly only after the process completes, i.e., only after the ride poster and fellow user agree to share a ride. Then an email is sent to each user containing the contact information and each user covers the rest of the details.

[0027] The previous process sets specific times. The present invention provides for rides leaving during a range of time, such as in the morning, afternoon and evening. The timing coverage on ride departures of the present invention thus is different.

[0028] The previous process identifies ride originations and destinations as street intersections. The present invention identifies departure and destination areas. Each area can be a town or the area designated by a postal code. Additional details are covered in comment fields in the ride database or left up to the riders, e.g., pickup and drop off points.

[0029] The present invention enables ride posters to specify the preferred gender of the riders for any given ride: women only rides, men only rides, and mixed gender rides.

[0030] The previous process does not provide expressly for multiple riders, or keep track of the number of riders that have chosen a given carpool. The current invention provides for up to, for example at least, ten additional riders on each ride, and keeps track of the number of available positions, and does not permit the acceptance of riders beyond the specified maximum for any given ride. The ride poster can specify the number of additional riders, from one to for example ten.

[0031] The previous process assumes that each of their posted rides leaves each work day, i.e., it is recurring on a daily basis. The present invention covers non-recurring rides and recurring rides. In addition, the present invention allows for recurring rides leaving on a weekly,

bi-weekly, monthly, and quarterly basis. Furthermore, the present invention covers rides leaving as late as three months from the date the ride is posted.

[0032] The previous process does not keep track of past carpools, or whether they are accepted. The present invention lists a user's posted rides and past accepted rides, so that a user can keep track of his or her activity.

[0033] The present invention provides for rating riders that travel on a ride including the driver, pilot or captain. Ratings remain stored so a user can review them.

[0034] The present invention effectuates various personal preferences. The ride poster can vary the expense sharing arrangement, set a nonsmoking/smoking preference, set a drive sharing/non-sharing preference, set a gender preference (including mixed gender), and specify other preferences in a general comment field.

[0035] The general preferences could specify the exact departure time, the exact pick-up and drop off points, music preferences, allergy concerns, or any other concern of the ride poster. The user can select a percentage threshold of how high or low a possible match they desire with regards to matching personal preferences of other users in the determination of ride share information. Alternatively, the computer program can determine a specific percentage threshold of matches in determining the ride share information.

[0036] Through the use of a real-time third party micro-payment system the present invention interacts with, the present system can verify that each user is "real". In a sense, the present system verifies that each user can have access to credit directly, or through another person with credit. Users can not be fictitious.

[0037] To enhance security, the present invention uses user IDs, passwords, and 128 bit encryption. The present invention also collects ID information from each user, including but not limited to home address, telephone number, email address, birth date, gender, and driver's license number and state. The present invention also collects vehicle information, including but not limited to make, year, model, license number, state of registration, name of owner, color and condition. In the case of each student, the present invention asks for a student ID number and the name of college and campus. The invention can be modified to permit the use of other forms of identification, such as passports or identity cards.

[0038] The process sends to each rider a detailed email, for example, for confirmation covering rider contact information and the details of the ride. The ride confirmation also provides many helpful suggestions for the ride, including security recommendations. Each rider can forward the confirmation email to a close friend or parent, to further enhance security.

[0039] The process reminds the rider of each accepted ride approximately, for example, one day before the ride departs. For rides scheduled more than one week in advance, an additional reminder can be sent, for example, one week before the ride departs. User communications are encrypted for security.

[0040] FIGS. 1-90 illustrate the process of registration, ride posting and ride acceptance. The example involves three member registrations by three new users, the posting of a ride with space for three passengers by one of the new users, and the acceptance of the ride by three passengers, including two of the new users and an existing member of the website. The invention is not so limited to this example, and it is understood that various combinations involving different amounts of users can exist with the present invention.

[0041] Rides Covered

[0042] The software of the present invention is capable of dealing with rides in any region, country or continent, from any city or town to any city or town, or from any area designated by postal code area to any other such area, or any combination thereof. The rides can occur by ground vehicle, such as a car, van, sport utility vehicle or truck, or by aircraft, helicopter or water vessel.

[0043] The software can also cover carpooling and periodic commuting rides. For example, if a rider only travels to a destination on an infrequent basis, the present invention can be utilized. This was one of the shortcomings of the previous attempts to provide ridesharing information. Information was only available to full time commuters that traveled daily to a particular destination. The present invention allows a broader scope of travelers and commuters to utilize its database to access ride sharing information.

[0044] A membership fee can be charged, and a member can be charged for posting a ride or accepting a ride, or both. Fees can also be charged for revising a posted ride.

[0045] Rides by ground vehicle can occur on any territory or island covered by the postal code database provided for any region, country or continent. In the USA, for example, the software covers rides by ground vehicle within Hawaii, Puerto Rico and Guam and any other island or area that is part of the USA or its territories or possessions, including rides requiring ferry trips between land bodies.

[0046] Find-A-Ride Screen

[0047] The "Find A Ride Screen" ("FAR Screen") enables a user to search the list of available rides anywhere within a region, country or continent. See Exhibit Page 5. A user can

first select a single date or date range on which he wants to leave. The range can be within one week, two weeks, one month or three months, or any variation thereof.

[0048] The user can be reminded of the departure of any accepted ride one day before the ride is scheduled to depart. For example, an e-mail, fax telephone cal or the like would be sent to all parties involved in the ride share at least one day prior to the appointment.

[0049] The user then enters the town or city of departure and town or city destination. Alternatively, the user can enter the postal code of the point of departure and/or the postal code of the destination, or a combination can be used.

[0050] The user can also set a gender preference for the ride – all rides, women only rides, men only rides, and mixed gender rides. Preferences can also be set for music type desired, smoking or non-smoking, number of people going on the ride and the like.

[0051] The software then retrieves the rides that have been posted during the date range from the departing town to the destination town, within the gender parameters set by the user. FIG 53.

[0052] Various fields enable the user to determine the following characteristics of the rider posting the ride: smoking habits, if any, college, if for example, the poster is a college student, campus of the poster, preferred departure time, and other criteria listed by the poster of the ride in comment fields, such as age, musical tastes, expense sharing issues, and other personal preferences. See for example FIG 54.

[0053] Neighborhood information can be specified by a ride poster to enable the user to determine from where within a town or postal code the ride poster desires to leave from or end a ride.

[0054] Additional Ride Finding Features

[0055] The software enables the user to also see rides leaving from nearby departure points and rides going to nearby destinations, via use of formulas that calculate radii about the departure and destination points. Depending on the embodiment, a user can select the range of the radii about departure and destination points. This feature provides more options to the user on any given day or week or month.

[0056] Currently the formulae are set at a constant of fifty miles. The radii formulae can be revised to vary in length, in proportion to the length of the trip. All distances are determined using as a basis the latitude and longitude information provided by the postal code databases being used. To speed the software, certain calculations between larger urban areas are pre-calculated and stored as a database, for example see FIG 53. This page shows additional rides arriving at nearby towns.

[0057] The software can also enable the user to program robots to look for certain rides posted in the future and to advise the user of their posting. The user can click on "My Robots" in the left column and give the robot instructions as indicated in FIG 26. The software can enable the user to search for return rides, newly posted rides of interest to the user, and shorter rides that might be combined to reach a further destination.

[0058] Accepting a Ride

[0059] Before the user can see the details of a posted ride, or accept a ride, the user can register with the software.

[0060] The user can view the details of the ride by clicking on the "Ride Details" link. FIG 54. This occurs after the user registers. The user accepts the ride at the acceptance screen

as illustrated for example in FIG 55. The software can then refer the user to a payment processing website ("PPW") to charge the user's credit card or to collect payment in any other manner covered by the PPW. The collection of funds by credit card enables the software to verify the user as the holder of a credit card (or as an authorized user of the credit card). The software collects the charge from the PPW by a funds transfer.

[0061] Should the ride not occur, the software can issue a credit to the user, if the user complains, after review by an authorized officer. The credit can expire after a certain period of time, currently three years. This process can be automated in the future.

[0062] Registration

[0063] Before a user can see the details of a posted ride, or accept a ride, the user can register with the software as a member. The Exhibit pages cover registration by several users. Examples are given in FIGS 12 to 23.

[0064] Also, if none of the posted rides appeal to the user, the user can register with the software and then post a ride with his or her own travel and personal preferences. See for example the depictions in FIGS 7 to 11.

[0065] To register with the software, the user can provide the following information, that includes but is not limited to:

- First and last name
- street address, town, postal code and state
- valid driver's license number and state of issue
- date of birth
- gender
- primary telephone number
- secondary telephone number (optional)
- college name, campus name, and student ID number (all optional)
- user ID (seven character minimum)
- valid email address

- password
- secret question (asked by the software to retrieve the password or to reset it)
- answer to the secret question

[0066] If the user does not complete a required field, then the user is reminded to complete it before the software can allow the user to proceed further. This protocol applies to each required field in the software.

[0067] All of the above information can be edited at any time by re-logging into the software as a user and giving the relevant password, for example as shown in FIG 21.

[0068] Once a user is registered, a user can see the details of a posted ride, and then accept the ride and pay for it, as described above. Acceptance can occur without reviewing the details of the ride. See for example the depiction in FIG 55. A fee can be charged for registration.

[0069] It is within the scope of the present invention to allow riders who do not have a driver's license. Many commuters would be caning to share a ride with a non-licensed driver in exchange, for example, gas money or toll funds to decrease the ride cost. The software meets the specific needs of this type of rider or commuter by requiring instead the filing of a passport number or other official identification number.

[0070] Posting a Ride

[0071] A registered user, or member, can post rides on the software, for example as shown in FIG 28 – 33.

[0072] Before posting any ride, however, the member can first provide information on the vehicle he or she intends to use. The registrant can provide the following vehicle information, which includes but is not limited to:

- vehicle make
- year of vehicle
- model name
- license plate number
- color
- condition (selected from a range, ranging from excellent to dilapidated)
- state in which the vehicle is registered

[0073] All of the above vehicle information can be edited at any time by re-logging into the software as a member.

[0074] In order to post a ride, a member can list the following information about the ride. The information includes, but is not limited to:

- date of departure
- leaving time (morning, afternoon, after 6PM local time)
- the number of passengers requested (can be less than ten)
- departure town, city or postal code area
- destination town, city or postal code area
- whether driving can be shared
- whether the provider of the vehicle can drive
- expiration date of license
- smoking terms (no, yes, smoking outside vehicle permitted)
- gender of riders (women only, men only, mixed)
- the vehicle details indicated above
- name of actual owner of vehicle

[0075] The software sets certain presumptions about each ride that each rider, including the ride poster, can agree to:

- the ride can leave if at least one person accepts the ride
- even if the requested number of passengers is higher
- gas used and tolls paid can be shared by the riders, pro rata
- other costs of the ride are not shared
- the cost of any speeding ticket is borne by the driver at the time
- the ride description can not be modified once the ride is accepted
- additional riders may accept the ride up to the day before the ride leaves.

[0076] Expense sharing can be modified from the standard protocol by the poster of the ride as seen for example in FIG 28 and 29.

[0077] In addition, the following information can be added to the description of any posted ride:

- the name of the departure neighborhood (useful when the town or postal code covers a large area)
- the name of the destination neighborhood
- additional rider preferences, such as exact point of departure (e.g., Third Ave. and East 90th St.) or point of destination, allergies, music tastes, types of pets that can be traveling) for example as seen in FIG 32.

[0078] Any person who accepts a ride can comply with the restrictions set forth by the poster of the ride, so that the process works simply. Typically, there is no negotiation permitted, although it is within the scope of this invention to provide a negotiation model where restrictions as such can be agreed upon.

[0079] The member is offered a chance to review the ride details and to edit them as seen for example in FIGS 33, 34 and 39.

[0080] The member can modify the ride listing at any time, until the ride is accepted by another party. At that point, the ride can no longer be modified, unless the riders agree directly amongst themselves. This feature is illustrated for example in FIG 40.

[0081] A fee can be charged for posting a ride at the time of the posting, when the poster is ready to approve the posting and accept it as shown in FIG 33.

[0082] A posting can be made up to three months in advance and can be continuously modified until the trip has been accepted by a rider. If no one accepts a proposed ride by the departure date, then the software can issue automatically a credit to post another trip for free. The credit can expire after a certain number of years, currently three years.

[0083] A member can log in and give his or her password before posting any ride, and before editing a posted ride description as shown for example in FIG 25.

[0084] Security Features

[0085] The software provides various security features discussed below. First, no information is released to anyone but a member. For a user to become a member, the user can register with the site. Before a person can accept a ride or post a ride, a person can be a member and logged in.

[0086] Once a member accepts a ride, a confirmation email is sent to the ride acceptor and the ride poster, containing the same information. The confirmation email summarizes the details of the ride, including the contact information of each rider (e.g., name, age, email and telephone number(s)). This is seen for example in FIGS 42–44, 71–74, and 75–78.

[0087] In the event that there are multiple passengers, a new confirmation is sent out each time an additional rider accepts the ride, both to the additional rider and to the poster of the ride, for example see FIGS 57 to 60, and 75 to 78.

[0088] The confirmation also contains each rider's drivers license number (truncated to the last four to six digits) and a detailed vehicle description (make, model, year, color, condition) and the vehicle license number. Each driver's license number is truncated to deter identity theft.

[0089] In the case of each student, the confirmation email includes the relevant college, college campus, and the student's truncated ID (last four to six digits).The confirmation email also contains helpful suggestions for how to proceed safely and securely with the ride.

[0090] The confirmation email strongly suggests that the riders meet briefly in a public place, such as a coffeehouse, prior to the departure date, to verify each other's information and the vehicle. The meeting allows each rider to check the data in the confirmation email against each other rider's actual driver's license and against the actual vehicle.

[0091] If the student riders are enrolled at the same college, they can also perform a background check through mutual contacts. Also, student riders can have access to a college website or direction that describes the students and their living groups, and that resource can be used to help verify a rider. Also, students might use a web resource like www.thefacebook.com to check on other riders. Such websites list names of students, their images, their living groups and their friends.

[0092] In the event that there are discrepancies between a rider's posted information and a rider's actual information or the actual vehicle information, the potential ride can be terminated easily, before it leaves, and credits can be issued to the innocent parties.

[0093] Riders are also encouraged to forward their confirmation emails, whether by email or by regular mail, to a close friend, significant other, parent or other relative. Riders are further encouraged to bring along mobile telephones for the ride, and to consider traveling in groups of two or more.

[0094] The above procedures can heighten security substantially, especially compared to existing ride boards, rideshare websites, and public mass transit. This can discourage criminal activity in the ridesharing space.

[0095] In the event any accident or crime occurs, the software and the confirmation emails can enable various parties to assist the authorities in finding the distressed riders and any potential criminals. These parties can include RideCheck, close friends of the riders, significant others of the riders, and parents or other relatives of the riders.

[0096] Quality Assurance Features

[0097] The confirmation encourages riders to meet in advance and to settle any remaining details about a ride, such as the actual departure time and pick-up site, along with map, snack, music, headphone and other requirements.

[0098] The software can be used by those with disabilities and infirmities to share rides with members who can drive or provide other assistance on a ride. A disabled person can vary the driving terms and add comments to cover his or her situation as illustrated in FIG 30.

[0099] After the completion of a trip, each rider can rate the other riders as "good" or "bad", and the software keeps track of these ratings. A person looking for a ride can review the ratings information on a ride poster. Each member can review their ratings for example as shown in FIGS 83 to 86. The software can be modified so that the ride poster can specify a rating. Alternatively, a rate can be set by the software program to achieve the highest quality of riders. The ratings can be searchable. Comment fields can be included to rate other riders.

[00100] The ratings function can help to ensure that each rider behaves in a responsible manner, improving the quality of the rides offered by the software.

[00101] The software can send an inquiry to each rider to encourage him or her to rate the other riders. Comment fields can be included. This grading process will discourage each rider from canceling ride plans, or changing a ride plan after acceptance, or behaving uncivilly. Negative comments can result in a downgrade of a member. Users will be attracted to other users with higher ratings.

[00102] The software can be modified so that an adult without a car can post a proposed ride and so that adults with vehicles can search for such listed rides, in the same manner as the

software currently works for rides posted by vehicle owners or bailees. In addition, macros can be added to facilitate the processes of: searching for similar outbound rides (with vehicles and posted by others (whether singly or in combination)); posting recurring similar rides; and searching for return trips (with vehicles).

[00103] Credit and Refund Aspects

[00104] What happens if the ride never happens or if the ride turns out to be unpleasant? These outcomes can be incorporated into a rider's bad rating, via negative comments made to the software.

[00105] The intent behind the software is to offer a ride, subject to the terms of the description contained in the ride posting and related vehicle description, nothing better and nothing worse. The software also relies on the general good can of the members – i.e., that most of them can apply common sense in their judgment of a ride taken.

[00106] More plainly, if a rider did in fact travel from point A to point B, under the constraints described in the ride posting, in the vehicle as described and subject to the potential failings of such a vehicle, and the costs of fuel and tolls were shared proportionally, and each rider was civil, then the ride should be considered satisfactory and no complaint should be filed.

[00107] The software can issue credits in the following situations to build goodwill with its members:

- A credit can be issued automatically by the software to the ride poster if the posted ride is not accepted by 12:01 AM of the day the ride is scheduled to occur. (At that point the ride cannot be accepted.)

- A credit can be issued if the rider or driver failed to show up on time for a trip (each should wait for at least fifteen minutes). This can be automated.

- A credit can be issued to the complaining party if the any rider refused in any material way to comply with the trip description. This can be automated.

[00108] The credit can be either a ride posting fee or a ride acceptance fee, or some other commensurate credit, whichever was paid by the complaining rider.

[00109] Other Points

[00110] The software, through emailing a ride confirmation, advises each rider going on a ride to check to confirm that the age of each rider is over eighteen. The confirmation also tells each rider where the minimum age of 18 is not sufficient. The software informs the riders of the higher age in those states and provinces where the minimum age is higher than 18. This is necessary to ensure the formation of a binding legal agreement as shown in FIG 76.

[00111] The software, through emailing a ride reminder to each rider, reminds the riders of the impending ride. A reminder can be given a day before any ride begins. In the event the ride was posted more than a week in advance, a reminder can be given a week in advance.

[00112] The software contains a contact feature that is automated to lodge certain complaints in certain mailboxes within the software. The software contains a survey feature that can be modified. To conduct surveys of users.

[00113] The software architecture was built using the Java programming language and the Enterprise Java Beans (EJB) technology with MySQL data base. The server deployment uses JBoss secure server technology, along with a Microsoft Windows firewall operating system and a secure mail server (for example, only port 80 is exposed to the Internet). Access to the software is strictly controlled via user/password assignment and is validated each time access is requested. Similar supporting software can also be used.

[00114] SSL certificate encryption, i.e., secure socket layer encryption, is used by the software. A SSL certificate was obtained from Thawte, although the invention is not so limited to this embodiment. The certificate provides 128-bit encryption. Other bit amounts for encryption may be used depending on the embodiment and are within the scope of the invention.

[00115] FIG. 90 is an exemplary schematic block diagram depicting one embodiment of the system of the present invention. Shown in the figure is a server or central processor **100** which schematically represents a network, mainframe computer, server, website, or database. Server **100** is coupled to an institution computer, having a database **112**, by a connection **111**. For purposes of this description, the term "computer" shall refer to any type of processor, network, server, terminal, mainframe computer, and electronic device, regardless if it is wireless or wire connected. The database may be integral to or separate from the server, depending on the embodiment.

[00116] The server, in one implementation, down loads data profiles of potential ride share users enrolled. The profiles are kept in the institution database. After downloading into the server, the profiles are stored in a database of the central processor (not shown). The profiles include at least one of a surname, an address, a gender identifier, demographic information, personal preferences, and the like. Profiles can be continuously updated by an account user or an administrator. The processor utilizes the profile data to perform at least one application.

[00117] Connection **101** is for one embodiment a data link connected to an account user **102**. Such a data link can alternatively be, but is not limited to, an electronic data link, optical fiber connection, wireless data connection or any other known connection used for data transfer, for example, over the Internet. Depending upon the implementation, connection **101** can operate in one or more modes of transmission. For example, such modes include radio frequency

transmissions, optical transmission, microwave transmission, digital or analog transmission, or other known data transmission.

[00118] As shown in Fig. 90, an account user computer **101** utilized by an account user is also coupled to the server by the connection **101**. The account user includes, for example, any user interested in ride sharing information. The account user has access to the applications stored in the server and is able to display the applications.

[00119] Similarly, as with connection **101**, connections **103, 105, 107** and **109** can have various configurations depending upon the implementation. However, the connections need not be the same type, or bear any relation in type or mode, to a particular connection **101** employed in the present invention. For one embodiment, connection **101** is a data link. However, as with connection **101**, it is within the scope of the invention to include all other types of communication links known.

[00120] Computers used by potential ride share account users are depicted as blocks **104, 106, 108**. Three users are given merely as an example, and in no way limit the amount of ride share account users that can utilize the present invention. The potential ride share users are coupled to the server through connections **103, 105**, and **107**. An administrator having access to server **100** can monitor and discontinue communications from any account user. Updating the profiles stored in the database is also permitted by the system administrator.

[00121] Fig. 90 further depicts at least one third party vendor computer **110** coupled to the server by a connection **109**. This third party vendor computer may or may not be integral with the server **100**. In addition, this third party vendor computer may or may not be used with the present invention depending on the embodiment. The third party computer provides services and products to be offered through the server. Such services may include, but are not limited to, a

third-party micro-payment system with which the present invention interacts. This third party allows the present invention, in one potential embodiment, to verify that each account user is "real", in the sense that each user can have access to credit directly, or through another person with credit.

[00122] The product and service offerings are made in both Intranet and Internet based communications. A third party utilizing the third party computer can monitor its product offering and edit the offerings as needed. All product and service offerings may be monitored and pre-approved. The system administrator also has the ability to limit the product and service offerings offered to the account users.

[00123] In conclusion, while various examples have been shown and described employing the invention, it should be understood that the above description is only representative of illustrative embodiments. For the convenience of the reader, the above description has focused on a representative sample of all possible embodiments, a sample that teaches the principles of the invention. The description has not attempted to exhaustively enumerate all possible variations. That alternate embodiments may not have been presented for a specific portion of the invention, or that further undescribed alternate embodiments or other combinations of described portions may be available, is not to be considered a disclaimer of those alternate embodiments. It can be appreciated that many of those undescribed embodiments are within the literal scope of the following claims, and others are equivalent.

What is claimed is:

1. A method for providing ride sharing information to a user's computer or network using a programmed computer and a communications link, said method comprising:

receiving a request from a user;

authorizing use for access of the user;

establishing a connection between the programmed computer and the user's computer;

receiving a response from the user's computer concerning personal preferences;

storing the response in a database;

matching the personal preferences of the user from the stored response to personal preferences from other user responses stored in the database;

generating ride share information containing the matched personal preferences;

sending ride share information to the user's computer in the appropriate format; and

sending confirmation and reminder information concerning the ride share information to the user in the appropriate format.

2. The method of claim 1 wherein the information includes data and software application resident at the user's computer.

3. The method of claim 1 further including sending user verification information in response to a log-on request from a device; and authenticating the user to permit access to a controller.

4. The method of claim 1 further includes providing for rating riders that travel on a ride.

5. The method of claim 4 further including the storage of rating information in the database for access by future riders.

6. The method of claim 1, wherein the information provided includes availability of multiple riders.

7. A computerized system for providing ride share information, comprising:

a memory device; and

a processor disposed in communication with the memory device, the processor configured to: send user verification information in response to a log-on request, authenticate the user to permit access to a controller, receive personal preference information from the user, store the personal preference information in the memory device, match the personal preference information to personal preference information from other users, said personal preference information stored in the memory device, generate ride share information containing the matched personal preferences, and send the ride share information to the user.

8. A computerized system for providing ride share information, comprising:

means for sending user verification information in response to a log-on request,

means for authenticating the request to permit access to a controller,

means for receiving personal preference information from the user,

means for storing the personal preference information in a memory device,

means for matching the personal preference information to personal preference information from other users, said personal preference information stored in the memory device,

means for generating ride share information containing the matched personal preferences,

means for sending the ride share information to the user in an appropriate format.

9. A computer readable medium for providing ride share information, comprising:

code for receiving a request from a user;

code for receiving personal preference information from the user;

code for storing the personal preference information from the user in a memory device;

code for matching the personal preference information to personal preference information from other users, said personal preference information stored in the memory device;

code for generating ride share information containing the matched personal preferences; and

code for sending ride share information.

10. The computer readable medium of claim 9 further including code for applying a rating system for riders.

11. The computer readable medium of claim 9 further including code for maintaining secure communication.

12. The computer readable medium of claim 9 further including code for tracking the history of rides posted and accepted.

13. A method for providing ride sharing information, which uses a computer program and links to establish and communicate with a network or user's computer, said method comprising:

receiving a request from a user searching for ride sharing information;

authorizing use for access of the user;

establishing a connection between the programmed computer and the network or user's computer;

receiving a response from the user's computer concerning personal preferences selected from the group consisting of:

an expense sharing arrangement, a nonsmoking or smoking preference, a drive sharing or non-sharing preference, a gender or mixed gender preference, departure time, pick-up and drop off points, music preferences, allergy concerns, disabilities, special needs, and any combination thereof;

storing the response that includes the personal preferences in a database;

determining ride share information for the user by using the personal preferences of the user from the stored response matched to personal preferences from other user responses stored in the database in accordance with a percentage threshold of possible matched personal preferences;

further determining ride share information by using a user selected quality rating of available previous ride sharing reviews of the other users that had matched personal preferences;

generating ride share information containing the matched personal preferences and selected quality review rating;

sending ride share information to the user's computer in the appropriate format; and

sending confirmation and reminder information concerning the ride share information to the user in the appropriate format.

14. The method of claim 13 wherein ride share information is for a ground vehicle, aircraft, water vessel, or any combination thereof.

15. The method of claim 13 further includes displaying reviews of previous ride share ratings of other users in a searchable manner to allow the user to search for ride share information based on the previous ratings.

16. The method of claim 13 wherein the ride share determination further includes calculating radii about departure and destination points of the user based on user selected parameters.

17. The method of claim 13 further includes sending an alert to the user concerning specific ride requests later posted by other users that match the user's personal preferences.

18. The method of claim 13 further includes issuing a credit to the user if no ride sharing information is determined.

19. The method of claim 13 further including verifying a user's identity for security purposes.

20. The method of claim 13 further includes allowing the user to modify a ride listing at any time up until the ride listing is accepted by another user.

FIG. 1

EXHIBIT A

RideCheck, LLC

Screen Images

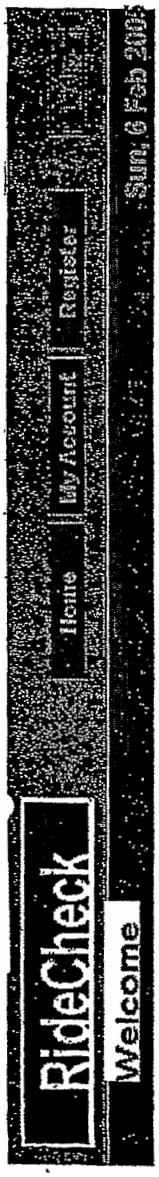
(beta.ridecheck.com)

2/6/05

FIG. 2

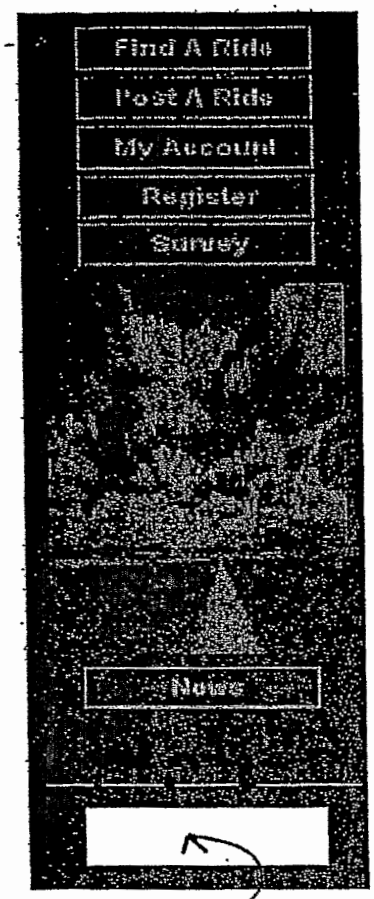
General

FIG. 3



Top Bar

Left Bar - Not Signed In. Fig. 4



© Ride Check, LLC
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FIG. 5

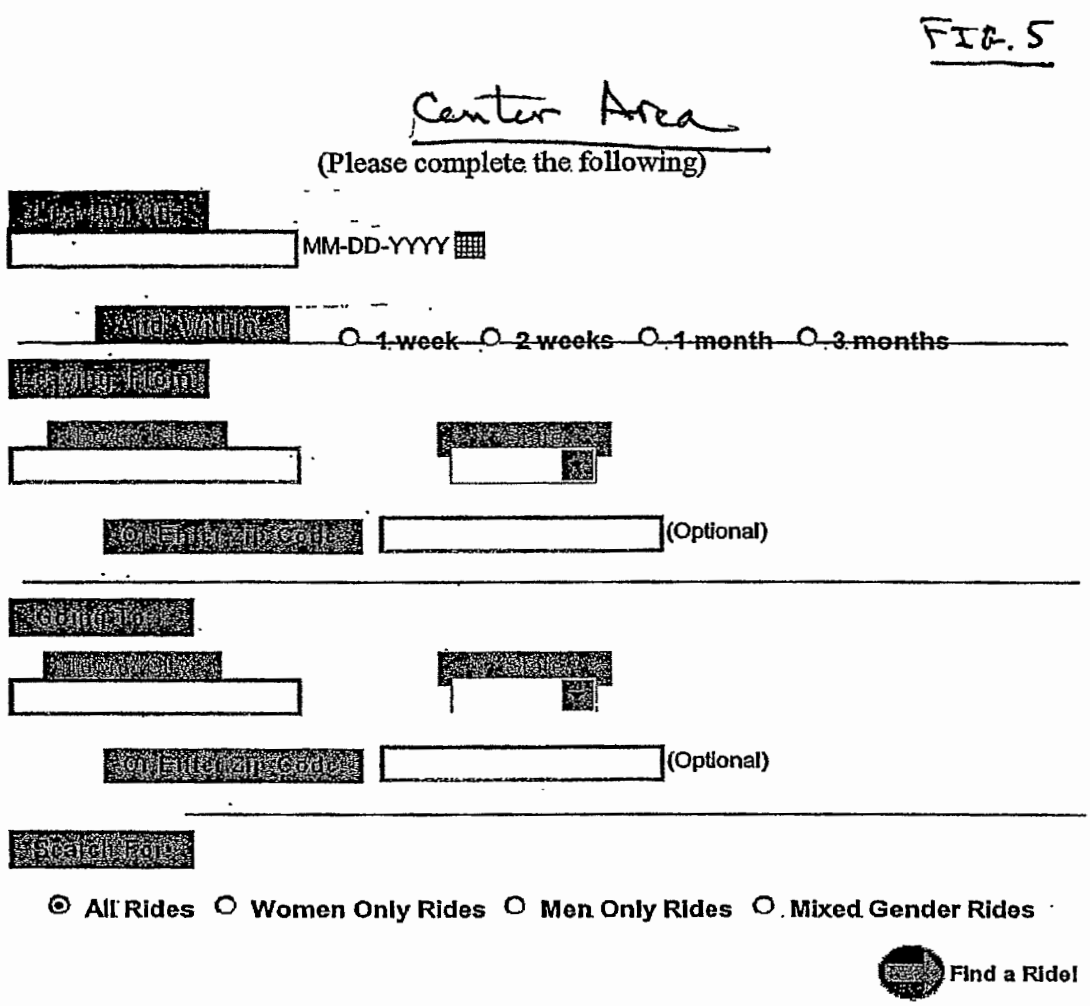

Center Area
(Please complete the following)
MM-DD-YYYY
1 week
2 weeks
1 month
3 months
(Optional)
(Optional)
All Rides
Women Only Rides
Men Only Rides
Mixed Gender Rides
Find a Ride!

FIG. 6

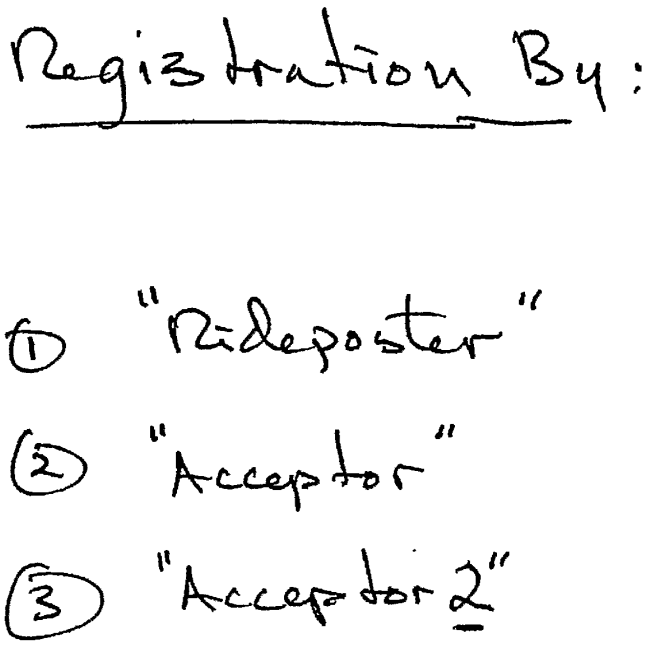


FIG. 7

"RidePoster" Registers – p. 1

Clyde | Rideposter | New York
171 East 90th St., 4B | NY | 10128
xxxxx | AAA11111A | NY
2127229257 | 1 1 1900
2127229258 | Male Female
Click here to check mandatory age limits on rides starting in some states

NOTE TO STUDENTS: For your security please enter your school

MIT | East Campus | A11111111111A

IMPORTANT: You MUST enter a valid email address that you can check immediately.
STUDENTS: Your school's email address is strongly preferred for security

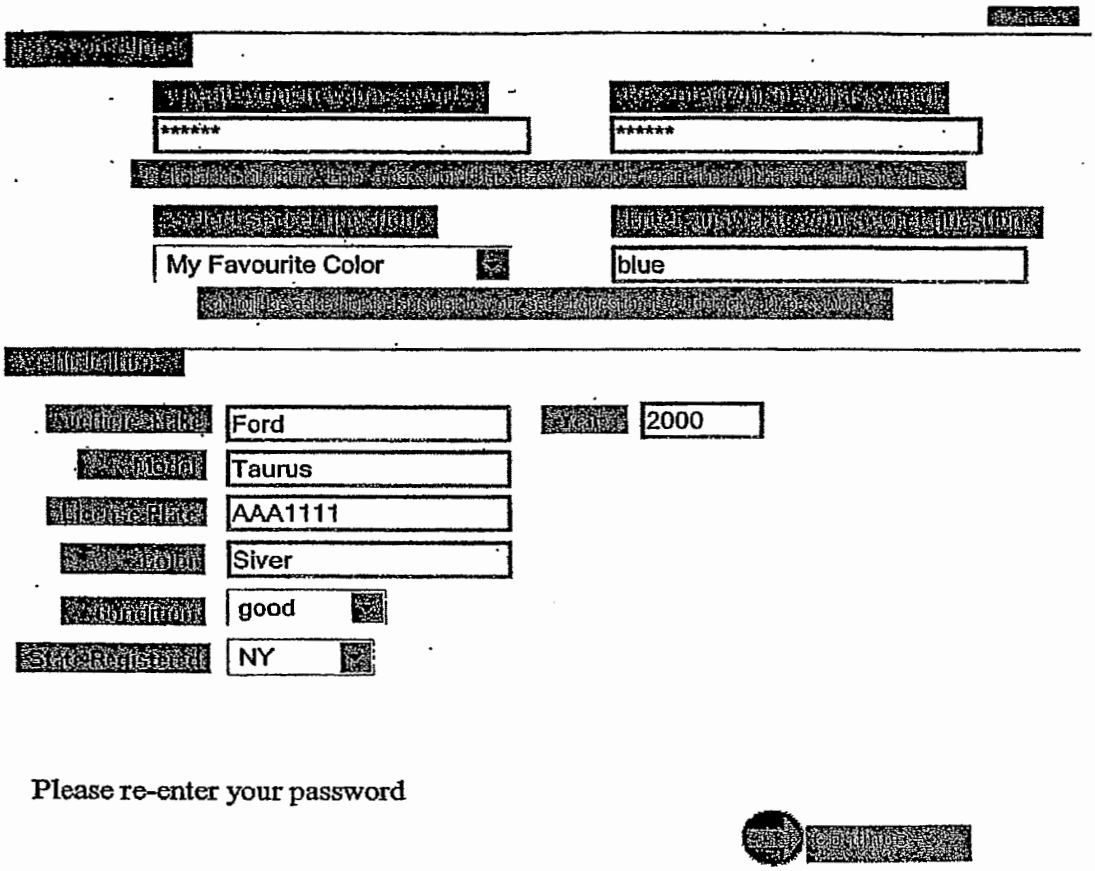
ClydePoster | clydemitchell@alum.mit.edu | clydemitchell@alum.mit.edu

7 character minimum for User Id: e.g., jeff950 (Don't use
Please enter a valid license number(minimum 9 characters)

7/90

FIG 8

RideFinder Registers - p. 2



Please re-enter your password

FIG. 9

RideRoster Register - p.3

NOTE: All of the data entered above, except your physical address and credit card data, will be disclosed to each person going on the ride, in order to improve the security of the ride for everyone.
Please review your personal information below.

Name: Clyde Rideposter
Address: 171 East 90th St., 4B
Address: xxxxx
Birth Date: 1-1-1900
Gender: Male
Telephone: 2127229257
Driver's License: AAA11111A
Email: clydemitchell@alum.mit.edu
School: MIT
Campus: East Campus
Student Id: A11111111111A
Vehicle: 2000 Ford, Taurus
Vehicle Condition: good
License Plate: AAA1111
Vehicle State Registration: USA,NY

You have to accept our Terms

9/90

FIG. 10

RidePoster Must Now Sign In as a User

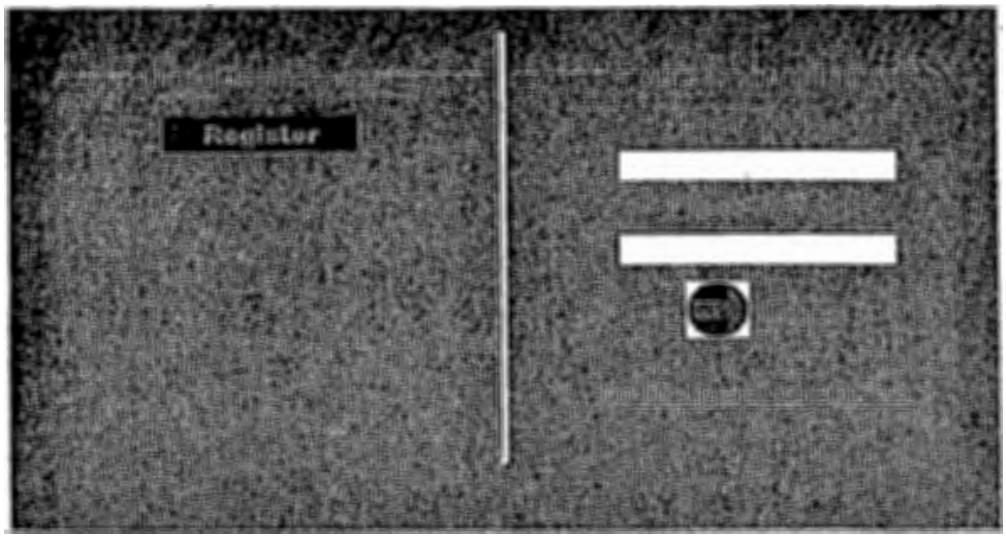


FIG. 11

RidePoster Rights. Email Confirmation

Clyde Mitchell

From: ridecheckTeam@ridecheck.com
Sent: Sunday, February 06, 2005 2:40 PM
To: clydemitchell@alum.mit.edu
Subject: Ridecheck Registration Information

Dear Clyde,

Thank you for registering with Ridecheck.com.

You now have access to a large number of rides. You can post rides yourself as well.

Here is your registration information:

User ID: ClydePoster
Password: cp1cp1

We look forward to helping you find rides to share!!

Sincerely,

The Ridecheck Team

http://www.ridecheck.com

FIG. 12

"Acceptor" Registers - p. 1

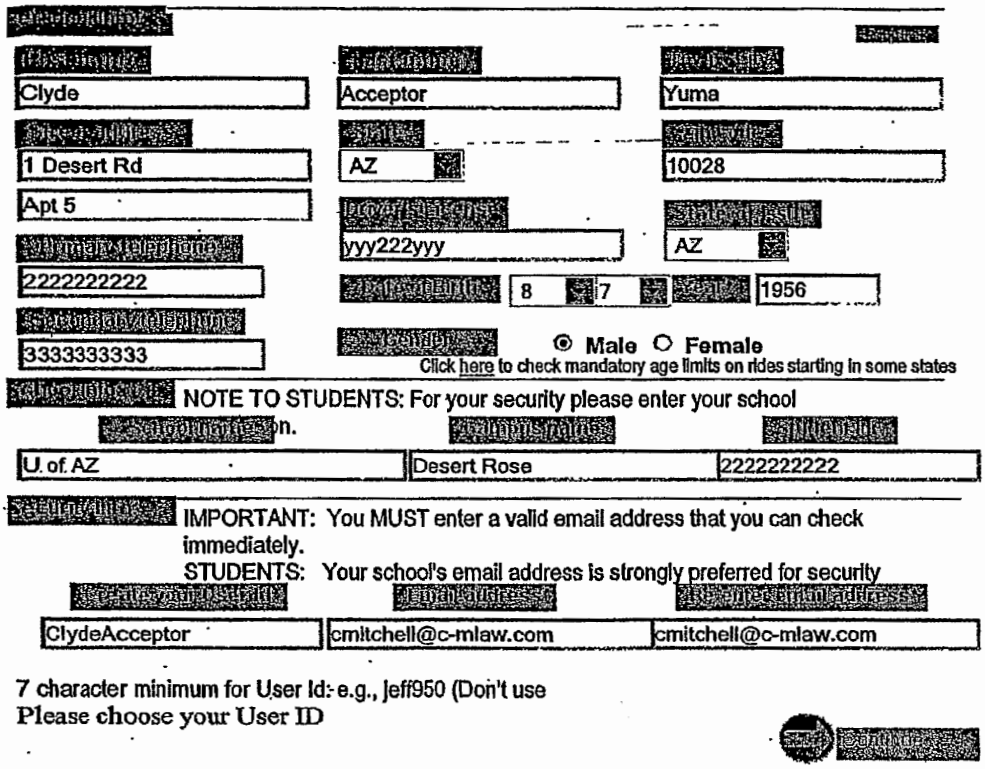


FIG. 13

Acceptor Registers - p. 2

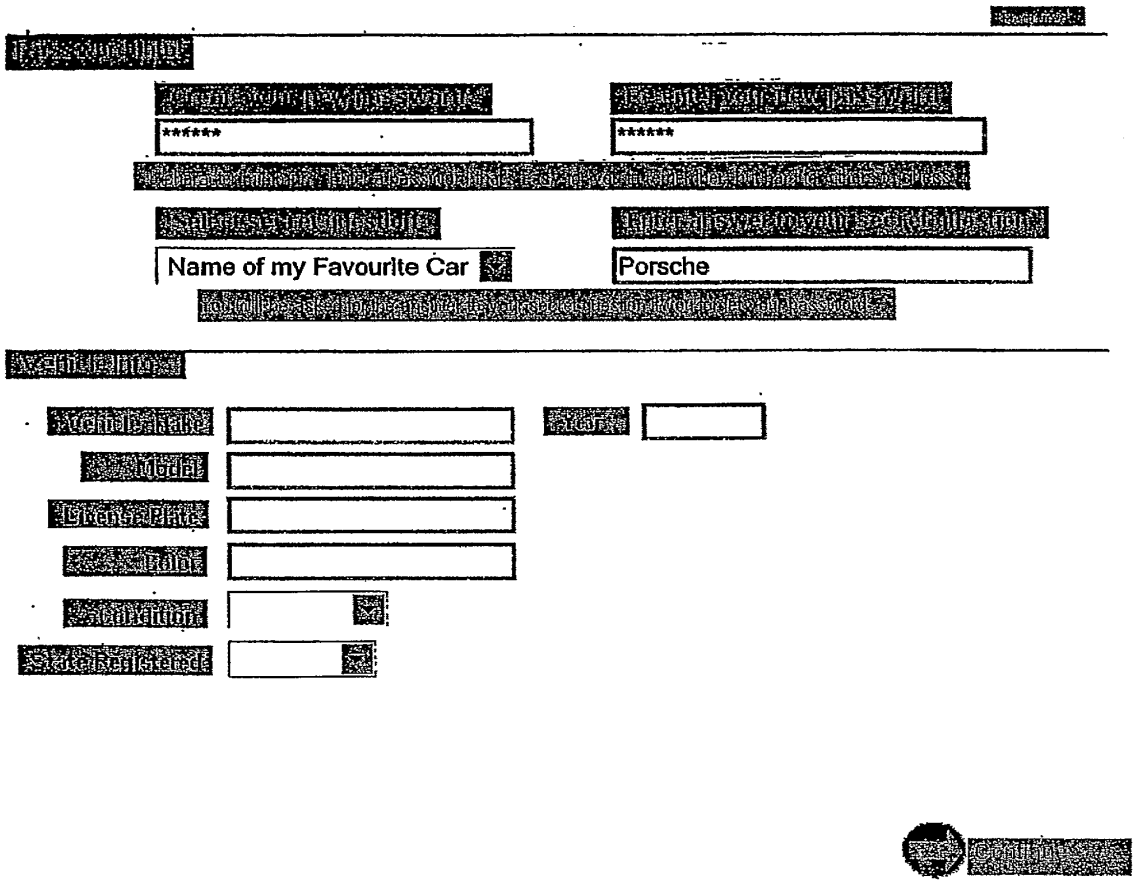


FIG. 14

Acceptor Registers - p. 3

NOTE: All of the data entered above, except your physical address and credit card data, will be disclosed to each person going on the ride, in order to improve the security of the ride for everyone.
Please review your personal information below.

Name: Clyde Acceptor
Address: 1 Desert Rd
Address: Apt 5
Birth Date: 8-7-1956
Gender: Male
Telephone: 2222222222
Driver's License: yyy222yyy
Email: cmitchell@c-mlaw.com
School: U of AZ
Campus: Desert Rose
Student Id: 2222222222
Vehicle: ,
Vehicle Condition:
License Plate:
Vehicle State Registration:

You have to accept our Policy

FIG. 15

Acceptor Must Now Sign In

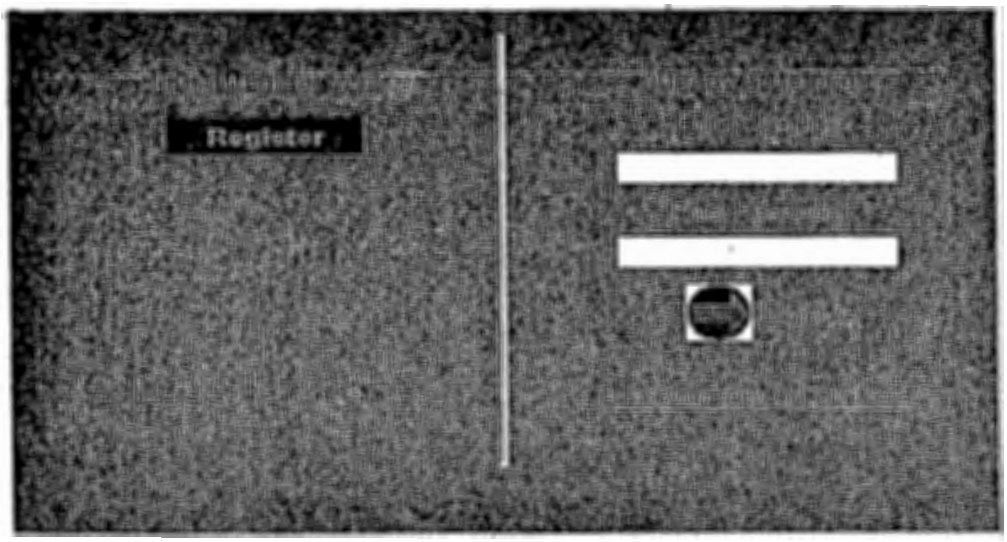


FIG. 16

Acceptor's Reg'n. Confirmation Email

Clyde Mitchell

From: ridecheckTeam@ridecheck.com
Sent: Sunday, February 06, 2005 3:02 PM
To: clydemitchell@alum.mit.edu
Subject: Ridecheck Registration Information

Dear Clyde,

This is just to inform you that you have updated your registration information with Ridecheck.com.

If you think that this is a mistake, please log back into our site and verify your information.

Here is your registration information:

User ID: clydeacceptor
Password: ca1ca1

We look forward to helping you find rides to share!!

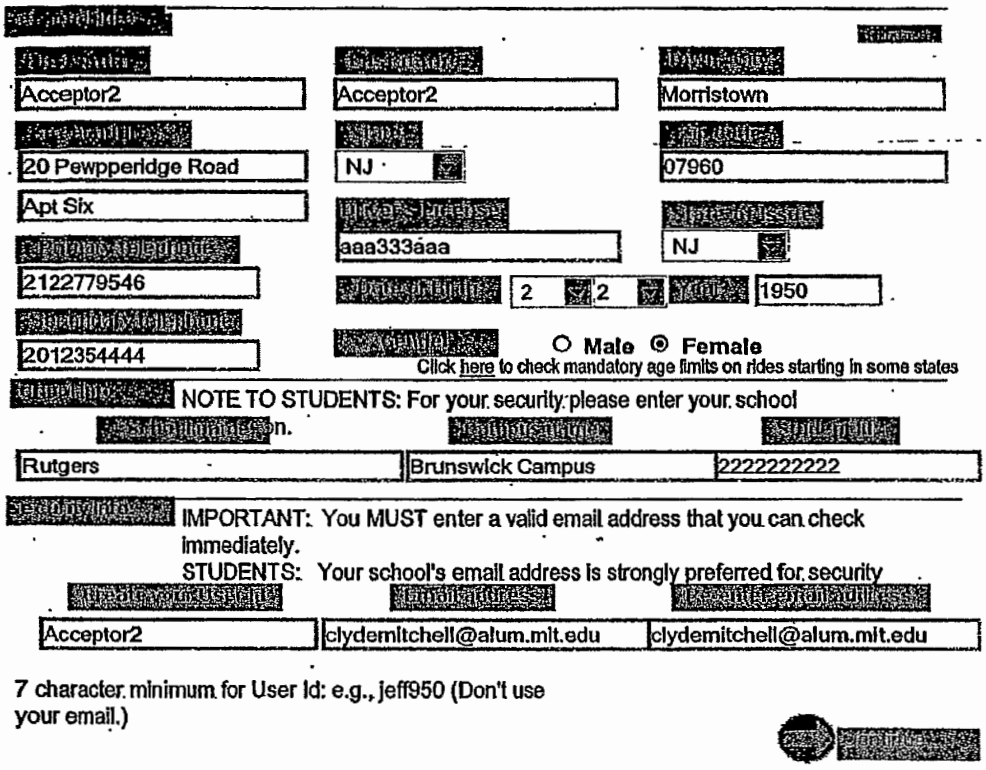
Sincerely,

The Ridecheck Team

http://www.ridecheck.com.

FIG. 17

"Acceptor2" Registers - p. 1



Note - p. 2 not printed.

Fig. 18

Acceptor 2 Registers – p.3

NOTE: All of the data entered above, except your physical address and credit card data, will be disclosed to each person going on the ride, in order to improve the security of the ride for everyone.
Please review your personal information below.

Agreements

Name: Acceptor2 Acceptor2
Address: 20 Pewpperidge Road
Address: Apt Six
Birth Date: 2-2-1950
Gender: Female
Telephone: 2122779546
Driver's License: aaa333aaa
Email: clydemitchell@alum.mit.edu
School: Rutgers
Campus: Brunswick Campus
Student Id: 2222222222
Vehicle: ,
Vehicle Condition:
License Plate:
Vehicle State Registration:

You have to accept our Policy

FIG. 19

Acceptor 2 Must Now Sign In

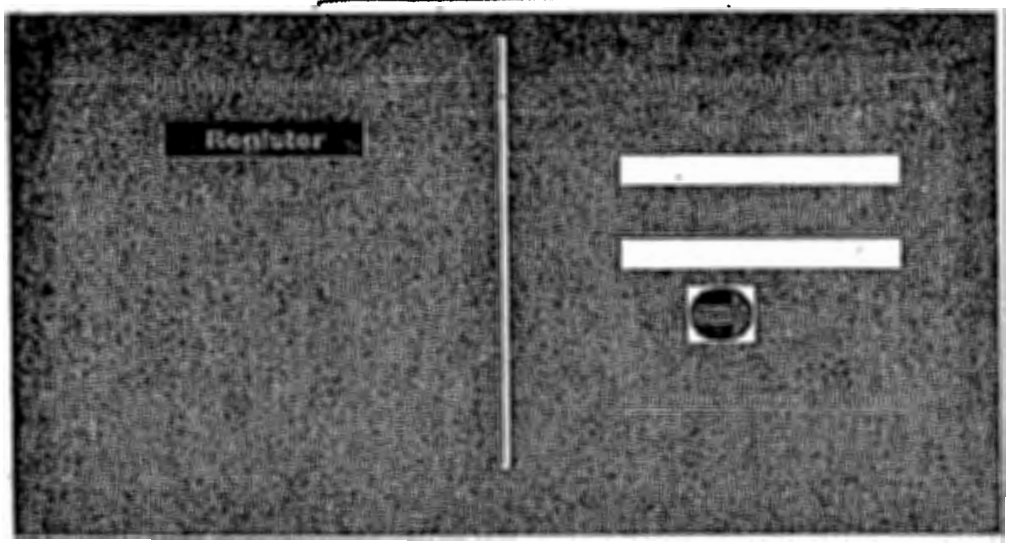


FIG. 20

Acceptor2's Regis. Confirmation Email

Clyde Mitchell

From: rideckeckTeam@ridecheck.com
Sent: Sunday, February 06, 2005 3:09 PM
To: clydemitchell@alum.mit.edu
Subject: Ridecheck Registration Information

Dear Acceptor2,

Thank you for registering with Ridecheck.com.

You now have access to a large number of rides. You can post rides yourself as well.

Here is your registration information:

User ID: Acceptor2
Password: acc222

We look forward to helping you find rides to share!!

Sincerely,

The Ridecheck Team

http://www.ridecheck.com

FIG. 21

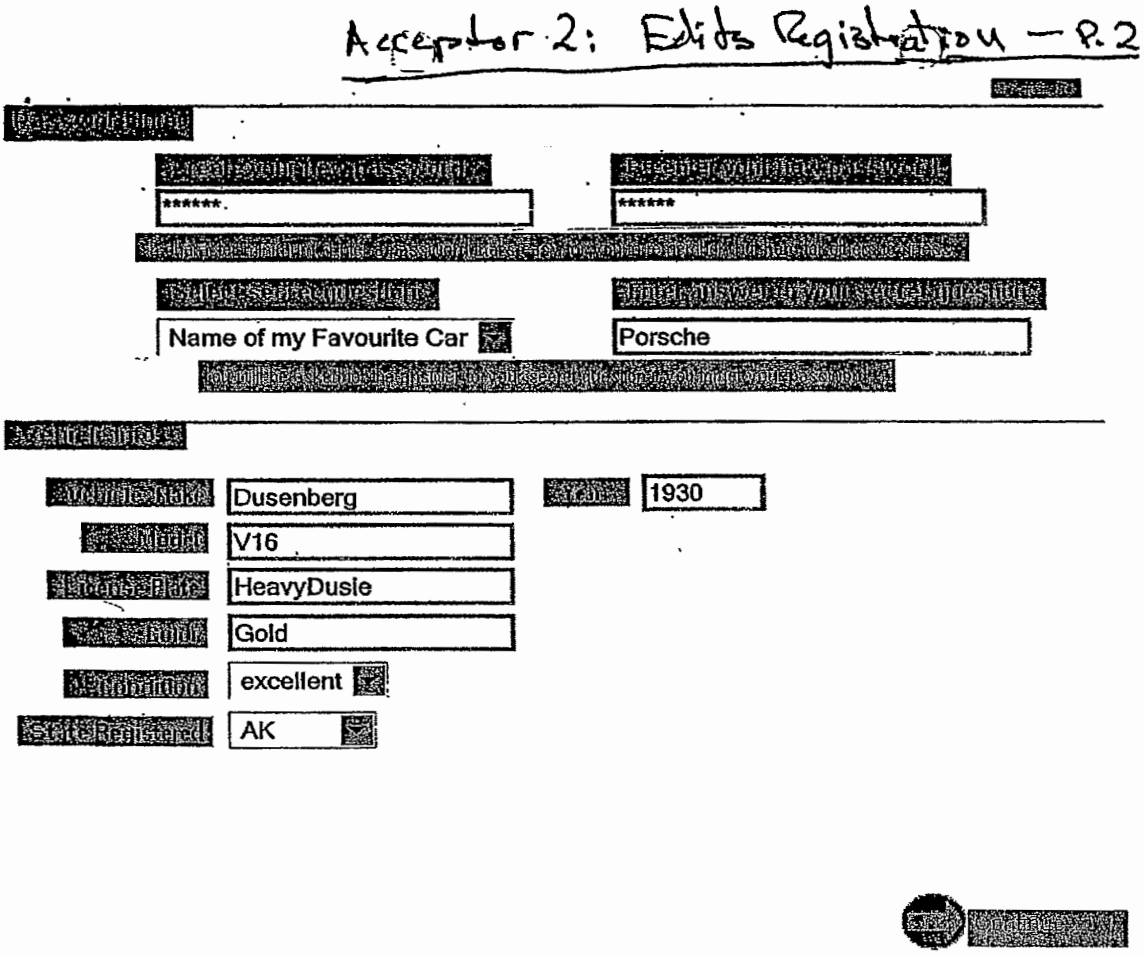

Acceptor 2: Edits Registration – P.2
******
******
Name of my Favourite Car
Porsche
Dusenberg
1930
V16
HeavyDusie
Gold
excellent
AK

Fig. 22

Acceptor 2: Confirmation of Edit

Clyde Mitchell

From: rideckeckTeam@ridecheck.com
Sent: Sunday, February 06, 2005 3:31 PM
To: clydemitchell@alum.mit.edu
Subject: Ridecheck Registration Information

Dear Acceptor2,

This is just to inform you that you have updated your registration information with Ridecheck.com.

If you think that this is a mistake, please log back into our site and verify your information.

Here is your registration information:

User ID: acceptor2
Password: acc222

We look forward to helping you find rides to share!!

Sincerely,

The Ridecheck Team

http://www.ridecheck.com

FIG. 23

Acuptor 2 Signs Out

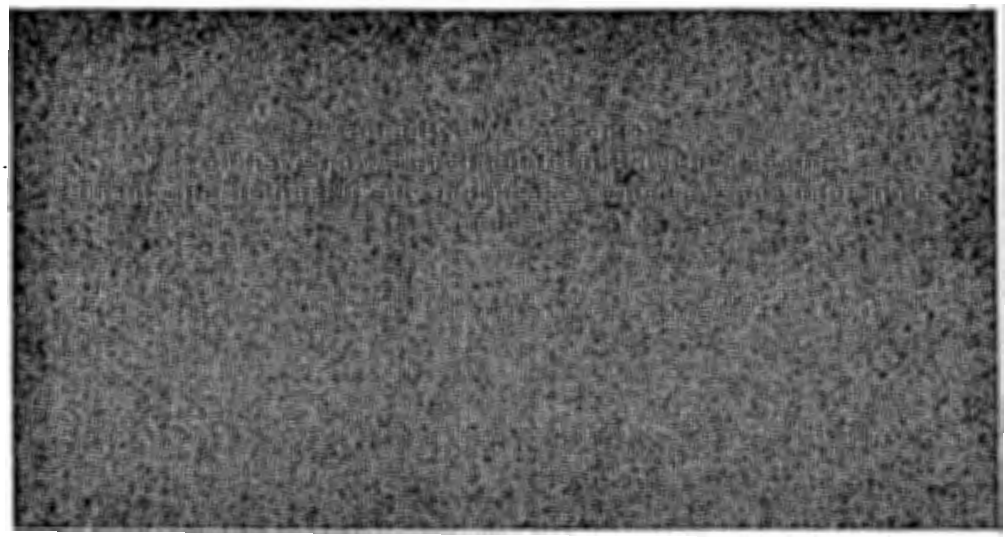


FIG. 24

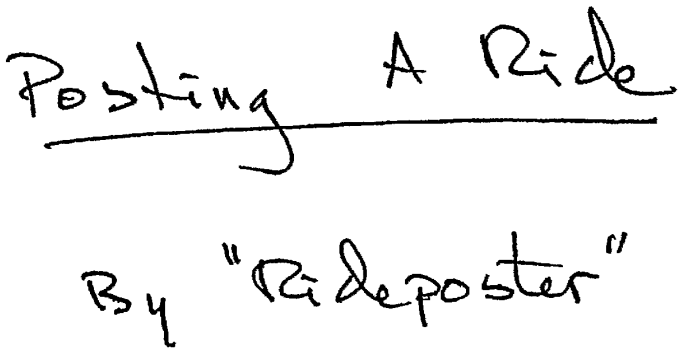


FIG. 25

"Rideposter" Signs Into Post a Ride

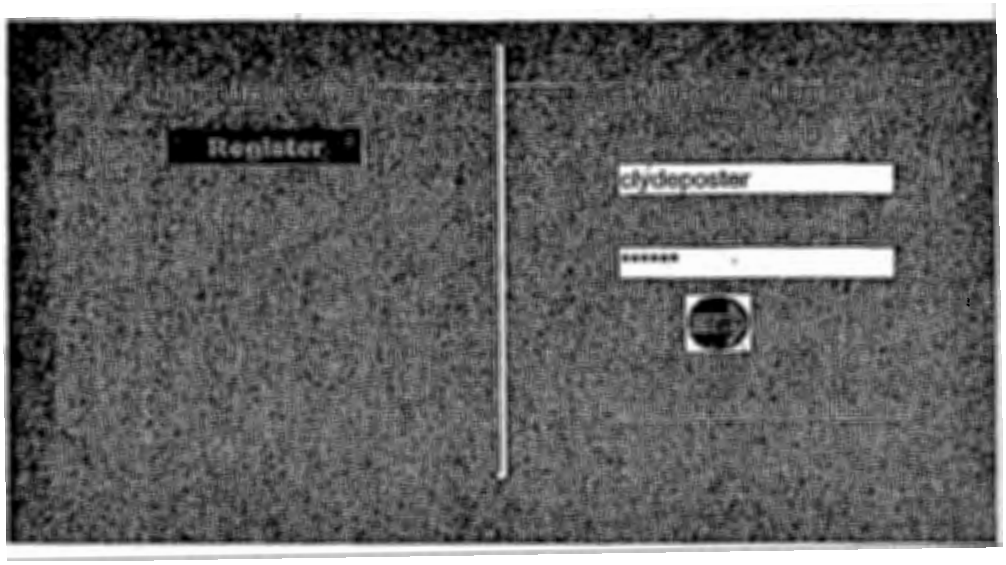


FIG. 26

Left SideBar, After Signing In

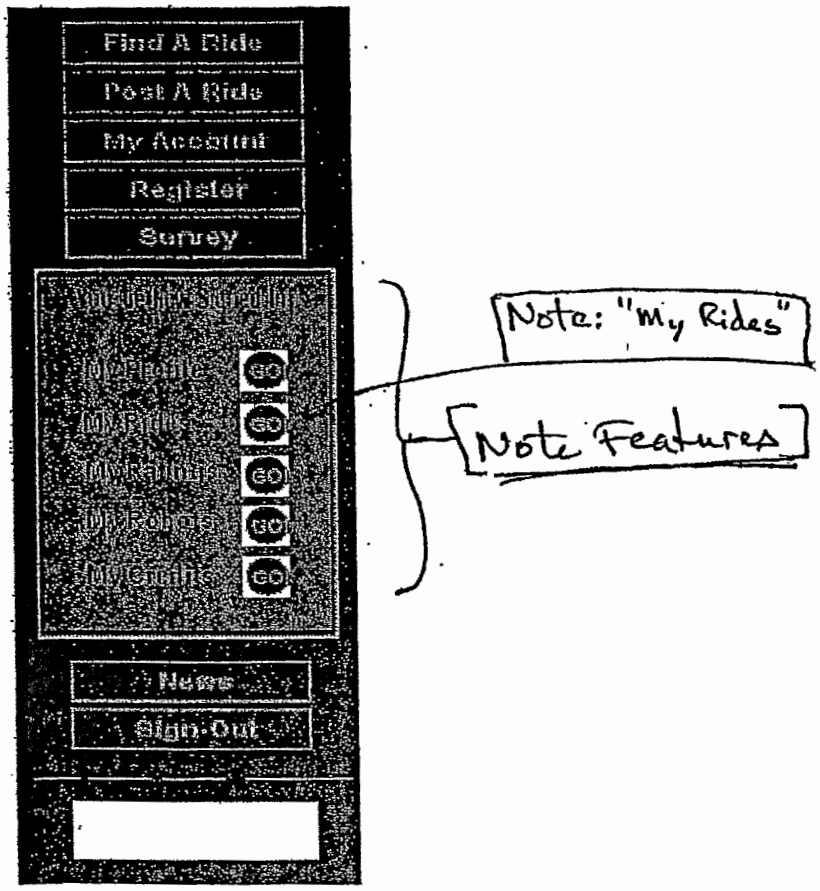


FIG. 27

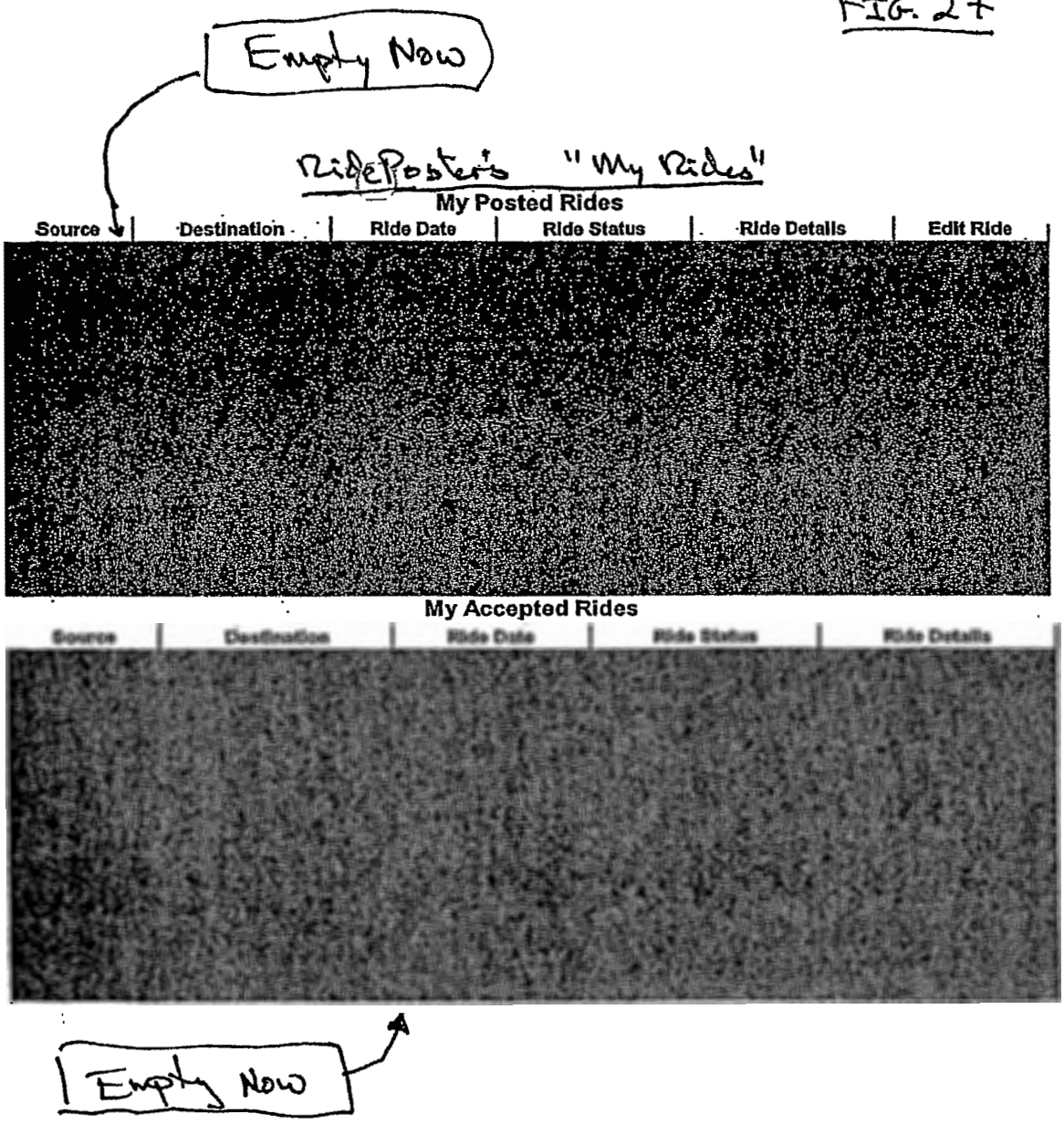

Empty Now
RidePosters "My Rides"
My Posted Rides
Source
Destination
Ride Date
Ride Status
Ride Details
Edit Ride
My Accepted Rides
Source
Destination
Ride Date
Ride Status
Ride Details
Empty Now

Fig 28

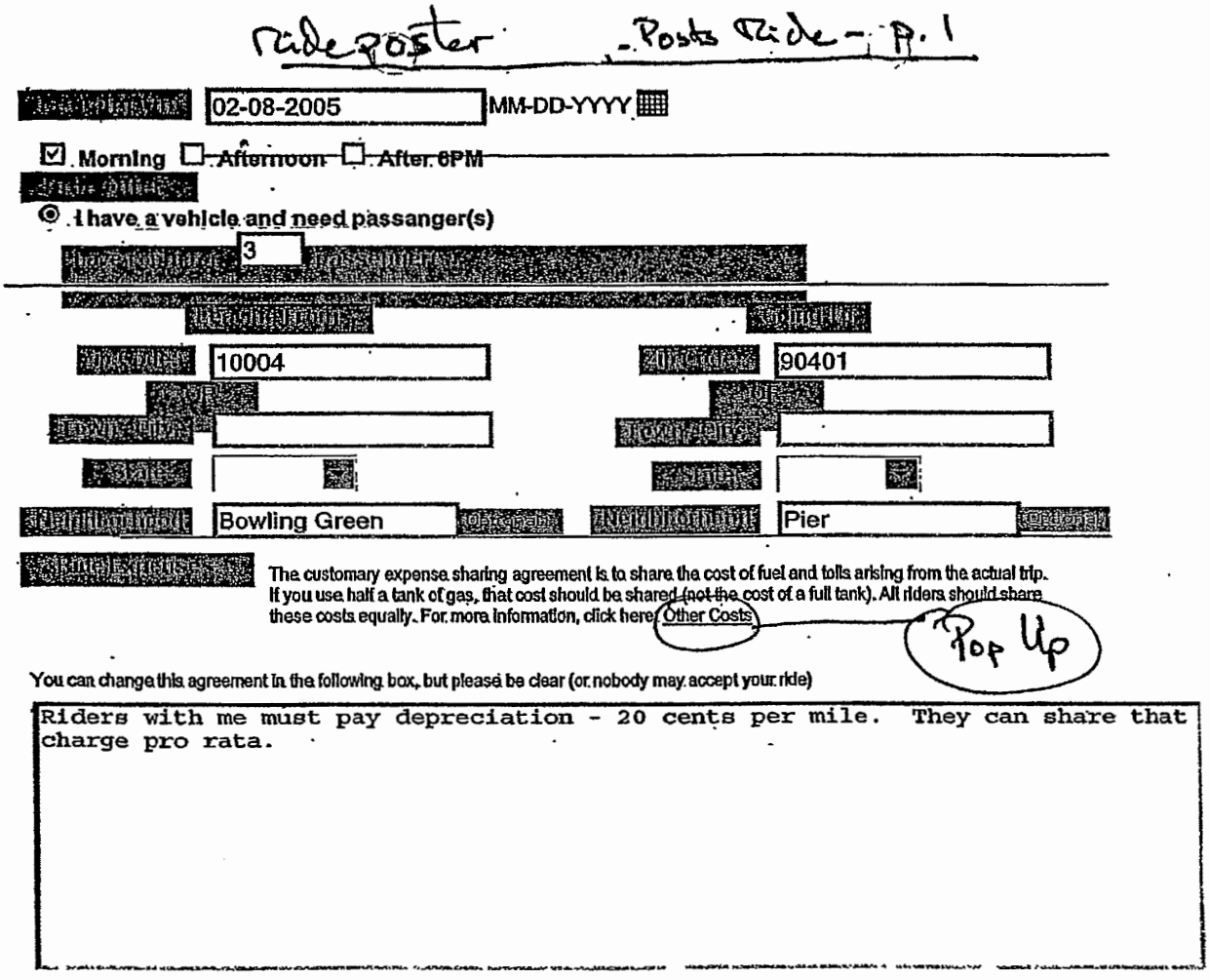

Ride Poster - Posts Ride - p. 1
02-08-2005
MM-DD-YYYY
Morning
Afternoon
After 6PM
I have a vehicle and need passanger(s)
3
10004
90401
Bowling Green
Pier
The customary expense sharing agreement is to share the cost of fuel and tolls arising from the actual trip. If you use half a tank of gas, that cost should be shared (not the cost of a full tank). All riders should share these costs equally. For more information, click here Other Costs
Pop Up
You can change this agreement in the following box, but please be clear (or nobody may accept your ride)
Riders with me must pay depreciation - 20 cents per mile. They can share that charge pro rata.

FIG. 29

"Other Costs" Pop Up

(Informs user of other costs that might arise during the ride.)

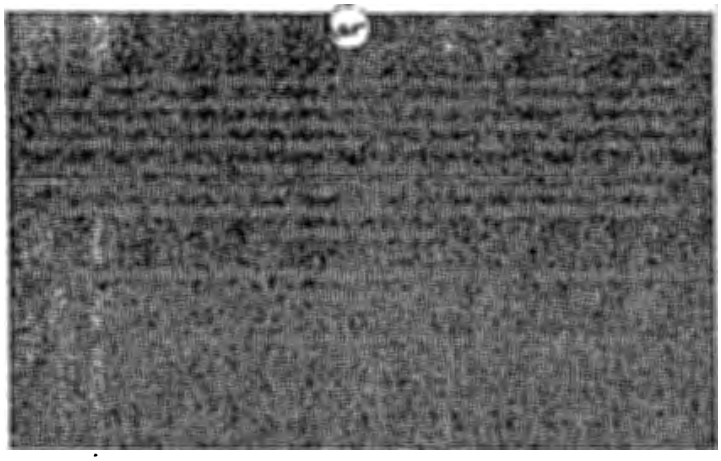


FIG. 30

RideBoston Posts Ride-, ,2

I will be the only driver because it is my vehicle

I will share the driving

I will not drive, even though it is my vehicle

I am a licensed driver: Yes

If 'Yes' License Number: AAA11111A

Expiration Date: 02-30-2006 State Issued: NY

Error!

Save on File

I do not smoke, and I will ride with non-smokers only

I plan to smoke

I do not smoke, but will ride with smokers who agree to smoke outside the vehicle

I will travel with riders of either gender

I will only travel with women because I am a woman

I will only travel with men because I am a man

Please enter a valid License Expiration Date (Must be later than todays date)

Error Alert Field

FIG. 31

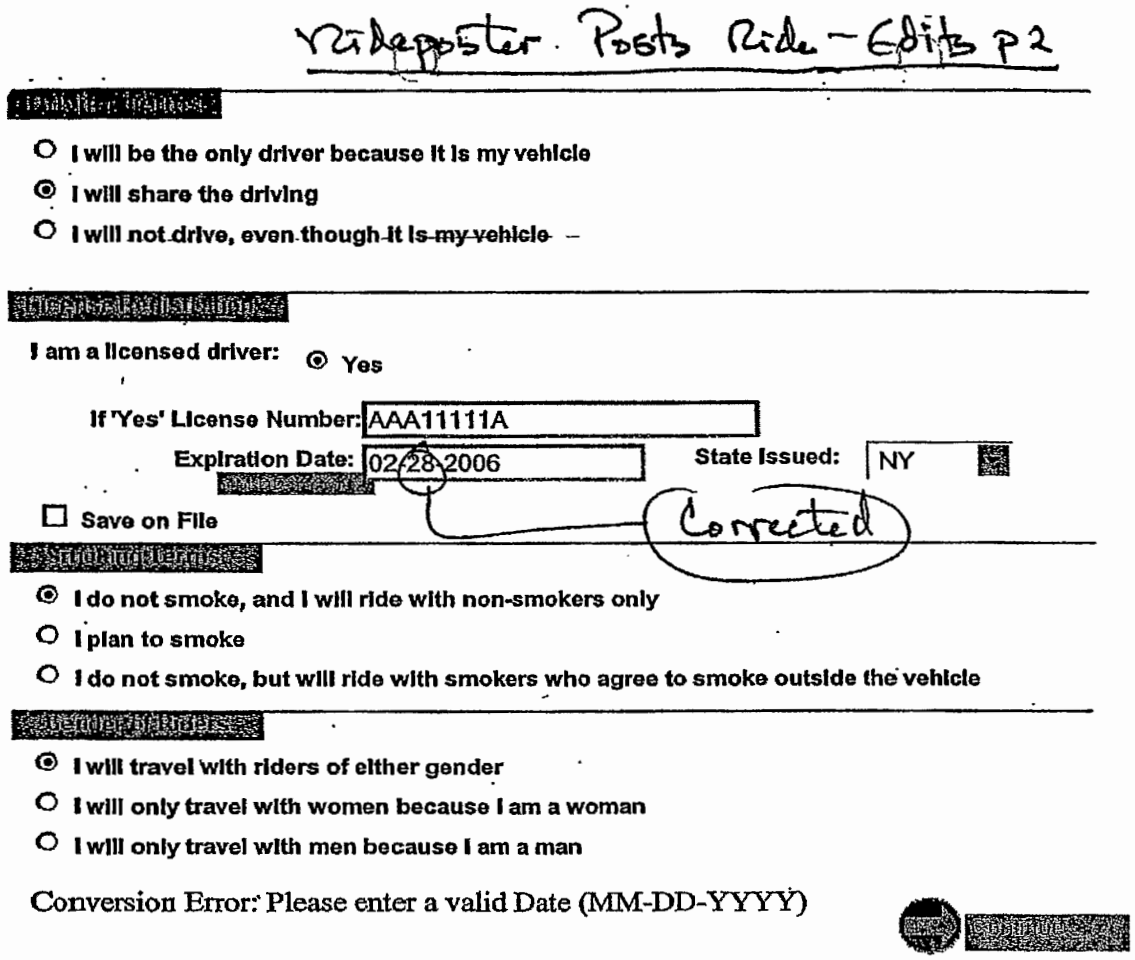

Ridepooler. Posts Ride - Edits p2
I will be the only driver because it is my vehicle
I will share the driving
I will not drive, even though it is my vehicle
I am a licensed driver:
Yes
If 'Yes' License Number:
AAA11111A
Expiration Date:
02-28-2006
State Issued:
NY
Save on File
Corrected
I do not smoke, and I will ride with non-smokers only
I plan to smoke
I do not smoke, but will ride with smokers who agree to smoke outside the vehicle
I will travel with riders of either gender
I will only travel with women because I am a woman
I will only travel with men because I am a man
Conversion Error: Please enter a valid Date (MM-DD-YYYY)

FIG. 32

rideposter Posts Ride - P.B

Optional - use sparingly.
List all other rules that you want to set. If you are too picky, you may not get a rider.
Good Example: I will need to picked up at the corner of Maple St and Fifth Avenue, in Brookdale. I am allergic to pets and can't be in the same car with them. I dislike music while driving.
Bad Example: I need to ride with nice people and our pets need to get along. (It's too open-ended.)

Leaving from Bowling Green and dropping off at the Pier. No pets. Only rock will be played. Otherwise, bring headsets.

Vehicle Make: Ford | Year: 2000 | Color: Siver
Model: Taurus | Condition: good
License Plate: AAA1111 | State: NY

- The vehicle is registered in my name
- The vehicle is registered in this person's name: Momma Rideposter
- [x] Save this vehicle information for future reference.

FIG. 33

Rideposter Accepts Posting

Important!
Please review your ride listing below carefully because it will be used by others as acceptance criteria and it will constitute a binding offer.
[This site is free until further notice, which may occur at any time.]
[You are required to pay a fee of US$2.00 in order to post your offer. Please have your credit card ready to make your payment.]
Thank You.

If no one accepts your ride, you will receive a full credit to use to post an additional ride.

Accept Cancel

The price that we charge the person posting the ride, US$2.00, is lower than the price that we charge each person accepting a ride, US$4.00. We believe that this arrangement is a fair allocation of total cost. The person posting the ride spends additional time at the site completing the details and takes the risk that nobody may accept the posted ride. Consequently, the ride poster pays a lower price.

The ride is scheduled to depart on: **Tue, 8 Feb 2005**
The ride will depart from: **New York, NY (Neighbourhood: Bowling Green)**
The ride will end in: **Santa Monica, CA (Neighbourhood: Pier)**
Smoking preferences: **I do not smoke, and I will ride with non-smokers only**
The vehicle used will be: **2000, Ford Taurus**
The License Plates of the vehicle: **AAA1111**
The condition of the vehicle used is: **good**
The additional ride information: **Leaving from Bowling Green and dropping off at the Pier. No pets. Only rock will be played. Otherwise, bring headsets.**
Expense Agreement: **Riders with me must pay depreciation - 20 cents per mile. They can**

Ride Summary

Scrolls

FIG. 34

Rideposter - Sees Ride on "My Rides" Screen

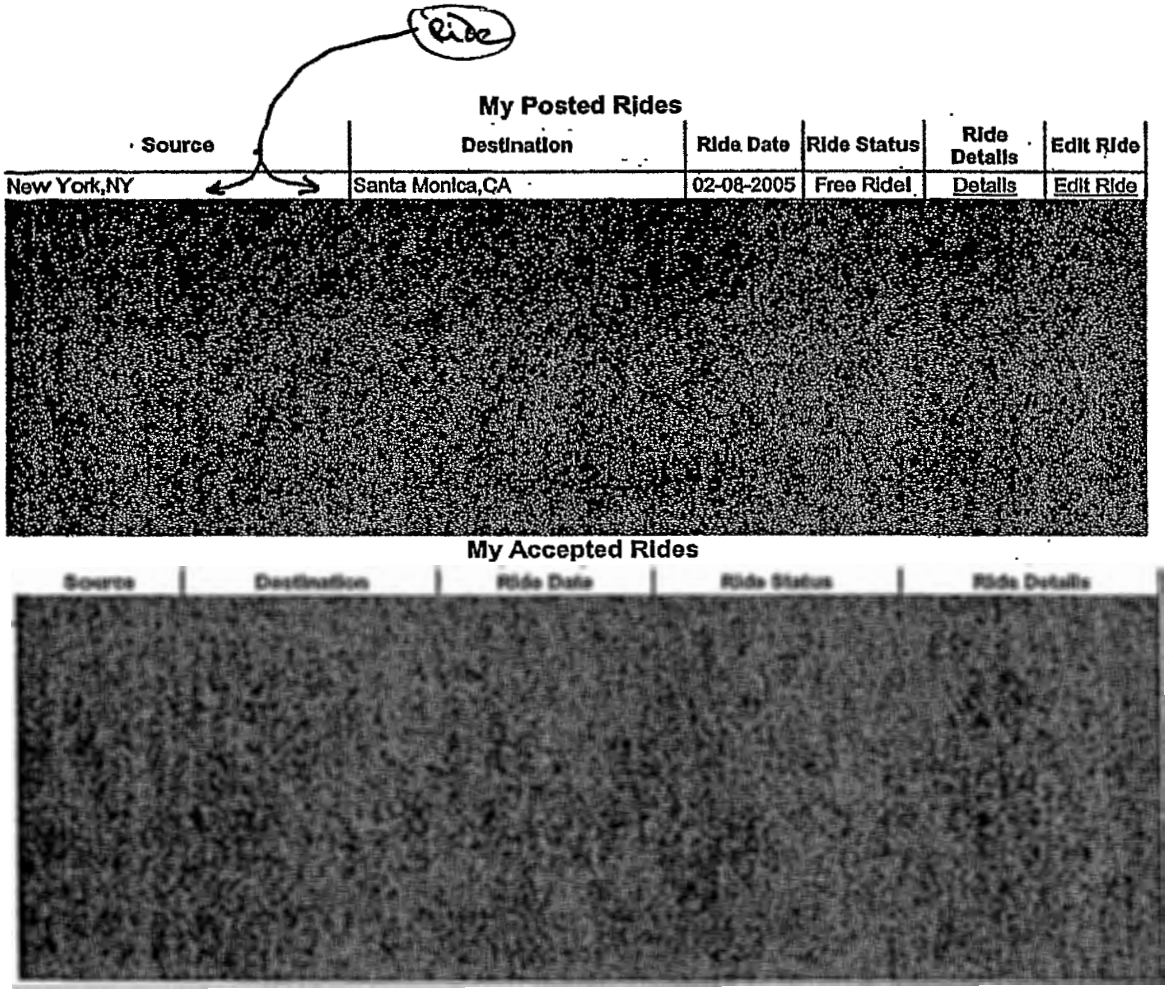


FIG. 35

Ridepostes Receives Email Confirm of Posted Ride

Clyde Mitchell

From: ridecheckTeam@ridecheck.com
Sent: Sunday, February 06, 2005 3:56 PM
To: clydemitchell@alum.mit.edu
Subject: Ridecheck Ride Updated

Dear Clyde,

This is just to inform you that you have posted a ride with Ridecheck.com.

The ride you posted is as follows:

Originating from: New York, NY
Going to: Santa Monica, CA
Ride Date: Tue, 8 Feb 2005, Morning
Ride ID: e97562520af000f501b99786ccd609e3

We wish you luck in sharing your ride.!!

Thank you for using our services.

Yours Sincerely,

The Ridecheck Team

http://www.ridecheck.com

FIG. 36

"My Rides" - Details of Ride Posted - 10004 to 90401

Ride leaving from New York, NY and going to Santa Monica, CA

The ride is scheduled to depart on: **Tue, 8 Feb 2005 ,Morning**
The ride will depart from: **New York, NY (Neighbourhood: Bowling Green)**
The ride will end in: **Santa Monica, CA (Neighbourhood: Pier)**
Number of possible riders: **3**
Number of riders who have accepted this ride: **0**
Smoking preferences: **I do not smoke, and I will ride with non-smokers only**
Gender preferences: **Male/Female**
Driving preferences: **I will share driving**
The vehicle used will be: **2000, Ford Taurus**
The condition of the vehicle used is: **good**
The additional ride information: **Leaving from Bowling Green and dropping off at the Pier. No pets. Only rock will be played. Otherwise, bring headsets.**
Expense Agreement: **Riders with me must pay depreciation - 20 cents per mile. They can share that charge pro rata.**
Trip ID: **e97562520af000f501b99786ccd609e3**

FIG. 37

Ride Poster Signs Out

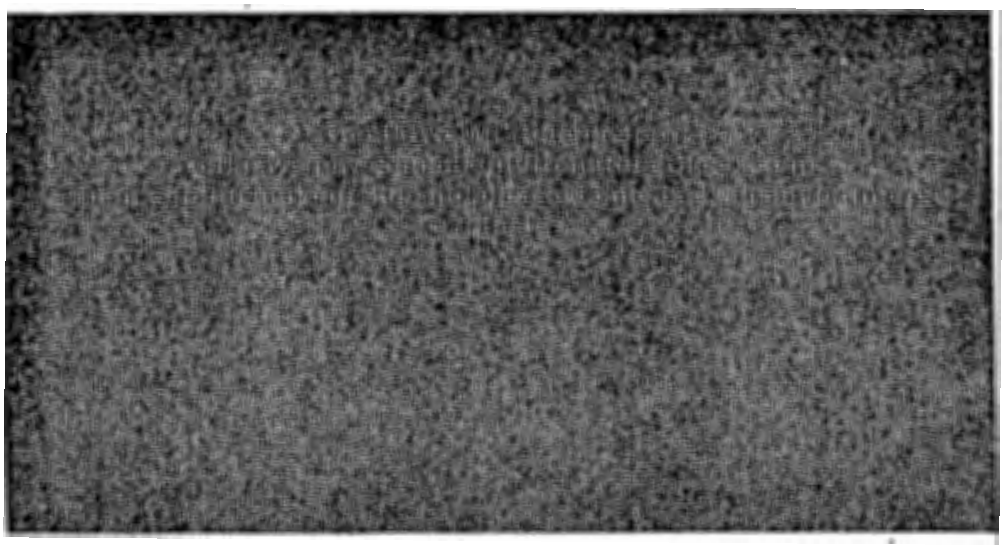


FIG. 38

First

Ride Acceptance

(3 additional riders*)

① RidePoster checks on ride to edit, and learns ride is already accepted by Mr. PD.

② Confirms re Mr PD's acceptance.

---

* Besides Mr. Rideposter.

FIG. 39

Rideposter - Signs In to Check/Edit a Ride

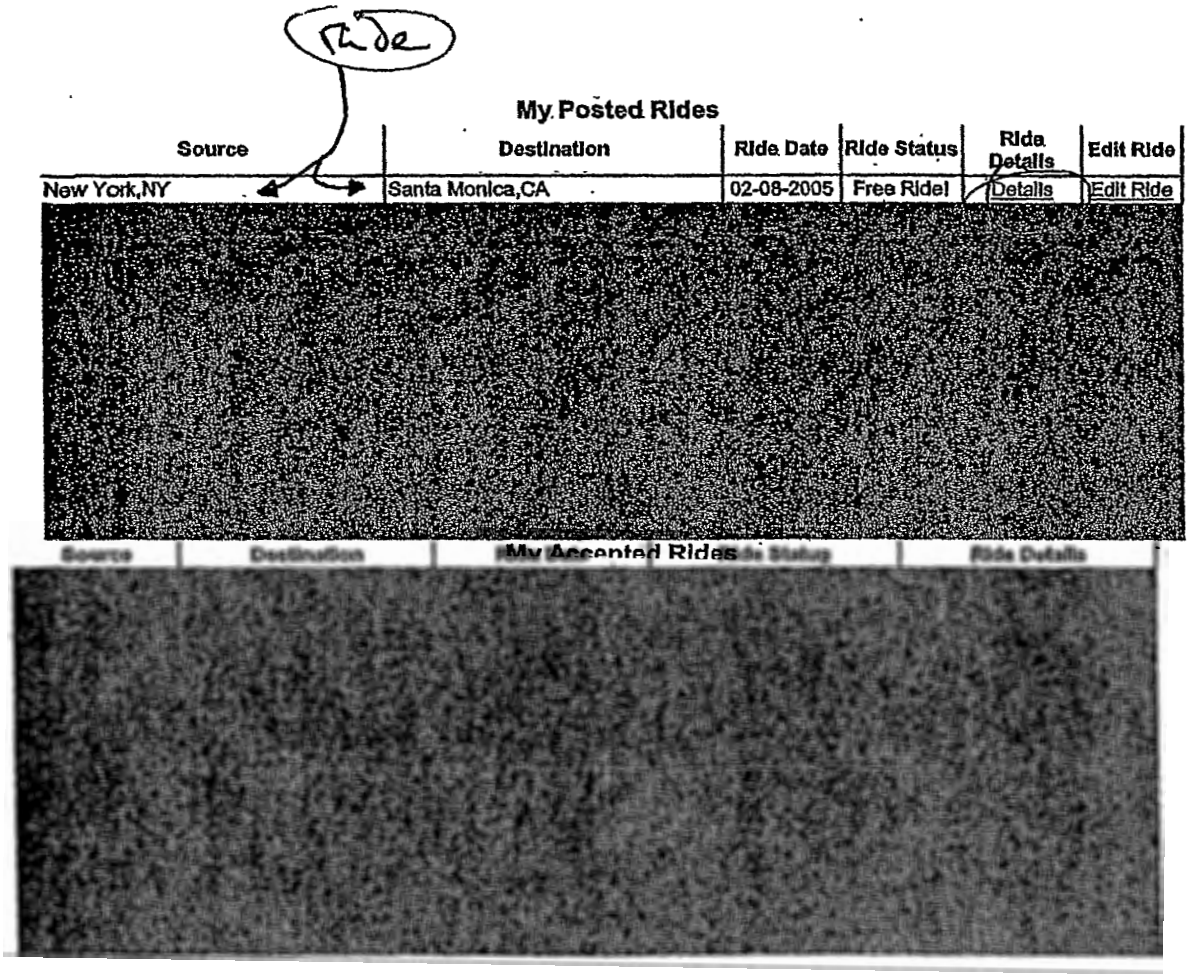


FIG. 40

Ridepostar Cannot Edit Ride Because Mr. PD Has Accepted the Ride Already

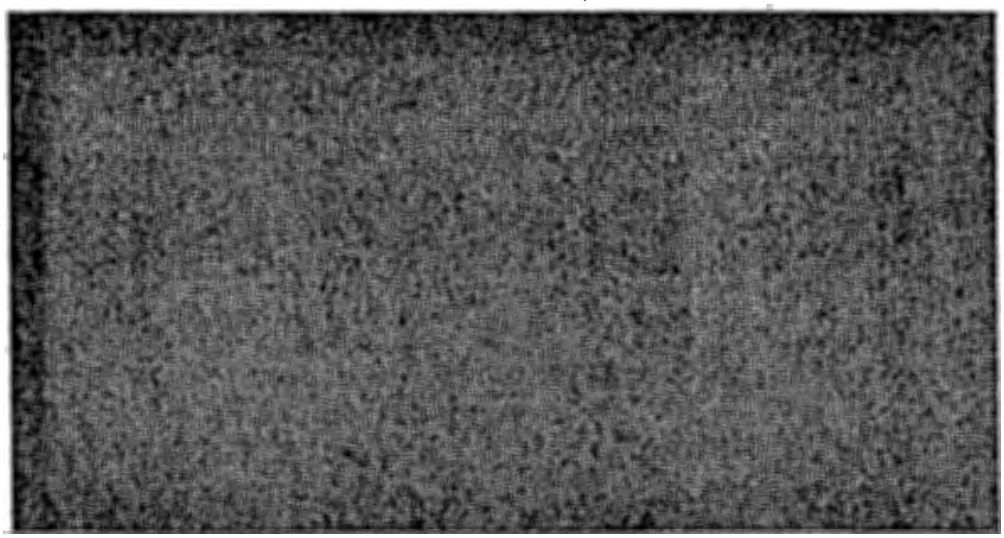


FIG. 41

My Ride Screen - Details - Shows Ride Accepted

Ride leaving from New York, NY and going to Santa Monica, CA

The ride is scheduled to depart on: Tue, 8 Feb 2005 ,Morning
The ride will depart from: New York, NY (Neighbourhood: Bowling Green)
The ride will end in: Santa Monica, CA (Neighbourhood: Pier)
Number of possible riders: 3
Number of riders who have accepted this ride: 1 ← Note
Smoking preferences: I do not smoke, and I will ride with non-smokers only
Gender preferences: Male/Female
Driving preferences: I will share driving
The vehicle used will be: 2000, Ford Taurus
The condition of the vehicle used is: good
The additional ride information: Leaving from Bowling Green and dropping off at the Pier. No pets. Only rock will be played. Otherwise, bring headsets.
Expense Agreement: Riders with me must pay depreciation - 20 cents per mile. They can share that charge pro rata.
Trip ID: e97562520af000f501b99786ccd609e3

Note: Mr. FD has accepted the ride.

Confirming Acceptance Email to "Rideposter" re P. Deedwaniya Acceptance FIG. 42

Clyde Mitchell

From: rideCheckTeam@ridecheck.com
Sent: Sunday, February 06, 2005 4:06 PM
To: clydemitchell@alum.mit.edu
Subject: Ridecheck Ride Accepted

Dear Clyde,

THIS IS YOUR CONFIRMATION FROM RIDECHECK.COM. THIS CONFIRMATION CONTAINS IMPORTANT INFORMATION CONCERNING FINALIZING YOUR RIDE FOR THE DATE SET FORTH BELOW. KINDLY FOLLOW THE SUGGESTIONS MADE BELOW TO MAKE THE RIDE SAFE AND PLEASANT FOR YOU AND YOUR FELLOW RIDERS.

Ride Summary:

The ride is scheduled to depart on: Tue, 8 Feb 2005

The ride will depart from: New York, NY

The ride destination is: Santa Monica, CA

Ride ID: e97562520af000f501b99786ccd609e3

Vehicle Information:
Vehicle Make: Ford
Year: Sun Feb 06 14:56:19 CST 2000
Color: Siver
Model: Taurus
Condition: good
License plate number: AAA1111
Issuing state: USA,NY

Ride Poster Information:

Name:Clyde Rideposter
From: New York, USA,NY
Email address: clydemitchell@alum.mit.edu
First telephone number: 2127229257
Second telephone number: 2127229258
Age: 105
Last six digits of the ride riders's Drivers License: 11111A

Last six digits of the rider's School ID: 11111A

Ride Acceptor Information:

Name:Pawan Deedwaniya
From: Cambridge, USA,MA
Email address: pawand@mit.edu
First telephone number: 9142042924
Age: 21
Last six digits of the ride riders's Drivers License: 221257

Last six digits of the rider's School ID: 915124

Recommendations:

42/90

We strongly recommend the following:

FIG. 43

First, each of you should confirm the above information by meeting briefly with each of your co-riders and the rider with the vehicle. (You may want to delay the meeting if you are expecting additional riders to accept the ride. We will let you know as soon as we know.) Consider meeting them after class at a coffeehouse, a college building, such as a library, cafeteria, or student center, or some other public place, near a place where you can see the vehicle. (You should not meet at a private residence or apartment or get into the vehicle at this point.)

Second, each rider should check-out the rider with the vehicle: his or her student ID, drivers? license and vehicle license information. Compare that information and his or her vehicle with the above information in this Confirmation.

Third, the rider with the vehicle should check-out the accepting riders: their student IDs and/or drivers licenses. Compare that information with the above information in the Confirmation.

Each rider (including the driver) must be 18 or older, except in the following states. If your ride originates in the District of Columbia, Indiana, Mississippi, or Pennsylvania, each rider must be 21 or older (including the driver).

For rides originating in Canada, each rider (including the driver) must be 18 or older, except in the following provinces, where each rider must be 19 or older: British Columbia, New Brunswick, Newfoundland, Northwest Territories, Nova Scotia and the Yukon.

Fourth, examine the vehicle to make sure that it fits the description above.

In most cases, there should not be any significant discrepancies. If there are any discrepancies, please see below because we are concerned about your safety and security.

Discrepancies:

If any rider presents any significant discrepancy from the above information, the rider with the vehicle should cancel the problematic rider by telling the problematic rider. Also, go to our website and then click on Contact Us, then Complaint, and then click on Rider Discrepancy. You will then be prompted for more information.

If the rider with the vehicle (the driver) presents any significant discrepancy, one of the riders should cancel the ride by telling the driver. Also, go to our website, and then click on Contact Us, then Complaint, and then click on Trip Discrepancy. You will then be prompted for more information and given a credit for the ride.

Forward This Confirmation to a Spouse, Friend, or Parent:

We encourage you to forward this Confirmation to a spouse, friend or parent, whether by email or by sending them a printed copy. This way, they will be able to keep tabs on you and the other riders during the actual ride and this will give them some peace of mind. Also, you may want to briefly discuss the ride with them, so please consider this.

Iron Out Other Trip Details:

1. Agree on the exact pick-up time and location. Consider confirming this the night before the ride is to occur.

2. Obtain mobile telephone numbers in case of last minute changes. Do call each other about any important changes, including a change in the vehicle. (The other riders should have a say in that and an opportunity to examine the substituted vehicle and cancel the ride if the vehicle is significantly different.)

3. Do note that each rider, and the rider with the vehicle, should wait at least fifteen minutes at each pick-up location, for each other. (Also; try to call the others if you expect to be more than five minutes late, so they know that you are coming.)

4. Arrange for snacks and drinks to bring along and how to share their cost.

5. Arrange for music CDs and tapes to bring along.

6. Discuss the need for headphone use, to keep the vehicle quiet.

Additional Riders May Accept the Ride:

If the ride listing provided for additional riders, and any additional rider is identified by us, you will receive a separate Confirmation of each additional rider. Each additional rider may also want to work through the confirmation process with each other rider, and each of you should accommodate this.

FIG. 44

On the Day of the Ride:

1. Each rider, and the rider with the vehicle, should wait at least fifteen minutes at any pick-up spot. After fifteen minutes, they do not have to wait any longer.

2. Try your best to call the other riders if you expect to be more than five minutes late, so they know that you are still coming.

3. The rider with the vehicle and the other authorized riders should make sure that no other person rides with them because this can raise safety and security concerns. The rider with the vehicle, as the vehicle owner (or as the one given control over the vehicle), should not let unauthorized persons participate in the ride. Letting others participate would be unfair to the authorized riders and will result in a substantial downgrading of your rating. Any others who attempt to participate in the ride should be told that they cannot participate and should be left behind.

4. If any other person not covered by a Confirmation is allowed to participate in the trip, then each rider should seriously consider skipping the ride. This should not happen in most cases, but it could happen. If it does happen, we cannot give you any assurance about the identity of the other traveler, and therefore we cannot give you any assurance about your safety or security. If it does happen, and you opt to cancel, you will receive a credit. You should go to our website and then click on Contact Us, then Complaint, and then click on DOR Rider Discrepancy. You will then be prompted for more information.

5. If the person with the vehicle - i.e., the trip poster - does not appear, but someone else does and offers the same ride, you should not get into the vehicle. You should not take the ride. You should go to our website and then click on Contact Us, then send us an email (Please include the TripID which you can find in the Ride Details).

We wish you a safe and pleasant ride.!!

Thank you for using our services.

Yours Sincerely,

The Ridecheck Team

http://www.ridecheck.com

FIG. 45

Clyde Mitchell

From: Pawan Deedwaniya [pawand@MIT.EDU]
Sent: Sunday, February 06, 2005 4:17 PM
To: clyde Mitchell
Subject: Fwd: Ridecheck Ride Accepted

>X-Sieve: CMU Sieve 2.2
>Date: Sun, 6 Feb 2005 15:05:58 -0600 (CST)
>From: ridecheckTeam@ridecheck.com
>To: pawand@mit.edu
>Subject: Ridecheck Ride Accepted
>X-Spam-Score: -0.735
>X-Spam-Flag: NO
>X-Scanned-By: MIMEDefang 2.42
>
>Dear Pawan,
>
>THIS IS YOUR CONFIRMATION FROM RIDECHECK.COM. THIS CONFIRMATION
>CONTAINS IMPORTANT INFORMATION CONCERNING FINALIZING YOUR RIDE FOR THE
>DATE SET FORTH BELOW. KINDLY FOLLOW THE SUGGESTIONS MADE BELOW TO MAKE
>THE RIDE SAFE AND PLEASANT FOR YOU AND YOUR FELLOW RIDERS.
>
>Ride Summary:
>
> The ride is scheduled to depart on: Tue, 8 Feb 2005
>
> The ride will depart from: New York, NY
>
> The ride destination is: Santa Monica, CA
>
> Ride ID: e97562520af000f501b99786ccd609e3
>
> Vehicle Information:
> Vehicle Make: Ford
> Year: Sun Feb 06 14:56:19 CST 2000
> Color: Siver
> Model: Taurus
> Condition: good
> License plate number: AAA1111
> Issuing state: USA,NY
>
>Ride Poster Information:
>
> Name:Clyde Rideposter
> From: New York, USA,NY
> Email address: clydemitchell@alum.mit.edu
> First telephone number: 2127229257
> Second telephone number: 2127229258
> Age: 105
> Last six digits of the ride riders's Drivers License: 11111A
>
> Last six digits of the rider's School ID: 11111A
>
>
>Ride Acceptor Information:
>
> Name:Pawan Deedwaniya
> From: Cambridge, USA,MA
> Email address: pawand@mit.edu

FIG. 46

> First telephone number: 9142042924
> Age: 21
>Last six digits of the ride riders's Drivers License: 221257
>
> Last six digits of the rider's School ID: 915124
>
>
>Recommendations:
>
>We strongly recommend the following:
>
>First, each of you should confirm the above information by meeting
>briefly
>with each of your co-riders and the rider with the vehicle. (You may want
>to delay the meeting if you are expecting additional riders to accept the
>ride. We will let you know as soon as we know.) Consider meeting them
>after class at a coffeehouse, a college building, such as a library,
>cafeteria, or student center, or some other public place, near a place
>where you can see the vehicle. (You should not meet at a private
>residence or apartment or get into the vehicle at this point.)
>
>Second, each rider should check-out the rider with the vehicle: his or
>her
>student ID, drivers? license and vehicle license information. Compare
>that information and his or her vehicle with the above information in this
>Confirmation.
>
>Third, the rider with the vehicle should check-out the accepting
>riders:
>their student IDs and/or drivers licenses. Compare that information with
>the above information in the Confirmation.
>
>Each rider (including the driver) must be 18 or older, except in the
>following states. If your ride originates in the District of Columbia,
>Indiana, Mississippi, or Pennsylvania, each rider must be 21 or older
>(including the driver).
>
>For rides originating in Canada, each rider (including the driver) must
>be
>18 or older, except in the following provinces, where each rider must be
>19 or older: British Columbia, New Brunswick, Newfoundland, Northwest
>Territories, Nova Scotia and the Yukon.
>
>Fourth, examine the vehicle to make sure that it fits the description
>above.
>
>In
>most cases, there should not be any significant discrepancies. If
>there
>are any discrepancies, please see below because we are concerned about
>your safety and security.
>
>Discrepancies:
>
>If any rider presents any significant discrepancy from the above
>information, the rider with the vehicle should cancel the problematic
>rider by telling the problematic rider. Also, go to our website and then
>click on Contact Us, then Complaint, and then click on Rider
>Discrepancy. You will then be prompted for more information.
>
>If the rider with the vehicle (the driver) presents any significant
>discrepancy, one of the riders should cancel the ride by telling the
>driver. Also, go to our website, and then click on Contact Us, then
>Complaint, and then click on Trip Discrepancy. You will then be prompted

FIG. 47

>for more information and given a credit for the ride.
>
>Forward This Confirmation to a Spouse, Friend, or Parent:
>
>We encourage you to forward this Confirmation to a spouse, friend or
>parent, whether by email or by sending them a printed copy. This way,
>they will be able to keep tabs on you and the other riders during the
>actual ride and this will give them some peace of mind. Also, you may
>want to briefly discuss the ride with them, so please consider this.
>
>Iron Out Other Trip Details:
>
>1. Agree on the exact pick-up time and location. Consider confirming
>this the night before the ride is to occur.
>
>2. Obtain mobile telephone numbers in case of last minute changes. Do
>call each other about any important changes, including a change in the
>vehicle. (The other riders should have a say in that and an opportunity
>to examine the substituted vehicle and cancel the ride if the vehicle is
>significantly different.)
>
>3. Do note that each rider, and the rider with the vehicle, should
>wait
>at least fifteen minutes at each pick-up location, for each other. (Also,
>try to call the others if you expect to be more than five minutes late, so
>they know that you are coming.)
>
>4. Arrange for snacks and drinks to bring along and how to share their
>cost.
>
>5. Arrange for music CDs and tapes to bring along.
>
>6. Discuss the need for headphone use, to keep the vehicle quiet.
>
>Additional Riders May Accept the Ride:
>
>If the ride listing provided for additional riders, and any additional
>rider is identified by us, you will receive a separate Confirmation of
>each additional rider. Each additional rider may also want to work
>through the confirmation process with each other rider, and each of you
>should accommodate this.
>
>On the Day of the Ride:
>
>1. Each rider, and the rider with the vehicle, should wait at least
>fifteen minutes at any pick-up spot. After fifteen minutes, they do not
>have to wait any longer.
>
>2. Try your best to call the other riders if you expect to be more
>than
>five minutes late, so they know that you are still coming.
>
>3. The rider with the vehicle and the other authorized riders should
>make
>sure that no other person rides with them because this can raise safety
>and security concerns. The rider with the vehicle, as the vehicle owner
>(or as the one given control over the vehicle), should not let
>unauthorized persons participate in the ride. Letting others participate
>would be unfair to the authorized riders and will result in a substantial
>downgrading of your rating. Any others who attempt to participate in the
>ride should be told that they cannot participate and should be left behind.
>
>
>4. If any other person not covered by a Confirmation is allowed to

FIG. 48

>skipping the ride. This should not happen in most cases, but it could
>happen. If it does happen, we cannot give you any assurance about the
>identity of the other traveler, and therefore we cannot give you any
>assurance about your safety or security. If it does happen, and you opt
>to cancel, you will receive a credit. You should go to our website and
>then click on Contact Us, then Complaint, and then click on DOR Rider
>Discrepancy. You will then be prompted for more information.
>
>5. If the person with the vehicle - i.e., the trip poster - does not
>appear, but someone else does and offers the same ride, you should not get
>into the vehicle. You should not take the ride. You should go to our
>website and then click on Contact Us, then send us an email (Please
>include the TripID
>which you can find in the Ride Details).
>
>
>
>We wish you a safe and pleasant ride.!!
>
>Thank you for using our services.
>
>Yours Sincerely,
>
>The Ridecheck Team
>
>http://www.ridecheck.com

FIG. 49

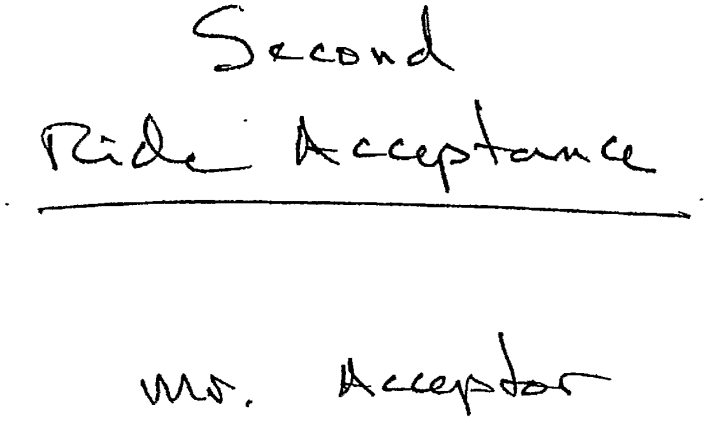
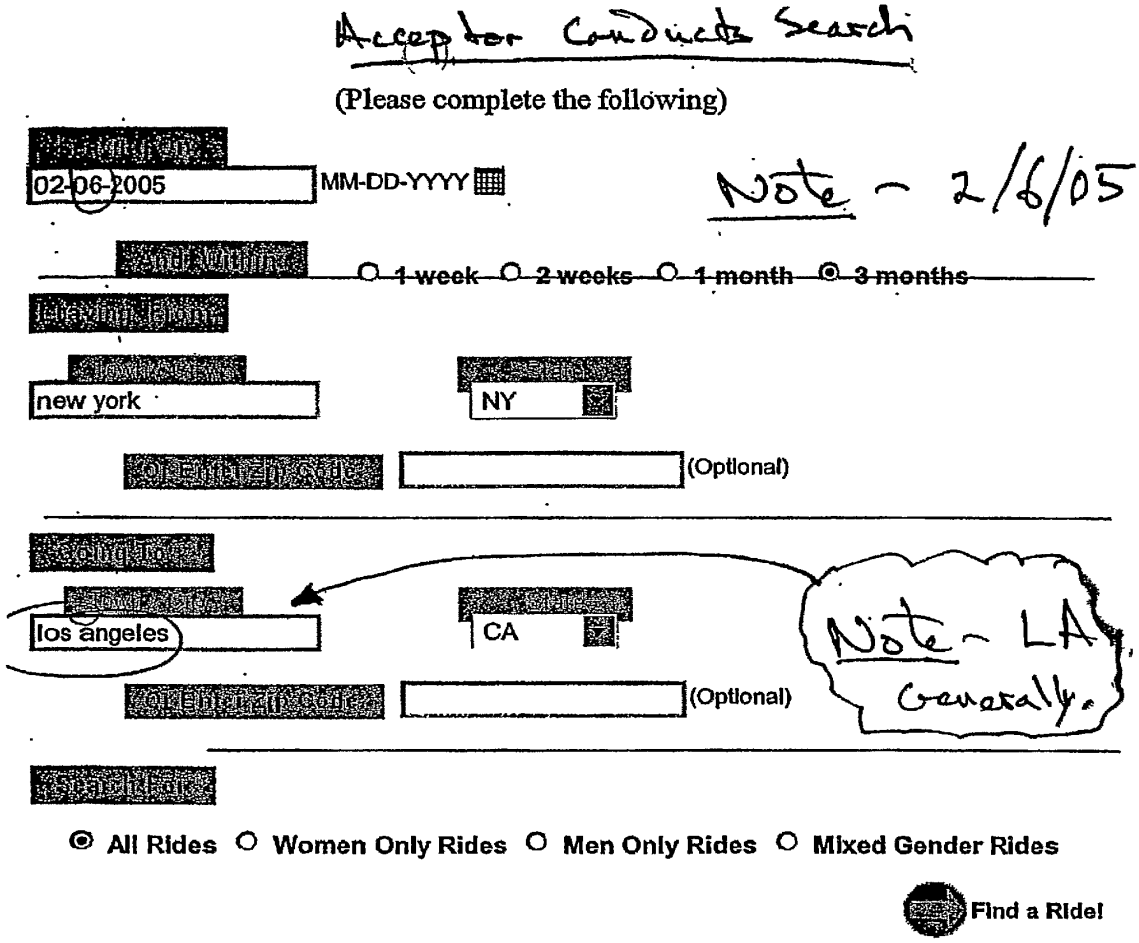


FIG. 50


Acceptor Conducts Search
(Please complete the following)
02-06-2005
MM-DD-YYYY
Note - 2/6/05
1 week
2 weeks
1 month
3 months
new york
NY
(Optional)
los angeles
CA
(Optional)
Note - LA Generally.
All Rides
Women Only Rides
Men Only Rides
Mixed Gender Rides
Find a Ride!

Error 1

FIG. 51

(Please complete the following)

02-06-2005 MM-DD-YYYY

1 week 2 weeks 1 month 3 months

new.york NY

(Optional)

los. angeles CA

(Optional)

All Rides Women Only Rides Men Only Rides Mixed Gender Rides

Start date has to be later than today's date

Find a Ride!

Error!

FIG. 52

Error 2

(Please complete the following)

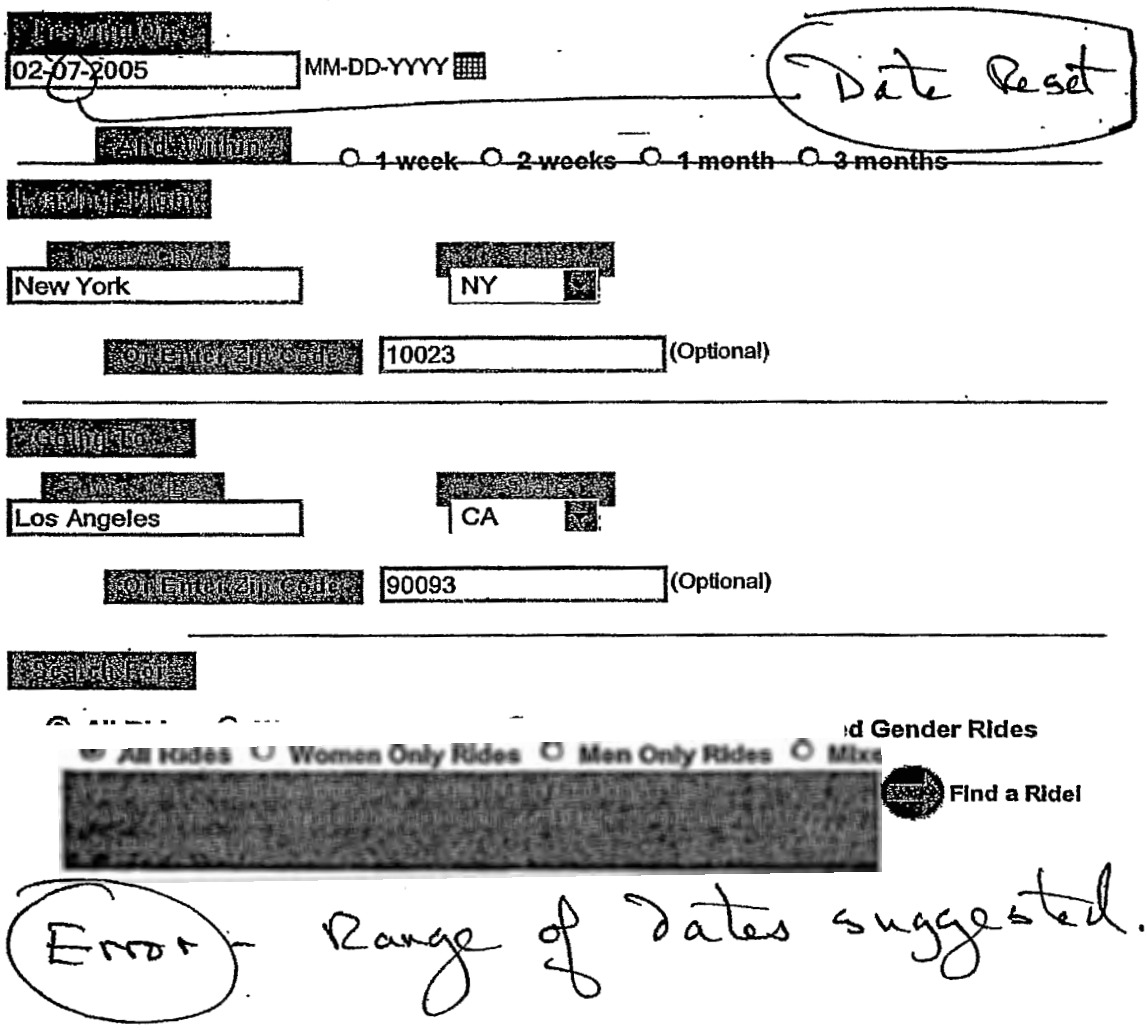


FIG. 53

Acceptor's Range of Ride Possibilities

Trips from within 50 miles of New York to within 50 miles of Los Angeles

Source	Destination	Ride Date	Gender	Ride Details	Accept Ride
New York,NY	Beverly Hills,CA	02-08-2005	Male/Female	Details	Accept
New York,NY	Santa Monica,CA	02-08-2005	Male/Female	Details	Accept
Brooklyn,NY	Venice,CA	02-16-2005	Male/Female	Details	Accept
Brooklyn,NY	Venice,CA	02-18-2005	Male/Female	Details	Accept
New York,NY	Beverly Hills,CA	02-24-2005	All Female	Details	Accept
New York,NY	Los Angeles,CA	02-26-2005	All Female	Details	Accept
New York,NY	Venice,CA	02-28-2005	Male/Female	Details	Accept
New York,NY	Venice,CA	03-03-2005	Male/Female	Details	Accept
Brooklyn,NY	Topanga,CA	03-03-2005	Male/Female	Details	Accept
New York,NY	Playa del Rey,CA	03-03-2005	Male/Female	Details	Accept
New York,NY	Beverly Hills,CA	03-05-2005	Male/Female	Details	Accept
New York,NY	Venice,CA	03-12-2005	Male/Female	Details	Accept
New York,NY	Marina del Rey,CA	03-15-2005	Male/Female	Details	Accept
Brooklyn,NY	Venice,CA	03-15-2005	Male/Female	Details	Accept
New York,NY	Pacoima,CA	03-30-2005	All Male	Details	Accept
New York,NY	Reseda,CA	03-30-2005	All Female	Details	Accept
New York,NY	Pacoima,CA	03-30-2005	Male/Female	Details	Accept
New York,NY	Pacoima,CA	03-31-2005	Male/Female	Details	Accept
New York,NY	Venice,CA	04-12-2005	Male/Female	Details	Accept
New York,NY	Venice,CA	04-14-2005	All Male	Details	Accept

Page 1 Of 1 Go to page

Previous Next

ride

Ranges

① starting on 2/7

② Within 50 miles of NYC

③ Within 50 miles of LA

FIG. 54

Acceptor Reviews Ride Details

Ride leaving from New York, NY and going to Santa Monica, CA

The ride is scheduled to depart on: Tue, 8 Feb 2005 ,Morning
The ride will depart from: New York, NY (Neighbourhood: Bowling Green)
The ride will end in: Santa Monica, CA (Neighbourhood: Pier)
Number of possible riders: 3
Number of riders who have accepted this ride: 1 *
Smoking preferences: I do not smoke, and I will ride with non-smokers only
Gender preferences: Male/Female
Driving preferences: I will share driving
The vehicle used will be: 2000, Ford Taurus
The condition of the vehicle used is: good
The additional ride information: Leaving from Bowling Green and dropping off at the Pier. No pets. Only rock will be played. Otherwise, bring headsets.
Expense Agreement: Riders with me must pay depreciation - 20 cents per mile. They can share that charge pro rata.
Trip ID: e97562520af000f501b99786ccd609e3

* PD has already accepted the ride.

FIG. 55

Acceptor Accepts 2/8 Ride with Rideposter

Important!
Please review the ride listing below carefully.
This site is free until further notice, which may occur at any time.

Thank You.

If the ride does not occur due to any valid reason, you will receive a full credit for future use.
For further information, see the FAQ.

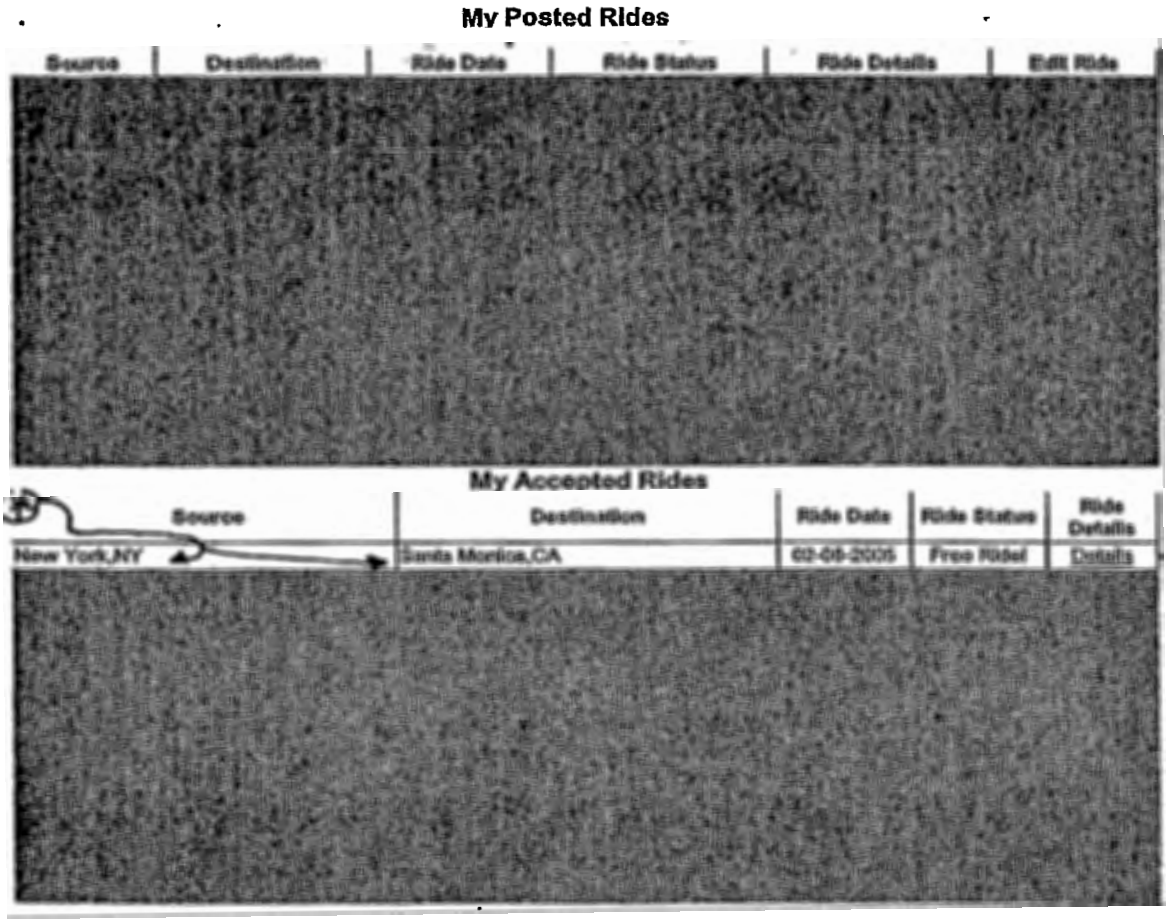
Accept Cancel

The price that we charge the person posting the ride, US$2.00, is lower than the price that we charge each person accepting a ride, US$4.00. We believe that this arrangement is a fair allocation of total cost. The person posting the ride spends additional time at the site completing the details and takes the risk that nobody may accept the posted ride. Consequently, the ride poster pays a lower price.

Ride Review

The ride is scheduled to depart on: **Tue, 8 Feb 2005**
The ride will depart from: **New York, NY (Neighbourhood: Bowling Green)**
The ride will end in: **Santa Monica, CA (Neighbourhood: Pier)**
Smoking preferences: **I do not smoke, and I will ride with non-smokers only**
The vehicle used will be: **2000, Ford Taurus**
The condition of the vehicle used is: **good**
The additional ride information: **Leaving from Bowling Green and dropping off at the Pier. No pets. Only rock will be played. Otherwise, bring headsets.**
Expense Agreement: **Riders with me must pay depreciation - 20 cents per mile. They can share that charge pro rata.**

Acceptor's "My Rides" Screen - Shows Ride Accepted FIG. 56



Note: Acceptor is referred to his "My Rides" Screen and sees the 2/8 ride, as an accepted ride

Confirming Acceptance to Rideposter FIG. 57

Clyde Mitchell

From: ridecheckTeam@ridecheck.com
Sent: Sunday, February 06, 2005 5:33 PM
To: clydemitchell@alum.mit.edu
Subject: Ridecheck Ride Accepted

Dear Clyde,

THIS IS YOUR CONFIRMATION FROM RIDECHECK.COM. THIS CONFIRMATION CONTAINS IMPORTANT INFORMATION CONCERNING FINALIZING YOUR RIDE FOR THE DATE SET FORTH BELOW. KINDLY FOLLOW THE SUGGESTIONS MADE BELOW TO MAKE THE RIDE SAFE AND PLEASANT FOR YOU AND YOUR FELLOW RIDERS.

Ride Summary:

The ride is scheduled to depart on: Tue, 8 Feb 2005

The ride will depart from: New York, NY

The ride destination is: Santa Monica, CA

Ride ID: e97562520af000f501b99786ccd609e3

Vehicle Information:
Vehicle Make: Ford
Year: Sun Feb 06 14:56:19 CST 2000
Color: Siver
Model: Taurus
Condition: good
License plate number: AAA1111
Issuing state: USA,NY

Ride Poster Information:

Name:Clyde Rideposter
From: New York, USA,NY
Email address: clydemitchell@alum.mit.edu
First telephone number: 2127229257
Second telephone number: 2127229258
Age: 105
Last six digits of the ride riders's Drivers License: 11111A

Last six digits of the rider's School ID: 11111A

Ride Acceptor Information:

Name:Clyde Acceptor
From: Yuma, USA,AZ
Email address: clydemitchell@alum.mit.edu
First telephone number: 2222222222
Second telephone number: 3333333333
Age: 48
Last six digits of the ride riders's Drivers License: 222yyy

Last six digits of the rider's School ID: 222222

Additional Ride Acceptor(s) Information :

Note - An identical copy to both the poster of the ride and the acceptor.

FIG. 58

Ride Acceptor Information:

Name:Clyde Acceptor
From: Yuma, USA,AZ
Email address: clydemitchell@alum.mit.edu
First telephone number: 2222222222
Second telephone number: 3333333333
Age: 48
Last six digits of the ride riders's Drivers License: 222yyy

Last six digits of the rider's School ID: 222222

Ride Acceptor Information:

Name:Pawan Deedwaniya
From: Cambridge, USA,MA
Email address: pawand@mit.edu
First telephone number: 9142042924
Age: 21
Last six digits of the ride riders's Drivers License: 221257

Last six digits of the rider's School ID: 915124

Recommendations:

We strongly recommend the following:

First, each of you should confirm the above information by meeting briefly with each of your co-riders and the rider with the vehicle. (You may want to delay the meeting if you are expecting additional riders to accept the ride. We will let you know as soon as we know.) Consider meeting them after class at a coffeehouse, a college building, such as a library, cafeteria, or student center, or some other public place, near a place where you can see the vehicle. (You should not meet at a private residence or apartment or get into the vehicle at this point.)

Second, each rider should check-out the rider with the vehicle: his or her student ID, drivers? license and vehicle license information. Compare that information and his or her vehicle with the above information in this Confirmation.

Third, the rider with the vehicle should check-out the accepting riders: their student IDs and/or drivers licenses. Compare that information with the above information in the Confirmation.

Each rider (including the driver) must be 18 or older, except in the following states. If your ride originates in the District of Columbia, Indiana, Mississippi, or Pennsylvania, each rider must be 21 or older (including the driver).

For rides originating in Canada, each rider (including the driver) must be 18 or older, except in the following provinces, where each rider must be 19 or older: British Columbia, New Brunswick, Newfoundland, Northwest Territories, Nova Scotia and the Yukon.

Fourth, examine the vehicle to make sure that it fits the description above.

In
most cases, there should not be any significant discrepancies. If there are any discrepancies, please see below because we are concerned about your safety and security.

Discrepancies:

If any rider presents any significant discrepancy from the above information, the rider with the vehicle should cancel the problematic rider by telling the problematic rider. Also, go to our website and then click on Contact Us, then Complaint, and then click on Rider Discrepancy. You will then be prompted for more information.

If the rider with the vehicle (the driver) presents any significant discrepancy, one of the riders should cancel the ride by telling the driver. Also, go to our website, and then click on Contact Us, then Complaint, and then click on Trip Discrepancy. You will then be prompted for more information and given a credit for the ride.

58/90

FIG. 59

Forward This Confirmation to a Spouse, Friend, or Parent:

We encourage you to forward this Confirmation to a spouse, friend or parent, whether by email or by sending them a printed copy. This way, they will be able to keep tabs on you and the other riders during the actual ride and this will give them some peace of mind. Also, you may want to briefly discuss the ride with them, so please consider this.

Iron Out Other Trip Details:

1. Agree on the exact pick-up time and location. Consider confirming this the night before the ride is to occur.

2. Obtain mobile telephone numbers in case of last minute changes. Do call each other about any important changes, including a change in the vehicle. (The other riders should have a say in that and an opportunity to examine the substituted vehicle and cancel the ride if the vehicle is significantly different.)

3. Do note that each rider, and the rider with the vehicle, should wait at least fifteen minutes at each pick-up location, for each other. (Also, try to call the others if you expect to be more than five minutes late, so they know that you are coming.)

4. Arrange for snacks and drinks to bring along and how to share their cost.

5. Arrange for music CDs and tapes to bring along.

6. Discuss the need for headphone use, to keep the vehicle quiet.

Additional Riders May Accept the Ride:

If the ride listing provided for additional riders, and any additional rider is identified by us, you will receive a separate Confirmation of each additional rider. Each additional rider may also want to work through the confirmation process with each other rider, and each of you should accommodate this.

On the Day of the Ride:

1. Each rider, and the rider with the vehicle, should wait at least fifteen minutes at any pick-up spot. After fifteen minutes, they do not have to wait any longer.

2. Try your best to call the other riders if you expect to be more than five minutes late, so they know that you are still coming.

3. The rider with the vehicle and the other authorized riders should make sure that no other person rides with them because this can raise safety and security concerns. The rider with the vehicle, as the vehicle owner (or as the one given control over the vehicle), should not let unauthorized persons participate in the ride. Letting others participate would be unfair to the authorized riders and will result in a substantial downgrading of your rating. Any others who attempt to participate in the ride should be told that they cannot participate and should be left behind.

4. If any other person not covered by a Confirmation is allowed to participate in the trip, then each rider should seriously consider skipping the ride. This should not happen in most cases, but it could happen. If it does happen, we cannot give you any assurance about the identity of the other traveler, and therefore we cannot give you any assurance about your safety or security. If it does happen, and you opt to cancel, you will receive a credit. You should go to our website and then click on Contact Us, then Complaint, and then click on DOR Rider Discrepancy. You will then be prompted for more information.

5. If the person with the vehicle - i.e., the trip poster - does not appear, but someone else does and offers the same ride, you should not get into the vehicle. You should not take the ride. You should go to our website and then click on Contact Us, then send us an email (Please include the TripID which you can find in the Ride Details).

We wish you a safe and pleasant ride.!!

Thank you for using our services.

Yours Sincerely,

FIG. 60

The Ridecheck Team

http://www.ridecheck.com

FIG. 61

Acceptor - "My Rides" - Details of 2/8 Ride

Ride leaving from New York, NY and going to Santa Monica, CA

The ride is scheduled to depart on: Tue, 8 Feb 2005 ,Morning
The ride will depart from: New York, NY (Neighbourhood: Bowling Green)
The ride will end in: Santa Monica, CA (Neighbourhood: Pier)
Number of possible riders: 3
Number of riders who have accepted this ride: 2 *
Smoking preferences: I do not smoke, and I will ride with non-smokers only
Gender preferences: Male/Female
Driving preferences: I will share driving
The vehicle used will be: 2000, Ford Taurus
The condition of the vehicle used is: good
The additional ride information: Leaving from Bowling Green and dropping off at the Pier. No pets. Only rock will be played. Otherwise, bring headsets.
Expense Agreement: Riders with me must pay depreciation - 20 cents per mile. They can share that charge pro rata.
Trip ID: e97562520af000f501b99786ccd609e3

The ride Originator:
Name: Clyde Rideposter
Email Address: clydemitchell@alum.mit.edu
Good Ratings: None Yet
Bad Ratings: None Yet

The ride Acceptor(s):
Name: Clyde Acceptor
Email Address: clydemitchell@alum.mit.edu

* Note - 2 riders have accepted.

FIG. 62

"Rideposter" Checks Status

Ride leaving from New York, NY and going to Santa Monica, CA

The ride is scheduled to depart on: Tue, 8 Feb 2005 ,Morning
The ride will depart from: New York, NY (Neighbourhood: Bowling Green)
The ride will end in: Santa Monica, CA (Neighbourhood: Pier)
Number of possible riders: 3
Number of riders who have accepted this ride: 2
Smoking preferences: I do not smoke, and I will ride with non-smokers only
Gender preferences: Male/Female
Driving preferences: I will share driving
The vehicle used will be: 2000, Ford Taurus
The condition of the vehicle used is: good
The additional ride information: Leaving from Bowling Green and dropping off at the Pier. No pets. Only rock will be played. Otherwise, bring headsets.
Expense Agreement: Riders with me must pay depreciation - 20 cents per mile. They can share that charge pro rata.
Trip ID: e97562520af000f501b99786ccd609e3

FIG. 63

Rideposter Signs Out

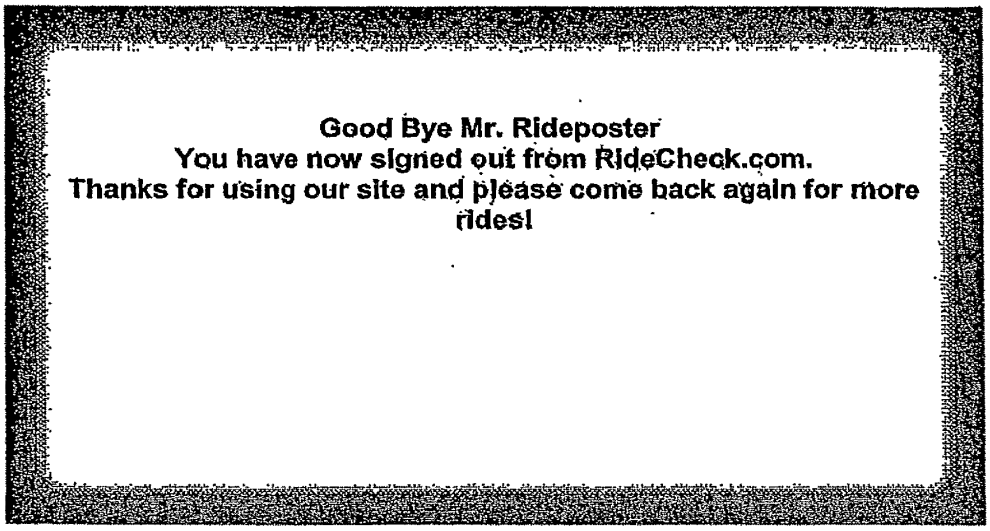


FIG. 64

Third
Ride Acceptance

Ms. Acceptor 2

FIG. 65

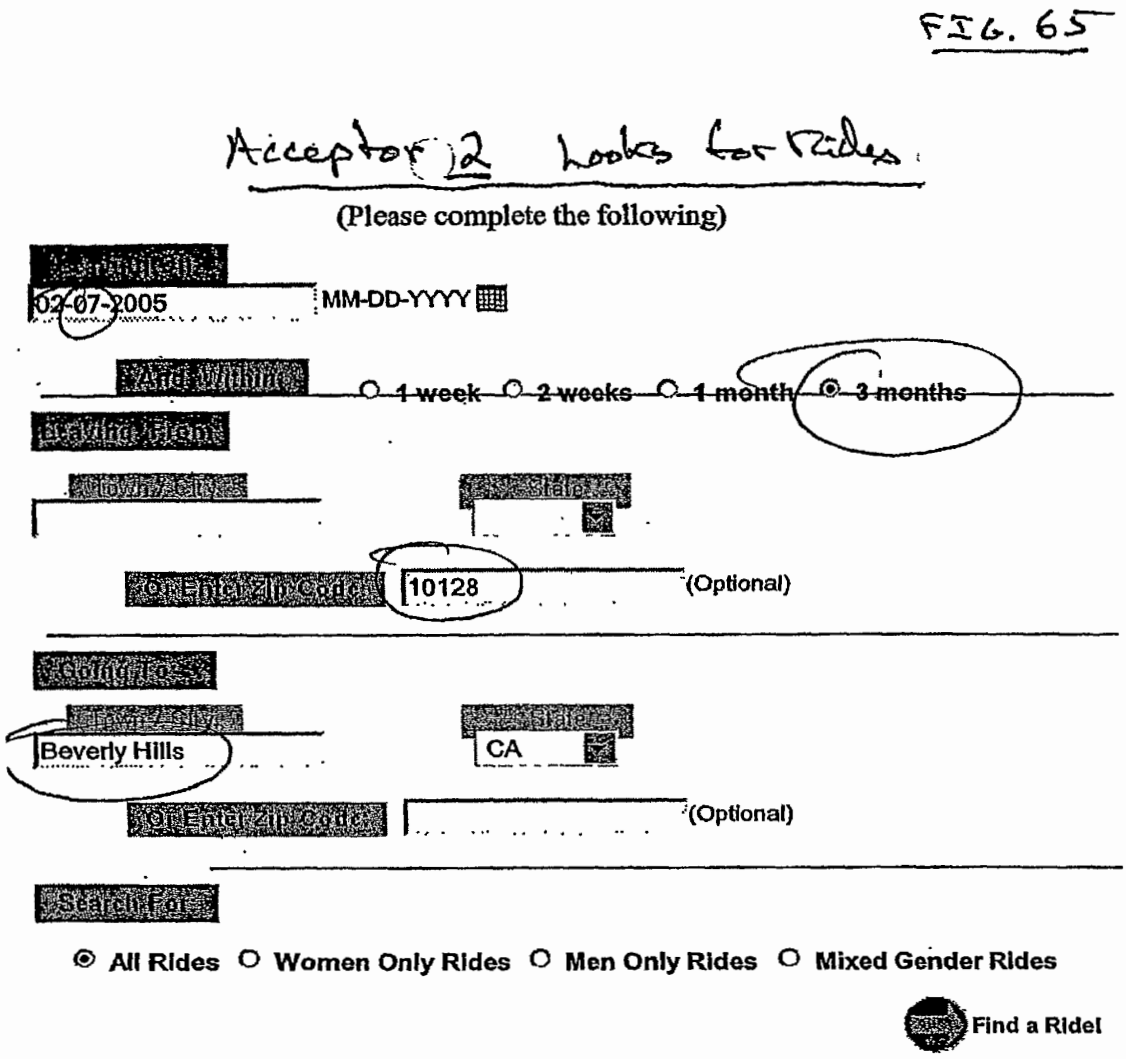

Acceptor 12 looks for Rides
(Please complete the following)
02-07-2005
MM-DD-YYYY
1 week
2 weeks
1 month
3 months
10128
(Optional)
Beverly Hills
CA
(Optional)
All Rides
Women Only Rides
Men Only Rides
Mixed Gender Rides
Find a Ride!

FIG. 66

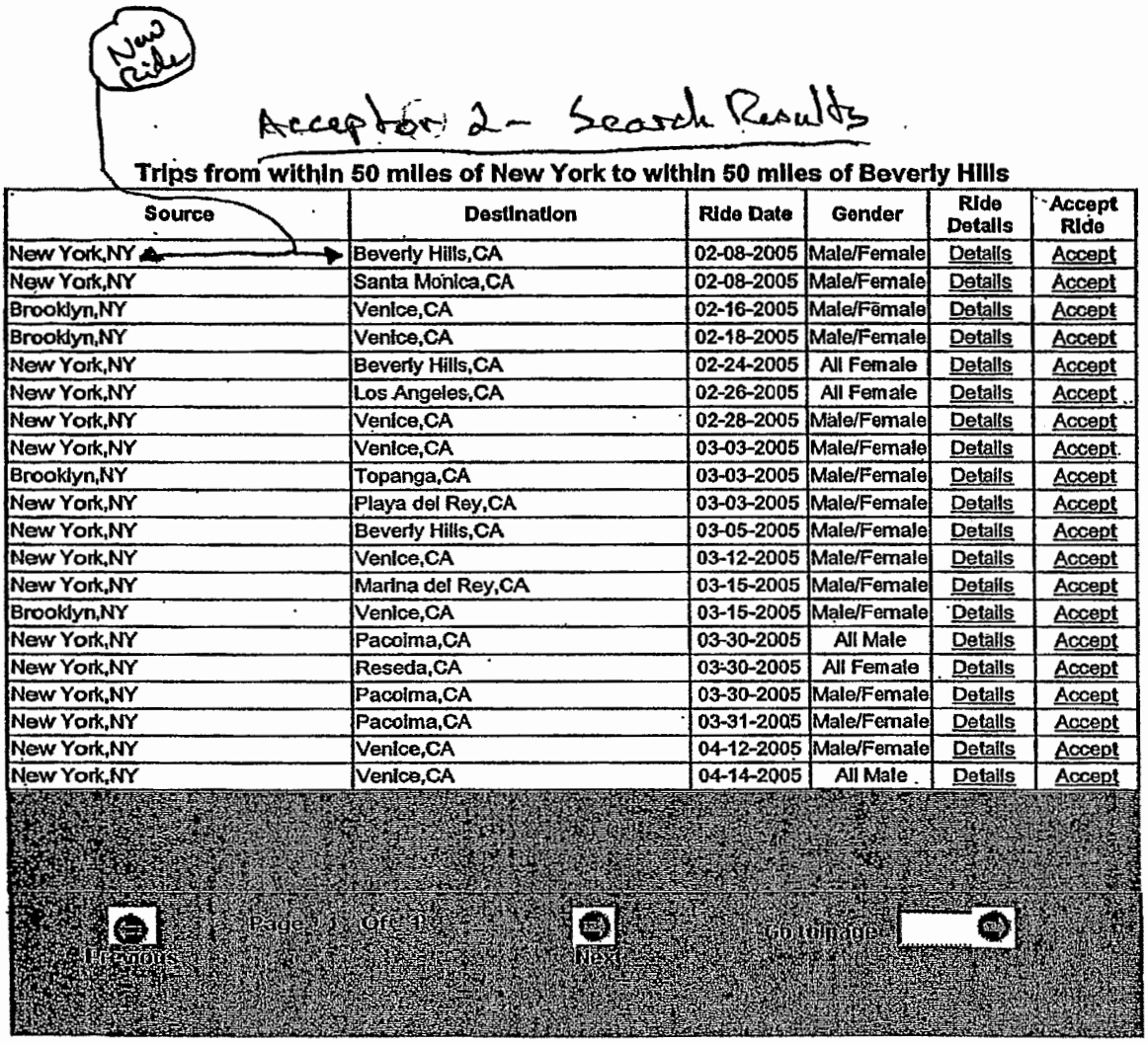

New Ride
Accept for 2 - Search Results
Trips from within 50 miles of New York to within 50 miles of Beverly Hills
Source
Destination
Ride Date
Gender
Ride Details
Accept Ride
New York,NY
Beverly Hills,CA
02-08-2005
Male/Female
Details
Accept
New York,NY
Santa Monica,CA
02-08-2005
Male/Female
Details
Accept
Brooklyn,NY
Venice,CA
02-16-2005
Male/Female
Details
Accept
Brooklyn,NY
Venice,CA
02-18-2005
Male/Female
Details
Accept
New York,NY
Beverly Hills,CA
02-24-2005
All Female
Details
Accept
New York,NY
Los Angeles,CA
02-26-2005
All Female
Details
Accept
New York,NY
Venice,CA
02-28-2005
Male/Female
Details
Accept
New York,NY
Venice,CA
03-03-2005
Male/Female
Details
Accept
Brooklyn,NY
Topanga,CA
03-03-2005
Male/Female
Details
Accept
New York,NY
Playa del Rey,CA
03-03-2005
Male/Female
Details
Accept
New York,NY
Beverly Hills,CA
03-05-2005
Male/Female
Details
Accept
New York,NY
Venice,CA
03-12-2005
Male/Female
Details
Accept
New York,NY
Marina del Rey,CA
03-15-2005
Male/Female
Details
Accept
Brooklyn,NY
Venice,CA
03-15-2005
Male/Female
Details
Accept
New York,NY
Pacoima,CA
03-30-2005
All Male
Details
Accept
New York,NY
Reseda,CA
03-30-2005
All Female
Details
Accept
New York,NY
Pacoima,CA
03-30-2005
Male/Female
Details
Accept
New York,NY
Pacoima,CA
03-31-2005
Male/Female
Details
Accept
New York,NY
Venice,CA
04-12-2005
Male/Female
Details
Accept
New York,NY
Venice,CA
04-14-2005
All Male
Details
Accept
Previous
Page 1 Of 1
Next
Go to page

FIG. 67

2/8 Ride Details Reviewed By Acceptor 2

Ride leaving from New York, NY and going to Santa Monica, CA

The ride is scheduled to depart on: Tue, 8 Feb 2005 ,Morning
The ride will depart from: New York, NY (Neighbourhood: Bowling Green)
The ride will end in: Santa Monica, CA (Neighbourhood: Pier)
Number of possible riders: 3
Number of riders who have accepted this ride: 2
Smoking preferences: I do not smoke, and I will ride with non-smokers only
Gender preferences: Male/Female
Driving preferences: I will share driving
The vehicle used will be: 2000, Ford Taurus
The condition of the vehicle used is: good
The additional ride information: Leaving from Bowling Green and dropping off at the Pier. No pets. Only rock will be played. Otherwise, bring headsets.
Expense Agreement: Riders with me must pay depreciation - 20 cents per mile. They can share that charge pro rata.
Trip ID: e97562520af000f501b99786ccd609e3

FIG. 68

Acceptor 2 Accepts the Ride

Important!
Please review the ride listing below carefully.
This site is free until further notice, which may occur at any time.

Thank You.

If the ride does not occur due to any valid reason, you will receive a full credit for future use.
For further information, see the FAQ.

Accept Cancel

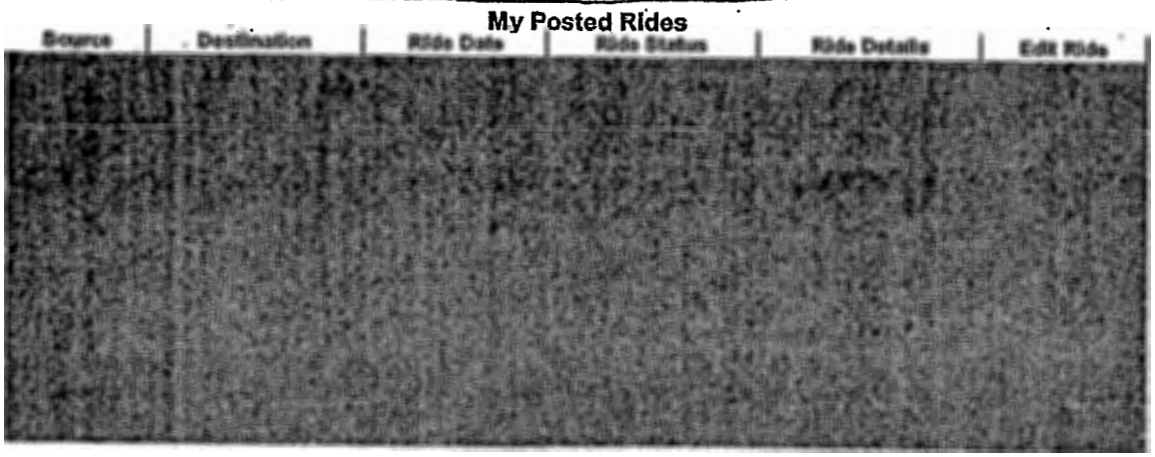
The price that we charge the person posting the ride, US$2.00, is lower than the price that we charge each person accepting a ride, US$4.00. We believe that this arrangement is a fair allocation of total cost. The person posting the ride spends additional time at the site completing the details and takes the risk that nobody may accept the posted ride. Consequently, the ride poster pays a lower price.

Ride Review

The ride is scheduled to depart on: **Tue, 8 Feb 2005**
The ride will depart from: **New York, NY (Neighbourhood: Bowling Green)**
The ride will end in: **Santa Monica, CA (Neighbourhood: Pier)**
Smoking preferences: **I do not smoke, and I will ride with non-smokers only**
The vehicle used will be: **2000, Ford Taurus**
The condition of the vehicle used is: **good**
The additional ride information: **Leaving from Bowling Green and dropping off at the Pier. No pets. Only rock will be played. Otherwise, bring headsets.**
Expense Agreement: **Riders with me must pay depreciation - 20 cents per mile. They can share that charge pro rata.**

FIG. 69

Acceptor 2's "My Rides" Screen



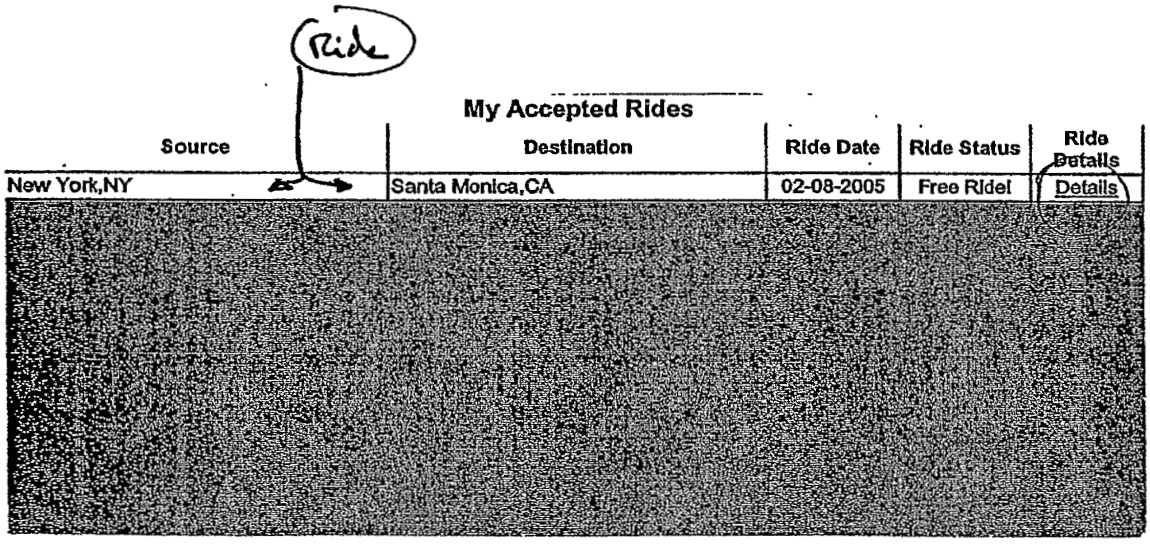


FIG. 70

Acceptor 2 – "Details" of 2/8 Ride

Ride leaving from New York, NY and going to Santa Monica, CA

The ride is scheduled to depart on: Tue, 8 Feb 2005 ,Morning
The ride will depart from: New York, NY (Neighbourhood: Bowling Green)
The ride will end in: Santa Monica, CA (Neighbourhood: Pier)
Number of possible riders: 3
Number of riders who have accepted this ride: 3
Smoking preferences: I do not smoke, and I will ride with non-smokers only
Gender preferences: Male/Female
Driving preferences: I will share driving
The vehicle used will be: 2000, Ford Taurus
The condition of the vehicle used is: good
The additional ride information: Leaving from Bowling Green and dropping off at the Pier. No pets. Only rock will be played. Otherwise, bring headsets.
Expense Agreement: Riders with me must pay depreciation - 20 cents per mile. They can share that charge pro rata.
Trip ID: e97562520af000f501b99786ccd609e3

The ride Originator:
Name: Clyde Rideposter
Email Address: clydemitchell@alum.mit.edu
Good Ratings: None Yet
Bad Ratings: None Yet

The ride Acceptor(s):
Name: Acceptor2 Acceptor2
Email Address: clydemitchell@alum.mit.edu

Confirming Acceptance for Acceptor2 FIG. 71

Clyde Mitchell

From: rideCheckTeam@ridecheck.com
Sent: Sunday, February 06, 2005 6:07 PM
To: clydemitchell@alum.mit.edu
Subject: Ridecheck Ride Accepted

Dear Acceptor2,

THIS IS YOUR CONFIRMATION FROM RIDECHECK.COM. THIS CONFIRMATION CONTAINS IMPORTANT INFORMATION CONCERNING FINALIZING YOUR RIDE FOR THE DATE SET FORTH BELOW. KINDLY FOLLOW THE SUGGESTIONS MADE BELOW TO MAKE THE RIDE SAFE AND PLEASANT FOR YOU AND YOUR FELLOW RIDERS.

Ride Summary:

The ride is scheduled to depart on: Tue, 8 Feb 2005

The ride will depart from: New York, NY

The ride destination is: Santa Monica, CA

Ride ID: e97562520af000f501b99786ccd609e3

Vehicle Information:
Vehicle Make: Ford
Year: Sun Feb 06 14:56:19 CST 2000
Color: Siver
Model: Taurus
Condition: good
License plate number: AAA1111
Issuing state: USA,NY

Ride Poster Information:

Name:Clyde Rideposter
From: New York, USA,NY
Email address: clydemitchell@alum.mit.edu
First telephone number: 2127229257
Second telephone number: 2127229258
Age: 105
Last six digits of the ride riders's Drivers License: 11111A

Last six digits of the rider's School ID: 11111A

Ride Acceptor Information:

Name:Acceptor2 Acceptor2
From: Morristown, USA,NJ
Email address: clydemitchell@alum.mit.edu
First telephone number: 2122779546
Second telephone number: 2012354444
Age: 55
Last six digits of the ride riders's Drivers License: 333aaa

Last six digits of the rider's School ID: 222222

Additional Ride Acceptor(s) Information :

FIG. 72

Ride Acceptor Information:

Name:Acceptor2 Acceptor2
From: Morristown, USA,NJ
Email address: clydemitchell@alum.mit.edu
First telephone number: 2122779546
Second telephone number: 2012354444
Age: 55
Last six digits of the ride riders's Drivers License: 333aaa

Last six digits of the rider's School ID: 222222

Ride Acceptor Information:

Name:Clyde Acceptor
From: Yuma, USA,AZ
Email address: clydemitchell@alum.mit.edu
First telephone number: 2222222222
Second telephone number: 3333333333
Age: 48
Last six digits of the ride riders's Drivers License: 222yyy

Last six digits of the rider's School ID: 222222

Ride Acceptor Information:

Name:Pawan Deedwaniya
From: Cambridge, USA,MA
Email address: pawand@mit.edu
First telephone number: 9142042924
Age: 21
Last six digits of the ride riders's Drivers License: 221257

Last six digits of the rider's School ID: 915124

Recommendations:

We strongly recommend the following:

First, each of you should confirm the above information by meeting briefly with each of your co-riders and the rider with the vehicle. (You may want to delay the meeting if you are expecting additional riders to accept the ride. We will let you know as soon as we know.) Consider meeting them after class at a coffeehouse, a college building, such as a library, cafeteria, or student center, or some other public place, near a place where you can see the vehicle. (You should not meet at a private residence or apartment or get into the vehicle at this point.)

Second, each rider should check-out the rider with the vehicle: his or her student ID, drivers? license and vehicle license information. Compare that information and his or her vehicle with the above information in this Confirmation.

Third, the rider with the vehicle should check-out the accepting riders: their student IDs and/or drivers licenses. Compare that information with the above information in the Confirmation.

Each rider (including the driver) must be 18 or older, except in the following states. If your ride originates in the District of Columbia, Indiana, Mississippi, or Pennsylvania, each rider must be 21 or older (including the driver).

For rides originating in Canada, each rider (including the driver) must be 18 or older, except in the following provinces, where each rider must be 19 or older: British Columbia, New Brunswick, Newfoundland, Northwest Territories, Nova Scotia and the Yukon.

Fourth, examine the vehicle to make sure that it fits the description above.

Fig. 73

most cases, there should not be any significant discrepancies. If there are any discrepancies, please see below because we are concerned about your safety and security.

Discrepancies:

If any rider presents any significant discrepancy from the above information, the rider with the vehicle should cancel the problematic rider by telling the problematic rider. Also, go to our website and then click on Contact Us, then Complaint, and then click on Rider Discrepancy. You will then be prompted for more information.

If the rider with the vehicle (the driver) presents any significant discrepancy, one of the riders should cancel the ride by telling the driver. Also, go to our website, and then click on Contact Us, then Complaint, and then click on Trip Discrepancy. You will then be prompted for more information and given a credit for the ride.

Forward This Confirmation to a Spouse, Friend, or Parent:

We encourage you to forward this Confirmation to a spouse, friend or parent, whether by email or by sending them a printed copy. This way, they will be able to keep tabs on you and the other riders during the actual ride and this will give them some peace of mind. Also, you may want to briefly discuss the ride with them, so please consider this.

Iron Out Other Trip Details:

1. Agree on the exact pick-up time and location. Consider confirming this the night before the ride is to occur.

2. Obtain mobile telephone numbers in case of last minute changes. Do call each other about any important changes, including a change in the vehicle. (The other riders should have a say in that and an opportunity to examine the substituted vehicle and cancel the ride if the vehicle is significantly different.)

3. Do note that each rider, and the rider with the vehicle, should wait at least fifteen minutes at each pick-up location, for each other. (Also, try to call the others if you expect to be more than five minutes late, so they know that you are coming.)

4. Arrange for snacks and drinks to bring along and how to share their cost.

5. Arrange for music CDs and tapes to bring along.

6. Discuss the need for headphone use, to keep the vehicle quiet.

Additional Riders May Accept the Ride:

If the ride listing provided for additional riders, and any additional rider is identified by us, you will receive a separate Confirmation of each additional rider. Each additional rider may also want to work through the confirmation process with each other rider, and each of you should accommodate this.

On the Day of the Ride:

1. Each rider, and the rider with the vehicle, should wait at least fifteen minutes at any pick-up spot. After fifteen minutes, they do not have to wait any longer.

2. Try your best to call the other riders if you expect to be more than five minutes late, so they know that you are still coming.

3. The rider with the vehicle and the other authorized riders should make sure that no other person rides with them because this can raise safety and security concerns. The rider with the vehicle, as the vehicle owner (or as the one given control over the vehicle), should not let unauthorized persons participate in the ride. Letting others participate would be unfair to the authorized riders and will result in a substantial downgrading of your rating. Any others who attempt to participate in the ride should be told that they cannot participate and should be left behind.

4. If any other person not covered by a Confirmation is allowed to participate in the trip, then each rider should seriously consider skipping the ride. This should not happen in most cases, but it could happen. If it does happen, we cannot give you any assurance about the identity of the other traveler, and therefore we cannot give you any assurance about your safety or security. If it does happen, and you opt to cancel, you will receive a credit. You should go to our website and then click on Contact Us, then Complaint, and then click on DOR Rider Discrepancy. You will then be prompted for more information.

FIG. 74

5. If the person with the vehicle - i.e., the trip poster - does not appear, but someone else does and offers the same ride, you should not get into the vehicle. You should not take the ride. You should go to our website and then click on Contact Us, then send us an email (Please include the TripID which you can find in the Ride Details).

We wish you a safe and pleasant ride.!!

Thank you for using our services.

Yours Sincerely,

The Ridecheck Team

http://www.ridecheck.com

Confirming Acceptance for Rideposter re Acceptor 2 FIG. 75

Clyde Mitchell

From: ridecheckTeam@ridecheck.com
Sent: Sunday, February 06, 2005 6:07 PM
To: clydemitchell@alum.mit.edu
Subject: Ridecheck Ride Accepted

Dear Clyde,

THIS IS YOUR CONFIRMATION FROM RIDECHECK.COM. THIS CONFIRMATION CONTAINS IMPORTANT INFORMATION CONCERNING FINALIZING YOUR RIDE FOR THE DATE SET FORTH BELOW. KINDLY FOLLOW THE SUGGESTIONS MADE BELOW TO MAKE THE RIDE SAFE AND PLEASANT FOR YOU AND YOUR FELLOW RIDERS.

Ride Summary:

The ride is scheduled to depart on: Tue, 8 Feb 2005

The ride will depart from: New York, NY

The ride destination is: Santa Monica, CA

Ride ID: e97562520af000f501b99786ccd609e3

Vehicle Information:
Vehicle Make: Ford
Year: Sun Feb 06 14:56:19 CST 2000
Color: Siver
Model: Taurus
Condition: good
License plate number: AAA1111
Issuing state: USA,NY

Ride Poster Information:

Name:Clyde Rideposter
From: New York, USA,NY
Email address: clydemitchell@alum.mit.edu
First telephone number: 2127229257
Second telephone number: 2127229258
Age: 105
Last six digits of the ride riders's Drivers License: 11111A

Last six digits of the rider's School ID: 11111A

Ride Acceptor Information:

Name:Acceptor2 Acceptor2
From: Morristown, USA,NJ
Email address: clydemitchell@alum.mit.edu
First telephone number: 2122779546
Second telephone number: 2012354444
Age: 55
Last six digits of the ride riders's Drivers License: 333aaa

Last six digits of the rider's School ID: 222222

Additional Ride Acceptor(s) Information :

75/90

FIG. 76

Ride Acceptor Information:

Name:Acceptor2 Acceptor2
From: Morristown, USA,NJ
Email address: clydemitchell@alum.mit.edu
First telephone number: 2122779546
Second telephone number: 2012354444
Age: 55
Last six digits of the ride riders's Drivers License: 333aaa

Last six digits of the rider's School ID: 222222

Ride Acceptor Information:

Name:Clyde Acceptor
From: Yuma, USA,AZ
Email address: clydemitchell@alum.mit.edu
First telephone number: 2222222222
Second telephone number: 3333333333
Age: 48
Last six digits of the ride riders's Drivers License: 222yyy

Last six digits of the rider's School ID: 222222

Ride Acceptor Information:

Name:Pawan Deedwaniya
From: Cambridge, USA,MA
Email address: pawand@mit.edu
First telephone number: 9142042924
Age: 21
Last six digits of the ride riders's Drivers License: 221257

Last six digits of the rider's School ID: 915124

Recommendations:

We strongly recommend the following:

First, each of you should confirm the above information by meeting briefly with each of your co-riders and the rider with the vehicle. (You may want to delay the meeting if you are expecting additional riders to accept the ride. We will let you know as soon as we know.) Consider meeting them after class at a coffeehouse, a college building, such as a library, cafeteria, or student center, or some other public place, near a place where you can see the vehicle. (You should not meet at a private residence or apartment or get into the vehicle at this point.)

Second, each rider should check-out the rider with the vehicle: his or her student ID, drivers? license and vehicle license information. Compare that information and his or her vehicle with the above information in this Confirmation.

Third, the rider with the vehicle should check-out the accepting riders: their student IDs and/or drivers licenses. Compare that information with the above information in the Confirmation.

Each rider (including the driver) must be 18 or older, except in the following states. If your ride originates in the District of Columbia, Indiana, Mississippi, or Pennsylvania, each rider must be 21 or older (including the driver).

For rides originating in Canada, each rider (including the driver) must be 18 or older, except in the following provinces, where each rider must be 19 or older: British Columbia, New Brunswick, Newfoundland, Northwest Territories, Nova Scotia and the Yukon.

Fourth, examine the vehicle to make sure that it fits the description above.

FIG. 77

in
most cases, there should not be any significant discrepancies. If there are any discrepancies, please see below because we are concerned about your safety and security.

Discrepancies:

If any rider presents any significant discrepancy from the above information, the rider with the vehicle should cancel the problematic rider by telling the problematic rider. Also, go to our website and then click on Contact Us, then Complaint, and then click on Rider Discrepancy. You will then be prompted for more information.

If the rider with the vehicle (the driver) presents any significant discrepancy, one of the riders should cancel the ride by telling the driver. Also, go to our website, and then click on Contact Us, then Complaint, and then click on Trip Discrepancy. You will then be prompted for more information and given a credit for the ride.

Forward This Confirmation to a Spouse, Friend, or Parent:

We encourage you to forward this Confirmation to a spouse, friend or parent, whether by email or by sending them a printed copy. This way, they will be able to keep tabs on you and the other riders during the actual ride and this will give them some peace of mind. Also, you may want to briefly discuss the ride with them, so please consider this.

Iron Out Other Trip Details:

1. Agree on the exact pick-up time and location. Consider confirming this the night before the ride is to occur.

2. Obtain mobile telephone numbers in case of last minute changes. Do call each other about any important changes, including a change in the vehicle. (The other riders should have a say in that and an opportunity to examine the substituted vehicle and cancel the ride if the vehicle is significantly different.)

3. Do note that each rider, and the rider with the vehicle, should wait at least fifteen minutes at each pick-up location, for each other. (Also, try to call the others if you expect to be more than five minutes late, so they know that you are coming.)

4. Arrange for snacks and drinks to bring along and how to share their cost.

5. Arrange for music CDs and tapes to bring along.

6. Discuss the need for headphone use, to keep the vehicle quiet.

Additional Riders May Accept the Ride:

If the ride listing provided for additional riders, and any additional rider is identified by us, you will receive a separate Confirmation of each additional rider. Each additional rider may also want to work through the confirmation process with each other rider, and each of you should accommodate this.

On the Day of the Ride:

1. Each rider, and the rider with the vehicle, should wait at least fifteen minutes at any pick-up spot. After fifteen minutes, they do not have to wait any longer.

2. Try your best to call the other riders if you expect to be more than five minutes late, so they know that you are still coming.

3. The rider with the vehicle and the other authorized riders should make sure that no other person rides with them because this can raise safety and security concerns. The rider with the vehicle, as the vehicle owner (or as the one given control over the vehicle), should not let unauthorized persons participate in the ride. Letting others participate would be unfair to the authorized riders and will result in a substantial downgrading of your rating. Any others who attempt to participate in the ride should be told that they cannot participate and should be left behind.

4. If any other person not covered by a Confirmation is allowed to participate in the trip, then each rider should seriously consider skipping the ride. This should not happen in most cases, but it could happen. If it does happen, we cannot give you any assurance about the identity of the other traveler, and therefore we cannot give you any assurance about your safety or security. If it does happen, and you opt to cancel, you will receive a credit. You should go to our website and then click on Contact Us, then Complaint, and then click on DOR Rider Discrepancy. You will then be prompted for more information.

77/90

FIG. 78

5. If the person with the vehicle - i.e., the trip poster - does not appear, but someone else does and offers the same ride, you should not get into the vehicle. You should not take the ride. You should go to our website and then click on Contact Us, then send us an email (Please include the TripID which you can find in the Ride Details).

We wish you a safe and pleasant ride.!!

Thank you for using our services.

Yours Sincerely,

The Ridecheck Team

http://www.ridecheck.com

FIG. 79

Acceptor 2 Signs Out



FIG. 80

"RideposTer" Reviews Ride On 2/8

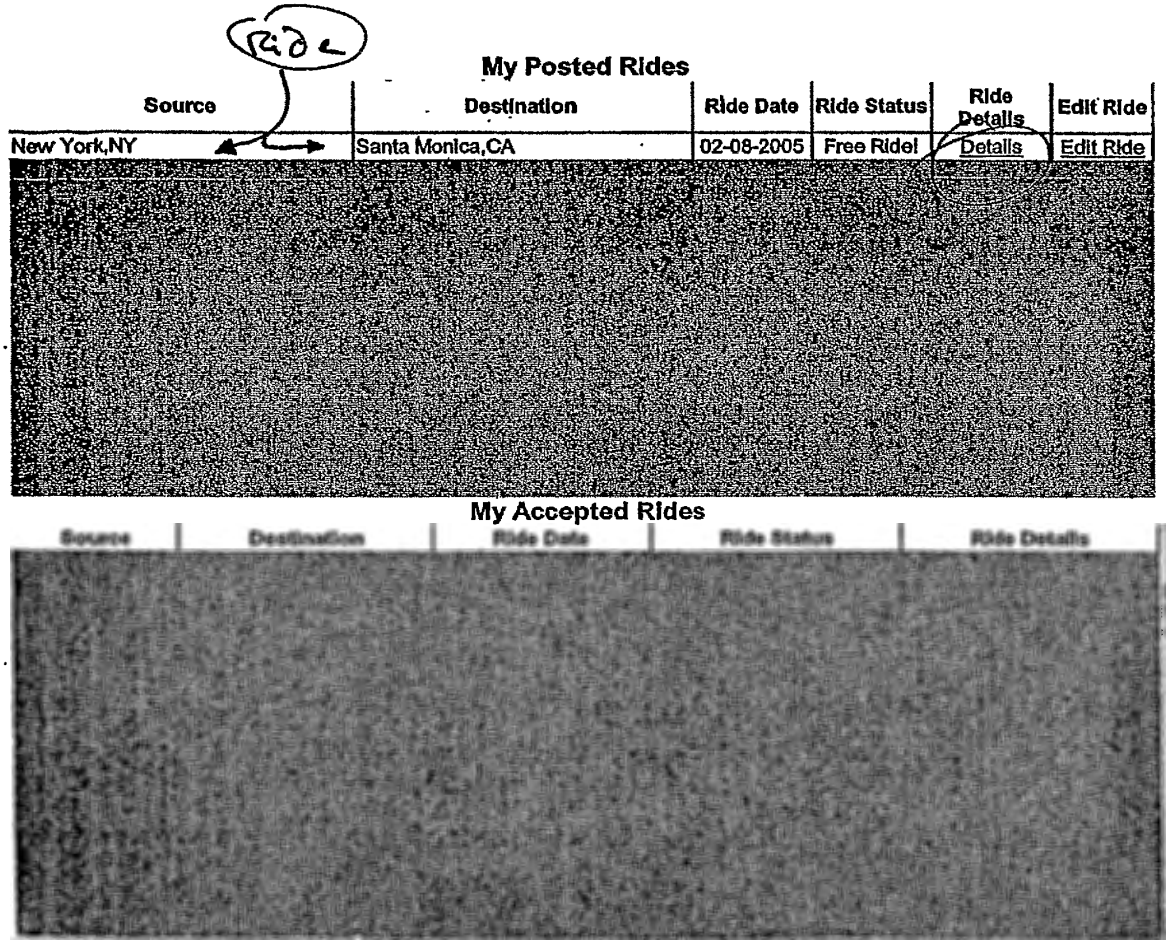


FIG. 81

Details of Ride on 2/8:

Ride leaving from New York, NY and going to Santa Monica, CA

The ride is scheduled to depart on: Tue, 8 Feb 2005 ,Morning
The ride will depart from: New York, NY (Neighbourhood: Bowling Green)
The ride will end in: Santa Monica, CA (Neighbourhood: Pier)
Number of possible riders: 3
Number of riders who have accepted this ride: 3 *
Smoking preferences: I do not smoke, and I will ride with non-smokers only
Gender preferences: Male/Female
Driving preferences: I will share driving
The vehicle used will be: 2000, Ford Taurus
The condition of the vehicle used is: good
The additional ride information: Leaving from Bowling Green and dropping off at the Pier. No pets. Only rock will be played. Otherwise, bring headsets.
Expense Agreement: Riders with me must pay depreciation - 20 cents per mile. They can share that charge pro rata.
Trip ID: e97562520af000f501b99786ccd609e3

* 3 acceptances shown.

FIG. 82

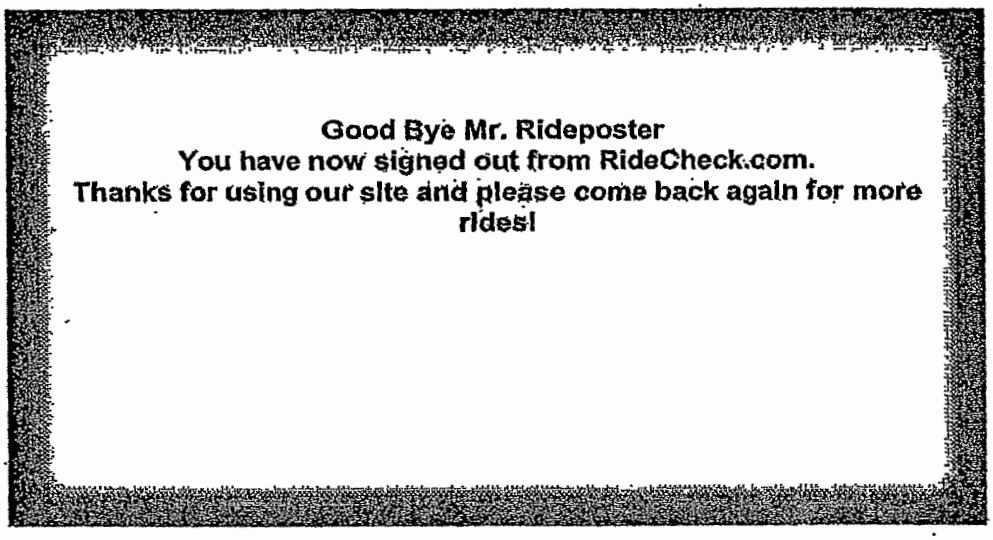

Good Bye Mr. Rideposter
You have now signed out from RideCheck.com.
Thanks for using our site and please come back again for more rides!

FIG. 83

Clyde 100 - Accepted Rides on "My Rides"

Ratings for my Posted Rides

Source	Destination	Ride Date	Ride Details	Rate Riders
New York,NY	Beverly Hills,CA	03-05-2005	Details	Future Ride
New York,NY	Beverly Hills,CA	02-24-2005	Details	Future Ride
New York,NY	Beverly Hills,CA	01-31-2005	Details	Rate Riders
New York,NY	Beverly Hills,CA	01-30-2005	Details	No Riders
New York,NY	Beverly Hills,CA	01-20-2005	Details	Rate Riders

Ratings for my Accepted Rides

Source	Destination	Ride Date	Ride Details	Rate Riders
New York,NY	Beverly Hills,CA	03-05-2005	Details	Future Ride
New York,NY	Pacoima,CA	03-30-2005	Details	Future Ride
New York,NY	Los Angeles,CA	02-26-2005	Details	Future Ride
New York,NY	Beverly Hills,CA	01-31-2005	Details	Rate Riders
Morris Plains,NJ	los angeles,CA	01-31-2005	Details	Rate Riders
Brooklyn,NY	Venice,CA	02-18-2005	Details	Future Ride
New York,NY	Pacoima,CA	01-30-2005	Details	Rate Riders
New York,NY	Marina del Rey,CA	03-15-2005	Details	Future Ride
Morris Plains,NJ	los angeles,CA	01-26-2005	Details	Rate Riders
New York,NY	Reseda,CA	03-30-2005	Details	Future Ride
New York,NY	Beverly Hills,CA	01-20-2005	Details	Rate Riders

ride

83/90

FIG. 84

Details on 1/26 Ride - Ratings Info

Ride leaving from Morris Plains, NJ and going to los angeles, CA

The ride is scheduled to depart on: Wed, 26 Jan 2005 ,Morning
The ride will depart from: Morris Plains, NJ
The ride will end in: los angeles, CA
Number of possible riders: 6
Number of riders who have accepted this ride: 3
Smoking preferences: I do not smoke, and I will ride with non-smokers only
Gender preferences: Male/Female
Driving preferences: Only I will drive
The vehicle used will be: 2001, Mercedes ML320
The condition of the vehicle used is: mint
The additional ride information: blah!
Expense Agreement: hahahahahaha
Trip ID: 3477d79e936bc1630048fe360de1becb

The ride Originator:
Name: Hari Godbole
Email Address: godboles@ureach.com
Good Ratings: 1
Bad Ratings: None Yet

Ratings

The ride Acceptor(s):
Name: Clyde Mitchell
Email Address: clydemitchell@alum.mit.edu
Good Ratings: 3
Bad Ratings: 1

Ratings

FIG. 85

1/26 Ride ~ "Rate Riders"

Rate the riders for the Ride leaving from Morris Plains, NJ and going to los angeles, CA

Rider Details	Rate the Rider
Trip Originator Name: Hari Godbole Email Address: godboles@ureach.com	Good
Name: e2 g2 Email Address: eli_graf2003@yahoo.com	Bad
Name: kaka kaku Email Address: godboles@ureach.com	Good

* click here when done rating riders.

FIG. 86

1/26 Ride - Ratings Acknowledged

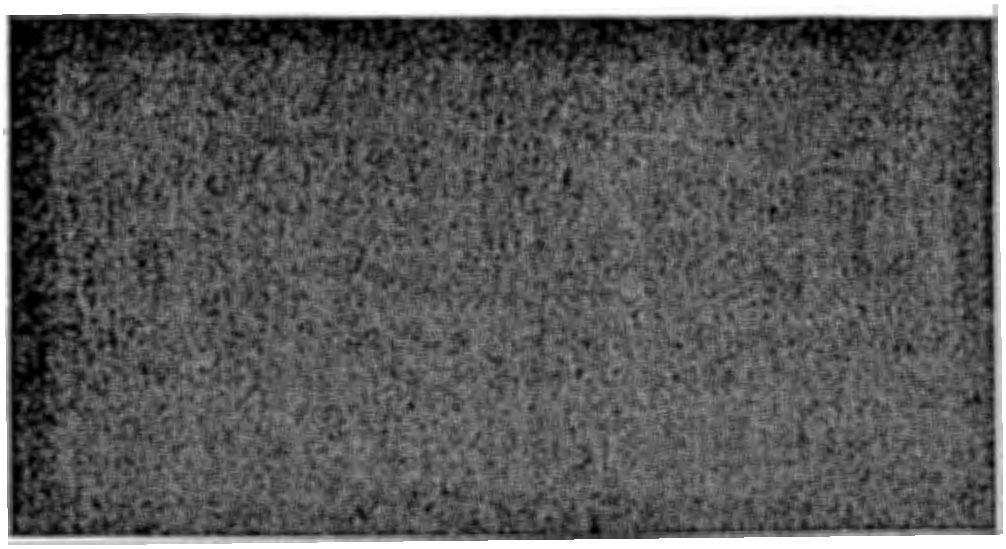


FIG. 87

Clyde Mitchell — Reminder to Acceptor2

From: rideCheckTeam@ridecheck.com
Sent: Monday, February 07, 2005 3:01 AM
To: clydemitchell@alum.mit.edu
Subject: Ridecheck Ride Reminder for your ride on: Tue, 8 Feb 2005

Dear Acceptor2,

THIS IS REMINDER FROM RIDECHECK.COM ABOUT YOUR TRIP. THIS REMINDER CONTAINS IMPORTANT INFORMATION CONCERNING FINALIZING YOUR RIDE FOR THE DATE SET FORTH BELOW. KINDLY FOLLOW THE SUGGESTIONS MADE BELOW TO MAKE THE RIDE SAFE AND PLEASANT FOR YOU AND YOUR FELLOW RIDERS.

Ride Summary:

The ride is scheduled to depart on: Tue, 8 Feb 2005

The ride will depart from: New York, NY

The ride destination is: Santa Monica, CA

Ride ID: e97562520af000f501b99786cad609c3

Vehicle Information:
Vehicle Make: Ford
Year: Sun Feb 06 00:00:00 CST 2000
Color: Silver
Model: Taurus
Condition: good
License plate number: AAA1111
Issuing state: USA,NY

Ride Poster Information:

Name:Clyde Rideposter
From: New York, USA,NY
Email address: clydemitchell@alum.mit.edu
First telephone number: 2127229257
Second telephone number: 2127229258
Age: 105
Last six digits of the ride rider's Drivers License: 11111A

Last six digits of the rider's School ID: 11111A

Additional Ride Acceptor(s) Information :

Name:Clyde Acceptor
From: Yuma, USA,AZ
Email address: clydemitchell@alum.mit.edu
First telephone number: 2222222222
Second telephone number: 3333333333
Age: 48
Last six digits of the ride riders's Drivers License: 222yyy

Last six digits of the rider's School ID: 222222

Name:Pawan Deedwaniya
From: Cambridge, USA,MA
Email address: pawand@mit.edu

FIG. 88

First telephone number: 9142042924
Age: 21
Last six digits of the ride riders's Drivers License: 221257

Last six digits of the rider's School ID: 915124

Recommendations:

We strongly recommend the following:

First, each of you should confirm the above information by meeting briefly with each of your co-riders and the rider with the vehicle. (You may want to delay the meeting if you are expecting additional riders to accept the ride. We will let you know as soon as we know.) Consider meeting them after class at a coffeehouse, a college building, such as a library, cafeteria, or student center, or some other public place, near a place where you can see the vehicle. (You should not meet at a private residence or apartment or get into the vehicle at this point.)

Second, each rider should check-out the rider with the vehicle: his or her student ID, drivers? license and vehicle license information. Compare that information and his or her vehicle with the above information in this Confirmation.

Third, the rider with the vehicle should check-out the accepting riders: their student IDs and/or drivers licenses. Compare that information with the above information in the Confirmation.

Each rider (including the driver) must be 18 or older, except in the following states. If your ride originates in the District of Columbia, Indiana, Mississippi, or Pennsylvania, each rider must be 21 or older (including the driver).

For rides originating in Canada, each rider (including the driver) must be 18 or older, except in the following provinces, where each rider must be 19 or older: British Columbia, New Brunswick, Newfoundland, Northwest Territories, Nova Scotia and the Yukon.

Fourth, examine the vehicle to make sure that it fits the description above.

In most cases, there should not be any significant discrepancies. If there are any discrepancies, please see below because we are concerned about your safety and security.

Discrepancies:

If any rider presents any significant discrepancy from the above information, the rider with the vehicle should cancel the problematic rider by telling the problematic rider. Also, go to our website and then click on Contact Us, then Complaint, and then click on Rider Discrepancy. You will then be prompted for more information.

If the rider with the vehicle (the driver) presents any significant discrepancy, one of the riders should cancel the ride by telling the driver. Also, go to our website, and then click on Contact Us, then Complaint, and then click on Trip Discrepancy. You will then be prompted for more information and given a credit for the ride.

Forward This Confirmation to a Spouse, Friend, or Parent:

We encourage you to forward this Confirmation to a spouse, friend or parent, whether by email or by sending them a printed copy. This way, they will be able to keep tabs on you and the other riders during the actual ride and this will give them some peace of mind. Also, you may want to briefly discuss the ride with them, so please consider this.

Iron Out Other Trip Details:

1. Agree on the exact pick-up time and location. Consider confirming this the night before the ride is to occur.

2. Obtain mobile telephone numbers in case of last minute changes. Do call each other about any important changes, including a change in the vehicle. (The other riders should have a say in that and an opportunity to examine the substituted vehicle and cancel the ride if the vehicle is significantly different.)

3. Do note that each rider, and the rider with the vehicle, should wait at least fifteen minutes at each pick-up location, for each other. (Also, try to call the others if you expect to be more than five minutes late, so they know that you are coming.)

4. Arrange for snacks and drinks to bring along and how to share their cost.

2

FIG. 89

5. Arrange for music CDs and tapes to bring along.

6. Discuss the need for headphone use, to keep the vehicle quiet.

Additional Riders May Accept the Ride:

If the ride listing provided for additional riders, and any additional rider is identified by us, you will receive a separate Confirmation of each additional rider. Each additional rider may also want to work through the confirmation process with each other rider, and each of you should accommodate this.

On the Day of the Ride:

1. Each rider, and the rider with the vehicle, should wait at least fifteen minutes at any pick-up spot. After fifteen minutes, they do not have to wait any longer.

2. Try your best to call the other riders if you expect to be more than five minutes late, so they know that you are still coming.

3. The rider with the vehicle and the other authorized riders should make sure that no other person rides with them because this can raise safety and security concerns. The rider with the vehicle, as the vehicle owner (or as the one given control over the vehicle), should not let unauthorized persons participate in the ride. Letting others participate would be unfair to the authorized riders and will result in a substantial downgrading of your rating. Any others who attempt to participate in the ride should be told that they cannot participate and should be left behind.

4. If any other person not covered by a Confirmation is allowed to participate in the trip, then each rider should seriously consider skipping the ride. This should not happen in most cases, but it could happen. If it does happen, we cannot give you any assurance about the identity of the other traveler, and therefore we cannot give you any assurance about your safety or security. If it does happen, and you opt to cancel, you will receive a credit. You should go to our website and then click on Contact Us, then Complaint, and then click on DOR Rider Discrepancy. You will then be prompted for more information.

5. If the person with the vehicle - i.e., the trip poster - does not appear, but someone else does and offers the same ride, you should not get into the vehicle. You should not take the ride. You should go to our website and then click on Contact Us, then send us an email (Please include the TripID. which you can find in the Ride Details).

We wish you a safe and pleasant ride.!!

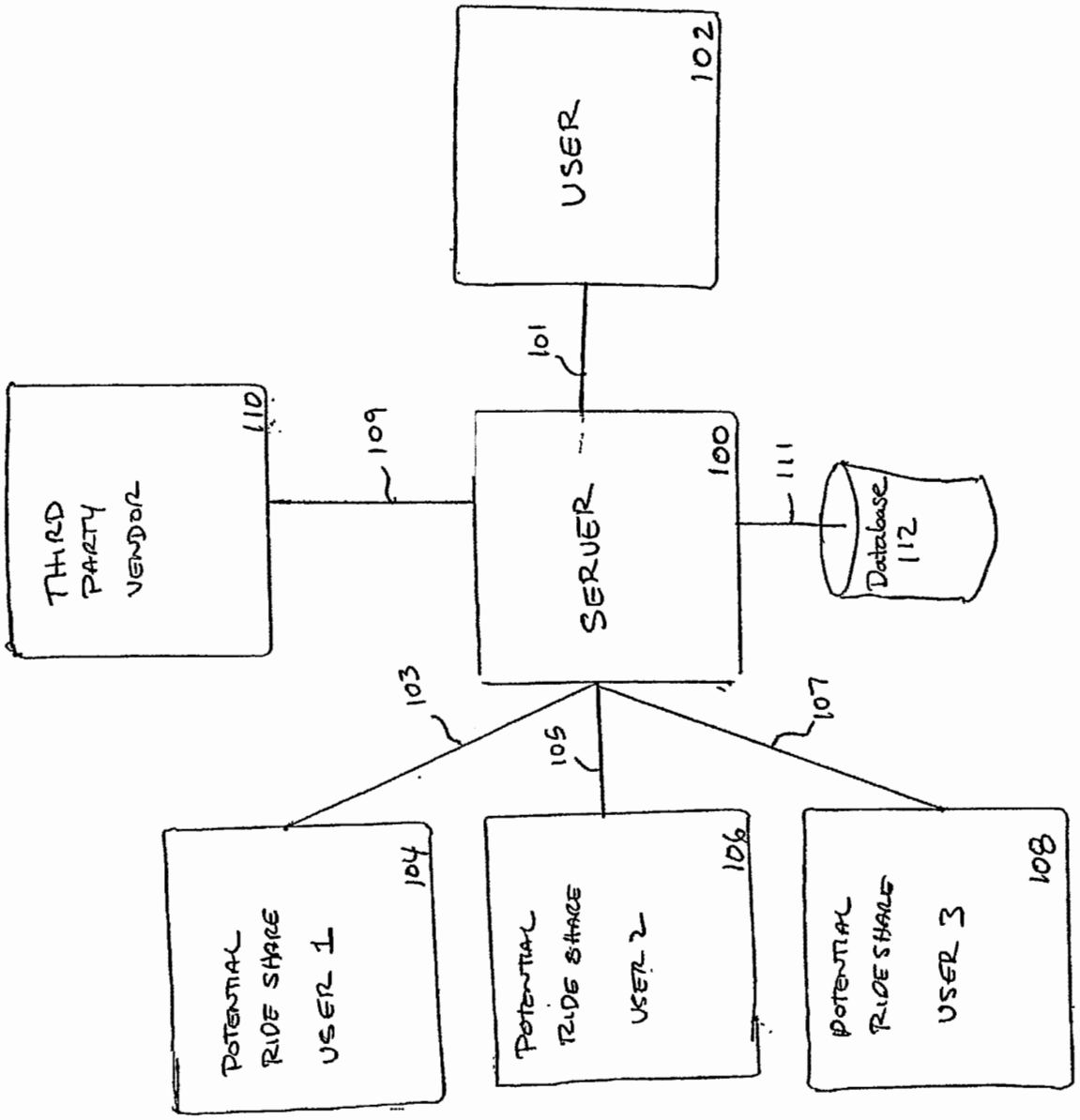
Thank you for using our services,

Yours Sincerely,

The Ridecheck Team

http://www.ridecheck.com

FIG. 90


USER
102
101
THIRD PARTY VENDOR
110
109
SERVER
100
111
Database 112
103
105
107
POTENTIAL RIDE SHARE USER 1
104
POTENTIAL RIDE SHARE USER 2
106
POTENTIAL RIDE SHARE USER 3
108

Electronic Acknowledgement Receipt

EFS ID:	43087587
Application Number:	17236491
International Application Number:	
Confirmation Number:	7940
Title of Invention:	SYSTEMS AND METHODS FOR MATCHING PICK-UP REQUESTS WITH TRANSPORT PROVIDERS, TRACKING TRIP PROGRESS, AND ENABLING PROVIDER RATINGS
First Named Inventor/Applicant Name:	Sean O'SULLIVAN
Customer Number:	108449
Filer:	Joel Stuart Simon/Jeovany Cantillano
Filer Authorized By:	Joel Stuart Simon
Attorney Docket Number:	00199-0001-25000
Receipt Date:	25-JUN-2021
Filing Date:	21-APR-2021
Time Stamp:	09:05:59
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	Information Disclosure Statement (IDS) Form (SB08)	SB08.pdf	1058352 5caafba1652c194d8698ae0217f08584aa69a7d9	no	16

Warnings:

Information:					
2	Foreign Reference	JP2003036498A.pdf	13703745 e79a4685c0007694bbc156121631f4c0148a54a8	no	18
Warnings:					
Information:					
3	Foreign Reference	WO02073546A2.pdf	539286 1153705148185ba778c36f395544dc16630ffd04	no	15
Warnings:					
Information:					
4	Foreign Reference	WO2005045549A2.pdf	2462260 b99a92a2fd54e8af2a8fdb8168e9fc0b0abf923b	no	48
Warnings:					
Information:					
5	Foreign Reference	WO2006011158A2.pdf	1797073 0a31ef8a293894fe01657719cee357c6c3e25bc8	no	42
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Information:					
6	Foreign Reference	WO2006088703A2.pdf	6960790 048b85dbee27530647137de934ac282398754faf	no	119
Warnings:					
Information:					
7	Non Patent Literature	DAILEY.pdf	6532826 b9b1f34f0d1d613fe17d4c3652c39610a08f2159	no	17
Warnings:					
Information:					
8	Non Patent Literature	DILLENBURG.pdf	3025568 1fa783688e229305e72ec4b3e2ca47da0dd802cb	no	7
Warnings:					
Information:					

9	Non Patent Literature	HALL.pdf	2118860 91e4ac442fbb9cce60d12e79dca86afaea8f34ea	no	8
Warnings:					
Information:					
10	Non Patent Literature	HU.pdf	7194690 99a516659c6e0ee0c6c01eb6821617d72343dfac	no	142
Warnings:					
Information:					
11	Non Patent Literature	HWANG_Part1.pdf	23866536 a0b30bd64764bf91c0f0e893ccde94488c7c70fc	no	100
Warnings:					
Information:					
12	Non Patent Literature	HWANG_Part2.pdf	26150965 e60012dfd1bf87e7beb29928685bc674c705e37a	no	100
Warnings:					
Information:					
13	Non Patent Literature	HWANG_Part3.pdf	15502859 5a017da5770d13efe10a3f808bc2009860014d69	no	64
Warnings:					
Information:					
14	Non Patent Literature	HYRECAR.pdf	4792315 eff1aaa9f83efa53f5edb53cb272e46ad1ad2036	no	22
Warnings:					
Information:					
15	Non Patent Literature	MIYAMOTO.pdf	3281327 99736c85ba3daad9bfd66b5d1c666e5441b7ad71	no	6
Warnings:					
Information:					

16	Non Patent Literature	ROORDA.pdf	4624088 4b9d53ef0a8a7809b628c44570adab1bf648b42b	no	6
Warnings:					
Information:					
17	Non Patent Literature	SAVELSBERGH.pdf	3528903 943001ab0f4b098f107cb24b48bee1501fcb7e41	no	14
Warnings:					
Information:					
18	Non Patent Literature	STEGER.pdf	4051654 0c44a44e55b1ac6fdf12b954260f59b2542c99ff	no	6
Warnings:					
Information:					
19	Non Patent Literature	TAO.pdf	2506252 a6f7b1e58592f6d362db836f4505f566df251424	no	4
Warnings:					
Information:					
20	Non Patent Literature	WINTER.pdf	3520459 62a0a90f79b3577f882fbe6287ca8c608f2e8095	no	8
Warnings:					
Information:					
		Total Files Size (in bytes):	137218808		

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.

UNITED STATES PATENT AND TRADEMARK OFFICE

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

108449 7590 07/01/2021

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

EXAMINER
WENDELL, ANDREW

ART UNIT	PAPER NUMBER
2648	

DATE MAILED: 07/01/2021

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/236,491	04/21/2021	Sean O'SULLIVAN	00199-0001-25000	7940

TITLE OF INVENTION: SYSTEMS AND METHODS FOR MATCHING PICK-UP REQUESTS WITH TRANSPORT PROVIDERS, TRACKING TRIP PROGRESS, AND ENABLING PROVIDER RATINGS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$600	$0.00	$0.00	$600	10/01/2021

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 07/01/2021

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.
17/236,491	04/21/2021	Sean O'SULLIVAN	00199-0001-25000	7940

TITLE OF INVENTION: SYSTEMS AND METHODS FOR MATCHING PICK-UP REQUESTS WITH TRANSPORT PROVIDERS, TRACKING TRIP PROGRESS, AND ENABLING PROVIDER RATINGS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$600	$0.00	$0.00	$600	10/01/2021

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,
(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.

1 _____
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

❑ 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 _____ Date _____

Typed or printed name _____ Registration No. _____

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Alexandria, Virginia 22313-1450
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/236,491	04/21/2021	Sean O'SULLIVAN	00199-0001-25000	7940

108449 7590 07/01/2021

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

EXAMINER	
WENDELL, ANDREW	
ART UNIT	**PAPER NUMBER**
2648	

DATE MAILED: 07/01/2021

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. 17/236,491	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 4/21/2021.
   ☐ 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 2-21 . 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, the prior art of record, 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).

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

The prior art of record fails to teach a method implemented by at least one processor of a shared transport system, the method comprising receiving, from a transport user application operating on a transport user device corresponding to a

transport user, a pick-up request for at least one person or item, the pick-up request identifying a pick-up location and a drop-off location for the at least one person or item; identifying one or more transport providers available to service the pick-up request, based on information from a transport provider application operating on one or more transport provider devices corresponding to the identified one or more transport providers; transmitting the pick-up request to a transport provider device corresponding to a transport provider, the transport provider being one of the identified one or more transport providers; causing the transport provider device to display, via the transport provider application, one or more of the pick-up location or a transport user rating score associated with the transport user; receiving an indication of an acceptance of the pick-up request; causing the transport provider device to display, via the transport provider application, at least: (1) navigation instructions from a location of the transport provider to the pick-up location, the location determined based on GPS position data of the transport provider device; and (2) information descriptive of the at least one person or item; causing the transport user device to display, via the transport user application information descriptive of one or more of the transport provider, a transport provider vehicle associated with the transport provider, or a transport provider rating score associated with the transport provider; an estimated cost associated with servicing the pick-up request; an estimated time associated with arrival of the at least one person or item at the drop-off location; and location information of the transport provider based on the GPS position data of the transport provider device; receiving an indication, based on the GPS position data of the transport provider device, that the transport provider is approaching the pick-up location; in response to receiving the indication that the

transport provider is approaching the pick-up location, causing the transport user device, via the transport user application, to display a notification indicative of the approaching transport provider; receiving, from the transport provider device, an indication that the at least one person or item has been picked up; causing the transport provider device, via the transport provider application, to display navigation directions to the drop-off location based on the GPS position data of the transport provider device; causing the transport user device, via the transport user application, to display one or more of an estimated time associated with arrival of the at least one person or item at the drop-off location or the location information of the transport provider based on the GPS position data of the transport provider device; tracking progress of travel of the transport provider along a route from the pick-up location to the drop-off location based on one or more of the GPS position data of the transport provider device or GPS position data of the transport user device; receiving an indication that the transport provider has delivered the at least one person or item to the drop-off location from at least one of the transport provider device or the transport user device; transmitting trip summary data associated with the pick-up request to the transport user device, the trip summary data displayable via the transport user application and including a cost for servicing the pick-up request and a transport provider rating prompt soliciting the transport user to provide a rating value for the transport provider; receiving the rating value for the transport provider from the transport user device via the transport user application; updating the transport provider rating score of the transport provider based on the received rating value for the transport provider; and causing the cost for servicing

the pick-up request to be charged to a payment method associated with the transport user.

The prior art of record fails to teach the claimed subject matter as claimed and substantially connected in claims 2-11, 12-19, 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. Abhyandker discloses a short term automobile rentals in a geo-spatial environment.

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.

/ANDREW WENDELL/
Primary Examiner, Art Unit 2648
6/24/2021

Notice of References Cited	Application/Control No. 17/236,491	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-20140172727-A1	06-2014	Abhyanker; Raj V.	G06Q30/0645	705/307
	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.

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/236,491	O'SULLIVAN, Sean
	Examiner	**Art Unit**
	ANDREW WENDELL	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
G06Q	/	10	/	02	I	2013-01-01

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	20	
/ANDREW WENDELL/ Primary Examiner, Art Unit 2648	24 June 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	5a

U.S. Patent and Trademark Office — Part of Paper No.: 20210623

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/236,491	O'SULLIVAN, Sean
	Examiner	**Art Unit**
	ANDREW WENDELL	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)	20	
/ANDREW WENDELL/ Primary Examiner, Art Unit 2648	24 June 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	5a

U.S. Patent and Trademark Office — Part of Paper No.: 20210623

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	Examiner	**Art Unit**
	ANDREW WENDELL	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	11	19	20										
2	3	11	12	20	21										
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5	6	14	15												
6	7	15	16												
7	8	16	17												
8	9	17	18												
9	10	18	19												

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	20	
/ANDREW WENDELL/ Primary Examiner, Art Unit 2648	24 June 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	5a

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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/236,491	O'SULLIVAN, Sean
	Examiner	Art Unit
	ANDREW WENDELL	2648

CPC - Searched*		
Symbol	**Date**	**Examiner**
G08G 1/123	06/21/2021	/AW/
G06Q 10/063112, 10/00, 50/30, 10/025, 10/02	06/21/2021	/AW/
H04W 4/42, 4/44, 4/46, 4/48, 4/80, 4/04, 4/046	06/21/2021	/AW/
H04B 7/2693, 1/3822	06/21/2021	/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	06/21/2021	/AW/
East Search	06/22/2021	/AW/
East Search	06/23/2021	/AW/

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**
	PG Pub and Inventor Text Search	06/23/2021	/AW/

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/236,491	O'SULLIVAN, Sean
	Examiner	**Art Unit**
	ANDREW WENDELL	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	06/24/2021								
1	2	=								
2	3	=								
3	4	=								
4	5	=								
5	6	=								
6	7	=								
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14	15	=								
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16	17	=								
17	18	=								
18	19	=								
19	20	=								
20	21	=								

Bibliographic Data

Application No: 17/236,491

Foreign Priority claimed: ○ Yes ◉ No

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

Verified and Acknowledged: /ANDREW WENDELL/ (Examiner's Signature) | (Initials)

Title: SYSTEMS AND METHODS FOR MATCHING PICK-UP REQUESTS WITH TRANSPORT PROVIDERS, TRACKING TRIP PROGRESS, AND ENABLING PROVIDER RATINGS

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
04/21/2021	455	2648	00199-0001-25000
RULE			

APPLICANTS

CARMA TECHNOLOGY LIMITED, Cork City, IRELAND

INVENTORS

Sean O'SULLIVAN, Princeton, NJ, UNITED STATES

CONTINUING DATA

This application is a CON of 16983598 08/03/2020 PAT 11017668

16983598 is a CON of 16698312 11/27/2019 PAT 10748420

16698312 is a CON of 16198000 11/21/2018 PAT 10593206

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

IF REQUIRED, FOREIGN LICENSE GRANTED**

04/27/2021

**** SMALL ENTITY ****

STATE OR COUNTRY

UNITED STATES

ADDRESS

Bookoff McAndrews, PLLC

2020 K Street NW

Suite 400

Washington, DC 20006

UNITED STATES

FILING FEE RECEIVED

$3,210

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
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Art Unit	2648
Examiner Name	Andrew Wendell
Attorney Docket Number	00199-0001-25000

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	4360875		1982-11-23	BEHNKE; Robert W.	
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	Examiner Name	Andrew Wendell
	Attorney Docket Number	00199-0001-25000

/A.W/	9	7062376		2006-06-13	OESTERLING; Christopher L.	
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	Examiner Name	Andrew Wendell
	Attorney Docket Number	00199-0001-25000

/A.W/	20	10748420		2020-08-18	O'SULLIVAN; Sean	
/A.W/	21	10803749		2020-10-13	O'SULLIVAN; Sean	

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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		2001-11-01	DICKERSON; Stephen L.	
/A.W/	2	20010056363		2001-12-27	GANTZ; Donald T. et al.	
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/A.W/	6	20020052751		2002-05-02	EBATA; Shinji	
/A.W/	7	20020069017		2002-06-06	SCHMIER; Kenneth J. et al.	

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	Art Unit	2648
	Examiner Name	Andrew Wendell
	Attorney Docket Number	00199-0001-25000

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/A.W/	9	20020127997		2002-09-12	KARLSTEDT; Paul et al.	
/A.W/	10	20020135515		2002-09-26	RANKIN; Paul J. et al.	
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/A.W/	20	20040076280		2004-04-22	ANDO; Tanichi et al.	
/A.W/	21	20040106399		2004-06-03	KI; Joon- Seong	
/A.W/	22	20040119589		2004-06-24	FRENCH; Kevin et al.	
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/A.W/	24	20040158483		2004-08-12	LECOUTURIER; Jacques M.	
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/A.W/	28	20050021227		2005-01-27	MATSUMOTO; Shuichi et al.	
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/A.W/	30	20050172148		2005-08-04	YING; Jeffrey	
/A.W/	31	20050197767		2005-09-08	NORTRUP; Edward H.	
/A.W/	32	20060010037		2006-01-12	ANGERT; Charles D. et al.	
/A.W/	33	20060015394		2006-01-19	SORENSEN; Roger G.	
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/A.W/	35	20060059023		2006-03-16	MASHINSKY; Alex	
/A.W/	36	20060091206		2006-05-04	OLSEN; John A. et al.	
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/A.W/	38	20060178949		2006-08-10	McGRATH; Paul Thomas	
/A.W/	39	20060234631		2006-10-19	DIEGUEZ; Jorge	
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/A.W/	41	20060276960		2006-12-07	ADAMCZYK; Maria et al.	
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/A.W/	46	20070135078		2007-06-14	LJUNG; Peter	
/A.W/	47	20070143012		2007-06-21	KEAVENY; Ian et al.	
/A.W/	48	20070150369		2007-06-28	ZIVIN; Michael A.	
/A.W/	49	20070179792		2007-08-02	KRAMER; James Frederick	
/A.W/	50	20070243880		2007-10-18	GITS; Peter Michael et al.	
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/A.W/	52	20080004802		2008-01-03	HORVITZ; Eric J.	
/A.W/	53	20080041936		2008-02-21	VAWTER; Jamison	
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/A.W/	55	20080109852		2008-05-08	KRETZ; Martin H. et al.	
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/A.W/	60	20080167892		2008-07-10	CLARK; Neil et al.	
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/A.W/	63	20080270019		2008-10-30	ANDERSON; Jeffrey Paul et al.	
/A.W/	64	20080277183		2008-11-13	HUANG; Qingfeng et al.	
/A.W/	65	20090089105		2009-04-02	WU; Jen-Chang	
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/A.W/	67	20090326991		2009-12-31	WEI; Hongfeng et al.	
/A.W/	68	20100161392		2010-06-24	ASHBY; Duncan et al.	
/A.W/	69	20110102165		2011-05-05	RAHAMIM; Avner	
/A.W/	70	20110145089		2011-06-16	KHUNGER; Sanjay et al.	
/A.W/	71	20110153629		2011-06-23	LEHMANN; Jens et al.	
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/A.W/	74	20130185109		2013-07-18	LOABNEH; Nohad et al.	
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/A.W/	76	20150206166		2015-07-23	FLETCHER; Paul et al.	
/A.W/	77	20160069694		2016-03-10	TAO; Christine et al.	
/A.W/	78	20170011324		2017-01-12	TRUONG; Michael et al.	
/A.W/	79	20170178416		2017-06-22	BARREIRA AVEGLIANO; Priscilla et al.	
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/A.W/	87	20190205812		2019-07-04	AFZAL; Danial et al.		
/A.W/	88	20200410857		2020-12-31	O'SULLIVAN; Sean		

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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	2003036498	JP	A	2003-02-07	YAZAKI CORP.		X
/A.W/	2	02073546	WO	A2	2002-09-19	ERICSSON TELEFON AB L M [SE], et al.		☐

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/A.W/	1	HU P.S., "Summary of Travel Trends 1995 National Personal Transportation Survey", prepared for U.S. Department of Transportation, Federal High Administration, December 1999, 142 pages.	

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/A.W/	2	HyreCar, "The 14 Best Apps to track your Uber and Lyft Mileage", Dec. 30, 2017, (https://web.archive.org/web/20171230231230/http://hyrecar.com/blog/best-apps-to-track-uber-and-lyft-mileage/), 22 pages, (Year: 2017).
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Examiner Signature	/ANDREW WENDELL/	Date Considered	06/21/2021

*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.

[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.

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	Examiner Name	Andrew Wendell
	Attorney Docket Number	00199-0001-25000

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	/Joel S. Simon/	Date (YYYY-MM-DD)	2021-04-21
Name/Print	Joel S. Simon	Registration Number	70271

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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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).

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	218,899	(G08G1/123 or G06Q10/063112 or G06Q10/00 or G06Q50/30 or G06Q10/025 or G06Q10/02 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	2021/06/21 08:19
S2	73	(("4360875") or ("5799263") or ("6085976") or ("6363323") or ("6434510") or ("6675150") or ("6919804") or ("6975997") or ("7062376") or ("7080019") or ("7119716") or ("7449998") or ("7870025") or ("7877204") or ("9026454") or ("9911169") or ("9978282") or ("9991169") or ("10121289") or ("10748420") or ("10803749")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/06/21 13:25
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S4	119	(("20060276960") or ("20070013209") or ("20070027825") or ("20070030824") or ("20070052586") or ("20070135078") or ("20070143012") or ("20070150369") or ("20070179792") or ("20070243880") or ("20070276595") or ("20080004802") or ("20080041936") or ("20080091342") or ("20080109852") or ("20080114629") or ("20080114829") or ("20080125967") or ("20080140479") or ("20080167892") or ("20080172173") or ("20080270010") or ("20080270019") or ("20080277183") or ("20090089105") or ("20090119006") or ("20090326991") or ("20100161392") or ("20110102165") or ("20110145089") or ("20110153629") or ("20110196708") or ("20120130872") or ("20130185109") or ("20140032282") or ("20150206166") or ("20160069694") or ("20170011324") or ("20170178416") or ("20180211541") or ("20180338225") or ("20190050880") or ("20190051174") or ("20190073737") or ("20190095965") or ("20190137288") or ("20190205812") or ("20200410857")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/06/21 16:49
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S6	7,194	S5 and (rating$1 or score$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/22 09:25
S7	218,980	(G08G1/123 or G06Q10/063112 or G06Q10/00 or G06Q50/30 or G06Q10/025 or G06Q10/02 or H04W4/42 or H04W4/44 or H04W4/46 or H04W4/48 or H04W4/80 or	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	ON	2021/06/22 09:25

		H04W4/04 or H04W4/046 or H04B7/2693 or H04B1/3822).cpc.	DERWENT; IBM_TDB			
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S9	1,259	S5 and ((rating$1 or score$1) with (prompt$3 or alert$3 or show$3))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/22 09:26
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S11	338	S7 and S10	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/22 09:27
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			DERWENT; IBM_TDB			
S15	338	S13 and S14	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/22 11:29
S16	57	S15 and (@ad<="20080212" or @pd<="20080212" or @rlad<="20080212" or @prad<="20080212")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/22 11:29
S17	895	((rating$1 or score$1) with (user or person or driver or rider) with (prompt$3 or alert$3 or show$3 or display$3)) same (ride$1 or transport$3 or transportation or taxi or uber or lyft)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/22 13:51
S18	438	S17 and ("G08G" or "G06Q" or "H04B" or "H04W" or "H04M")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/22 13:52
S19	69	S18 and (@ad<="20080212" or @pd<="20080212" or @rlad<="20080212" or @prad<="20080212")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/22 13:53
S20	68,478	(shar$3 with (ride$1 or transport$3 or transportation))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/22 15:17
S21	10,184	S20 and ((estimat$3 or predict$3) with (time or duration or arrival))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	ON	2021/06/22 15:17

			DERWENT; IBM_TDB			
S22	1,605	S21 and ((estimat$3 or predict$3) with (money or cost$1 or purchase))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/22 15:18
S23	968	S22 and ("G08G" or "G06Q" or "H04B" or "H04W" or "H04M")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/22 15:18
S24	91	S23 and (@ad<="20080212" or @pd<="20080212" or @rlad<="20080212" or @prad<="20080212")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/22 15:19
S25	5,956	(arriv$3 or pick adj2 up) with (prompt$3 or alert$3 or show$3 or display$3) with (driver or provider)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/22 17:01
S26	2,426	S25 and ("G08G" or "G06Q" or "H04B" or "H04W" or "H04M")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/22 17:01
S27	397	S26 and (@ad<="20080212" or @pd<="20080212" or @rlad<="20080212" or @prad<="20080212")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/22 17:01
S28	68,478	(shar$3 with (ride$1 or transport$3 or transportation))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	ON	2021/06/23 14:08

			DERWENT; IBM_TDB			
S29	1,762	S28 and ((GPS or global adj2 position$3) same (notification or notif$4 or alert$3))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/23 14:08
S30	385	S29 and ((estimat$3 or predict$3) with (cost$1 or money or purchase))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/23 14:12
S31	19	S30 and (@ad<="20080212" or @pd<="20080212" or @rlad<="20080212" or @prad<="20080212")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/23 14:13
S32	23,560	uber or lyft	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/23 14:22
S33	703	S32 and ((GPS or global adj2 position$3) same (notification or notif$4 or alert$3))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/23 14:22
S34	101	S33 and ((estimat$3 or predict$3) with (cost$1 or money or purchase))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/23 14:23
S35	0	S34 and (@ad<="20080212" or @pd<="20080212" or @rlad<="20080212" or @prad<="20080212")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	ON	2021/06/23 14:23

			DERWENT; IBM_TDB			
S36	68,478	(shar$3 with (ride$1 or transport$3 or transportation))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/23 15:01
S37	2,289	S36 and ((estimat$3 or predict$3) with (arrival or pick$3 adj2 up))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/23 15:01
S38	315	S36 and (((estimat$3 or predict$3) with (arrival or pick$3 adj2 up)) same (GPS or global adj2 posit$3))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/23 15:02
S39	58	S38 and (@ad<="20080212" or @pd<="20080212" or @rlad<="20080212" or @prad<="20080212")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/23 15:05
S40	23,560	uber or lyft	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/23 15:32
S41	106	S40 and (((estimat$3 or predict$3) with (arrival or pick$3 adj2 up)) same (GPS or global adj2 posit$3))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/23 15:32
S42	4	S41 and (@ad<="20080212" or @pd<="20080212" or @rlad<="20080212" or @prad<="20080212")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	ON	2021/06/23 15:32

			DERWENT; IBM_TDB			
S43	270	(gps or global adj2 posit$3) and (rating$1 or score$1) and ((estimat$3 or predict$3) with (payment$1 or cost$1 or money)) and ((estimat$3 or predict$3) with (arrival or pick adj2 up or drop adj2 off or dropoff)) same (navigat$3 or direction$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/23 16:12
S44	69	S43 and (@ad<="20080212" or @pd<="20080212" or @rlad<="20080212" or @prad<="20080212")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/23 16:13
S45	1,341	(gps or global adj2 posit$3) and (rating$1 or score$1) and ((estimat$3 or predict$3) with (payment$1 or cost$1 or money)) and ((estimat$3 or predict$3) with (arrival or pick adj2 up or drop adj2 off or dropoff)) and (navigat$3 or direction$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/23 16:20
S46	461	S45 and (@ad<="20080212" or @pd<="20080212" or @rlad<="20080212" or @prad<="20080212")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/23 16:20
S47	45	S46 and ((shar$3 with (ride$1 or transport$3 or transportation)) or uber or lyft)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/23 16:22
S48	143	o adj2 sullivan.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/23 16:46
S49	0	S48 and (pick adj2 up and transport adj2 provider and transport adj2 user and estimat$3 and cost and arrival and drop adj2 off and GPS and rating and payment)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	ON	2021/06/23 16:46

			DERWENT; IBM_TDB			
S50	72	(pick adj2 up and transport adj2 provider and transport adj2 user and estimat$3 and cost and arrival and drop adj2 off and GPS and rating and payment)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/06/23 16:47

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S51	0	(pick adj2 up and transport adj2 provider and transport adj2 user and estimat$3 and cost and arrival and drop adj2 off and GPS and rating and payment).clm.	US-PGPUB; USPAT	OR	ON	2021/06/23 16:44

6/24/2021 11:43:40 AM
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Doc description: Information Disclosure Statement (IDS) Filed

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	17236491
	Filing Date	2021-04-21
	First Named Inventor	Sean O'SULLIVAN
	Art Unit	2648
	Examiner Name	WENDELL, ANDREW
	Attorney Docket Number	00199-0001-25000

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	1	9892637		2018-02-13	DEMISSE; Dereje M.	
	2	10169987		2019-01-01	DEMISSE; Dereje M.	
	3	10395525		2019-08-27	DEMISSE; Dereje M.	
	4	10559199		2020-02-11	DEMISSE; Dereje M.	
	5	10748417		2020-08-18	DEMISSE; Dereje M.	

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	Attorney Docket Number	00199-0001-25000

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	1186056	CA	A	1985-04-23	BEHNKE RICHARD F.		
	2	10113803	DE	A1	2002-09-26	SIEMENS BUSINESS SERVICES GMBH [DE]		☒
	3	10237831	DE	A1	2004-02-26	HARTUNG MICHAEL [DE]		☒
	4	1710768	EP	A2	2006-10-11	NISSAN MOTOR [JP]		☐
	5	2001291192	JP	A	2001-10-19	OMRON TATEISI ELECTRONICS CO.		☒
	6	2002140399	JP	A	2002-05-17	NIPPON TELEGRAPH & TELEPHONE.		☒
	7	2002367086	JP	A	2002-12-20	FFC KK.		☒
	8	2003168195	JP	A	2003-06-13	DENSO CORP.		☒
	9	2003256982	JP	A	2003-09-12	SEIKO EPSON CORP.		☒
	10	2003331013	JP	A	2003-11-21	NEC CORP.		☒

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	Examiner Name	WENDELL, ANDREW
	Attorney Docket Number	00199-0001-25000

	11	2005182146	JP	A	2005-07-07	FUJITSU LTD.			☒
	12	0161604	WO	A1	2001-08-23	ZIPCAR INC [US]			☐
	13	0206994	WO	A2	2002-01-24	PAUL SUNIL [US]			☐
	14	03023641	WO	A1	2003-03-20	P2P COMMUNITY PTY LTD [AU], et al.			☐
	15	03040971	WO	A1	2003-05-15	SITRA LTD [GB], et al.			☐
	16	2004081833	WO	A1	2004-09-23	ECOLANE FINLAND OY [FI], et al.			☐
	17	9952084	WO	A1	1999-10-14	GIACOPINELLI VALERIO [IT], et al.			☐

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	Art Unit	2648
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	Attorney Docket Number	00199-0001-25000

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	Attorney Docket Number	00199-0001-25000

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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).

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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	/Joel S, Simon/	Date (YYYY-MM-DD)	2021-07-12
Name/Print	Joel S. Simon	Registration Number	70271

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(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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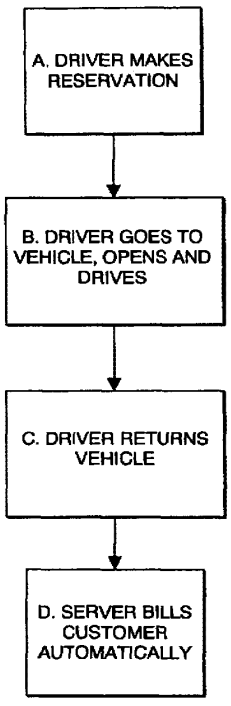
(74) Agent: **JACOBS, David**; Lucash, Gesmer & Updegrove, 40 Broad Street, Boston, MA 02109 (US).

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— *with amended claims*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: SYSTEMS AND METHODS FOR CONTROLLING VEHICLE ACCESS



(57) Abstract: Disclosed are methods and systems for an automated car sharing system. An authorized user makes a reservation (A) to use a vehicle at a certain location, specifying the date and time for the pick-up and drop-off. At the appointed time, the user accesses the vehicle (B) and presents identification to automatically gain access to the car. The system maintains all necessary information such as mileage, length of use, distance, and other such information, and when the user returns the car (C), automatically generates a bill (D).

WO 01/61604 A1

SYSTEMS AND METHODS FOR CONTROLLING VEHICLE ACCESS

Background of the Invention

1. Field of the Invention

The present invention relates generally to systems that provide for the shared-use of vehicles. More particularly, the invention relates to a system that allows one of a plurality of drivers to automatically make a reservation for a car, then the system controls the access and use of the car, and the return of the car, including billing.

2. Background of the Invention

The number of cars in cities continues to grow, placing an ever-increasing demand on a limited infrastructure of parking and roads. However, many of these cars are actually in use only a very small fraction of the time. Many drivers commute without a car by walking, bicycling or by public transportation, and their cars sit idle most of the week. Still others may commute by car, though alternative means of transportation are available, primarily because they anticipate a possible need for the car during the workday. These cars simply make traffic worse and needlessly occupy a valuable parking spot most workdays.

Shared-use systems have been described in the prior art, however, current systems are inconvenient for the vehicle drivers. Using a shared vehicle must be as convenient as possible or drivers will choose to use private vehicles

instead. The shared vehicles should be located a short walk from a driver's home or work which means that they should be distributed over a wide area rather than centrally located or located in a small number of pods. Transaction time and the number of steps that are required to gain entry to the vehicle should be minimized. Unnecessary steps such as retrieving a key from a kiosk, negotiating a barrier intended to secure the vehicle, filling out forms, etc. should be minimized. In addition, in current systems, the vehicles are frequently not reliably available. A reservation system can enable efficient use of vehicles and helps ensure availability. The reservation system should enable a user to easily select an available vehicle and time, or allow the user to choose from alternatives that are similar to the desired vehicle and time. Access to vehicles should be secure from unauthorized users. During a reservation, access should be restricted to the reserving driver. This provides an expected level of security for the reserving driver and prevents a vehicle from being used without a reservation either maliciously or inadvertently.

Several systems have been described for shared access or shared-use vehicles. Generally these systems describe various methods of access and monitoring vehicles and are not integrated with a reservation system. As such, they provide ways of sharing vehicles that are less economical and/or less reliable than the present invention. Nor are they very scalable, many requiring specialized parking facilities, communication pods, or kiosks.

U.S. Patent Nos. 3,624,608 and 3,665,397 describe systems that do not restrict access to the vehicles or include any reservation system. These systems require specially-modified stations to effect data transfer to and from the in-vehicle systems at each parking location and specially-modified parking locations for vehicle security. The systems do not provide for a high degree of

security or reliability, nor is such a system easily scaled due to the infrastructure required at each parking location.

U.S. Patent Nos. 5,519,260, 5,660,246 and 5,715,905 describe systems that are primarily concerned with vehicle monitoring and security. These systems do not include a reservation system.

There are a number of systems that require a single parking area, or multiple parking locations, to have a certain amount of infrastructure. Examples of these systems are described in U.S. Patent Nos. 5,812,070, 5,206,643, 5,726,885 and 5,066,853.

U.S. Patent No. 5,289,369 discloses a system that does not require any infrastructure modifications to the parking locations, but because the cars are parked in random locations, the system cannot guarantee the availability of a desired vehicle. According to this system, round trips are not required, which can result in an uneven distribution of vehicles, which then need to be redistributed.

It is therefore an object of the present invention to provide a system that allows a number of shared-use vehicles to be used by a number of drivers.

It is also an object to provide a system and method to access and monitor a vehicle-sharing system with an integrated reservation system.

It is a further object of the invention to provide a shared-use vehicle system that is convenient for use by the driver.

It is an additional object to provide a system that makes construction, management, and growth of a shared-use vehicle system economical.

Summary of the Invention

These and other objects are attained by the invention, which comprises a method and system for sharing the use of one or more vehicles by a plurality of drivers.

According to the present invention, a system for controlling access to a vehicle is provided. The system includes a vehicle-associated access control module that is located in the vehicle. This module allows access to the vehicle by users who have been authorized by a verification module. The verification module communicates with the vehicle-associated access control module over a communications such as the Internet or a wireless communications system.

The verification module includes a server that stores personal identification information for all authorized users, and vehicle information. The server has a database that stores all reservation requests, including specific vehicles, dates and times, and authorizations.

An authorized user can thus make a reservation for a specific vehicle at a certain date and time, and can request a pick-up and drop-off location. At the appointed time, the user accesses the vehicle and presents identification such as a smart card or PIN to gain access to the car. The system maintains all necessary information such as mileage, length of use, distance, and other such information, and when the user returns the car, automatically generates a bill.

Those skilled in the art will appreciate that the methods, systems and software products described herein can be implemented in systems and software

other than the specific examples set forth herein, and such examples are provided by way of illustration rather than limitation.

This specification, including the drawings attached hereto, will next present the invention at various levels of enabling detail, from conceptual to specific examples of implementation.

Brief Description of the Drawings

Fig. 1 illustrates one embodiment of the vehicle access control system of the present invention.

Fig. 2 shows an overview of the system.

Fig. 3 shows the system from the point of view of a driver using the system.

Fig. 4 shows Step A of Fig. 3 in more detail.

Fig. 5 shows Step B of Fig. 3 in more detail.

Fig. 6 shows Step C of Fig. 3 in more detail.

Fig. 7 shows Step D of Fig. 3 in more detail.

Fig. 8 illustrates the overall system according to the preferred embodiment.

Fig. 9 shows an alternate embodiment of the system.

Fig. 10 shows the vehicle-associated access control module system in more detail.

Detailed Description of the Invention

The invention is a highly scalable and reliable automated car sharing system based on specially-equipped vehicles and a central resource management reservation system. The central resource management reservation system is highly flexible and facilitates adding and removing vehicles and vehicle locations, and moving vehicles between vehicle locations. An authorized driver can reserve any of the vehicles for an available and desired amount of time, and then enter and use the vehicle in a secure and reliable fashion. Each vehicle is stored in a specific location and after use is returned to a specific location. Vehicles are equipped with means of identifying a driver, means of enabling or refusing use, and means for monitoring, measuring, and reporting use to the central resource management reservation system. The central resource management reservation system also facilitates adding and subtracting drivers to the system and automatically calculating and billing drivers for various fees and vehicle usage charges.

The invention is a system and method of sharing a car, or a fleet of cars, using a resource management reservation system. Each car is outfitted with a vehicle-associated access control module as described below. The main features of the system are the convenient and reliable access to shared vehicles via a reservation system, a means of identifying an authorized driver, a means for allowing or denying entry to, and use of a vehicle, and a means for monitoring vehicle use.

The invention could also be used to enable a specific group of drivers, such as a family, to share access to a single vehicle in a controlled way. The reservation mechanism can easily incorporate a range of rights and privileges for different drivers while guaranteeing or

denying access to the vehicle. The invention may also be used to enable a specific group of drivers to share access to several vehicles, such as a corporate fleet of cars or trucks. In this case, the reservation and access mechanism would limit access to the corporate fleet to drivers authorized by the corporation.

Each driver has a unique identifier. The unique identifier may be implemented in the system by a variety of means, including a password or a personal identification number. In the preferred embodiment, a personal identification number assigned to each driver allows secure access to the reservation system of the present invention. The unique identifier may also include a smart card or chip card. In the preferred embodiment, a smart card is used to gain access to a vehicle.

Each of the cars in the fleet is parked in a specific location for a specific amount of time when not in use. A central resource management reservation system stores data and determines when and where each vehicle is parked when not in use, allowing each driver to reliably reserve a specific vehicle for a specific duration.

Each of the cars in the fleet is equipped with a vehicle-associated access control module that has a means of communicating with the central resource management reservation system. The vehicle-associated access control module is also equipped with a means of recognizing the identity of each driver by using a chip card reader, in the preferred embodiment.

Because most wireless communication mechanisms are not available 100 % of the time due to poor coverage, environmental shielding effects, or other unforeseen conditions, the vehicle-associated access control module is intended to perform with partial availability of the communications link.

According to the preferred embodiment, a driver wishing to use one of the cars must first make a reservation. The driver may request a specific car in a specific location or one of a pool of cars in a specific location starting and ending at specific times. When the driver makes a reservation, the system checks the status of that particular driver and, if a problem exists with that user's account, notifies the user before continuing with the reservation process. If a requested vehicle or pickup location is not available, the system presents the user with alternate choices for the requested date and time.

If the requested car is available, or if there is adequate availability within the pool of cars, then the reservation is confirmed. Before the start of the reservation, the central resource management reservation system informs the appropriate vehicle-associated access control module of the details of the reservation including the chip card ID of the driver and the start and end time of the reservation.

At the time of the start of the reservation, the driver goes to the specific location and identifies himself by placing the proximity or chip card near the reader. If his ID matches the stored ID, then the vehicle-associated access control module unlocks the car door, disables the vehicle security system, enables ignition, and informs the server. The proximity or chip card is used to lock the car the same way it was used to unlock the car. During the reservation period and beyond, until a different proximity or chip card ID is detected, the vehicle-associated access control module permits the driver's proximity or chip card to be used to unlock and lock the car. At the end of the reservation, the vehicle-associated access control module informs the server of the vehicle usage time and distance traveled. This information permits the server to automatically calculate usage charges and to bill the driver's account accordingly. Because

the usage information is tracked automatically, the server can better manage the fleet of vehicles.

The vehicle-associated access control module monitors the status of the wireless communications link to the server. If there is ever a problem with the server, or with the communications link to the server, then the access control module does not trust any reservations it might know about and it allows any valid proximity or chip card ID to gain access and use the vehicle. Usage is monitored, and when the link to the server is re-established, the usage information is sent to the server. Reservation information is also sent from the server to the access control module. If the access control module determines that the current driver is using vehicle without a valid reservation, the access control module can sound an alarm altering the driver.

The vehicle-associated access control module can accept new instructions via the wireless communications link to the server. This permits each of these modules to be updated remotely rather than requiring a visit to each of the vehicles every time a modification needs to be made.

The vehicle security system can be overridden for maintenance purposes, either by remote control or by special master IDs of the proximity or chip cards.

Nearly all of the components used in the system are conventional ones and need no detailed description. As stated above, the main feature of the present invention is the convenient and reliable access to shared vehicles.

The system provides for automated monitoring and tracking of vehicle use. If fees are charged for the use of the shared vehicles, bills are generated automatically from tracking data and submitted for automatic payment.

According to the present invention, the management of a fleet of shared vehicles is economical and scalable. Vehicles locations, in the preferred embodiment, are distributed over a wide area. The system minimizes infrastructure costs by completely containing the components of the system that implement the shared access and vehicle monitoring within the vehicle. This allows vehicles to be stored in any parking location rather than limiting storage to specific locations that have been built or modified for them, such as special parking facilities, kiosks, or barriers. It also permits vehicles to be moved to new parking locations and allows a large number of new vehicles to be added without the need to build any additional parking location-specific infrastructure.

Once the system components are installed in a vehicle, they may be reprogrammed via a wireless connection, thus obviating the need to visit each vehicle. This allows for more efficient and more scalable management of system development and improvements.

The present invention thus reduces the total number of cars in a city because it allows a shared vehicle to replace a number of private vehicles. The availability of shared-access vehicles will encourage some drivers to dispose of their cars, some to defer purchase of a car, and others to leave their vehicles at home. Drivers using shared cars will likely drive less than drivers of private vehicles because the costs of each trip are externalized and the drivers tend to make a rational decision each time they need to get somewhere.

The system has a vehicle-associated access control module for enabling access to the vehicle by an authorized driver. The driver must first complete a verification sequence, showing that the driver is authorized. The system, at the zipcar.com server, has a verification module that communicates with the vehicle-associated access control module. The vehicle-associated access

control module and the remote verification module communicate over a communications channel. These components and the overall system are described in more detail below, and in conjunction with the Figures.

Figure 1 illustrates one embodiment of the vehicle-associated access control system. The chip card reader 105, a Philips MIFARE Card Reader, detects a chip card and signals the Board Computer 101. The Board Computer 101 first determines whether or not the communication link to the Zipcar.com server (shown in Figure 2) via GSM-GPRS wireless modem 102 and Antenna 103 is enabled. If the communication link is enabled, the reservation data stored on the board computer are trusted and the board computer compares the ID of the proximity or chip card presented with the ID in each stored reservation. If the ID matches an appropriate reservation, the board computer unlocks the car door via the door locks module 107 and enables the ignition via the starter module 106. The display and keypad 108 can be used for further driver verification by requesting a driver-specific code be entered and compared before enabling the ignition. The display and keypad 108 can further be used to solicit information from the driver regarding the status of the vehicle and reservation. The display and keypad 108 can also be used to enable the driver to change the current reservation. The display and keypad 108 can also be used to create a new reservation if there is not one for this vehicle already. During use, Board Computer 101 monitors the Odometer 104. The total distance that was traveled during the reservation is stored for later transmission to the Zipcar.com server via GSM-GPRS 102 and Antenna 103. The system may also include a Global Position System (GPS) that allows the system to determine the location of each of the cars, both when in use and when not in use.

Figure 2 illustrates one embodiment of the overall system. The vehicle-associated access control system is contained in a plurality of cars 201 that communicate via wireless link through a base station 202 and a service provider 203 that is a gateway to the Internet 208. Typically, base station 202 and service provider 203 are components in a network provided by a wireless data service provider such as Verizon or Omnipoint or AT&T. The client PCs 209, 210, and 211 are used to access the Zipcar.com server 215 via the Internet 208 so that vehicle availability can be reviewed and reservations created. The accounting office 214 is also connected to the Internet allowing accountants to review the system activity and charges. Drivers can also review their own account status via their own PC (represented by PCs 209, 210, and 211) by accessing the Zipcar.com server 215 though the Internet 208. The Bank 213 is a payment processor that permits the Zipcar.com server 215 to automatically charge for usage of the cars and other fees via the Credit/Debit service module 207 in the Zipcar.com server 215. The Zipcar.com server 215 contains a database 204 that stores all the information necessary to manage the resource management reservation system. Web pages 205 are constructed by the Zipcar.com server 215 using information from the database 204 and can be displayed on the client PCs 208, 209, 210 via the Internet 208. The Zipcar.com server 215 can also send and receive email via the Email In/Out module 6 via the Internet 208. The corporate LAN 212 is connected to the Zipcar.com server 215 via a secure link allowing office personnel to manage the server.

Figure 3 describes the system from the point of view of the driver who wants to use a vehicle. As shown in Step A, the driver makes a reservation for a specific vehicle or one of a pool of vehicles parked in a specific location for a specific period of time. In Step B the driver goes to the specific location and gains access to the vehicle or one of a pool of vehicles using their proximity or

chip card and uses the vehicle. In Step C the driver returns the vehicle to a specific location. In Step D the driver is billed automatically for their use of the vehicle.

Figure 4 describes the method to make a reservation (Step A of Figure 3) in more detail. The driver's identity is verified, as shown in step 401, by any of various means including entering a username and password. Once the driver identity is verified, the zipcar.com server checks the driver account, shown in step 402, to make sure the driver is permitted to charge usage on the account. If the account is not verified, the driver may rectify whatever the problem is, such as enter a new credit card number, as shown in step 403. Once the driver's account is processed and accepted, then the driver specifies the desired location, start date and time, end date and time, and other optional parameters, shown in step 404. Individual driver preferences are stored in a database and preferences include the preferred city, neighborhood, location, vehicle type, and other such information. The system examines the individual driver's preferences to facilitate the selection of the desired reservation parameters, as shown in step 404.

As shown in step 405, the zipcar.com server checks for any available vehicle or vehicles that match the preferences specified. If no vehicles are available that match the preferences, alternative choices are presented to the driver, as shown in step 406. These alternatives are displayed ordered by the most likely preferred choices first, and the least likely preferred choices last. For example, the most likely choices may be the available vehicles nearest to the preferred vehicle. In this case, the locations of all vehicles are known and a well-known formula may be used to calculate the distance from the preferred vehicle to the available vehicles.

After the vehicle availability is confirmed, or an alternative vehicle is chosen, shown in step 406, the driver confirms the reservation, shown in step 407. The confirmation step allows the driver to select from among several available vehicles that match the preferences. The driver is also able to estimate the cost of the reservation by entering anticipated usage.

After the reservation is confirmed, the zipcar.com server establishes communication with the appropriate vehicle-associated access control module. Once this communication is established, the server transfers the reservation information, shown in step 409, to the vehicle-associated access control module.

Figure 5 describes Step B of Figure 3 in more detail. In Figure 5, the driver goes to the specific location and gains access to the vehicle. The operations shown in Figure 5 are implemented by the vehicle-associated access control module. As shown in step 501 of Fig. 5, the driver first identifies himself to the system. In the preferred embodiment, the means of identification is a proximity card, which could be provided by Applied Wireless Identification Group, Inc. (AWID) model Prox-Linc CS or KT. In the preferred embodiment, the access control module is equipped with a detector, which could be AWID model SR2400-ZIP. According to the system, the vehicle-associated processor is in communication with a proximity card detector that enables access to the vehicle only when a validated proximity card is placed in proximity to the card detector. The vehicle-associated processor may include associated audio/visual display elements, such as a visual display or a speaker. In an alternate embodiment, the vehicle-associated processor may also include data entry elements the user accesses to enter authorization data, such as a keyboard or a touch-

screen, or other devices available to enter a user-associated personal identification number for validation.

As shown in step 512 of Figure 5, the access control module determines whether the doors are locked or not. If the doors are not locked, as shown in step 513, the vehicle-associated access control module sends a signal that causes the doors to be locked and the ignition to be disabled. The access control module then returns to wait for another signal from the proximity card detector. If the doors are locked, as shown in step 502, the processor determines if a reservation has begun.

If a new reservation has begun, as shown in Step 503, the ID from the proximity card is compared with the card ID for the current reservation. If the card ID matches, as shown in step 504, the processor sends a signal to the door unlock mechanism and enables the ignition via the Ignition Disable. If the ID does not match, as shown in step 505, access is refused by keeping the doors locked and the ignition remains disabled. If, as shown in step 502, the processor determines that a reservation has not begun, the status of the wireless connection via the wireless modem and antenna to the zipcar.com server is queried (step 506). If the connection is enabled, the reservation data stored in Board Computer 101 is trusted and the card ID from the proximity card is compared with the stored reservations (step 507). If the card ID matches, the processor records the beginning of the vehicle usage for this reservation (step 508). The system then allows for vehicle usage, shown in step 504. If the card ID does not match, access is refused.

If the system determines that the wireless connection is down, a simpler test of the card ID is performed. If the card ID is determined to be valid, the start of vehicle usage is logged as above. If the card ID is determined to be invalid, access is refused. The system may perform a further check to

determine if the card ID matches a list of master ID numbers permitted to access the vehicle at all times (shown at steps 503, 507, and 510). As shown in step 507, a driver may be permitted access to the vehicle without a reservation. If the vehicle-associated access control module is equipped with a keyboard, user interface processor, and display, the driver may create a new reservation by entering desired information via the on-board keyboard. In certain embodiments, a driver is permitted access to the vehicle without a pre-authorized ID. In such a case, the resource management reservation system performs an authorization before allowing vehicle use. Such an authorization could include a background driving record check for insurance purposes and a credit check to determine creditworthiness.

Figure 6 describes Step C of Figure 3 in more detail. Each time the processor determines via the on-board vehicle system that the vehicle has been turned off, it determines whether the reservation has ended. If the reservation has not ended, the system will continue to wait until the end of the reservation. If the processor determines that the reservation has ended, the status of the wireless connection is determined, as shown in step 603. If the wireless connection is not enabled, the system will wait until the connection is established (shown in step 602). If the connection is enabled, the processor sends the vehicle usage details, such as the start of usage, the end of usage, the card ID of the user, and the vehicle status to the zipcar.com server.

Figure 7 describes Step D of Figure 3 in more detail. As shown in step 701, the zipcar.com server receives usage information from the vehicle-associated access control module. As shown in step 702, charges for a particular use of the vehicle may be calculated based on a number of factors including which vehicle was used, from which parking location, for how long and at what time of day, the distance driven, which driver, and other system-set

parameters. As shown in step 703, the charges are automatically submitted for payment.

Figure 8 shows the components of the overall system. The zipcar.com server 801 is connected to a database 802 that stores all the necessary information to manage the resource management reservation system. The zipcar.com server 801 is connected to the Internet 803 that allows a plurality of browsers 805, also connected to the Internet 803, to be used by the system of the present invention to reserve vehicles, view vehicle availability, review account status, report problems with vehicles, and perform other functions. A plurality of vehicle-associated access control modules 805 are also connected to the Internet 803 via a wireless link enabling communication between the on-board vehicle-associated access control modules 805 and the zipcar.com server 801.

When an authorized user, or driver, requests a reservation for a car, the system accesses the database 802 and registers in the database 802, a reservation information item that represents the identity of the authorized user, the identity of the requested vehicle or vehicles, and the time requested by the reservation. When the system subsequently accepts, from a vehicle-associated processor 805, a request-to-access message indicating that the user is at a vehicle and is requesting access to the vehicle, the system responds by verifying the access request. The system, to perform verification, first determines the identity of the user requesting access to the vehicle. The system then compares the identity of the user requesting access to the vehicle, the identity of the vehicle, and the time of the request for access, against information contained in the reservation information item in the database. If the user requesting access is the user registered in the database and the vehicle is one of the

vehicles registered in the database, and the time of the request is also registered in the database, the system enables the user to access the vehicle.

Figure 9 is an alternate embodiment of the system for shared use of a vehicle according to the present invention. In some cases, the wireless link to the vehicle-associated access control modules 905 may not be via the Internet 903, but the connection may also be through some other network 906. This may be the case with the GSM network. The overall system and the other components are similar to that shown in Figure 8.

Figure 10 shows the vehicle-associated access control modules system in more detail. As shown in Figure 10, the processor 1001 monitors vehicle systems 1004, and determines various vehicle-specific facts, including whether the engine is running or not, the odometer reading, the battery voltage level, and other vehicle-specific facts. The processor 1001 also monitors an on-board GPS system and maintains the current location of the vehicle. The processor 1001 also monitors the proximity or chip card detector 1005. The processor 1001 is able to communicate with the zipcar.com Server via the wireless modem 1002, which in this example is a CDPD modem, Novatel Wireless Expedite model and antenna 1003. The proximity or chip card 1013 is used to identify the driver and is detected by the proximity chip card detector 1005. Processor 1001 is able to enable and disable the vehicle ignition via ignition disable 1009. Processor 1001 is able to lock the doors via door lock 1010. Processor 1001 is able to unlock the doors via door unlock 1011. Processor 1001 is able to sound an alarm via speaker 1012. A user interface processor 1007 may be optionally connected to processor 1001. This permits driver to enter data via keyboard 1006 or other input device. This also permits the display of information to the driver via display 1008.

What is claimed is:

1. A system for controlling access to a vehicle, the system comprising:

a vehicle-associated access control module for enabling access to the vehicle by a first authorized user following completion of a verification sequence,

a verification module for enabling completion of the verification sequence through communications with the vehicle-associated access control module, and

a communications channel for supporting communications between the vehicle-associated access control module and the remote verification module.

2. The system of claim 1 wherein the communications channel includes the Internet.

3. The system of claim 2 wherein the communications channel includes wireless communications elements.

4. The system of claim 3 wherein the verification module includes a server that stores personal identification information representative of the first authorized user.

5. The system of claim 4 wherein the server includes elements for enabling the first user to reserve, in advance, a predetermined period of access to the vehicle.

6. The system of claim 5 wherein the server includes elements for verifying, in real-time, a personal identifier provided by the first authorized user as a prerequisite to completion of the verification sequence.

7. The system of claim 6 wherein the personal identifier includes a personal identification number.

8. The system of claim 6 wherein the personal identifier includes a personal identification object.

9. The system of claim 8 wherein the personal identification object is an electronic device containing a unique code representative of the first authorized user.

10. The system of claim 9 wherein
the electronic device is a chip card or tag, and
the vehicle-associated processor is in communication with a chip card detector that enables access to the vehicle only when a validated chip card is placed in proximity to the card detector.

11. The system of claim 10 wherein the vehicle-associated processor includes associated audio/visual display elements.

12. The system of claim 11 wherein the audio/visual display elements include a visual display and a speaker.

13. The system of claim 12 wherein the vehicle-associated processor includes data entry elements for use by the user to enter data.

14. The system of claim 13 wherein the data entry elements include a keyboard.

15. The system of claim 13 wherein the data entry elements include a touch-screen.

16. The system of claim 13 wherein the data entry elements can be used to enter a user-associated personal identification number to identify the user.

17. The system of claim 16 wherein the vehicle-associated processor includes a user interface processor for processing information-representative signals from the data entry elements and to the display.

18. The system of claim 17 wherein the vehicle-associated processor is in communication with an ignition disabling module for preventing actuation of vehicle ignition unless the verification sequence is successfully completed.

19. The system of claim 18 wherein the vehicle-associated processor is in communication with door lock actuator elements, for unlocking the vehicle door locks after the verification sequence is successfully completed.

20. The system of claim 19 wherein the vehicle-associated processor includes a wireless modem.

21. The system of claim 20 wherein the wireless modem operates in accordance with a known wireless technology.

22. The system of claim 21 wherein the wireless technology is CDPD

23. The system of claim 21 wherein the wireless technology is GSM.

24. The system of claim 21 wherein the server is capable of communication with each of a plurality of vehicles in a fleet of vehicles.

25. The system of claim 24 wherein

reservations can be accepted from a plurality of authorized users for a single vehicle or each of a plurality of vehicles in a fleet of vehicles, and

the reservations include selected pickup and drop-off times and locations.

26. The system of claim 25 wherein the system prevents other authorized users other than the first authorized user from obtaining access to the first vehicle during a reservation time.

27. The system of claim 26 wherein the system accepts and registers newly added vehicles and vehicle-associated access control modules.

28. The system of claim 27 wherein the vehicle-associated access control module can monitor total access time and distance covered.

29. The system of claim 28 wherein total access time is measured from vehicle pickup time to drop-off time.

30. The system of claim 29 wherein distance covered is measured from vehicle pickup to drop-off.

31. The system of claim 27 wherein the communications channel includes a program for communication between the vehicle-associated access control processor and the server and a database resident on the server.

32. The system of claim 31 wherein the vehicle-associated access control processor is capable of communicating with the server via 1) the Internet, or (2) another communications network.

33. The system of claim 5 wherein the vehicle-associated access control processor includes elements for verifying, in real-time, a personal identifier provided by the first authorized user as a prerequisite to completion of the verification sequence

34. A method of providing controlled access to a vehicle, the method comprising

accepting from a first authorized user a reservation of access to a first vehicle at a first time,

registering, in a database, a reservation information item representative of the identity of the first authorized user, identity of the first vehicle or pool of vehicles, and a value representative of the first time prescribed by the reservation,

subsequently accepting, from a vehicle-associated processor, a request-to-access message indicating that a user is at the first vehicle or one of a pool of vehicles requesting access thereto,

responding to the request-to-access message by entering into a verification sequence, the verification sequence including (1) determining the identity of the user requesting access to the vehicle and (2) comparing, against information contained in the reservation information item in the database, the identity of the user requesting access to the vehicle, the identity of the vehicle, and the time of the request for access, and

if (1) the user requesting access is the first user, (2) the vehicle is the first vehicle or one of a pool of vehicles, and (3) the time of the request for access is the first time, then enabling the first user to access the vehicle.

35. A method of enabling controlled vehicle access by a first authorized user to a first vehicle within a fleet of vehicles, the method including the steps of

accepting an advance reservation by the first authorized user to reserve access to the first vehicle at a first authorized location beginning at a first authorized time,

verifying, when the first authorized user reaches the first vehicle at the first authorized time, that the first authorized user has a valid reservation for access to the first vehicle at the first authorized time, and

enabling the first authorized user, following successful completion of the verifying step, to gain access to and initiate operation of the first vehicle.

36. The method of claim 35 comprising the further steps of:

recognizing, when the first authorized user returns the first vehicle to either the first authorized location or a second authorized location, the return of the first vehicle, and

automatically billing an account of the first authorized user upon return of the first vehicle.

37. The method of claim 36 wherein the step of accepting a reservation includes the step of verifying the identity of the user attempting to make a reservation.

38. The method of claim 37 wherein the step of verifying the identity of the user attempting to make a reservation includes the step of verifying the status of the user's account.

39. The method of claim 38 including the further step of notifying the user if a problem exists with the user's account.

40. The method of claim 39 wherein the step of accepting a reservation includes the step of enabling the user to specify requested vehicle, requested pickup location, request vehicle access start date and time, and requested vehicle access end date and time.

41. The method of claim 40 wherein the step of accepting a reservation includes the further step of verifying whether the requested vehicle is available at the requested pickup location at the requested start date and time.

42. The method of claim 41 including the further step of presenting the user with alternate choices if the requested vehicle is not available at the requested pickup location at the requested vehicle access start date and time.

43. The method of claim 42 including the further step of transmitting, upon acceptance of the reservation, information representative of the reservation to a vehicle-associated access control processor.

44. The method of claim 43 wherein the step of verifying that the user has a valid reservation for access to the vehicle includes the further steps of:

enabling the user to provide to the vehicle-associated access control processor information representative of the user's identity,

verifying, using the vehicle-associated access control processor, whether the user, identified by way of the information representative of the user's identity, has a reservation,

if the identified user has a reservation, verifying whether the identification provided by the user to the vehicle-associated access control processor is valid, and

if the customer identification is valid, authorizing the step of enabling the user to obtain access to the vehicle.

45. The method of claim 44 wherein the verifying steps are executed by the vehicle-associated access control processor checks in communication with a database.

46. The method of claim 45 wherein the database is resident on a server.

47. The method of claim 46 wherein

the verifying steps include the further steps of

checking, using the vehicle-associated access control processor, whether a communications channel to the server is available, and

if a communications channel to the server is available, verifying whether the customer identification is valid by comparing with information in the server's database or a local copy of this information resident in the vehicle-associated access control processor; or

if a communications channel to the server is not available, checking whether the customer identification by comparison with information resident in the vehicle-associated access control processor.

48. The method of claim 47 wherein access is refused if the identified user does not have a reservation.

49. The method of claim 47 wherein access is refused if the identified user's identification is not valid.

50. The method of claim 49 wherein the step of recognizing return of the vehicle includes the further steps of:

notifying the server of vehicle return and transmitting, to the server, usage information representative of usage time and distance covered.

51. The method of claim 50 further including the step of automatically billing a user after recognizing the return of the vehicle, wherein the step of automatically billing includes the further steps of:

receiving usage information,

calculating charges corresponding to usage time and distance covered, and

transmitting for payment the calculated charges.

52. A vehicle shared-use system comprising a plurality of vehicle-associated access control processors and a verification module, the system comprising:

means for enabling access to a vehicle by a first authorized user following completion of a verification sequence,

means for enabling completion of the verification sequence through communications with one of the vehicle-associated access control module, and

means for communicating between the vehicle-associated access control module and the remote verification module.

AMENDED CLAIMS
[received by the International Bureau on 16 July 2001 (16.07.01);
original claims 1-52 replaced by new claims 1-30 (9 pages)]

1. A method of controlling access to a vehicle by a first or second authorized user, the method comprising:

generating, at a reservation system, a reservation for the vehicle, upon receiving a request by the first authorized user to reserve the vehicle; and

when the first authorized user attempts access to the vehicle, permitting access to the first authorized user after causing a vehicle-associated access controller to communicate with the reservation system to verify that a reservation exists for the first authorized user to use the vehicle; or,

if communication cannot be established between the access controller and the reservation system, permitting access to the vehicle by the first or the second authorized user in response to access by the access controller to a local source of information identifying the first and second authorized users.

2. The method of claim 1 wherein the reservation system maintains information representative of authorized users, the method further comprising:

transmitting the authorized user information from the reservation system to the access controller.

3. The method of claim 2 further comprising:

transmitting the reservation from the reservation system to the access controller after the reservation is generated for the vehicle; and

maintaining the reservation by the access controller.

4. The method of claim 3 wherein verifying with the reservation system further comprises:

receiving identity information provided by the first authorized user to the access controller;

transmitting the identity information to the reservation system;

comparing the identity information with the reservation information maintained by the reservation system;

transmitting an access authorization, from the reservation system to the access controller, if the comparison is successful; and

transmitting a no-access command, from the reservation system to the access controller, if the comparison is not successful.

5. The method of claim 3 further comprising:

receiving identification from the user requesting the use of the vehicle;

determining, using the access controller, whether the user is an authorized user, by comparing the identification with the information representative of authorized users maintained by the access controller.

6. The method of claim 5 further comprising disregarding the reservation, and permitting any authorized user to access the vehicle.

7. The method of claim 1 further comprising:

measuring, at the vehicle, vehicle usage information comprising a distance traveled and a time of usage of the vehicle;

storing, using the access controller, the vehicle usage information; and

transmitting the vehicle usage information from the access controller to the reservation system.

8. The method of claim 7 further comprising, if the access controller cannot communicate with the reservation system, storing the vehicle usage information at the access controller for later transmission to the reservation system.

9. The method of claim 8 further comprising:

recognizing return of the vehicle by the user permitted to use the vehicle; and

automatically billing the account of the user permitted to use the vehicle upon return of the vehicle.

10. A method of providing controlled user access to a vehicle having an associated access controller, the method comprising:

maintaining information representative of authorized users permitted to use the vehicle at the access controller;

generating, by a reservation system, a reservation for an authorized user to reserve the vehicle for use;

maintaining the reservation at the reservation system;

receiving a request to use the vehicle by a first user;

determining the identity of the first user; and

permitting access to the vehicle by the first user (a) after causing the access controller to communicate with the reservation system to verify the first user's request to use the vehicle, or (b) if the access controller cannot communicate with the reservation system, by verifying the first user's request to use the vehicle by causing the access controller to access a local source of information identifying the first user.

11. The method of claim 10 further comprising:

sending the reservation from the reservation system to the access controller after the reservation is generated for the vehicle; and

storing the reservation in the access controller.

12. The method of claim 11 wherein the reservation system maintains authorized user information, the method further comprising:

sending the authorized user information from the reservation system to the vehicle control processor.

13. The method of claim 12 wherein verifying the request to use the vehicle with the reservation system further comprises:

sending the first user's request to use the vehicle from the access control system to the reservation system;

comparing the first user's request to use the vehicle with the reservation information on the reservation system;

transmitting an access authorization, from the reservation system to the access controller, if the comparison is successful.

transmitting a no-access command, from the reservation system to the access controller, if the comparison is not successful.

14. The method of claim 12 wherein verifying the first user's request to use the vehicle by accessing a local source of information comprises:

accessing the information representative of authorized users maintained locally by the access controller; and

causing the access controller to permit access by the first user to the vehicle if the first user is identified by the information representative of authorized users.

15. The method of claim 10 further comprising:

measuring, at the vehicle, vehicle usage information comprising a distance traveled and a time of usage of the vehicle; and

storing, by the access controller the vehicle usage information; and

transmitting the vehicle usage information from the access controller to the reservation system.

16. The method of claim 15 further comprising, if the access controller cannot communicate with the reservation system, storing the vehicle usage information at the access controller for later transmission to the reservation system.

17. The method of claim 16 further comprising:

recognizing return of the vehicle by the first user; and

automatically billing the first user's account upon return of the vehicle.

18. A vehicle sharing system comprising:

a plurality of access controllers, each capable of being associated with a vehicle to be shared among authorized users;

a reservation system;

means for generating a reservation after receiving a request from a reserving user to reserve a vehicle for use;

means for maintaining the reservation by the reservation system;

means for receiving a request to use the vehicle reserved for use by a first user;

means for determining the identity of the first user; and

means for permitting access by the first user to the vehicle reserved for use upon successful completion of a verification sequence wherein:

a) if the access controller can communicate with the reservation system, the verification sequence is performed through communications between the reservation system and the access controller; and

b) if the access controller cannot communicate with the reservation system, the verification sequence is performed by the access controller by access to a local source of information.

19. The vehicle sharing system of claim 18, the system further comprising:

transmitting information representative of the reservation from the reservation system to the access controller associated with the vehicle reserved for use after the reservation is generated; and

storing information representative of the reservation on the access controller receiving the reservation.

20. The vehicle sharing system of claim 19 further comprising:

means for maintaining a list of all users authorized to access the associated vehicle at the reservation system;

means for sending a set of all users authorized to use a vehicle to the associated access controller from the reservation system to at least one access controller; and

means for storing, at the at least one access controller, a list of all users authorized to access the associated vehicle.

21. The vehicle sharing system of claim 20 wherein the verification sequence performed through communications between the reservation system and the access controller further comprises:

means for transmitting the first user's request to use the vehicle to the reservation system;

means for comparing the first user's request to use the vehicle with the reservation maintained by the reservation system;

means for transmitting a verification-successful signal, from the reservation system to the access controller, if the comparison is successful; and

means for transmitting a verification-not-successful signal, from the reservation system to the access controller, if the comparison is not successful.

22. The vehicle sharing system of claim 21 wherein the verification sequence performed by the access controller further comprises:

means for determining, by the access controller, whether the first user is an authorized user by comparing the first user with the list of all users authorized to access the associated vehicle; and

means for indicating successful verification if the first user is an authorized user.

23. The vehicle sharing system of claim 22, wherein, if communications cannot be established between the access controller and the reservation system, the access controller permits any authorized user, identified by information contained in the local source of information, to use the vehicle.

24. The vehicle sharing system of claim 18 further comprising:

means for measuring, at the vehicle, vehicle usage information comprising a distance traveled and a time of usage of the vehicle; and

means for storing, by the access controller the vehicle usage information; and

means for transmitting the vehicle usage information from the access controller to the reservation system.

25. The vehicle sharing system of claim 24 further comprising, if the access controller cannot communicate with the reservation system, means for storing the vehicle usage information at the access controller for later transmission to the reservation system.

26. The vehicle sharing system of claim 25 further comprising:

means for recognizing the return of the vehicle by the first user; and

means for automatically billing the first user's account upon return of the vehicle.

27. A system for controlling access to a vehicle by a first user, the system comprising:

a reservation system for generating a reservation upon a request by a reserving user to reserve the vehicle for use,

an access controller associated with the vehicle,

storage means on the access controller for storing information representative of a set of authorized users permitted to use the vehicle;

storage means on the reservation system for storing the reservation;

means for receiving a request to use the vehicle by the first user;

means for identifying the first user; and

means for permitting use of the vehicle by the first user:

(a) if the access controller can communicate with the reservation system, by verifying the first user's request to use the vehicle with the reservation system; or

(b) if the access controller cannot communicate with the reservation system, by verifying the first user's request to use the vehicle with the access controller.

28. The system of claim 27 further comprising:

means for sending the reservation from the reservation system to the access controller after the reservation is generated for the vehicle; and

means for storing the reservation in the access controller.

29. The system of claim 28 wherein the reservation system maintains authorized user information, the system further comprising:

means for sending the authorized user information from the reservation system to the access controller.

30. The system of claim 29 wherein verifying the request to use the vehicle with the reservation system further comprises:

means for sending the first user's request to use the vehicle from the access controller to the reservation system;

means for comparing the first user's request to use the vehicle with the reservation stored on the reservation system;

means for transmitting a authorization-to-use signal, from the reservation system to the access controller, if the first user is the reserving user; and

means for transmitting a no-access signal, from the reservation system to the access controller, if the first user is not the reserving user.

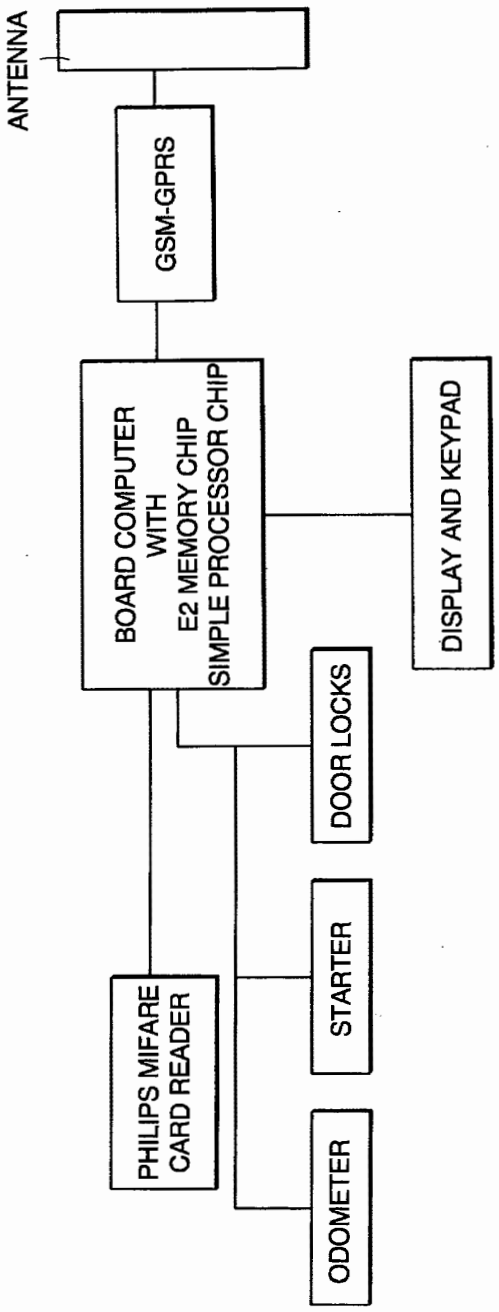

ANTENNA
GSM-GPRS
BOARD COMPUTER WITH E2 MEMORY CHIP SIMPLE PROCESSOR CHIP
DISPLAY AND KEYPAD
DOOR LOCKS
PHILIPS MIFARE CARD READER
STARTER
ODOMETER

FIG. 1

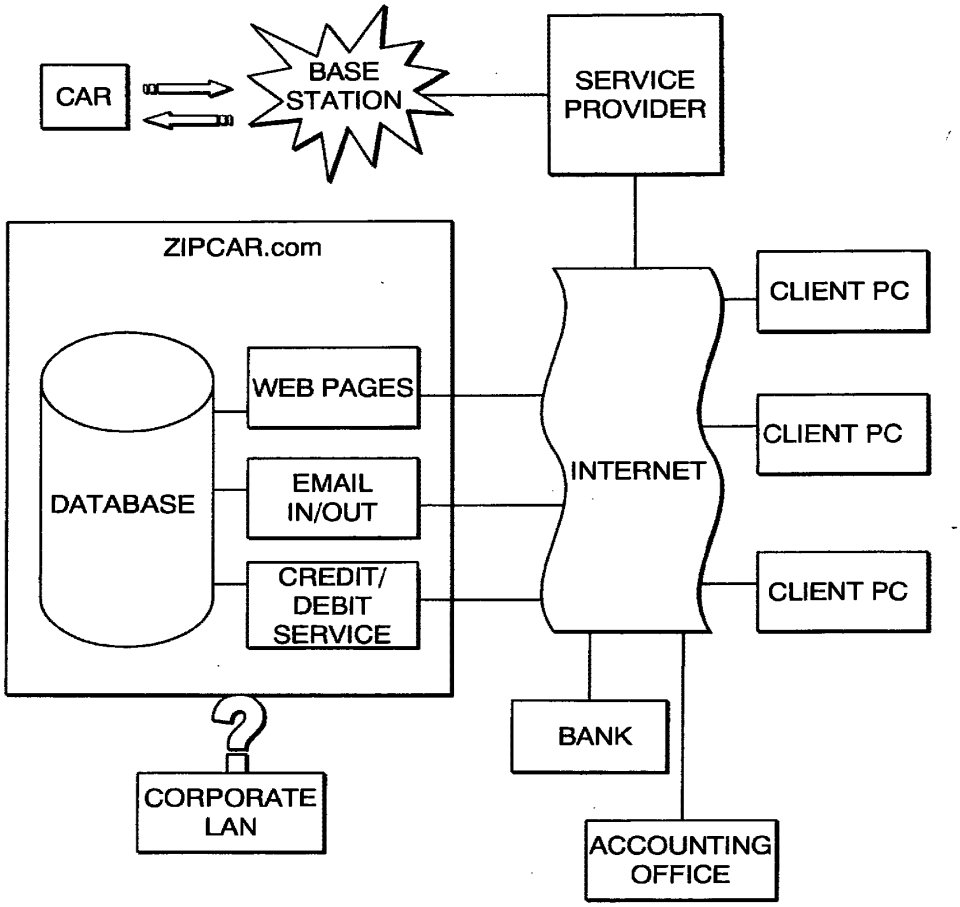

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BASE STATION
SERVICE PROVIDER
ZIPCAR.com
WEB PAGES
DATABASE
EMAIL IN/OUT
CREDIT/ DEBIT SERVICE
INTERNET
CLIENT PC
CLIENT PC
CLIENT PC
BANK
CORPORATE LAN
ACCOUNTING OFFICE

FIG. 2

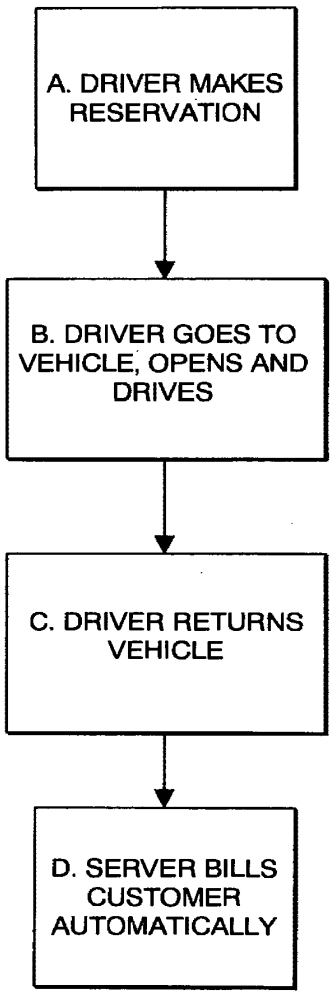

A. DRIVER MAKES RESERVATION
B. DRIVER GOES TO VEHICLE, OPENS AND DRIVES
C. DRIVER RETURNS VEHICLE
D. SERVER BILLS CUSTOMER AUTOMATICALLY

FIG. 3

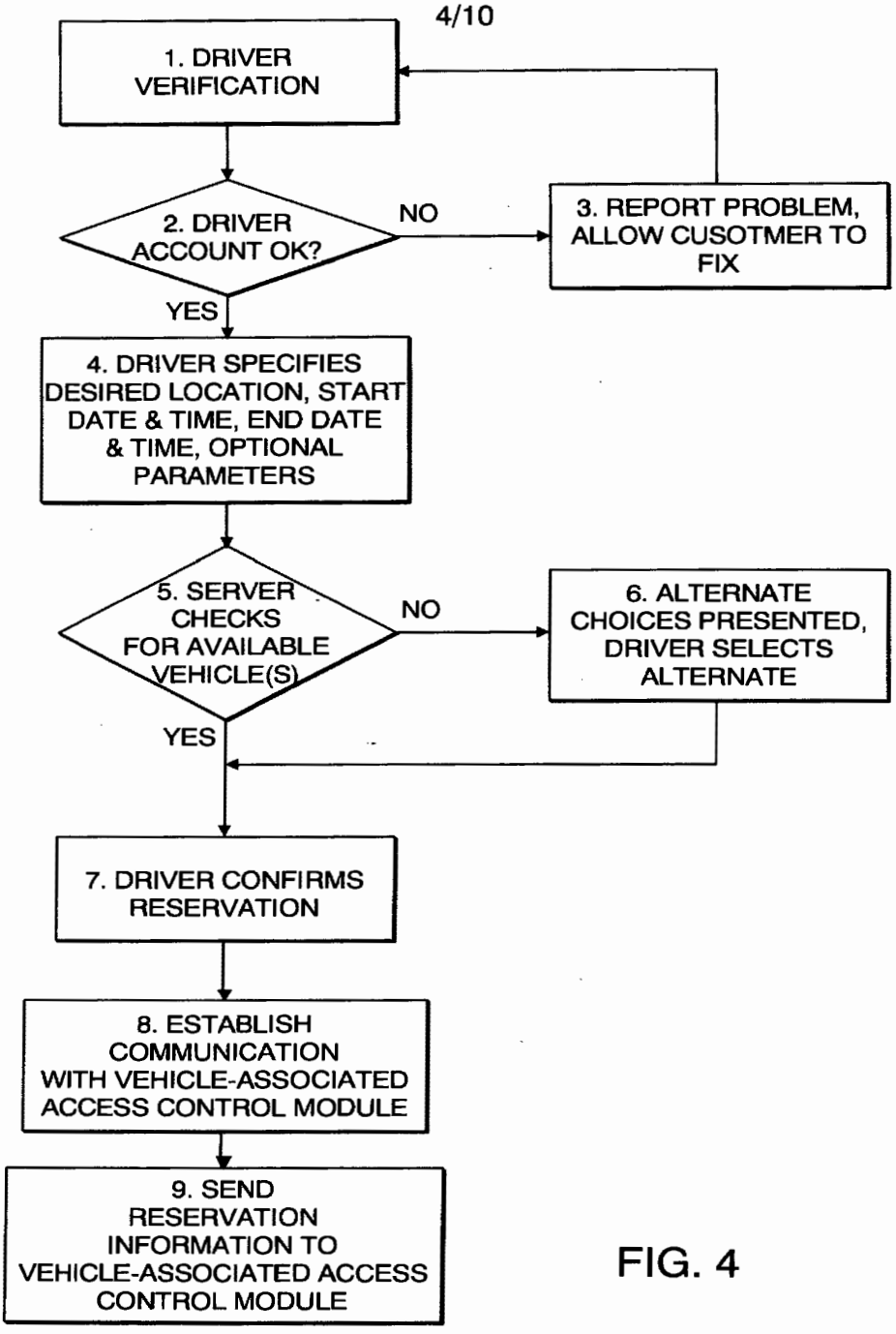

1. DRIVER VERIFICATION
2. DRIVER ACCOUNT OK?
NO
3. REPORT PROBLEM, ALLOW CUSOTMER TO FIX
YES
4. DRIVER SPECIFIES DESIRED LOCATION, START DATE & TIME, END DATE & TIME, OPTIONAL PARAMETERS
5. SERVER CHECKS FOR AVAILABLE VEHICLE(S)
NO
6. ALTERNATE CHOICES PRESENTED, DRIVER SELECTS ALTERNATE
YES
7. DRIVER CONFIRMS RESERVATION
8. ESTABLISH COMMUNICATION WITH VEHICLE-ASSOCIATED ACCESS CONTROL MODULE
9. SEND RESERVATION INFORMATION TO VEHICLE-ASSOCIATED ACCESS CONTROL MODULE

FIG. 4

FIG. 5

SUBSTITUTE SHEET (RULE 26)

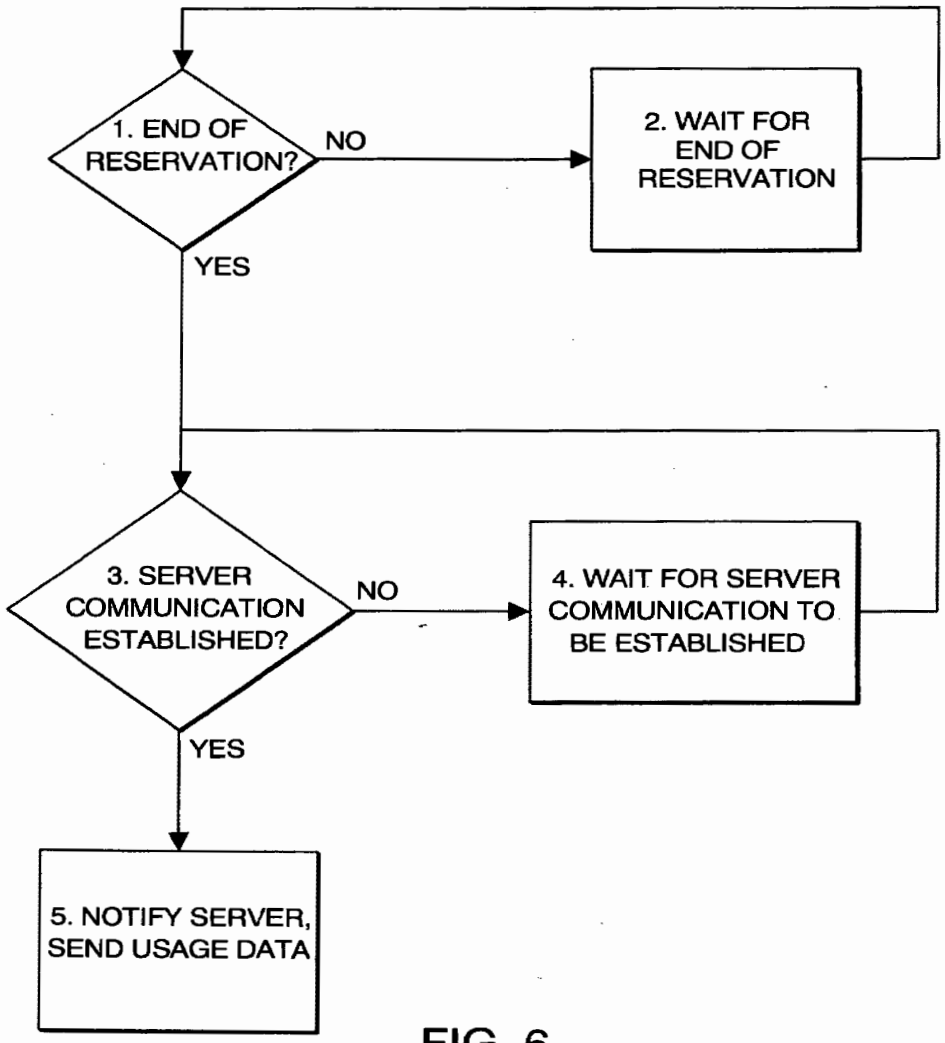

1. END OF RESERVATION?
NO
2. WAIT FOR END OF RESERVATION
YES
3. SERVER COMMUNICATION ESTABLISHED?
NO
4. WAIT FOR SERVER COMMUNICATION TO BE ESTABLISHED
YES
5. NOTIFY SERVER, SEND USAGE DATA

FIG. 6

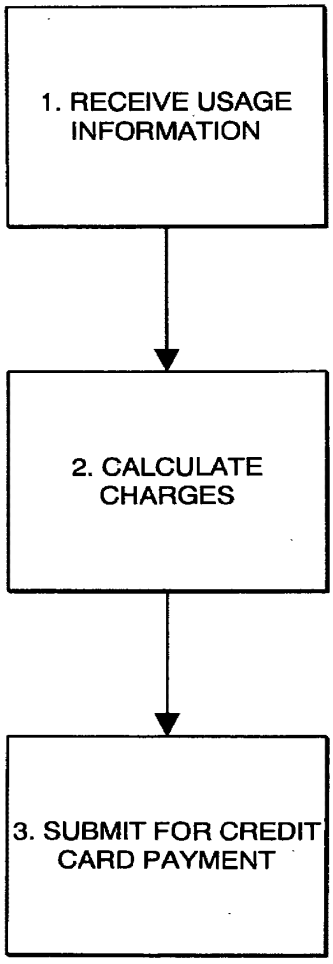

1. RECEIVE USAGE INFORMATION
2. CALCULATE CHARGES
3. SUBMIT FOR CREDIT CARD PAYMENT

FIG. 7

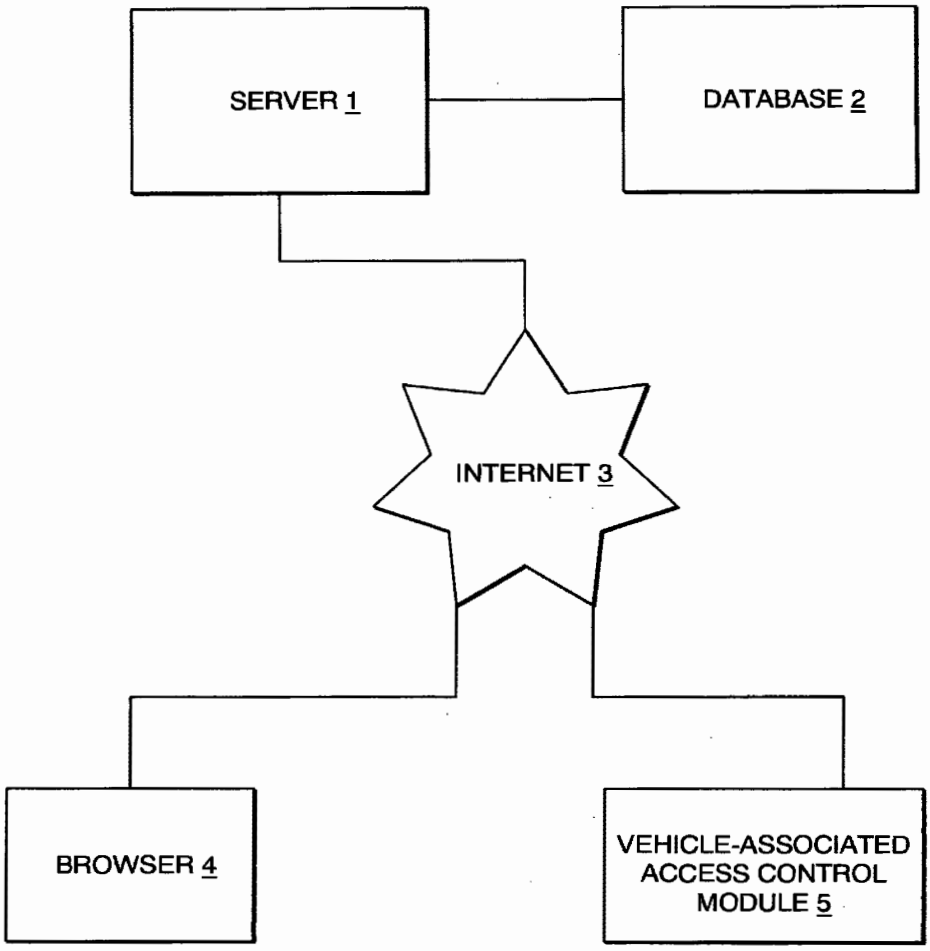

SERVER 1
DATABASE 2
INTERNET 3
BROWSER 4
VEHICLE-ASSOCIATED ACCESS CONTROL MODULE 5

FIG. 8

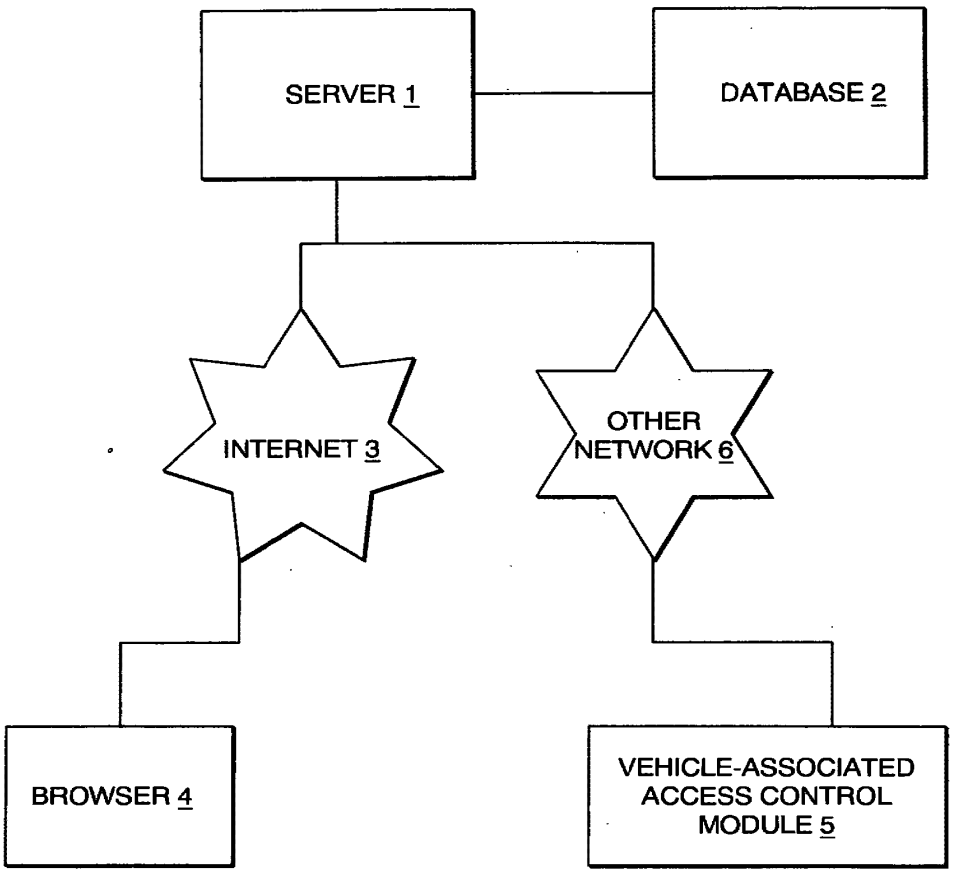

SERVER 1
DATABASE 2
INTERNET 3
OTHER NETWORK 6
BROWSER 4
VEHICLE-ASSOCIATED ACCESS CONTROL MODULE 5

FIG. 9

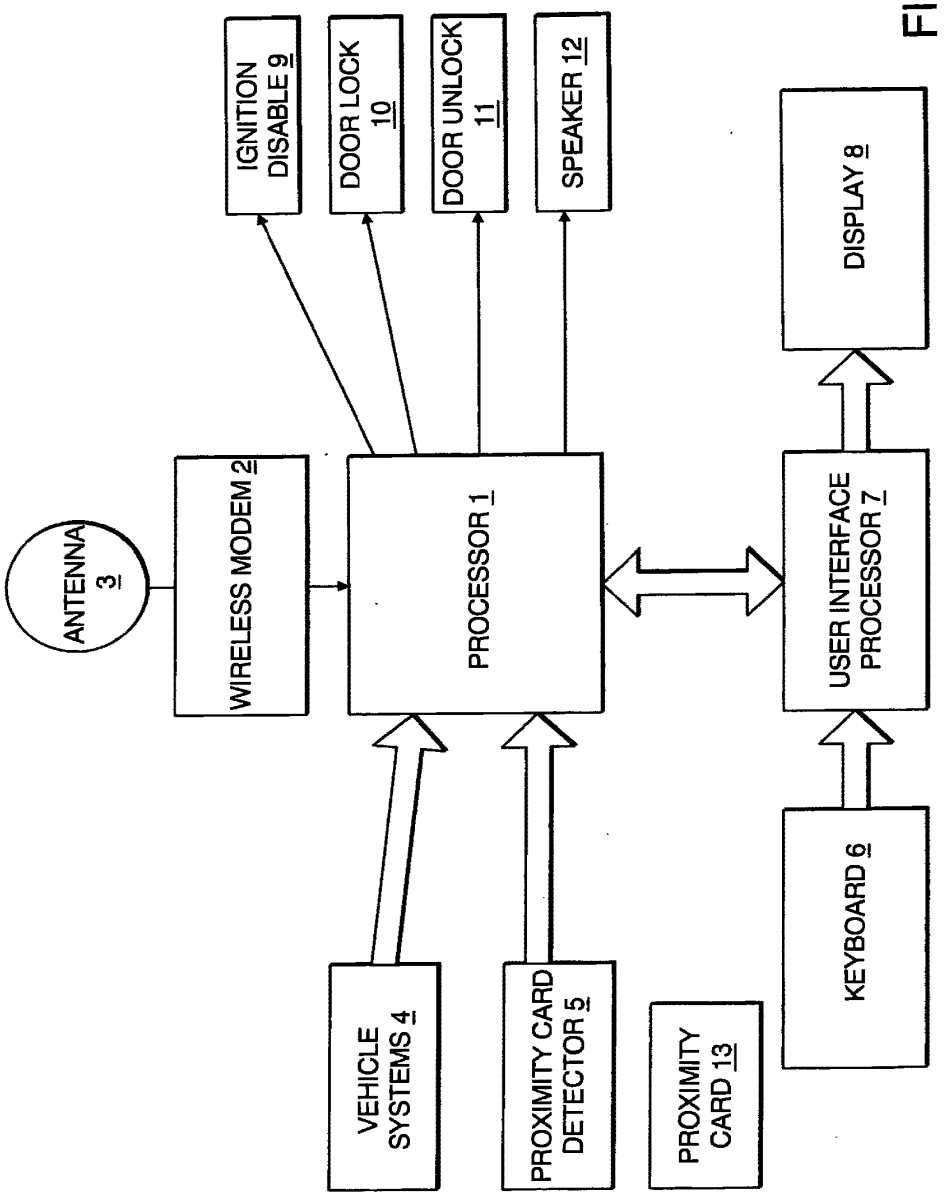

ANTENNA 3
WIRELESS MODEM 2
PROCESSOR 1
IGNITION DISABLE 9
DOOR LOCK 10
DOOR UNLOCK 11
SPEAKER 12
DISPLAY 8
USER INTERFACE PROCESSOR 7
KEYBOARD 6
VEHICLE SYSTEMS 4
PROXIMITY CARD DETECTOR 5
PROXIMITY CARD 13

FIG. 10

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US01/05026

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G06F 17/60
US CL : 705/7,8,28,72;701/2;340/825.72,825.28,825.29

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 705/7,8,28,72;701/2;340/825.72

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EAST (USPAT, Derwent, IBMTDB,EPO,JPO), Dialog (CORE 705/OR)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WEBER. Pioneering networking innovations employed at Avis aim to make renting cars transparent. (User Casebook) . Networking Management, v10, n5, p19(1), April, 1992.	1-52
A	NATIONAL CAR RENTAL. National Car Rental Introduces its New Smart, Fast and Efficient Rental and Reservations System. PR Newswire, March 10, 1999.	1-52
A	TELXON CORPORATION. Telxon Installs Wireless Check-In System at Avis Rent A Car Locations . PR Newswire, January 6, 1998.	1-52
X,P	WO 200023960 A1 (HODGSON) 11 September 2000 (11.09.2000).	1,52
X	US 5,289,369 A (HIRSHBERG) 22 February 1994 (22.02.1994).	1,34,35,52
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Y		2-33,36-51
A,P	US 6,067,007 A (GIOIA) 23 May 2000 (23.05.2000).	1,52
X	SE 9,802,053 A (KRONHEFFER) 09 July 1999 (09.07.1999) (abstract only).	1,34,35,52
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Y		2-33,36-51
A	US 5,660,246 A (KAMAN) 26 August 1997 (26.08.1997).	1,52
A	US 3,665,397 A (DI NAPOLI et al) 23 May 1972 (23.05.1972).	34-51

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
23 April 2001 (23.04.2001)	16 MAY 2001
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230	Authorized officer Tariq Hafiz Telephone No. 703.305.3900

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US01/05026

C (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,519,260 A (WASHINGTON) 21 May 1996 (21.05.1996).	1-52
X	US 5,726,885 A (KLEIN et al) 10 March 1998 (10.03.1998).	1,34,35,52
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Y		2-33,36-51
A	US 5,812,070 A (TAGAMI et al) 22 September 1998 (22.09.1998).	1-52
A	US 5,959,577 A (FAN et al) 28 September 1999 (28.09.1999).	1-52

Form PCT/ISA/210 (continuation of second sheet) (July 1998)

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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/236,491	**07/12/2021 10:50:53 AM ET**	**00199-0001-25000**

Title of Invention

SYSTEMS AND METHODS FOR MATCHING PICK-UP REQUESTS WITH TRANSPORT PROVIDERS, TRACKING TRIP PROGRESS, AND ENABLING PROVIDER RATINGS

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	7940	FILED BY	Jeovany Cantillano
PATENT CENTER #	60237279	FILING DATE	04/21/2021
CUSTOMER #	108449	FIRST NAMED INVENTOR	Sean O'SULLIVAN
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Joel Simon

Documents

TOTAL DOCUMENTS: 18

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
CA1186056A.pdf	47	Foreign Reference	7569 KB
DE10113803A1.pdf	40	Foreign Reference	7261 KB
DE10237831A1.pdf	6	Foreign Reference	467 KB
EP1710768A2.pdf	15	Foreign Reference	3330 KB
JP2001291192A.pdf	30	Foreign Reference	8400 KB
JP2002140399A.pdf	18	Foreign Reference	6027 KB
JP2002367086A.pdf	29	Foreign Reference	8644 KB

JP2003168195A.pdf	44	Foreign Reference	12717 KB
JP2003256982A.pdf	24	Foreign Reference	6805 KB
JP2003331013A.pdf	19	Foreign Reference	5034 KB
JP2005182146A.pdf	38	Foreign Reference	9234 KB
SB08.pdf	6	Information Disclosure Statement (IDS) Form (SB08)	1030 KB
WO0161604A1.pdf	52	Foreign Reference	1487 KB
WO0206994A2.pdf	30	Foreign Reference	5247 KB
WO03023641A1.pdf	36	Foreign Reference	5929 KB
WO03040971A1.pdf	71	Foreign Reference	12280 KB
WO9952084A1.pdf	21	Foreign Reference	3255 KB
WO2004081833A1.pdf	34	Foreign Reference	6062 KB

Digest

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for 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.

Espacenet

Bibliographic data: JP2001291192 (A) — 2001-10-19

INFORMATION PROCESSOR AND RECORDING MEDIUM

Inventor(s): TAKAGI HIDEMASA; DOI MOTOI ± (TAKAGI HIDEMASA, ; DOI MOTOI)

Applicant(s): OMRON TATEISI ELECTRONICS CO ± (OMRON CORP)

Classification: **- international:** ***G08G1/123; H04B7/26; H04L12/28;*** (IPC1-7): G08G1/123; H04B7/26; H04L12/28

- cooperative:

Application number: JP20000103062 20000405

Priority number(s): JP20000103062 20000405

Abstract of JP2001291192 (A)

PROBLEM TO BE SOLVED: To perform radio communication with a driver before getting-on a vehicle. SOLUTION: A user information transmission processing part 34 transmits information of a user, which is set in a user information setting part 32, to an on-vehicle unit by radio wave. A riding-together candidate reception processing part 39 receives information of the driver, which is transmitted from the on-vehicle unit by radio wave. A riding-together candidate display processing part 41 outputs received information of the driver to an LCD 46 and displays it. A riding-together request receiving part 35 selects the vehicle which requests riding-together based on a command from an input part 31. A riding-together request transmission processing part 36 transmits riding- together request data to the selected vehicle.

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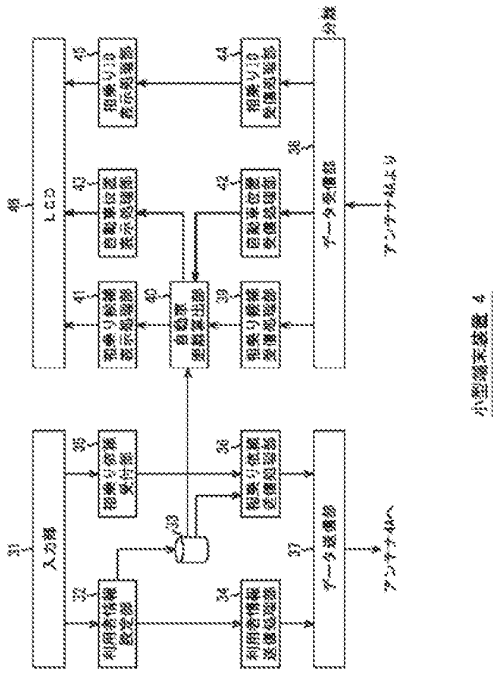
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最終頁に続く

(54)【発明の名称】 情報処理装置および記録媒体

(57)【要約】
【課題】　乗車前に運転手と無線通信することができるようにする。
【解決手段】　利用者情報送信処理部３４は、利用者情報設定部３２で設定された利用者の情報を車載装置に無線送信する。相乗り候補受信処理部３９は、車載装置より無線送信されてきた運転手の情報を受信する。相乗り候補表示処理部４１は、受信された運転手の情報をLCD４６に出力，表示させる。相乗り依頼受付部３５は，入力部３１からの指令に基づいて，相乗りを依頼する車両を選択する。相乗り依頼送信処理部３６は，選択された車両に対して相乗り依頼データを送信する。



小型端末装置 4

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【特許請求の範囲】

【請求項１】　他の装置と無線通信する情報処理装置において、
車両情報を設定する設定手段と，
前記他の装置から送信されてくる第１の情報を受信する第１の受信手段と、
前記第１の受信手段により受信された前記第１の情報に基づいて、前記設定手段により設定された前記車両情報を，前記他の装置に送信する送信手段と、
前記他の装置から送信されてくる第２の情報を受信する第２の受信手段とを備えることを特徴とする情報処理装置。

【請求項２】　前記第１または第２の情報の表示を制御する表示制御手段と、
前記第１の受信手段により受信された前記第１の情報が受け付け可能であるのか否かを判定する判定手段とをさらに備えることを特徴とする請求項１に記載の情報処理装置。

【請求項３】　前記車両情報は，予定行先、車両の特徴、または車両の現在位置を含み、
前記第１の情報は、希望行先、希望車種、または利用者の現在位置を含み、
前記第２の情報は、相乗り依頼，利用者の特徴，または利用者IDを含むことを特徴とする請求項１に記載の情報処理装置。

【請求項４】　他の装置と無線通信する情報処理装置において、
第１の情報を設定する設定手段と、
前記設定手段により設定された前記第１の情報を，前記他の装置に送信する第１の送信手段と、
前記他の装置から送信されてくる複数の車両情報を受信する第１の受信手段と、
前記第１の受信手段により受信された前記車両情報に基づいて、前記他の装置に、第２の情報を送信する第２の送信手段とを備えることを特徴とする情報処理装置。

【請求項５】　前記第１の受信手段により受信された前記車両情報と前記設定手段により設定された前記第１の情報に基づいて，前記他の装置との距離を算出する距離算出手段をさらに備えることを特徴とする請求項４に記載の情報処理装置。

【請求項６】　前記車両情報の表示を制御する表示制御手段をさらに備えることを特徴とする請求項４に記載の情報処理装置。

【請求項７】　前記表示制御手段により表示が制御されている、複数の前記車両情報の中から、所望の前記車両情報を選択する選択手段をさらに備えることを特徴とする請求項６に記載の情報処理装置。

【請求項８】　前記第２の送信手段は、前記選択手段により選択された前記車両情報に対応する他の装置に、前記第２の情報を送信することを特徴とする請求項７に記載の情報処理装置。

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【請求項９】　前記車両情報は，予定行先、車両の特徴、または車両の現在位置を含み、
前記第１の情報は、希望行先、希望車種、または利用者の現在位置を含み、
前記第２の情報は、相乗り依頼，利用者の特徴，または利用者IDを含むことを特徴とする請求項４に記載の情報処理装置。

【請求項１０】　他の装置と無線通信する情報処理装置を制御するプログラムにおいて、
第１の情報を設定する設定ステップと、
前記設定ステップの処理により設定された前記第１の情報を，前記他の装置に送信する第１の送信ステップと、
前記他の装置から送信されてくる複数の車両情報を受信する受信ステップと、
前記受信ステップの処理により受信された前記車両情報に基づいて、前記他の装置に、第２の情報を送信する第２の送信ステップとを含むことを特徴とするコンピュータが読み取り可能なプログラムが記録されている記録媒体。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】本発明は、情報処理装置および記録媒体に関し、特に、乗車前に、車両に搭載された車載装置と利用者の携帯する小型端末装置との間で無線通信を行うことにより、無駄な停止，かつ，誤乗車を防止することができるようにした情報処理装置および記録媒体に関する。

【０００２】

【従来の技術】例えば、タクシーに乗車または相乗りする場合、利用者が挙手等の動作を行い、乗車させてくれるタクシーを停止させる。そして、運転者との間で行き先等の交渉を行い、交渉が成立すれば、そのタクシーに乗車することができる

【０００３】

【発明が解決しようとする課題】しかしながら、これらの一連の動作には、以下に示すような課題があった。

（１）乗車を希望する利用者およびタクシーの運転手は、相手の人物像が判らず、お互いに不安である。

（２）運転者は、乗車を希望する（挙手をしている）利用者を路上で発見した後、車両を停止させるため、急停車になる危険がある。

（３）運転者と利用者との間で、行き先が異なる等の理由により交渉が成立しない場合があり、無駄な停止をすることになる。

【０００４】本発明はこのような状況に鑑みてなされたものであり、車両に搭載されている車載装置と利用者が携帯する小型端末装置との間で、無線通信を行うことにより、事前に相手の情報を把握することができるようにするものである。

【０００５】
【課題を解決するための手段】本発明の第１の情報処理装置は、車両情報を設定する設定手段と、他の装置から送信されてくる第１の情報を受信する第１の受信手段と、第１の受信手段により受信された第１の情報に基づいて、設定手段により設定された車両情報を、他の装置に送信する送信手段と、他の装置から送信されてくる第２の情報を受信する第２の受信手段とを備えることを特徴とする。
【０００６】第１の情報処理装置とは、例えば、図１の車載装置２であり、他の装置とは、例えば、図１の小型端末装置４である。
【０００７】設定手段とは、例えば、図２の運転者情報設定部１２であり、車両情報（氏名、年齢、性別、予定行先、車両の特徴、プレート番号など）を設定する。
【０００８】第１の受信手段とは、例えば、図２の利用者情報受信処理部２０であり、他の装置から送信されてきた第１の情報（氏名、年齢、性別、希望行先、希望車種、現在位置など）を受信する。
【０００９】送信手段とは、例えば、図２の運転者情報送信処理部１５であり、第１の受信手段により受信された利用者の希望行先や希望車種などの条件に適合するとき、設定手段により設定された運転者の情報（車両情報）を他の装置に送信する。
【００１０】第２の受信手段とは、例えば、図２の相乗り依頼受信処理部２３であり、他の装置から送信されてきた相乗り依頼データを受信する。
【００１１】本発明の第１の情報処理装置においては、他の装置から送信されてくる第１の情報に基づいて、車両情報が他の装置に送信され、他の装置から送信されてくる第２の情報が受信される。
【００１２】本発明の第１の情報処理装置によれば、他の装置から送信されてくる第１の情報に基づいて、車両情報を他の装置に送信し、他の装置から送信されてくる第２の情報を受信するようにしたので、利用者の属性情報を事前に把握することができる。
【００１３】本発明の第１の情報処理装置には，第１または第２の情報の表示を制御する表示制御手段と、第１の受信手段により受信された第１の情報が受け付け可能であるのか否かを判定する判定手段とをさらに設けるようにすることができる。
【００１４】表示制御手段とは、例えば、図２のＬＣＤ２６であり、利用者の情報や相乗りＩＤを表示する。判定手段とは、例えば、図２の表示候補選択部２１であり、第１の受信手段により受信された利用者の情報（現在位置など）が相乗り候補者として受け付け可能であるのか否かを判定する。
【００１５】表示制御手段を設けた場合、利用者の属性情報を表示することができる。判定手段を設けた場合、車両の現在位置や予定行先などの運転者情報と条件が適合しない利用者は相乗り候補車から除外することができる。
【００１６】本発明の第１の情報処理装置における車両情報は、予定行先、車両の特徴、または車両の現在位置を含み、第１の情報は、希望行先、希望車種、または利用者の現在位置を含み、第２の情報は、相乗り依頼、利用者の特徴、または利用者ＩＤを含むようにすることができる。
【００１７】本発明の第２の情報処理装置は、第１の情報を設定する設定手段と、設定手段により設定された第１の情報を、他の装置に送信する第１の送信手段と、他の装置から送信されてくる複数の車両情報を受信する第１の受信手段と、第１の受信手段により受信された車両情報に基づいて、他の装置に、第２の情報を送信する第２の送信手段とを備えることを特徴とする。
【００１８】第２の情報処理装置とは、例えば、図１の小型端末装置４であり、他の装置とは、例えば、図１の車載装置２である。
【００１９】設定手段とは、例えば、図３の利用者情報設定部３２であり、第１の情報（氏名、年齢、性別、特徴、希望行先、希望車種、現在位置など）を設定する。
【００２０】第１の送信手段とは、例えば、図３の利用者情報送信処理部３４であり、設定手段により設定された利用者の属性情報を送信する。
【００２１】第１の受信手段とは、例えば、図３の相乗り候補受信処理部３９であり、他の装置から送信されてくる車両情報（氏名、年齢、性別、特徴、予定行先、車両の特徴、現在位置など）を受信する。
【００２２】第２の送信手段とは、例えば、図３の相乗り依頼送信処理部３６であり、第１の受信手段で受信された車両情報に基づいて、第２の情報（相乗り依頼データ、または、見送りデータ）を送信する。
【００２３】本発明の第２の情報処理装置においては、第１の情報が他の装置に送信され、他の装置から送信されてくる複数の車両情報が受信され，受信された車両情報に基づいて、他の装置に第２の情報が送信される。
【００２４】本発明の第２の情報処理装置によれば，第１の情報を他の装置に送信し、他の装置から送信されてくる複数の車両情報を受信し、受信された車両情報に基づいて、他の装置に第２の情報を送信するようにしたので、運転者の属性情報を事前に把握することができる。
【００２５】本発明の第２の情報処理装置には、第１の受信手段により受信された車両情報と設定手段により設定された第１の情報に基づいて、他の装置との距離を算出する距離算出手段をさらに設けるようにすることができる。
【００２６】距離算出手段とは、例えば、図３の自動車距離算出部４０であり、第１の受信手段により受信された自動車の現在位置と、設定手段により設定された利用者の現在位置に基づいて、利用者から自動車までの距離

を算出する。

【００２７】距離算出手段を設けた場合、利用者から自動車までの距離を算出することができる。

【００２８】本発明の第２の情報処理装置には、車両情報の表示を制御する表示制御手段をさらに設けるようにすることができる。

【００２９】表示制御手段とは、例えば、図３のLCD４６であり、他の装置から送信されてきた車両情報を表示する。

【００３０】表示制御手段を設けた場合、他の装置から送信されてきた車両情報を表示することができる。

【００３１】本発明の第２の情報処理装置には、表示制御手段により表示が制御されている、複数の車両情報の中から、所望の車両情報を選択する選択手段をさらに設けるようにすることができる。

【００３２】選択手段とは、例えば、図３の相乗り依頼受付部３５であり、相乗り可能な複数の車両情報の中からユーザが所望する車両情報を選択する。

【００３３】選択手段を設けた場合，相乗り可能な複数の車両情報の中からユーザが所望する車両情報を選択することができる。

【００３４】第２の送信手段は、選択手段により選択された車両情報に対応する他の装置に、第２の情報を送信するようにすることができる。

【００３５】本発明の第２の情報処理装置における車両情報は、予定行先、車両の特徴、または車両の現在位置を含み、第１の情報は、希望行先、希望車種、または利用者の現在位置を含み、第２の情報は、相乗り依頼、利用者の特徴、または利用者IDを含むようにすることができる。

【００３６】本発明の記録媒体に記録されているプログラムは、第１の情報を設定する設定ステップと、設定ステップの処理により設定された第１の情報を、他の装置に送信する第１の送信ステップと、他の装置から送信されてくる複数の車両情報を受信する受信ステップと、受信ステップの処理により受信された車両情報に基づいて、他の装置に，第２の情報を送信する第２の送信ステップとを含むことを特徴とする。

【００３７】設定ステップとは、例えば、図９のステップＳ２２乃至Ｓ２５であり、第１の送信ステップとは、例えば，図９のステップＳ２６であり、受信ステップとは、例えば，図９のステップＳ２７であり、第２の送信ステップとは、例えば，図９のステップＳ３１，３２である。

【００３８】本発明の記録媒体に記録されているプログラムにおいては、第１の情報が他の装置に送信され、他の装置から送信されてくる複数の車両情報が受信され、受信された車両情報に基づいて、他の装置に第２の情報が送信される。

【００３９】本発明の記録媒体に記録されているプログラムによれば、第１の情報を他の装置に送信し、他の装置から送信されてくる複数の車両情報を受信し、受信された車両情報に基づいて、他の装置に第２の情報を送信するようにしたので、運転者の属性情報を事前に把握することができる。

【００４０】

【発明の実施の形態】図１は、本発明を適用した同乗システムの一実施の形態の構成を示すブロック図である。この同乗システムにおいては、車載装置２のアンテナ２Ａと車載装置基地局１のアンテナ１Ａとの間で無線信号が送受信され、小型端末装置４のアンテナ４Ａと小型端末装置基地局３のアンテナ３Ａとの間で無線信号が送受信され、および、車載装置基地局１のアンテナ１Ａと小型端末装置基地局３のアンテナ３Ａとの間で無線信号が送受信される。

【００４１】図２は、車載装置２の詳細な構成を示すブロック図である。入力部１１は、ボタン、スイッチ等より構成され、ユーザ（運転者）により操作されると、その操作に対応するコマンドが運転者情報設定部１２または相乗り可能受付部１４に入力される。運転者情報設定部１２は、入力部１１からの指令に基づいて、運転者の情報（氏名、年齢、性別、予定行先、車両の特徴、プレート番号など）を設定し、運転者情報データベース１３に記憶（蓄積）した後、運転者情報送信処理部１５に供給する。

【００４２】相乗り可能受付部１４は、入力部１１からの指令に基づいて、相乗り可能受付データを、運転者情報送信処理部１５に供給する。運転者情報送信処理部１５は、運転者情報データベース１３に記憶されている運転者データを読み出し、相乗り可能受付部１４より供給された相乗り可能受付データとともに、変調処理やD/A（Analog to Digital）変換などの所定の信号処理を施し、データ送信部１８に供給する。

【００４３】相乗りID（Identifier）送信処理部１６は、運転者情報データベース１３に記憶されている車両の特徴データと、後述する、相乗りID発行部２４で発行される相乗りIDとともに、変調処理およびD/A変換などの所定の信号処理を施し、データ送信部１８に供給する。自動車の位置送信処理部１７は、位置検知システム（GPS：Global Positioning System）などを利用し、自動車（車両）の現在位置を検知し、自動車位置データに対して，変調処理やD/A変換などの所定の信号処理を施し、データ送信部１８に供給する。

【００４４】データ送信部１８は、運転者情報送信処理部１５乃至自動車の位置送信処理部１７より供給された送信データ（運転者データ、相乗りID、自動車位置データなど）を増幅し、アンテナ２Ａを介して車載装置基地局１に無線送信する。

【００４５】データ受信部１９は、アンテナ２Ａで受信された受信データ（利用者データ、相乗り依頼データな

ど）を、利用者情報受信処理部２０または相乗り依頼受信処理部２３に供給する。利用者情報受信処理部２０は、データ受信部１９より供給された受信データ（利用者データ）に対して、復調処理やA/D変換などの所定の信号処理を施し、表示候補選択部２１に供給する。表示候補選択部２１は、運転者情報データベース１３に記憶されている運転者データに基づいて、利用者情報受信処理部２０より供給された利用者データを相乗り候補者として表示するのか否かを選択する。利用者情報表示処理部２２は、表示候補選択部２１で選択された相乗り候補者の利用者データをD/A変換し、LCD（Liquid Crystal Display）２６に出力、表示させる。

【００４６】相乗り依頼受信処理部２３は、データ受信部１９より供給された受信データ（相乗り依頼データ）に対して、復調処理やA/D変換などの所定の信号処理を施し、相乗りID発行部２４に供給する。相乗りID発行部２４は、相乗り依頼受信処理部２３より供給された相乗り依頼データに基づいて、相乗りIDを発行し、相乗りID表示処理部２５および相乗りID送信処理部１６に、それぞれ供給する。相乗りID表示処理部２５は、相乗りID発行部２４より供給された相乗りIDをD/A変換し、LCD２６に出力、表示させる。

【００４７】図３は、小型端末装置４の詳細な構成を示すブロック図である。入力部３１は、ボタン、スイッチ等より構成され、ユーザ（相乗り希望者）により操作されると、その操作に対応するコマンドが利用者情報設定部３２または相乗り依頼受付部３５に入力される。利用者情報設定部３２は、入力部３１からの指令に基づいて、利用者の情報（氏名、年齢、性別、特徴、希望行先、希望車種、現在位置など）を設定し、利用者情報データベース３３に記憶（蓄積）した後、利用者情報送信処理部３４および相乗り依頼送信処理部３６に、それぞれ供給する。

【００４８】利用者情報送信処理部３４は、利用者情報設定部３２より供給された利用者データに対して、変調処理やD/A変換などの所定の信号処理を施し、データ送信部３７に供給する。相乗り依頼受付部３５は、入力部３１からの指令に基づいて、相乗り依頼受付データを、相乗り依頼送信処理部３６に供給する。

【００４９】相乗り依頼送信処理部３６は、相乗り受付部３５より供給された相乗り依頼データに対して、変調処理やD/A変換など、所定の信号処理を施し、データ送信部３７に送信する。データ送信部３７は、利用者情報送信処理部３４または相乗り依頼送信処理部３６より供給された送信データを増幅し、アンテナ４Ａを介して小型端末装置基地局３に無線送信する。

【００５０】データ受信部３８は、アンテナ４Ａで受信された受信データ（運転者データ、自動車位置データ、相乗りIDなど）を、相乗り候補受信処理部３９、自動車位置受信処理部４２、または、相乗りID受信処理部４４に供給する。相乗り候補受信処理部３９は、データ受信部３８より供給された受信データ（運転者データ）に対して、復調処理やA/D変換などの所定の信号処理を施し、自動車距離算出部４０に供給する。自動車位置受信処理部４２は、データ受信部３８より供給された受信データ（自動車位置データ）に対して、復調処理やA/D変換などの所定の信号処理を施し、自動車距離算出部４０に供給する。

【００５１】自動車距離算出部４０は、利用者情報データベース３３に記憶されている利用者の現在位置データ、自動車受信処理部４２より供給された自動車位置データに基づいて、利用者から車両まで距離を算出し、相乗り候補受信処理部３９より供給された相乗り候補データとともに、相乗り候補表示処理部４１に供給する。自動車距離算出部４０はまた、自動車位置受信処理部４２より供給された自動車位置データを自動車位置表示処理部４３に供給する。

【００５２】相乗り候補表示処理部４１は、自動車距離算出部４０より供給された利用者から車両までの距離データおよび相乗り候補車両データをA/D変換し、LCD４６に出力、表示させる。自動車位置表示処理部４３は、自動車距離算出部４０より供給された自動車位置データをA/D変換し、LCD４６に出力、表示させる。

【００５３】相乗りID受信処理部４４は、データ受信部３８より供給された受信データ（相乗りID）に対して、復調処理やA/D変換などの所定の信号処理を施し、相乗りID表示処理部４５に供給する。相乗りID表示処理部４５は、相乗りID受信処理部４４より供給された相乗りIDデータをD/A変換し、LCD４６に出力、表示させる。

【００５４】次に、図４のフローチャートを参照して、車載装置２が実行する一連の動作について説明する。

【００５５】ステップＳ１において、ユーザ（運転者）は、車載装置２の主電源をオンして、図５に示すような運転者情報設定画面をLCD２６に表示させる。ステップＳ２において、運転者情報設定部１２は、入力部１１を用いてユーザにより運転者の属性情報が入力されることにより、その属性情報を設定し、運転者情報データベース１３に記憶する。これにより、例えば、図５に示すように、氏名入力エリア５１には「山田花子」のデータ、年齢入力エリア５２には「２４」のデータ、および性別入力エリア５３には「女性」のデータが、それぞれ設定（入力）される。

【００５６】ステップＳ３において、運転者情報設定部１２は、入力部１１を用いてユーザにより予定行先が入力されることにより、その予定行先を設定し、運転者情報データベース１３に記憶する。これにより、例えば、図５に示すように、予定行先入力エリア５４には「お台場」のデータが設定される。

【００５７】ステップＳ４において、運転者情報設定部１２は、入力部１１を用いてユーザにより車両の特徴が

入力されることにより、その車両の特徴を設定し、運転者情報データベース１３に記憶する。これにより、例えば、図５に示すように、車両の特徴入力エリア５５には「緑色のダンプ」のデータ、およびプレート番号入力エリア５６には「い　12-34」のデータが、それぞれ設定される。

【００５８】以上のように、ステップＳ２乃至Ｓ４の処理が終了すると、すなわち、運転者情報の設定が終了すると、ユーザにより、登録ボタン５７が押圧され、設定が完了される。なお、設定情報を修正したいとき、ユーザにより、取り消しボタン５８が押圧されることにより、ステップＳ２乃至Ｓ４の処理に戻ることができる。

【００５９】ステップＳ５において、データ受信部１９は、車載装置基地局１より送信されてきた利用者データがアンテナ２Ａで受信されたのか否かを判定し、未だ、利用者データが受信されていないと判定した場合、利用者データが受信されたと判定されるまで待機する。そして、ステップＳ５において、車載装置基地局１より無線送信されてきた利用者データがアンテナ２Ａで受信されたと判定されると、ステップＳ６に進む。

【００６０】ステップＳ６において、利用者情報受信処理部２０は、アンテナ２Ａおよびデータ受信部１９を介して無線送信されてきた利用者データに対して、復調処理やA/D変換などの所定の信号処理を施し、表示候補選択部２１に供給する。表示候補選択部２１は、ステップＳ３およびステップＳ４の処理で設定された、予定行先や車両の特徴に基づいて、利用者情報受信処理部２０より供給された利用者データをエントリ（相乗り候補者）として表示（選択）するのか否か、すなわち、利用者の希望行先や希望車両から相乗り可能であるのか否かを判定し、利用者データをエントリとして表示しないと判定した場合，ステップＳ５に戻り、上述した処理を繰り返す。

【００６１】そして、ステップＳ６において、利用者データをエントリとして表示すると判定された場合、ステップＳ７に進み、利用者情報表示処理部２２は、表示候補選択部２１で選択された利用者データをD/A変換し、LCD２６に出力、表示させる。これにより、例えば、図６に示すような利用者情報表示画面がLCD２６に表示される。

【００６２】図６の例の場合、利用者（相乗り候補者）の氏名に「鈴木一郎」のデータ、年齢に「３８」のデータ、性別に「男性」のデータ、希望行先に「警視庁」のデータ、希望車種に「特になし」のデータ、および現在位置に「自由が丘のＡデパートの前」のデータが、それぞれ表示される。

【００６３】また、位置検知システムなどを利用して、図７に示すように、車載装置２（車両）の現在位置と相乗り利用者の現在位置を周辺地図とともに表示させることも可能である。これにより、車両の運転者は、相乗り利用者までの最短路を見つけることができる。

【００６４】ステップＳ８において、相乗り可能受付部１４は、入力部１１を用いてユーザにより相乗り可能受付情報が入力されたのか否か、すなわち、ユーザにより相乗り可ボタン６１（図６または図７）が押圧されたのか否かを判定し、相乗り可能受付情報が入力されていないと判定した場合（ユーザにより相乗り不可ボタン６２が押圧されたと判定した場合）、ステップＳ５に戻り、上述した処理を繰り返す。

【００６５】そして、ステップＳ８において、相乗り可能受付情報が入力されたと判定された場合（相乗り可ボタン６１が押圧されたと判定された場合）、ステップＳ９に進み、運転者情報送信処理部１５は、ステップＳ２およびステップＳ３の処理で設定された運転者データ（車両データ）と、ステップＳ８の処理で判定された相乗り可能データに対して、それぞれ変調処理やD/A変換などの所定の信号処理を施し、それらをデータ送信部１８およびアンテナ２Ａを介して車載装置基地局１に無線送信する。

【００６６】ステップＳ１０において、データ受信部１９は、車載装置基地局１より無線送信されてきたデータ（利用者データおよび相乗り依頼データ）がアンテナ２Ａで受信されたのか否かを判定し、未だ、データが受信されていないと判定した場合、データが受信されたと判定されるまで待機する。そして、ステップＳ５において，車載装置基地局１より無線送信されてきたデータがアンテナ２Ａで受信されたと判定されると、ステップＳ１１に進む。

【００６７】ステップＳ１１において、データ受信部１９は、ステップＳ１０で受信されたデータが、見送り受信（車両に相乗りしないことを通知するデータ）であるのか否かを判定し、見送り受信であると判定した場合、ステップＳ５に戻り、上述した処理を繰り返す。ステップＳ１１において、見送り受信ではない、すなわち、相乗り依頼データ（車両に相乗りすることを通知するデータ）であると判定した場合、ステップＳ１２に進む。

【００６８】ステップＳ１２において、相乗り依頼受信処理部２３は、アンテナ２Ａおよびデータ受信部１９を介して無線送信されてきたデータ（利用データおよび相乗り依頼データ）に対して、復調処理やA/D変換などの所定の信号処理を施し、相乗りID発行部２４に供給する。相乗りID発行部２４は、相乗り依頼受信処理部２３より供給された相乗り依頼データに基づいて、相乗りIDを割り当て、相乗りID表示処理部２５および相乗りID送信処理部１６に供給する。

【００６９】ステップＳ１３において、相乗りID表示処理部２５は、相乗りID発行部２４より供給された相乗りIDおよび利用者データをそれぞれD/A変換し、LCD２６に出力、表示させる。これにより、例えば、図８に示すような、相乗り利用者の特徴や相乗りIDなどがLCD２６に

表示される。

【００７０】図８の例の場合、相乗り利用者の氏名に「鈴木一郎」のデータ、年齢に「３８」のデータ、性別に「男性」のデータ、特徴に「若作り」のデータ、希望行先に「警視庁」のデータ、希望車種に「特になし」のデータ、現在位置に「自由が丘のＡデパートの前」のデータ、および、予約ID（相乗りID）に「5523」のデータが、それぞれ表示される。

【００７１】ステップＳ１４において、相乗りID送信処理部１６は、ステップＳ４の処理で設定された車両の特徴データ、および、ステップＳ１２の処理で割り当てられた相乗りIDを、それぞれ変調処理およびD/A変換などの所定の信号処理を施し、データ送信部１８およびアンテナ２Ａを介して車載装置基地局１に無線送信する。

【００７２】ステップＳ１５において、車載装置１は、相乗りが完了したのか否かを判定し、相乗りが完了していないと判定した場合、相乗りが完了したと判定されるまで、相乗り利用者を探す。そして、ステップＳ１５において、相乗りが完了したと判定された場合、処理は終了される。

【００７３】以上においては、運転者の属性情報を自ら入力し、設定するようにして説明したが、本発明はこれに限らず、例えば、運転者の属性（身分）を証明するカードを専用の読み取り装置で読み取ることにより、属性情報を設定することも可能である。また、入力エリア５４において、よく利用される予定行先を予め複数設定し、その中から選択させることも可能である。

【００７４】次に、図９のフローチャートを参照して、小型端末装置４が実行する一連の動作について説明する。

【００７５】ステップＳ２１において、ユーザ（相乗り希望者）は、小型端末装置４の主電源をオンして、図１０に示すような利用者情報設定画面をLCD４６に表示させる。ステップＳ２２において、利用者情報設定部３２は、入力部３１を用いてユーザにより利用者の属性情報が入力されることにより、その属性情報を設定し、利用者情報データベース３３に記憶する。これにより、例えば、図１０に示すように、氏名入力エリア７１には「鈴木一郎」のデータ、年齢入力エリア７２には「３８」のデータ、および、性別入力エリア７３には「男性」のデータが、それぞれ設定（入力）される。

【００７６】ステップＳ２３において、利用者情報設定部３２は、入力部１１を用いてユーザにより利用者の特徴が入力されることにより、その利用者の特徴を設定し、利用者情報データベース３３に記憶する。これにより、例えば、図１０に示すように、利用者の特徴入力エリア７４には、「若作り」のデータが設定される。

【００７７】ステップＳ２４において、利用者情報設定部３２は、入力部３１を用いてユーザにより希望行先が入力されることにより、その希望行先を設定し、利用者情報データベース３３に記憶する。これにより、例えば、図１０に示すように、希望行先入力エリア７５には、「警視庁」のデータが設定される。

【００７８】ステップＳ２５において、利用者情報設定部３２は、入力部３１を用いてユーザにより希望車種が入力されることにより、その希望車種を設定し、利用者情報データベース３３に記憶する。これにより、例えば、図１０に示すように、希望車種入力エリア７６には、「特になし」のデータが設定される。また、位置検知システムなどを利用して、小型端末装置４（利用者）の現在位置が検知され、現在位置入力エリア７７には、「自由が丘のＡデパートの前」のデータが設定される。

【００７９】以上のように、ステップＳ２２乃至Ｓ２５の処理が終了すると、すなわち、利用者情報の設定が終了すると、ユーザにより、登録ボタン７８が押圧され、設定が完了される。なお、設定情報を修正したいとき、ユーザにより、取り消しボタン７９が押圧されることにより、ステップＳ２２乃至２５の処理に戻ることができる。

【００８０】ステップＳ２６において、利用者情報送信処理部３４は、ステップＳ２２乃至Ｓ２５の処理で設定された利用者データに対して、変調処理やD/A変換などの所定の信号処理を施し、データ送信部３７およびアンテナ４Ａを介して小型端末装置基地局３に無線送信する。

【００８１】ステップＳ２７において、データ受信部３８は、小型端末装置基地局３より無線送信されてきた車両データがアンテナ４Ａで受信されたのか否かを判定し、未だ、車両データが受信されていないと判定した場合、車両データが受信されたと判定されるまで待機する。そして、ステップＳ２７において、小型端末装置基地局３より無線送信されてきた車両データがアンテナ４Ａで受信されたと判定されると、ステップＳ２８に進む。

【００８２】ステップＳ２８において、自動車位置受信処理部４２は、データ受信部３８より供給された自動車位置データに対して、復調処理やA/D変換など、所定の信号処理を施し、自動車距離算出部４０に供給する。自動車距離算出部４０は、ステップＳ２５の処理で設定された利用者の現在位置データと、自動車受信処理部４２より供給された自動車位置データに基づいて、利用者から車両までの距離を算出する。

【００８３】ステップＳ２９において、相乗り候補表示処理部４１は、ステップＳ２８の処理で算出された利用者から車両までの距離データ、および、ステップＳ２７の処理で受信された車両データを、それぞれA/D変換し、LCD４６に出力、表示させる。これにより、例えば、図１１に示すような相乗り候補車両情報表示画面がLCD４６に表示される。

【００８４】図１１の例の場合、候補番号１のエントリ

には、運転手名が「田中二郎（３９）男性」、予定行先が「新橋」、自動車の位置が「都立大学前」、および自動車との距離が「１．５km」の車両データが表示される。候補番号２のエントリには、運転手名が「山本三郎（５８）男性」、予定行先が「中野」、自動車の位置が「世田谷駅」、および自動車との距離が「２．０km」の車両データが表示される。そして、候補番号３のエントリには、運転手名が「山田花子（２４）女性」、予定行先が「お台場」、自動車の位置が「目黒調布」、および自動車との距離が「３．０km」の車両データが表示される。

【００８５】優先順位設定エリア９４は、近い順、運転手の年齢の若い順、道路の空いている順などの中から、ユーザにより選択されるとにより、その優先順位で表示される（いまの場合、近い順が選択されている）。次の候補ボタン９２は、相乗り候補車両が複数あり、１つの画面に表示しきれない場合、ユーザにより、次の候補ボタン９２が押圧されることにより、候補番号４以降の相乗り候補車両データが表示される。

【００８６】図９に戻って、ステップＳ３０において、相乗り依頼受付部３５は、ユーザにより入力部３１を用いて、ステップＳ２９の処理で表示された相乗り候補車両（いまの場合、候補番号１乃至３の３つの候補車両）の中から、相乗りを依頼する候補車両（いまの場合、候補番号３）が選択され、相乗り依頼ボタン９１（図１１）が押圧されることにより、相乗りを依頼する車両を選択する。なお、選択された候補車両を変更したいとき、ユーザにより、取り消しボタン９３が押圧されることにより、候補車両を再度、選択することができる。

【００８７】ステップＳ３１において、相乗り依頼送信処理部３６は、ステップＳ３０の処理で選択された車両に対して送信するための、相乗り依頼データ、利用者の特徴、および、利用者IDに対して、変調処理やD/A変換処理などの所定の信号処理を施し、データ送信部３７およびアンテナ４Ａを介して小型端末装置３に送信する。

【００８８】ステップＳ３２において、相乗り依頼送信処理部３６は、ステップＳ３０の処理で選択されなかった車両（いまの場合、候補車両１，２）に対して送信するための見送りデータを所定の信号処理し，データ送信部３７およびアンテナ４Ａを介して小型端末装置３に送信する。

【００８９】ステップＳ３３において，データ受信部３８は、小型端末装置基地局３より送信されてきたデータ（車両詳細データ）がアンテナ４Ａで受信されたのか否かを判定し、未だ、データが受信されていないと判定した場合、データが受信されたと判定されるまで待機する。そして、ステップＳ３３において、小型端末装置基地局３より送信されてきたデータがアンテナ４Ａで受信されたと判定されると、ステップＳ３４に進む。

【００９０】ステップＳ３４において、相乗りID受信処理部４４は、データ受信部３９より供給された車両詳細データに対して，復調処理やA/D変換などの所定の信号処理を施し、相乗りID表示処理部４５に供給する。相乗りID表示処理部４５は、相乗りID受信処理部４４より供給された車両詳細データをD/A変換し、LCD４６に出力、表示させる。これにより、例えば、図１２に示すような相乗り車両情報表示画面がLCD４６に表示される。

【００９１】図１２の例の場合、相乗り車両の運転手名に「山田花子（２４）女性」、予定行先に「お台場」，自動車の位置に「目黒調布」、自動車との距離に「3.0km」、自動車の特徴に「緑色の」、プレート番号に「い12-34」，および、相乗りIDに「5523」の車両詳細データが表示される。

【００９２】また、位置検知システムなどを利用して、図１３に示すように、小型端末装置４（利用者）の現在位置と車両との現在位置を周辺地図とともに表示させることも可能である。これにより、相乗り利用者は、どの方向から車両が到来するのかを確認することができる。

【００９３】以上においては、自動車距離算出部４０を小型端末装置４に設けるようにしたが、車載装置２に設けることも可能である。

【００９４】次に、図１４および図１５のフローチャートを参照して、相乗り希望者（利用者）が車両に相乗り完了するまでの処理について説明する。

【００９５】ステップＳ４１において、車載装置２の運転者情報設定部１２は，入力部１１を用いてユーザにより運転者の属性情報が入力されることにより、その属性情報を設定し、運転者情報データベース１３に記憶する（図５）。

【００９６】ステップＳ１０１において、小型端末装置４の利用者情報設定部３２は、入力部３１を用いてユーザにより利用者の希望行先、希望車種、および特徴を含む属性情報が入力されることにより、その属性情報を設定し、利用者情報データベース３３に記憶する（図１０）。ステップＳ１０２において、利用者情報設定部３２は、ステップＳ１０１の処理で入力された属性情報に基づいて、利用者IDを割り当てる。ステップＳ１０３において、利用者情報送信処理部３４は、ステップＳ１０１，１０２の処理で設定された利用者の属性情報および利用者IDを、データ送信部３７およびアンテナ４Ａを介して小型端末装置基地局３に無線送信する。

【００９７】ステップＳ８１において、小型端末装置基地局３のアンテナ３Ａは、小型端末装置４より無線送信されてきた、利用者の属性情報データを受信する。ステップＳ８２において、小型端末装置基地局３は、ステップＳ８１の処理で受信された利用者の属性情報および利用者IDに対して、所定の信号処理を施し、アンテナ３Ａを介して車載装置基地局１に無線送信する。

【００９８】ステップＳ６１において、車載装置基地局１のアンテナ１Ａは、小型端末装置基地局３より無線送

信されてきた、利用者の属性情報および利用者IDを受信する。ステップＳ６２において、車載装置基地局１は、ステップＳ６１の処理で受信された利用者の属性情報および利用者IDに対して、所定の信号処理を施し、アンテナ１Ａを介して、車載装置２に無線送信する。

【００９９】ステップＳ４２において、車載装置２のアンテナ２Ａは、車載装置基地局１より送信されてきた利用者の属性情報および利用者IDを受信する。ステップＳ４３において、表示候補選択部２１は、ステップＳ４１の処理で設定された運転者の属性情報（予定行先や現在位置など）に基づいて、ステップＳ４２の処理で受信された利用者の属性情報データをエントリ（相乗り候補者）として表示するのか否か、すなわち、利用者の希望行先や現在位置から相乗りが可能であるのか否かを判定し、利用者の属性情報データをエントリとして表示しないと判定した場合、ステップＳ４２に戻り、上述した処理を繰り返す。

【０１００】ステップＳ４３において、利用者の属性情報データをエントリとして表示すると判定された場合、ステップＳ４４に進み、利用者情報表示処理部２２は、利用者の属性情報データをD/A変換し、LCD２６に出力、表示させる（図６）。そして、相乗り可能受付部１４は、入力部１１を用いてユーザにより相乗り可能受付情報が入力されたのか否か、すなわち、ユーザにより相乗り可ボタン６１（図６）が押圧（選択）されたのか否かを判定し、相乗り可能受付情報が入力されていないと判定した場合（ユーザにより相乗り不可ボタン６２が押圧されたと判定した場合）、ステップＳ４２に戻り、上述した処理を繰り返す。

【０１０１】ステップＳ４４において、相乗り可能受付情報が入力されたと判定された場合（相乗り可ボタン６１が選択されたと判定された場合）、ステップＳ４５に進み、運転者情報送信処理部１５は、ステップＳ４１の処理で設定された運転者の属性情報を、データ送信部１８およびアンテナ２Ａを介して車載装置基地局１に無線送信する。

【０１０２】ステップＳ６３において、車載装置基地局１のアンテナ１Ａは、車載装置２より無線送信されてきた運転者の属性情報を受信する。ステップＳ６４において、車載装置基地局１は、ステップＳ６３の処理で受信された運転者の属性情報を、アンテナ１Ａを介して小型端末装置基地局３に無線送信する。

【０１０３】ステップＳ８３において、小型端末装置基地局３のアンテナ３Ａは、車載装置基地局１より無線送信されてきた運転者の属性情報を受信する。ステップＳ８４において、小型端末装置基地局３は、ステップＳ８３の処理で受信された運転者の属性情報を、アンテナ３Ａを介して小型端末装置４に無線送信する。

【０１０４】ステップＳ１０４において、小型端末装置４のアンテナ４Ａは、小型端末装置基地局３より送信されてきた運転者の属性情報を受信する。ステップＳ１０５において、自動車距離算出部４０は、ステップＳ１０１の処理で設定された利用者の現在位置と、ステップＳ１０４の処理で受信された運転者の属性情報に基づいて、利用者から車両までの距離を算出する。

【０１０５】ステップＳ１０６において、相乗り候補表示処理部４１は、ステップＳ１０５の処理で算出された利用者から車両までの距離データ、および、ステップＳ１０４の処理で受信された車両データ（運転者の属性情報）をA/D変換し、LCD４６に出力、表示させる（図１１）。そして、相乗り依頼受付部３５は、ユーザにより複数の相乗り候補車両の中から、相乗りを依頼する車両が選択されることにより、相乗り車両を選択する（いまの場合、候補番号３の車両）。

【０１０６】ステップＳ１０７において、相乗り依頼送信処理部３６は、ステップＳ１０６の処理で選択された車両に対して送信するための、相乗り依頼データ、利用者の特徴、および利用者IDを、小型端末装置基地局３に無線送信する。

【０１０７】ステップＳ８５において、小型端末装置基地局３のアンテナ３Ａは、小型端末装置４より無線送信されてきた、相乗り依頼データ、利用者の特徴、および利用者IDを受信する。ステップＳ８６において、小型端末装置基地局３は、ステップＳ８５の処理で受信された、相乗り依頼データ、利用者の特徴、および利用者IDを、アンテナ３Ａを介して車載装置基地局１に無線送信する。

【０１０８】ステップＳ６５において、車載装置基地局１のアンテナ１Ａは、小型端末装置基地局３より無線送信されてきた、相乗り依頼データ、利用者の特徴、および利用者IDを受信する。ステップＳ６６において、車載装置基地局１は、ステップＳ６５の処理で受信された、相乗り依頼データ、利用者の特徴、および利用者IDを、アンテナ１Ａを介して、車載装置２に無線送信する。

【０１０９】ステップＳ４６において、車載装置２のアンテナ２Ａは、車載装置基地局１より送信されてきた、相乗り依頼データ、利用者の特徴、および利用者IDを受信する。ステップＳ４７において、相乗りID発行部２４は、ステップＳ４７の処理で受信された相乗り依頼データに基づいて、相乗りIDを割り当てる。ステップＳ４８において、車載装置２のユーザ（運転者）は、利用者との面会方法（例えば、行先、予約ID、名前、または合言葉）を決定する。相乗りID送信処理部１６は、ステップＳ４１の処理で設定された車両の特徴データ、ステップＳ４７の処理で割り当てられた相乗りID、および、ユーザにより決定された面会方法を、データ送信部１８およびアンテナ２Ａを介して車載装置基地局１に無線送信する。

【０１１０】ステップＳ６７において、車載装置基地局１のアンテナ１Ａは、車載装置２より無線送信されてき

た、車両の特徴，相乗りID，および，面会方法を受信する。ステップＳ６８において、車載装置基地局１は，ステップＳ６７の処理で受信された、車両の特徴，相乗りID，および，面会方法を、アンテナ１Ａを介して小型端末装置基地局３に無線送信する。

【０１１１】ステップＳ８７において，小型端末装置基地局３のアンテナ３Ａは、車載装置基地局１より無線送信されてきた、車両の特徴，相乗りID，および、面会方法を受信する。ステップＳ８８において、小型端末装置基地局３は、ステップＳ８７の処理で受信された、車両の特徴、相乗りID，および、面会方法を、アンテナ３Ａを介して小型端末装置４に無線送信する。

【０１１２】ステップＳ１０８において、小型端末装置４のアンテナ４Ａは、小型端末装置基地局３より送信されてきた、車両の特徴、相乗りID、および、面会方法を受信する。これにより、図１２に示すような車両情報表示画面がLCD２６に表示される。ステップＳ１０９において、利用者情報送信処理部３４は，小型端末装置４のユーザ（相乗り利用者）により決定された車両の運転者との面会方法を，データ送信部３７およびアンテナ４Ａを介して小型端末装置基地局３に無線送信する。

【０１１３】ステップＳ８９において、小型端末装置基地局３のアンテナ３Ａは、小型端末装置４より無線送信されてきた、利用者の面会方法を受信する。ステップＳ９０において、小型端末装置基地局３は、ステップＳ８９の処理で受信された利用者の面会方法を、アンテナ３Ａを介して車載装置基地局１に無線送信する。

【０１１４】ステップＳ６９において、車載装置基地局１のアンテナ１Ａは、小型端末装置基地局３より無線送信されてきた，利用者の面会方法を受信する。ステップＳ７０において、車載装置基地局１は、ステップＳ６９の処理で受信された利用者の面会方法を、アンテナ１Ａを介して，車載装置２に無線送信する。

【０１１５】ステップＳ４９において、車載装置２のアンテナ２Ａは、車載装置基地局１より送信されてきた利用者の面会方法を受信する。そして，運転者は、相乗り希望者が待機している場所に向かって車両を走行させる。ステップＳ５０において、車載装置２のユーザ（運転者）は、ステップＳ４９の処理で受信された面会方法により、相手が利用者であるのか否かを判定（確認）し、相手が相乗り利用者ではないと判定した場合、面会方法により、相手が相乗り利用者であると判定されるまで，相乗り利用者を探し、相手が相乗り利用者であると判定されると、処理は終了される。

【０１１６】ステップＳ１１０において、小型端末装置４のユーザ（利用者）は、ステップＳ１０８の処理で受信された面会方法により、相手が相乗り車両の運転者であるのか否かを判定（確認）し、相手が相乗り車両の運転者ではないと判定した場合、面会方法により、相手が車両の運転者であると判定されるまで、その場所で待機し、相手が車両の運転者であると判定されると、処理は終了される。

【０１１７】すなわち、ステップＳ５０、ステップＳ１１０の処理では，運転者と利用者との間で、お互いに決定した面会方法により、相手を確認し、相手が確認されると、相乗りが完了する。

【０１１８】以上のように、運転者と利用者との間で、お互いの情報を交換することにより、効率的に相乗りすることができる。

【０１１９】また，以上においては、利用者より送信されてきた利用者情報に基づいて、運転者が相乗り可能であるのか否かを手動で選択するようにしたが、本発明は、これに限らず、自動で選択することも可能である。

【０１２０】図１６は、相乗り可能であるのか否かを自動で選択するようにした構成例を示すブロック図である。なお，図１６において、図２における場合と対応する部分には同一の符号を付してあり、その説明は適宜省略する。この例においては、表示候補選択部２１の代わりに相乗り判定部１０１が設けられ，相乗り可能受付部１４が不要となり、その他の構成は，図２に示した例と同様である。

【０１２１】図１６に示されるように、表示候補選択部２１の代わりに設けられた相乗り判定部１０１は、利用者情報受信処理部２０より供給された利用者データを相乗り候補者として表示するのか否かを判定し、その判定結果を、運転者情報送信処理部１５に供給する。これにより、相乗り可能であるのか否かが自動で判定され、その判定結果が利用者に送信される。

【０１２２】また，相乗り希望者が、図１６に示されるような車載装置２を搭載した車両に相乗り完了するまでの処理は、基本的に、図１４および図１５のフローチャートを参照して説明した処理と同様であるため、省略する。ただし、ステップＳ４３およびステップＳ４４の処理の代わりに、相乗り判定処理が行われる。従って、ユーザにより相乗り可能であるのか否かの選択処理（ステップＳ４４）は不要となり、運転者が、相乗り利用者の属性情報を確認するための利用者属性情報の確認画面がLCD２６に表示される（図１７）。

【０１２３】以上においては、利用者が小型端末装置４を携帯するようにしたが、本発明はこれに限らず、例えば、タクシー乗り場に小型端末装置４を設置することも可能である。

【０１２４】また，以上においては、行先、予約ID、名前、または合言葉により面会する例を説明したが、本発明はこれに限らず，以下に示すような面会方法により相手を確認するようにしてもよい。

（１）携帯電話装置などのトランシーバ機能を用いて通話したり、利用者側（小型端末装置４）から所定のメロディを車載装置２に送信，再生させたり，相手に近づくに従って音量を変化させたり，または、音の高低で表し

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たりするなど、音を利用した面会方法。

（２）利用者側から指定されたオン／オフの間隔で車両のヘッドライトを点滅させたり，ヘッドライトの色を変更させたり，相手に近づくに従って、装置に設けられているランプの光量を増大させたりするなど、光を利用した面会方法。

（３）お互いの近傍の画像（目印）を送信するなど、画像を利用した面会方法。

（４）車両と利用者との距離、車のプレート番号など、文字を利用した面会方法。

（５）お互いの位置情報をLCD２６，４６に表示させるなど、地図を利用した面会方法。

【０１２５】以上のように、本発明によれば，以下に示すような効果が得られる。

（１）乗車を希望する利用者および運転者は、相手の人物像が判り、お互いに安心である。

（２）運転者は、乗車を希望する利用者の位置や人物像などに基づいて，容易に利用者を発見することができる。

（３）運転者と利用者との間で，予め行先等の交渉が成立しているので、無駄な停車をしなくて済む。

【０１２６】上述した一連の処理は、ハードウェアにより実行させることもできるが、ソフトウェアにより実行させることもできる。一連の処理をソフトウェアにより実行させる場合には、そのソフトウェアを構成するプログラムが、専用のハードウェアに組み込まれているコンピュータ、または，各種のプログラムをインストールすることで、各種の機能を実行することが可能な、例えば汎用のパーソナルコンピュータなどに、記録媒体からインストールされる。

【０１２７】この記録媒体は、コンピュータとは別に、ユーザにプログラムを提供するために配布される、プログラムが記録されている磁気ディスク（フロッピディスクを含む）、光ディスク（CD-ROM（Compact Disk-Read Only Memory），DVD（Digital Versatile Disk）を含む、光磁気ディスク（MD（Mini-Disk）を含む）、若しくは半導体メモリなどよりなるパッケージメディアにより構成されるだけでなく、コンピュータに予め組み込まれた状態でユーザに提供される，プログラムが記録されているROMや、ハードディスクなどで構成される。

【０１２８】なお、本明細書において，記録媒体に記録されるプログラムを記述するステップは、記載された順序に沿って時系列的に行われる処理はもちろん、必ずしも時系列的に処理されなくとも、並列的あるいは個別に実行される処理をも含むものである。

【０１２９】また，本明細書において、システムとは、複数の装置により構成される装置全体を表すものである。

【０１３０】

【発明の効果】本発明の第１の情報処理装置によれば、

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他の装置から送信されてくる利用者の属性情報に基づいて、車両情報を他の装置に送信し、他の装置から送信されてくる相乗り依頼情報を受信するようにしたので、利用者の属性情報を事前に把握することができる。

【０１３１】本発明の第２の情報処理装置および記録媒体に記録されているプログラムによれば、利用者の属性情報を他の装置に送信し、他の装置から送信されてくる複数の車両情報を受信し、受信された車両情報に基づいて，他の装置に相乗り依頼情報を送信するようにしたので、運転者の属性情報を事前に把握することができる。

【図面の簡単な説明】

【図１】本発明を適用した同乗システムの構成例を示す図である。

【図２】車載装置の詳細な構成を示すブロック図である。

【図３】小型端末装置の詳細な構成を示すブロック図である。

【図４】車載装置の動作を説明するフローチャートである。

【図５】運転車情報設定画面を説明する図である。

【図６】利用者情報表示画面を説明する図である。

【図７】他の例の利用者情報表示画面を説明する図である。

【図８】相乗り利用者情報画面を説明する図である。

【図９】小型端末装置の動作を説明するフローチャートである。

【図１０】利用者情報設定画面を説明する図である。

【図１１】相乗り候補車両情報表示画面を説明する図である。

【図１２】車両情報表示画面を説明する図である。

【図１３】他の例の車両情報表示画面を説明する図である。

【図１４】利用者が相乗り完了するまでの処理を説明するフローチャートである。

【図１５】図１４の続きを説明するフローチャートである。

【図１６】他の例の車載装置の詳細な構成を示すブロック図である。

【図１７】相乗り利用者の属性情報確認画面を説明する図である。

【符号の説明】

１　車載装置基地局
２　車載装置
３　小型端末装置基地局
４　小型端末装置
１２　運転者情報設定部
１３　運転者情報データベース
１４　相乗り可能受付部
１５　運転者情報送信処理部
１６　相乗りID送信処理部

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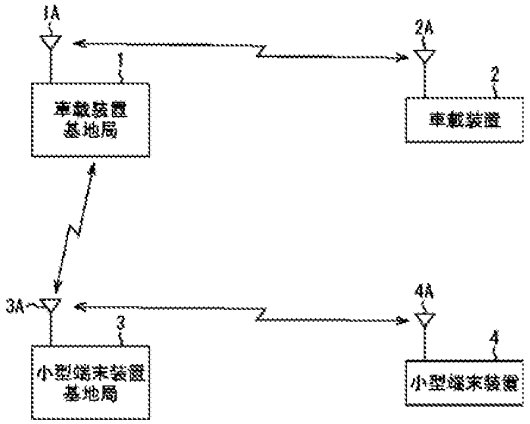
１７　自動車の位置送信処理部
２０　利用者情報受信処理部
２１　表示候補選択部
２２　利用者情報表示処理部
２３　相乗り依頼受信処理部
２４　相乗りID発行部
２５　相乗りID表示処理部
２６　LCD
３２　利用者情報設定部
３３　利用者情報データベース
３４　利用者情報送信処理部

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＊３５　相乗り依頼受付部
３６　相乗り依頼送信処理部
３９　相乗り候補受信処理部
４０　自動車距離算出部
４１　相乗り候補表示処理部
４２　自動車位置受信処理部
４３　自動車位置表示処理部
４４　相乗りID受信処理部
４５　相乗りID表示処理部
４６　LCD

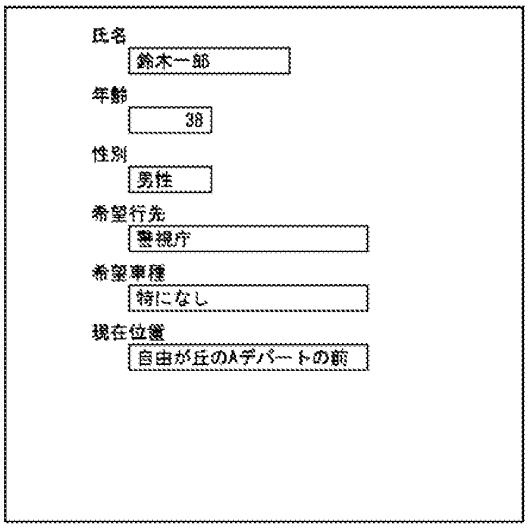
＊

【図１】

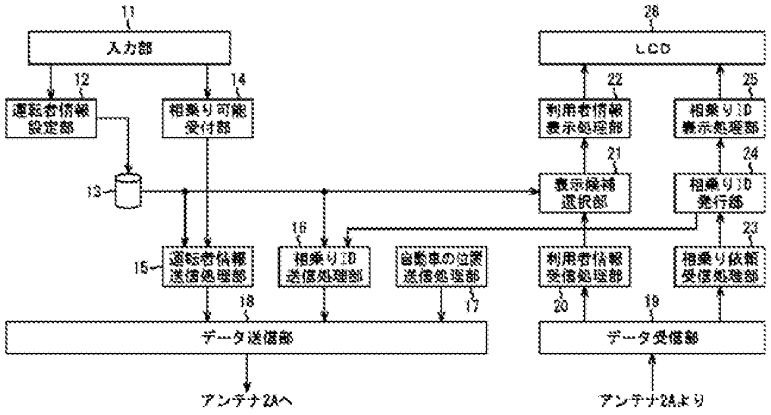


同業システム

【図１７】

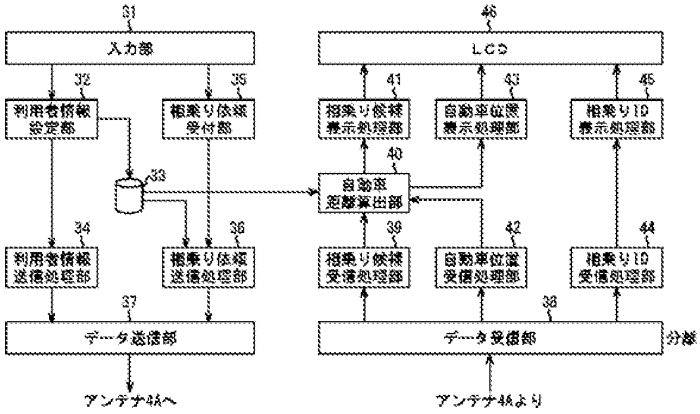


【図２】



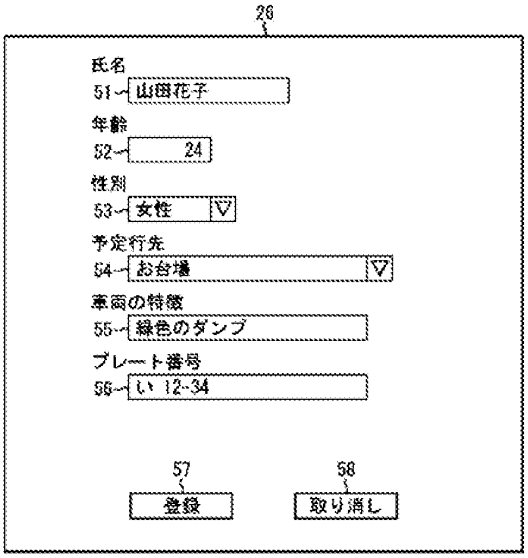
車載装置 2

【図3】

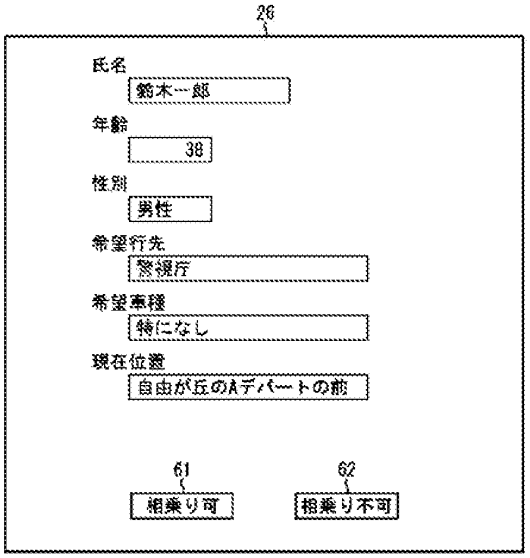


小型端末装置 4

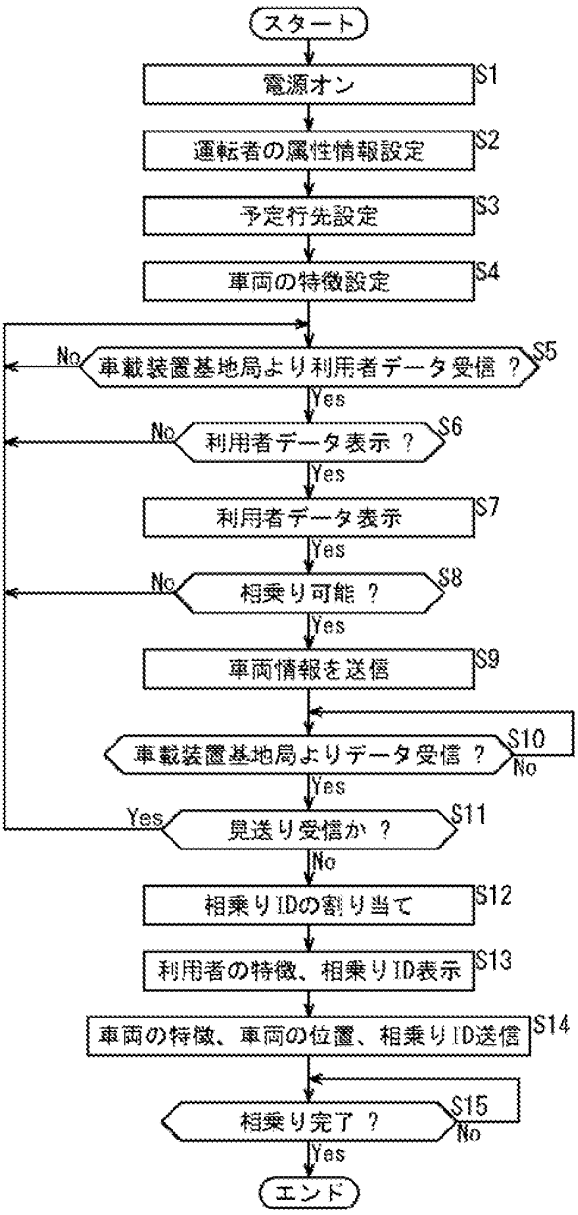
【図5】



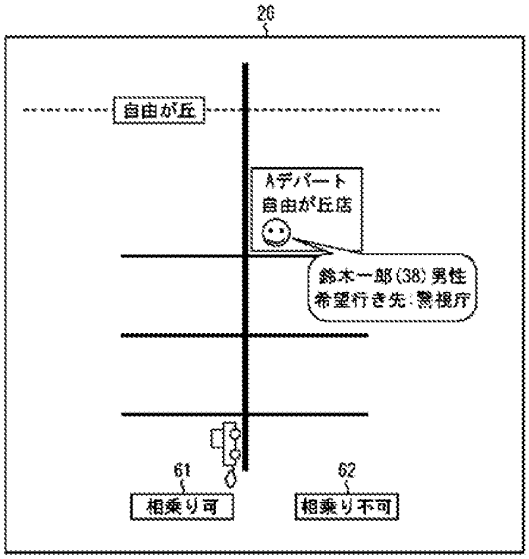
【図6】



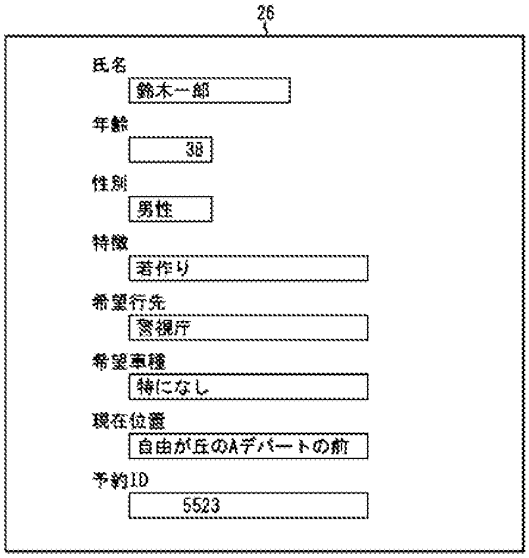
【図４】


スタート
電源オン
S1
運転者の属性情報設定
S2
予定行先設定
S3
車両の特徴設定
S4
No
車載装置基地局より利用者データ受信 ？
S5
Yes
No
利用者データ表示 ？
S6
Yes
利用者データ表示
S7
Yes
No
相乗り可能 ？
S8
Yes
車両情報を送信
S9
車載装置基地局よりデータ受信 ？
S10
No
Yes
Yes
見送り受信か ？
S11
No
相乗りIDの割り当て
S12
利用者の特徴、相乗りID表示
S13
車両の特徴、車両の位置、相乗りID送信
S14
相乗り完了 ？
S15
No
Yes
エンド

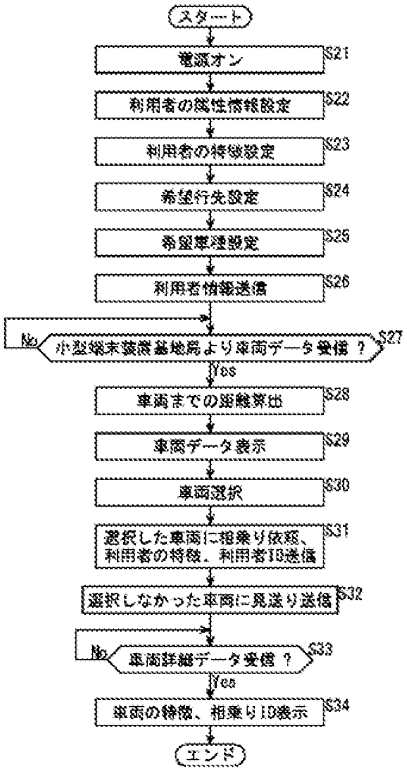
【図７】


26
自由が丘
Aデパート
自由が丘店
鈴木一郎(38)男性
希望行き先:警視庁
61
相乗り可
62
相乗り不可

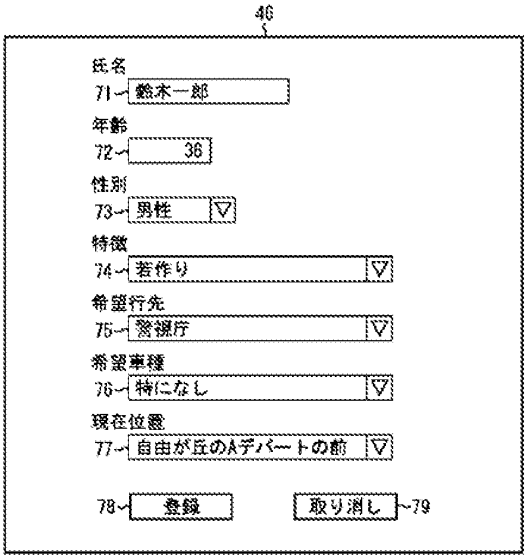
【図８】


26
氏名
鈴木一郎
年齢
38
性別
男性
特徴
若作り
希望行先
警視庁
希望車種
特になし
現在位置
自由が丘のAデパートの前
予約ID
5523

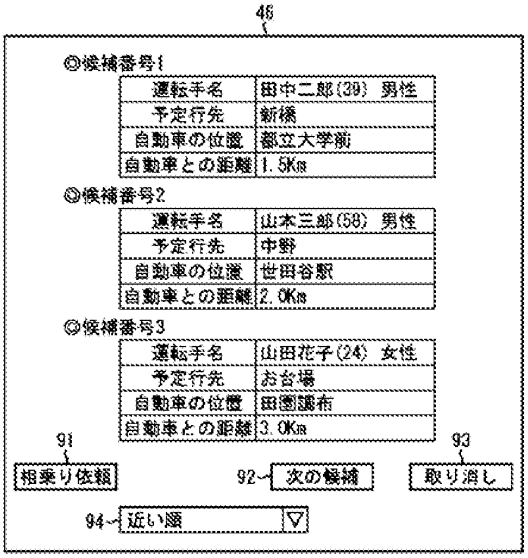
【図９】



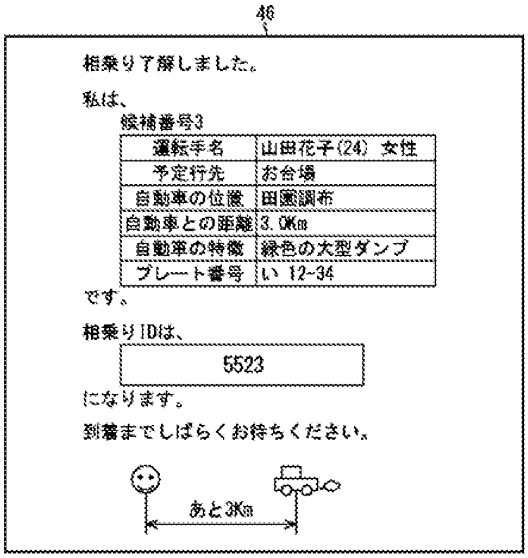
【図１０】



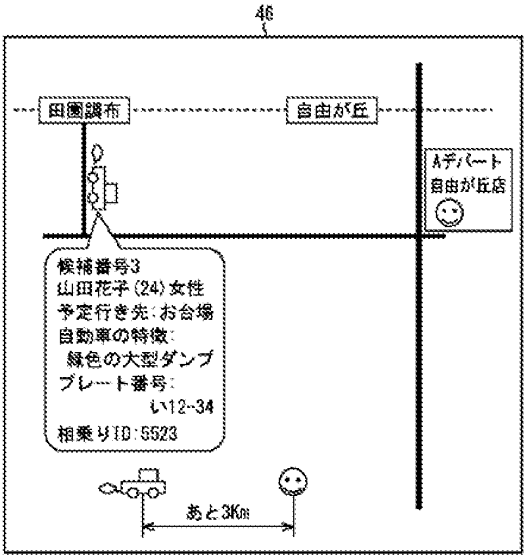
【図１１】



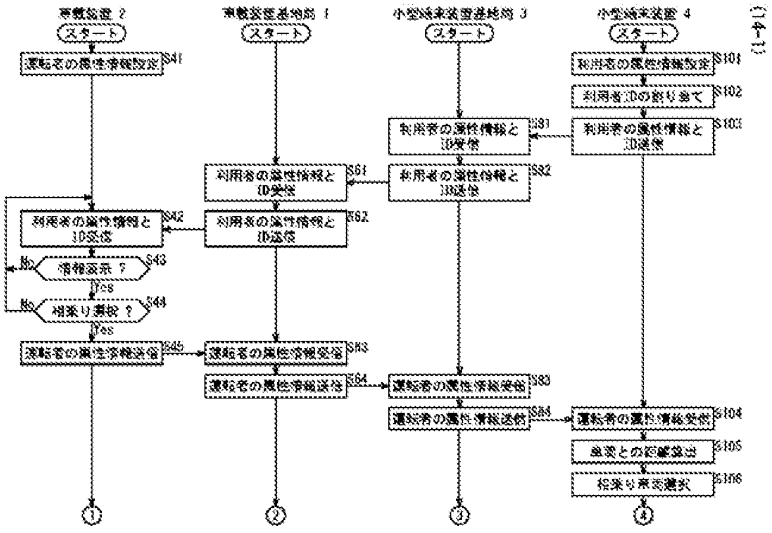
【図１２】



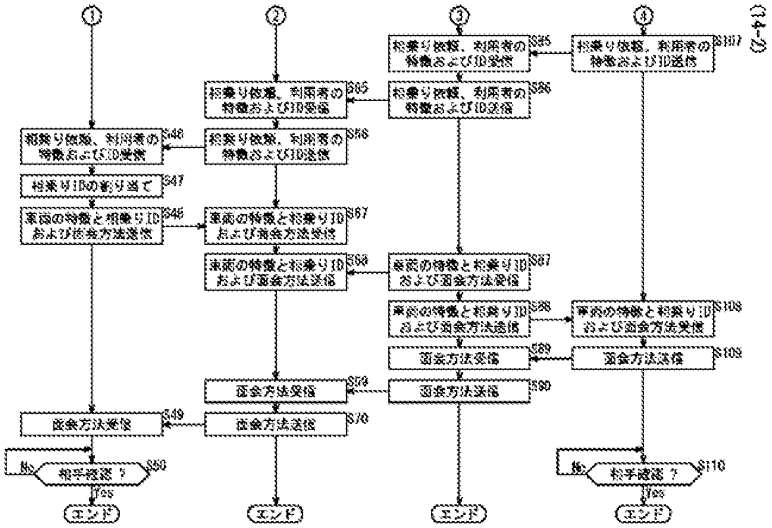
【図１３】


46
田園調布
自由が丘
Aデパート
自由が丘店
候補番号3
山田花子(24)女性
予定行き先:お合場
自動車の特徴:
緑色の大型ダンプ
プレート番号:
い12-34
相乗りID:5523
あと3Km

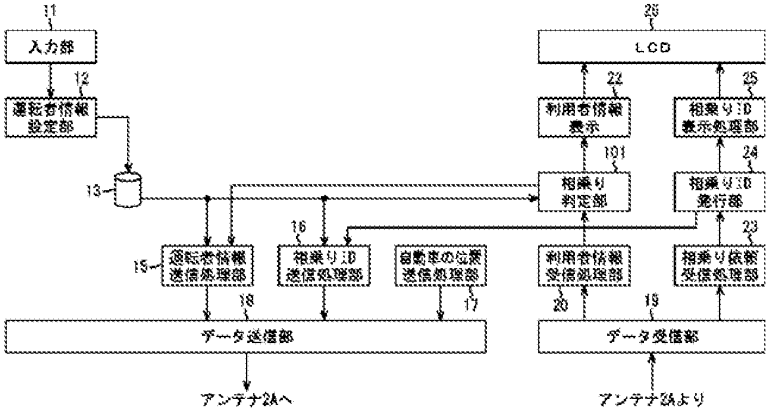
【図１４】


車載装置 2
スタート
運転者の属性情報設定
S41
利用者の属性情報とID受信
S42
情報表示 ?
S43
No
Yes
相乗り承認 ?
S44
運転者の属性情報送信
S45
車載装置基地局 1
スタート
利用者の属性情報とID受信
S61
利用者の属性情報とID送信
S62
運転者の属性情報受信
S63
運転者の属性情報送信
S64
小型端末装置基地局 3
スタート
利用者の属性情報とID受信
S81
利用者の属性情報とID送信
S82
運転者の属性情報受信
S83
運転済の属性情報送信
S84
小型端末装置 4
スタート
利用者の属性情報設定
S101
利用者IDの割り当て
S102
利用者の属性情報とID送信
S103
運転者の属性情報受信
S104
乗車との距離算出
S105
相乗り車両選択
S106
(1ページ)
①
②
③
④

【図１５】



【図１６】



車載装置 2

フロントページの続き

Ｆターム(参考) 5H180 AA14 BB04 CC12 EE07 FF05
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5K033 BA02 BA06 DA19
5K067 AA21 BB14 DD17 DD53 EE02
EE10 FF23 HH21 HH23 JJ52

JP2001291192A INFORMATION PROCESSOR AND RECORDING MEDIUM

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The wording below is an initial machine translation of the original publication. To generate a version using the latest translation technology, go to the original language text and use Patent Translate.

[0001] BACKGROUND OF THE INVENTION 1. Field of the Invention The present invention relates to an information processing device and a recording medium, and more particularly to wireless communication between an on-vehicle device mounted on a vehicle and a small terminal device carried by a user before getting on a vehicle. Accordingly, the present invention relates to an information processing device and a recording medium capable of preventing unnecessary stop and erroneous boarding.

[0002] 2. Description of the Related Art For example, in the case of getting on a taxi or synergizing with a taxi, the user performs an operation such as raising his hand to stop the taxi that is taking the passenger. Then, you can negotiate with the driver about the destination, etc., and if the negotiation is successful, you can board the taxi

[0003] However, these series of operations have the following problems. (1) The user who wants to get on the bus and the taxi driver are worried because they do not know the other person's image. (2) The driver stops the vehicle after finding the user who wants to get on the vehicle (raising his/her hand) on the road, and there is a risk of sudden stop. (3) Negotiation may not be established between the driver and the user due to different destinations, resulting in an unnecessary stop.

[0004] The present invention has been made in view of such a situation, and wireless communication is performed between an in-vehicle device mounted on a vehicle and a small terminal device carried by a user, so that information of the other party can be obtained in advance. It is to be able to grasp.

[0005] A first information processing apparatus according to the present invention comprises setting means for setting vehicle information, and first receiving means for receiving first information transmitted from another device. , Transmitting means for transmitting the vehicle information set by the setting means to another device based on the first information received by the first receiving means, and second information transmitted from the other device. And a second receiving means for receiving.

[0006] The first information processing device is, for example, the vehicle-mounted device 2 in FIG. 1, and the other device is, for example, the small terminal device 4 in FIG. 1.

[0007] The setting means is, for example, the driver information setting unit 12 in FIG. 2, and sets vehicle information (name, age, gender, scheduled destination, vehicle characteristics, plate number, etc.).

[0008] The first receiving means is, for example, the user information reception processing unit 20 of FIG. 2, and the first information (name, age, gender, desired destination, desired vehicle type, current position) transmitted from another device. Etc.).

[0009] The transmission means is, for example, the driver information transmission processing unit 15 in FIG. 2, and is set by the setting means when the conditions such as the desired destination of the user and the desired vehicle type received by the first receiving means are met. The driver information (vehicle information) is transmitted to another device.

[0010] The second receiving unit is, for example, the carpool request reception processing unit 23 in FIG. 2, and receives the carpool request data transmitted from another device.

[0011] In the first information processing device of the present invention, the vehicle information is transmitted to the other device based on the first information transmitted from the other device, and the second information is transmitted from the other device. Is received.

[0012] According to the first information processing apparatus of the present invention, the vehicle information is transmitted to the other device based on the first information transmitted from the other device, and the second vehicle information is transmitted from the other device. Since the information is received, the attribute

information of the user can be grasped in advance.

[0013] The first information processing apparatus of the present invention is capable of accepting the display control means for controlling the display of the first or second information and the first information received by the first receiving means. It is possible to further provide a determination means for determining.

[0014] The display control means is, for example, the LCD 26 in FIG. 2, and displays the user information and the carpool ID. The determining unit is, for example, the display candidate selecting unit 21 in FIG. 2, and determines whether or not the user information (current position etc.) received by the first receiving unit can be accepted as a carpool candidate. To do.

[0015] When the display control means is provided, the attribute information of the user can be displayed. When the determining means is provided, a user whose conditions do not match the driver information such as the current position of the vehicle and the planned destination can be excluded from the carpool candidate vehicles.

[0016] The vehicle information in the first information processing device of the present invention includes a planned destination, the characteristics of the vehicle, or the current position of the vehicle, and the first information includes the desired destination, the desired vehicle type, or the current position of the user, The second information may include a carpool request, user characteristics, or user ID.

[0017] A second information processing apparatus of the present invention includes a setting unit that sets the first information, a first transmitting unit that transmits the first information set by the setting unit to another device, and another device. A first receiving means for receiving a plurality of vehicle information transmitted from the second transmitting means, and a second transmitting means for transmitting the second information to another device based on the vehicle information received by the first receiving means. And means.

[0018] The second information processing device is, for example, the small terminal device 4 in FIG. 1, and the other device is, for example, the vehicle-mounted device 2 in FIG. 1.

[0019] The setting means is, for example, the user information setting unit 32 in FIG. 3, and sets the first information (name, age, gender, characteristics, desired destination, desired vehicle type, current position, etc.).

[0020] The first transmission unit is, for example, the user information transmission processing unit 34 in FIG. 3, and transmits the user attribute information set by the setting unit.

[0021] The first reception means is, for example, the carpool candidate reception processing unit 39 in FIG. 3, and is the vehicle information (name, age, gender, characteristics, scheduled destination, characteristics of the vehicle, current position) transmitted from another device. Etc.).

[0022] The second transmission means is, for example, the carpool request transmission processing unit 36 in FIG. 3, and based on the vehicle information received by the first receiving means, the second information (corolling request data or see-off data).) Is sent.

[0023] In the second information processing device of the present invention, the first information is transmitted to another device, a plurality of vehicle information transmitted from the other device is received, and other vehicle information is transmitted based on the received vehicle information. Second information is transmitted to the device.

[0024] According to the second information processing device of the present invention, the first information is transmitted to another device, a plurality of vehicle information transmitted from the other device is received, and based on the received vehicle information, Since the second information is transmitted to another device, the driver's attribute information can be grasped in advance.

[0025] The second information processing apparatus of the present invention includes a distance calculating means for calculating a distance to another device based on the vehicle information received by the first receiving means and the first information set by the setting means. Can be further provided.

[0026] The distance calculating means is, for example, the vehicle distance calculating section 40 in FIG. 3, and is used based on the current position of the vehicle received by the first receiving means and the current position of the user set by the setting means. The distance from the person to the car.

[0027] When the distance calculating means is provided, the distance from the user to the automobile can be calculated.

[0028] The second information processing apparatus of the present invention may be further provided with display control means for controlling the display of vehicle information.

[0029] The display control means is, for example, the LCD 46 of FIG. 3, and displays vehicle information transmitted from another device.

[0030] When the display control means is provided, the vehicle information transmitted from another device can be displayed.

[0031] The second information processing apparatus of the present invention may further include a selection unit that selects desired vehicle information from a plurality of vehicle information items whose display is controlled by the display control unit.

[0032] The selection unit is, for example, the carpool request reception unit 35 in FIG. 3, and selects the vehicle information desired by the user from a plurality of vehicle information that can be carpooled.

[0033] When the selection means is provided, the vehicle information desired by the user can be selected from the plurality of vehicle information that can be shared.

[0034] The second transmitting means may be configured to transmit the second information to another device corresponding to the vehicle information selected by the selecting means.

[0035] The vehicle information in the second information processing apparatus of the present invention includes a planned destination, the characteristics of the vehicle, or the current position of the vehicle, and the first information includes a desired destination, a desired vehicle type, or the current position of the user. The second information may include a carpool request, user characteristics, or user ID.

[0036] The program recorded on the recording medium of the present invention includes a setting step of setting first information, and a first transmitting step of transmitting the first information set by the processing of the setting step to another device. A second step of transmitting second information to another device based on the vehicle information received by the receiving step of receiving a plurality of vehicle information transmitted from another device and the processing of the receiving step And a step.

[0037] The setting step is, for example, steps S22 to S25 in FIG. 9, the first transmitting step is, for example, step S26 in FIG. 9, and the receiving step is, for example, step S27 in FIG. The second transmission step is, for example, steps S31 and 32 in FIG.

[0038] In the program recorded on the recording medium of the present invention, the first information is transmitted to another device, a plurality of vehicle information transmitted from the other device is received, and based on the received vehicle information. , The second information is transmitted to the other device.

[0039] According to the program recorded on the recording medium of the present invention, the first information is transmitted to another device, a plurality of vehicle information transmitted from the other device is received, and based on the received vehicle information. Since the second information is transmitted to another device, the driver's attribute information can be grasped in advance.

[0040] 1 is a block diagram showing the configuration of an embodiment of a passenger system to which the present invention is applied. In this passenger system, a radio signal is transmitted and received between the antenna 2A of the in-vehicle device 2 and the antenna 1A of the in-vehicle device base station 1, and the antenna 4A of the small terminal device 4 and the antenna 3A of the small terminal device base station 3 are exchanged. Radio signals are transmitted and received between the two, and radio signals are transmitted and received between the antenna 1A of the vehicle-mounted device base station 1 and the antenna 3A of the small terminal device base station 3.

[0041] FIG. 2 is a block diagram showing a detailed configuration of the vehicle-mounted device 2. The input unit 11 includes buttons, switches and the like, and when operated by a user (driver), a command corresponding

to the operation is input to the driver information setting unit 12 or the joint ownership acceptance unit 14. The driver information setting unit 12 sets driver information (name, age, gender, scheduled destination, vehicle characteristics, plate number, etc.) based on a command from the input unit 11 and stores it in the driver information database 13. After storing (accumulating), the information is supplied to the driver information transmission processing unit 15.

[0042] The joint ownership reception unit 14 supplies the joint ownership reception data to the driver information transmission processing unit 15 based on the command from the input unit 11. The driver information transmission processing unit 15 reads out the driver data stored in the driver information database 13, and together with the joint ownership reception data supplied from the joint ownership reception unit 14, the modulation processing and D/A (Analog to Digital).) Perform predetermined signal processing such as conversion, and supply the data to the data transmission unit 18.

[0043] The carpool ID (Identifier) transmission processing unit 16 performs modulation processing and D/A conversion together with the characteristic data of the vehicle stored in the driver information database 13 and the carpool ID issued by the carpool ID issuing unit 24, which will be described later. Predetermined signal processing such as is performed, and the data is supplied to the data transmission unit 18. The position transmission processing unit 17 of the automobile detects the current position of the automobile (vehicle) by using a position detection system (GPS: Global Positioning System) or the like, and performs modulation processing or D/A conversion on the automobile position data. Then, the signal is subjected to the predetermined signal processing and is supplied to the data transmitting unit 18.

[0044] The data transmission unit 18 amplifies the transmission data (driver data, carpool ID, vehicle position data, etc.) supplied from the driver information transmission processing unit 15 to the position transmission processing unit 17 of the vehicle, and is mounted on the vehicle via the antenna 2A. The data is wirelessly transmitted to the device base station 1.

[0045] The data receiving unit 19 supplies the reception data (user data, carpool request data, etc.) received by the antenna 2A to the user information reception processing unit 20 or the carpool request reception processing unit 23. The user information reception processing section 20 performs predetermined signal processing such as demodulation processing and A/D conversion on the reception data (user data) supplied from the data receiving section 19, and causes the display candidate selection section 21 to perform the signal processing. Supply. The display candidate selection unit 21 selects, based on the driver data stored in the driver information database 13, whether or not to display the user data supplied from the user information reception processing unit 20 as a carpool candidate. To do. The user information display processing unit 22 D/A-converts the user data of the carpooling candidate selected by the display candidate selecting unit 21, and outputs and displays it on an LCD (Liquid Crystal Display) 26.

[0046] The carpool request reception processing unit 23 performs predetermined signal processing such as demodulation processing and A/D conversion on the reception data (coaching request data) supplied from the data receiving unit 19, and supplies the data to the carpool ID issuing unit 24. To do. The carpool ID issuing unit 24 issues a carpool ID based on the carpool request data supplied from the carpool request reception processing unit 23, and supplies the carpool ID display processing unit 25 and the carpool ID transmission processing unit 16 respectively. The carpool ID display processing unit 25 D/A converts the carpool ID supplied from the carpool ID issuing unit 24, and outputs and displays it on the LCD 26.

[0047] FIG. 3 is a block diagram showing a detailed configuration of the small terminal device 4. The input unit 31 includes buttons, switches and the like, and when operated by a user (a person who wants to join a car), a command corresponding to the operation is input to the user information setting unit 32 or the carpool request receiving unit 35. The user information setting unit 32 sets user information (name, age, gender, characteristics, desired destination, desired vehicle type, current position, etc.) based on a command from the input unit 31, and the user information database 33. After being stored (accumulated) in, the information is supplied to the user information transmission processing unit 34 and the carpool request transmission processing unit 36, respectively.

[0048] The user information transmission processing unit 34 performs predetermined signal processing such as modulation processing and D/A conversion on the user data supplied from the user information setting unit 32, and supplies the data to the data transmission unit 37. The carpool request reception unit 35 supplies the carpool request reception data to the carpool request transmission processing unit 36 based on the instruction from the input unit 31.

[0049] The carpool request transmission processing unit 36 subjects the carpool request data supplied from the carpool reception unit 35 to predetermined signal processing such as modulation processing and D/A conversion, and transmits the data to the data transmission unit 37. The data transmission unit 37 amplifies the transmission data supplied from the user information transmission processing unit 34 or the carpool request transmission processing unit 36, and wirelessly transmits it to the small terminal device base station 3 via the antenna 4A.

[0050] The data reception unit 38 receives the reception data (driver data, vehicle position data, carpool ID, etc.) received by the antenna 4A from the carpool candidate reception processing unit 39, the car position reception processing unit 42, or the carpool ID reception processing unit. 44. The carpool candidate reception processing unit 39 performs predetermined signal processing such as demodulation processing and A/D conversion on the reception data (driver data) supplied from the data reception unit 38, and supplies it to the vehicle distance calculation unit 40. To do. The vehicle position reception processing unit 42 performs predetermined signal processing such as demodulation processing and A/D conversion on the reception data (vehicle position data) supplied from the data receiving unit 38, and supplies the data to the vehicle distance calculation unit 40. To do.

[0051] The vehicle distance calculation unit 40 calculates the distance from the user to the vehicle based on the current position data of the user stored in the user information database 33 and the vehicle position data supplied from the vehicle reception processing unit 42. The data is supplied to the carpool candidate display processing unit 41 together with the carpool candidate data supplied from the carpool candidate reception processing unit 39. The vehicle distance calculation unit 40 also supplies the vehicle position data supplied from the vehicle position reception processing unit 42 to the vehicle position display processing unit 43.

[0052] The carpool candidate display processing unit 41 A/D-converts the distance data from the user to the vehicle and the carpool candidate vehicle data supplied from the vehicle distance calculation unit 40, and outputs and displays the data on the LCD 46. The vehicle position display processing unit 43 A/D-converts the vehicle position data supplied from the vehicle distance calculation unit 40, and outputs and displays it on the LCD 46.

[0053] The carpool ID reception processing unit 44 performs predetermined signal processing such as demodulation processing and A/D conversion on the reception data (coaching ID) supplied from the data receiving unit 38, and supplies the data to the carpool ID display processing unit 45. To do. The carpool ID display processing unit 45 D/A converts the carpool ID data supplied from the carpool ID reception processing unit 44, and outputs and displays it on the LCD 46.

[0054] Next, a series of operations performed by the vehicle-mounted apparatus 2 will be described with reference to the flowchart of FIG.

[0055] In step S1, the user (driver) turns on the main power source of the vehicle-mounted apparatus 2 and causes the LCD 26 to display a driver information setting screen as shown in FIG. In step Sundefined2, the driver information setting unit 12 sets the attribute information of the driver when the user inputs the attribute information of the driver using the input unit 11, and stores the attribute information in the driver information database 13. As a result, for example, as shown in FIG. 5, "Hanako Yamada" data in the name input area 51, "24" data in the age input area 52, and "female" data in the gender input area 53. , Are set (input) respectively.

[0056] In step S3, the driver information setting unit 12 sets the planned destination by the user inputting the planned destination using the input unit 11, and stores the planned destination in the driver information database 13. As a result, for example, as shown in FIG. 5, data of "Odaiba" is set in the scheduled destination input area 54.

[0057] In step Sundefined4, the driver information setting unit 12 sets the characteristics of the vehicle by the user inputting the characteristics of the vehicle using the input unit 11, and stores the characteristics in the driver information database 13. As a result, for example, as shown in FIG. 5, "green dump" data is set in the vehicle characteristic input area 55 and "yes 12-34" data is set in the plate number input area 56. .

[0058] As described above, when the processes of steps S2 to S4 are completed, that is, when the setting of the driver information is completed, the user presses the registration button 57 to complete the setting. When the user wants to correct the setting information, the user can press the cancel button 58 to return to the processing of steps S2 to S4.