

[0059] In step S5, the data receiving unit 19 determines whether the user data transmitted from the in-vehicle device base station 1 has been received by the antenna 2A, and determines that the user data has not been received yet. In this case, it waits until it is determined that the user data has been received. When it is determined in step S5 that the user data wirelessly transmitted from the vehicle-mounted device base station 1 is received by the antenna 2A, the process proceeds to step S6.

[0060] In step S6, the user information reception processing section 20 performs predetermined signal processing such as demodulation processing and A/D conversion on the user data wirelessly transmitted via the antenna 2A and the data receiving section 19. To the display candidate selection unit 21. The display candidate selection unit 21 enters the user data supplied from the user information reception processing unit 20 (joining candidate) based on the scheduled destination and the characteristics of the vehicle set in the processes of steps S3 and S4. It is determined whether or not to display (select), that is, whether or not it is possible to share the vehicle from the destination or vehicle desired by the user. If it is determined that the user data is not displayed as an entry, the process returns to step S5. The above process is repeated.

[0061] Then, in step S6, when it is determined that the user data is displayed as an entry, the process proceeds to step S7, and the user information display processing unit 22 performs the D/A conversion on the user data selected by the display candidate selection unit 21. Then, it is output and displayed on the LCD 26. Thereby, for example, a user information display screen as shown in FIG. 6 is displayed on the LCD 26.

[0062] In the case of the example in FIG. 6, the name of the user (carpool candidate) is "Tehiro Suzuki", the data is "38" for the age, the data is "male" by gender, the data is "Metropolitan Police Department" for the destination, and the desired The data "none in particular" is displayed for the vehicle type, and the data "in front of A department store in Jiyugaoka" is displayed at the current position.

[0063] Further, by using a position detection system or the like, as shown in FIG. 7, it is possible to display the current position of the vehicle-mounted device 2 (vehicle) and the current position of the carpool user together with the surrounding map. Thereby, the driver of the vehicle can find the shortest path to the carpool user.

[0064] In step S8, the joint ownership reception unit 14 determines whether or not the joint ownership reception information is input by the user using the input unit 11, that is, the joint press button 61 (FIG. 6 or 7) is pressed by the user. If it is determined that the joint ownership acceptance information is not input (when it is determined that the user has pressed the joint ownership prohibition button 62), the process returns to step S5 and the above-described processing is repeated.

[0065] Then, in step S8, when it is determined that the joint ownership acceptance information is input (when it is determined that the joint ownership button 61 is pressed), the process proceeds to step S9, and the driver information transmission processing unit 15 causes the driver information transmission processing unit 15 to execute steps S2 and Predetermined signal processing such as modulation processing and D/A conversion is performed on the driver data (vehicle data) set in the processing of step S3 and the joint ownership data determined in the processing of step S8. Is wirelessly transmitted to the vehicle-mounted apparatus base station 1 via the data transmitter 18 and the antenna 2A.

[0066] In step S10, the data receiving unit 19 determines whether or not the data (user data and carpool request data) wirelessly transmitted from the vehicle-mounted apparatus base station 1 is received by the antenna 2A, and the data is still received. If it is determined that the data has not been received, the process waits until it is determined that the data has been received. When it is determined in step S5 that the data wirelessly transmitted from the vehicle-mounted device base station 1 is received by the antenna 2A, the process proceeds to step S11.

[0067] In step S11, the data receiving unit 19 determines whether or not the data received in step S10 is send-off reception (data notifying that the vehicle is not shared), and when it is determined that it is send-off reception, Returning to step S5, the above-mentioned processing is repeated. If it is determined in step S11 that it is not the send-off reception, that is, it is the carpool request data (data notifying that the vehicle is synergistic), the process proceeds to step S12.

[0068] In step S12, the carpool request reception processing unit 23 performs predetermined processing such as demodulation processing and A/D conversion on the data (use data and carpool request data) wirelessly transmitted via the antenna 2A and the data receiving unit 19. Signal processing is performed and the result is supplied to the carpool ID issuing unit 24. The carpool ID issuing unit 24 assigns 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.

[0069] In step S13, the carpool ID display processing unit 25 D/A-converts the carpool ID and user data supplied from the carpool ID issuing unit 24, and outputs and displays them on the LCD 26. Thereby, for example, the characteristics of the carpool user, the carpool ID, etc. are displayed on the LCD 26 as shown in FIG.

[0070] In the case of the example in FIG. 8, the name of the carpool user is "Ichiro Suzuki", the data is "38" for age, the data is "male" for gender, the data is "young" for the feature, and "Metropolitan Police Department" is the desired destination. No., data of "No particular" for desired vehicle type, data of "in front of A department store in Jiyugaoka" at the current position, and data of "5523" for reservation ID (pooling ID) are displayed.

[0071] In step S14, the carpool ID transmission processing section 16 determines the characteristic data of the vehicle set in the process of step S4 and the carpool ID assigned in the process of step S12 by a predetermined modulation process and D/A conversion, respectively. Signal processing is performed and wirelessly transmitted to the vehicle-mounted apparatus base station 1 via the data transmission unit 18 and the antenna 2A.

[0072] In step S15, the in-vehicle device 1 determines whether or not the carpool is completed, and when it is determined that the carpool is not completed, the in-vehicle device 1 searches for the carpool user until it is determined that the carpool is completed. Then, in step S15, when it is determined that the carpooling is completed, the processing ends.

[0073] In the above description, the driver's attribute information is input and set by itself, but the present invention is not limited to this. For example, a card for proving the driver's attribute (identity) can be read by a dedicated reading device. It is also possible to set the attribute information by reading. It is also possible to preset a plurality of frequently used scheduled destinations in the input area 54 and to select from them.

[0074] Next, a series of operations performed by the small terminal device 4 will be described with reference to the flowchart of FIG.

[0075] In step S21, the user (passenger applicant) turns on the main power source of the small terminal device 4 and causes the LCD 46 to display a user information setting screen as shown in FIG. In step S22, the user information setting unit 32 sets the attribute information when the user inputs the attribute information of the user using the input unit 31, and stores the attribute information in the user information database 33. As a result, for example, as shown in FIG. 10, "Ichiro Suzuki" data in the name input area 71, "38" data in the age input area 72, and "male" data in the gender input area 73. Are set (input) respectively.

[0076] In step S23, the user information setting unit 32 sets the user feature by the user inputting the user feature using the input unit 11, and stores the user feature in the user information database 33. As a result, for example, as shown in FIG. 10, the data "young" is set in the user's feature input area 74.

[0077] In step S24, the user information setting unit 32 sets the desired destination when the user inputs the desired destination using the input unit 31, and stores the desired destination in the user information database 33. As a result, for example, as shown in FIG. 10, data of "Metropolitan Police Department" is set in the desired destination input area 75.

[0078] In step S25, the user information setting unit 32 sets the desired vehicle type by the user inputting the desired vehicle type using the input unit 31, and stores it in the user information database 33. As a result, for example, as shown in FIG. 10, data of "none in particular" is set in the desired vehicle type input area 76. Moreover, the current position of the small terminal device 4 (user) is detected by using a position detection system or the like, and data "in front of A department store in Jiyugaoka" is set in the current position input area 77.

[0079] As described above, when the processing of steps S22 to S25 is completed, that is, when the setting of the user information is completed, the user presses the registration button 78 to complete the setting. When the user wants to correct the setting information, the user can press the cancel button 79 to return to the processing of steps S22 to S25.

[0080] In step S26, the user information transmission processing section 34 performs predetermined signal processing such as modulation processing and D/A conversion on the user data set in the processing of steps

S22 to S25, and the data transmission section 37. And wirelessly transmits to the small terminal device base station 3 via the antenna 4A.

[0081] In step S27, the data receiving unit 38 determines whether the vehicle data wirelessly transmitted from the small terminal device base station 3 has been received by the antenna 4A, and determines that the vehicle data has not been received yet. In this case, it waits until it is determined that the vehicle data has been received. When it is determined in step S27 that the vehicle data wirelessly transmitted from the small terminal device base station 3 is received by the antenna 4A, the process proceeds to step S28.

[0082] In step S28, the vehicle position reception processing unit 42 performs predetermined signal processing such as demodulation processing and A/D conversion on the vehicle position data supplied from the data receiving unit 38 and supplies the vehicle position data to the vehicle distance calculation unit 40. To do. The vehicle distance calculation unit 40 calculates the distance from the user to the vehicle based on the current position data of the user set in the process of step S25 and the vehicle position data supplied from the vehicle reception processing unit 42.

[0083] In step S29, the carpool candidate display processing unit 41 respectively A/D-converts the distance data from the user to the vehicle calculated in the process of step S28 and the vehicle data received in the process of step S27. Output and display on the LCD 46. Thereby, for example, the carpooling candidate vehicle information display screen as shown in FIG. 11 is displayed on the LCD 46.

[0084] In the example of FIG. 11, the entry of candidate number 1 is that the driver's name is "Jiro Tanaka (39) Male", the planned destination is "Shimbashi", the position of the car is "Toritsu University Mae", and the distance to the car. The vehicle data of "1.5km" is displayed. The entry for candidate number 2 is that the driver name is "Saburo Yamamoto (58) Male", the scheduled destination is "Nakano", the car position is "Setagaya Station", and the car distance is "2.0km". The data is displayed. In the entry of candidate number 3, the driver name is "Hanako Yamada (24) Female", the planned destination is "Odaiha", the car position is "Denen Chofu", and the distance to the car is "3.0km." Vehicle data is displayed.

[0085] The priority setting area 94 is displayed in the priority order when selected by the user from among the closest order, the younger driver's age, the vacant order, etc. (in the present case, it is closer. Order is selected). If the next candidate button 92 has a plurality of carpooling candidate vehicles and cannot be displayed on one screen, the user presses the next candidate button 92 to display the carpooling candidate vehicle data of candidate number 4 and thereafter. To be done.

[0086] Returning to FIG. 9, in step S30, the carpool request acceptance unit 35 uses the input unit 31 by the user to display the carpool candidate vehicle (in this case, three candidate numbers 1 to 3) displayed in the process of step S29. A candidate vehicle (candidate number 3 in this case) for requesting carpool is selected from among the candidate vehicles, and the carpool request button 91 (FIG. 11) is pressed to select the vehicle for which carpool is requested. When the user wants to change the selected candidate vehicle, the user can select the candidate vehicle again by pressing the cancel button 93.

[0087] In step S31, the carpool request transmission processing unit 36 performs a modulation process on the carpool request data, user characteristics, and user ID to be transmitted to the vehicle selected in the process of step S30. Predetermined signal processing such as D/A conversion processing is performed, and the signal is transmitted to the small terminal device 3 via the data transmission unit 37 and the antenna 4A.

[0088] In step S32, the carpool request transmission processing unit 36 performs predetermined signal processing of the send-off data to be transmitted to the vehicles (in this case, candidate vehicles 1 and 2) not selected in the processing of step S30. It transmits to the small terminal device 3 via the transmitter 37 and the antenna 4A.

[0089] In step S33, the data receiving unit 38 determines whether or not the data (vehicle detailed data) transmitted from the small terminal device base station 3 is received by the antenna 4A, and the data is not yet received. If so, wait until it is determined that the data has been received. When it is determined in step S33 that the data transmitted from the small terminal device base station 3 is received by the antenna 4A, the process proceeds to step S34.

[0090] In step S34, the carpool ID reception processing unit 44 performs predetermined signal processing such as demodulation processing and A/D conversion on the vehicle detailed data supplied from the data receiving

unit 39, and causes the carpool ID display processing unit 45 to perform the signal processing. Supply. The carpool ID display processing unit 45 D/A-converts the vehicle detailed data supplied from the carpool ID reception processing unit 44, and outputs and displays it on the LCD 46. Thereby, for example, a shared vehicle information display screen as shown in FIG. 12 is displayed on the LCD 46.

[0091] In the case of the example in FIG. 12, the driver name of the shared vehicle is "Hanako Yamada (24) Female", the planned destination is "Odaiba", the position of the car is "Denen Chofu", and the distance to the car is "3.0 km". Vehicle details data of "green" as the feature of the car, "I 12-34" as the plate number, and "5523" as the carpool ID are displayed.

[0092] It is also possible to display the current position of the small terminal device 4 (user) and the current position of the vehicle together with the surrounding map, as shown in FIG. 13, using a position detection system or the like. This allows the carpool user to confirm from which direction the vehicle will arrive.

[0093] Although the vehicle distance calculation unit 40 is provided in the small terminal device 4 in the above, it may be provided in the in-vehicle device 2.

[0094] Next, with reference to the flow charts of FIGS. 14 and 15, a process until the joint caring applicant (user) completes joint caring with the vehicle will be described.

[0095] In step Sundefined41, the driver information setting unit 12 of the vehicle-mounted apparatus 2 sets the attribute information of the driver input by the user using the input unit 11, and stores the attribute information in the driver information database 13. (Fig. 5).

[0096] In step S101, the user information setting unit 32 of the small-sized terminal device 4 receives the attribute information including the destination, the desired vehicle type, and the feature of the user by the user using the input unit 31, and thus the attribute information. Is set and stored in the user information database 33 (FIG. 10). In step S102, the user information setting unit 32 assigns a user ID based on the attribute information input in the process of step S101. In step S103, the user information transmission processing unit 34 uses the attribute information and the user ID of the user set in the processes of steps S101 and 102, via the data transmission unit 37 and the antenna 4A, the small terminal device base station 3 To wirelessly send to.

[0097] In step S81, the antenna 3A of the small terminal device base station 3 receives the user attribute information data wirelessly transmitted from the small terminal device 4. In step S82, the small terminal device base station 3 performs predetermined signal processing on the user attribute information and user ID received in the process of step S81, and the in-vehicle device base station 1 via the antenna 3A. To wirelessly send to.

[0098] In step S61, the antenna 1A of the vehicle-mounted device base station 1 receives the user attribute information and the user ID wirelessly transmitted from the small terminal device base station 3. In step S62, the in-vehicle device base station 1 performs predetermined signal processing on the user attribute information and user ID received in the process of step S61, and transmits the wireless signal to the in-vehicle device 2 via the antenna 1A. Send.

[0099] In step S42, the antenna 2A of the vehicle-mounted apparatus 2 receives the user attribute information and the user ID transmitted from the vehicle-mounted apparatus base station 1. In step S43, the display candidate selection unit 21 receives the attribute information data of the user received in the process of step S42 based on the attribute information of the driver (scheduled destination, current position, etc.) set in the process of step S41. Is displayed as an entry (carpooling candidate), that is, whether carpooling is possible from the user's desired destination or current position, and it is determined not to display the user attribute information data as an entry. If so, the process returns to step S42 and the above-described processing is repeated.

[0100] When it is determined in step S43 that the user's attribute information data is displayed as an entry, the process proceeds to step S44, in which the user information display processing unit 22 D/A converts the user's attribute information data and outputs it to the LCD 26. Are displayed (FIG. 6). Then, the joint ownership reception unit 14 determines whether or not the joint ownership acceptance information is input by the user using the input unit 11, that is, whether or not the joint ownership button 61 (FIG. 6) is pressed (selected) by the user. If it is determined that the joint ownership acceptance information has not been input (if it is determined that the user has pressed the joint ownership prohibition button 62), the process returns to step S42 and the above-described processing is repeated.

[0101] When it is determined in step S44 that the joint ownership acceptance information is input (when it is determined that the joint ownership button 61 is selected), the process proceeds to step S45, and the driver information transmission processing unit 15 performs the processing in step S41. The set attribute information of the driver is wirelessly transmitted to the vehicle-mounted apparatus base station 1 via the data transmitter 18 and the antenna 2A.

[0102] In step S63, the antenna 1A of the vehicle-mounted apparatus base station 1 receives the driver attribute information wirelessly transmitted from the vehicle-mounted apparatus 2. In step S64, the vehicle-mounted device base station 1 wirelessly transmits the driver attribute information received in the process of step S63 to the small terminal device base station 3 via the antenna 1A.

[0103] In step S83, the antenna 3A of the small terminal device base station 3 receives the driver attribute information wirelessly transmitted from the vehicle-mounted device base station 1. In step S84, the small terminal device base station 3 wirelessly transmits the driver attribute information received in the process of step S83 to the small terminal device 4 via the antenna 3A.

[0104] In step S104, the antenna 4A of the small terminal device 4 receives the driver attribute information transmitted from the small terminal device base station 3. In step S105, the vehicle distance calculation unit 40 determines the distance from the user to the vehicle based on the current position of the user set in the process of step S101 and the attribute information of the driver received in the process of step S104. To calculate.

[0105] In step S106, the carpool candidate display processing unit 41 uses the distance data from the user to the vehicle calculated in the process of step S105 and the vehicle data (driver attribute information) received in the process of step S104 to A/D converted, output to LCD 46 and displayed (Fig. 11). Then, the carpool request accepting unit 35 selects the carpool request vehicle by the user from among the plurality of carpool candidate vehicles (in this case, the vehicle of candidate number 3).

[0106] In step S107, the carpool request transmission processing unit 36 transmits the carpool request data, the characteristics of the user, and the user ID to be transmitted to the vehicle selected in the process of step S106, to the small terminal device base station 3 To wirelessly send to.

[0107] In step S85, the antenna 3A of the small terminal device base station 3 receives the carpool request data, the user feature, and the user ID wirelessly transmitted from the small terminal device 4. In step S86, the small terminal device base station 3 wirelessly transmits the carpool request data, the user feature, and the user ID received in the process of step S85 to the vehicle-mounted device base station 1 via the antenna 3A. ..

[0108] In step S65, the antenna 1A of the in-vehicle device base station 1 receives the carpool request data, user characteristics, and user ID wirelessly transmitted from the small terminal device base station 3. In step S66, the vehicle-mounted apparatus base station 1 wirelessly transmits the carpool request data, the characteristics of the user, and the user ID received in the processing of step S65 to the vehicle-mounted apparatus 2 via the antenna 1A.

[0109] In step S46, the antenna 2A of the vehicle-mounted apparatus 2 receives the carpool request data, the characteristics of the user, and the user ID transmitted from the vehicle-mounted apparatus base station 1. In step S47, the carpool ID issuing unit 24 assigns a carpool ID based on the carpool request data received in the process of step S47. In step S48, the user (driver) of the vehicle-mounted apparatus 2 determines a method of meeting with the user (for example, destination, reservation ID, name, or secret word). The carpool ID transmission processing unit 16 uses the vehicle characteristic data set in the process of step S41, the carpool ID assigned in the process of step S47, and the visit method determined by the user as the data transmission unit 18 and the antenna 2A. Wirelessly transmitted to the vehicle-mounted device base station 1 via.

[0110] In step S67, the antenna 1A of the vehicle-mounted apparatus base station 1 receives the characteristics of the vehicle, the carpool ID, and the meeting method wirelessly transmitted from the vehicle-mounted apparatus 2. In step S68, the vehicle-mounted device base station 1 wirelessly transmits the vehicle feature, the carpool ID, and the meeting method received in the process of step S67 to the small terminal device base station 3 via the antenna 1A.

[0111] In step S87, the antenna 3A of the small terminal device base station 3 receives the vehicle feature, the carpool ID, and the meeting method wirelessly transmitted from the in-vehicle device base station 1. In step S88, the small terminal device base station 3 wirelessly transmits the characteristics of the vehicle, the carpool ID,

and the meeting method received in the process of step S87 to the small terminal device 4 via the antenna 3A.

[0112] In step S108, the antenna 4A of the small terminal device 4 receives the characteristics of the vehicle, the carpool ID, and the visit method transmitted from the small terminal device base station 3. As a result, the vehicle information display screen as shown in FIG. 12 is displayed on the LCD 26. In step S109, the user information transmission processing unit 34 uses the data transmission unit 37 and the antenna 4A to determine the method of meeting with the driver of the vehicle, which is determined by the user of the small terminal device 4 (joint user). The data is wirelessly transmitted to the device base station 3.

[0113] In step S89, the antenna 3A of the small terminal device base station 3 receives the user's meeting method wirelessly transmitted from the small terminal device 4. In step S90, the small terminal device base station 3 wirelessly transmits the user meeting method received in the process of step S89 to the in-vehicle device base station 1 via the antenna 3A.

[0114] In step S69, the antenna 1A of the vehicle-mounted device base station 1 receives the user's meeting method wirelessly transmitted from the small terminal device base station 3. In step S70, the vehicle-mounted apparatus base station 1 wirelessly transmits the user meeting method received in the process of step S69 to the vehicle-mounted apparatus 2 via the antenna 1A.

[0115] In step S49, the antenna 2A of the vehicle-mounted apparatus 2 receives the user's meeting method transmitted from the vehicle-mounted apparatus base station 1. Then, the driver drives the vehicle toward the place where the ride-sharing candidate is waiting. In step S50, the user (driver) of the vehicle-mounted apparatus 2 determines (confirms) whether or not the other party is the user based on the visit method received in the process of step S49, and the other party is not the joint user. If it is determined that the interview method determines that the partner is a carpool user and the partner is a carpool user, the process ends.

[0116] In step S110, the user (user) of the small-sized terminal device 4 determines (confirms) whether or not the other party is the driver of the carpool vehicle by the visit method received in the process of step S108, and the other party. If it is determined that the vehicle driver is not the driver of the vehicle, the waiting method is waited until the opponent is determined to be the vehicle driver by the visit method, and it is determined that the opponent is the vehicle driver. Is ended.

[0117] That is, in the processes of steps S50 and S110, the driver and the user confirm the other party by the meeting method determined by each other, and when the other party is confirmed, the carpool is completed.

[0118] As described above, exchanging information between the driver and the user enables efficient synergy.

[0119] Further, in the above, based on the user information transmitted from the user, the driver is manually selected whether or not it is possible to share a car, the present invention is not limited to this, automatic It is also possible to select with.

[0120] FIG. 16 is a block diagram showing a configuration example in which it is automatically selected whether or not carpooling is possible. Note that, in FIG. 16, portions corresponding to those in FIG. 2 are denoted by the same reference numerals, and description thereof will be appropriately omitted. In this example, the joint ownership determination unit 101 is provided in place of the display candidate selection unit 21, the joint ownership acceptance unit 14 is not required, and other configurations are the same as the example illustrated in FIG. 2.

[0121] As shown in FIG. 16, the carpool determination unit 101 provided in place of the display candidate selection unit 21 determines whether or not to display the user data supplied from the user information reception processing unit 20 as a carpool candidate. The determination result is supplied to the driver information transmission processing unit 15. As a result, it is automatically determined whether carpooling is possible, and the determination result is transmitted to the user.

[0122] In addition, the process until the carpooling applicant completes the carpooling in the vehicle equipped with the vehicle-mounted device 2 as shown in FIG. 16 is basically the same as the process described with reference to the flowcharts of FIGS. 14 and 15. Therefore, it is omitted. However, instead of the processing of step S43 and step S44, the carpool determination processing is performed. Therefore, the process of selecting whether or not the user can share the car (step S44) is unnecessary, and the driver attribute information confirmation screen for the driver to confirm the attribute information of the carpool user is displayed on the

LCD 26. (FIG. 17).

[0123] In the above description, the user carries the small terminal device 4, but the present invention is not limited to this, and the small terminal device 4 can be installed at a taxi stand, for example.

[0124] Further, in the above, an example of meeting with a destination, a reservation ID, a name, or a secret word has been described, but the present invention is not limited to this, and the other party may be confirmed by the following meeting method. (1) Make a call using a transceiver function such as a mobile phone device, send a predetermined melody from the user side (small terminal device 4) to the in-vehicle device 2 and play it back, or change the volume as the partner approaches. Or, it is an interview method that uses sound, such as expressing it by the pitch of the sound. (2) The headlight of the vehicle blinks at the on/off intervals specified by the user, the color of the headlight is changed, and the light amount of the lamp provided in the device increases as the vehicle approaches the other party. An interview method that uses light, such as by letting you know. (3) A meeting method using images, such as sending images (marks) in the vicinity of each other. (4) An interview method that uses characters such as the distance between the vehicle and the user and the plate number of the vehicle. (5) A meeting method using a map, such as displaying mutual position information on the LCDs 26 and 46.

[0125] As described above, according to the present invention, the following effects can be obtained. (1) The user and the driver who want to get on can feel the other person's image because they know the other person's image. (2) The driver can easily find the user on the basis of the position of the user who desires to board and the image of the person. (3) Since negotiations on the destination etc. have been established in advance between the driver and the user, it is not necessary to stop the vehicle uselessly.

[0126] The series of processes described above can be executed by hardware, but can also be executed by software. When a series of processes is executed by software, various functions can be executed by installing a computer in which a program configuring the software is incorporated in dedicated hardware or by installing various programs. It is installed from a recording medium into a possible general-purpose personal computer or the like.

[0127] This recording medium is a magnetic disk (including a floppy disk) on which a program is recorded, an optical disk (CD-ROM (Compact Disk-Read Only Memory), which is distributed to provide a program to a user, separately from a computer. , Packaged media such as magneto-optical disks (including MD (Mini-Disk)) including DVD (Digital Versatile Disk), semiconductor memory, etc. It consists of a ROM that stores the program that is provided and a hard disk.

[0128] In the present specification, the steps for writing the program recorded on the recording medium include, in addition to the processing performed in time series in the order described, not necessarily in time series, but in parallel or It also includes the processing executed individually.

[0129] In addition, in the present specification, the system represents the entire apparatus including a plurality of apparatuses.

[0130] According to the first information processing apparatus of the present invention, vehicle information is transmitted to another device based on the attribute information of the user transmitted from the other device, and transmitted from the other device. Since the received carpool request information is received, the user's attribute information can be grasped in advance.

[0131] According to the second information processing device and the program recorded in the recording medium of the present invention, the attribute information of the user is transmitted to another device, and the plurality of vehicle information transmitted from the other device is received. Since the carpool request information is transmitted to another device based on the received vehicle information, the driver's attribute information can be grasped in advance.



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RIDE-SHARING SUPPORT SYSTEM, PROGRAM AND INFORMATION STORAGE MEDIUM

Inventor(s): MURAYAMA HIDEKI; MARUYAMA TAKASHI ± (MURAYAMA HIDEKI, ; MARUYAMA TAKASHI)

Applicant(s): SEIKO EPSON CORP ± (SEIKO EPSON CORP)

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PROBLEM TO BE SOLVED: To provide a ride-sharing support system, a program and an information storage medium for supporting the ride-sharing of a paid vehicle such as a taxi. ;SOLUTION: A server 1 is constituted by including: a transmission/reception part 11 that receives a user's retrieval request information including positional information and transmits ride-sharing notification information indicating a party to share ride to the user; a judgment part 16 that judges whether or not a user conforming to prescribed retrieval conditions exists by retrieving a user data base 18 based on the retrieval request information; and an information generation part 15 that generates the ride-sharing notification information when the user conforming to the retrieval conditions is judged to exist. ;COPYRIGHT: (C)2003,JPO

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(71)出願人 00002369

セイコーエプソン株式会社

東京都新宿区西新宿2丁目4番1号

(72)発明者 村山 秀樹

長野県諏訪市大和3丁目3番5号 セイコーエ
プソン株式会社内

(72)発明者 丸山 高志

長野県諏訪市大和3丁目3番5号 セイコーエ
プソン株式会社内

(74)代理人 100090479

弁理士 井上 一 (外2名)

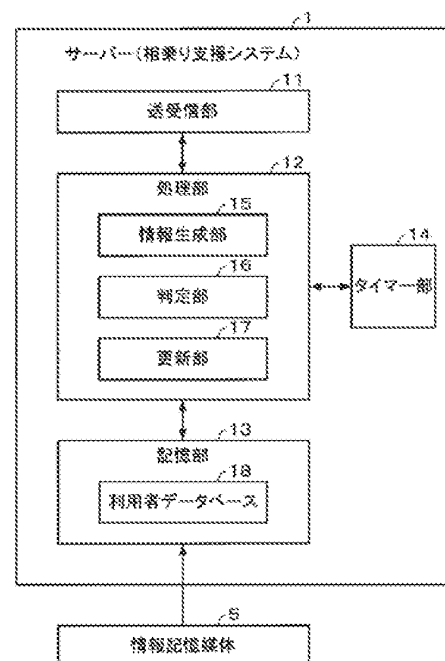
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(54)【発明の名称】 相乗り支援システム、プログラムおよび情報記憶媒体

(57)【要約】

【課題】 タクシー等の有料自動車の相乗りを支援することが可能な相乗り支援システム、プログラムおよび情報記憶媒体を提供すること。

【解決手段】 位置情報を含む利用者の検索要求情報を受信するとともに、利用者へ向け相乗り相手を示す相乗り通知情報を送信する送受信部11と、検索要求情報に基づき、所定の検索条件と適合する利用者がいるかどうかを、利用者データベース18を検索して判定する判定部16と、検索条件と適合する利用者がいると判定された場合に、相乗り通知情報を生成する情報生成部15とを含んでサーバー1を構成する。



【特許請求の範囲】

【請求項1】 端末装置を使用する複数の利用者が1台の有料自動車に相乗りすることを支援する相乗り支援システムにおいて、

前記端末装置から相乗り相手の検索を要求することを示し、かつ、所定の検索条件が指定された検索要求情報を受信するとともに、前記端末装置へ向け相乗り相手を示す相乗り相手通知情報を送信する送受信手段と、

検索要求情報に基づき、利用者が希望する有料自動車の利用内容を示す利用者データベースを検索し、検索条件と適合する利用者を相乗り相手として判定する判定手段と、

前記判定手段によって検索条件と適合する利用者がいると判定された場合に、相乗り相手を示す前記相乗り相手通知情報を生成する情報生成手段と、

を含み、

前記送受信手段は、検索要求情報の送信元の端末装置および検索条件と適合した利用者の端末装置へ向け、相乗り相手を示す前記相乗り相手通知情報を送信することを特徴とする相乗り支援システム。

【請求項2】 請求項1において、

前記利用者データベースは、各利用者が有料自動車を利用する乗車区間を示すデータを含み、

前記検索条件は、有料自動車の乗車位置と降車位置を示す乗車区間が指定された乗車区間指定検索条件を含み、

前記判定手段は、乗車区間指定検索条件と乗車区間が一致または重複する利用者を相乗り相手として判定することを特徴とする相乗り支援システム。

【請求項3】 請求項2において、

前記情報生成手段は、前記判定手段によって検索条件と適合する利用者がいると判定された場合に、相乗り相手の端末装置に当該端末装置の現在位置を問い合わせる位置確認用情報を生成し、

前記送受信手段は、当該位置確認用情報を、前記判定手段によって検索条件と適合すると判定された端末装置へ向け送信するとともに、当該端末装置から当該端末装置の現在位置を示す位置通知情報を受信し、

前記判定手段は、当該位置通知情報に基づき、乗車区間指定検索条件の乗車位置と現在位置が適合する利用者を相乗り相手として判定することを特徴とする相乗り支援システム。

【請求項4】 請求項2において、

前記情報生成手段は、前記判定手段によって検索条件と適合する利用者がいると判定された場合に、前記利用者データベースの当該利用者の乗車区間の乗車位置に当該利用者がいるかどうかを問い合わせる存在有無確認用情報を生成し、

前記送受信手段は、当該存在有無確認用情報を、前記判定手段によって検索条件と適合すると判定された端末装置へ向け送信するとともに、当該端末装置から当該端末

装置が当該利用者の乗車区間の乗車位置に位置しているかどうかを示す存在有無通知情報を受信し、

前記判定手段は、当該存在有無通知情報に基づき、乗車区間指定検索条件の乗車位置と前記利用者データベースの当該利用者の乗車区間の乗車位置とが適合する利用者のうち、当該利用者が当該乗車位置に存在していることを示す存在有無通知情報を送信した利用者を相乗り相手として判定することを特徴とする相乗り支援システム。

【請求項5】 請求項1～4のいずれかにおいて、

前記利用者データベースは、各利用者の有料自動車の利用時間帯を示すデータを含み、

前記検索条件は、有料自動車の利用時間帯が指定された時間帯指定検索条件を含み、

前記判定手段は、時間帯指定検索条件と利用時間帯が一致または重複する利用者を相乗り相手として判定することを特徴とする相乗り支援システム。

【請求項6】 請求項1～5のいずれかにおいて、

前記利用者データベースは、各利用者の性別、年代、職種、勤務先、学校のうちの少なくとも1つを示す属性を示すデータを含み、

前記検索条件は、利用者の性別、年代、職種、勤務先、学校のうちの少なくとも1つを示す属性が指定された属性指定検索条件を含み、

前記判定手段は、属性指定検索条件と属性が適合する利用者を相乗り相手として判定することを特徴とする相乗り支援システム。

【請求項7】 端末装置を使用する複数の利用者が1台の有料自動車に相乗りすることを支援する相乗り支援システムにおいて、

前記端末装置から相乗り相手の検索を要求することを示し、かつ、所定の検索条件が指定された検索要求情報を受信するとともに、前記端末装置へ向け相乗り相手を示す相乗り相手通知情報を送信する送受信手段と、

複数の利用者からの検索要求情報に基づき、検索条件と適合する利用者を相乗り相手として判定する判定手段と、

前記判定手段によって検索条件と適合する利用者がいると判定された場合に、相乗り相手を示す前記相乗り相手通知情報を生成する情報生成手段と、

を含み、

前記送受信手段は、検索要求情報の送信元の端末装置および検索条件と適合した利用者の端末装置へ向け、相乗り相手を示す前記相乗り相手通知情報を送信することを特徴とする相乗り支援システム。

【請求項8】 端末装置を使用する複数の利用者が1台の有料自動車に相乗りすることを支援する相乗り支援システムにおいて、

前記端末装置へ向け相乗り相手を示す相乗り相手通知情報を送信する送受信手段と、

利用者が希望する有料自動車の利用内容を示す利用者デ

データベースを検索し、所定の検索条件と適合する利用者を相乗り相手として判定する判定手段と、

前記判定手段によって検索条件と適合する利用者がいると判定された場合に、相乗り相手を示す前記相乗り相手通知情報を生成する情報生成手段と、

を含み、
前記送受信手段は、検索条件と適合した利用者の端末装置へ向け、相乗り相手を示す前記相乗り相手通知情報を送信することを特徴とする相乗り支援システム。

【請求項9】 端末装置を使用する複数の利用者が1台10の有料自動車に相乗りすることを支援するためのプログラムであり、コンピュータにより読み取り可能なプログラムであって、

コンピュータを、

前記端末装置から相乗り相手の検索を要求することを示し、かつ、所定の検索条件が指定された検索要求情報を送受信手段に受信させるとともに、前記端末装置へ向け相乗り相手を示す相乗り相手通知情報を送受信手段に送信させる通信制御手段と、

検索要求情報に基づき、利用者が希望する有料自動車の20利用内容を示す利用者データベースを検索し、検索条件と適合する利用者を相乗り相手として判定する判定手段と、

前記判定手段によって検索条件と適合する利用者がいると判定された場合に、

相乗り相手を示す前記相乗り相手通知情報を生成する情報生成手段として機能させ、

前記通信制御手段は、前記送受信手段に、検索要求情報の送信元の端末装置および検索条件と適合した利用者の30端末装置へ向け、相乗り相手を示す前記相乗り相手通知情報を送信させることを特徴とするプログラム。

【請求項10】 請求項9において、

前記利用者データベースは、各利用者が有料自動車を利用する乗車区間を示すデータを含み、

前記検索条件は、有料自動車の乗車位置と降車位置を示す乗車区間が指定された乗車区間指定検索条件を含み、
前記判定手段は、乗車区間指定検索条件と乗車区間が一致または重複する利用者を相乗り相手として判定することを特徴とするプログラム。

【請求項11】 請求項10において、

前記情報生成手段は、前記判定手段によって検索条件と適合する利用者がいると判定された場合に、相乗り相手の40端末装置に当該端末装置の現在位置を問い合わせる位置確認用情報を生成し、

前記通信制御手段は、前記送受信手段に、当該位置確認用情報を、前記判定手段によって検索条件と適合すると判定された端末装置へ向け送信させるとともに、当該端末装置から当該端末装置の現在位置を示す位置通知情報を受信させ、前記判定手段は、当該位置通知情報に基づき、乗車区間指定検索条件の乗車位置と現在位置が適合50

する利用者を相乗り相手として判定することを特徴とするプログラム。

【請求項12】 請求項10において、

前記情報生成手段は、前記判定手段によって検索条件と適合する利用者がいると判定された場合に、前記利用者データベースの当該利用者の乗車区間の乗車位置に当該利用者がいるかどうかを問い合わせる存在有無確認用情報を生成し、

前記通信制御手段は、前記送受信手段に、当該存在有無確認用情報を、前記判定手段によって検索条件と適合すると判定された端末装置へ向け送信させるとともに、当該端末装置から当該端末装置が当該利用者の乗車区間の乗車位置に位置しているかどうかを示す存在有無通知情報を受信させ、

前記判定手段は、当該存在有無通知情報に基づき、乗車区間指定検索条件の乗車位置と前記利用者データベースの当該利用者の乗車区間の乗車位置とが適合する利用者のうち、当該利用者が当該乗車位置に存在していることを示す存在有無通知情報を送信した利用者を相乗り相手として判定することを特徴とするプログラム。

【請求項13】 請求項9～12のいずれかにおいて、前記利用者データベースは、各利用者の有料自動車の利用時間帯を示すデータを含み、

前記検索条件は、有料自動車の利用時間帯が指定された時間帯指定検索条件を含み、

前記判定手段は、時間帯指定検索条件と利用時間帯が一致または重複する利用者を相乗り相手として判定することを特徴とするプログラム。

【請求項14】 請求項9～13のいずれかにおいて、前記利用者データベースは、各利用者の性別、年代、職種、勤務先、学校のうちの少なくとも1つを示す属性を示すデータを含み、

前記検索条件は、利用者の性別、年代、職種、勤務先、学校のうちの少なくとも1つを示す属性が指定された属性指定検索条件を含み、

前記判定手段は、属性指定検索条件と属性が適合する利用者を相乗り相手として判定することを特徴とするプログラム。

【請求項15】 端末装置を使用する複数の利用者が1台の50有料自動車に相乗りすることを支援するためのプログラムであり、コンピュータにより読み取り可能なプログラムであって、

コンピュータを、

前記端末装置から相乗り相手の検索を要求することを示し、かつ、所定の検索条件が指定された検索要求情報を送受信手段に受信させるとともに、前記端末装置へ向け相乗り相手を示す相乗り相手通知情報を送受信手段に送信させる通信制御手段と、

複数の利用者からの検索要求情報に基づき、検索条件と適合する利用者を相乗り相手として判定する判定手段

と、
前記判定手段によって検索条件と適合する利用者がいると判定された場合に、相乗り相手を示す前記相乗り相手通知情報を生成する情報生成手段として機能させ、
前記通信制御手段は、前記送受信手段に、検索要求情報の送信元の端末装置および検索条件と適合した利用者の端末装置へ向け、相乗り相手を示す前記相乗り相手通知情報を送信させることを特徴とするプログラム。

【請求項16】 端末装置を使用する複数の利用者が1台の有料自動車に相乗りすることを支援するためのプログラムであり、コンピュータにより読み取り可能なプログラムであって、
コンピュータを、
前記端末装置へ向け相乗り相手を示す相乗り相手通知情報を送受信手段に送信させる通信制御手段と、
利用者が希望する有料自動車の利用内容を示す利用者データベースを検索し、所定の検索条件と適合する利用者を相乗り相手として判定する判定手段と、
前記判定手段によって検索条件と適合する利用者がいると判定された場合に、相乗り相手を示す前記相乗り相手通知情報を生成する情報生成手段として機能させ、
前記通信制御手段は、前記送受信手段に、検索条件と適合した利用者の端末装置へ向け、相乗り相手を示す前記相乗り相手通知情報を送信させることを特徴とするプログラム。

【請求項17】 コンピュータにより読み取り可能な情報記憶媒体であって、
請求項9～16のいずれかのプログラムを記憶したことを特徴とする情報記憶媒体。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、タクシー等の有料自動車の相乗り支援システム、プログラムおよび情報記憶媒体に関する。

【0002】

【背景技術および発明が解決しようとする課題】タクシーやレンタカー等の有料自動車を利用する場合、なるべく多くの人で乗ったほうが1人当たりの料金が割安となる。

【0003】しかし、タクシー乗り場等において相乗りの相手を探すことは困難であるため、従来、タクシーやレンタカー等の有料自動車の利用は、個人単位または知り合い同士のグループ単位での利用に限られていた。

【0004】特に、近年、タクシーの利用量は減ってきており、タクシー等の有料自動車をより積極的に利用させる技術が求められている。

【0005】また、面識のない相手と相乗りをする場合、利用者には不安感が生じる場合があり、このような不安感を軽減する必要がある。

【0006】本発明は、上記の課題に鑑みなされたもの

であり、その目的は、タクシー等の有料自動車の相乗りを支援することが可能な相乗り支援システム、プログラムおよび情報記憶媒体を提供することにある。

【0007】

【課題を解決するための手段】上記課題を解決するため、本発明に係る相乗り支援システムは、端末装置を使用する複数の利用者が1台の有料自動車に相乗りすることを支援する相乗り支援システムにおいて、前記端末装置から相乗り相手の検索を要求することを示し、かつ、所定の検索条件が指定された検索要求情報を受信するとともに、前記端末装置へ向け相乗り相手を示す相乗り相手通知情報を送信する送受信手段と、検索要求情報に基づき、利用者が希望する有料自動車の利用内容を示す利用者データベースを検索し、検索条件と適合する利用者を相乗り相手として判定する判定手段と、前記判定手段によって検索条件と適合する利用者がいると判定された場合に、相乗り相手を示す前記相乗り相手通知情報を生成する情報生成手段と、を含み、前記送受信手段は、検索要求情報の送信元の端末装置および検索条件と適合した利用者の端末装置へ向け、相乗り相手を示す前記相乗り相手通知情報を送信することを特徴とする。

【0008】また、本発明に係るプログラムは、端末装置を使用する複数の利用者が1台の有料自動車に相乗りすることを支援するためのプログラムであり、コンピュータにより読み取り可能なプログラムであって、コンピュータを、前記端末装置から相乗り相手の検索を要求することを示し、かつ、所定の検索条件が指定された検索要求情報を送受信手段に受信させるとともに、前記端末装置へ向け相乗り相手を示す相乗り相手通知情報を送受信手段に送信させる通信制御手段と、検索要求情報に基づき、利用者が希望する有料自動車の利用内容を示す利用者データベースを検索し、検索条件と適合する利用者を相乗り相手として判定する判定手段と、前記判定手段によって検索条件と適合する利用者がいると判定された場合に、相乗り相手を示す前記相乗り相手通知情報を生成する情報生成手段として機能させ、前記通信制御手段は、前記送受信手段に、検索要求情報の送信元の端末装置および検索条件と適合した利用者の端末装置へ向け、相乗り相手を示す前記相乗り相手通知情報を送信させることを特徴とする。

【0009】また、本発明に係る情報記憶媒体は、コンピュータにより読み取り可能な情報記憶媒体であって、上記手段としてコンピュータを機能させるためのプログラムを記憶したことを特徴とする。

【0010】本発明によれば、検索条件に適合した相乗り相手を通知することができるため、有料自動車の相乗りを支援することができる。

【0011】また、本発明によれば、利用者は、利用する度に検索条件を変更して利用時の状況に適した相乗り相手を検索することができるため、検索の利便性を向上

させることができる。

【0012】また、本発明によれば、あらかじめデータが記憶された利用者データベースを検索して判定することにより、複数の検索要求を逐次処理する場合と比べ、検索処理効率を向上させることができる。

【0013】また、本発明に係る相乗り支援システムは、端末装置を使用する複数の利用者が1台の有料自動車に相乗りすることを支援する相乗り支援システムにおいて、前記端末装置から相乗り相手の検索を要求することを示し、かつ、所定の検索条件が指定された検索要求10 情報を受信するとともに、前記端末装置へ向け相乗り相手を示す相乗り相手通知情報を送信する送受信手段と、複数の利用者からの検索要求情報に基づき、検索条件と適合する利用者を相乗り相手として判定する判定手段と、前記判定手段によって検索条件と適合する利用者がいると判定された場合に、相乗り相手を示す前記相乗り相手通知情報を生成する情報生成手段と、を含み、前記送受信手段は、検索要求情報の送信元の端末装置および検索条件と適合した利用者の端末装置へ向け、相乗り相手を示す前記相乗り相手通知情報を送信することを特徴20 とする。

【0014】また、本発明に係るプログラムは、端末装置を使用する複数の利用者が1台の有料自動車に相乗りすることを支援するためのプログラムであり、コンピュータにより読み取り可能なプログラムであって、コンピュータを、前記端末装置から相乗り相手の検索を要求することを示し、かつ、所定の検索条件が指定された検索要求情報を送受信手段に受信させるとともに、前記端末装置へ向け相乗り相手を示す相乗り相手通知情報を送受信手段に送信させる通信制御手段と、複数の利用者からの30 の検索要求情報に基づき、検索条件と適合する利用者を相乗り相手として判定する判定手段と、前記判定手段によって検索条件と適合する利用者がいると判定された場合に、相乗り相手を示す前記相乗り相手通知情報を生成する情報生成手段として機能させ、前記通信制御手段は、前記送受信手段に、検索要求情報の送信元の端末装置および検索条件と適合した利用者の端末装置へ向け、相乗り相手を示す前記相乗り相手通知情報を送信させることを特徴とする。

【0015】また、本発明に係る情報記憶媒体は、コンピュータにより読み取り可能な情報記憶媒体であって、上記手段としてコンピュータを機能させるためのプログラムを記憶したことを特徴とする。

【0016】本発明によれば、検索条件に適合した相乗り相手を通知することができるため、有料自動車の相乗りを支援することができる。

【0017】また、本発明によれば、利用者は、利用する度に検索条件を変更して利用時の状況に適した相乗り相手を検索することができるため、検索の利便性を向上させることができる。

【0018】また、本発明に係る相乗り支援システムは、端末装置を使用する複数の利用者が1台の有料自動車に相乗りすることを支援する相乗り支援システムにおいて、前記端末装置へ向け相乗り相手を示す相乗り相手通知情報を送信する送受信手段と、利用者が希望する有料自動車の利用内容を示す利用者データベースを検索し、所定の検索条件と適合する利用者を相乗り相手として判定する判定手段と、前記判定手段によって検索条件と適合する利用者がいると判定された場合に、相乗り相手を示す前記相乗り相手通知情報を生成する情報生成手段と、を含み、前記送受信手段は、検索条件と適合した利用者の端末装置へ向け、相乗り相手を示す前記相乗り相手通知情報を送信することを特徴とする。

【0019】また、本発明に係るプログラムは、端末装置を使用する複数の利用者が1台の有料自動車に相乗りすることを支援するためのプログラムであり、コンピュータにより読み取り可能なプログラムであって、コンピュータを、前記端末装置へ向け相乗り相手を示す相乗り相手通知情報を送受信手段に送信させる通信制御手段と、利用者が希望する有料自動車の利用内容を示す利用者データベースを検索し、所定の検索条件と適合する利用者を相乗り相手として判定する判定手段と、前記判定手段によって検索条件と適合する利用者がいると判定された場合に、相乗り相手を示す前記相乗り相手通知情報を生成する情報生成手段として機能させ、前記通信制御手段は、前記送受信手段に、検索条件と適合した利用者の端末装置へ向け、相乗り相手を示す前記相乗り相手通知情報を送信させることを特徴とする。

【0020】また、本発明に係る情報記憶媒体は、コンピュータにより読み取り可能な情報記憶媒体であって、上記手段としてコンピュータを機能させるためのプログラムを記憶したことを特徴とする。

【0021】本発明によれば、検索条件に適合した相乗り相手を通知することができるため、有料自動車の相乗りを支援することができる。

【0022】また、本発明によれば、あらかじめデータが記憶された利用者データベースを検索して判定することにより、複数の検索要求を逐次処理する場合と比べ、検索処理効率を向上させることができる。

【0023】また、前記相乗り支援システム、前記プログラムおよび前記情報記憶媒体において、前記利用者データベースは、各利用者が有料自動車を利用する乗車区間を示すデータを含み、前記検索条件は、有料自動車の乗車位置と降車位置を示す乗車区間が指定された乗車区間指定検索条件を含み、前記判定手段は、乗車区間指定検索条件と乗車区間が一致または重複する利用者を相乗り相手として判定してもよい。

【0024】これによれば、乗車区間が一致または重複する相乗り相手を利用者に通知することができる。

50 【0025】また、前記相乗り支援システムにおいて、

前記情報生成手段は、前記判定手段によって検索条件と適合する利用者がいると判定された場合に、相乗り相手の端末装置に当該端末装置の現在位置を問い合わせる位置確認用情報を生成し、前記送受信手段は、当該位置確認用情報を、前記判定手段によって検索条件と適合すると判定された端末装置へ向け送信するとともに、当該端末装置から当該端末装置の現在位置を示す位置通知情報を受信し、前記判定手段は、当該位置通知情報に基づき、乗車区間指定検索条件の乗車位置と現在位置が適合する利用者を相乗り相手として判定してもよい。

【0026】また、前記プログラムおよび前記情報記憶媒体において、前記情報生成手段は、前記判定手段によって検索条件と適合する利用者がいると判定された場合に、相乗り相手の端末装置に当該端末装置の現在位置を問い合わせる位置確認用情報を生成し、前記通信制御手段は、前記送受信手段に、当該位置確認用情報を、前記判定手段によって検索条件と適合すると判定された端末装置へ向け送信させるとともに、当該端末装置から当該端末装置の現在位置を示す位置通知情報を受信させ、前記判定手段は、当該位置通知情報に基づき、乗車区間指定検索条件の乗車位置と現在位置が適合する利用者を相乗り相手として判定してもよい。

【0027】これによれば、乗車区間指定検索条件の乗車位置と現在位置が適合する相乗り相手を利用者に通知することができる。これにより、相乗りの成立する確率をより高めることができる。

【0028】また、これによれば、適合する利用者がいると判定された場合に、相乗り相手の端末装置に当該端末装置の現在位置を問い合わせるため、無条件に利用者の位置確認を行う事態の発生を防止でき、利用者のプライバシー保護をより強化することができる。

【0029】また、前記相乗り支援システムにおいて、前記情報生成手段は、前記判定手段によって検索条件と適合する利用者がいると判定された場合に、前記利用者データベースの当該利用者の乗車区間の乗車位置に当該利用者がいるかどうかを問い合わせる存在有無確認用情報を生成し、前記送受信手段は、当該存在有無確認用情報を、前記判定手段によって検索条件と適合すると判定された端末装置へ向け送信するとともに、当該端末装置から当該端末装置が当該利用者の乗車区間の乗車位置に位置しているかどうかを示す存在有無通知情報を受信し、前記判定手段は、当該存在有無通知情報に基づき、乗車区間指定検索条件の乗車位置と前記利用者データベースの当該利用者の乗車区間の乗車位置とが適合する利用者のうち、当該利用者が当該乗車位置に存在していることを示す存在有無通知情報を送信した利用者を相乗り相手として判定してもよい。

【0030】また、前記プログラムおよび前記情報記憶媒体において、前記情報生成手段は、前記判定手段によって検索条件と適合する利用者がいると判定された場合

に、前記利用者データベースの当該利用者の乗車区間の乗車位置に当該利用者がいるかどうかを問い合わせる存在有無確認用情報を生成し、前記通信制御手段は、前記送受信手段に、当該存在有無確認用情報を、前記判定手段によって検索条件と適合すると判定された端末装置へ向け送信させるとともに、当該端末装置から当該端末装置が当該利用者の乗車区間の乗車位置に位置しているかどうかを示す存在有無通知情報を受信させ、前記判定手段は、当該存在有無通知情報に基づき、乗車区間指定検索条件の乗車位置と前記利用者データベースの当該利用者の乗車区間の乗車位置とが適合する利用者のうち、当該利用者が当該乗車位置に存在していることを示す存在有無通知情報を送信した利用者を相乗り相手として判定してもよい。

【0031】これによれば、乗車区間指定検索条件の乗車位置と現在位置が適合する相乗り相手を利用者に通知することができる。これにより、相乗りの成立する確率をより高めることができる。

【0032】また、これによれば、端末装置から位置通知情報ではなく、存在有無通知情報を受信することにより、相乗り支援を行う場合における端末装置の利用者のプライバシー保護をさらに強化することができる。

【0033】また、前記相乗り支援システム、前記プログラムおよび前記情報記憶媒体において、前記利用者データベースは、各利用者の有料自動車の利用時間帯を示すデータを含み、前記検索条件は、有料自動車の利用時間帯が指定された時間帯指定検索条件を含み、前記判定手段は、時間帯指定検索条件と利用時間帯が一致または重複する利用者を相乗り相手として判定してもよい。

【0034】これによれば、利用時間帯が一致または重複する者を相乗りさせることができる。

【0035】また、前記相乗り支援システム、前記プログラムおよび前記情報記憶媒体において、前記利用者データベースは、各利用者の性別、年代、職種、勤務先、学校のうちの少なくとも1つを示す属性を示すデータを含み、前記検索条件は、利用者の性別、年代、職種、勤務先、学校のうちの少なくとも1つを示す属性が指定された属性指定検索条件を含み、前記判定手段は、属性指定検索条件と属性が適合する利用者を相乗り相手として判定してもよい。

【0036】これによれば、利用者は、種々の属性を指定して検索することができるため、利用者の相乗りの不安感を軽減することができる。

【0037】

【発明の実施の形態】以下、本発明を、相乗り支援システムとして機能するサーバーに適用した場合を例に採り、図面を参照しつつ説明する。なお、以下に示す実施形態は、特許請求の範囲に記載された発明の内容を何ら限定するものではない。また、以下の実施形態に示す構成の全てが、特許請求の範囲に記載された発明の解決手

段として必須であるとは限らない。

【0038】(システム全体の説明)図1は、本実施形態の一例に係るシステム全体の概略図である。

【0039】本システムは、相乗り支援システムとして機能するサーバー1と、インターネット3と、インターネット3を介してサーバー1と情報を送受信する端末装置の一種である携帯電話2と、携帯電話2に位置情報を提供するGPS衛星4とを含んで構成されている。

【0040】携帯電話2を使用する利用者は、他の利用者と一緒にタクシーの相乗りをするため、サーバー1に利用者登録を行っておく。そして、利用者は、タクシーを利用したいと思った時点で、携帯電話2を用いて検索条件を指定して相乗り相手を探す。

【0041】サーバー1は、利用者の要求に応じて相乗り相手を示す相乗り相手通知情報を携帯電話2へ向け送信する。

【0042】次に、このような機能を実現するためのサーバー1の機能ブロックについて説明する。

【0043】図2は、本実施形態の一例に係るサーバー1の機能ブロック図である。

【0044】サーバー1は、携帯電話2と情報を送受信する送受信部11と、処理部12と、利用者が希望するタクシーの利用内容等を示す利用者データベース18を記憶している記憶部13と、タイマー部14とを含んで構成されている。

【0045】送受信部11は、携帯電話2から相乗り相手の検索を要求することを示し、かつ、所定の検索条件が指定された検索要求情報を受信するとともに、携帯電話2へ向け相乗り相手を示す相乗り相手通知情報を送信する。

【0046】また、処理部12は、情報生成部15と、判定部16と、更新部17とを含んで構成されている。

【0047】判定部16は、検索要求情報に基づき、利用者データベース18を検索し、検索条件と適合する利用者を相乗り相手として判定する処理等を行う。

【0048】また、情報生成部15は、判定部16によって検索条件と適合する利用者がいると判定された場合に、相乗り相手を示す相乗り相手通知情報を生成する処理等を行う。

【0049】また、更新部17は、携帯電話2からの登録要求情報に基づいて利用者データベース18を更新する処理等を行う。

【0050】なお、これら各部のハードウェアとしては、例えば、送受信部11としてはルーター等、処理部12としてはCPU等、タイマー部14としてはシステムタイマー等、記憶部13としてはHDD等を用いて実現できる。

【0051】また、情報生成部15等の機能は、回路等のハードウェアで実現してもよいし、例えば、情報記憶媒体5からプログラムを読み取って実現したり、インタ

ーネット3を介してホスト装置等からプログラムを読み取って実現してもよい。

【0052】なお、情報記憶媒体5としては、例えば、CD-ROM、DVD-ROM、ROM、RAM、HDD等を適用でき、そのプログラムの読み取り方式は接触方式であっても、非接触方式であってもよい。

【0053】次に、携帯電話2の機能ブロックについて説明する。

【0054】図3は、本実施形態の一例に係る携帯電話2の機能ブロック図である。

【0055】携帯電話2は、GPS衛星4からの電波を受信するGPS測位部21と、サーバー1との間で情報を送受信する送受信部22と、利用者のキー入力を受け付ける入力部23と、処理部24と、画像情報に基づいて画像を表示する表示部25と、種々のデータを記憶する記憶部26とを含んで構成されている。

【0056】また、処理部24は、画像情報等を生成する情報生成部27と、判定部28と、記憶部26内のデータを更新する更新部29とを含んで構成されている。

【0057】また、記憶部26は、後述する登録用画像や検索用画像を表示するための画像情報等を生成するためのプログラムを記憶している。

【0058】なお、携帯電話2としては、GPS通信機能を有する一般的な携帯電話を用いればよい。また、測位は乗車位置との適合性の判定のために行うため、GPS測位部21の測位精度は、何丁目といった程度の大体の場所がわかる程度の精度で十分である。

【0059】本実施の形態では、サーバー1は、携帯電話2からの登録要求情報に基づいて利用者データベース18を更新し、携帯電話2からの検索条件を指定した検索要求情報に基づいて利用者データベース18を検索して相乗り相手通知情報を携帯電話2へ向け送信する。

【0060】次に、上述した各部を用いた処理の流れについて説明する。

【0061】まず、利用者が希望するタクシーの利用内容と利用者の属性を登録する際の処理の流れについて説明する。

【0062】図4は、本実施形態の一例に係る登録用画像101を示す図である。また、図5は、本実施形態の一例に係る登録時のフローチャートである。

【0063】まず、利用者は、携帯電話2に登録用画像101が表示された状態で、携帯電話2のキーを操作してよく利用する乗車区間、時間帯、相乗り相手の条件の登録を行う(ステップS1)。

【0064】登録用画像101には、名前を入力するための名前入力用領域、電子メールアドレスを入力するためのメールアドレス入力用領域、よく利用する乗車区間を入力するための乗車区間入力用領域、よく利用する時間帯を入力するための時間帯入力用領域、男性または女性を選択するための性別選択用領域、20歳未満、20

代、30代、40歳以上のいずれかを選択するための年代選択用領域、学生、会社員、主婦、その他のいずれかを選択するための職種選択用領域、勤務先または学校の名前を入力するための通勤先入力用領域と、登録用のボタンが設けられている。

【0065】利用者は、これらの各項目を入力または選択して登録ボタンを押してサーバー1に登録する。

【0066】携帯電話2の判定部28は、入力部23からの入力情報に基づき、利用者が登録ボタンを押したことを判定し、情報生成部27に登録要求情報を生成する10ように命令を出す。情報生成部27は、入力情報に基づき、利用者の入力内容および選択内容を示す登録要求情報を生成し、送受信部22は、当該登録要求情報をサーバー1へ向け送信する。

【0067】サーバー1の送受信部11は、携帯電話2からの登録要求情報を受信し、利用者の登録要求を受け付ける（ステップS11）。

【0068】判定部16は、登録要求情報であると判定すると更新部17に利用者データベース18に登録するように命令を出す。

【0069】更新部17は、利用者データベース18に登録するように、当該登録要求情報に基づき、利用者データベース18を更新する（ステップS12）。

【0070】ここで、利用者データベース18のデータ構造について説明する。

【0071】図6は、本実施形態の一例に係る利用者データベース18のデータ構造を示す図である。

【0072】図6に示すように、利用者データベース18は、登録用画像101の項目と対応した「名前」、
「メールアドレス」、乗車位置と降車位置を示す「乗車30
区間」、開始時刻と終了時刻を示す「時間帯」、「性別」、「年代」、「職種」、「勤務先/学校」の項目を含む。また、利用者データベース18は、図6に示すデータ以外にも携帯電話2の識別情報等を含む。

【0073】また、図6に示すように、乗車区間、時間帯については、複数種のデータを記憶することができるように利用者データベース18は構成されている。これは、例えば、行き経路と帰りの経路、行き経路であっても自宅から乗車駅までタクシーを使い、降車駅から会社までタクシーを使うといった場合もあり、1人が複40
数種の登録をする場合もあるからである。

【0074】このようにしてサーバー1は、複数の利用者からの登録要求情報に基づいて複数の利用者のタクシーの利用内容等を示す利用者データベース18を構築する。

【0075】次に、利用者が相乗りをするために検索を行う場合について説明する。

【0076】図7は、本実施形態の一例に係る検索用画像102を示す図である。図8は、本実施形態の一例に係る検索時のフローチャートである。

【0077】まず、利用者は、携帯電話2に検索用画像102が表示された状態で、携帯電話2のキーを操作して利用するタクシーの乗車位置と降車位置を示す乗車区間を指定する乗車区間指定条件、利用する時間帯を指定する時間帯指定条件、性別等の属性を指定する属性指定条件を指定して相乗り相手の検索要求を行う（ステップS21）。

【0078】検索用画像102には、乗車区間を指定するための乗車区間指定用領域、時間帯を指定するための時間帯指定用領域、男性または女性を選択するための性別選択用領域、指定しない、20歳未満、20代、30代、40歳以上のいずれかを指定するための年代指定用領域、指定しない、学生、会社員、主婦、その他のいずれかを指定するための職種指定用領域と、検索要求用のボタンが設けられている。

【0079】利用者は、これらの各項目を入力または選択して要求ボタンを押してサーバー1に検索要求を行う。

【0080】携帯電話2の判定部28は、入力部23からの入力情報に基づき、利用者が要求ボタンを押したことを判定し、情報生成部27に検索要求情報を生成するように命令を出す。情報生成部27は、入力情報に基づき、利用者の入力内容および選択内容を示す検索要求情報を生成し、送受信部22は、当該検索要求情報をサーバー1へ向け送信する。

【0081】サーバー1の送受信部11は、携帯電話2からの検索要求情報を受信し、利用者の検索要求を受け付ける（ステップS31）。

【0082】判定部16は、検索要求情報であると判定すると利用者データベース18から利用者の希望に適合する相乗り相手を検索する（ステップS32）。

【0083】ところで、図6に示す例において、利用者データベース18における「山田太郎」の情報は、乗車位置が「A」、降車位置が「B」、時間帯は「7:00～9:00」、性別は「男」、年代は「20代」、職種は「会社員」、勤務先は「A社」である。

【0084】これに対し、「鈴木次郎」は、乗車位置が「A」、降車位置が「B」、時間帯は「6:00～9:00」、性別は「男」、年代は「30代」、職種は「会社員」、勤務先は「A社」である。

【0085】また、「田中花子」は、乗車位置が「A」、降車位置が「C」、時間帯は「7:00～9:00」、性別は「男」、年代は「20代」、職種は「会社員」、勤務先は「B社」である。

【0086】なお、位置「A」と位置「C」の間に位置「B」があるものとする。また、本実施形態では、判定部16は、乗車区間指定検索条件と図6に示す利用者データベース18の乗車区間が一致または重複する利用者を相乗り相手として判定する。

50 【0087】ここで、検索要求を行った利用者を「山田

太郎」と仮定する。

【0088】このような場合、「山田太郎」が、属性指定検索条件として性別が男性であることを指定すれば、判定部16は、相乗り相手として「鈴木次郎」を選択する。また、「山田太郎」が、属性指定検索条件として年代が20代であることを指定すれば、判定部16は、相乗り相手として「田中花子」を選択する。また、「山田太郎」が、属性指定検索条件として職種が会社員であることを指定すれば、判定部16は、相乗り相手として「鈴木次郎」と「田中花子」を選択する。また、「山田太郎」が、属性指定検索条件として同じ勤務先であることを指定すれば、判定部16は、相乗り相手として「鈴木次郎」を選択する。

【0089】相乗り相手の検索後、情報生成部15は、タイマー部14のタイマー値に基づき利用者の希望時間帯の利用開始時刻の少し前になると、当該相乗り相手の現在位置を問い合わせるための位置確認用情報を生成し、送受信部11は、利用者データベース18に登録されている相乗り相手の携帯電話2の識別情報に基づき、相乗り相手の携帯電話2へ向け位置確認用情報を送信する。

【0090】相乗り相手が使用している携帯電話2の送受信部22は、位置確認用情報を受信し、判定部28は位置確認用情報であると判定するとGPS測位部21に現在位置を調べるように命令を出す。

【0091】GPS測位部21は、当該命令を受けると、GPS衛星4からの電波に基づき、現在位置を検出する。情報生成部27は、現在位置を示す位置通知情報を生成し、送受信部22は、当該位置通知情報をサーバー1へ向け送信する。

【0092】サーバー1の判定部16は、当該位置通知情報に基づき、相乗り相手の中から出発地付近にいる人を抽出する（ステップS33）。

【0093】情報生成部15は、利用者データベース18のメールアドレスに基づき、抽出された相乗り相手と検索要求を行った利用者へ向け相乗り相手を通知するための相乗り相手通知情報の一種である電子メールを生成する。

【0094】送受信部11は、当該電子メールを抽出された相乗り相手と検索要求を行った利用者へ向け送信し、両者に通知する（ステップS34）。

【0095】携帯電話2の送受信部22は、相乗り相手通知としての電子メールを受信する（ステップS22）。

【0096】電子メールを受信した利用者は、相乗り相手とメールを送受信する（ステップS23）。サーバー1は、メールサーバーとして機能することにより、利用者と相乗り相手の両者を仲介する（ステップS35）。

【0097】両者の間で交渉が成立すると、交渉が成立した利用者同士で相乗りする。なお、本サービス利用に

よる利用者への課金方式は、利用回数、検索要求回数、相乗り成立回数、相乗りによって節約できた代金等に応じて課金する方式を採用できる。

【0098】以上のように、本実施の形態によれば、タクシー等の有料自動車の相乗りを支援することができる。これにより、利用者は、容易に相乗りをすることができ、タクシー等の利用料金を節約することができる。また、タクシー業者等は、タクシー等の利用率を高めることができる。

【0099】特に、本実施の形態によれば、利用者が相乗り相手の性別、年代等の条件を指定することができるため、利用者の不安感を軽減することができる。

【0100】また、相乗り相手の現在位置を調べてから通知することができるため、相乗りが成立する確率をより高めることができる。特に、利用者の現在位置を確認するのは、相乗り相手として選択した場合だけであるため、無条件に現在位置を確認する場合と比べ、利用者のプライバシーを保つことができる。また、利用者のプライバシーを保つため、上述したように、GPS測位部21の測位精度は、大体の場所がわかる程度の精度となっている。

【0101】なお、さらに、プライバシーの保護を強化するためには、例えば、情報生成部15を、判定部16によって検索条件と適合する利用者がいると判定された場合に、利用者データベース18の当該利用者の乗車区間の乗車位置に当該利用者がいるかどうかを問い合わせる存在有無確認用情報を生成するように構成し、送受信部11を、当該存在有無確認用情報を、検索条件と適合すると判定された携帯電話へ向け送信するとともに、当該携帯電話から当該携帯電話が当該利用者の乗車区間の乗車位置に位置しているかどうかを示す存在有無通知情報を受信するように構成し、判定部16を、当該存在有無通知情報に基づき、乗車区間指定検索条件の乗車位置と利用者データベース18の当該利用者の乗車区間の乗車位置とが適合する利用者のうち、当該利用者が当該乗車位置に存在していることを示す存在有無通知情報を送信した利用者を相乗り相手として判定するように構成すればよい。

【0102】これによれば、携帯電話からサーバー1へ送信する情報は、YESかNOかの情報だけであり、携帯電話から不必要に正確な精度で位置情報を送信する必要はないため、利用者のプライバシーの保護を強化することができる。

【0103】さらに、利用者間の連絡を、サーバー1を介して行うことにより、利用者間の匿名性を保つことができる。また、利用者間の連絡は、電子メール以外にも、例えば、専用の電子掲示板等の種々の情報伝達手法を採用可能である。

【0104】（変形例）なお、本発明は、上述した実施例に限定されず、種々の変形が可能である。

【0105】例えば、上述した実施例では、1人の利用者が検索要求を行ったが、複数の利用者が検索要求を行ってもよい。次に、複数の利用者が検索要求を行う場合の処理の流れについて説明する。

【0106】図9は、本実施形態の他の一例に係る検索時のフローチャートである。

【0107】第1の利用者は、携帯電話2に検索用画像102が表示された状態で、携帯電話2のキーを操作して乗車区間指定検索条件、時間帯指定検索条件、性別等の属性指定検索条件を指定して相乗り相手の検索要求を行う（ステップS41）。

【0108】また、第2の利用者は、携帯電話2に検索用画像102が表示された状態で、携帯電話2のキーを操作して乗車区間指定検索条件、時間帯指定検索条件、属性指定検索条件を指定して相乗り相手の検索要求を行う（ステップS61）。

【0109】サーバー1の送受信部11は、複数の携帯電話2からの検索要求情報を受信し、複数の利用者の検索要求を受け付ける（ステップS51）。

【0110】判定部16は、検索要求情報であると判定すると更新部17に利用者データベース18に登録するように命令を出す。

【0111】更新部17は、利用者データベース18に登録するように、当該検索要求情報に基づき、利用者データベース18を更新する（ステップS52）。

【0112】そして、判定部16は、タイマー部14のタイマー値に基づき、利用者データベース18の希望時間の開始時刻になったことを判定すると、利用者データベース18から当該開始時刻に登録した利用者の希望に適合する相乗り相手を検索する（ステップS53）。

【0113】相乗り相手の検索後、情報生成部15は、利用者データベース18のメールアドレスに基づき、相乗り相手通知情報の一種である電子メールを生成する。

【0114】送受信部11は、当該電子メールを、抽出された相乗り相手と検索要求を行った利用者へ向け送信し、両者に通知する（ステップS54）。

【0115】携帯電話2の送受信部22は、相乗り相手通知としての電子メールを受信する（ステップS42、S62）。

【0116】サーバー1は、メールサーバーとして機能し、利用者と候補者の両者を仲介する（ステップS55）。相乗り相手通知を受信した利用者は、他の利用者とサーバー1を介してメールを送受信して相談する（ステップS43、S63）。

【0117】このように、複数の利用者が検索要求を行う場合であっても、相乗りを支援することができる。

【0118】なお、本実施例では、利用者データベース18を用いたが、複数の利用者がすぐにタクシーを利用したい場合のようにリアルタイムに処理する必要がある場合には利用者データベース18を用いなくてもよい。*50

*【0119】また、上述した実施例では、利用者からの検索要求に基づいて利用者データベース18を検索して相乗り相手を通知したが、利用者からの検索要求がない場合でも利用者があらかじめ利用者データベース18に登録した時間帯や乗車区間が適合する複数の利用者がいる場合に、相乗り相手を通知するようにサーバー1を構成してもよい。

【0120】また、この場合、タイマー部14のタイマー値に基づき、乗車希望時間帯になった時点で適合する利用者の携帯電話2へ向け位置確認用情報を送信し、乗車位置の付近にいる利用者同士を相乗り相手として抽出するようにサーバー1を構成してもよい。

【0121】これによれば、相乗りが成立する確率をより高めることができる。

【0122】また、上述した実施例では位置情報の検索にGPS衛星4を用いたが、例えば、携帯電話等の基地局からの位置情報、専用の装置からの位置情報等を用いてもよい。

【0123】また、相乗り支援システムは、サーバー1のように単体の装置でなくとも、複数の装置に機能を分散して実現してもよい。

【0124】さらに、サーバー1と情報を送受信する端末装置は、上述した携帯電話2に限定されず、PHS、PDA、PC等の種々の端末装置を用いることができる。

【図面の簡単な説明】

【図1】本実施形態の一例に係るシステム全体の概略図である。

【図2】本実施形態の一例に係るサーバーの機能ブロック図である。

【図3】本実施形態の一例に係る携帯電話の機能ブロック図である。

【図4】本実施形態の一例に係る登録用画像を示す図である。

【図5】本実施形態の一例に係る登録時のフローチャートである。

【図6】本実施形態の一例に係る利用者データベースのデータ構造を示す図である。

【図7】本実施形態の一例に係る検索用画像を示す図である。

【図8】本実施形態の一例に係る検索時のフローチャートである。

【図9】本実施形態の他の一例に係る検索時のフローチャートである。

【符号の説明】

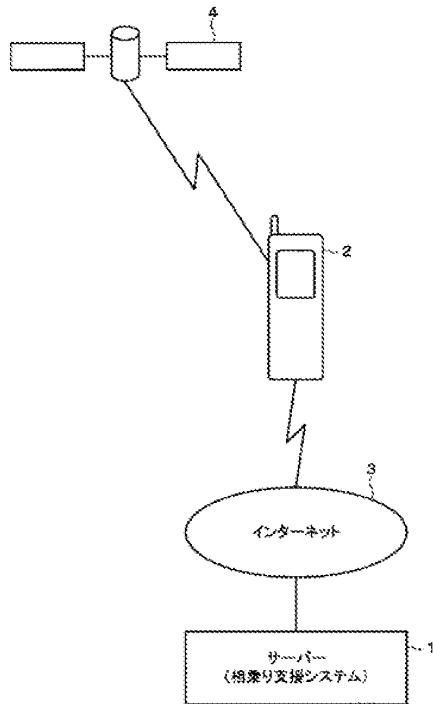
- 1 サーバー（相乗り支援システム）
- 2 携帯電話
- 4 GPS衛星
- 5 情報記憶媒体
- 11、22 送受信部

15、27 情報生成部
16、28 判定部

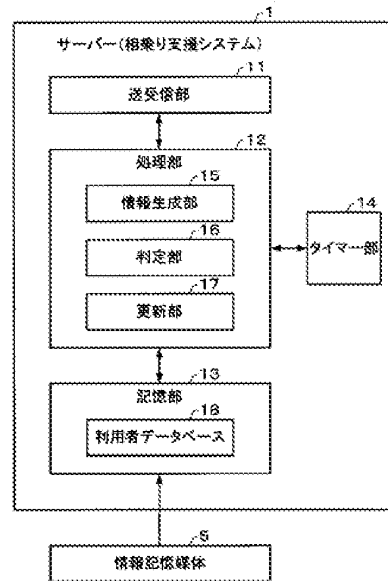
*18 利用者データベース

*

【図1】



【図2】



【図4】

登録

名前:

メールアドレス:

よく利用する乗車区間: ~

よく利用する時間帯: ~

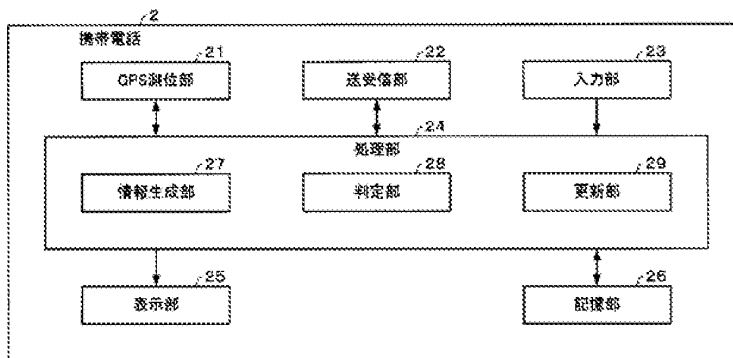
性別:
☒ 男性 ☐ 女性

年代:
☒ 20歳未満 ☐ 20代
☐ 30代 ☐ 40歳以上

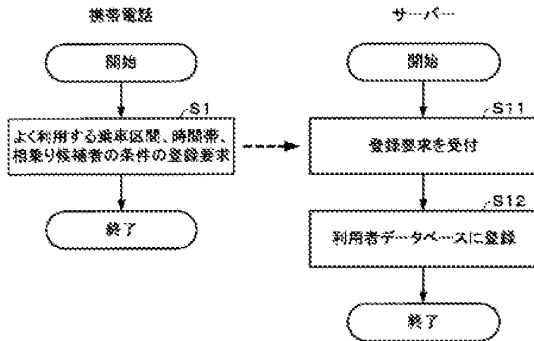
職種:
☒ 学生 ☐ 会社員
☐ 主婦 ☐ その他

勤務先/学校:

【図3】



【図5】



【図7】

検索

乗車区間: ~

時間帯: ~

性別:

☒ 指定しない

☐ 男性 ☐ 女性

年代:

☒ 指定しない

☐ 20歳未満 ☐ 20代

☐ 30代 ☐ 40歳以上

その他:

☒ 指定しない

☐ 学生 ☐ 会社員

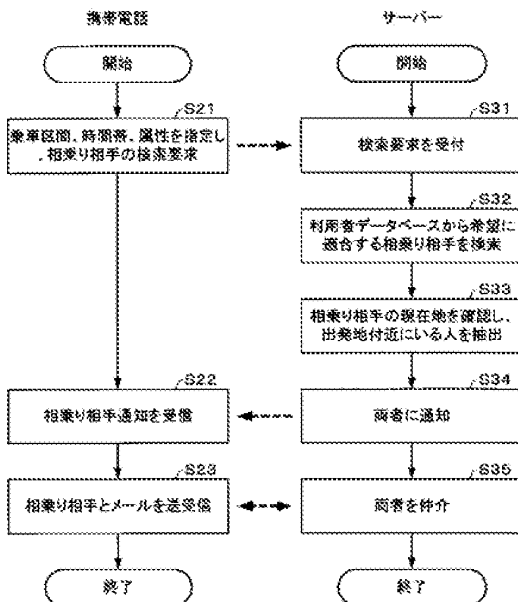
☐ 主婦 ☐ その他

☐ 同じ勤務先/学校

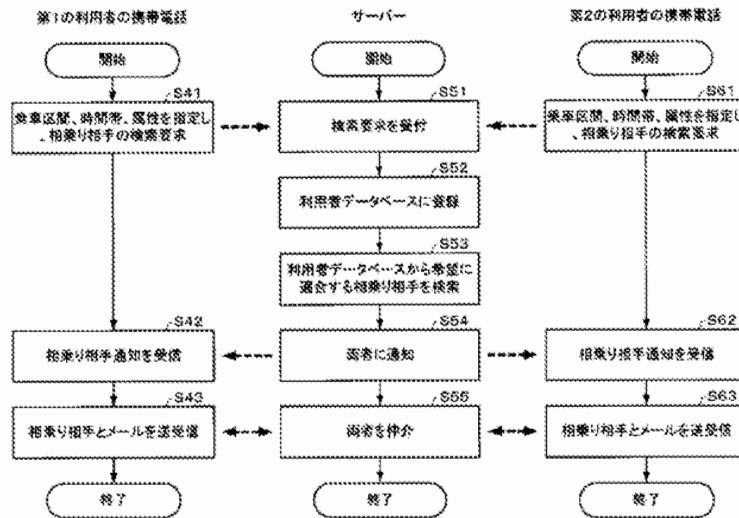
【図6】

名前	メールアドレス	乗車区間		時間帯		性別	年代	職種	勤務先/学校
		乗車位置	降車位置	開始	終了				
山田太郎	YAMADA@A.COM	A	B	7:00	9:00	男	20代	会社員	A社
		B	A	18:00	20:00				
鈴木次郎	SUZUKI@A.COM	A	B	8:00	9:00	男	30代	会社員	A社
		B	A	19:00	21:00				
田中花子	TANAKA@B.COM	A	C	7:00	9:00	女	20代	会社員	B社
		C	A	17:30	20:30				
...	...	...	...	...	...	...	...	...	...

【図8】



【図9】



JP2003256982A RIDE-SHARING SUPPORT SYSTEM, PROGRAM AND INFORMATION STORAGE 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 a carpool support system, a program, and an information storage medium for a paid car such as a taxi.

[0002] BACKGROUND OF THE INVENTION Problems to be Solved by the Invention and Invention When using a paid car such as a taxi or a rental car, the charge per person is cheaper if you ride as many people as possible.

[0003] However, since it is difficult to find a carpool partner at a taxi stand or the like, conventionally, the use of a paid car such as a taxi or a rental car has been limited to an individual unit or a group unit of acquaintances.

[0004] In particular, in recent years, the amount of taxis used has decreased, and there is a need for a technique for more actively using paid cars such as taxis.

[0005] In addition, when sharing a partner with an unacquainted partner, there may be a sense of anxiety for the user, and such anxiety needs to be reduced.

[0006] The present invention has been made in view of the above problems, and an object of the present invention is to provide a carpool support system, a program, and an information storage medium that can support carpooling of a paid car such as a taxi.

[0007] In order to solve the above-described problems, a carpooling support system according to the present invention supports a carpooling support system that supports a plurality of users who use a terminal device to ride in a single toll car. The terminal device requests a search for a carpool partner, receives search request information in which a predetermined search condition is specified, and transmits the carpool partner notification information indicating the carpool partner to the terminal device. A transmission / reception unit that performs a search based on the search request information, a determination unit that searches a user database indicating usage contents of the pay car desired by the user, and determines a user who meets the search condition as a carpool partner; and the determination unit Information generating means for generating the carpooling partner notification information indicating the carpooling partner when it is determined that there is a user who matches the search condition, Wherein the said transmitting and receiving means is directed to the transmission source terminal device and the search conditions as matched user of the terminal device of the search request information, and transmits the joining partner notification information indicating piggybacking opponent.

[0008] Further, the program according to the present invention is a program for supporting a plurality of users who use the terminal device to ride in one pay car, and is a computer-readable program. A request to search for a carpool partner from the terminal device is received, and search request information in which a predetermined search condition is specified is received by the transmission / reception means, and carpool partner notification information indicating the carpool partner is indicated to the terminal device. Communication control means to be transmitted to the transmission / reception means, and determination means for searching the user database indicating the usage contents of the pay car desired by the user based on the search request information, and determining a user who meets the search condition as a carpool partner. And when the determination means determines that there is a user who matches the search condition, The communication control means causes the transmission / reception means to send the search request information to the terminal device that is the transmission source of the search request information and the user's terminal device that matches the search conditions. The carpool partner notification information indicating is transmitted.

[0009] An information storage medium according to the present invention is an information storage medium readable by a computer, and stores a program for causing the computer to function as the above means.

[0010] According to the present invention, since it is possible to notify a carpool partner that matches the search

condition, it is possible to support carpooling of a paid car.

[0011] Further, according to the present invention, the user can search for a carpool partner suitable for the situation at the time of use by changing the search condition every time it is used, so that the convenience of search can be improved.

[0012] Further, according to the present invention, search processing efficiency can be improved by searching and determining a user database in which data is stored in advance, as compared with the case where a plurality of search requests are sequentially processed.

[0013] In addition, the carpooling support system according to the present invention requests a search for a carpooling partner from the terminal device in the carpooling support system that supports a plurality of users who use the terminal device to ride in one pay car. And transmission / reception means for receiving the sharing partner notification information indicating the sharing partner toward the terminal device, and search request information from a plurality of users. Based on the determination means for determining a user who matches the search condition as a carpool partner, and when the determination means determines that there is a user who matches the search condition, the carpool partner notification information indicating the carpool partner is displayed. Generating and generating information, wherein the transmission / reception means includes a terminal device that is the source of the search request information and a user terminal device that matches the search conditions. Towards, and transmits the joining partner notification information indicating piggybacking opponent.

[0014] Further, the program according to the present invention is a program for supporting a plurality of users who use the terminal device to ride in one pay car, and is a computer-readable program. A request to search for a carpool partner from the terminal device is received, and search request information in which a predetermined search condition is specified is received by the transmission / reception means, and carpool partner notification information indicating the carpool partner is indicated to the terminal device. Communication control means to be transmitted to the transmission / reception means, determination means for determining a user who matches the search condition as a carpool partner based on search request information from a plurality of users, and a user who matches the search condition by the determination means Functioning as information generating means for generating the carpooling partner notification information indicating the carpooling partner when it is determined that there is a carpooling partner. The communication control means causes the transmission / reception means to transmit the carpool partner notification information indicating the carpool partner to the terminal device that is the source of the search request information and the user terminal device that matches the search conditions. And

[0015] An information storage medium according to the present invention is an information storage medium readable by a computer, and stores a program for causing the computer to function as the above means.

[0016] According to the present invention, since it is possible to notify a carpool partner that matches the search condition, it is possible to support carpooling of a paid car.

[0017] Further, according to the present invention, the user can search for a carpool partner suitable for the situation at the time of use by changing the search condition every time it is used, so that the convenience of search can be improved.

[0018] In addition, the carpooling support system according to the present invention is a carpooling support system that supports a plurality of users who use a terminal device to ride in a single pay car. A transmission / reception means for transmitting information, a determination means for searching a user database indicating usage contents of a toll car desired by a user, and determining a user who meets a predetermined search condition as a carpool partner; and the determination means Information generating means for generating the carpooling partner notification information indicating the carpooling partner when it is determined that there is a user that matches the search condition, and the transmission / reception means includes a terminal of the user that matches the search condition The carpool partner notification information indicating the carpool partner is transmitted to the apparatus.

[0019] Further, the program according to the present invention is a program for supporting a plurality of users who use the terminal device to ride in one pay car, and is a computer-readable program. The communication control means for transmitting the carpool partner notification information indicating the carpool partner to the terminal device to the transmission / reception means, and the user database indicating the usage contents of the

pay car desired by the user are searched, and the predetermined search condition is satisfied. A determination unit that determines a user as a carpooling partner, and an information generation unit that generates the carpooling partner notification information indicating the carpooling partner when the determination unit determines that there is a user who matches the search condition. The communication control means sends a carpool partner to the transmission / reception means toward the terminal device of the user that matches the search condition. Characterized in that to transmit to the joining partner notification information.

[0020] An information storage medium according to the present invention is an information storage medium readable by a computer, and stores a program for causing the computer to function as the above means.

[0021] According to the present invention, since it is possible to notify a carpool partner that matches the search condition, it is possible to support carpooling of a paid car.

[0022] Further, according to the present invention, search processing efficiency can be improved by searching and determining a user database in which data is stored in advance, as compared with the case where a plurality of search requests are sequentially processed.

[0023] In the carpooling support system, the program, and the information storage medium, the user database includes data indicating a riding section where each user uses a toll car, and the search condition includes a boarding position of the toll car. The determination means may include a boarding section designation search condition in which a boarding section indicating an alighting position is designated, and the determination unit may determine a user whose boarding section designation search condition and boarding section match or overlap as a carpool partner.

[0024] According to this, it is possible to notify the user of a carpool partner whose boarding sections are identical or overlap.

[0025] Further, in the carpooling support system, the information generation means inquires of the terminal apparatus of the carpooling partner about the current position of the terminal apparatus when the determination means determines that there is a user who matches the search condition. The transmission / reception means transmits the position confirmation information to the terminal device determined by the determination means to match the search condition, and indicates the current position of the terminal device from the terminal device. The position notification information may be received, and the determination unit may determine, based on the position notification information, a user who matches the boarding position in the boarding section designation search condition and the current position as a carpool partner.

[0026] Further, in the program and the information storage medium, when the determination unit determines that there is a user who matches the search condition, the information generation unit sets the current position of the terminal device to the terminal device of the carpool partner. The position confirmation information to be inquired is generated, and the communication control unit causes the transmission / reception unit to transmit the position confirmation information to the terminal device determined to match the search condition by the determination unit, and the terminal device. The position notification information indicating the current position of the terminal device is received from the position information, and the determination unit determines, based on the position notification information, a user who matches the boarding position in the boarding section designation search condition and the current position as a carpool partner. May be.

[0027] According to this, it is possible to notify the user of a carpool partner in which the boarding position in the boarding section designation search condition and the current position match. Thereby, the probability that a carpool will be established can be further increased.

[0028] Further, according to this, when it is determined that there is a suitable user, the current position of the terminal device is inquired to the terminal device of the carpool partner, so that the occurrence of a situation in which the user's location is unconditionally confirmed. This can prevent the user's privacy protection.

[0029] Further, in the carpooling support system, when the determination unit determines that there is a user who matches the search condition, the information generation unit determines the boarding position of the user's boarding section in the user database. The presence / absence confirmation information for inquiring whether there is a user is generated, and the transmission / reception means transmits the presence / absence confirmation information to the terminal device determined by the determination means to match the search condition, and Receiving presence / absence notification information indicating whether or not the terminal device is located at

the boarding position of the user's boarding section from the terminal device, the determination means, based on the presence / absence notification information, Among the users whose boarding position matches the boarding position of the user's boarding section in the user database, the user It may be determined as a joining partner the user who has transmitted the existence notice information indicating that it is present in the position.

[0030] Further, in the program and the information storage medium, when the information generating unit determines that there is a user who matches the search condition by the determining unit, the information generating unit gets on the user section of the user database in the user section. The presence / absence confirmation information for inquiring whether or not the user is present at the position is generated, and the communication control means determines that the presence / absence confirmation information matches the search condition by the determination means to the transmission / reception means. While transmitting to the terminal device, the presence / absence notification information indicating whether or not the terminal device is located at the boarding position of the user's boarding section is received from the terminal device. Based on the information, the boarding position in the boarding section designation search condition and the boarding position of the user's boarding section in the user database are appropriate. Of the users who may determine the user which the user has sent the existence notification information indicating that it is present in the riding position as joining partners.

[0031] According to this, it is possible to notify the user of a carpool partner in which the boarding position in the boarding section designation search condition and the current position match. Thereby, the probability that a carpool will be established can be further increased.

[0032] Also, according to this, the privacy protection of the user of the terminal device when carrying out the carpooling support can be further strengthened by receiving the presence / absence notification information instead of the location notification information from the terminal device.

[0033] In the carpooling support system, the program, and the information storage medium, the user database includes data indicating a usage time zone of each user's toll car, and the search condition includes a usage time zone of the toll car. The determination means may include a specified time zone specification search condition, and the determination means may determine a user whose use time zone matches or overlaps with the time zone specification search condition as a carpool partner.

[0034] According to this, it is possible to share a person whose usage time zones coincide or overlap.

[0035] In the carpooling support system, the program, and the information storage medium, the user database includes data indicating an attribute indicating at least one of each user's sex, age, occupation, workplace, and school. The search condition includes an attribute designation search condition in which an attribute indicating at least one of a user's gender, age, occupation, workplace, and school is designated, and the determination means includes the attribute designation search condition and the attribute You may determine the user who suits as a carpool partner.

[0036] According to this, since the user can search by specifying various attributes, the user's anxiety about carpooling can be reduced.

[0037] DESCRIPTION OF THE PREFERRED EMBODIMENTS The present invention will be described below with reference to the drawings, taking as an example the case where the present invention is applied to a server functioning as a carpool support system. In addition, the embodiment shown below does not limit the content of the invention described in the claim at all. In addition, all of the configurations shown in the following embodiments are not necessarily essential as means for solving the problems described in the claims.

[0038] (Description of Entire System) FIG. 1 is a schematic view of the entire system according to an example of this embodiment.

[0039] This system provides a server 1 that functions as a carpool support system, the Internet 3, a mobile phone 2 that is a type of terminal device that transmits and receives information to and from the server 1 via the Internet 3, and provides location information to the mobile phone 2. The GPS satellite 4 is included.

[0040] A user who uses the mobile phone 2 registers the user in the server 1 in order to share a taxi with other users. When the user wants to use a taxi, the user specifies a search condition using the mobile phone 2 and searches for a carpool partner.

[0041] The server 1 transmits carpool partner notification information indicating the carpool partner to the mobile phone 2 in response to a user request.

[0042] Next, functional blocks of the server 1 for realizing such functions will be described.

[0043] FIG. 2 is a functional block diagram of the server 1 according to an example of the present embodiment.

[0044] The server 1 includes a transmission / reception unit 11 that transmits / receives information to / from the mobile phone 2, a processing unit 12, a storage unit 13 that stores a user database 18 that indicates a user's desired taxi usage, and a timer unit 14.

[0045] The transmission / reception unit 11 indicates that a search for a carpool partner is requested from the mobile phone 2 and receives search request information in which a predetermined search condition is specified, and a carpool partner notification indicating the carpool partner to the mobile phone 2 Send information.

[0046] The processing unit 12 includes an information generation unit 15, a determination unit 16, and an update unit 17.

[0047] The determination unit 16 searches the user database 18 based on the search request information, and performs a process of determining a user that matches the search condition as a carpool partner.

[0048] In addition, when the determination unit 16 determines that there is a user who matches the search condition, the information generation unit 15 performs processing for generating sharing partner notification information indicating the sharing partner.

[0049] The updating unit 17 performs processing for updating the user database 18 based on the registration request information from the mobile phone 2.

[0050] The hardware of these units can be realized by using, for example, a router as the transmission / reception unit 11, a CPU as the processing unit 12, a system timer as the timer unit 14, and an HDD as the storage unit 13.

[0051] The functions of the information generation unit 15 and the like may be realized by hardware such as a circuit. For example, the function may be realized by reading a program from the information storage medium 5 or by executing a program from a host device or the like via the Internet 3. It may be realized by reading.

[0052] As the information storage medium 5, for example, a CD-ROM, DVD-ROM, ROM, RAM, HDD or the like can be applied, and the program reading method may be a contact method or a non-contact method. .

[0053] Next, functional blocks of the mobile phone 2 will be described.

[0054] FIG. 3 is a functional block diagram of the mobile phone 2 according to an example of the present embodiment.

[0055] The mobile phone 2 includes a GPS positioning unit 21 that receives radio waves from the GPS satellite 4, a transmission / reception unit 22 that transmits and receives information to and from the server 1, an input unit 23 that receives user key input, and a processing unit 24. And a display unit 25 that displays an image based on the image information, and a storage unit 26 that stores various data.

[0056] The processing unit 24 includes an information generation unit 27 that generates image information and the like, a determination unit 28, and an update unit 29 that updates data in the storage unit 26.

[0057] The storage unit 26 stores a program for generating image information and the like for displaying a registration image and a search image, which will be described later.

[0058] As the mobile phone 2, a general mobile phone having a GPS communication function may be used. In addition, since positioning is performed for determination of compatibility with the boarding position, the positioning accuracy of the GPS positioning unit 21 is sufficient to detect the approximate location such as what number.

[0059] In the present embodiment, the server 1 updates the user database 18 based on the registration request information from the mobile phone 2, and updates the user database 18 based on the search request information specifying the search conditions from the mobile phone 2. The carpool partner notification information is transmitted to the mobile phone 2 by searching.

[0060] Next, the flow of processing using the above-described units will be described.

[0061] First, a description will be given of the flow of processing when registering taxi usage details and user attributes desired by the user.

[0062] FIG. 4 is a diagram illustrating a registration image 101 according to an example of the present embodiment. FIG. 5 is a flowchart at the time of registration according to an example of the present embodiment.

[0063] First, the user registers the riding section, the time zone, and the conditions of the carpool partner that are often used by operating the keys of the mobile phone 2 with the registration image 101 displayed on the mobile phone 2 (step S1).).

[0064] The registration image 101 includes a name input area for inputting a name, an e-mail address input area for inputting an e-mail address, a riding section input area for inputting a frequently used riding section, and a frequently used area. Time zone input area for inputting the time zone to be selected, gender selection area for selecting male or female, age selection for selecting any of under 20 years old, 20s, 30s, 40 years old or more Area for selecting job category, student, office worker, housewife, etc., job selection area, commute input area for entering work or school name, and registration button. Yes.

[0065] The user inputs or selects each of these items and presses a registration button to register with the server 1.

[0066] The determination unit 28 of the mobile phone 2 determines that the user has pressed the registration button based on the input information from the input unit 23 and issues an instruction to the information generation unit 27 to generate registration request information. The information generation unit 27 generates registration request information indicating the user input content and selection content based on the input information, and the transmission / reception unit 22 transmits the registration request information to the server 1.

[0067] The transmission / reception unit 11 of the server 1 receives the registration request information from the mobile phone 2 and accepts a user registration request (step S11).

[0068] If the determination unit 16 determines that the request is registration request information, the determination unit 16 instructs the update unit 17 to register in the user database 18.

[0069] The updating unit 17 updates the user database 18 based on the registration request information so as to be registered in the user database 18 (step S12).

[0070] Here, the data structure of the user database 18 will be described.

[0071] FIG. 6 is a diagram illustrating a data structure of the user database 18 according to an example of the present embodiment.

[0072] As shown in FIG. 6, the user database 18 indicates "name", "mail address" corresponding to the item of the registration image 101, "boarding section" indicating the boarding position and the getting-off position, start time and end time. Includes items such as "time zone", "gender", "age", "job type", and "work / school". Further, the user database 18 includes identification information of the mobile phone 2 in addition to the data shown in FIG.

[0073] As shown in FIG. 6, the user database 18 is configured so that a plurality of types of data can be stored for the boarding section and the time zone. For example, there is a case where a taxi is used from the home to the boarding station and a taxi is used from the getting off station to the company even if the route is the going route, the returning route, and the going route. This is because there are cases where it is necessary.

[0074] In this way, the server 1 constructs a user database 18 indicating the usage details of taxis of a plurality of users based on registration request information from a plurality of users.

[0075] Next, a case where a user performs a search for carpooling will be described.

[0076] FIG. 7 is a diagram illustrating a search image 102 according to an example of the present embodiment. FIG. 8 is a flowchart at the time of search according to an example of the present embodiment.

[0077] First, a user specifies a boarding section specifying condition for specifying a boarding section indicating a boarding position and a getting-off position of a taxi to be used by operating a key of the mobile phone 2 in a state where the search image 102 is displayed on the mobile phone 2. Then, a time zone specifying condition for specifying the time zone to be used and an attribute specifying condition for specifying an attribute such as gender are specified and a search for a carpool partner is made (step S21).

[0078] In the search image 102, a boarding area designating area for designating a boarding section, a time zone designating area for designating a time zone, a gender selection area for selecting a male or female, no designation, 20 Age designation area for designating any of under 20s, 20s, 30s, 40 years of age or older, designation area for specifying any of students, office workers, housewives, etc. not designated, A search request button is provided.

[0079] The user inputs or selects each of these items and presses a request button to make a search request to the server 1.

[0080] The determination unit 28 of the mobile phone 2 determines that the user has pressed the request button based on the input information from the input unit 23, and issues a command to the information generation unit 27 to generate search request information. The information generation unit 27 generates search request information indicating the input contents and selection contents of the user based on the input information, and the transmission / reception unit 22 transmits the search request information to the server 1.

[0081] The transmission / reception unit 11 of the server 1 receives the search request information from the mobile phone 2 and accepts a user search request (step S31).

[0082] If the determination unit 16 determines that the search request information is found, the determination unit 16 searches the user database 18 for a carpool partner that matches the user's wishes (step S32).

[0083] By the way, in the example shown in FIG. 6, the information of "Taro Yamada" in the user database 18 is "A" for the boarding position, "B" for the getting off position, "7:00 to 9:00" for the time zone, Is "male", age is "20s", occupation is "company employee", and workplace is "Company A".

[0084] In contrast, "Jiro Suzuki" has a boarding position of "A", alighting position of "B", a time zone of "6: 00 to 9:00", a gender of "male", and an age of "30s" The occupation is "company employee" and the place of work is "Company A".

[0085] In addition, "Hanako Tanaka" has a boarding position of "A", an alighting position of "C", a time zone of "7:00 to 9:00", a gender of "male", an age of "20s", "Company employee" and work place are "Company B".

[0086] It is assumed that there is a position "B" between the position "A" and the position "C". Moreover, in this embodiment, the determination part 16 determines the user in which boarding area designation | designated search conditions and boarding areas of the user database 18 shown in FIG.

[0087] Here, it is assumed that the user who made the search request is "Taro Yamada".

[0088] In such a case, if "Taro Yamada" designates that the gender is male as the attribute designation search condition, the determination unit 16 selects "Jiro Suzuki" as the carpool partner. If "Taro Yamada" specifies that the age is in his 20s as the attribute specification search condition, the determination unit 16 selects "Hanako Tanaka" as the carpool partner. If "Taro Yamada" designates that the job type is a company employee as the attribute designation search condition, the determination unit 16 selects "Jiro Suzuki" and "Hanako Tanaka" as carpooling partners. If "Taro Yamada" is designated as the same office as the attribute designation search condition, the determination unit 16 selects "Jiro Suzuki" as the carpool partner.

[0089] After searching for the carpooling partner, the information generating unit 15 uses the timer value of the timer unit 14 to position information for confirming the current position of the carpooling partner slightly before the use start time of the user's desired time zone. The transmission / reception unit 11 transmits the position confirmation information to the mobile phone 2 of the carpool partner based on the identification information of the mobile phone 2 of the carpool partner registered in the user database 18.

[0090] When the transmitting / receiving unit 22 of the mobile phone 2 used by the carpooling partner receives the position confirmation information and the determination unit 28 determines that the information is the position confirmation information, the GPS positioning unit 21 is instructed to check the current position, put out.

[0091] When receiving the command, the GPS positioning unit 21 detects the current position based on the radio wave from the GPS satellite 4. The information generation unit 27 generates position notification information indicating the current position, and the transmission / reception unit 22 transmits the position notification information to the server 1.

[0092] Based on the position notification information, the determination unit 16 of the server 1 extracts a person near the departure place from the carpooling partner (step S33).

[0093] Based on the mail address of the user database 18, the information generation unit 15 generates an e-mail that is a type of carpool partner notification information for notifying the carpooling partner with the extracted carpooling partner and the user who made the search request. To do.

[0094] The transmission / reception unit 11 transmits the e-mail to the extracted carpooling partner and the user who has made the search request, and notifies both (step S34).

[0095] The transmitting / receiving unit 22 of the mobile phone 2 receives an e-mail as a sharing partner notification (step S22).

[0096] The user who has received the e-mail transmits / receives a mail to / from the carpool partner (step S23). The server 1 functions as a mail server to mediate both the user and the carpool partner (step S35).

[0097] When negotiations are established between the two users, the users who have completed the negotiations share. In addition, as a charging method for the user by using this service, a method of charging according to the number of times of use, the number of search requests, the number of times of sharing, the price saved by the sharing, etc. can be adopted.

[0098] As described above, according to the present embodiment, it is possible to support the sharing of paid cars such as taxis. As a result, the user can easily share a car and save on a taxi or the like. In addition, taxi operators can increase the usage rate of taxis and the like.

[0099] In particular, according to the present embodiment, since the user can specify conditions such as the gender and age of the carpool partner, the user's anxiety can be reduced.

[0100] Further, since the notification can be made after checking the current position of the carpooling partner, the probability that the carpooling is established can be further increased. In particular, since the user's current position is confirmed only when the car is selected as a carpool partner, the user's privacy can be maintained as compared with the case where the current position is unconditionally confirmed. Further, as described above, in order to maintain the privacy of the user, the positioning accuracy of the GPS positioning unit 21 is of an accuracy that allows an approximate location to be understood.

[0101] Further, in order to further strengthen the protection of privacy, for example, when the information generation unit 15 determines that there is a user who meets the search condition by the determination unit 16, the user of the user database 18 is concerned. The presence / absence confirmation information for inquiring whether there is the user at the boarding position of the boarding section of the vehicle is generated, and the transmitting / receiving unit 11 carries the presence / absence confirmation information that is determined to match the search condition. And transmitting to the phone, and configured to receive presence / absence notification information indicating whether or not the mobile phone is located at the boarding position of the user's boarding section from the mobile phone. Based on the presence / absence presence / absence notification

information, the user position where the boarding position in the boarding section designation search condition matches the boarding position of the user's boarding section in the user database 18 is matched. It may be configured to determine user to which the user has sent the existence notification information indicating that it is present in the riding position as joining partners.

[0102] According to this, the information transmitted from the mobile phone to the server 1 is only information of YES or NO, and it is not necessary to transmit the location information with an unnecessarily accurate accuracy from the mobile phone. Protection can be strengthened.

[0103] Furthermore, the anonymity between users can be maintained by communicating between users via the server 1. In addition to electronic mail, various information transmission methods such as a dedicated electronic bulletin board can be adopted for communication between users.

[0104] (Modification) The present invention is not limited to the above-described embodiments, and various modifications can be made.

[0105] For example, in the above-described embodiment, one user makes a search request, but a plurality of users may make a search request. Next, the flow of processing when a plurality of users make a search request will be described.

[0106] FIG. 9 is a flowchart at the time of search according to another example of the present embodiment.

[0107] The first user operates the keys of the mobile phone 2 while the search image 102 is displayed on the mobile phone 2, and the specified designation search condition such as a boarding section designation search condition, a time zone designation search condition, and gender. Is requested to search for a carpool partner (step S41).

[0108] In addition, the second user operates the keys of the mobile phone 2 while the search image 102 is displayed on the mobile phone 2, and sets the boarding section designation search condition, the time zone designation search condition, and the attribute designation search condition. A search request for a carpool partner is made by designating (step S61).

[0109] The transmission / reception unit 11 of the server 1 receives search request information from a plurality of mobile phones 2 and accepts a search request from a plurality of users (step S51).

[0110] If the determination unit 16 determines that it is search request information, the determination unit 16 instructs the update unit 17 to register it in the user database 18.

[0111] The updating unit 17 updates the user database 18 based on the search request information so as to be registered in the user database 18 (step S52).

[0112] When the determination unit 16 determines that the start time of the desired time in the user database 18 is reached based on the timer value of the timer unit 14, the determination unit 16 requests the user who registered the start time from the user database 18. A suitable carpool partner is searched (step S53).

[0113] After searching for the carpooling partner, the information generating unit 15 generates an email that is a kind of carpooling partner notification information based on the mail address of the user database 18.

[0114] The transmission / reception unit 11 transmits the electronic mail to the extracted carpooling partner and the user who made the search request, and notifies both of them (step S54).

[0115] The transmitting / receiving unit 22 of the mobile phone 2 receives an email as a carpool partner notification (steps S42 and S62).

[0116] The server 1 functions as a mail server and mediates both users and candidates (step S55). The user who has received the sharing partner notification consults with other users by sending / receiving mails via the server 1 (steps S43 and S63).

[0117] Thus, even when a plurality of users make a search request, carpooling can be supported.

[0118] In the present embodiment, the user database 18 is used. However, when a plurality of users need to perform a taxi immediately, it is not necessary to use the user database 18 when processing is necessary in real time. Good.

[0119] In the above-described embodiment, the user database 18 is searched based on a search request from the user and the carpool partner is notified. However, even if there is no search request from the user, the user preliminarily uses the user database 18. The server 1 may be configured to notify the carpooling partner when there are a plurality of users who are suitable for the time zone and boarding section registered in.

[0120] Further, in this case, based on the timer value of the timer unit 14, the position confirmation information is transmitted to the mobile phone 2 of the user who matches when the desired boarding time zone is reached, and the users who are in the vicinity of the boarding position. The server 1 may be configured to extract as a carpool partner.

[0121] According to this, it is possible to further increase the probability that the carpool will be established.

[0122] In the above-described embodiment, the GPS satellite 4 is used to search for position information. However, for example, position information from a base station such as a mobile phone, position information from a dedicated device, or the like may be used.

[0123] Further, the carpooling support system may be realized by distributing functions to a plurality of devices, instead of being a single device like the server 1.

[0124] Furthermore, the terminal device that transmits / receives information to / from the server 1 is not limited to the mobile phone 2 described above, and various terminal devices such as PHS, PDA, and PC can be used.

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- (71) Applicant and
(72) Inventor: PAUL, Sumil [US/US]; 1506 Willard Street, San Francisco, CA 94117 (US).
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(54) Title: SYSTEM AND METHOD FOR DETERMINING AN EFFICIENT TRANSPORTATION ROUTE

(57) Abstract: A computer-implemented method is described for determining an efficient transportation route comprising: compiling travel data over one or more travel segments, the travel data transmitted from one or more transportation vehicles traveling over the travel segments; receiving positional data associated with a transportation request, the positional data including an origin and a destination; and providing a driver of a vehicle with a first efficient route from the origin to the destination using the travel data, the first efficient route including one or more of the travel segments. Also described is a computer-implemented method for providing transportation services comprising: receiving a transportation request from a passenger; tracking the passenger's position following the request using positional detection logic; and transmitting positional data identifying the passenger's position to a pickup vehicle.

SYSTEM AND METHOD FOR DETERMINING AN EFFICIENT TRANSPORTATION ROUTE

PRIORITY

This application is a continuation-in-part of U.S. Serial No. 09/615,680, filed July 14, 2000, entitled "System and Method for Providing Transportation Services."

BACKGROUND OF THE INVENTION

Field of the Invention

This invention relates generally to the field of transportation services. More particularly, the invention relates to an improved system and method for providing transportation services over a data communications network.

Description of the Related Art

The automobile is one of the most successful inventions of all time but automobiles and the industry surrounding them are also responsible for more pollution and toxic waste than any other product of the industrial era. Unfortunately, the typical use of automobiles – in particular personal automobiles – is extremely inefficient. On a typical day, one can see large numbers of personal automobiles parked and not in use. This represents a large base of underutilized capital goods. At the same time, the use of alternative modes of transportation that are more efficient – public transportation, taxis, private cars – is either inconvenient or too expensive.

Private automobiles are both ubiquitous (at least in industrialized countries) and inefficiently utilized, in part because the modern consumer wants the "on demand" transportation services a waiting car represents. In a typical rush hour commute virtually every car is driven by a sole driver. A more convenient and efficient utilization of automobiles and other forms of on-

demand transportation could replace a large number of automobiles and therefore be a boon to consumers, the environment, and congestion on our highways. If applied to other on-demand resource situations, it could also be used to enhance the efficiency of industry and commerce.

SUMMARY

A computer-implemented method is described for determining an efficient transportation route comprising: compiling travel data over one or more travel segments, the travel data transmitted from one or more transportation vehicles traveling over the travel segments; receiving positional data associated with a transportation request, the positional data including an origin and a destination; and providing a driver of a vehicle with a first efficient route from the origin to the destination using the travel data, the first efficient route including one or more of the travel segments.

Also described is a computer-implemented method for providing transportation services comprising: receiving a transportation request from a passenger; tracking the passenger's position following the request using positional detection logic; and transmitting positional data identifying the passenger's position to a pickup vehicle.

BRIEF DESCRIPTION OF THE DRAWINGS

A better understanding of the present invention can be obtained from the following detailed description in conjunction with the following drawings, in which:

FIG. 1 illustrates an exemplary network architecture for implementing various embodiments of the invention.

FIG. 2 is a flowchart of a method according to one embodiment of the invention.

DETAILED DESCRIPTION

In the following description, for the purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of embodiments of the invention. It will be apparent, however, to one skilled in the art that these embodiments may be practiced without some of these specific details. In other instances, well-known structures and devices are shown in block diagram form to avoid obscuring the underlying principles of these embodiments.

Embodiments of the invention described below provide for an automated method for convenient, efficient allocation of personal transportation and other on-demand transportation resources. These embodiments may also be extended for use in a variety of scenarios in which a mobile resource requires scheduling and allocation of that resource.

AN EXEMPLARY NETWORK ARCHITECTURE

Embodiments of the invention may be implemented within a networking architecture such as that illustrated in Figure 1. The particular embodiment shown in Figure 1 includes a wireless communication network 120 for supporting communication between two or more wireless devices (e.g., device 160). The wireless communication network 120 may also include a communication link to a larger network 110 such as the Internet over which a plurality of servers 130 and clients 140 communicate.

In one embodiment, a personal wireless device 160 operated by a user 170 transmits and receives data as well as audio signals. For example, in one embodiment, the wireless device 160 (and/or the wireless network 120) is configured to transmit and receive data using the Wireless Application Protocol ("WAP"). The WAP is a communications standard which specifies an application framework and associated network protocols for wireless devices

such as mobile telephones, two-way pagers and personal digital assistants ("PDAs"), and which leverages existing mobile networking technologies (e.g., digital data networking standards) and existing Internet technologies (such as Extensible Markup Language, URLs, scripting, and various content formats).

Regardless of the type of wireless data transmission standard employed, the wireless device 160 of one embodiment is capable of communicating with servers 130 and/or clients 140 over the network 120 and/or directly over the wireless network 120 (e.g., with servers 125). In one embodiment, one or more transportation vehicles 180 are also equipped with wireless devices (not shown) capable of transmitting and receiving various types of data over the wireless network 120.

In one embodiment, the vehicle 180 may also be configured with a personal information device such as a computer and optional interface components such as display, audio components, a keyboard, a touch-screen, a joystick, . . . etc, to be used by a passenger during transport. In addition, the system may include AM/FM radio reception, TV reception and display, and/or Internet access via the wireless network 120.

In one embodiment, the personal wireless device 160 of the user 170 and/or the driver contains a location-identification capability. For example, the wireless device 160 may include Global Positioning System ("GPS") logic or cell-based locator logic (e.g., such as the positioning technology developed by Snap-Trac™, Inc). In an embodiment which uses a form of GPS technology, the wireless device 160 may transmit and receive positional data to/from one or more global positioning satellites 150.

In one embodiment, one or more data centers equipped with servers 130 and/or 125 for providing the transportation services described herein

(hereinafter "transportation services") are operated and maintained on a regional basis, based on the demands of the marketplace and/or the geographical scope of the service. These services, described in detail below, may include a customer billing system, a customer profiling system used for advertising, merchandising, and/or content delivery to transportation system passengers 170.

EMBODIMENTS OF SYSTEM OPERATION

System operation according to one embodiment of the invention will now be described with respect to the flowchart illustrated in Figure 2 as well as the network architecture of Figure 1. This embodiment employs the wireless network 120 and/or the Internet 110 to coordinate the on-demand or scheduled pickup and drop-off of passengers 170. It should be noted that various wireless and terrestrial communications technologies may be employed while still complying with the underlying principles of the invention. For example, the vehicle 180 may be equipped with a device for communicating using the Global System for Mobile Communications ("GSM") protocol, the General Packet Radio Service ("GPRS") protocol, and/or any other communication protocol/standard capable of communicating data, audio and/or video. In one embodiment, described in detail below, the vehicle 180 is equipped with a television receiver and/or an AM/FM receiver.

At 210, a user 170 of the service indicates her need for transportation from point A to point B by transmitting a transportation request from the wireless device 160 and/or from a client computer 140 connected to the network 110 (if one is available). Accordingly, she may connect to a data center server (e.g., to server 130) over the wireless network 120 and/or the Internet 110.

In one embodiment, the passenger's 170's location is automatically known by a GPS tracking device (not shown) embedded in the wireless communication device 160. Based on the GPS tracking information, at 215, a lookup performed

on a data center server 130 (and/or 125) determines one or more suitable pickup locations for the passenger.

In one embodiment, the potential passenger 170 is provided with a number of options for pickup based on larger-area data such as, for example, zip code, area code, and/or the potential passenger's cellular zone. Alternatively, or in addition, the potential passenger 170 may be prompted by servers (e.g., 130, 125) at the data center to enter a destination address, a time-frame within which she needs/wants to have the transportation available (e.g., immediately at the airport, tomorrow at 2:00PM), and/or any other relevant information (e.g., number of passengers who need to be transported, class of service, type of vehicle, minimum safety record and reliability of the driver, . . . etc).

The data center may then provide the potential passenger 170 with a price at which the requested transportation service will be rendered, based on the vehicles available and the price at which the drivers of those vehicles are willing to provide service. Under this embodiment, different drivers (or other entities in control of pricing and/or resource allocation such as other transportation companies) may choose to provide transportation services using different pricing schedules (e.g., \$.90/mile, \$20 per trip within 10 miles, . . . etc). Alternatively, each driver who signs up with the transportation service may be required to agree to a standard pricing schedule. Alternatively, a driver's rate may be based on that driver's experience, timeliness record, safety record, or other driver-specific variables.

In one embodiment, the potential passenger 170 may quote a price which she is willing to pay for the transportation and the data center may match that price with an appropriate driver/vehicle 180 if one is available (i.e., with a driver in the area willing to accept the quoted price). In this embodiment, the data center may auction drivers to the highest bidding passengers. Similarly,

passengers may be required to enter prices that represent minimum or maximum acceptable prices for the transportation. In one embodiment, one of the many auction mechanisms known in the art are used to match passengers to drivers or other transportation resources.

Regardless of how a price is selected, at 220 the data center identifies one or more vehicles 170 to comply with the transportation request based on the specifics of the request. The determination as to which vehicle is a most "appropriate" match for the passenger may be based on a number of different factors including, for example, the location of the user, the quoted price, the number of passengers, the class of service or type of vehicle requested (e.g., private or shared car, extra cargo space), whether a destination is provided (e.g., roundtrip journeys may be better for resource allocation), the length of time the driver has been driving or other safety/regulation-related factors, and/or the timeliness of the driver.

In addition, in one embodiment, the data centers may factor in the current traffic conditions to make a driver selection (or, for that matter, a pickup point selection). Thus, a driver who is relatively further away from the pickup point may be selected if he has a quicker path to the passenger based on traffic conditions. Any of the foregoing factors, alone or in combination, may be used to render a driver/vehicle selection. If an acceptable vehicle cannot be identified, the passenger may be offered an opportunity to choose from a list of next-best alternatives (e.g., different class of vehicle, different arrive time, local rental car or bus service).

In addition, a prioritized list of driver candidates may be compiled at the data center. In one embodiment, the location of each vehicle 180 is known because of positional information gathered automatically from the vehicle's 180's

wireless device. Alternatively, or in addition, the driver of the vehicle 180 may manually transmit positional information to the data center on a periodic basis.

At 225, once an appropriate vehicle has been identified, the data center sends a pickup request to the driver of that vehicle 180 indicating that a potential passenger 170 is available and/or additional information related to that passenger 170 (e.g., the number of passengers, the time period within which the passengers require service, the location of the passengers, . . . etc). In an embodiment which generates a prioritized list of driver candidates, the initial driver candidate may be selected from the top of the list.

In one embodiment, if the driver accepts the pickup, the driver then confirms an estimated arrival time (e.g., within the time period specified by the passenger 170). If the driver accepts, a confirmation code associated with the transportation transaction may be generated. In one embodiment this may simply be the user's 170's telephone number. Alternatively, the driver may indicate that she is unable or unwilling to make the pickup (determined at 230), in which case another suitable vehicle/driver is identified from the prioritized list of vehicle/driver candidates (in an embodiment which employs a prioritized list). In one embodiment, the passenger 170 is notified by the data center of the progress of her request.

Once a driver has accepted, at 235 a message is transmitted to the user/passenger 170 confirming pickup location, time, a quoted price and/or the confirmation code for the driver. In one embodiment, the passenger 170 is then asked to confirm that these parameters are acceptable. If so, then the driver is notified of the confirmation. At this stage, the passenger's cell phone (or other wireless device) number may be transmitted to the driver and/or the driver's cell phone number may be transmitted to the passenger 170, so that the two can communicate directly over the wireless network 120.

In one embodiment, the passenger's and driver's cell phone numbers (and any other potentially confidential data) are kept only at the data center and communications coordinated through the data center. In one embodiment, the driver and passenger are each given a unique identifier separate from their cell phone number or other wireless access device.

The driver then proceeds to the pickup point. As the driver continues on her way, she may update the passenger 170 of any changes to the arrival time estimate including, for example, the fact that she has arrived at the pickup point. These updates can be in the form of either a "pull" transmission (e.g., wherein the passenger's wireless device 160 periodically polls the server 125 or 130 for a pickup update) or a "push" transmission (e.g., wherein the server 125 or 130 automatically transmits an update to the wireless device; or, alternatively, wherein a confirmation telephone call is placed to the passenger).

Alternatively, or in addition, the updates may be comprised of a combination of both pull and push communications technology (e.g. pull up to a fixed time before arrival then a push notification). In one particular embodiment, the pull mechanism is a periodic reference to an updated WAP page or Web page by the wireless device 160, and the push mechanism is a Short Message Service ("SMS") message or pager notification transmitted by the server 125, 130 for wireless environments and/or an email or instant message for wired modes.

In one embodiment, the data centers may utilize live operators to dispatch and update users on the progress of a particular transaction (e.g., how close the driver is) in addition to the computer-implemented updates described above. Alternatively, or in addition, an interactive voice response ("IVR") system may be programmed to provide user updates (e.g., such as those employed by Tellme™ Networks and others).

While the passenger 170 waits for the transportation, she can notify the data center and/or the driver that she has decided to cancel the trip, change the pickup time, pickup location, and/or any other changes to her itinerary.

When the driver arrives, the driver and passenger 170 may exchange confirmation codes to verify that they are matched correctly. In one embodiment, this exchange may occur via a communication through the wireless network 120. Alternatively, or in addition, the code exchange may occur directly between devices (e.g., through a short-range communications medium like an infrared communication link or a Bluetooth protocol link).

As mentioned above, in one embodiment, passenger and/or driver billing information is maintained at the data center. Accordingly, when driver arrives at the destination, a new billing record may be generated in the billing database. The bill may be directly applied to the passenger's credit card, or, alternatively, may be mailed to the passenger. Similarly, the driver's account may be credited by the amount of the bill or some percentage of the amount.

In one embodiment, the user may use a computer such as client 140 connected to the Internet 110 to schedule or request transportation (i.e., rather than a wireless device). In this embodiment, pickup locations may be entered directly by the user and/or stored in a cookie on the user's hard drive. This embodiment could be in the form of a dedicated kiosk or a general-purpose computer anywhere on the network 110. In this embodiment, a cookie may correspond to multiple locations to allow for multiple resources (e.g., such as a laptop computer). In one embodiment, users may schedule pickups for future dates/times from the client 140 as well as the wireless device 160. In this embodiment, the billing system may be programmed to provide discounted transportation fees for transportation scheduled far enough in advance.

Pickup points may be determined using a variety of techniques including, but not limited to, identifying the nearest addressable building or the nearest street crossing; pre-selecting a number of pickup points in a given area; using pickup points frequently chosen by other similar passengers based on collaborative or other matching technology; and/or using pickup points designated by others other entities such as a driver, an airport authority, a city bus authority, . . . etc.

In one embodiment, pickup point data is stored and analyzed at the data center depending on the hardware and software sophistication on the user's wireless device 160. Alternatively, or in addition, all or some of the pickup point database may be cached locally on wireless devices 160 to improve response time (i.e., if the wireless device 160 is capable of caching data). One embodiment of a lower-cost wireless device includes a manual input for new pickup points and a historical record of past/recent pickup points, thereby reducing the need for repetitive data entry. One embodiment of a more fully featured wireless device would also cache data such as driver profiles, advertising, and other information.

In one embodiment of the invention, in addition to the foregoing features, a passenger may dial a phone number and arrange for a pickup using either a human-answered or automated data entry system. This alternative can be combined with some of the other automated features above to maximize the flexibility of the transportation system.

In one embodiment of the invention, a map of the region surrounding the pickup point may be displayed on the user's wireless device 160 or computer 140 to simplify the process of selecting a pickup point. The user may select a particular point on the map and this data may be transmitted to the data center for processing. Moreover, once a point has been identified at the data center

(e.g., based on driver availability), the data center may transmit a map to the user with an indication of the pickup point.

Using confirmation codes (as briefly described above) will help to promote integrity and trust of the overall transportation system. Passengers who use the system will feel secure that they are being provided with a driver whose activity is monitored and who will, therefore, be held accountable. Similarly, drivers will be servicing customers who are known to the data center. In one embodiment, a reliability measurement is generated for drivers and/or passengers based on driver/passenger data maintained at the data center (e.g., passenger 'xyz' is on average 5 minutes late to meet the vehicle) and/or based on feedback from the drivers and passengers (e.g., passengers may rate the friendliness or cleanliness of the driver or vehicle). Various other reliability and/or quality measurements may be factored into the data center analysis while still complying with the underlying principles of the invention.

In one embodiment, entertainment and/or workspace services are uniquely tailored to the preferences of the passenger in the vehicle (e.g., through the personal information device). For example, a personal stereo in the vehicle may be automatically set to a passenger's preferred radio stations and/or work documents may be made available via a connection to a shared document service on the Internet 110 (e.g., through the wireless network 120). A passenger code (or other mechanism for tracking the passenger's preferences) may be used to identify the passenger's preferences from a passenger profile database maintained at the data center. Alternatively, or in addition, the wireless device 160 may be bundled with a long-term memory device (e.g. a hard disk) to store relevant personalization data, personal documents and/or files. In one embodiment the passenger code may be the same as the confirmation code described above.

In one embodiment, the computer or other personal information system may receive the passenger/confirmation code through one of several optional mechanisms. For example, the passenger or driver may enter it directly; it may be automatically transmitted through an interconnection with the central dispatch system (e.g., over the wireless network 120); and/or it may automatically be provided via a direct wireless connection with the passenger's 170's personal wireless device 160 (e.g. via a Bluetooth protocol link).

Moreover, the personalized resources may be provided in either a Internet-disconnected or Internet-connected mode. In the disconnected mode, the resources are selected among those available on the local storage device. For example, a passenger 170 may have a preference for particular radio stations which are pre-selected as options. In addition, through a linkage with the location information and mapping data, periodic updates on the progress of the journey may be presented to the passenger. In a connected mode, certain Internet resources (e.g., the passenger's personal homepage) may be made available. In addition, the connected mode may include the ability for the passenger's personal data to be pre-cached on a local hard disk in the vehicle 180 as the vehicle 180 is in-transit to the pickup point.

In one embodiment, an optional service tied to the customer code or other personal identifier would provide targeted advertising based on the preferences and other information (e.g., demographic information) available about a passenger. Because many personal information displays are customized to the tastes of a particular customer, it is possible to target advertising to these passengers based on their profiles, customer data, trip origin, trip destination, and/or point in the progress of the trip. For example, on the way to the destination, advertisements for local restaurants or other stores may be transmitted to the passenger's 170's wireless device 160. Moreover, the advertisements may also be linked with a loyalty program or a special drop-off

discount. In one embodiment, the advertising may be displayed on the in-vehicle personal information device.

In one embodiment, the various transportation features described herein may be linked to a billing system that provides for a variety of different business models. In addition to those discussed above, these include, for example, a flat subscription price that allows for unlimited use of the system; limited use based on time in the transport, distance traveled, boundaries crossed (e.g. within a city limit); billing on a per-trip basis with a calculation made for each proposed trip; whether a destination address is provided; discounts/surcharge for various groups or affiliates, scheduling travel in advance, length of stay over, etc.; discounts/surcharge for particular destinations such as the billing address of the passenger 170, or an airport or restaurant; whether a round-trip is requested; discounts for accumulating adequate frequent traveler or other loyalty-program points; billing groups to a corporate account or other group account; payments from certain business destinations that pay for passengers to be let off at particular locations (e.g. a shopping mall, a restaurant or other retail outlet); pre-paid billing similar in principle to a pre-paid telephone card (this allows people without credit histories to use the service); and/or including other types of transportation services such as light rail, bus, airlines, etc, on either a one-off basis or as a subscription style "pass". In one embodiment, payments made by business destinations (and/or other discounts or surcharges) may be passed on, in whole or in part, to the subscriber.

In one embodiment, a subscriber to the system may be permitted to have up to a certain number of guest passengers during the subscription period, either under a flat (e.g., monthly) fee or for a small surcharge. Certain restrictions may be placed on this feature. For example, guests may be required to be dropped off before (or at the same time as) the subscriber.

In addition, in one embodiment, a single membership may be shared among several different passengers. Once again, limits may be set on this type of passenger usage including, for example, service usage of only one member at any given time (e.g., similar to what certain ISPs do to limit abuse by multiple user IDs under a single membership). Users under group memberships may be permitted to share a predetermined number of miles or time under a billing plan (e.g., similar to group packages for cellular phones). In this embodiment, users may be required to be part of the same physical household.

In one embodiment, a passenger may use a car that he/she owns to pay for the service. For example, the passenger would transfer title of a car worth \$10,000 to the an organization connected to the billing system. The organization would credit the passenger with some amount of service. The organization may sell the car and may, as an inducement, offer credits for more than the value of the car. The organization may also issue credits for purchasing goods and services via the personal information display or other credits, including a refund directly to the former car owner.

One embodiment allows for a "hub and spoke" system of transportation, which would increase pickup and delivery densities and reduce costs. In this embodiment, a subscriber receives an estimated drop off time that may include a stop at a hub. Like an airline reservation, the subscriber will be advised by the data center of which connection he/she must catch and the departure time for that connection. Unlike previous systems, however, in this embodiment, a central system tracks the estimated arrival times for each subscriber that has a connection and verifies that a seat is available (and optionally reserves a specific seat) and may also request that a departing connection not leave until the incoming passengers arrive.

Optionally, the connections may be via transportation vehicles other than an automobile such as, for example, the subway, inter-city rail, light rail, airlines, bus, or ship/ferry, to name a few. In this embodiment, different transportation links may be selected for the user based on the price the user is willing to pay for the transportation services. Moreover, the user may be presented with a group of transportation link options from which to select when planning a trip (e.g., bus from point A to point B, then automobile from point B to point C).

One embodiment of the invention may be used for coordinating a single shared resource that is cooperatively owned. For example, existing services allow an individual to purchase a portion of an airplane or jet and share its use among other owners. Unlike prior systems, however, this embodiment of the invention would provide centralized tracking and coordination among the members sharing the resource (e.g., at the data center). For example, a resource calendar may be maintained at the data center, setting forth days when each member is to be allocated the resource. In addition, the location of the resource could be continually tracked at the data center so that other members know exactly where it is at any given time. One embodiment of the invention may be used to coordinate a pool of shared mobile resources such as fractional jets or car sharing.

One embodiment of the invention would allocate a pool of transportation resources (rather than a single resource) between a plurality of passengers. This embodiment may be implemented under a variety of resource sharing business models, including those discussed above. For example, passengers may pay a periodic subscription fee for the right to use the transportation resources on a regular basis. Certain limitations may be placed on users in this embodiment. For example, the periodic payment may be for the right to use transportation resources for a limited number of miles or hours, after which the passenger may be required to pay a surcharge. In addition, the type of resource used may factor

in to this calculation. For example, each mile/hour used in a luxury automobile may be equivalent to $\frac{1}{2}$ mile/hour in a compact car. Various other business models may be implemented consistent with the underlying principles of the invention.

In one embodiment, the user may request a vehicle to perform a delivery in lieu of arranging for the delivery by a delivery service. In addition, the service may also be used to deliver a particular transportation resource (e.g., a rental car, a cooperatively owned automobile, etc) to the passenger. The foregoing embodiment may be useful for long-distance trips, further mimicking the full value proposition of car ownership. Embodiments of the present invention include various steps, which have been described above. The steps may be embodied in machine-executable instructions. The instructions can be used to cause a general-purpose or special-purpose processor to perform certain steps. Alternatively, these steps may be performed by specific hardware components that contain hardwired logic for performing the steps, or by any combination of programmed computer components and custom hardware components.

One embodiment of the invention employs a peer-to-peer system for linking drivers to passengers (rather than a system with a centralized data center). In this embodiment, the user's request may be routed through the wireless network 120 directly to one or more drivers within the passenger's geographical area. The location of the passenger in this embodiment may be determined using any of the location techniques described above. For example, the location of the driver may be identified based on the cellular cell within which the request was received. Any potential drivers within that cell may then be automatically transmitted the user's cell number so that the driver may call the passenger to coordinate transportation directly. As described above, the request may be sent to the most "appropriate" driver first based on variables discussed above (e.g., price, safety and/or reliability of the driver, class of

service, number of passengers, . . . etc). In one embodiment, interactions between passenger and drivers occur between nodes on a network (e.g., an Internet protocol (IP) network) with direct communication between the network nodes.

A further application of embodiments of the invention is to allow for a more precise method of hailing a taxi. Rather than relying exclusively on sight for evidence of waiting fare, a driver could use the invention to identify where passengers are available. There are benefits for passengers in avoiding inclement weather and minimizing opportunities for racial and other visually-based discrimination.

A further application of the invention is to allow a taxi or other mobile resource to find the location of the passenger when the passenger changes location over time. For example, a passenger may be walking down a street while waiting for the driver. Periodic updates on the location of the passenger allows the driver to find the passenger.

In one embodiment, location and travel time information from a vehicle is periodically and/or continually transmitted and tracked by the data center. This real-time travel data can be used by the data center in a variety of ways. For example, in one embodiment, this data is used to determine an optimal route from the pickup point to the destination and/or from the driver notification point (i.e., the point from which the driver accepts the pickup) to the pickup point. In this embodiment, the amount of time taken to travel certain segments of the trip may be evaluated by compiling and analyzing drive times for all other vehicles over these segments. The results of this analysis may then be used by the system to determine the most efficient route for the driver to take to the pickup point and/or to the passenger's destination. Thus, if another driver recently encountered construction or other backups on a particular street, this

information will be used to reroute other drivers to minimize delays. In one embodiment, the driver may be presented with several alternate paths, each with an estimated drive time, from which the driver may select. In one embodiment, these paths may be displayed graphically using a mapping technology which graphically illustrates the various paths on a map.

One embodiment of a system and method by which the foregoing analysis and routing can be accomplished is as follows: A map is divided into travel segments. These segments can be as small or as large as appropriate, depending on the circumstances. For example, a single city block might be a travel segment in the city and a 2 miles section between two exits might be a travel segment for a highway. As vehicles travel through a segment, the time of their entry and exit is monitored. In one embodiment, the location identification device (e.g. GPS) calculates the location and transmits it to a data center whenever it enters or exits a travel segment. In one embodiment, location information is regularly transmitted on a periodic basis. In this embodiment, a calculation is made between two measurements to calculate the speed of travel and distance traveled. Regardless of which embodiment chosen for communicating location and time information, the data is stored in a database or other data structure.

Various analysis can be performed to determine whether a travel segment is slower than expected. For example, a simple average over time can be calculated to establish a typical speed and variations from that average indicate slowdowns. Another example is to have average speeds for different times of day to account for times such as rush hour congestion. Another example is to determine variations from comparable speeds of neighboring paths (e.g. city blocks). Another example is to compare the speed with posted speed limits. In addition, there are other optimization and anomaly detection algorithms known in the art that may be employed in the routing analysis. Information on current

traffic conditions can be used to develop more efficient routing using these routing algorithms.

In one embodiment, the speed of travel is also transmitted to a data center and that data is used to calculate the speed of travel for a particular segment. Similarly, in one embodiment, data related to traffic congestion can be input manually or automatically to allow information from police, emergency teams, and other sources of traffic information to be factored into the analysis for different travel segments.

Elements of the invention may also be provided as a machine-readable medium for storing the machine-executable instructions. The machine-readable medium may include, but is not limited to, floppy diskettes, optical disks, CD-ROMs, and magneto-optical disks, ROMs, RAMs, EPROMs, EEPROMs, magnet or optical cards, propagation media or other type of media/machine-readable medium suitable for storing electronic instructions. For example, the present invention may be downloaded as a computer program which may be transferred from a remote computer (e.g., a server) to a requesting computer (e.g., a client) by way of data signals embodied in a carrier wave or other propagation medium via a communication link (e.g., a modem or network connection).

Throughout the foregoing description, for the purposes of explanation, numerous specific details were set forth in order to provide a thorough understanding of the invention. It will be apparent, however, to one skilled in the art that the invention may be practiced without some of these specific details. Accordingly, the scope and spirit of the invention should be judged in terms of the claims which follow.

CLAIMS

What is claimed is:

1. A computer-implemented method for determining an efficient transportation route comprising:
compiling travel data over one or more travel segments, said travel data transmitted from one or more transportation vehicles traveling over said travel segments;
receiving positional data associated with a transportation request, said positional data including an origin and a destination; and
providing a driver of a vehicle with a first efficient route from said origin to said destination using said travel data, said first efficient route including one or more of said travel segments
2. The method as in claim 1 wherein said destination is a pickup point of a passenger submitting a transportation request and said origin is a current position of said vehicle.
3. The method as in claim 2 wherein said transportation request is transmitted over a wireless network from said passenger's wireless device.
4. The method as in claim 3 wherein said destination is determined by positional data generated by positional tracking logic in said passenger's wireless device.
5. The method as in claim 4 wherein said positional tracking logic is global positioning system ("GPS") logic and wherein said wireless device communicates with one or more GPS satellites.
6. The method as in claim 1 wherein said one or more drivers are selected based on a price which said passenger is willing to pay and a price said one or more drivers are willing to accept.
7. The method as in claim 1 wherein said travel data includes an amount of time expended by a vehicle in traveling across a portion of said travel segment.

8. The method as in claim 1 wherein said travel data includes a speed of a vehicle in traveling across a portion of said travel segment.

9. The method as in claim 1 wherein said travel data is transmitted from a wireless device configured in a vehicle.

10. The method as in claim 6 further comprising:
transmitting a pickup confirmation to said passenger responsive to receiving a response from said first driver indicating that said first driver can service said request.

11. The method as in claim 1 further comprising:
providing a driver of a vehicle with a second efficient route from said origin to said destination using said travel data, said second efficient route including one or more of said travel segments.

12. The method as in claim 11 wherein said first and/or said second route are graphically displayed on a map.

13. A system for determining an efficient transportation route comprising:
communication means for receiving travel segment data from one or more transportation vehicles; and
route determination means for analyzing said travel segment data and calculating a first efficient route from an origin to a destination based on said travel segment data.

14. The system as in claim 13 wherein said communication means further comprises:

wireless communication means for receiving said travel segment data over a wireless network from said one or more transportation vehicles.

15. The system as in claim 13 further comprising destination identification means for locating said destination.

16. The system as in claim 15 wherein said destination identification means includes GPS logic for locating said destination.

17. The system as in claim 12 further comprising origin identification means for locating said origin.

18. The system as in claim 17 wherein said origin identification logic includes GPS logic for locating said origin.

19. The method as in claim 13 further comprising:
transportation request means for receiving passenger transportation requests over a wireless network from a passenger's wireless device, said transportation requests including said destination.

20. A computer-implemented method for providing transportation services comprising:
receiving a transportation request from a passenger;
tracking said passenger's position following said request using positional detection logic; and
transmitting positional data identifying said passenger's position to a pickup vehicle.

21. The method as in claim 20 wherein said transportation request is received over a wireless network from said passenger's wireless device.

22. The method as in claim 21 wherein said positional detection logic is embedded in said passenger's wireless device.

23. The method as in claim 22 wherein said positional detection logic is global positioning system ("GPS") logic.

24. The method as in claim 22 further comprising:
re-transmitting positional data identifying said passenger's position to said pickup vehicle at periodic intervals.

25. The method as in claim 22 further comprising:
re-transmitting positional data identifying said passenger's position to said pickup vehicle at periodic intervals.

26. The method as in claim 22 further comprising:
re-transmitting positional data identifying said passenger's position to said pickup vehicle responsive to movement of said passenger.

27. A computer-implemented method for providing transportation services comprising:
- receiving a request for transportation from a passenger;
 - determining an appropriate pickup point for said passenger based on location data related to said passenger; and
 - identifying one or more appropriate drivers for servicing said passenger request.
28. The method as in claim 27 wherein said request is received over a wireless network from said passenger's wireless device.
29. The method as in claim 28 wherein said location data related to said passenger is positional data generated by positional tracking logic in said passenger's wireless device.
30. The method as in claim 29 wherein said positional tracking logic is global positioning system ("GPS") logic and wherein said wireless device communicates with one or more GPS satellites.
31. The method as in claim 27 wherein said one or more drivers are selected based on a price which said passenger is willing to pay and a price said one or more drivers are willing to accept.
32. The method as in claim 27 further comprising:
- transmitting a service request to a first driver of said one or more drivers to determine if said first driver can service said passenger request.
33. The method as in claim 27 further comprising:
- transmitting a service request to a second of said one or more drivers if said first driver cannot service said passenger request.
34. The method as in claim 32 further comprising:
- transmitting a pickup confirmation to said passenger responsive to receiving a response from said first driver indicating that said first driver can service said request.
35. The method as in claim 34 further comprising:

transmitting an estimated arrival time of said first driver.

36. The method as in claim 34 further comprising:

transmitting a confirmation code to said first driver and/or said passenger.

37. The method as in claim 36 wherein said confirmation code is said passenger's telephone number.

38. The method as in claim 34 further comprising:

providing personalized services to said passenger based on collected information relating to said passenger.

39. The method as in claim 38 wherein said personalized services include entertainment selected based on said collected information.

40. The method as in claim 38 wherein said personalized services include data services selected based on said collected information.

41. The method as in claim 40 wherein said data networking services include access to said passenger's files over a network.

42. A method implemented within a transportation vehicle comprising:

retrieving profile information for a passenger; and

providing said passenger with one or more personalized services based on said passenger profile information.

43. The method as in claim 42 further comprising wherein retrieving comprises retrieving said profile data from a passenger database using a passenger code.

44. The method as in claim 43 wherein retrieving comprises retrieving said profile data from a passenger database over a wireless network.

45. The method as in claim 43 wherein said passenger code is transmitted from a wireless device of said passenger.

46. The method as in claim 42 wherein said personalized services include entertainment selected based on said passenger profile information.

47. The method as in claim 42 wherein said personalized services include data services selected based on said passenger profile information.

48. The method as in claim 47 wherein said data networking services include access to said passenger's data files over a network.

49. The method as in claim 42 wherein said transportation vehicle is an automobile.

50. A computer-implemented method for providing transportation services comprising:
 associating a plurality of transportation resources with a plurality of users;
 receiving a request by one of said plurality of users for transportation services; and
 allocating a first transportation resource of said transportation resources to a user responsive to said request.

51. The computer-implemented method as in claim 50 wherein said first resource is selected for said user based on said user's location.

52. The method as in claim 50 further comprising:
 monitoring how frequently said user uses one or more of said plurality of transportation resources.

53. The method as in claim 52 further comprising:
 charging said user a fee if said user uses one or more of said plurality of resources more than a threshold amount.

54. The method as in claim 52 wherein said frequency with which said user uses one or more of said plurality of resources is measured based on a number of miles cumulated on said transportation resource while said resource is allocated to said user.

55. The method as in claim 50 wherein said transportation resources are automobiles.

56. The method as in claim 50 wherein one or more of said transportation resources are not automobiles.

57. A system for providing transportation services comprising:
 pickup point determination means for identifying an appropriate pickup point for a passenger responsive to a transportation service request transmitted

by said passenger, said pickup point based on positional data related to said passenger; and

driver determination means for identifying one or more appropriate drivers for servicing said passenger request.

58. The system as in claim 57 further comprising:

positional detection means for transmitting positional data related to said driver to said driver determination means.

59. The system as in claim 57 further comprising:

positional detection means for transmitting positional data related to said passenger to said pickup point determination means.

60. The system as in claim 59 wherein said positional detection means includes GPS positioning logic.

61. The system as in claim 57 further comprising:

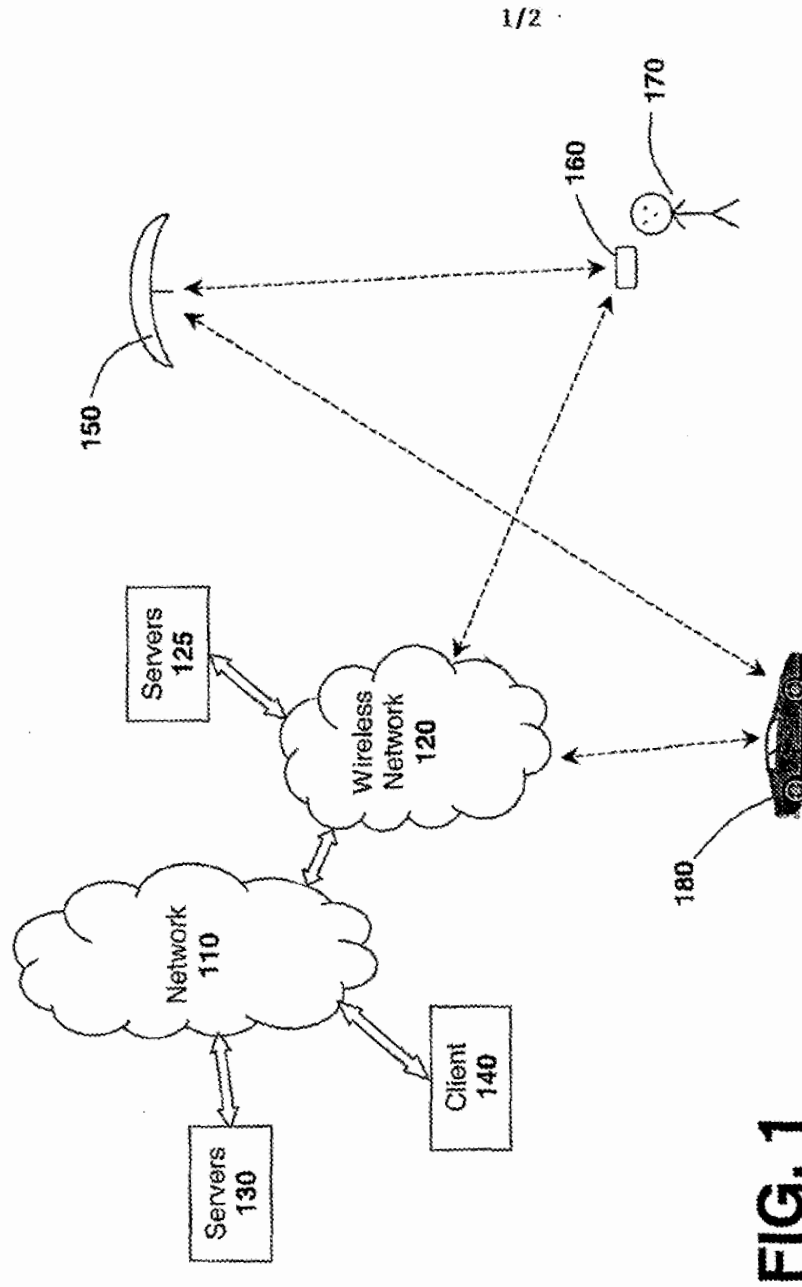
passenger update means for updating said passenger as to the location of said driver.

62. The system as in claim 57 further comprising:

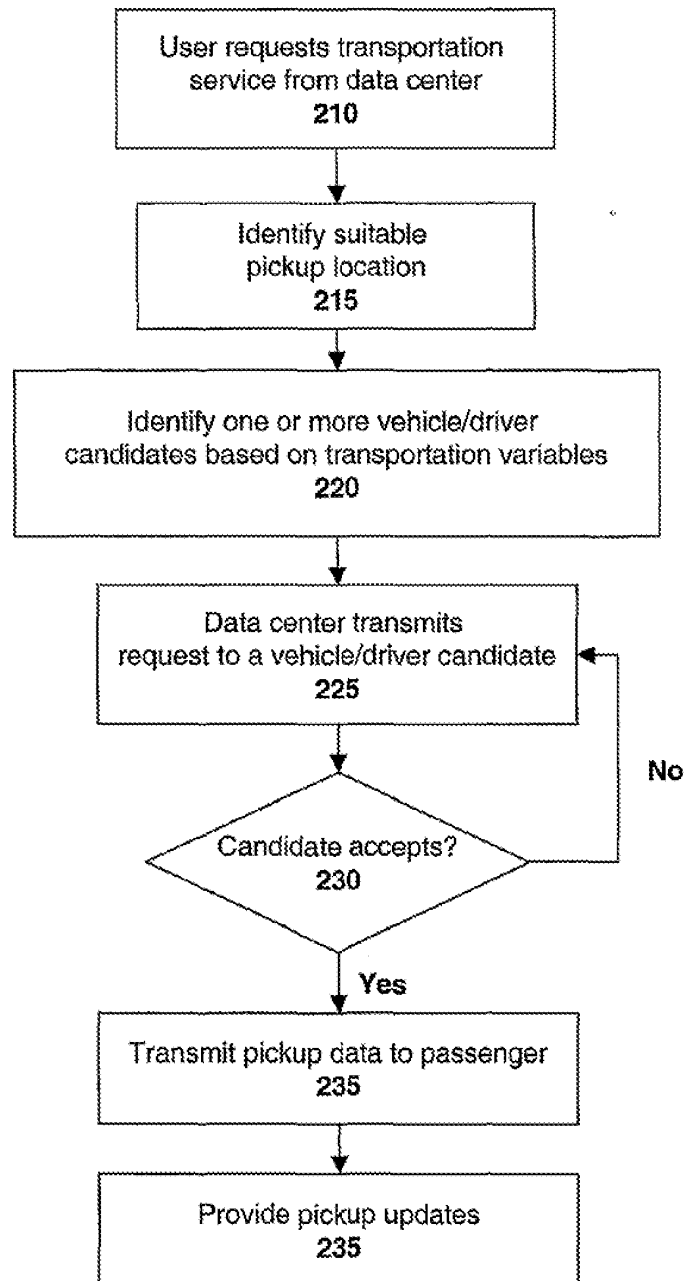
passenger update means for updating said passenger as to the estimated time of arrival of said driver.

63. The system as in claim 62 wherein said passenger update means updates said passenger at periodic intervals.

64. The system as in claim 63 wherein said passenger update means transmits a confirmation code to said passenger.



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**FIG. 2**



Espacenet

Bibliographic data: JP2003168195 (A) — 2003-06-13

METHOD, SYSTEM AND APPARATUS FOR VEHICLE DISPATCHING SERVICE, USER TERMINAL DEVICE, COMPANY TERMINAL DEVICE AND COMPANY ONBOARD MACHINE

Inventor(s): NAGATA ASAKO ± (NAGATA ASAKO)

Applicant(s): DENSO CORP ± (DENSO CORP)

Classification: - international: *G01C21/00; G06Q10/00; G06Q50/00; G06Q50/30; G08G1/123; G08G1/13; H04B7/26; H04W64/00; H04W88/18; (IPC1-7): G01C21/00; G06F17/60; G08G1/123; G08G1/13; H04B7/26; H04Q7/20*

- cooperative:

Application number: JP20010368561 20011203

Priority number(s): JP20010368561 20011203

Abstract of JP2003168195 (A)

PROBLEM TO BE SOLVED: To provide a system by which a user can simply request a taxi or a vehicle for transporting cargo and a vehicle can speedily be dispatched at low costs. ;**SOLUTION:** A service organization 1 is provided with a Web server 5 and various kinds of servers 6 to 12, and receives vehicle request information from the user 3 via the Internet 2 or via a telephone line network 14. Vehicle request information is distributed to a company 4 such as a taxi company and a transportation company via the Internet 2, and the company 4 which can provide a vehicle suited to the conditions of vehicle request is selected. When a plurality of companies apply for the vehicle dispatch, bidding is performed for selecting the company. Vehicle dispatch is instructed to the vehicle of the selected company 4. Until the vehicle is dispatched to the place of the user 3, vehicle dispatch information of the position of the vehicle is provided to the user 3. ;**COPYRIGHT:** (C)2003,JPO

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(71)出願人 000004260

株式会社デンソー

愛知県刈谷市昭和町1丁目1番地

(72)発明者 永田 麻子

愛知県刈谷市昭和町1丁目1番地 株式会社
デンソー内

(74)代理人 100071135

弁理士 佐藤 強

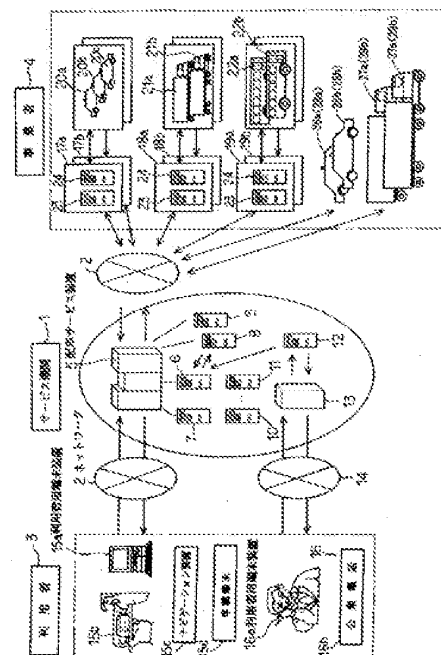
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(54)【発明の名称】 配車サービス方法、配車サービスシステム、配車サービス装置、利用者用端末装置、事業者用端末装置、事業者用車載機

(57)【要約】

【課題】 利用者がタクシーや荷送のための求車を簡単に行なえと共に、安価で迅速に配車できるシステムを提供する。

【解決手段】 サービス機関1は、Webサーバ5および各種サーバ6～12を備え、利用者3からインターネット2を経由したり電話回線網14を経由して求車情報を受ける。タクシー会社や運送会社などの事業者4に対してインターネット2を経由して求車情報を配信し、求車条件に適合する車両を提供できる事業者4を選定する。複数の事業者が応募したときには入札を行なって選定する。選定された事業者4の車両に対して配車指示を行なう。利用者3の元に配車されるまでの間車両の位置などの配車情報を利用者3に提供する。



【特許請求の範囲】

【請求項1】 利用者によりネットワークを介してサービス機関に求車情報が送信されると、前記サービス機関において、前記利用者が利用可能な車両を有する事業者であって前記求車情報に含まれる求車条件に適合する事業者に対して前記求車情報を送信する過程と、複数の前記事業者から前記求車情報に対する応募があった場合に入札を実施することにより適合する前記事業者を選定する過程と、選定された前記事業者に対して配車を指示する過程とを
10 実行することを特徴とする配車サービス方法。

【請求項2】 請求項1に記載の配車サービス方法において、前記サービス機関は、前記事業者に対して求車情報の送信をする過程では、既に他の利用者に対して配車済みの車両であっても利用可能な車両を備える場合にはその事業者に対しても前記求車情報を送信することを特徴とする配車サービス方法。

【請求項3】 請求項2に記載の配車サービス方法において、前記サービス機関は、配車済みの車両を利用する場合には、その車両の複数の利用者の利用料金を単独で利用する場合よりも低価格に設定することを特徴とする配車サービス方法。

【請求項4】 請求項1ないし3のいずれかに記載の配車サービス方法において、前記サービス機関により配車が指示された車両について、利用者に配車するまでの間、その車両の位置を検出して前記ネットワークを介して前記利用者に送信することを特徴とする配車サービス方法。

【請求項5】 請求項1ないし4のいずれかに記載の配車サービス方法において、前記サービス機関は、前記事業者が車両の利用に関して特別なサービスを有する場合に、これを前記利用者が求車条件として指定可能としたことを特徴とする配車サービス方法。

【請求項6】 請求項1ないし5のいずれかに記載の配車サービス方法において、前記サービス機関は、前記事業者の配車を利用した前記利用者から、そのときのサービスの質についての情報を受け付け、得られた情報に基づいて前記事業者のサービスの質の評価を行ない、これを前記求車情報を送信する利用者に対して付加情報として提示可能としたことを特徴とする配車サービス方法。

【請求項7】 請求項1ないし6のいずれかに記載の配車サービス方法において、前記サービス機関は、前記事業者との情報の授受に用いる前記ネットワークとして、インターネットを含んだ通信網を用いることを特徴とする配車サービス方法。

【請求項8】 請求項1ないし7のいずれかに記載の配車サービス方法において、

前記サービス機関は、前記利用者との間の情報の授受に用いる前記ネットワークとして、インターネットを含んだ通信網を用いることを特徴とする配車サービス方法。

【請求項9】 請求項8に記載の配車サービス方法において、前記サービス機関は、前記利用者との間の情報の授受を全国どこでも同一のアクセス方法で行なうことができるように設定されていることを特徴とする配車サービス方法。

【請求項10】 請求項1ないし9のいずれかに記載の配車サービス方法において、前記サービス機関は、前記利用者から前記ネットワークとしての電話回線網からの音声による求車情報を受け付けると共に、選定した配車の情報を音声情報に変換して前記利用者に案内することを特徴とする配車サービス方法。

【請求項11】 サービス機関に対してネットワークを介して求車情報を送信可能な利用者用端末装置と、前記サービス機関に設けられ、前記ネットワークを介して利用者側から前記求車情報を受け付ける手段、その求車情報に含まれる求車条件に適合する配車が可能な事業者に前記ネットワークを介して求車情報として送信する手段、前記事業者からの応募を受け付ける手段、応募が複数ある場合には入札処理により前記事業者を選定する手段、および選定した前記事業者に対して配車を指示する手段を備えた配車サービス装置と、前記事業者側に設けられ、前記サービス機関の配車サービス装置により前記ネットワークを介して送信される求車情報を受け付ける手段、その求車条件に対応して応募する場合に前記配車サービス装置に応募情報を送信する手段、前記配車サービス装置から配車の指示を受け付ける手段を備えた事業者用端末装置とを備えたことを特徴とする配車サービスシステム。

【請求項12】 請求項11に記載の配車サービスシステムにおいて、

前記配車サービス装置は、前記利用者からの求車情報を受け付けたときに、既に配車済みであっても利用可能な車両を備える場合にはその事業者に対しても前記求車情報を送信することを特徴とする配車サービスシステム。

【請求項13】 請求項12に記載の配車サービスシステムにおいて、前記配車サービス装置は、前記配車済みの車両を利用する場合には、その車両の複数の利用者の利用料金を単独で利用する場合よりも低価格に設定することを特徴とする配車サービスシステム。

【請求項14】 請求項11ないし13のいずれかに記載の配車サービスシステムにおいて、

前記事業者の車両に現在位置を検出可能な位置検出手段

を設け、
前記配車サービス装置は、前記配車の指示をした車両が前記利用者に配車されるまでの間、その車両もしくはその事業者から、その車両の位置検出手段が検出した位置検出信号を受信して前記利用者用端末装置に対して前記ネットワークを介して配車位置情報として送信することを特徴とする配車サービスシステム。

【請求項15】 請求項14に記載の配車サービスシステムにおいて、
前記配車サービス装置は、前記配車の指示をした車両が前記利用者の利用場所に到着する時刻情報を推定して前記利用者用端末装置に送信することを特徴とする配車サービスシステム。

【請求項16】 請求項11ないし15のいずれかに記載の配車サービスシステムにおいて、
前記配車サービス装置は、前記事業者が車両の利用に関して特別なサービスを有する場合に、これを前記利用者が求車条件として指定可能に構成されていることを特徴とする配車サービスシステム。

【請求項17】 請求項11ないし16のいずれかに記載の配車サービスシステムにおいて、
前記配車サービス装置は、前記事業者の配車を利用した前記利用者から、そのときのサービスの質についての情報を受け付け、得られた情報に基づいて前記事業者のサービスの質の評価を行ない、これを前記求車情報を送信する利用者に対して付加情報として提示可能に構成したことを特徴とする配車サービスシステム。

【請求項18】 請求項17に記載の配車サービスシステムにおいて、
前記配車サービス装置は、前記事業者のサービスの質の評価について、前記配車を利用した利用者に対してアンケート調査を行なうことにより必要な評価項目についての評価を行なうように構成されていることを特徴とする配車サービスシステム。

【請求項19】 請求項11ないし18のいずれかに記載の配車サービスシステムにおいて、
前記配車サービス装置と前記事業者用端末装置との間の通信を行なうための前記ネットワークは、インターネットを含んだ通信網により構成されていることを特徴とする配車サービスシステム。

【請求項20】 請求項11ないし19のいずれかに記載の配車サービスシステムにおいて、
前記配車サービス装置と前記利用者用端末装置との間の通信を行なうための前記ネットワークは、インターネットを含んだ通信網により構成されていることを特徴とする配車サービスシステム。

【請求項21】 請求項11ないし20のいずれかに記載の配車サービスシステムにおいて、
前記サービス機関には電話回線網を介して前記利用者から音声による求車情報を受け付ける音声案内手段が設け

られ、
前記配車サービス装置は、前記利用者から電話回線網を通じて音声により送信される求車情報を前記音声案内手段が受け付けると、これに応じて求車情報を作成して前記事業者を選定する処理を実行し、この結果を前記音声案内手段を通じて前記利用者に対して音声により応答するように構成されていることを特徴とする配車サービスシステム。

【請求項22】 請求項11ないし21のいずれかに記載の配車サービスシステムにおいて、
前記事業者用端末装置は、配車可能な車両について取得した位置情報を前記配車サービス装置に送信する機能を備え、
前記配車サービス装置は、前記事業者用端末装置から受信した事業者の配車可能な車両に関する位置情報に基づいて前記利用者から送信された求車情報に対応する車両を有する前記事業者を選択して前記求車情報を送信するように構成されていることを特徴とする配車サービスシステム。

【請求項23】 請求項11ないし22のいずれかに記載の配車サービスシステムにおいて、
前記配車サービス装置は、前記利用者に対して配車を行なって目的地までの車両の運用が終了すると、前記利用者用端末装置を通じて利用料金を請求する処理を行なうと共に、前記事業者用端末を通じて顧客紹介料を請求する処理を行なうことを特徴とする配車サービスシステム。

【請求項24】 請求項11ないし23のいずれかに記載の配車サービスシステムにおいて、
前記事業者は、前記利用者を目的地まで乗車させるタクシー業務を行なう事業者を含んでいることを特徴とする配車サービスシステム。

【請求項25】 請求項24に記載の配車サービスシステムにおいて、
前記利用者用端末装置は、位置情報を取得する機能を備えた構成とされ、前記求車情報に加えて、自己の位置情報を現在位置情報として前記配車サービス装置に対して送信可能に構成され、
前記配車サービス装置は、前記利用者用端末装置から送信される現在位置情報に基づいて前記利用者の利用場所情報を取得することを特徴とする配車サービスシステム。

【請求項26】 請求項25に記載の配車サービスシステムにおいて、
前記配車サービス装置は、前記求車情報を送信した前記利用者に対して配車を行なった場合に、その利用者の利用場所から行き先までの経路に関する各種情報を前記利用者用端末装置に送信することで案内を行なうことを特徴とする配車サービスシステム。

【請求項27】 請求項26に記載の配車サービスシステムにおいて、
前記配車サービス装置は、前記求車情報を送信した前記利用者に対して配車を行なった場合に、その利用者の利用場所から行き先までの経路に関する各種情報を前記利用者用端末装置に送信することで案内を行なうことを特徴とする配車サービスシステム。

【請求項28】 請求項27に記載の配車サービスシステムにおいて、
前記配車サービス装置は、前記求車情報を送信した前記利用者に対して配車を行なった場合に、その利用者の利用場所から行き先までの経路に関する各種情報を前記利用者用端末装置に送信することで案内を行なうことを特徴とする配車サービスシステム。

テムにおいて、
前記配車サービス装置は、前記利用者の利用場所から行き先に関する各種情報として、地図情報、経路情報、所用時間情報、目的地情報、周辺情報、交通情報などの情報を送信可能としていることを特徴とする配車サービスシステム。

【請求項28】 請求項11ないし27のいずれかに記載の配車サービスシステムにおいて、
前記事業者は、前記利用者が託する荷物を目的地まで輸送する荷送業務を行なう事業者を含んでいることを特徴とする配車サービスシステム。

【請求項29】 利用者からネットワークを介して送信される求車情報を受け付けるサービス機関に設けられ、前記利用者の端末装置から前記求車情報を受け付ける手段と、
その求車情報に含まれる求車条件に適合する配車が可能な事業者の前記ネットワークを介して求車情報として送信する手段と、
前記事業者からの応募を受け付ける手段と、
応募が複数ある場合には入札処理により前記事業者を選定する手段と、
選定した前記事業者に対して配車を指示する手段とを備えたことを特徴とする配車サービス装置。

【請求項30】 請求項29に記載の配車サービス装置において、
前記利用者からの求車情報を受け付けたときに、既に配車済みであっても利用可能な車両を備える場合にはその事業者に対しても前記求車情報を送信することを特徴とする配車サービス装置。

【請求項31】 請求項29または30に記載の配車サービス装置において、
前記配車の指示をした車両が前記利用者に配車されるまでの間、その車両もしくはその事業者から、その車両の現在位置を示す位置検出信号を受信すると前記利用者用端末装置に対して前記ネットワークを介して配車位置情報として送信することを特徴とする配車サービス装置。

【請求項32】 利用者によりサービス機関の配車サービス装置に対してネットワークを介して求車情報を送信可能な手段と、
前記配車サービス装置から配車の指示を実施した旨の情報を受信して利用者に通知する手段とを備えたことを特徴とする利用者用端末装置。

【請求項33】 請求項32に記載の利用者用端末装置において、
前記配車された車両に関して前記配車サービス装置から送信される車両の位置情報を受信して前記利用者に通知する手段を備えていることを特徴とする利用者用端末装置。

【請求項34】 請求項32または33に記載の利用者用端末装置において、

*前記求車情報に関して前記配車サービス装置から各種情報が送信されるとこれを利用者に通知する手段を備えたことを特徴とする利用者用端末装置。

【請求項35】 請求項32ないし34のいずれかに記載の利用者用端末装置において、
自己の現在位置情報を取得する位置情報取得手段を備え、
前記配車サービス装置に対して前記求車情報を送信するときに、前記位置情報取得手段により得られた現在位置情報を利用場所情報として送信することを特徴とする利用者用端末装置。

【請求項36】 利用者に対する配車が可能な車両を備えた事業者側に設けられ、
サービス機関の配車サービス装置によりネットワークを介して送信される求車情報を受け付ける手段と、
その求車条件に対応して応募する場合に前記配車サービス装置に応募情報を送信する手段と、
前記配車サービス装置から配車の指示を受け付ける手段とを備えたことを特徴とする事業者用端末装置。

【請求項37】 請求項11ないし28のいずれかに記載の配車サービスシステムにおいて使用される配車可能な車両に設けられる事業者用車載機において、
現在位置情報を取得可能な位置情報取得手段と、
現在の稼働状態を示す情報および前記位置情報取得手段による現在位置情報を配車サービス装置もしくは事業者用端末装置に送信可能な送信手段とを備えたことを特徴とする事業者用車載機。

【請求項38】 請求項37に記載の事業者用車載機において、
前記送信手段は、前記現在位置情報を適宜のタイミングで前記配車サービス装置もしくは事業者用端末装置に自動的に送信することを特徴とする事業者用車載機。

【請求項39】 請求項37または38に記載の事業者用車載機において、
前記通信手段は、インターネットを介して前記事業者用端末装置に接続可能に構成されていることを特徴とする事業者用車載機。

【請求項40】 請求項39に記載の事業者用車載機において、
前記通信手段は、D S R C (Dedicated Short-Range Communication : 狭域通信) 方式により路上機との間で通信を行なうことでインターネットに接続可能に構成されていることを特徴とする事業者用車載機。

【請求項41】 請求項39または40に記載の事業者用車載機において、
前記通信手段は、携帯電話網を介してインターネットに接続可能に構成されていることを特徴とする事業者用車載機。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、利用者が求車情報を提示したときに迅速且つ安価に配車サービスを行なうことができるようにした配車サービス方法、配車サービスシステム、配車サービス装置、利用者用端末装置、事業者用端末装置、および事業者用車載機に関する。

【0002】

【発明が解決しようとする課題】利用者が求車をする場合として、例えば、タクシーを利用する場合においては、従来では、利用者がタクシー会社に電話をして配車を依頼したり、あるいはタクシー乗り場で順番を待つなどの方法が一般的である。この場合に、タクシー会社に電話をする方法においては、利用者はタクシー会社の電話番号を知っているか簡単に分かる場合には良いが、見知らぬ土地や緊急時などにおいては調べるのが困難になる場合もあり、面倒なことであった。加えて、知らない土地でのタクシー会社探しは、運賃やサービス内容が分かりにくく、何を基準としてタクシー会社を選べば良いのか困る場合がある。

【0003】さらに、依頼者がその土地に馴染めないために自分の所在位置（現在位置あるいは乗車位置）を明確に認識することができない場合などには、タクシー会社に対して電話で乗車場所を指定することが難しい場合があり、配車の際の出向き先の特定が困難となることがあった。

【0004】また、駅などの所定のタクシー乗り場で待つ場合には、利用者が多数並んだ状態となっていてなかなか乗車することができない場合があり、一刻も早く目的地に到着したい場合などには、別の場所で流しのタクシーを探すなどもあるが、この場合に確実にタクシーを探すことができる場所がわからないために、もどかしい思いをすることもある。

【0005】上記のようなタクシーを利用する場合以外に、例えば、運送業や宅配便などで顧客（荷主）が荷物を送りたい場合などにおいても、上述と同様の問題点があり、事情は改善されていないのが実情である。

【0006】本発明は、上記事情に鑑みてなされたもので、その目的は、利用者が事業者の車両を求車する場合に、その場所や条件に適合する事業者を知らない場合でも迅速且つ確実にしかも安価に配車を受けることができるようにした配車サービス方法、配車サービスシステム、配車サービス装置、利用者用端末装置、事業者用端末装置、事業者用車載機を提供することにある。

【0007】

【課題を解決するための手段】請求項1の発明によれば、サービス機関は、利用者からネットワークを介して求車情報が送信されると、利用者が利用可能な車両を有する事業者であって求車情報に含まれる求車条件に適合する事業者に対して求車情報を送信し、ひとつの事業者が対象となっている場合にはその応答を得ることで配車を指示することができ、また、その応答として複数の事

業者から求車情報に対する応募があった場合には入札を実施することにより適合する事業者を選定し、選定された事業者に対して配車を指示することで、利用者の求車条件に含まれる目的地や料金あるいはサービス内容などの条件が満たされる事業者の車両を配車することができ、しかも、ネットワークを通じて情報の授受を行なうことで、利用者が求車情報を発信した後、迅速に対応することができるようになる。

【0008】これにより、利用者は、例えば知らない土地や環境でタクシーや荷送などの事業者の車両の配車を依頼する場合に、その求車情報をネットワークを通じて常にサービス機関に送信することで配車してもらうことができるようになり、電話番号を探したり複数の事業者について検討するなどの煩わしい作業をすることがなくなる。また、タクシー待ちで空車がなかなか見つからない場合でも、サービス機関に求車情報を送信するだけで、簡単且つ迅速に配車を受けることができるようになる。

【0009】請求項2の発明によれば、上記発明において、サービス機関により事業者に対して求車情報の送信をする過程では、既に他の利用者に対して配車済みの車両であっても利用可能な車両を備える場合にはその事業者に対しても求車情報を送信するので、配車済みの車両であってもその進行経路や搭乗あるいは搭載余裕などの状況によって、利用者が利用できる場合があり、利用者が差支えない場合にはこのような車両を利用して配車に供することで、配車対象となる車両が不足する場合でも迅速に対応することができるようになる。

【0010】これにより、利用者が早く目的地に到着したいあるいは荷送したいといった場合に、従来では利用することができなかった配車済みの車両でも余裕のあるものを有効に用いてこれに迅速に対応することができるようになり、サービス性の向上を図ることができるようになる。なお、この場合に、利用する配車済みの車両は、新たな利用者の利用場所から目的地への経路が重複する部分があったり、利用者の人数あるいは荷物の量などが収容可能な余裕のあるものが対象である。

【0011】請求項3の発明によれば、上記した請求項2の発明において、サービス機関を、配車済みの車両を利用する場合に、その車両の複数の利用者の利用料金を単独で利用する場合よりも低価格に設定するので、このような形態での利用率を高めることができ、事業者にとってはエネルギーの消費量に対する利用率の向上を図ることができ、効率的かつ環境に優しい運営を行なうことができ、しかも利用者にとっても経済的な利用が可能となる。

【0012】請求項4の発明によれば、上記各発明において、サービス機関により配車が指示された車両について、利用者に配車するまでの間、その車両の位置を検出してネットワークを介して利用者へ送信するので、利用

者は、配車される車両の位置から利用する場所までの所用時間や距離などを推定することができるようになる。これにより、利用するまでの待ち時間や状況が分かるので、利用者に対して配車が遅れる場合でも、不安感を与えることがなくなり、安心して利用してもらうことができるようになる。

【0013】請求項5の発明によれば、上記各発明において、サービス機関により、事業者が車両の利用に関して特別なサービスを有する場合に、これを利用者が求車条件として指定可能としたので、利用者の多様な求車条件にも対応可能な特別なサービスを提供する事業者を提示することができ、これによって利用者の利便性の向上を図ることができ、事業者にとっても提供するサービスのバリエーションを利用者に知らせて業務の特徴をアピールして利用者の拡大を図ることができるようになる。

【0014】この場合、特別なサービスとしては、例えば、タクシーの場合では車種を選ぶことができたり、丁寧な応対で対応することができる点を示したり、女性の利用者に対して女性の乗務員が運転する車両を選ぶことができたり、各種案内サービスを設けたり、乗車中に音楽や各種放送のサービスを提供したりするなどの様々なサービスのアピールポイントがある。これらを利用者側に提示したり、利用者の好みに応じて選択可能にすることでサービス性の向上を図り、利用の増大を図ることに貢献できる。

【0015】また、このようなサービスを提供可能なことを、利用者が利用したいときに直接提示することができるので、特別な宣伝やポスターあるいはTVコマーシャルなどで提供する余裕のない個人事業者においても、サービスの質や内容において大規模な事業者との間で対等に評価してもらうことができるようになる。

【0016】請求項6の発明によれば、上記各発明において、サービス機関により、事業者の配車を利用した利用者から、そのときのサービスの質についての情報を受け付け、得られた情報に基づいて事業者のサービスの質の評価を行ない、これを求車情報を送信する利用者に対して付加情報として提示可能としたので、利用者にとっては利用しようとする事業者の評価結果を元にして選定することもできるので、希望に沿った質のサービスを受けることができるようになり、利便性が向上すると共に安心感が向上するようになる。

【0017】また、このように事業者のサービスの質について評価することは、事業者にとっては他の事業者とのサービスの質の差別化を図ってより利用者の要求する質に対応した的確なサービスを提供することができるようになる。また、利用者が要求している質のイメージが利用率から明らかになることで、全体として求められている質の方向に事業者のサービスが移行し、業界全体の質の向上にも貢献することができるようになる。また、この場合においても、事業者の規模の大小にかかわ

らず、サービスの質や内容そのもので対等に評価を受けることができるので、個人事業者などにとっても利用価値の高いシステムとして活用することができるようになる。

【0018】請求項7の発明によれば、上記各発明において、サービス機関と事業者との間の情報の授受に用いるネットワークとして、インターネットを含んだ通信網を用いる構成としているので、サービス機関および事業者のそれぞれは専用の通信網を設けることなく既存のインフラを利用して簡単且つ安価に実施することができるようになる。

【0019】請求項8の発明によれば、上記各発明において、サービス機関と利用者との間の情報の授受に用いるネットワークとして、インターネットを含んだ通信網を用いる構成としているので、上述同様にしてインターネットを利用可能な環境にあれば別途に通信網を用いることなく簡単に情報の授受を行なうことができ、利用者にとって利便性が高く、実用性に富むものとなる。

【0020】請求項9の発明によれば、利用者は、全国どこにいても同一のアクセス方法でサービス機関に接続して求車情報の送信や他の情報の授受を行なうことができるので、場所によるアクセス方法の選定などの面倒な作業を考える必要もなく、しかも迅速且つ正確にアクセスすることができるようになる。また、このように利便性が高まることで、利用者も安心してサービス機関を利用することができるので、信頼性の向上も図れるようになる。

【0021】請求項10の発明によれば、上記各発明において、サービス機関を、利用者からネットワークとしての電話回線網からの音声による求車情報を受け付けると共に、選定した配車の情報を音声情報に変換して利用者に案内するように構成しているため、上記したインターネットによるアクセスに加えて、利用者が直接電話によって音声で利用することもできるので、インターネットにアクセスするための端末装置などの使用が不得手な利用者にとっても簡単且つ迅速にサービス機関にアクセスしてサービスを受けることができるようになる。

【0022】請求項11の発明によれば、利用者が利用者用端末装置を用いてサービス機関に対してネットワークを介して求車情報を送信すると、サービス機関においては配車サービス装置により、利用者からの求車情報を受け付けてこれに含まれる求車条件に適合する配車が可能な事業者の事業者用端末装置にネットワークを介して求車情報として送信する。これに対して事業者側においては事業者用端末装置を通じて求車条件に対応する応募情報を送信すると、配車サービス装置は、事業者からの応募を受け付け、その応募が複数ある場合には入札処理により事業者を選定して事業者に対して配車を指示すると、事業者用端末装置によりこれを受け付けて、車両に対して配車の指示をすることができる。

【0023】このような構成とすることにより、サービス機関の配車サービス装置により、ネットワークを介して利用者と事業者との端末装置間が結び付けられ、利用者は直接事業者の連絡先が分からなくともサービス機関に対して連絡をとって求車情報を提示することで、サービス機関側において求車条件に適合した車両を配車することができる事業者を選定して迅速に配車することができるようになる。また、この事業者の選定では、複数の事業者が応募しているときに入札を利用しているので、利用者にとって安価な条件で利用することができるようになり、このシステムを利用することによる利益を享受することができるようになる。

【0024】請求項12の発明によれば、上記請求項11の発明において、配車サービス装置を、利用者からの求車情報を受け付けたときに、既に配車済みであっても利用可能な車両を備える場合にはその事業者に対しても求車情報を送信するように構成しているの、請求項2の発明と同様に、配車済みの車両であってもその利用者が利用可能な条件で配車されている場合に配車対象とすることで、事業者側において配車する車両が不足する場合でも迅速に対応することができ、サービス性の向上を図ったシステムとして活用することができるようになる。

【0025】請求項13の発明によれば、上記請求項12の発明において、配車サービス装置を、配車済みの車両を利用する場合に、その車両の複数の利用者の利用料金を単独で利用する場合よりも低価格に設定するように構成したので、請求項3の発明と同様に、このような形態での利用率を高めることができ、事業者にとってはエネルギーの消費量に対する利用率の向上を図ることができ、効率的かつ環境に優しい運営を行なうことができ、しかも利用者にとっても経済的な利用が可能となるシステムとして活用することができる。

【0026】請求項14の発明によれば、請求項11ないし13の発明において、事業者の車両に現在位置を検出可能な位置検出手段を設け、配車サービス装置を、配車の指示をした車両が利用者に配車されるまでの間、その車両もしくはその事業者から、請求項4の発明と同様に、その車両の位置検出手段が検出した位置検出信号を受信して利用者用端末装置に対してネットワークを介して配車位置情報として送信するように構成したので、利用者は、配車される車両の位置から利用する場所までの所用時間や距離などを推定することができるようになる。これにより、利用するまでの待ち時間や状況が分かるので、利用者にとっては安心して利用することができるようになる。

【0027】請求項15の発明によれば、請求項14の発明において、配車サービス装置を、配車の指示をした車両が利用者の利用場所に到着する時刻情報を推定して利用者用端末装置に送信するように構成したので、利用

者は利用者用端末装置側に表示される時刻情報を見ることで、配車される車両がいつ利用場所に到着するかを認識することができ、利用場所まで出向く場合などにおいては、到着時刻を考慮して移動すれば良いので、待ち時間がある場合にはその時間を有効に利用することができるようになり、利用者にとって利便性の高いシステムとして利用することができるようになる。

【0028】請求項16の発明によれば、請求項11ないし15の発明において、配車サービス装置を、事業者が車両の利用に関して特別なサービスを有する場合に、これを利用者が求車条件として指定可能に構成したので、利用者の多様な求車条件にも対応可能な特別なサービスを提供する事業者を利用者に対して提示することができ、これによって利用者の要求にきめ細かく対応して、利便性の向上を図ることができ、事業者にとっても提供するサービスのバリエーションを利用者に知らせて業務の特徴をアピールして利用者の拡大を図ることができるようになる。

【0029】請求項17の発明によれば、請求項11ないし16の発明において、配車サービス装置を、事業者の配車を利用した利用者から、そのときのサービスの質についての情報を受け付け、得られた情報に基づいて事業者のサービスの質の評価を行ない、これを求車情報を送信する利用者に対して付加情報として提示可能に構成しているので、利用者にとっては利用しようとする事業者の評価結果を元にして選定することもできるので、希望に沿った質のサービスを受けることができるようになり、利便性が向上すると共に安心感が向上するようになる。

【0030】これは、例えば、利用者が求車情報を発信する際に、価格条件を優先した求車条件を設定するか、配車に要する時間あるいは所要時間が短くなることを優先した求車条件を設定するか、もしくは利用者に対する応対などの面を優先した求車条件を設定するかなどの、様々な求車条件が考えられるが、それらのどのような要望に答えることが可能かといったサービスの質について利用者側で評価結果から選ぶことができるようになり、きめ細かなサービスの充足を達成することができる。

【0031】また、このように事業者のサービスの質について評価をすることは、事業者にとっては他の事業者とのサービスの質の差別化を図ってより利用者の要求する質に対応した的確なサービスを提供することができるようになる。また、利用者が要求している質のイメージが利用率から明らかになることで、全体として求められている質の方向に事業者のサービスが移行し、業界全体の質の向上にも貢献することができるようになる。

【0032】請求項18の発明によれば、上記請求項17の発明において、配車サービス装置を、事業者のサービスの質の評価について、配車を利用した利用者に対してアンケート調査を行なうことにより必要な評価項目に

ついでの評価を行なうように構成したので、利用者が受けたサービスの質について直接フィードバックを行なうことができ、迅速且つ的確な評価を行なうことができるようになる。

【0033】これにより、次の利用者がアンケート調査による評価結果を参考にして求車条件を設定することもできるようになり、利用者にとっては事業者側のアピールだけではなく利用者側からの評価に基づいた選択をすることができるようになる。また、このことは、事業者側にとっても、利用者の評価を参考にしてさらにサービスの向上を図ることができる点でメリットがあり、結果としてシステム全体としての質の向上も図れるようになる。

【0034】請求項19の発明によれば、請求項11ないし18の発明において、配車サービス装置と事業者用端末装置との間の通信を行なうためのネットワークを、インターネットを含んだ通信網により構成しているの

で、サービス機関および事業者のそれぞれは専用の通信網を設けることなく既存のインフラを利用して実施することができるようになる。

【0035】請求項20の発明によれば、請求項11ないし19の発明において、配車サービス装置と利用者用端末装置との間の通信を行なうためのネットワークを、インターネットを含んだ通信網により構成しているの

で、上述同様にしてインターネットを利用可能な環境にあれば、利用者にとっても、別途に通信網を用いることなく簡単且つ安価に情報の授受を行なうことができ、利便性が高く、実用性に富むものとなる。

【0036】請求項21の発明によれば、請求項11ないし20の発明において、サービス機関に電話回線網を介して利用者から音声による求車情報を受け付ける音声案内手段を設け、配車サービス装置を、利用者から電話回線網を通じて音声により送信される求車情報を音声案内手段が受け付けると、これに応じて求車情報を作成して事業者を選定する処理を実行し、この結果を音声案内手段を通じて利用者に対して音声により応答するように構成したので、上記したインターネットによるアクセスに加えて、利用者が直接電話によって音声で利用することもできるので、インターネットにアクセスするための端末装置などの使用が不得手な利用者にとっても簡単且つ迅速にサービス機関にアクセスしてサービスを受けることができるようになる。

【0037】請求項22の発明によれば、上記請求項11ないし21の発明において、事業者用端末装置を、配車可能な車両について取得した位置情報を配車サービス装置に送信する機能を備えた構成とし、配車サービス装置を、事業者用端末装置から受信した事業者の配車可能な車両に関する位置情報に基づいて利用者から送信された求車情報に対応する車両を有する事業者を選択して求車情報を送信するように構成しているの、配車サービ

ス装置を備えたサービス機関側において、その利用者が車両を必要とする利用場所や目的地に対して最も相応しい車両が存在する事業者を迅速に把握することができ、これによってサービス機関側から利用者に対して迅速な案内と配車を提供することができるようになる。

【0038】請求項23の発明によれば、請求項11ないし22の発明において、配車サービス装置を、利用者に対して配車を行なって目的地までの車両の運用が終了すると、利用者用端末装置を通じて利用料金を請求する処理を行なうと共に、事業者用端末装置を通じて顧客紹介料を請求する処理を行なうように構成したので、配車のサービスを受けた後にその利用者が適切な利用料金を支払うことができると共に、サービスを提供した事業者にとっても顧客を確保できた代償として利用料金を支払うことができ、双方にとって効率的な利用が可能となると共に、これを提供するサービス機関もその橋渡しの業務をすることで利益を得ることができるようになる。

【0039】請求項24の発明によれば、請求項11ないし23の発明において、事業者として、利用者を目的地まで乗車させるタクシー業務を行なう事業者を含んでいるので、特に利用者が見知らぬところに来ている場合や、タクシー会社の電話番号を知らないような場合でも、迅速にタクシーを見つけて乗車することができるようになる。また、接客などでタクシーを利用する場合などでも、タクシーを手配するための手間を最小限にすることができると共に、相手の人を不用意に待たせたりすることなく迅速な配車を行うことができるようになる。

【0040】そして、すでに配車済みの車両を配車対象とする場合には、いわゆる「相乗り」となるが、これによって車両が不足している状況などにおいては、「相乗り」をすることで迅速に配車を行なって目的地に早く到着することができるようになり、さらに、「相乗り」の場合に料金を安く設定すれば、その利用率も高まり、利用者にとっては安価に目的地に移動することができ、タクシー会社にとっては空車率を低減してより効率的な運営が行なえるようになる。

【0041】請求項25の発明によれば、請求項24の発明において、利用者用端末装置を、位置情報を取得する機能を備えた構成とし、求車情報に加えて、自己の位置情報を現在位置情報として配車サービス装置に対して送信可能に構成し、配車サービス装置を、利用者用端末装置から送信される現在位置情報に基づいて利用者の利用場所情報を取得するように構成したので、利用者が見知らぬ土地などでタクシーを利用する場合に、利用者が現在の位置について不案内でもサービス機関側でその位置を自動的に把握することができ、適切な配車を行うことができるタクシー会社を選定して迅速に配車することができる。

【0042】請求項26の発明によれば、上記請求項25の発明において、配車サービス装置を、求車情報を送

信した利用者に対して配車を行なった場合に、その利用者の利用場所から行き先までの経路に関する各種情報を利用者用端末装置に送信することで案内を行なうようにしたので、利用者は目的地までの経路やその経路に関する情報に詳しくない場合などに、サービス機関の配車サービス装置から送信される各種情報によって認識することができるようになり、予備知識として目的地に関する情報を得ることができたり、あるいは交通状態などの情報によって目的地までの所要時間などの変動をあらかじめ知ることができ、きめ細かなサービスの提供を行なうことができるようになる。

【0043】請求項27の発明によれば、上記請求項26の発明において、配車サービス装置を、利用者の利用場所から行き先に関する各種情報として、地図情報、経路情報、所用時間情報、目的地情報、周辺情報、交通情報などの情報を送信可能としたので、単に目的地までの移動手段として利用するだけでなく、その移動に関して様々な情報を得ることで利用価値が高まり、サービス機関にとっては既存の交通手段との差別化を図ったシステムとしてサービスを提供することができるようになる。

【0044】請求項28の発明によれば、請求項11ないし27の発明において、事業者として、利用者が託する荷物を目的地まで輸送する荷送業務を行なう事業者を含んだ構成としているので、利用者が乗車する場合と同様に、荷物の輸送に関しても迅速且つ的確に目的地まで移動することができるようになる。

【0045】請求項29の発明によれば、配車サービス装置は、利用者からネットワークを介して送信される求車情報を受け付けるサービス機関に設けられ、利用者の端末装置から求車情報を受け付け、その求車条件に適合する事業者にネットワークを介して求車情報として送信し、事業者からの応募を受け付けて応募が複数ある場合には入札処理により前記事業者を選定し、配車を指示するように構成しているので、利用者からの求車情報を受け付けると迅速に事業者に対してその求車情報を提示することができ、さらに、事業者側からの応募に対して迅速に選定を行なって利用者に対する配車を行なうことができる。そして、このような運営を行なえることから、利用者が直接事業者の名前や連絡先などを認識していなくとも、常に、利用したいときには適切な事業者との連絡および選定を取り仕切ることで利用者に配車を行なうことができ、迅速性および利便性を高めたものとすることができる。

【0046】請求項32の発明によれば、利用者用端末装置は、利用者によりサービス機関の配車サービス装置に対してネットワークを介して求車情報を送信することができ、これに対して配車サービス装置から配車の指示を実施した旨の情報を受信して利用者に通知することができるので、利用者にとって求車情報に対応した配車を

迅速且つ的確に受けることができるようになり、その結果についても、迅速に認識することができ、求車をする場合に利便性の高い装置として利用することができるようになる。

【0047】請求項36の発明によれば、事業者用端末装置は、利用者に対する配車が可能な車両を備えた事業者側に設けられ、サービス機関の配車サービス装置からネットワークを介して求車情報を受け付け、その求車条件に対応して応募する場合に配車サービス装置に応募情報を送信し、配車サービス装置から配車の指示を受け付けることができるので、配車サービス装置を仲介として利用者からの求車を的確且つ確実に受けることができるようになる。

【0048】請求項37の発明によれば、請求項11ないし28のいずれかに記載の配車サービスシステムにおいて使用される配車可能な車両に設けられる事業者用車載機において、現在位置情報を取得可能な位置情報取得手段と、現在の稼働状態を示す情報および前記位置情報取得手段による現在位置情報を配車サービス装置もしくは事業者用端末装置に送信可能な送信手段とを備えた構成としているので、事業者においては、配車可能な各車両の位置情報取得手段により得られた現在位置情報について送信手段から送信されるので、各車両の位置を事前に把握しておくことができ、求車情報を受けたときに迅速に対応可能な車両を配車に充てるように応募することができるようになる。

【0049】

【発明の実施の形態】（第1の実施形態）以下、本発明をタクシー業界および運送業界を中心としたシステムに適用した場合の第1の実施形態について図1ないし図9を参照しながら説明する。なお、具体例としては、利用者がタクシーを利用する場合を代表例として示すが、利用者が荷送を依頼する場合においても同様の内容で利用が可能である。

【0050】図1は本システムの概略的な構成を示すもので、サービス機関1にはインターネット2を介して多数の利用者3および多数の事業者4がアクセス可能なシステム構成となっている。なお、このシステムに参加可能な利用者3および事業者4は、あらかじめ登録処理を行なって会員あるいは登録事業者となることにより、利用者3の識別を可能にすると共に事業者の対応可能な範囲を明らかにしておくことを条件としている。

【0051】サービス機関1には、インターネット2を介してアクセスするためのWebサーバ5とこれに接続される車両検索サーバ6、求車条件管理データベース7、公募サーバ8、配車サーバ9、地図サーバ10、経路サーバ11が設けられると共に、音声案内求車受付サーバ12が設けられている。さらに、音声案内求車受付サーバ12は、PBX（私設交換機）13に接続されていて、外部から電話回線網14を介して利用者3の求車

情報を受け付けるように構成されている。

【0052】Webサーバ5は、サービス機関1内で各種サーバ6～12などを統括的に制御する配車サービス装置として機能するものである。車両検索サーバ6は、登録されている事業者4の保有する車両を検索するためのもので、後述するように、各車両の位置情報を得ている場合には、この情報も付加して車両の検索を行なうようになっている。求車条件管理データベース7は、利用者3から受ける求車情報に含まれる求車条件を記憶して、求車情報を得るとその利用者3の求車条件のデータから該当する車両を探索できるようにするものである。

【0053】公募サーバ8は、後述する入札の処理を行なう場合に、事業者4からの応募を受け付けて、複数の応募がある場合には入札処理を行なう。配車サーバ9は、配車が決まった車両について、その配車指示の指令を送信したり、該当車両が利用者の元に到着するまでの間の配車情報を管理する。地図サーバ10は、求車情報に含まれる利用者の利用位置から目的地までの経路を地図上で検索するためのものであり、経路サーバ11は、その場合の経路を探索するもので、渋滞情報や工事情報なども取り入れて的確な経路を探索することができるものである。

【0054】音声案内求車受付サーバ12は、音声により求車情報を受ける場合のWebサーバ5へのインターフェースとしての機能をするもので、利用者3の音声による入力をデータに変換してWebサーバ5に渡したり、Webサーバ5からの応答データを音声に変換して利用者3側に出力する。

【0055】利用者3は、サービス機関1と通信を行なうために、利用者用端末装置として、インターネット2に接続可能なパーソナルコンピュータ15a、PDA15b、ナビゲーション装置15cあるいは車載端末15dなどの利用者端末15が利用可能である。また、利用者用端末装置としては、電話回線網14を通じてサービス機関1にアクセスするための携帯電話機16aや公衆電話機16bなどの利用者端末16を利用することもできる。また、上記したように、このシステムを利用するために、利用者3は、あらかじめサービス機関1に対して会員登録を行なう必要がある。

【0056】事業者4としては、例えば、複数のタクシー会社17a、17bや、複数の運送会社18a、18bあるいは複数のバス会社19a、19bなどの各業界で組織的運営を行なう会社や、1台の車両で個人事業を営む複数の個人タクシー業者20a、20bや個人運送業者21a、21bなどがある。これらの事業者4は、本システムに参加して営業を行なうために、後述するように事業者登録をあらかじめ行なう必要がある。

【0057】なお、タクシー会社17、運送会社18あるいはバス会社19などは、必ずしも複数の事業者がシ

ステムに加入している必要はないが、同業の事業者が複数加入することで全体としての競合意識が高まり、サービスの質の向上を図るよう方向付けができる。

【0058】上記したタクシー会社17a、17b、運送会社18a、18b、バス会社19a、19bは、それぞれ営業車として、タクシー20a、20b、20c、トラック21a、21b、バス22a、22bなどの複数の業務用車両を保有している。そして、各会社の管理事務所においては、事業者用端末装置として、求車情報を受け付けて業務用車両の配車を行なうための受注サーバ23および配車サーバ24が設けられ、サービス機関1および各業務用車両20a、20b、20c、21a、21b、22a、22bとの間の通信処理を行なうようになっている。各業務用車両20a、20b、20c、21a、21b、22a、22bには通信処理および車両情報の授受を行なうための事業者用車載機としての車載装置25（図2参照）が設けられている。

【0059】また、個人タクシー業者26a、26b、個人運送会社27a、27bにおいては、それぞれ1台のタクシー28a、28bあるいはトラック29a、29bを業務用車両として保有しており、管理事務所に対応する部署を持たず、車両そのもので受注サーバおよび配車サーバの機能を兼ね備えた事業者用車載機としての車載装置25（図2参照）を設けた構成とされている。

【0060】次に、図2を参照して車載装置25について説明する。車載装置25は、同図（a）に示すように、車載制御装置30を中心として構成され、この車載制御装置30には、車両挙動センサ31およびGPS（Global Positioning System）装置32が接続されている。車両挙動センサ31は、車両の各部の動作を検出するセンサにより走行速度、走行方向、走行経路などの様々な走行挙動の情報を検出して車載制御装置30に出力する。GPS装置32は、GPS衛星からの信号を検出して現在位置を特定して車載制御装置30に出力するものである。

【0061】車載制御装置30には、外部との通信機能を担う通信インターフェースとして、DSRC（Dedicated Short-Range Communication：狭域通信）車載機33、携帯電話機34あるいはパケット端末35などのうちのいずれかを接続することで通信を行なうように構成されている。DSRC車載機33は、有料道路の自動料金収受システムなどで使用されているもので、料金所に設けられたアンテナとの間で通信を行なうものであるが、ここでは、道路上に設けられる通信可能なアンテナとの間で通信を行なうことでインターネット2に接続可能なものとして設けられる。携帯電話機34やパケット端末35は、パケット通信を行なうことで図示しない無線電話網を介してインターネット2に接続可能である。

【0062】車載制御装置30には、HMI（Human Machine Interface）機能を果たす入出力装置として、オ

オーディオPC36、ナビゲーション装置37、表示装置38、パーソナルコンピュータあるいはPDAなどの端末装置39あるいはオーディオ装置40およびそのスピーカ41などのいずれかを接続するように構成されている。オーディオ装置40のように表示機能を持たないものでは、スピーカ41を用いて音声により入出力を行なう。

【0063】また、上記の構成とは異なり、同図(b)に示すように、車載制御装置30の機能を兼ね備えた構成のナビゲーション装置42を設けると共に、サービス機1との通信を行なうための携帯電話機43を接続した構成の車載装置25を構成することもできる。この場合には、ナビゲーション装置42は、GPS機能を備えていると共に、車両にあらかじめ設けられた各種センサからの検出信号を取り込んで車両挙動情報として作成すると共に、これを送信可能な構成とされているものである。

【0064】次に、本発明の作用について図3ないし図9を参照して説明する。まず、図3を用いて概略的な機能とその処理の流れについて説明し、その後、各処理の20 詳細について説明する。

【0065】〔1〕システムの概要

まず、このシステムを利用するために、利用者3においては、インターネット2を経由して接続する利用者端末15あるいは音声で電話回線網14を経由してサービス機1のWebサーバ5に対して接続し、前もって会員登録処理を行なっておく必要がある。同様に、各事業者4においても、このシステムを利用して利用者の紹介を受ける場合には、サービス機1に対してあらかじめ事業者登録処理を行なうと共に所定の登録料金を納めておく30 必要がある。

【0066】さて、利用者3による求車情報の送信では、利用者端末15あるいは16を用いてサービス機1に接続して所定の情報を送信する。ここでは、例えば、タクシー予約、荷送予約、引越予約あるいはデリバリ予約などの様々な形態の求車情報として発信することができる。各求車情報の発信においては、利用者3により指定される求車条件が付加された状態で送信される。

【0067】この場合、利用者端末15を用いる場合にはインターネット2を経由してWebサーバ5に接続する。また、利用者端末16つまり携帯電話機16aもしくは公衆電話16bなどを用いる場合には、電話回線網14を経由してサービス機1のPBX13に接続し、音声認識が可能な音声案内求車受付サーバ12との間で通信を行ない、求車情報を送信する。

【0068】一方、サービス機1側からは、配車が決まると求車の結果としてどの事業者からどのような条件で配車されるかという結果を受信することができる。また、求車情報を提示したときにその求車条件として特別なサービスがあるか否かを要求している場合には、サ

ービス機1は、各事業者4が提示しているサービス内容について利用者端末15に送信する。また、配車が決まってから実際に該当車両が利用者3の元に来るまでの間、その車両の位置情報や各種の車両情報が送信されるので、これを受信することで配車までの時間を有効に利用することができるようになる。

【0069】サービス機1においては、Webサーバ5によりこれを受信して事業者4側に求車情報としてインターネット2を経由して配信する。このとき、どの事業者4に配信するかは、求車情報の種類や求車条件に対応することのできる車両を探索してその車両を保有する事業者4を選定する。配信すべき事業者4が複数存在する場合には、入札を行なうことを前提として入札情報も提示する。そして、求車情報に対する配車の指定先を選定した場合には、その事業者4に配車の指示を送信する。

【0070】事業者4は、受信した求車情報に対して対応可能な場合にはこれに応募する旨の応答をサービス機1に返す。また、入札情報に応答する場合には、入札の条件を示す情報を送信する。また、自社に配車指示が来ている場合にはこれにしたがって該当する車両を利用者3の元に配車させると共に、配車情報として、その車両の位置情報や各種の配車に関する情報を送信して利用者3へのサービスを行なう。なお、サービスを提供した代償として、サービス機1は、利用者3から配車利用料金を徴収し、事業者4から利用者紹介料を徴収する。

【0071】以上のように、サービス機1、利用者3、事業者4の3者の間で情報の授受を行なうことで、利用者3は、タクシーを利用したいときには、常にサービス機1に連絡するだけで、所望の求車条件でタクシーを利用することができ、利用者3にとっては簡単且つ迅速にタクシーを利用することができるようになり、事業者4は効率良く業務用車両を運用することができるようになり、このサービスを提供するサービス機1は、サービスを提供する代償を受け取ることができるようになる。

【0072】〔2〕システムの詳細な機能

次に、上記した各処理内容について、関連する部署間の情報の授受とそのシーケンスを示して説明する。

(2-1) 利用者の会員登録処理

利用者3による会員登録処理は、図4に示すフローチャートにしたがって行なわれる。まず、利用者端末15(16)により、サービス機1のWebサーバ5にアクセスし、公開されているホームページを表示させる。次に、利用者端末15により、ホームページから会員登録要求を送信すると(ステップA1)、Webサーバ5はこれを受け付けて(ステップA2)、必要な登録事項を記入するための会員登録のページの情報を送信する(ステップA3)。

【0073】利用者端末15には、会員登録するのに必

要な登録事項が表示され、利用者3により所定事項が記入されて送信処理がなされると（ステップA4）、Webサーバ5は、受信した必要登録事項のデータに基づいて登録処理を行ない（ステップA5）、登録が完了するとその通知を行なう（ステップA6）。利用者端末15は、登録完了通知を受けるとこれを表示し、利用者3により確認することができるようになる（ステップA7）。以上により登録処理が終了する。

【0074】上述の場合、必要登録事項として、例えば、特殊な条件を付加しておくことができる。例えば、利用者3が身障者であることを示す条件や、利用する車両の種類を指定する条件、あるいは優先条件として低価格を優先する条件や目的地への迅速な到着を優先する条件や、各種の情報をできるだけ得られるようにする車両であることを優先指定する条件などが考えられる。

【0075】（2-2）事業者登録処理
次に、事業者登録処理について図5を参照して説明する。事業者4が備える端末装置23、24のいずれかによりサービス機関1のWebサーバ5にアクセスして公開されているホームページを表示させる。次に、事業者端末23、24により、ホームページから事業者登録要求を送信すると（ステップB1）、Webサーバ5はこれを受け付けて（ステップB2）、必要な登録サービス項目および必要登録事項を記入するための事業者登録のページの情報を送信する（ステップB3）。

【0076】事業者端末23、24には、事業者登録するのに必要な登録事項が表示され、事業者4のオペレータにより所定事項が記入されて送信処理がなされると（ステップB4）、Webサーバ5は、受信した必要登録事項のデータに基づいて登録処理を行ない（ステップB5）、登録料の請求を行う（ステップB6）。

【0077】事業者4が、事業者端末23、24を用いてもしくは他の方法で登録料支払いの処理を行ってその旨を送信すると（ステップB7）、Webサーバ5は、登録料受領確認を行ってOKならばその旨を通知し（ステップB8）、続いて入札条件の指定を登録するように事業者端末23、24に促す。事業者端末23、24により、入札条件として例えば配車単価や営業条件などを指定する内容を記入して送信すると（ステップB9）、Webサーバ5はこれを受信して入札条件を登録し（ステップB10）、これによって事業者登録の処理を終了する。

【0078】上述のステップB9では、その事業者4が行なっている特別なサービスなどがある場合には、これを利用者3側に提示するための条件として登録することもできるようになっている。例えば、利用条件となるサービス内容として、身障者対応サービス、丁寧さを優先したサービス、対応の早さを優先したサービス、料金の安さを優先したサービス、近距離優先サービス、遠距離優先サービス、少人数優先サービス、大人数優先サービ

ス、など各種のサービスの他社に対する優位性を主張できるものを登録する。

【0079】（2-3）車両位置情報管理処理
サービス機関1のWebサーバ5は、各事業者4の保有する業務用車両の位置情報を取得して管理している。これは、利用者3から求車情報を受けたときに、その利用者3が乗車しようとしている場所に最も近い位置に存在する車両を探索することで迅速に配車を行えるようにするために管理するものである。

【0080】このシステムにおいては、各事業者4は、自社が保有する業務用車両の位置および車両情報を車載装置25より送信させて取得することで管理を行っており、このようにして取得している車両の位置情報をサービス機関1に定期的に送信することで各事業者4の車両の位置情報を管理している。

【0081】例えば、事業者4の一つであるタクシー会社A（17a）のサーバ23、24は、次のようにして2台の車両に搭載している車載装置25a、25bからの情報を受信する。車載装置25a、25bは、GPS機能を利用して車両の位置を検出し（ステップC1a、C1b）、車両運行情報を作成する（ステップC2a、C2b）。車両運行情報としては、GPS機能により検出した車両位置情報、運転手により入力される業務日程情報、業務依頼情報、日報送受情報、業務受け入れの可否を示す情報などがある。

【0082】そして、タクシー会社Aのサーバ23、24から車両位置検知の指示が送信されると（ステップC3）、車載装置25a、25bは、上述のようにして作成した車両運行情報をサーバ23、24に対して送信する（ステップC4a、C4b）。サーバ23、24は、受信した車両運行情報を元にして自社が保有する業務用車両の車両運行管理情報を作成して前の情報と変化がある場合にはこれを書き換える（ステップC5）。

【0083】そして、サーバ23、24は、サービス機関1のWebサーバ5に対して、作成した車両運行管理情報のうちの車両位置情報を送信する（ステップC6）。Webサーバ5は、タクシー会社Aからの車両位置情報を受信する（ステップC7）。なお、タクシー会社A以外にも他のタクシー会社から車両位置情報を随時受信していて（ステップC0a、C0b、…）、これら各タクシー会社から受信した車両位置情報をまとめて総合的に管理する（ステップC8）。以上のようにして、サービス機関1は、各タクシー会社の車両の現在位置情報を把握することができるように、管理しており、求車情報に対して迅速な対応をすることができるようにしている。

【0084】（2-4）求車情報に対する処理
上述のようにして、利用者3から受ける求車情報に対して準備をしており、システムが円滑に機能するようになっている。次に、利用者3からの求車情報に対する処理

について図7および図8を参照して説明する。

【0085】ここでは、モデルケースとして、求車情報に応じて、タクシー会社A(17a)、タクシー会社B(17b)、個人タクシー28aが対応可能な場合で、これらの事業者4から入札により一つを選定する場合で説明する。

【0086】まず、利用者3により利用者端末15(16)が操作されて、サービス機関1のWebサーバ5に対して求車情報が送信されると(ステップD1)、Webサーバ5は、これを受け付けて(ステップD2)その求車情報に含まれる求車条件に適合する事業者4あるいは適合する車両を保有する事業者4を探索する(ステップD3)。

【0087】上述の場合に、利用者3が利用者端末15を操作して求車情報を送信する際に、サービス機関1に対して、事業者4の特別なサービスを希望したり、あるいはサービスの質を要求することができる。この場合には、Webサーバ5との間で相互にやり取りをしながら要求するサービス内容があるか否かを確認して希望の求車条件を設定しても良い。

【0088】そして、事業者4の探索に際しては、前述の事業者登録の際に登録した事項中、求車条件として指定されている項目に該当するものがあるかどうかをチェックしたり、各事業者4が保有する車両の位置情報から最も近い位置に存在する車両を保有している事業者4をチェックする。求車条件として指定される項目としては、例えば、利用者3の要求するサービス内容を備えているか、人数や行き先、あるいは値段などの条件が上げられる。

【0089】このような求車条件に適合する事業者4として、前述したようにタクシー会社A(17a)、B(17b)と個人タクシー28aの3つの事業者4が探索されると、Webサーバ5は、これらに求車情報と共に入札を行う旨の情報を送信する(ステップD4)。

【0090】ここで、例えばタクシー会社Aは、求車情報を受け付けると(ステップD5a)、改めて各車両に対して車両情報を送信するように指示を送信し(ステップD6)、車載装置25から車両情報が送信されると(ステップD7)、正確な車両情報を元にして入札の応募の内容をWebサーバ5に送信する(ステップD8a)。また、タクシー会社Bは、求車情報を受け付けると(ステップD5b)、これに応じて入札応募の送信を行う(ステップD8b)。同様に、個人タクシー28aも、求車情報を受け付けると共に入札応募の送信を行う(ステップD5c、D8c)。

【0091】Webサーバ5は、対象としている3つの事業者4から入札応募の送信を受けると、入札処理を行う(ステップD9)。この入札処理では、Webサーバ5は、条件に適合し且つ入札価格の最も安い事業者4を選定する。このとき、時間的に余裕の有る場合には各事

業者4との間で通信処理を行って再入札価格を受け付けるようにすることもできる。

【0092】入札処理が終了して、落札した事業者4として、例えばタクシー会社Aが選定されると、その結果を利用者端末15および各事業者4に送信する(ステップD10、D11a~D11d)。そして、Webサーバ5は、続いて落札した事業者4であるタクシー会社Aに対して配車指示を行うように送信すると共にそれを利用者端末15にも送信する(ステップD12)。利用者3は、配車の指示を行ったことを示す情報を受信して確認することができる(ステップD13)。また、配車を指示されたタクシー会社Aは、サーバ23、24により、対象となる車両の車載装置25に対して配車の指示を行う(ステップD14、D15)。

【0093】以上の処理を実施することにより、求車情報を受けてから迅速且つ確実に利用者に対して適切な条件で配車を行ってこれを利用者3に通知することができるようになる。なお、入札処理については、ほぼリアルタイムで実施してその結果を利用者3に通知することで迅速な対応を実現するようにしている。

【0094】上述のようにして、利用者3がサービス機関1に対して求車情報を送信する際には、求車条件として利用者3が乗車する場所つまり利用場所を付加する必要があるが、利用者端末15側に位置検出機能が備えられている場合には、自動的に付加するようになっている。

【0095】図8はその処理を示しており、利用者3が、利用者端末15を操作して求車情報の送信を指示すると、まず、GPS機能などを利用することで位置検出処理を行い(ステップE1)、続いて、求車条件の入力を促し(ステップE2)、目的地や人数あるいは値段などの各種条件が入力されると、求車情報として作成してこれをWebサーバ5に送信する(ステップE3)。これにより、利用者3は、自分が今いる場所を正確に知らなくとも、自動的に伝えることができるので、見知らぬ土地で求車情報を発する場合でも簡単且つ迅速に行うことができるようになる。

【0096】(2-5) 配車情報送信処理

次に、配車が指示されてから、該当の車両が利用者3の元に配車されるまでの期間中、その該当車両の位置などを示す車両情報を利用者3に知らせるための配車情報送信処理について図9を参照して説明する。

【0097】利用者3が、利用者端末15を使用して求車情報を送信して(ステップF1)、前述の処理がサービス機関1のWebサーバ5により行われた結果、該当する車両を有するタクシー会社A(17a)に対して配車指示がなされると(ステップF2)、該当車両に配車指示が送信され、車載装置25により配車指示が受信される(ステップF3)、タクシー会社Aは、この後、該当車両が利用者3の元に配車されるまでの間、車両の

位置を確認して車両に関する情報と共に利用者3の利用者端末15に送信する。この場合、タクシー会社Aは、まず、配車車両を確認し(ステップF4)、その車両の車載装置25に対して位置情報を要求する(ステップF5)。車載装置25においては、受信した位置情報の要求に応じて、GPS機能などを使用して現在位置を検出し(ステップF6)、得られた現在位置情報と共に運行情報をWebサーバ5に送信するようになる(ステップF7)。

【0098】Webサーバ5は、受信した車両の運行情報と利用者3の目的地に関する情報などから配車情報を作成して利用者端末15に送信する(ステップF8)。配車情報としては、利用場所から目的地までの経路に関する地図情報や経路情報、利用者3の現在位置に関する情報、目的地に関する情報、経路の周辺情報、交通情報あるいは気象情報などの様々な情報が含まれる。

【0099】利用者端末15は、配車情報を受信してこれを表示させるので(ステップF9、F10)、利用者3は、これを見ることで配車される車両の位置や目的地に移動することに関する各種の配車情報を得ることができ、車両が到着するまでの時間を有効に利用することができる。例えば、接客中の相手のためにタクシーを呼んだ場合など、到着までの時間が分かるのでその間、時間を有効に利用して接客を行なうことができる。また、渋滞などでタクシーの到着が遅れる場合でも、交通情報や到着予想の情報などから遅れることを確認することができるので、安心して待つことができるようになる。

【0100】以上のような配車情報を、車両が到着するまでの間、必要に応じてWebサーバ5から送信されるので(ステップF11、F12、F13)、配車に関する事情が変化した場合でも、利用者3は、これに対応した情報を的確に受信して配車情報を得ることができるようになる。

【0101】なお、上述の配車情報の授受については、車載装置25は、Webサーバ5と直接データを授受する構成として説明しているが、タクシー会社A(17a)のサーバ23、24を介して授受するようにしても良い。

【0102】(2-6) その他の処理と機能
その他の処理として、利用料金の支払い処理と、アンケートの回収処理などがある。

(2-6-1) 支払い処理

上述のようにして利用者3が配車を受けてこれを利用した後に、サービス機関1のWebサーバ5は、配車利用料金の請求を行なう。これに対して、利用者3は、利用者端末15などによりあらかじめ登録している指定口座への振り込みを指示して支払いを完了し、その旨をWebサーバ5に送信する。これにより、利用者3による利用の手続が完了する。また、Webサーバ5は、事業者4に対して利用者紹介料の請求を行なう。事業者4は、

これに応じて一定の利用者紹介料の支払い処理を行なってこれをWebサーバ5に送信する。

【0103】なお、これらの支払い処理は、自動的に口座振替処理を行なうように設定することもできるし、クレジット処理や、Eコマースによる処理を行なうこともできる。さらには、利用者3がタクシーを利用した際に支払う料金についても、同様にして口座振替を行なったりクレジットあるいはEコマースによる処理を行なうこともできる。

【0104】(2-6-2) アンケート処理

利用者3が、タクシーを利用した場合には、サービス機関1は、Webサーバ5により、利用者端末15に対して利用したタクシーのサービス内容についての対応や感想などを調査すべくアンケートフォームを送信する。これに対して、利用者3が利用者端末15によりアンケート項目に答えて送信すると、Webサーバ5は、これを該当する事業者4の車両についてのアンケート結果として記憶すると共に、これを集計して以後の利用者3への利用に際して提示するようになる。この場合、Webサーバ5は、アンケート集計結果は、例えば、事業者4毎のサービスの質のランク付けをしたり、サービスの質の特徴を把握したり、さらには、事業者4に対してこれを送信することで、該当する事業者4のサービスの提供方法の検討や質の向上、あるいは他の事業者4との違いなどを認識して改善やサービス性の提示に利用するなどに供するデータとして提供することができるようになる。

【0105】なお、アンケートの回収に際しては、回収率の向上を図るために、回答に対する景品などの提供を行なったり、改善された点などを事業者4側から直接利用者3に対して連絡をするなどのきめ細かな対応をすることでシステム自体の質の向上も図れるようになる。

【0106】[3] まとめ

このような本実施形態によれば、つぎのような効果を得ることができる。第1に、利用者3は、求車をする場合に、利用者端末15、16を用いてサービス機関1に接続して求車情報を送信するだけで、迅速且つ的確な配車サービスを受けることができるようになるので、見知らぬ土地に出向いた時やタクシー会社の電話番号などを知らない場合でも、簡単且つ迅速に配車サービスを受けることができるようになる。事業者4は、特定のタクシー乗り場以外でも的確な配車をすることができ、収益の増大を望むことができる。

【0107】第2に、求車情報を送信したときに複数の事業者4が応募したときには、入札処理により最も安価あるいは求車条件に適合する事業者4を選定するので、利用者3は適切且つ安価な値段でサービスを受けることができるようになる。また、事業者4にとっては、安価に配車サービスを提供することで利用者の増大を図ることができるようになる。

【0108】第3に、利用者3は、求車情報にサービス

の質を選択するなどの求車条件を付加することができるので、事前にきめ細かな指定により満足するサービスを受けることができるようになり、サービスの質の向上を図ることができる。事業者4は、これに応じて利用者の増大を図ることができる。

【0109】第4に、利用者3は、配車する車両が選定されてから利用する場所に到着するまでの間に、その車両の配車情報を受けることができるので、到着までの時間を把握して安心して待機することができると共に、接客などを行っている場合には有効に時間を過ごすことができ、さらには、配車が遅れる場合でも、到着予想時刻や渋滞情報を得ることで問い合わせをしたりイライラするなどの不快感を覚えることがなくなり、スムーズに配車サービスを行なうことができるようになる。

【0110】第5に、事業者4による特別なサービスが可能な場合には、これを利用者3側に提示させることができるので、利用者3は求車情報として提示する求車条件として特別なサービスを指定したり、利用者3が望むサービスに対して対応可能な事業者4を探索することができるようになり、きめ細かなサービスを迅速且つ的確に提供することができるようになる。

【0111】第6に、利用者3が配車サービスを受けた後に、利用者端末15に送信されるアンケートフォームに回答することでサービス内容についてフィードバックをすることができるので、利用者3が要求するサービスの質を事業者4側に提示することができると共に、事業者4側にとってはそのアンケート結果からサービスの改善点を的確に把握して効率良くサービスの質の向上を図ることができるようになる。

【0112】第7に、利用者3および事業者4は、インターネット2を介してWebサーバ5にアクセスすることができるので、簡単且つ迅速に求車情報や配車情報の授受を行なうことができるようになる。また、利用者3は、音声によってもサービス機関1にアクセスすることができるので、端末装置の操作に不慣れな利用者3でも簡単且つ迅速に利用することができる。

【0113】(第2の実施形態)図10および図11は、本発明の第2の実施形態を示すもので、第1の実施形態と異なるところは、求車情報に対する配車の車両対象として、既に配車済みであって他の利用者が利用中の車両も対象とするシステムとして構成したところである。つまり、「相乗り」も配車の対象として設定しているところが特徴となっている。

【0114】この実施形態では、従来の方式はもちろん、第1の実施形態のシステムを採用した場合でも、発生しうる不具合をさらに改善しようとするものである。例えば、空車がある場合には、第1の実施形態のシステムを採用することで迅速に利用者3に配車指示することができるが、配車可能な車両が既にほとんど他の利用者によって利用されている場合には、空車が発生するまで待

つ必要がある。

【0115】しかし、利用者によっては、単独で利用するよりも、迅速に目的地に移動したい場合もあり、このような場合には「相乗り」をしてでも早く乗車したいと考えるのが一般的であるが、せいぜいタクシー乗り場で声をかけて同一方向の同乗者を募るといった程度の対策しかなかった。

【0116】そこで、この実施形態においては、「相乗り」も積極的に利用することができるようにして、利用者の迅速な移動を可能とすると共に、その場合には、利用者のリーズナブルな料金で利用することができるよう、タクシー会社と利用者の双方にとってメリットが発生するようなシステムとしている。

【0117】(1) 処理内容

図10は「相乗り」車両を対象に入れた求車情報の配信システムの処理プログラムを示している。第1の実施形態における図7に示した求車情報に対する処理との違いを中心として処理の流れを説明する。なお、ここでは、モデルケースとして、利用者3が求車情報を送信したときに、「相乗り」が可能な車両が探索された場合で説明する。

【0118】まず、利用者3が利用者端末15を通じて求車情報をサービス機関1のWebサーバ5に送信すると(ステップG1)、Webサーバ5は、求車情報を受け付けてその求車条件に適合する車両が存在するか否かを探索する(ステップG2、3)。このとき、探索対象となる車両は、前述した空車の状態のすべての車両に加えて、事業者4が「相乗り」の条件受け入れの契約をしている場合の車両であって、その時点で他の利用者に対して配車済みのものも含めている。このため、第1の実施形態のようにして配車を指示したときには、サービス機関1側で、配車した車両側から他に「相乗り」で乗車可能な人数は何人かという点について情報を得るようにしている。

【0119】そして、このとき、「相乗り」となる対象車両が存在しなかった場合には(ステップG4で「NO」と判断)、第1の実施形態と同様の処理を行なうように移行する(ステップG5)。そして、対象車両としてタクシー会社A(17a)の車両が「相乗り」可能であるとして探索されたとすると(ステップG4で「YES」と判断)、まず、利用者3に対して「相乗り」がOKか否かを問い合わせる(ステップG6)。このとき、「相乗り」を選ぶことで得られるメリットとなる値引き率の見積額も同時に送信される。

【0120】利用者端末15は、受信した「相乗り」の場合の値引き率を表示させ(ステップG7)、「相乗り」がOKか否かの選択を促す(ステップG8)。ここで、使用者3が「NO」の場合には、「相乗り」の条件を止めて、第1の実施形態と同様の配車の処理を行なう(ステップG9)。そして、「相乗り」OKの場合には

(ステップG8で「YES」と判断)、これをWebサーバ5に伝送する(ステップG10)。

【0121】これを受けて、Webサーバ5は、該車両を有する事業者であるタクシー会社A(17a)のサーバ23、24に「相乗り」の依頼を送信する(ステップG11)。タクシー会社Aは、サーバ23、24に「相乗り」の依頼を受けると、該当する車両の利用者3に対して「相乗り」を受け入れるか否かを問い合わせる(ステップG12)。ここでは、「相乗り」のメリットとなる値引き率を条件として提示することになる。

【0122】該車両の車載装置25は、「相乗り」の問い合わせを受けると(ステップG13)、その車両を既に利用している利用者3に対して「相乗り」がOKか否かを聞いて運転手により入力するように促す(ステップG14)。その車両の利用者3が「相乗り」を拒否した場合には、その車両を配車対象から外して、第1の実施形態と同様の配車の処理を行なう(ステップG15)。

【0123】そして、その車両の利用者3が「相乗り」をOKとして運転手により車載装置25に「相乗り」OKの応答が入力された場合には、車載装置25は、タクシー会社Aのサーバ23、24を通じてWebサーバ5に伝送する(ステップG16、G17)。Webサーバ5は、伝送結果が「相乗り」が可でない場合には第1の実施形態と同様の通常処理に移行し(ステップG18、G19)、「相乗り」がOKの場合には、その車両に対して配車指示を行い(ステップG20、21、G22)、該車両からの伝送を受ける。また、Webサーバ5による配車指示は、利用者端末15にも送信されて配車されたことを表示により確認することができるようになる(ステップG23)。

【0124】この後、「相乗り」車両が利用者3の元に到着するまでは、前述同様にWebサーバ5から配車情報が利用者端末15に伝送されるので、各種の情報を得て車両が到着するまで待機することができるようになる。この結果、利用者3は、求車情報を送信してから「相乗り」車両が探索され、その値引き率に応じて「相乗り」を受け入れると、その車両が配車されるようになり、各種情報を得ながら、迅速且つ安価に目的地に移動することができるようになる。

【0125】(2)具体的なケース例

次に、上述の「相乗り」のケースの具体例を図11を参照して説明する。ここでは、先に車両を利用している利用者A(3)に対して、途中から「相乗り」をする利用者B(3)が乗車して目的地に移動する場合で説明する。例えば、利用者Aが車両Dに「新橋」で乗車したとする。この乗車の情報は、運転手により業務連絡として自社のサーバ23、24に連絡すると共に、Webサーバ5にも「新橋から東京駅まで1人乗車、『相乗り』OKです。」といったメッセージが送信されるようになる

(図中、①)。

【0126】次に、「銀座」で利用者Bが利用者端末15を使って求車情報をWebサーバ5に送信したとする(図中、②)。この利用者Bは、求車情報として目的地が「東京駅」であることを提示している。Webサーバ5は、これを受けて、該当する車両を探索した結果、車両Dが得られ、この車両Dの利用者Aに「相乗り」の条件を提示して可否を問い合わせる(図中、③)。

【0127】交渉が成立して車両Dの車載装置25には、Webサーバ5から配車の指示が与えられ、利用者Bが「銀座」で「相乗り」乗車をする。「東京駅」に到着すると、利用者Aは料金として1600円を支払い、利用者Bは600円を支払う。これは、単独で乗車した場合のそれぞれの料金1800円、680円に対して、各利用者A、Bは、200円、80円分だけ安く乗車することができたことになる。一方、タクシー会社側においては、利用者Aだけを乗車させた場合には、得られる料金が1800円だったのに対して、利用者Bも「相乗り」したことで、合計2200円を得ることができたので、差額として400円分多く得られたことになる。

【0128】なお、各利用者A、Bおよび車両Dのタクシー会社A(17a)は、それぞれサービス機関1に対して、配車利用料金および利用者紹介料金を支払うことで、サービス機関1は収入を得る。この場合、サービス機関1に支払うべき利用料金は、あらかじめ定められた一定料金であって、利用者やタクシー会社にとって大きな負担とならない程度の額に設定されている。

【0129】このような第2の実施形態によれば、配車済みの車両も配車対象として「相乗り」を条件として取り入れ、サービス機関1のWebサーバ5により、利用者の双方に確認をした上で「相乗り」を合理的に行なうので、利用者は「相乗り」をすることで迅速に目的地に移動することができるようになり、特に、配車すべき空車が少ない場合においては、利用者にとっては、早く目的地に移動することが可能となり、また事業者にとっては車両を効率良く運営することができるようになり、利便性の高いシステムとすることができる。

【0130】また、「相乗り」配車をする場合には、利用者に対して割引を条件として提示するので、積極的に利用する価値が発生し、プライバシーなどの質を要求しない場合には料金面でも利用しやすいこととなり、利用者にとっては料金面で直接的なメリットを得ることができ、事業者にとっては複数の利用者を「相乗り」させることで、車両の運用効率の向上と共に、走行距離に対する収益率の向上を図ることができるようになる。そして、このようなサービスを提供することで、サービス機関1は、利用者3および事業者4の双方から利用料金を得ることができるようになる。

【0131】(他の実施形態)本発明は、上記実施形態にのみ限定されるものではなく、次のように変形また拡

張できる。音声による求車を行う場合には、音声合成が可能な音声案内求車受付サーバを用いたが、これに限らず、オペレータを配置させて電話による求車を受け付けて入力処理することもできる。

【0132】また、音声による求車を行う場合には、求車情報を提示してから配車情報を受けるまでの間、一度電話を切って折り返しサービス機関側から配車情報を電話しなおして連絡するようにしても良いし、電話をつないだ状態のまま配車情報の連絡までの一連の処理を行うようにしても良い。タクシーの乗車の場合を求車情報として提示する例で示したが、もちろん、荷送の場合や、引越あるいはデリバリーなどのサービスを依頼する場合でも適用することができ、同様の考え方で実施することができる。ただし、配車の条件や配車情報の提供の仕方は若干場合によって異なることになる。

【0133】車載装置は、図2に示すものに限らず、他にも同様の機能を果たす構成のものを適宜使用することができる。サービス機関1においては、Webサーバ5に加えて多数のサーバ類6〜12を設ける構成としているが、必ずしも全ての構成を個別に設ける必要はなく、同様の機能を兼ね備えたサーバを用いることで構成しても良い。また、全てのサーバを必ず設ける必要もなく、目的や用途に応じて適宜必要なサーバを設けるようにしても良い。ネットワークは、インターネット2や電話回線網14以外に、パケット通信網、狭域通信網、光通信網、無線通信網など上記した内容の通信を可能とするネットワークであれば何でも適用することができる。

【0134】ナビゲーション装置は、カーナビゲーション装置以外に、ヒューマンナビゲーション装置でも良い。「相乗り」乗車をする場合の値引率の設定については、適宜のルールを決めて設定することができるし、この設定についても入札を適用して利用者及び事業者の間で設定するようにシステムを形成しても良い。「相乗り」以外にも、利用者を乗せて移動する目的地までの往路からの復路で他の利用者を値引きして配車できるようにするシステムを形成することもできる。この場合、利用者が多少の時間は待つことを承知で安く利用できる空車を利用する選択を可能にすることで、利用者にとって料金面でメリットを享受することができ、事業者にとっては空車で復路を移動することに比べて、利用者に安価に配車することで利益を得ることができるようになる。

【0135】利用者3については、会員登録を必ずしも事前に行なっておく必要はなく、必要なときに求車情報を発信する際に会員登録処理を行なうようにすることもできる。また、事業者4についても、必ずしも事前に事業者登録を行なうことを要件とする必要はなく、サービス機関1側において、必要性に応じて適宜求車情報を配信することで配車を得るようにシステムを構築することもできる。

【0136】上記各実施形態においては、タクシーを科

*用する場合の例として示したが、その場合の料金の設定については、一般的な料金を基準として設定することもできるし、独自のサービスルールで料金を設定するようにしても良い。また、「相乗り」乗車をする場合の利用者3の各料金の設定についても、各種の設定ルールがあるので、一元的に設定する必要はないし、この場合にも入札が行なえるようなシステムを構築して弾力的に活用することができる。

【0137】サービス機関1は、Webサーバ5により事業者4のサーバ23、24を介して各車両と通信を行なう場合を例として示したが、事業者4側の統括をサーバ23、24で行なう場合以外に、各車両の車載装置25が独立して求車情報を受けるようにしたシステムを構築することもできる。この場合には、事業者4のサーバ23、24は、そのやり取りや結果を受けて管理する位置付けとすることで全体の管理を行なうことができる。これにより、サービス機関1は、直接車載装置25と交渉をすることができて、迅速且つ的確な配車サービスを行なうことができるようになる。

【0138】サービス機関1は、利用者3による緊急の求車情報の送信に応じて配車サービスをすることもできるし、利用者3が先の日程で利用するための配車を予約するために送信する求車情報を受け付けて対処することもできる。

【0139】サービス機関1は、利用者3による求車情報の受信時に、利用者3が指定する価格について、標準的な価格データを用いて適正価格について案内情報を利用者端末15に送信するようにシステムを構築することで、利用者にとってリーズナブルな利用を行なえ、安心且つ確実な利用を図ることができる。

【図面の簡単な説明】

【図1】本発明の第1の実施形態を示すシステムの概略構成図

【図2】車載機の構成例を示す図

【図3】システムの概要を示す作用説明図

【図4】利用者の会員登録処理の流れを示す図

【図5】事業者登録の処理の流れを示す図

【図6】車両位置情報管理処理の流れを示す図

【図7】求車情報に対する処理の流れを示す図

【図8】車載機の位置情報取得と求車情報送信処理のフローチャート

【図9】配車情報処理の流れを示す図

【図10】本発明の第2の実施形態を示す相乗りの場合の図7相当図

【図11】相乗りの場合の流れを示す作用説明図

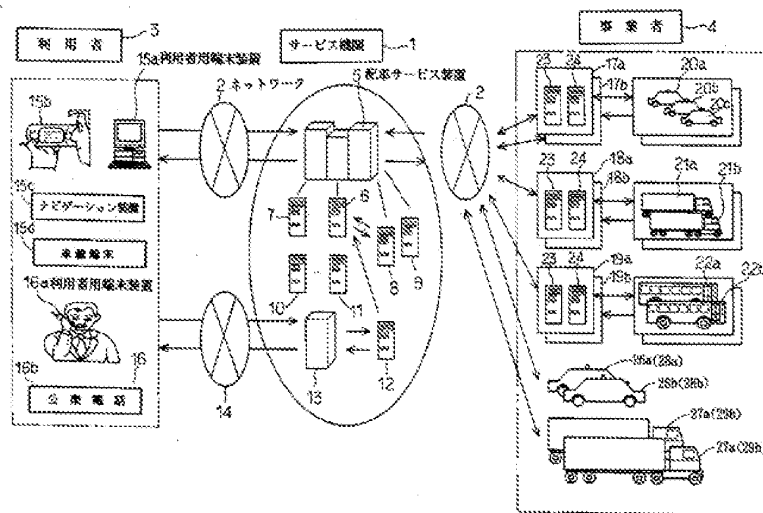
【符号の説明】

1はサービス機関、2はインターネット（ネットワーク）、3は利用者、4は事業者、5はWebサーバ（配車サービス装置）、6は車両検索サーバ、7は求車条件管理データベース、8は公募サーバ、9は配車サーバ、

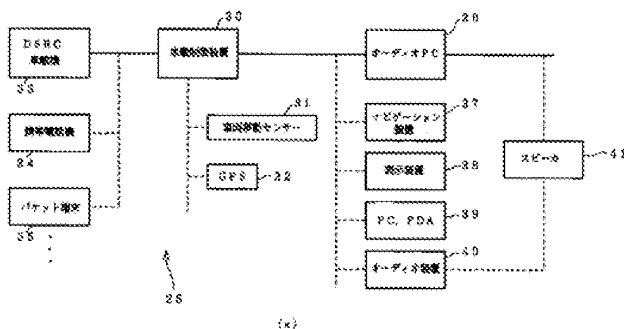
10は地図サーバ、11は経路サーバ、12は音声案内
求車受付サーバ、13はPBX、14は電話回線網（ネ
ットワーク）、15、16は利用者端末（利用者用端末
装置）、15aはパーソナルコンピュータ、15bはP
DA、15cはナビゲーション装置、15dは車載端
末、16aは携帯電話機、16bは公衆電話、17a、
17bはタクシー会社18a、18bは運送会社、19
a、19bはバス会社、20a～20cはタクシー（業
務用車両）、21a、21bはトラック（業務用車

＊

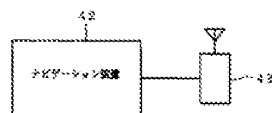
【図1】



【図2】



(a)

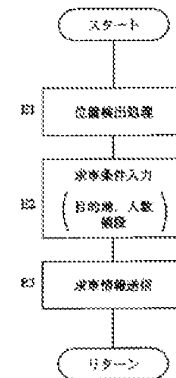


(b)

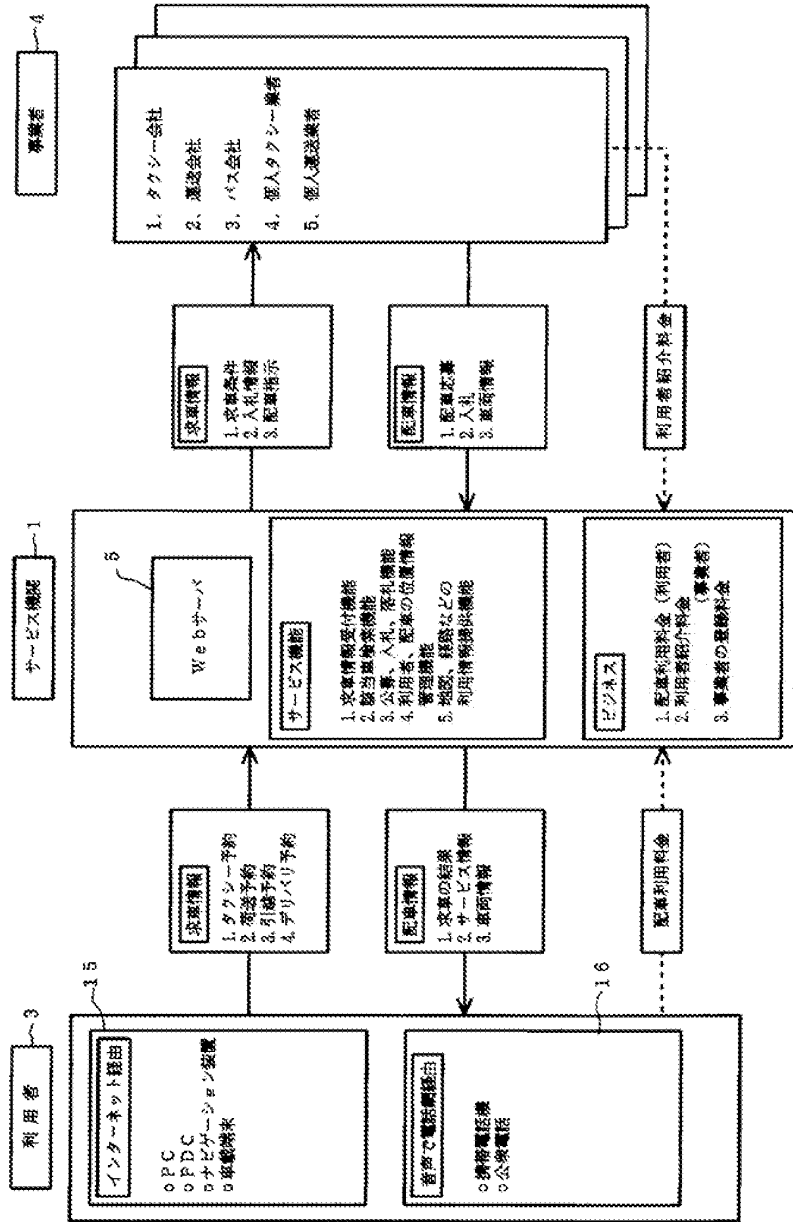
＊両）、22a、22bはバス（業務用車両）、23は受
注サーバ（事業者用端末装置）、24は配車サーバ（事
業者用端末装置）、25は車載装置（事業者用車載
機）、26a、26bは個人タクシー業者、27a、
27bは個人運送会社、28a、28bはタクシー（業務
用車両）、29a、29bはトラック（業務用車両）、
30は車載制御装置、31は車両挙動センサ、32はG
PS装置である。

【図8】

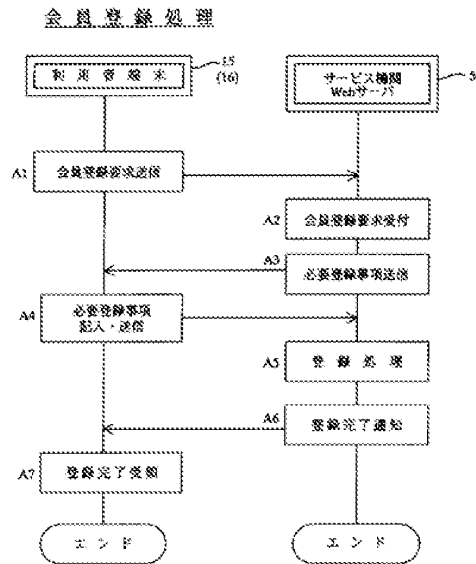
位置情報取得と求車情報送信処理



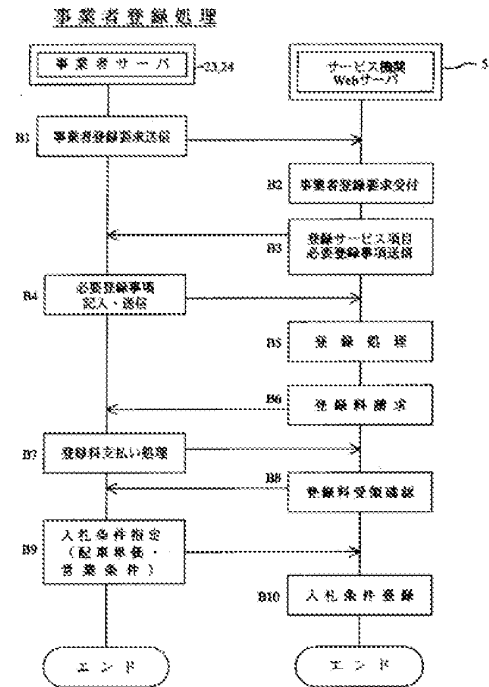
【図3】



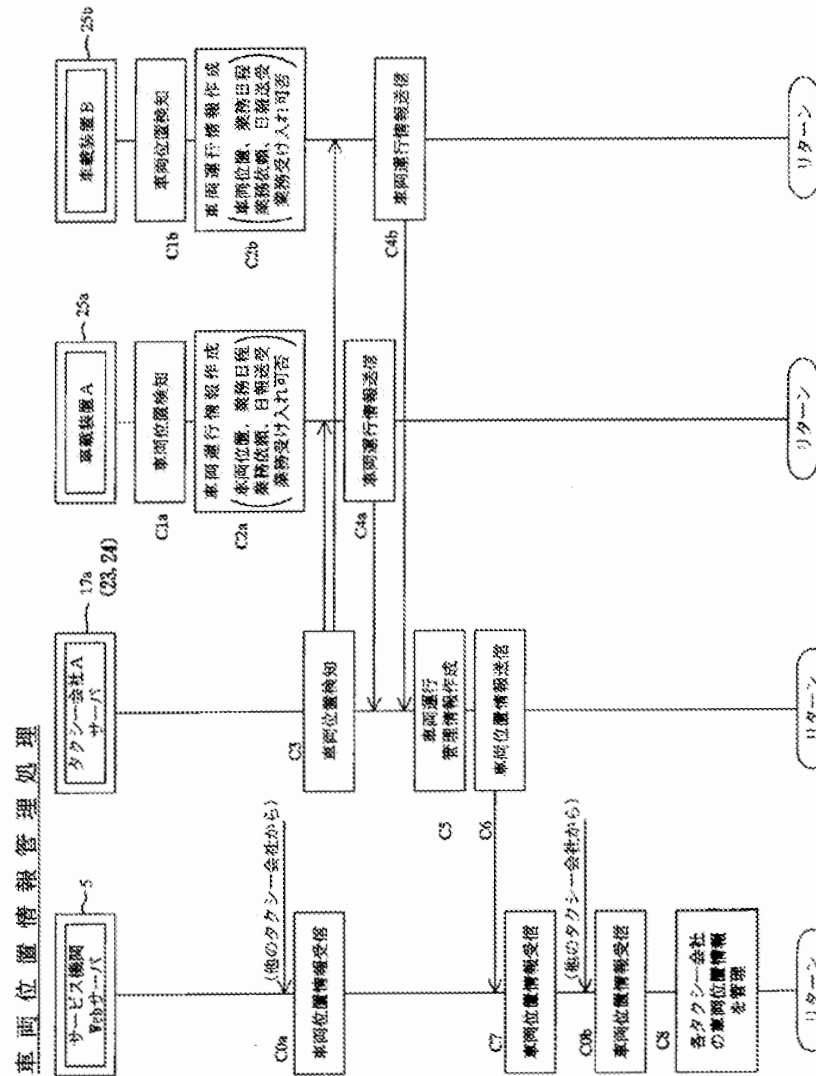
【図4】

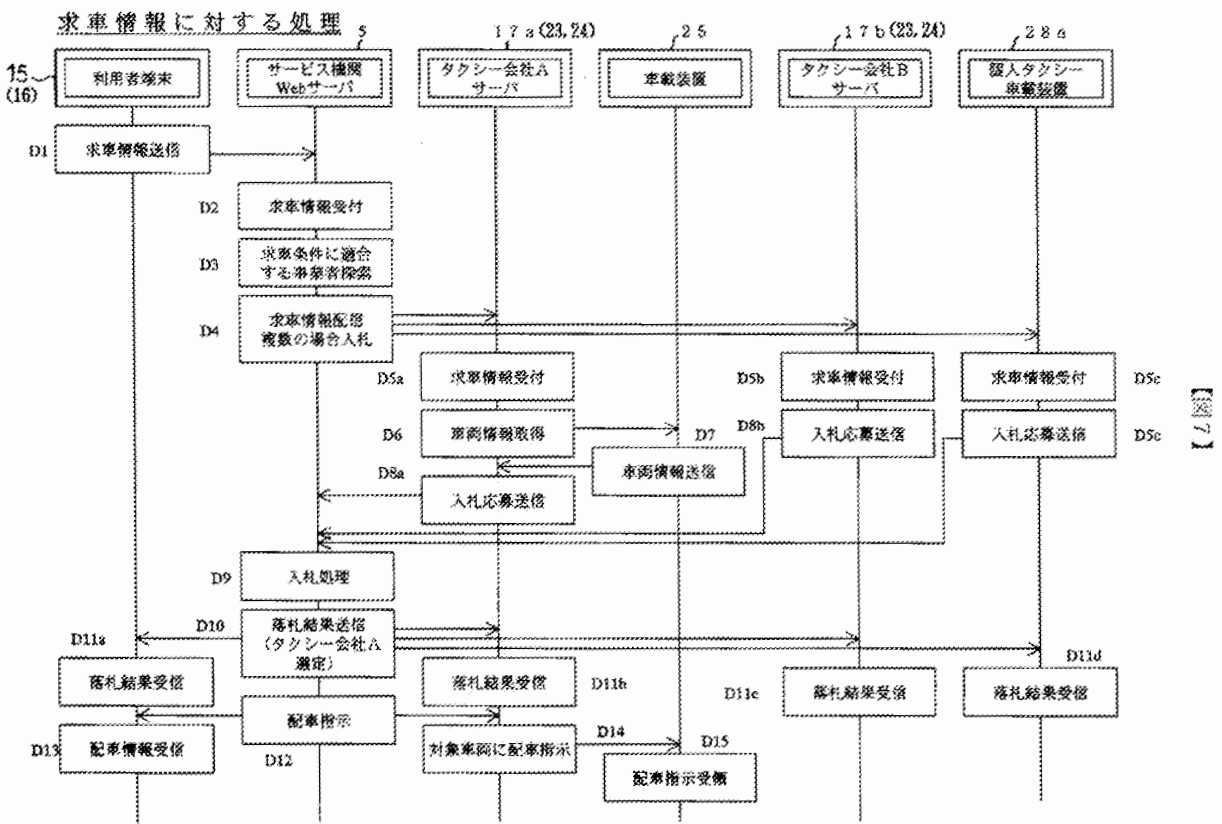


【図5】

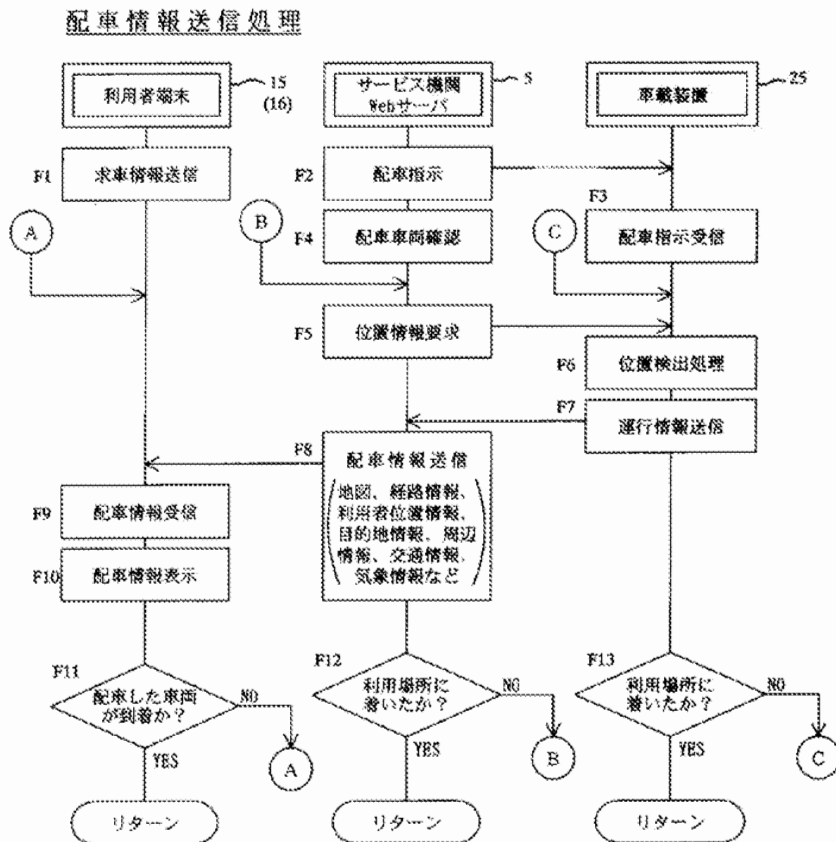


【図6】

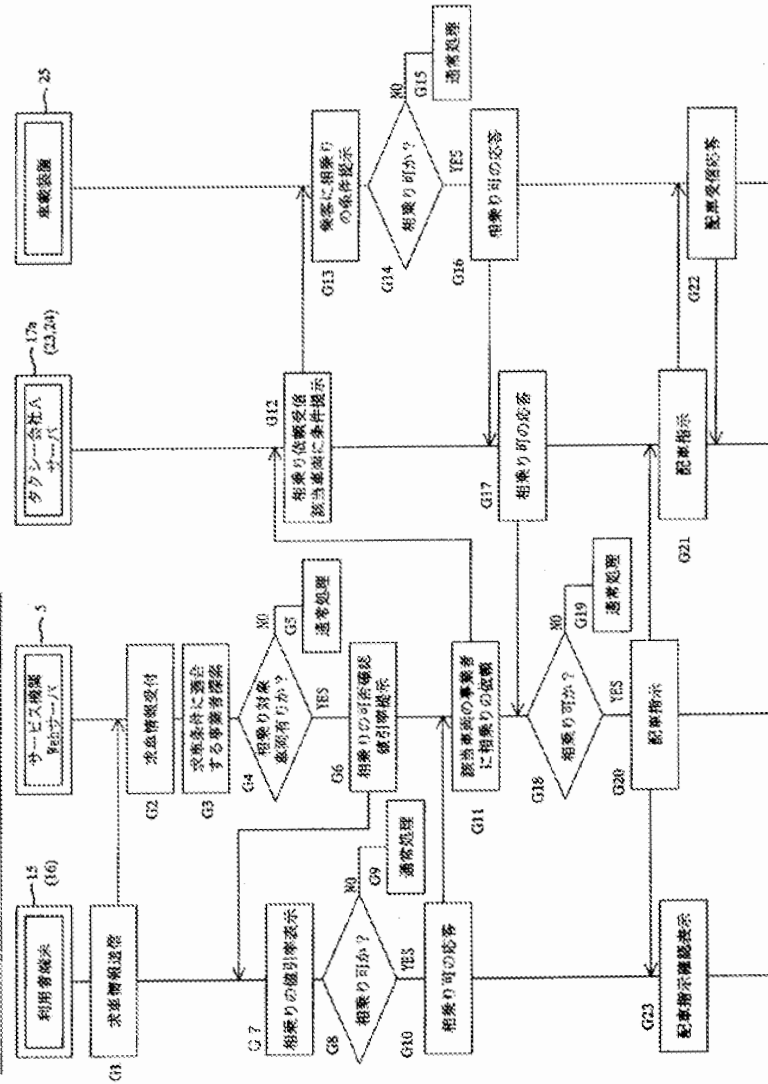




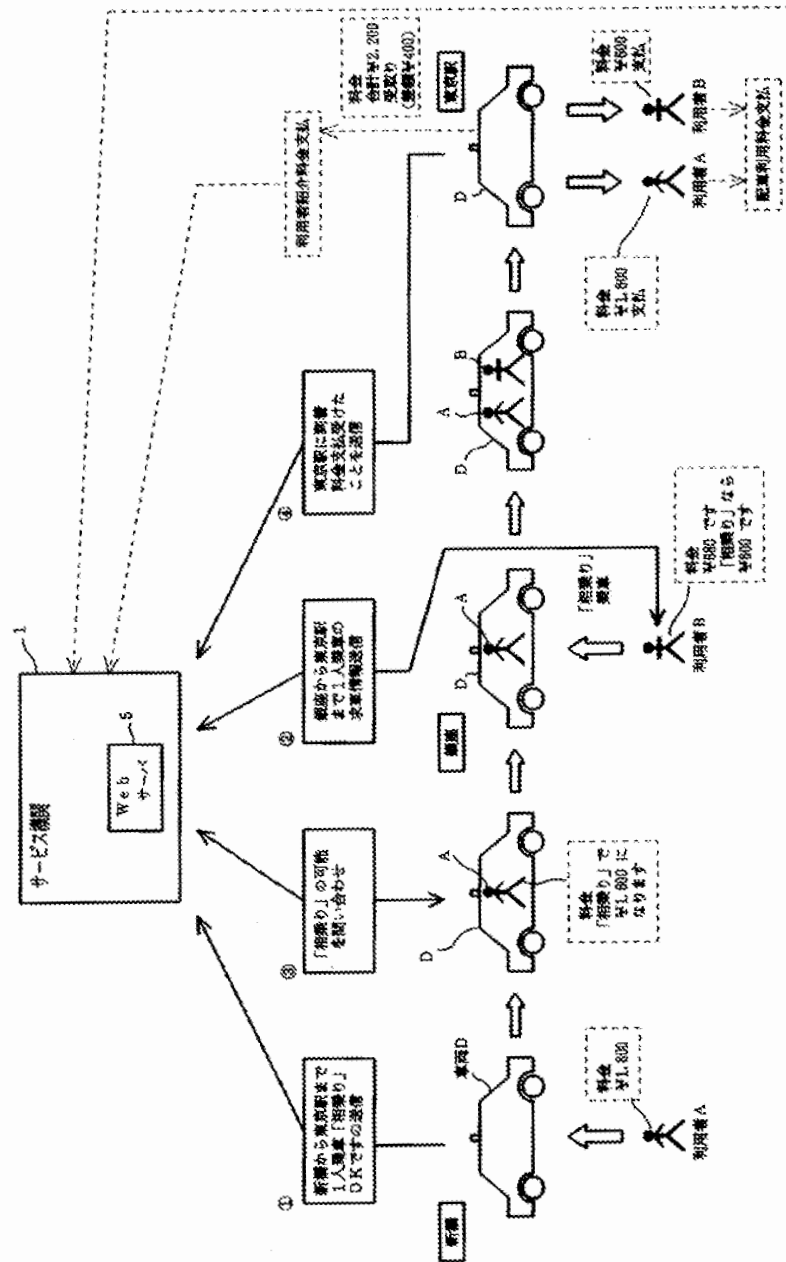
【図9】



求車情報に対する処理（相乗りの場合）



【図11】



フロントページの続き

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AC18
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EE10 EE11 FF04 FF05 FF22
FF25 FF27 FF32
SK067 AA21 BB04 BB21 DD51 EE02
FF01 JJ64

**JP2003168195A METHOD, SYSTEM AND APPARATUS FOR VEHICLE DISPATCHING SERVICE,
USER TERMINAL DEVICE, COMPANY TERMINAL DEVICE AND COMPANY ONBOARD
MACHINE**

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BACKGROUND OF THE INVENTION 1. Field of the Invention The present invention relates to a vehicle dispatching service method, a vehicle dispatching service system, a vehicle dispatching service device, and a user, which are capable of providing a vehicle dispatching service quickly and inexpensively when a user presents vehicle request information. The present invention relates to a terminal device for business use, a terminal device for business use, and a vehicle-mounted device for business use.

In the case where a user requests a car, for example, when using a taxi, conventionally, the user calls a taxi company to request a dispatch or a taxi. A common method is to wait for a turn at the landing. In this case, when calling the taxi company, it is good if the user knows the telephone number of the taxi company easily or easily, but it is difficult to search in unknown land or emergency. It was troublesome. In addition, when searching for a taxi company in a land you do not know, the fares and services are difficult to understand, and you may be wondering on what basis to select a taxi company.

In addition, if the client is unfamiliar with the land and cannot clearly identify his or her location (current position or boarding position), the taxi company can specify the boarding location by telephone. In some cases, it was difficult, and it was sometimes difficult to specify the destination where the vehicle was dispatched.

Also, when waiting at a designated taxi stand at a station or the like, there are cases where many users are lined up and it is difficult to get on the train. If you want to arrive at the destination as soon as possible, there is also a place to look for a taxi in a sink, but in this case, you may feel frustrated because you do not know where to find a taxi.

In addition to the case of using a taxi as described above, for example, in a case where a customer (shipper) wants to send luggage in a transportation business or a courier service, there is the same problem as described above, and the situation has not been improved. That is the fact.

The present invention has been made in view of the above circumstances, and its purpose is to promptly and surely ensure that even when a user seeks a business operator's vehicle and does not know a business operator that meets the location or conditions, the user can quickly and reliably. In addition, it is an object of the present invention to provide a vehicle allocation service method, a vehicle allocation service system, a vehicle allocation service device, a user terminal device, a business terminal device, and a business vehicle in-vehicle device capable of receiving a vehicle allocation at low cost.

According to the first aspect of the present invention, a service organization is a business entity having a vehicle that can be used by a user when vehicle request information is transmitted from the user via a network. Send vehicle request information to a company that meets the vehicle request conditions included in the vehicle request information, and if one company is targeted, get a response and instruct vehicle allocation. If there is a response from a plurality of businesses to apply for car-recruitment information, a bid is made to select a suitable company and instruct the selected companies to dispatch vehicles. As a result, it is possible to dispatch vehicles of a business operator that satisfies conditions such as the destination, fee, or service content included in the user's vehicle request conditions, and by transmitting and receiving information through the network. Is looking for After transmitting the broadcast, it becomes possible to quickly respond.

Thus, when requesting the dispatch of a vehicle of a business operator such as a taxi or consignment in a land or environment that is unknown, the user always dispatches the dispatch request information to the service organization through the network. You will be able to receive it, and you will not have to do troublesome work such as searching for a phone number or examining a plurality of operators. Further, even if an empty car is not easily found while waiting for a taxi, it is possible to easily and quickly receive the dispatch by simply transmitting the car request information to the service organization.

According to the invention of claim 2, in the above-mentioned invention, in the process of transmitting the vehicle request information to the business entity by the service organization, the vehicle can be used even if the vehicle has already been dispatched to another user. If a vehicle is provided, the vehicle request information is also sent to the business operator, so even if the vehicle has already been dispatched, it may be available to the user depending on the travel route, boarding or mounting margin, etc. In the case where the user can safely do so, by using such a vehicle and distributing the vehicle, it is possible to quickly cope with a shortage of vehicles to be distributed.

As a result, when a user wants to arrive at a destination early or wants to ship it quickly, it is possible to respond quickly by effectively using a dispatched vehicle that has not been able to be used in the past and has a margin. And the serviceability can be improved. In this case, the dispatched vehicles to be used may have a portion where the route from the place of use of the new user to the destination overlaps, or a room that can accommodate the number of users or the amount of luggage. Something is the subject.

According to the third aspect of the present invention, in the second aspect of the present invention, when the service organization uses a vehicle that has already been dispatched, it is more effective than when the service fee of a plurality of users of the vehicle is used alone. Since the price is set at a low price, the utilization rate in such a form can be increased, and the utilization rate for the energy consumption can be improved for the business operator, and efficient and environmentally friendly operation should be performed. And economical use is also possible for users.

According to the fourth aspect of the present invention, in each of the above-mentioned inventions, the position of the vehicle, which is instructed to be dispatched by the service organization, is detected and transmitted to the user via the network until the vehicle is dispatched to the user. Therefore, the user can estimate the required time and distance from the position of the vehicle to be dispatched to the place to be used. This allows the user to know the waiting time and situation before using the vehicle, so that even if the vehicle is delayed in dispatching the vehicle, the user does not feel uneasy and can use the vehicle with peace of mind.

According to the invention of claim 5, in each of the above inventions, when the service organization has a special service regarding the use of the vehicle by the service organization, the user can designate this as a vehicle request condition. Of businesses that provide special services that can respond to a variety of vehicle-requesting conditions, thereby improving the convenience of users and providing a variety of services Is notified to the user, and the characteristics of the business can be appealed to increase the number of users.

In this case, as a special service, for example, in the case of a taxi, it is possible to select a car type, show that it can respond with a careful response, or a female crew driving in response to a female user. There are various service appeal points such as selecting a vehicle to be provided, providing various guidance services, and providing music and various broadcasting services while riding. By presenting these to the user side or making them selectable according to the user's preference, it is possible to improve the serviceability and contribute to increasing the use.

In addition, the fact that such services can be provided can be directly presented when the user wants to use the services. Therefore, even private business operators who cannot afford to provide special advertisements, posters, TV commercials, etc. Quality and content can be evaluated equally with large-scale businesses.

According to the invention of claim 6, in each of the above inventions, the service organization receives information on the quality of service at that time from a user who has used the dispatch of the business, and based on the obtained information, the business Service quality was evaluated and it was made possible to present it as additional information to the user who sent the vehicle request information. For the user, the selection was made based on the evaluation result of the business operator trying to use the information. As a result, it is possible to receive the desired quality of service, thereby improving the convenience and the sense of security.

In addition, assessing the quality of service of a business in this way requires a business to differentiate the quality of service from other businesses and provide more accurate services that meet the quality requirements of users. Can be provided. In addition, by clarifying the image of the quality requested by the user from the utilization rate, the service of the business operator is shifted in the direction of the quality required as a whole and also contributes to the improvement of the quality of the entire industry. Will be able to do it. Also in this case, regardless of the size of the business, the quality of the service and the content itself can be evaluated equally, so it can be used as a system with high utility value even for individual businesses. become able to.

According to the invention of claim 7, in each of the above inventions, a communication network including the Internet is used as a network used for exchanging information between the service institution and the business. Each can be implemented simply and inexpensively using an existing infrastructure without providing a dedicated communication network.

According to the invention of claim 8, in each of the above-mentioned inventions, a communication network including the Internet is used as a network used for exchanging information between the service organization and the user. In an available environment, information can be easily transmitted and received without using a separate communication network, which is highly convenient and practical for a user.

According to the ninth aspect of the present invention, the user can connect to the service organization with the same access method anywhere in the country to transmit vehicle request information and transfer other information. It is not necessary to consider a troublesome operation such as selection of the information, and the access can be made quickly and accurately. In addition, since the convenience is improved in this way, the user can use the service organization with peace of mind, so that the reliability can be improved.

According to the tenth aspect of the present invention, in each of the above aspects, the service institution accepts vehicle request information by voice from a telephone line network as a network from the user, and converts the selected vehicle allocation information into voice information. Since the system is configured to guide the user, in addition to the above-described access via the Internet, the user can also use the device directly by voice, so that it is difficult to use a terminal device for accessing the Internet. Even a handy user can easily and quickly access the service organization and receive the service.

According to the eleventh aspect of the present invention, when the user transmits the vehicle request information to the service organization via the network using the user terminal device, the service organization uses the vehicle allocation service device to transmit the request from the user. The vehicle information is received and transmitted as vehicle request information to a company terminal device of a company capable of dispatching vehicles meeting the vehicle request conditions included in the vehicle information via a network. On the other hand, when the business operator sends application information corresponding to the vehicle request condition through the business terminal device, the dispatch service device accepts the application from the business operator, and if there are multiple applications, the bidding process is performed. When the operator selects a business operator and instructs the business operator to dispatch a vehicle, the terminal device for the business operator accepts the instruction and instructs the vehicle to dispatch the vehicle.

With this configuration, the vehicle dispatching service device of the service organization connects the terminal device between the user and the business operator via the network, and the user can directly access the service organization without knowing the contact information of the business operator. By contacting and presenting the vehicle request information, the service institution can select a company that can allocate a vehicle that meets the vehicle request conditions and quickly distribute the vehicle. In addition, in the selection of this company, since a bid is used when multiple companies are applying, it will be possible to use it under cheap conditions for users, and this system must be used. Will be able to enjoy the benefits.

According to the twelfth aspect of the present invention, in the invention of the eleventh aspect, when the vehicle allocation service device is provided with a vehicle that can be used even if the vehicle has already been allocated when receiving vehicle request information from the user. Is configured to transmit the vehicle request information also to the business operator. Therefore, similarly to the invention of claim 2, even if the vehicle is already allocated, the vehicle is allocated under the condition that the user can use it. In such a case, if the vehicle is to be dispatched, it is possible to promptly respond to a shortage of vehicles to be dispatched on the side of the business operator, and the system can be used as a system with improved serviceability.

According to the thirteenth aspect of the present invention, in the twelfth aspect of the present invention, when the vehicle allocation service device uses a vehicle that has already been allocated, the usage fee of a plurality of users of the vehicle is used alone. Since it is configured to be set at a low price, it is possible to increase the utilization rate in such a form as in the invention of claim 3, and to improve the utilization rate for the energy consumption for the business operator. The system can be operated efficiently and environmentally friendly, and can be utilized as a system that enables users to use the system economically.

According to a fourteenth aspect of the present invention, in the invention of the eleventh to thirteenth aspects, a position detecting means capable of detecting a current position is provided in the vehicle of the business

operator, and the vehicle which has provided the vehicle allocation service device and the vehicle allocation instruction is provided to the user. Until the vehicle is dispatched, a position detection signal detected by the position detection means of the vehicle is received from the vehicle or the business operator in the same manner as in the invention of claim 4, and a network is established to the user terminal device. Since the information is transmitted as the vehicle allocation position information via the vehicle, the user can estimate the required time and distance from the position of the vehicle to be allocated to the place to be used. As a result, the user can know the waiting time and the situation before use, so that the user can use it with peace of mind.

According to a fifteenth aspect of the present invention, in the fourteenth aspect of the present invention, the vehicle allocation service device estimates the time information at which the vehicle, which has instructed the vehicle allocation, arrives at the user's use location, and transmits the information to the user terminal device. With this configuration, the user can recognize when the dispatched vehicle arrives at the usage location by looking at the time information displayed on the user terminal device side, and when the user goes to the usage location. In such a case, it is only necessary to move in consideration of the arrival time, so if there is a waiting time, that time can be used effectively, and it can be used as a highly convenient system for users become able to.

According to the sixteenth aspect of the present invention, in the invention of the eleventh to fifteenth aspects, when the business operator has a special service regarding the use of the vehicle, the user can designate the dispatch service device as a vehicle request condition. With this configuration, it is possible to present to the user a business operator that provides a special service that can also respond to various vehicle request conditions of the user. Therefore, it is possible to increase the number of users by notifying the users of the variations of the services to be provided to the users and appealing to the features of the business.

According to the seventeenth aspect of the present invention, in the invention of the eleventh to sixteenth aspects, the vehicle allocation service device receives information about the quality of service at that time from a user who has used the vehicle allocation of the business, and obtained information. The quality of service of the business is evaluated based on the information, and it is configured so that it can be presented as additional information to the user who sends the vehicle request information. Since it is also possible to make a selection based on the evaluation result, it is possible to receive a service of the desired quality, thereby improving the convenience and the sense of security.

This is, for example, when the user transmits vehicle request information, sets a vehicle request condition that prioritizes the price condition, or sets a vehicle request condition that prioritizes the time required for vehicle allocation or the shorter required time. There are various vehicle search conditions, such as whether to set a vehicle search condition that prioritizes aspects such as responding to users, etc., but regarding the quality of service such as what kind of requests can be answered. The user can select from the evaluation results, and the service can be fine-tuned.

In addition, assessing the quality of service of a business in this way requires a business to differentiate the quality of service from other businesses and provide more accurate services that meet the quality requirements of users. Can be provided. In addition, by clarifying the image of the quality requested by the user from the utilization rate, the service of the business operator is shifted in the direction of the quality required as a whole and also contributes to the improvement of the quality of the entire industry. Will be able to do it.

According to the eighteenth aspect of the present invention, in the invention of the seventeenth aspect, the vehicle dispatching service device evaluates the quality of service of the business operator by conducting a questionnaire survey to users who use the vehicle dispatching service. Since the configuration is such that the item is evaluated, it is possible to directly provide feedback on the quality of the service received by the user, and it is possible to perform quick and accurate evaluation.

As a result, the next user can also set vehicle seeking conditions by referring to the evaluation results from the questionnaire survey, and for the user, not only based on the appeal from the business side but also based on the evaluation from the user side. You can make choices. This is also advantageous for the business operator in that the service can be further improved with reference to the user's evaluation, and as a result, the quality of the entire system can be improved.

According to the nineteenth aspect of the present invention, in the invention of the eleventh to eighteenth aspects, a network for performing communication between the vehicle allocation service device and the operator terminal device is configured by a communication network including the Internet. Therefore, each of the service

organization and the business can use the existing infrastructure without providing a dedicated communication network.

According to the twentieth aspect, in the invention of the eleventh to nineteenth aspects, a network for performing communication between the vehicle allocation service device and the user terminal device is constituted by a communication network including the Internet. Therefore, in an environment where the Internet can be used in the same manner as described above, users can easily and inexpensively transmit and receive information without using a separate communication network, which is highly convenient and practical. Be rich.

According to the invention of claim 21, in the invention of claims 11 to 20, the service institution is provided with voice guidance means for receiving vehicle request information by voice from the user via the telephone line network, and the vehicle allocation service device is provided by the user. When the voice guidance means receives voice request information transmitted by voice through the telephone line network from the user, the vehicle information is created in accordance with the information and the process for selecting a business is executed, and the result is used through the voice guidance means. In addition to the above-mentioned Internet access, users can also use voice directly by telephone, so it is not necessary to use a terminal device to access the Internet. Even a weak user can easily and quickly access a service organization and receive a service.

According to the invention of claim 22, in the invention of claims 11 to 21, the terminal device for the business operator is configured to have a function of transmitting the position information acquired about the vehicles that can be distributed to the vehicle allocation service device. The service device selects a company having a vehicle corresponding to the vehicle request information transmitted from the user based on the position information on the vehicle that can be dispatched by the company received from the terminal device for the company and transmits the vehicle request information. Because it is configured to transmit, on the service organization side equipped with a dispatch service device, the user can quickly grasp the business location where the user is most suitable for the place of use or destination that needs the vehicle. This allows the service organization to provide quick guidance and dispatch to the user.

According to the invention of claim 23, in the invention of claims 11 to 22, the vehicle dispatching service device is used through the user terminal device when the vehicle is dispatched to the user and the operation of the vehicle to the destination is completed. The system is configured to charge the fee and to charge the customer introduction fee through the business terminal, so that the user can pay the appropriate usage fee after receiving the dispatch service. In addition, the service provider can pay the usage fee as a price to secure the customer, so that both sides can use the service efficiently, and the service organization that provides it also works as a bridge between them. Will be able to benefit from it.

According to the invention of claim 24, in the invention of claims 11 to 23, since the business operator includes a business operator performing a taxi service to get the user to the destination, the user is particularly likely to come to an unknown place. Even if you are a taxi or do not know the telephone number of the taxi company, you will be able to find and ride a taxi quickly. Also, even when using a taxi for customer service, etc., it is possible to minimize the trouble of arranging a taxi and to make a quick dispatch without making the other person carelessly waiting, become able to.

In the case where vehicles that have already been dispatched are to be dispatched, so-called "sharing" is performed. In a situation where vehicles are insufficient, for example, by "sharing", dispatch is quickly performed by performing "sharing". If you can arrive at the destination early, and if you set a low price in the case of "sharing", the usage rate will increase, and users can move to the destination cheaply, taxi. The company will be able to operate more efficiently by reducing the vacancy rate.

According to the invention of claim 25, in the invention of claim 24, the user terminal device is provided with a function of acquiring position information, and in addition to the vehicle request information, the user's own terminal information is used as the current position information. The vehicle dispatching service device is configured to be able to transmit to the vehicle dispatching service device, and the vehicle dispatching service device is configured to acquire the use location information of the user based on the current position information transmitted from the user terminal device. If a taxi is used on a strange land, the service agency can automatically identify the current location even if the user is not informed about the current location, and select a taxi company that can make an appropriate dispatch. And you can dispatch quickly.

According to a twenty-sixth aspect of the present invention, in the twenty-sixth aspect of the present invention, when the vehicle dispatching service device dispatches the vehicle to the user who transmitted the vehicle

request information, the vehicle dispatching service device transmits the vehicle from the place of use to the destination. Since guidance is provided by transmitting various information related to the route to the user terminal device, when the user is not familiar with the route to the destination or the information on the route, the user is notified from the dispatch service device of the service organization. Being able to recognize by the various information transmitted, it is possible to obtain information about the destination as preliminary knowledge, or it is possible to know in advance the fluctuation such as the required time to the destination by information such as traffic conditions etc. It will be possible to provide detailed services.

According to a twenty-seventh aspect of the present invention, in the above-mentioned twenty-sixth aspect, the dispatch service device is provided with various types of information relating to the destination from the use location of the user, such as map information, route information, required time information, destination information, and peripheral information. Traffic information and other information can be transmitted, so it can be used not only as a means of transportation to a destination, but also by obtaining various information related to that movement, increasing its utility value. The service can be provided as a system that is differentiating from the above.

According to the twenty-eighth aspect of the present invention, in the invention of the eleventh to twenty-seventh aspects, the business entity includes a business entity that performs a freight forwarding business for transporting the luggage entrusted by the user to the destination. As in the case where the person gets on the vehicle, the user can quickly and accurately move to the destination in transporting the luggage.

According to the invention of claim 29, the vehicle allocation service device is provided in a service organization that receives vehicle request information transmitted from a user via a network, receives vehicle request information from a user terminal device, and receives the vehicle request information. It is configured to transmit as vehicle request information via a network to a company that meets the conditions, accept applications from the company, and if there are multiple applications, select the company by bidding process and instruct vehicle allocation. As a result, when vehicle information is received from the user, the vehicle information can be promptly presented to the business operator. It is possible to dispatch vehicles to users. In addition, since such operations can be performed, even if the user does not directly recognize the name and contact information of the business operator, the user always contacts and selects the appropriate business operator when he / she wants to use it. The vehicle can be dispatched to the driver, and the speed and convenience can be improved.

According to the invention of claim 32, the user terminal device can transmit the vehicle request information to the vehicle allocation service device of the service organization via the network by the user. Since it is possible to receive the information indicating that the dispatching instruction has been performed and notify the user, the user can receive the dispatch corresponding to the request information promptly and accurately. It can be quickly recognized and can be used as a highly convenient device when requesting a vehicle.

According to the invention of claim 36, the business operator terminal device is provided on the business operator side provided with a vehicle capable of allocating vehicles to the user, and receives vehicle request information from a vehicle allocation service device of a service organization via a network. In the case of applying in accordance with the vehicle request conditions, the application information is transmitted to the vehicle allocation service device, and the vehicle allocation instruction can be received from the vehicle allocation service device. It will be possible to receive it accurately and reliably.

According to a thirty-seventh aspect of the present invention, in the on-vehicle equipment for business use provided in a vehicle capable of dispatching used in the dispatching service system according to any one of claims 11 to 28, position information capable of acquiring current position information. Acquisition means, and transmission means capable of transmitting the information indicating the current operating state and the current position information by the position information acquisition means to the vehicle allocation service device or the business operator terminal device. Since the transmitting means transmits the current position information obtained by the position information obtaining means of each vehicle that can be dispatched, the position of each vehicle can be grasped in advance, and when the vehicle request information is received, it will be possible to apply to allocate vehicles that can respond quickly to dispatch vehicles.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS (First Embodiment) A first embodiment in which the present invention is applied to a system mainly in the taxi industry and the transportation industry will be described below with reference to FIGS. 1 to 4. As a specific example, a case where a user uses a taxi is shown as a representative example, but the same contents can be used when a user

requests shipment.

FIG. 1 shows a schematic configuration of the present system, in which a service organization 1 can be accessed by many users 3 and many businesses 4 via the Internet 2. The user 3 and the business 4 that can participate in this system can perform identification processing in advance and become a member or a registered business so that the user 3 can be identified and the business can respond. Must be clarified.

The service organization 1 includes a Web server 5 for accessing via the Internet 2 and a vehicle search server 6 connected thereto, a vehicle search condition management database 7, a public offering server 8, a vehicle allocation server 9, a map server 10, a route server 11 is provided, and a voice guidance vehicle request reception server 12 is provided. Further, the voice guidance vehicle request reception server 12 is connected to a PBX (private exchange) 13 and is configured to receive vehicle request information of the user 3 from outside via a telephone network 14.

The Web server 5 functions as a vehicle allocation service device that controls the various servers 6 to 12 and the like in the service organization 1. The vehicle search server 6 is for searching for a vehicle owned by the registered business operator 4. As will be described later, when position information of each vehicle is obtained, the vehicle search server 6 also adds this information to the vehicle. Is searched. The vehicle request condition management database 7 stores the vehicle request conditions included in the vehicle request information received from the user 3, and when the vehicle request information is obtained, the corresponding vehicle is determined from the vehicle request condition data of the user 3. It allows you to search.

The public offering server 8 accepts an application from the enterprise 4 when performing a bidding process described later, and performs a bidding process when there are a plurality of applications. The vehicle allocation server 9 transmits a vehicle allocation instruction command for a vehicle for which vehicle allocation has been determined, and manages vehicle allocation information until the vehicle reaches the user. The map server 10 is for searching on a map a route from the user's use position included in the vehicle search information to the destination, and the route server 11 is for searching for a route in that case. It can also search for an accurate route by incorporating information and construction information.

The voice guidance vehicle request reception server 12 functions as an interface to the Web server 5 when receiving vehicle request information by voice. The voice input of the user 3 is converted into data and passed to the Web server 5. Or converts response data from the Web server 5 into voice and outputs it to the user 3 side.

The user 3 can use a user terminal 15 such as a personal computer 15a, a PDA 15b, a navigation device 15c or an in-vehicle terminal 15d connectable to the Internet 2 as a user terminal device in order to communicate with the service organization 1. It is. Further, as the user terminal device, a user terminal 16 such as a mobile phone 16a or a public telephone 16b for accessing the service organization 1 through the telephone line network 14 can be used. Also, as described above, in order to use this system, the user 3 needs to register as a member with the service organization 1 in advance.

As the company 4, for example, a plurality of taxi companies 17a, 17b, a plurality of transportation companies 18a, 18b, a plurality of bus companies 19a, 19b, etc., which operate systemically in each industry, or a single vehicle. There are a plurality of individual taxi operators 20a, 20b and individual carriers 21a, 21b, etc., which operate private businesses. In order to participate in this system and conduct business, these businesses 4 need to perform business registration in advance as described later.

The taxi company 17, the transportation company 18 and the bus company 19 do not necessarily need to have a plurality of operators subscribing to the system. . So that the quality of service can be improved.

The taxi companies 17a and 17b, the transport companies 18a and 18b, and the bus companies 19a and 19b each provide a plurality of business vehicles such as taxis 20a, 20b and 20c, trucks 21a and 21b, and buses 22a and 22b as business vehicles. I have. In the management office of each company, an order receiving server 23 and a dispatch server 24 are provided as a terminal device for the business operator to receive dispatch information and dispatch a commercial vehicle. Communication processing is performed with the service vehicles 20a, 20b, 20c, 21a, 21b, 22a, 22b. Each of the commercial vehicles 20a, 20b, 20c, 21a, 21b, 22a, and 22b is provided with an in-vehicle device 25 (see FIG. 2) as a vehicle-mounted device for business use for performing communication processing and transmitting and receiving vehicle information. .

The individual taxi companies 26a and 26b and the individual transportation companies 27a and 27b each have

one taxi 28a and 28b or a truck 29a and 29b as business vehicles, and have a department equivalent to a management office. Instead, the vehicle itself is provided with an in-vehicle device 25 (see FIG. 2) as an in-vehicle device for a business operator, which has the functions of an order receiving server and a dispatch server.

Next, the in-vehicle device 25 will be described with reference to FIG. 1. As shown in FIG. 1A, the on-vehicle control device 30 is mainly configured with an on-vehicle control device 30, and a vehicle behavior sensor 31 and a GPS (Global Positioning System) device 32 are connected to the on-vehicle control device 30. I have. The vehicle behavior sensor 31 detects various traveling behavior information such as a traveling speed, a traveling direction, and a traveling route by a sensor that detects an operation of each part of the vehicle, and outputs the information to the in-vehicle control device 30. The GPS device 32 detects a signal from a GPS satellite, specifies the current position, and outputs the current position to the in-vehicle control device 30.

The vehicle-mounted control device 30 is connected to any of a Dedicated Short-Range Communication (DSRC) vehicle-mounted device 33, a mobile phone 34, a packet terminal 35, and the like as a communication interface having a communication function with the outside. It is configured to perform communication by communication. The DSRC in-vehicle device 33 is used in an automatic toll collection system for toll roads, and communicates with an antenna provided at a tollgate. It is provided as a device that can be connected to the Internet 2 by communicating with a possible antenna. The mobile phone 34 and the packet terminal 35 can connect to the Internet 2 via a wireless telephone network (not shown) by performing packet communication.

The in-vehicle control device 30 includes an audio PC 36, a navigation device 37, a display device 38, a terminal device 39 such as a personal computer or PDA, or an audio device 40 and its speaker 41 as input / output devices that perform an HMI (Human Machine Interface) function. Are connected to each other. In the case of a device that does not have a display function, such as the audio device 40, input and output are performed by voice using the speaker 41.

Further, unlike the above configuration, as shown in FIG. 3B, a navigation device 42 having a configuration also having the function of the on-vehicle control device 30 is provided, and a mobile phone 43 for communicating with the service organization 1 is provided. May be configured to connect the vehicle-mounted device 25. In this case, the navigation device 42 has a GPS function, is configured to take in detection signals from various sensors provided in the vehicle in advance, create vehicle behavior information, and transmit the vehicle behavior information. Is what it is.

Next, the operation of the present invention will be described with reference to FIGS. First, a schematic function and the flow of its processing will be described with reference to FIG. 3, and then details of each processing will be described.

[1] System Overview First, in order to use this system, the user 3 connects to the user terminal 15 via the Internet 2 or the Web of the service organization 1 via the telephone line network 14 by voice. It is necessary to connect to the server 5 and perform the member registration process in advance. Similarly, when each business operator 4 receives a user's introduction using this system, it is necessary to perform a business registration process for the service organization 1 and pay a predetermined registration fee in advance. is there.

In the transmission of the vehicle request information by the user 3, the user 3 connects to the service organization 1 using the user terminal 15 or 16 and transmits predetermined information. Here, the information can be transmitted as various forms of vehicle request information such as a taxi reservation, a shipping reservation, a moving reservation, or a delivery reservation. Each vehicle request information is transmitted in a state where vehicle request conditions specified by the user 3 are added.

In this case, when the user terminal 15 is used, the user terminal 15 is connected to the Web server 5 via the Internet 2. When the user terminal 16, that is, the mobile phone 16a or the public telephone 16b, is used, the user terminal 16 is connected to the PBX 13 of the service organization 1 via the telephone line network 14, and the voice guidance request reception server 12 capable of performing voice recognition. It communicates with and sends vehicle request information.

On the other hand, from the service organization 1, when the dispatch is determined, the result of the request for the vehicle and under what condition the dispatch is performed can be received. When requesting whether or not there is a special service as a vehicle request condition when the vehicle request information is presented, the service organization 1 uses the service contents presented by each business operator 4 to use the service contents. To the user terminal 15. In addition, from the time the vehicle is dispatched to the time when the vehicle

actually comes to the user 3, positional information and various vehicle information of the vehicle are transmitted. It can be used effectively.

In the service organization 1, this is received by the Web server 5 and distributed to the business entity 4 as vehicle request information via the Internet 2. At this time, the business 4 to which the vehicle is to be distributed is determined by searching for a vehicle capable of responding to the type of vehicle request information and the vehicle request condition and selecting the business 4 that owns the vehicle. If there are a plurality of businesses 4 to be delivered, bid information is also presented on the assumption that a bid is to be made. Then, when a vehicle allocation destination specified for the vehicle request information is selected, an instruction for vehicle allocation is transmitted to the company 4.

When the business request 4 can respond to the received vehicle request information, the business operator 4 returns a response to the effect that it applies for the request to the service organization 1. Also, when responding to the bid information, information indicating a bid condition is transmitted. In addition, when a dispatch instruction is sent to the company, the corresponding vehicle is dispatched to the user 3 in accordance with the dispatch instruction, and, as dispatch information, the position information of the vehicle and information on various dispatches are transmitted and used. Service to the third party. As a price for providing the service, the service organization 1 collects a vehicle allocation fee from the user 3 and a user introduction fee from the business 4.

As described above, by exchanging information between the service organization 1, the user 3, and the business operator 4, the user 3 always needs to contact the service organization 1 whenever he wants to use a taxi. Taxi can be used under desired conditions, and the taxi can be used easily and quickly for the user 3, and the business operator 4 can efficiently operate the business vehicle. As a result, the service provider 1 that provides this service can receive the price for providing the service.

[2] Detailed Function of System Next, the above-described processing contents will be described with reference to the transfer of information between related departments and the sequence thereof. (2-1) Member Registration Process of User The member registration process of the user 3 is performed according to the flowchart shown in FIG. First, the user terminal 15 (16) accesses the Web server 5 of the service organization 1 to display a public home page. Next, when the user terminal 15 transmits a member registration request from the home page (step A1), the Web server 5 accepts the request (step A2), and information on a member registration page for filling in necessary registration items. Is transmitted (step A3).

Registration items necessary for membership registration are displayed on the user terminal 15, and when the user 3 fills in predetermined items and performs transmission processing (step A4), the Web server 5 receives the necessary registration information. A registration process is performed based on the data of the item (step A5), and when the registration is completed, a notification is given (step A6). Upon receiving the registration completion notification, the user terminal 15 displays the notification and can be confirmed by the user 3 (step A7). Thus, the registration process ends.

In the above case, for example, special conditions can be added as necessary registration items. For example, a condition that indicates that the user 3 is disabled, a condition that specifies the type of vehicle to be used, a condition that prioritizes a low price as a priority condition, a condition that prioritizes quick arrival at a destination, and various conditions. There may be conditions for giving priority to a vehicle that can obtain the information of the vehicle as much as possible.

(2-2) Business Registration Process Next, the business registration process will be described with reference to FIG. One of the terminal devices 23 and 24 of the business operator 4 accesses the Web server 5 of the service organization 1 to display a published homepage. Next, when a company registration request is transmitted from the homepage by the company terminals 23 and 24 (step B1), the Web server 5 accepts the request (step B2) and fills in necessary registration service items and necessary registration items. Of the business registration page for transmission (step B3).

The registration items necessary for business registration are displayed on the business terminals 23 and 24, and when the operator of the business 4 fills in the predetermined items and performs transmission processing (step B4), the Web server 5 The registration processing is performed based on the received necessary registration data (step B5), and a registration fee is charged (step B6).

When the business operator 4 processes the registration fee payment using the business operator terminals 23

and 24 or by another method and transmits the result (step B7), the Web server 5 confirms the reception of the registration fee and confirms the OK. If so, this is notified (step B8), and then the business terminals 23 and 24 are urged to register the designation of the bidding condition. When the business terminals 23 and 24 enter and transmit, for example, the contents specifying the vehicle allocation unit price and the business conditions as the bidding conditions (step B9), the Web server 5 receives this and registers the bidding conditions (step B10).), Thereby ending the business registration process.

In step B9 described above, if there is a special service or the like provided by the business operator 4, it can be registered as a condition for presenting it to the user 3 side. For example, the service contents that are the usage conditions include services for people with disabilities, services that prioritize politeness, services that prioritize quick response, services that prioritize low prices, short-distance priority services, long-distance priority services, small numbers of people Register services that can claim superiority over other companies, such as priority services, large number priority services, etc.

(2-3) Vehicle Position Information Management Processing The Web server 5 of the service institution 1 acquires and manages the position information of the business vehicles owned by each business operator 4. This management is performed so that when the vehicle request information is received from the user 3, the vehicle 3 can be promptly dispatched by searching for the vehicle located closest to the place where the user 3 is going to board. Is what you do.

In this system, each business operator 4 manages by transmitting and acquiring the position and vehicle information of the business vehicle owned by the company from the in-vehicle device 25, and thus acquiring the vehicle. Is periodically transmitted to the service organization 1 to manage the position information of the vehicle of each company 4.

For example, the servers 23 and 24 of the taxi company A (17a), which is one of the businesses 4, receive information from the on-vehicle devices 25a and 25b mounted on two vehicles as follows. The in-vehicle devices 25a and 25b detect the position of the vehicle using the GPS function (Steps C1a and C1b) and create vehicle operation information (Steps C2a and C2b). The vehicle operation information includes vehicle position information detected by a GPS function, business schedule information input by a driver, business request information, daily report transmission / reception information, information indicating whether business can be accepted, and the like.

Then, when an instruction to detect the vehicle position is transmitted from the servers 23 and 24 of the taxi company A (step C3), the in-vehicle devices 25a and 25b transmit the vehicle operation information created as described above to the servers 23 and 24. (Steps C4a and C4b). The servers 23 and 24 create the vehicle operation management information of the commercial vehicle owned by the company based on the received vehicle operation information, and rewrite the information if there is a change from the previous information (step C5).

Then, the servers 23 and 24 transmit the vehicle position information of the created vehicle operation management information to the Web server 5 of the service organization 1 (Step C6). The Web server 5 receives the vehicle position information from the taxi company A (Step C7). In addition, vehicle position information is received from other taxi companies other than taxi company A as needed (steps C0a, C0b,...), And the vehicle position information received from each taxi company is collectively managed (step C0a, C0b,...). Step C8). As described above, the service organization 1 manages the current position information of each taxi company's vehicle so that it can grasp the current position information, and can quickly respond to the vehicle request information. ing.

(2-4) Processing for Vehicle Request Information As described above, preparation is made for vehicle request information received from the user 3 so that the system functions smoothly. Next, a process for the vehicle request information from the user 3 will be described with reference to FIGS.

Here, as a model case, a taxi company A (17a), a taxi company B (17b), and a private taxi 28a can be handled according to the vehicle request information, and one of these companies 4 is selected by bidding. Will be described.

First, when the user 3 operates the user terminal 15 (16) to transmit the vehicle request information to the Web server 5 of the service organization 1 (step D1), the Web server 5 accepts the request. (Step D2) A search is made for a company 4 that meets the vehicle search conditions included in the vehicle search information or a

company 4 that has a vehicle that matches the vehicle search conditions (step D3).

In the case described above, when the user 3 operates the user terminal 15 to transmit the vehicle request information, the service institution 1 requests the service institution 1 for a special service, or determines the quality of the service. Can be requested. In this case, a desired vehicle request condition may be set by confirming whether there is a service content to be requested while exchanging with the Web server 5 mutually.

Then, when searching for the business 4, it is checked whether or not there is an item specified as the vehicle search condition among the items registered at the time of the business registration described above. The operator 4 that owns the vehicle located at the closest position from the position information of the owned vehicle is checked. The items specified as the vehicle request conditions include, for example, conditions that the service contents requested by the user 3 are provided, the number of people, the destination, and the price.

As described above, when the three businesses 4 of the taxi companies A (17a) and B (17b) and the individual taxi 28a are searched as the businesses 4 that meet such a vehicle seeking condition, the Web server 5 Information indicating that a bid is to be made is transmitted to these together with the vehicle request information (step D4).

Here, for example, when the taxi company A receives the vehicle request information (step D5a), it transmits an instruction to transmit the vehicle information to each vehicle again (step D6), and the vehicle information is transmitted from the vehicle-mounted device 25. Then, the contents of the bid application are transmitted to the Web server 5 based on the accurate vehicle information (step D8a). When the taxi company B receives the vehicle request information (step D5b), the taxi company B transmits a bid application in response to the request (step D8b). Similarly, the individual taxi 28a also accepts the vehicle request information and transmits a bid application (steps D5c and D8c).

When the Web server 5 receives the transmission of the bid application from the three target businesses 4, the Web server 5 performs a bidding process (step D9). In this bidding process, the Web server 5 selects the business entity 4 that meets the conditions and has the lowest bid price. At this time, if there is enough time, communication processing can be performed with each of the businesses 4 to receive a rebid price.

When the bidding process is completed and, for example, the taxi company A is selected as the winning business 4, the result is transmitted to the user terminal 15 and each business 4 (steps D10, D11a to D11d). Then, the Web server 5 transmits to the taxi company A which is the successful bidder 4 so as to issue a vehicle allocation instruction, and also transmits the instruction to the user terminal 15 (step D12). The user 3 can receive and confirm the information indicating that the vehicle allocation instruction has been given (step D13). Further, the taxi company A instructed to dispatch the vehicle issues an instruction to dispatch the vehicle to the in-vehicle device 25 of the target vehicle by the servers 23 and 24 (steps D14 and D15).

By performing the above processing, it is possible to promptly and reliably dispatch a vehicle to the user under appropriate conditions after receiving the vehicle request information, and notify the user 3 of this. The bidding process is performed almost in real time, and the result is notified to the user 3, thereby realizing a quick response.

As described above, when the user 3 transmits the vehicle request information to the service organization 1, it is necessary to add a place where the user 3 gets on, that is, a use place, as a vehicle request condition. If the terminal 15 is provided with a position detection function, it is automatically added.

FIG. 8 shows the processing. When the user 3 operates the user terminal 15 to instruct transmission of the vehicle request information, first, the position detection processing is performed by using a GPS function or the like (step E1). Then, the user is prompted to input vehicle search conditions (step E2). When various conditions such as destination, number of people, and price are input, the information is created as vehicle request information and transmitted to the Web server 5 (step E2). E3). Thus, the user 3 can automatically inform the user of his / her current location without knowing the exact location, and can easily and quickly issue vehicle request information in an unknown land. .

(2-5) Vehicle Allocation Information Transmission Processing Next, during the period from when the vehicle allocation is instructed to when the relevant vehicle is allocated to the user 3, vehicle information indicating the position of the relevant vehicle is transmitted to the user. The vehicle allocation information transmitting process for notifying the vehicle 3 will be described with reference to FIG.

The user 3 transmits the vehicle request information using the user terminal 15 (step F1). As a result of the above processing being performed by the Web server 5 of the service organization 1, the taxi company A having the corresponding vehicle is obtained. When the dispatch instruction is given to (17a) (step F2), the dispatch instruction is transmitted to the corresponding vehicle, and the dispatch instruction is received by the in-vehicle device 25 (step F3). Until the vehicle is dispatched to the user 3, the position of the vehicle is confirmed and transmitted to the user terminal 15 of the user 3 together with information on the vehicle. In this case, the taxi company A first checks the dispatched vehicle (step F4), and requests position information from the vehicle-mounted device 25 of the vehicle (step F5). The in-vehicle device 25 detects the current position using a GPS function or the like in response to the received position information request (step F6), and transmits the operation information to the Web server 5 together with the obtained current position information. (Step F7).

The Web server 5 creates vehicle allocation information from the received vehicle operation information and information on the destination of the user 3 and transmits the information to the user terminal 15 (step F8). As the vehicle allocation information, various information such as map information and route information relating to the route from the use place to the destination, information relating to the current position of the user 3, information relating to the destination, peripheral information of the route, traffic information or weather information, etc. included.

Since the user terminal 15 receives and displays the dispatch information (steps F9 and F10), the user 3 sees the information and moves to the position of the dispatched vehicle or to the destination. Vehicle allocation information can be obtained, and the time until the vehicle arrives can be used effectively. For example, when a taxi is called for a partner who is waiting on the customer, the time until arrival can be known, and during that time, the customer can be served using the time effectively. Also, even if the taxi is delayed due to traffic congestion or the like, it is possible to confirm that the taxi has been delayed based on traffic information or information on expected arrival, so that the user can wait with confidence.

The vehicle allocation information as described above is transmitted from the Web server 5 as needed until the vehicle arrives (steps F11, F12, and F13). Therefore, even if the circumstances regarding the vehicle allocation change, the user 3 can use the information. Thus, it is possible to accurately receive the information corresponding to this and obtain the vehicle allocation information.

The above-described transfer of vehicle allocation information has been described as a configuration in which the in-vehicle device 25 transmits and receives data directly to and from the Web server 5, but the transfer is performed via the servers 23 and 24 of the taxi company A (17a). You may do it.

(2-6) Other Processes and Functions Other processes include usage fee payment processing and questionnaire collection processing. (2-6-1) Payment Processing After the user 3 receives and uses the vehicle allocation as described above, the Web server 5 of the service organization 1 charges a vehicle allocation usage fee. On the other hand, the user 3 instructs the transfer to the designated account registered in advance by the user terminal 15 or the like, completes the payment, and transmits the fact to the Web server 5. Thereby, the procedure of the use by the user 3 is completed. Further, the Web server 5 bills the business operator 4 for a user introduction fee. The business entity 4 performs payment processing of a certain user introduction fee in response to this, and transmits this to the Web server 5.

Note that these payment processes can be set to automatically perform an account transfer process, or can be performed by a credit process or an e-commerce process. Further, with respect to the fee to be paid when the user 3 uses the taxi, it is also possible to similarly perform the account transfer or the processing by credit or E-commerce.

(2-6-2) Questionnaire Processing When the user 3 uses a taxi, the service organization 1 uses the Web server 5 to respond to the user terminal 15 and respond to the taxi service contents. Send a questionnaire form to investigate. On the other hand, when the user 3 answers the questionnaire item through the user terminal 15 and transmits it, the Web server 5 stores the result as a questionnaire result for the vehicle of the corresponding company 4 and compiles the result. It will be presented at the time of subsequent use to the user 3. In this case, the Web server 5 may, for example, rank the quality of the service for each of the providers 4, grasp the characteristics of the quality of the service, and By transmitting the data, the data to be used for examining the method of providing the service of the corresponding company 4 and improving the quality, or recognizing the difference from the other companies 4 and using the information to present the improvement and serviceability, etc. Can be provided as.

When collecting the questionnaire, in order to improve the collection rate, we will provide prizes to the answers, etc., and the business operator 4 will directly notify the user 3 of the points that were improved. By taking detailed measures, the quality of the system itself can be improved.

[3] Summary According to the present embodiment, the following effects can be obtained. First, the user 3 receives a quick and accurate dispatch service by simply connecting to the service organization 1 using the user terminals 15 and 16 and transmitting the request information when requesting a vehicle. This makes it possible to easily and quickly receive a dispatch service even when the user goes to an unknown land or does not know the telephone number of a taxi company. The business operator 4 can make an accurate dispatch at places other than the specific taxi stand, and can hope for an increase in profit.

Secondly, when a plurality of businesses 4 apply when transmitting the vehicle search information, the lowest cost or the business 4 that meets the vehicle search conditions is selected by the bidding process, so that the user 3 is appropriate and inexpensive. You will be able to receive services at a price. In addition, it is possible for the company 4 to increase the number of users by providing the dispatching service at low cost.

Third, since the user 3 can add vehicle request conditions such as selecting the quality of service to the vehicle request information, the user 3 can receive a satisfactory service by detailed specification in advance. The quality of service can be improved. The business 4 can increase the number of users accordingly.

Fourth, since the user 3 can receive the dispatch information of the vehicle to be dispatched from the time when the dispatch vehicle is selected to the time when the user arrives at the place to be used, the user 3 can grasp the time until arrival and feel safe. In addition to being able to stand by, you can spend time effectively when you are waiting on customers, and even if you are late in dispatching, you can get inquiries and get irritated by obtaining estimated arrival time and traffic information. The driver does not feel discomfort, and the vehicle dispatching service can be performed smoothly.

Fifth, if a special service by the business operator 4 is possible, the special service can be presented to the user 3 side. It is possible to specify or search for a business 4 that can respond to the service desired by the user 3, and it is possible to provide a detailed service quickly and accurately.

Sixth, after the user 3 receives the dispatch service, the service content can be fed back by responding to the questionnaire form transmitted to the user terminal 15, so that the quality of service requested by the user 3 can be improved. Can be presented to the service provider 4 and the service provider 4 can accurately grasp the points of improvement of the service from the result of the questionnaire and efficiently improve the service quality.

Seventh, since the user 3 and the business operator 4 can access the Web server 5 via the Internet 2, it is possible to easily and quickly transmit and receive vehicle request information and vehicle allocation information. In addition, since the user 3 can access the service organization 1 also by voice, even the user 3 unfamiliar with the operation of the terminal device can use it easily and quickly.

(Second Embodiment) FIGS. 10 and 11 show a second embodiment of the present invention. The difference from the first embodiment is that a vehicle has already been dispatched as a vehicle to be dispatched in response to vehicle request information. Thus, the vehicle is being configured as a system that also targets vehicles being used by other users. In other words, the feature is that "sharing" is also set as a vehicle allocation target.

In this embodiment, even if the system of the first embodiment is employed, as well as the conventional system, the problem that may occur is further improved. For example, when there is an empty vehicle, the system of the first embodiment can be used to promptly issue a dispatch to the user, but almost all the vehicles that can be dispatched are already used by other users. In such a case, it is necessary to wait until an empty vehicle occurs.

However, some users may want to move to their destination more quickly than using alone, and in such a case it is common to want to get on earlier even with "sharing". At best, there was only a measure to call for a passenger in the same direction at the taxi stand.

Therefore, in this embodiment, the "sharing" can be positively used to enable the user to move quickly, and in that case, use at a reasonable fee of the user. The system is designed so that both taxi companies and users benefit from it.

(1) Processing Details FIG. 10 shows a processing program of a vehicle request information distribution system for "sharing" vehicles. The processing flow will be described focusing on the difference from the processing for the vehicle request information shown in FIG. 7 in the first embodiment. Here, a case will be described as a model case where a vehicle capable of "sharing" is searched when the user 3 transmits the vehicle request information.

First, when the user 3 transmits the vehicle request information to the Web server 5 of the service organization 1 through the user terminal 15 (step G1), the Web server 5 receives the vehicle request information and finds a vehicle that meets the vehicle request condition. A search is performed to determine whether or not there is (steps G2 and G3). At this time, the vehicles to be searched are all the vehicles in the empty state described above, and the vehicles in the case where the business operator 4 has contracted to accept the condition of "sharing". It includes those already dispatched to users. For this reason, when the dispatch is instructed as in the first embodiment, the service institution 1 obtains information on the number of persons who can be ridden by the "distributed car" from the dispatched vehicle. ing.

Then, at this time, if there is no target vehicle to be "sharing" (determined as "NO" in step G4), the process shifts to perform the same processing as in the first embodiment (step G5). Then, if a vehicle of the taxi company A (17a) is searched for as a target vehicle as a possible "sharing" (determined as "YES" in step G4), first, whether "sharing" is OK for the user 3 is OK. It is inquired whether or not it is (step G6). At this time, the estimated amount of the discount rate which is a merit obtained by selecting the "sharing" is also transmitted at the same time.

The user terminal 15 displays the received discount rate in the case of the "sharing" (step G7), and prompts the user to select whether or not the "sharing" is OK (step G8). Here, if the user 3 is "NO", the condition of "sharing" is stopped, and the same vehicle allocation processing as in the first embodiment is performed (step G9). Then, if "sharing" is OK (determined as "YES" in Step G8), this is responded to the Web server 5 (Step G10).

In response to this, the Web server 5 transmits a request for "sharing" to the servers 23 and 24 of the taxi company A (17a), which is a business having the vehicle (step G11). When the taxi company A receives the request for "sharing" from the servers 23 and 24, the taxi company A inquires the user 3 of the corresponding vehicle whether or not to accept the "sharing" (step G12). Here, the discount rate which is a merit of "sharing" is presented as a condition.

Upon receiving the inquiry about "sharing" (step G13), the in-vehicle device 25 of the corresponding vehicle asks the user 3 who has already used the vehicle whether or not "sharing" is OK and inputs it by the driver. Is prompted (step G14). If the user 3 of the vehicle refuses the "sharing", the vehicle is excluded from the allocation target, and the same allocation processing as in the first embodiment is performed (step G15).

Then, when the user 3 of the vehicle sets the "sharing" OK and the driver inputs a "sharing" OK response to the in-vehicle device 25, the in-vehicle device 25 passes through the servers 23 and 24 of the taxi company A. Responds to Web server 5 (steps G16 and G17). If the response result indicates that "sharing" is not possible, the Web server 5 proceeds to the normal processing similar to that of the first embodiment (steps G18 and G19). The vehicle is instructed to dispatch (steps G20, G21, G22), and a response is received from the vehicle. The dispatch instruction from the Web server 5 is also transmitted to the user terminal 15 so that the dispatch can be confirmed by display (step G23).

After that, the vehicle allocation information is transmitted from the Web server 5 to the user terminal 15 in the same manner as described above until the "sharing" vehicle arrives at the user 3. You will be able to wait. As a result, the user 3 searches for the "sharing" vehicle after transmitting the vehicle request information, and accepts the "sharing" according to the discount rate, the vehicle is dispatched, and various information is transmitted. It is possible to quickly and inexpensively move to the destination while obtaining.

(2) Specific Case Example Next, a specific example of the above-mentioned "sharing" case will be described with reference to FIG. Here, a case will be described in which a user B (3) who has "carpooled" in the middle of the user A (3) who has used the vehicle first gets on the vehicle and moves to the destination. For example, suppose that the user A has boarded the vehicle D at "Shimbashi". The ride information is communicated by the driver to the company's servers 23 and 24 as business communication, and a message such as "Single ride from Shimbashi to Tokyo Station," sharing "OK" is also sent to the Web server 5. (In the figure).

Next, it is assumed that the user B transmits the vehicle request information to the Web server 5 using the user terminal 15 in "Ginza" (in the figure). The user B presents that the destination is "Tokyo Station" as the vehicle request information. In response, the Web server 5 obtains the vehicle D as a result of searching for the relevant vehicle, and presents the condition of "sharing" to the user A of the vehicle D to inquire whether or not the vehicle A can be used (in the figure).

After the negotiation is established, the vehicle server 5 of the vehicle D is instructed to dispatch the vehicle from the Web server 5, and the user B rides in "Ginza". Upon arriving at "Tokyo Station", user A pays 1600 yen as a fee, and user B pays 600 yen. This means that the users A and B were able to get on at a low price of 200 yen and 80 yen, respectively, for the fare of 1800 yen and 680 yen, respectively, when they got on alone. On the other hand, if the taxi company only allows user A to get on, the fare obtained is 1,800 yen, whereas user B also "shares", so that a total of 2,200 yen is obtained. This means that the difference has been increased by 400 yen.

Note that the taxi company A (17a) of each of the users A and B and the vehicle D pays the service allocation fee and the user introduction fee to the service organization 1, so that the service organization 1 obtains income. In this case, the usage fee to be paid to the service organization 1 is a predetermined fixed fee, and is set to an amount that does not impose a large burden on the user or the taxi company.

According to such a second embodiment, vehicles that have already been dispatched are also taken in as a vehicle to be dispatched under the condition of "sharing", and the Web server 5 of the service organization 1 checks with both users before "sharing". Will be able to move quickly to the destination by "sharing", especially when there are few empty vehicles to be dispatched. The vehicle can be moved to the ground, and the vehicle can be efficiently operated for the business operator, so that a highly convenient system can be provided.

Also, in the case of "sharing" dispatch, since the discount is presented to the user as a condition, it is worthwhile to actively use it, and if you do not require quality such as privacy, use it also for the price side. It is easy for users to get direct benefits in terms of tolls, and for operators to "share" multiple users, improving the operational efficiency of vehicles and improving the return on mileage Can be improved. By providing such a service, the service organization 1 can obtain a usage fee from both the user 3 and the business operator 4.

(Other Embodiments) The present invention is not limited to the above embodiment, but can be modified or expanded as follows. When performing a vehicle request by voice, a voice guidance vehicle request reception server that can perform voice synthesis is used. However, the present invention is not limited to this, and an operator can be arranged to receive a vehicle request by telephone and perform input processing.

In addition, when making a vehicle request by voice, between the presentation of the vehicle request information and the reception of the vehicle allocation information, hang up once and return to call the vehicle allocation information from the service agency side and contact us. Alternatively, a series of processes up to the notification of vehicle allocation information may be performed while the telephone is connected. The example of presenting taxi rides as vehicle request information is shown, but of course it can be applied to shipping, requesting services such as moving or delivery, etc. Can be. However, the conditions of dispatch and the manner of providing dispatch information differ slightly depending on the case.

The in-vehicle device is not limited to the one shown in FIG. 2, and any other device having the same function can be used as appropriate. In the service organization 1, a large number of servers 6 to 12 are provided in addition to the Web server 5. However, it is not always necessary to provide all the components individually, and the server is configured by using a server having the same function. You may. In addition, it is not necessary to provide all the servers, and the necessary servers may be provided as appropriate according to the purpose and application. The network can be any network other than the Internet 2 and the telephone line network 14, such as a packet communication network, a short-range communication network, an optical communication network, and a wireless communication network, as long as the above-described communication is possible.

The navigation device may be a human navigation device other than the car navigation device. Regarding the setting of the discount rate when riding "sharing", it is possible to determine and set appropriate rules, and this system is also set between users and businesses by applying bids May be formed. In addition to the "sharing", a system can be formed that allows other users to be discounted and dispatched on the return trip from the outward trip to the destination to which the user is to be moved. In this case, by allowing the user to choose to use an inexpensive car that can be used cheaply, knowing to wait for some time, the user can enjoy the merit in terms of charges, and Compared to traveling on the return route, profits can be obtained by allocating vehicles to

users at low cost.

The user 3 does not always need to perform the member registration in advance, and may perform the member registration process when transmitting the vehicle request information when necessary. Also, it is not necessary for the business operator 4 to perform business registration in advance, and the service organization 1 may obtain vehicle allocation by distributing vehicle request information as needed according to necessity. You can also build a system.

In each of the above embodiments, an example in which a taxi is used has been described. In this case, the fare can be set based on a general fare, or the fee can be set according to a unique service rule. You may do it. Also, there are various setting rules for the setting of each fee of the user 3 in the case of the "sharing" boarding, so there is no need to set them centrally. Can be built and used flexibly.

The service institution 1 has been described by way of example in which the Web server 5 communicates with each vehicle via the servers 23 and 24 of the business operator 4, but other than when the control of the business operator 4 is performed by the servers 23 and 24. It is also possible to construct a system in which the in-vehicle device 25 of each vehicle independently receives vehicle request information. In this case, the servers 23 and 24 of the business entity 4 can perform overall management by positioning the servers 23 and 24 based on the exchanges and results. As a result, the service organization 1 can directly negotiate with the vehicle-mounted device 25, and can perform a quick and accurate vehicle allocation service.

The service organization 1 can provide a vehicle allocation service in response to the transmission of urgent vehicle request information by the user 3, or a vehicle request transmitted by the user 3 to reserve a vehicle allocation for use in a previous schedule. Information can also be received and addressed.

The service organization 1 transmits the guidance information on the appropriate price to the user terminal 15 using the standard price data for the price specified by the user 3 when the vehicle request information is received by the user 3. By constructing, it is possible to make reasonable use for the user, and it is possible to achieve safe and reliable use.

Brief Description of Drawings

1 is a schematic configuration diagram of a system showing a first embodiment of the present invention

FIG. 2 is a diagram showing a configuration example of an in-vehicle device.

FIG. 3 is an operation explanatory view showing an outline of the system.

FIG. 4 is a diagram showing a flow of a user member registration process.

Figure 5 Diagram showing the flow of the business registration process

6 is a diagram showing the flow of the vehicle position information management process

FIG. 7 is a diagram showing the flow of processing for vehicle request information

Fig. 8 Flowchart of on-board unit position information acquisition and vehicle request information transmission processing

Fig. 9 Diagram showing the flow of vehicle allocation information processing

FIG. 10 FIG. 7 corresponding to FIG.

FIG. 11 is an operation explanatory diagram showing a flow in the case of a carpool.

Explanation of symbols

1 is a service organization, 2 is the Internet (network), 3 is a user, 4 is a business operator, 5 is a Web server (vehicle allocation service device), 6 is a vehicle search server, 7 is a vehicle search condition management database, and 8 is a public offering server, 9 is a dispatch server, 10 is a map server, 11 is a route server, 12 is a

voice guidance request request server, 13 is a PBX, 14 is a telephone line network (network), and 15 and 16 are user terminals (user terminals). 15a is a personal computer, 15b is a PDA, 15c is a navigation device, 15d is an in-vehicle terminal, 16a is a mobile phone, 16b is a public telephone, 17a and 17b are taxi companies 18a and 18b are transportation companies, and 19a and 19b are buses. Company, 20a to 20c are taxis (business vehicles), 21a and 21b are trucks (business vehicles), 22a and 22b are (Business vehicles), 23 is an order receiving server (business terminal device), 24 is a dispatch server (business terminal device), 25 is a vehicle-mounted device (business vehicle device), 26a and 26b are individual taxi operators. Reference numerals 27a and 27b denote private transportation companies, 28a and 28b denote taxis (business vehicles), 29a and 29b denote trucks (business vehicles), 30 denotes an on-vehicle control device, 31 denotes a vehicle behavior sensor, and 32 denotes a GPS device.



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SYSTEM, DEVICE AND METHOD FOR MEDIATING RIDE-SHARING OF VEHICLE

Inventor(s): IKUTA MASASHI ± (IKUTA MASASHI)

Applicant(s): NEC CORP ± (NEC CORP)

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Abstract of JP2003331013 (A)

PROBLEM TO BE SOLVED: To provide a system, a device and a method for mediating ride-sharing of a vehicle suitable for mediation among unacquainted persons.

SOLUTION: A ride-sharing mediation center terminal 3 that accepts access from a terminal 1 of a person who desires the mediation of ride-sharing of the vehicle via a network, is provided with a registration function of mediation desire data consisting of route information and personal data such as attributes, tastes, of an individual and a retrieval function of a desired piece of mediation desire data satisfying desired conditions of the individual. When the mediation desire data conforming to the desired conditions exists, the ride-sharing mediation center terminal 3 transmits a retrieval result from which contact address information is hidden to the terminal 1. An operator of the terminal 1 refers to the route information, the attributes, the tastes, etc., of the individual to be included in the retrieval result, after that, when the mediation desire data is selected and a connecting address is requested from the terminal 1, the ride-sharing mediation center terminal 3 sends the contact address of a registrant of the mediation desire data to the terminal 1. **COPYRIGHT:** (C)2004,JPO

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(71)出願人 000004237

日本電気株式会社

東京都港区芝五丁目7番1号

(72)発明者 生田 将史

東京都港区芝五丁目7番1号 日本電気株式会社内

(74)代理人 100080816

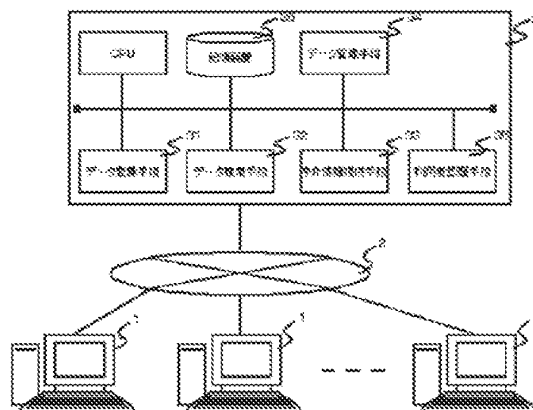
弁理士 加藤 朝道

(54)【発明の名称】 車両の相乗り仲介システム及び装置並びに仲介方法

(57)【要約】

【課題】面識の無い者同士における仲介に適した車両の相乗り仲介システム及び装置並びに仲介方法の提供

【解決手段】ネットワークを介して車両の相乗り仲介希望者の端末1からのアクセスを受け付ける相乗り仲介センタ端末3において、行程情報及び個人の属性、嗜好等の個人データからなる仲介希望データの登録機能と、自己の希望条件を満たす仲介希望データの検索機能と、を備える。希望条件に適合する仲介希望データが存在する場合は、相乗り仲介センタ端末3は、連絡先情報を隠蔽した検索結果を端末1に対して送出する。端末1の操作者に、該検索結果に含まれる行程情報及び個人の属性、嗜好等を参照させた後に、仲介希望データを選択して、端末1から連絡先の要求がなされると、相乗り仲介センタ端末3は、該仲介希望データの登録者の連絡先を応答する。



【特許請求の範囲】

【請求項1】車両の相乗りの仲介の希望者の端末からのアクセスを受け付けて、車両の相乗りの仲介を行う相乗り仲介システムの相乗り仲介センタ端末であって、仲介希望データの登録を要求する前記仲介希望者の端末から、相乗り乗車を希望する旨又は空席の提供を希望する旨のいずれかの指定を含む行程情報と、連絡先情報を含む個人属性情報と、からなる仲介希望データの登録を受け付けて記憶保持するデータ登録手段と、前記仲介希望データの検索を要求する仲介希望者の端末から、少なくとも相乗り乗車を希望する旨又は空席の提供を希望する旨のいずれかの指定と、前記仲介希望データに含まれる項目の希望条件が付された検索要求を受け付け、前記記憶保持した仲介希望データの検索を行い、少なくとも前記連絡先情報を隠蔽した検索結果を送信するデータ検索手段と、前記検索結果を受信した仲介希望者の端末から、希望する仲介希望データを指定してなる該連絡先情報の要求を受け付けた場合に、前記指定がなされた仲介希望データの連絡先情報を送信する仲介情報提供手段と、を備えたことを、特徴とする相乗り仲介センタ端末。

【請求項2】請求項1に記載の相乗り仲介センタ端末であって、前記仲介情報提供手段に代えて、前記検索結果を受信した仲介希望者の端末から、希望する仲介希望データを指定して該連絡先情報の要求を受け付けた場合に、更に、該仲介希望データの登録主に対するメッセージを要求し、前記指定がなされた仲介希望データの連絡先に対して、前記メッセージを送信する手段を備えたことを、特徴とする相乗り仲介センタ端末。

【請求項3】請求項1又は2に記載の相乗り仲介センタ端末であって、更に、予め定められた間隔で、前記仲介希望データの行程情報に含まれる出発日時情報が経過している仲介希望データを削除する手段を、備えたことを、特徴とする相乗り仲介センタ端末。

【請求項4】請求項1乃至3いずれかに記載の相乗り仲介センタ端末であって、更に、前記各仲介希望データ毎に、連絡先情報の送信を行った回数を計数する手段を含み、前記回数情報を含んだ検索結果を送信すること、を特徴とする相乗り仲介センタ端末。

【請求項5】請求項1乃至4いずれかに記載の相乗り仲介センタ端末であって、前記行程情報には、出発地情報及び目的地情報に加え、更に、出発地域情報と、目的方面情報とが含まれており、少なくとも出発地域又は目的方面いずれかを指定して、

適合するデータの検索を可能としたこと、を特徴とする相乗り仲介センタ端末。

【請求項6】請求項1乃至5いずれかに記載の相乗り仲介センタ端末であって、更に、前記仲介希望データの有効期間情報を受け付けて、前記有効期間が経過した仲介希望データを削除する有効期間管理手段を、備えたことを、特徴とする相乗り仲介センタ端末。

【請求項7】請求項1乃至6いずれかに記載の相乗り仲介センタ端末であって、更に、アクセスを試みる端末に対して、識別情報と認証情報を要求し、正しく入力された端末に対して、アクセスを許可する利用者認証手段を備えたことを、特徴とする相乗り仲介センタ端末。

【請求項8】一の操作で、請求項1乃至7いずれかに記載の相乗り仲介センタ端末にアクセスするスイッチ機構を備えたことを、特徴とする仲介希望者用端末。

【請求項9】請求項1乃至8に記載の相乗り仲介センタ端末と、仲介希望者の端末とを、接続してなる相乗り仲介システム。

【請求項10】車両の相乗りの仲介の希望者の端末と、相乗り仲介センタ端末とを接続してなる仲介システムにおける車両の相乗り希望者の仲介方法であって、前記相乗り仲介センタ端末が、仲介希望データの登録を要求する前記仲介希望者の端末から、相乗り乗車を希望する旨又は空席の提供を希望する旨のいずれかの指定を含む行程情報と、連絡先情報を含む個人属性情報と、からなる仲介希望データの登録を受け付けて記憶保持する工程と、前記仲介希望データの検索を要求する仲介希望者の端末から、少なくとも相乗り乗車を希望する旨又は空席の提供を希望する旨のいずれかの指定と、前記仲介希望データに含まれる項目の希望条件が付された検索要求を受け付け、前記記憶保持した仲介希望データの検索を行い、少なくとも前記連絡先情報を隠蔽した検索結果を送信する工程と、前記検索結果を受信した仲介希望者の端末から、希望する仲介希望データを指定してなる該連絡先情報の要求を受け付けて、前記指定がなされた仲介希望データの連絡先情報を送信する工程と、を含むこと、を特徴とする車両の相乗り希望者の仲介方法。

【請求項11】請求項10に記載の車両の相乗り希望者の仲介方法であって、前記相乗り仲介センタ端末が、仲介希望データの登録を要求する前記仲介希望者の端末から、相乗り乗車を希望する旨又は空席の提供を希望する旨のいずれかの指定を含む行程情報と、連絡先情報を含む個人属性情報と、からなる仲介希望データの登録を受け付けて記憶保持する

工程に代えて、
前記相乗り仲介センタ端末が、
前記検索結果を受信した仲介希望者の端末から、希望する仲介希望データを指定して該連絡先情報の要求を受け付けた場合に、更に、該仲介希望データの登録主に対するメッセージを要求する工程と、
前記指定がなされた仲介希望データの連絡先に対して、前記メッセージを送信する工程とを、含むこと、を特徴とする車両の相乗り希望者の仲介方法。

【請求項12】請求項10又は11に記載の車両の相乗り希望者の仲介方法であって、更に、
前記相乗り仲介センタ端末が、
予め定められた間隔で、前記仲介希望データの行程情報に含まれる出発日時情報が経過している仲介希望データを削除する工程を、含むこと、
を特徴とする車両の相乗り希望者の仲介方法。

【請求項13】請求項10乃至12いずれかに記載の車両の相乗り希望者の仲介方法であって、更に、
前記相乗り仲介センタ端末が、前記各仲介希望データ毎に、連絡先情報の送信を行った回数を計数する工程を含む、

前記相乗り仲介センタ端末は、前記検索結果とともに前記回数情報を送信すること、
を特徴とする車両の相乗り希望者の仲介方法。

【請求項14】請求項10乃至13いずれかに記載の車両の相乗り希望者の仲介方法であって、更に、
前記相乗り仲介センタ端末が、仲介希望データの登録を要求する前記仲介希望者の端末から、行程情報として、出発地域情報と、目的方面情報とを受け付ける工程を、含むこと、
を特徴とする車両の相乗り希望者の仲介方法。

【請求項15】請求項10乃至14いずれかに記載の車両の相乗り希望者の仲介方法であって、更に、
前記相乗り仲介センタ端末が、
前記仲介希望データの有効期間情報を受け付ける工程と、
前記有効期間が経過した仲介希望データを削除する工程と、を含むこと、
を特徴とする車両の相乗り希望者の仲介方法。

【請求項16】請求項10乃至15いずれかに記載の車両の相乗り希望者の仲介方法であって、更に、
前記相乗り仲介センタ端末が、
アクセスを試みる端末に対して、識別情報と認証情報を要求する工程と、
正しく識別情報と認証情報と送信した端末に対して、アクセスを許可する工程と、
を特徴とする車両の相乗り希望者の仲介方法。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、車両の相乗り仲介

システム及び装置並びに仲介方法に関し、特に、面識の無い者同士における仲介に適した車両の相乗り仲介システム及び装置並びに仲介方法に関する。

【0002】

【従来の技術】都市の混雑、迷惑駐車、環境破壊といった問題を解決する手法として、相乗り（1人乗り車両規制）に代表される自動車の効率的利用を義務付ける手法が知られている。また、公共交通機関等が充実していない地域においては、車を運転することができない者にとって、相乗りは依然重要な移動手段である。また、若年層を中心として、ヒッチハイクによる個人旅行や見知らぬ者同士のグループ旅行に対する関心が高まりつつある。

【0003】

【発明が解決しようとする課題】しかしながら、車両の相乗りには、次のような課題があり、広く普及するに到っていない。まず、第1に、相乗り乗車を希望する側及び空席の提供を希望する側双方にとって、効率良く相乗り希望者を探す方法が無いことである。相乗りをさせてくれる車両を路上で直接探すことや、走行中に相乗りを希望する者を発見することは、非効率的であって、時間に余裕がある場合を除いて、現実的な手法ではない。

【0004】第2に、相乗り乗車を希望する側及び空席の提供を希望する側双方のニーズが、完全に一致することは稀であり、目的地や時間が異なっていることの方が多い。このために、相乗りを断念したり、遠回りをする必要が生じるなどの不便があった。また、仮に相乗りを行ったとしても、上記ニーズが一致しない状況では、いずれか一方が、不都合を強いられることとなる。

【0005】第3に、相乗り乗車を希望する側及び空席の提供を希望する側が、互いに他人である場合、乗車する（させる）ことに抵抗感があることは否めないことである。上記ニーズが一致する場合であっても、実際に相乗りをするまで嗜好等の相手に関する情報について一切知り得ず、不快な思いをしたり、トラブルの原因となりうる。

【0006】本発明は、上記各課題点を解決すべくなされたものであって、その目的とするところは、面識の無い者同士における仲介に適した車両の相乗り仲介システム及び装置並びに仲介方法を提供することにある。

【0007】

【課題を解決するための手段】前記課題を解決するための手段を提供する本発明の第1の視点によれば、車両の相乗りの仲介の希望者の端末からのアクセスを受け付けて、車両の相乗りの仲介を行う相乗り仲介システムの相乗り仲介センタ端末であって、仲介希望データの登録を要求する前記仲介希望者の端末から、相乗り乗車を希望する旨又は空席の提供を希望する旨のいずれかの指定を含む行程情報と、連絡先情報を含む個人属性情報と、からなる仲介希望データの登録を受け付けて記憶保持する

データ登録手段と、前記仲介希望データの検索を要求する仲介希望者の端末から、少なくとも相乗り乗車を希望する旨又は空席の提供を希望する旨のいずれかの指定と、前記仲介希望データに含まれる項目の希望条件が付された検索要求を受け付け、前記記憶保持した仲介希望データの検索を行い、少なくとも前記連絡先情報を隠蔽した検索結果を送信するデータ検索手段と、前記検索結果を受信した仲介希望者の端末から、希望する仲介希望データを指定してなる該連絡先情報の要求を受け付けた場合に、前記指定がなされた仲介希望データの連絡先情報を送信する仲介情報提供手段と、を備えたこと、を特徴とする相乗り仲介センタ端末が提供される。

【0008】また、上記した相乗り仲介センタ端末において、前記仲介情報提供手段に代えて、前記検索結果を受信した仲介希望者の端末から、希望する仲介希望データを指定して該連絡先情報の要求を受け付けた場合に、更に、該仲介希望データの登録主に対するメッセージを要求し、前記指定がなされた仲介希望データの連絡先に対して、前記メッセージを送信する手段を備えることとしてもよい。

【0009】また、仲介希望データの鮮度を維持する観点等から、上記した相乗り仲介センタ端末において、更に、予め定められた間隔で、前記仲介希望データの行程情報に含まれる出発日時情報が経過している仲介希望データを削除する手段、若しくは、前記仲介希望データの有効期間情報を受け付けて、前記有効期間が経過した仲介希望データを削除する有効期間管理手段を、備えることとしてもよい。

【0010】また、上記した相乗り仲介センタ端末において、更に、前記各仲介希望データ毎に、連絡先情報の送信を行った回数を計数する手段を含み、前記回数情報を含んだ検索結果を送信するものとしてもよい。

【0011】また、上記した相乗り仲介センタ端末の前記行程情報には、出発地情報及び目的地情報に加え、更に、出発地域情報と、目的方面情報とが含まれており、少なくとも出発地域又は目的方面いずれかを指定して、適合するデータの検索を可能としたことで、検索条件をより好ましく設定できる相乗り仲介センタ端末が提供される。

【0012】また、上記した相乗り仲介センタ端末は、アクセスを試みる端末に対して、識別情報と認証情報を要求し、正しく入力された端末に対して、アクセスを許可する利用者認証手段を備えて、端末の所有者や所在に関わらず、アクセスを受け付けることができるよう構成されていることが好ましい。

【0013】また、本発明の第2の観点によれば、一の操作で、請求項1乃至7いずれか一に記載の相乗り仲介センタ端末にアクセスするスイッチ機構を備えた仲介希望者用端末が提供される。

【0014】また、本発明の第3の観点によれば、前記

各相乗り仲介センタ端末と、仲介希望者の端末とを、接続してなる相乗り仲介システムが提供される。

【0015】また、本発明の第4の観点によれば、前記各相乗り仲介センタ端末を用いて行う、車両の相乗り希望者の仲介方法が提供される。

【0016】

【発明の実施の形態】続いて、本発明の第1の実施の形態について、図面を参照して詳細に説明する。図1は、本発明の第1の実施の形態の全体構成を表した図である。図1を参照すると、車両の仲介希望者の端末1と、相乗り仲介センタ端末3と、をインターネット等のネットワーク2を介して相互に接続してなる車両の相乗り仲介システムが示されている。

【0017】端末1は、車両の相乗りの相手の求める者（以下、仲介希望者という）が操作する、パーソナルコンピュータ、携帯電話、PDA（Personal Digital Assistant）、車載型情報端末等の情報処理機器であって、仲介センタ端末3に対する情報の送受信手段として、ブラウザを備えている。

【0018】相乗りセンタ端末3は、ワークステーション、サーバ等の情報処理機器である。相乗りセンタ端末3は、データ登録手段31と、データ検索手段32と、仲介情報提供手段33と、登録データ管理手段34と、利用者認証手段35と、記憶装置36とを備えている。

【0019】データ登録手段31は、仲介希望データの登録を要求する者が操作する端末1から、仲介希望データの登録フォーマットを介して、相乗り乗車を希望する旨又は空席の提供を希望する旨のいずれかの指定を含む行程情報と、連絡先情報を含む個人属性情報と、からなる仲介希望データの登録を受け付けて、記憶装置36に記憶保持する手段である。

【0020】データ検索手段32は、仲介希望データの検索を要求する者の端末1から、検索フォーマットを介して、少なくとも相乗り乗車を希望する旨又は空席の提供を希望する旨のいずれかの指定と、前記仲介希望データに含まれる項目の希望条件が付された検索要求を受け付け、記憶装置36に記憶保持された仲介希望データの検索を行い、前記連絡先情報を隠蔽した検索結果を送信する手段である。

【0021】仲介情報提供手段33は、前記検索結果を受信した者の端末1から、希望する仲介希望データを指定／選択して該連絡先情報の要求を受け付けた場合に、前記指定／選択がなされた仲介希望データの連絡先情報を送信する手段である。

【0022】登録データ管理手段34は、記憶装置36に記憶保持された仲介希望データの管理を行う手段であって、予め定められた間隔で、仲介希望データの行程情報に含まれる出発日時情報が経過している仲介希望データを削除する処理を行う。

【0023】利用者認証手段35は、アクセスを試みる

端末に対して、識別情報（ログイン名）と認証情報（パスワード）を要求し、記憶装置36に記憶保持された利用者認証データに照らして、正しく入力された端末に対して、アクセスを許可する手段である。

【0024】記憶装置36は、前記仲介希望データと、識別情報（ログイン名）と認証情報（パスワード）とを関連付けてなる利用者認証データとを記憶保持する磁気ディスク装置等である。

【0025】続いて、本実施の形態の動作について、図面を参照して、説明する。まず、図2及び図3と図4を適宜参照して、登録処理について説明する。図2は、仲介希望データの登録処理における動作の一例を表したフローチャートである。図2を参照すると、まず、仲介希望者が、自らの端末1を用いて、相乗り仲介センタ端末3にアクセスすると、相乗り仲介センタ端末3は、利用者認証手段35を起動して、ログイン画面をユーザ端末1に送出する（ステップS001）。

【0026】図3は、利用者認証手段35が送出するログイン画面の一例である。端末1より、識別情報（ログイン名）101及び認証情報（パスワード）102を入力し、更に、メニュー選択欄103に「登録」を選択して入力し、送信することで、利用者認証処理が開始される。相乗り仲介センタ端末3の利用者認証手段35は、端末1から送信された、識別情報（ログイン名）101及び認証情報（パスワード）102を、記憶装置36に記憶保持された利用者認証データと照合し、アクセスを試みた者の正当性を確認する。

【0027】上記利用者認証手段35により、仲介希望者の正当性が確認されると、続いて、相乗り仲介センタ端末3は、データ登録手段31を起動して、仲介希望データの登録フォーマットを送出する（ステップS002）。

【0028】図4は、データ登録手段31より送出される仲介希望データの登録フォーマットの一例である。図4を参照すると、登録フォーマットには、相乗り乗車を希望する旨又は空席の提供を希望する旨のいずれかを選択する仲介区分201と、登録者の出発地域202と、登録者の出発地203と、登録者の目的方面204と、登録者の目的地205と、登録者の経由地206と、登録者の出発日時207と、目的地への到着予定日時208と、登録者の希望する希望負担額209と、登録者側の総人数210と、からなる行程情報と、喫煙の有無等の登録者の嗜好211と、登録者の性別212と、登録者の年代213、登録者の電話番号214と、登録者の電子メールアドレス215と、登録者の氏名216と、からなる登録者データからなっている。なお、登録者データのうち登録者の電話番号214、メールアドレス215及び氏名216は、連絡先情報である。

【0029】仲介希望者が、図4に例示される登録フォーマットの各項目に入力し、「登録」ボタンを起動する

と、端末1から前記入力内容が仲介希望データとして、相乗り仲介センタ端末3に対して送信される（ステップS003）。

【0030】前記仲介希望データを受け取った相乗り仲介センタ端末3のデータ登録手段31は、前記仲介希望データの内容に不備があるか否かを検査する（ステップS004）。前記検査の結果、入力すべき項目中に、入力洩れ、文字数過多、入力規則違反が存在する場合には、その旨を通知し、再度登録フォーマットの送信を行う（ステップS003）。

【0031】一方、前記仲介希望データの内容に不備が存在しない場合には、相乗り仲介センタ端末3は、該登録希望データを記憶装置36に登録する（ステップS005）。

【0032】このようにして、相乗り仲介センタ端末3は、仲介希望者からその端末1を介して、仲介希望データの入力を受け付けて、記憶装置36への登録を行う。

【0033】続いて、図5及び図6乃至図8を適宜参照して、検索処理について説明する。図5は、仲介希望データの検索処理における動作の一例を表したフローチャートである。図5を参照すると、まず、仲介希望者が、自らの端末1を用いて、相乗り仲介センタ端末3にアクセスすると、相乗り仲介センタ端末3は、利用者認証手段35を起動して、ログイン画面をユーザ端末1に送出する（ステップS101）。ここで、端末1より、識別情報（ログイン名）101及び認証情報（パスワード）102を入力し、更に、メニュー選択欄103に「検索」を選択して入力し、送信することで、利用者認証処理が開始される（図3参照）。

【0034】上記利用者認証手段35により、仲介希望者の正当性が確認されると、続いて、相乗り仲介センタ端末3は、データ検索手段32を起動して、仲介希望データの検索フォーマットを送出する（ステップS102）。

【0035】図6は、データ検索手段32より送出される仲介希望データの検索フォーマットに検索条件を入力した状態を示した図である。図6を参照すると、検索フォーマットには、相乗り乗車を希望する旨又は空席の提供を希望する旨のいずれかを選択する仲介区分301と、出発地域302と、出発地303と、目的方面304と、目的地305と、経由地306と、出発日時307と、到着予定日時308と、希望負担額309と、総人数310と、からなる行程による検索条件入力欄と、喫煙の有無等の嗜好311と、性別312と、年代313と、からなる登録者の属性、嗜好による検索条件入力欄とからなっている。そして、各項目の初期値は、「特に指定しない」のものとなっており、仲介希望者から入力された項目のみが、検索条件として、送信されるものとなっている。

【0036】また、図6において、入力された検索条件

を参照すると、仲介区分301として、「相乗りさせてあげる」(空席提供)が選択されており、空席提供側の仲介希望データを検索する条件が指定されている。また、行程による検索条件には、出発地域302は、「都内23区」、目的方面304は、「大阪府」、出発日時「2002/3/1 13:00~18:00」、希望負担額は、「5000円~6000円」がそれぞれ入力され、個人の属性、嗜好による検索条件には、嗜好1

(喫煙)311は、「禁煙」、性別312は、「男性」、年代313は、「20代」がそれぞれ入力されてい

る。
【0037】仲介希望者が、図6に例示される検索条件を入力し、「検索」ボタンを起動すると、端末1から前記検索条件が、相乗り仲介センタ端末3に対して送信される(ステップS103)。

【0038】前記検索条件を受け取った相乗り仲介センタ端末3のデータ検索手段32は、記憶装置36に登録された仲介希望データの検索を行って(ステップS104)、前記検索条件に適合する仲介希望データをリスト化して、端末1に対して、送出する(ステップS105)。

【0039】図7は、図6の検索条件を指定した場合の、相乗り仲介センタ端末3から送出される検索結果の一例である。図7を参照すると、出発地域402と、出発地403と、目的方面404と、目的地405と、経由地406と、出発日時407と、到着予定日時408と、希望負担額409と、総人数410と、からなる行程に係る情報と、喫煙の有無等の嗜好411と、性別412と、年代413と、からなる仲介希望データ登録者の個人属性や嗜好に係る情報とが、リスト出力されている一方で、各仲介希望データの電話番号214、メールアドレス215及び氏名216等の連絡先情報は、隠蔽されたものとなっている。

【0040】仲介希望者は、前記検索結果を参照して、自らの希望に合った仲介希望データが存在する場合(ステップS106のYes)、仲介希望者が、前記検索結果に含まれる仲介希望データを指定/選択するためのボタン等を起動すると、端末1は、相乗り仲介センタ端末3に対して、前記指定/選択がなされた仲介希望データの送信要求を行う(ステップS107)。なお、前記検索結果に自らの希望に合った仲介希望データが存在しない、ヒット件数が多い場合等に、検索条件の再入力や絞り込み等を行うことが可能である(ステップS110)。

【0041】前記指定/選択がなされた仲介希望データの送信要求を受けた相乗り仲介センタ端末3は、仲介情報提供手段33を起動して、該仲介希望データの連絡先情報を記憶装置36から取り出して、端末1に対して、送信する(ステップS108)。

【0042】図8は、相乗り仲介センタ端末3から送信

される連絡先情報の一例である。図8を参照すると、該仲介希望データの氏名501、電話番号502及びメールアドレス503が連絡先情報として、示されている。仲介希望者は、この連絡先情報に基づいて、各仲介データの登録主に連絡を行うことで、車両の相乗りについての交渉を開始することができる。

【0043】一方、相乗り仲介センタ端末3は、記憶装置36に記憶保持された該仲介希望データの更新を行う(ステップS109)。ここでの更新内容は、特に定めるものではないが、例えば、仲介希望データの人数が複数存在する場合には、該人数情報を減ずる処理、該仲介希望データを「交渉中」と表示できるように更新する処理等を実行させればよい。

【0044】また、相乗り仲介センタ端末3の登録データ管理手段34は、記憶装置36に記憶保持された仲介希望データについて、予め定められた間隔で、仲介希望データの行程情報に含まれる出発日時情報が経過している仲介希望データを削除する処理を行う。このため、検索結果として表示される仲介希望データの鮮度は、保たれたものとなっている。

【0045】上記の通り、相乗り乗車を希望する者或いは空席の提供を希望する者は、時間的に余裕がある場合は、自ら仲介希望データを登録する方法により、また、時間的に余裕の無い場合は、検索のみを行う等して、効率良く、かつ、相手の嗜好等を参照しながら、自らの希望に合った相手を求めることができる。特に、仲介希望データの行程情報には、出発地情報及び目的地情報に加え、更に、その上位概念としての出発地域情報と、目的方面情報とが含まれているため、長距離移動者やヒッチハイクを行う者等、厳密な目的地を問わない仲介希望者にとっても、適合する仲介希望データが求めやすいものとなっている。

【0046】また、端末1の利用者については、相乗り仲介センタ端末3の利用者認証手段35により、その認証を行うこととしているので、適正な者のみに、ログオン名(識別情報)及びパスワード(認証情報)を発行する体制を整えることで、事故やトラブルの発生を未然に防止することができるものとなっている。もちろん、前記ログオン名(識別情報)及びパスワード(認証情報)に代えて、端末1の固有の識別情報を用いることや、使用者によって、仲介希望データの登録又は検索のいずれかを制限すること等も、好ましい変形である。

【0047】また、複数の相乗りの約束(予約)をしておくことによって、車両を乗りついて、自らの最終目的地に到達すると行った用法や、遠距離を移動する間に、多数の短距離移動希望者を入れ替わり乗車させる用法等も実現できることとなる。

【0048】続いて、連絡先情報を仲介希望データ検索者に対して直接提供せずに、相手との仲介を可能とする本発明の第2の実施の形態について説明する。本実施の

形態の構成及び動作は、上記した第1の実施の形態と、略同様であるため、省略し、その相違点のみを説明する。

【0049】本実施の形態においては、相乗り仲介センタ端末3の仲介情報提供手段33は、指定/選択がなされた仲介希望データの連絡先情報を送信するのではなく、端末1に対して、該仲介希望データの登録者に対するメッセージの入力を受け付けて、記憶装置36に別途設けたメッセージ保存領域に記憶保持し、該仲介希望データの連絡先情報として入力されたメールアドレスに対してその旨を通知する処理と、該通知を受け取った者からのメッセージ参照要求を受け付けて送信する処理とを行う。

【0050】図9は、本実施の形態における仲介希望データの検索処理の動作を表したフローチャートである。図9を参照すると、ステップS107までの動作は、上記した第1の実施の形態の動作と同様である。そして、ステップS107において、仲介希望データの指定/選択を受け付けた相乗り仲介センタ端末3は、仲介情報提供手段33を起動して、端末1に対して、該仲介希望データの登録者に対するメッセージの入力を行わせるべく、メッセージ送信フォーマットを送出する（ステップS108）。

【0051】図10は、上記したメッセージ送信フォーマットと、入力されたメッセージの一例を示した図である。図10を参照すると、登録者に対するメッセージ601と、電話番号602及びメールアドレス603とが、入力されている。

【0052】仲介希望者が、図10に例示される登録者宛てのメッセージを入力し、「送信」ボタンを起動すると、端末1から前記メッセージ等が、相乗り仲介センタ端末3に対して送信される（ステップS109）。相乗り仲介センタ端末3は、前記メッセージを記憶装置36に記憶保持し、更に、該仲介希望データの連絡先情報のメールアドレスに対して、メッセージを預かっている旨の通知を行う（ステップS110）。

【0053】爾後、前記通知を受け取った仲介希望者が、相乗り仲介センタ端末3にアクセスして、前記メッセージの参照要求を行った場合は、相乗り仲介センタ端末3は、利用者認証手段35を起動して、仲介希望者を確認した後、該メッセージを送信する。

【0054】本実施の形態によれば、仲介希望データを登録した者の個人情報を秘匿することができるため、連絡先情報が不正に使用される等の事態を回避できる。また、登録を行った側においても、より条件のよい相手を選択する機会が与えられる。

【0055】上記した実施の形態では、相乗り仲介センタ端末3が、メッセージを預かり、要求に応じて送信する方式を採用しているが、相乗り仲介センタ端末3が、メッセージを記憶装置36に記憶保持せずに、電子メー

ルを生成して、そのまま転送する方式を採用してもよい。

【0056】続いて、連絡先情報の送信を行った回数を計数し、検索結果とともに提供する本発明の第3の実施の形態について説明する。本実施の形態の構成及び動作は、上記した第1、第2の実施の形態と、略同様であるため、省略し、その相違点のみを説明する。

【0057】本実施の形態においては、更に、相乗り仲介センタ端末3の登録データ管理手段34は、前記各仲介希望データ毎に、連絡先情報の送信或いはメッセージの提供/転送を行った回数を計数して、仲介希望データに書き込む処理を行う。

【0058】図11は、本実施の形態における相乗り仲介センタ端末3から送出される検索結果の一例である。図11を参照すると、その右端にアクセス累計の表示欄701が存在しており、各仲介希望データ毎の連絡先情報を送信した回数が表示されるものとなっている。

【0059】本実施の形態によれば、仲介希望データの検索を行った者は、前記アクセス累計欄の数値を参照して、該仲介希望データの登録を行った者にアクセスを行うか否かを判断することができる。該アクセス件数の多寡は、他の仲介希望者からの引き合い多寡を示しているからである。

【0060】上記した各実施の形態において、仲介希望者の端末1は、特に限定されないものとして説明したが、携帯電話や車載型端末において、特定のスイッチの起動直後に、相乗り仲介センタ端末3にアクセスできる機構を備えたものを用意してもよい。相乗りを中心として移動を続けるヒッチハイク嗜好者や、移動費用の節約を希望する車両運転者は、該端末を利用して、速やかに相乗りの相手を求めることが可能となる。

【0061】以上、本発明の各実施の形態を、図面を参照して、説明したが、上記各実施の形態として記載した事項及び図面の内容は、本発明の技術的範囲を限定するものではなく、特許請求の範囲の記載の範囲内で、当業者であれば、なし得るであろう各種変形、修正を含むことはもちろんである。例えば、図4に例示した仲介希望データとして登録する項目、図6に例示した検索条件の項目は、説明のために例示したものに過ぎない。例えば、仲介希望データの項目に、該仲介希望データの有効期間を含めて、該期間の経過後は、例え出発日時以前であっても、データ検索手段32は、検索の対象として取り扱わない、或いは、データ管理手段34が削除処理を行う等の変形を加えてもよい。

【0062】

【発明の効果】本発明によれば、相乗り乗車を希望する側及び空席の提供を希望する側双方が、効率的に、自己の希望条件に合った相手を探すことが可能となる。その理由は、経路のほか、相乗りの相手の選別要素となりうる個人の嗜好等を好ましく提供する構成を採用したこと

にある。

【図面の簡単な説明】

【図1】本発明の第1の実施の形態の全体構成を表した図である。

【図2】仲介希望データの登録処理における動作の一例を表したフローチャートである。

【図3】ログイン画面の一例である。

【図4】仲介希望データの登録フォーマットの一例である。

【図5】仲介希望データの検索処理における動作の一例を表したフローチャートである。

【図6】仲介希望データの検索フォーマットに検索条件を入力した状態を示した図である。

【図7】相乗り仲介センタ端末から送出される検索結果の一例である。

【図8】相乗り仲介センタ端末から送信される連絡先情報の一例である。

*

*【図9】本発明の第2の実施の形態における仲介希望データの検索処理の動作を表したフローチャートである。

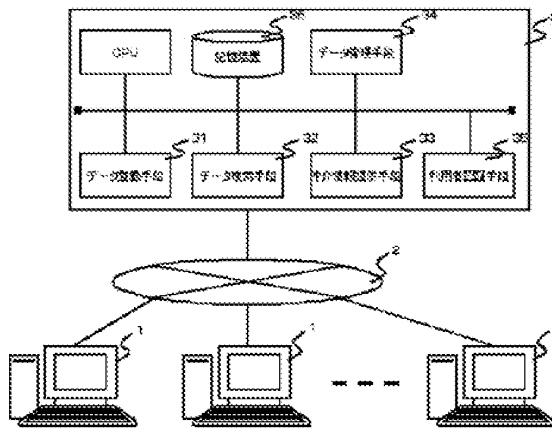
【図10】メッセージ送信フォーマットと、入力されたメッセージの一例を示した図である。

【図11】相乗り仲介センタ端末から送出される検索結果の別の例である。

【符号の説明】

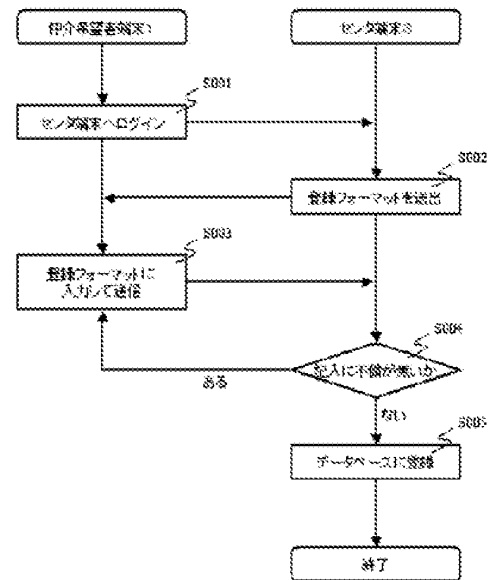
- 1 端末
- 2 ネットワーク
- 3 相乗り仲介センタ端末
- 31 データ登録手段
- 32 データ検索手段
- 33 仲介情報提供手段
- 34 登録データ管理手段
- 35 利用者認証手段
- 36 記憶装置

【図1】



【図3】

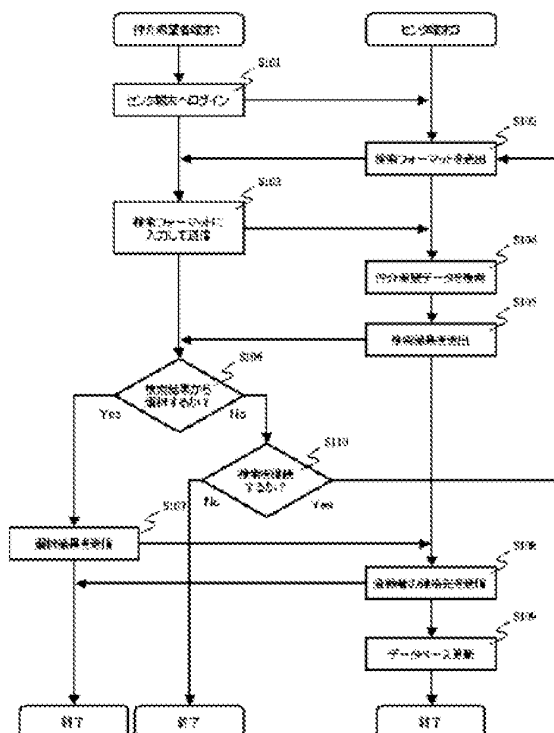
【図2】



【附 4】

登録画面			
行程情報			
区分 ☒ 相乗りさせてあげる ☐ 相乗りさせて欲しい			
出発地域		出発地	
目的地		目的地	
経由地			
出発日時 (yy/mm/dd hh:mm)		到着予定日時 (yy/mm/dd hh:mm)	
希望負担額			
人数			
登録者データ			
嗜好1(喫煙)		嗜好2(愛車)	
性別		年代	
電話番号		メールアドレス	
氏名			
登録			

【195】



【98】

図1は、情報を受け取るためのフォームの例を示している。フォームには3つの入力フィールドがあり、それぞれが番号で示されている。1番目のフィールドは「氏名」とラベルされ、「Ota Ota」と入力されている。2番目のフィールドは「電話番号」とラベルされ、「093-xxxx-xxxx」と入力されている。3番目のフィールドは「メールアドレス」とラベルされ、「ota@ota.sci.nagoya-u.ac.jp」と入力されている。

【図6】

検索画面

行程で検索

☒ 相乗りさせてあげる
 ☐ 相乗りさせて欲しい

仲介区分 ☐ 出発地域
 出発地

目的方面
 目的地

経由地

出発日時
 到着予定日時

希望負担額

人数

個人データで検索

嗜好1(喫煙)
 嗜好2(愛車)

性別
 年代

検索

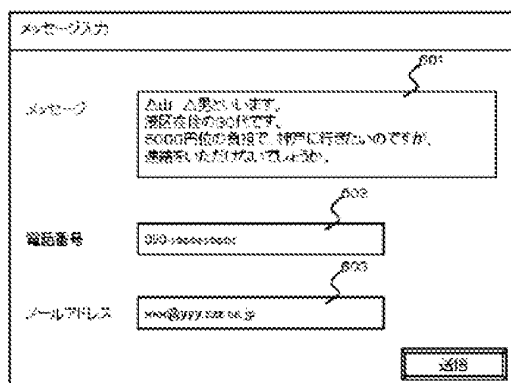
【図7】

検索結果(相乗りさせてあげる)

21件ヒットしました。(4/21 を表示) [検索条件再入力](#) [次頁へ](#)

#	出発地域	目的方面	経由地	出発日時	希望負担額	嗜好1(喫煙)	性別
	出発地	目的地		到着予定日時	人数	嗜好2(愛車)	年代
1	都内23区	大阪府	名古屋	2002/3/1 14:00	5,000円	禁煙	男性
選択	新宿区	東区		2002/3/1 21:00	1人	AAA	20代
2	都内23区	大阪府	-	2002/3/1 13:00	3,000円	喫煙	男性
選択	豊島区	高槻市		2002/3/1 22:00	3人	BBB	30代
3	都内23区	大阪府	京都	2002/3/1 9:00	5,500円	禁煙	男性
選択	世田谷区	堺市		2002/3/2 11:00	2人	CCC	20代
4	都内23区	大阪府	名古屋	2002/3/1 10:00	4,500円	禁煙	男性
選択	練馬区	西区		2002/3/1 18:00	2人	DDD	30代

【D10】



【8】1 1】

検査結果が正常なものをあげる							
21件にヒットしました。(4/21 を表示)							
※	出現場所	目的方面	調査地	出現日時	検出機名称	検出1(検出)	年代
	出現機	目的地		検出予定時刻	A 機	検出	2012年統計
1	東京23区	大塚駅	池袋駅	2012/01/14 03	5,000円	検出	30代
2	神奈川22区	東武		2012/01/21 03	1人	検出	?
3	神奈川22区	大塚駅	-	2012/01/13 03	1,000円	検出	30代
4	神奈川22区	大塚駅	池袋駅	2012/01/22 03	1人	検出	15
5	神奈川23区	大塚駅	池袋	2012/01/20 03	5,500円	検出	30代
6	神奈川23区	池袋		2012/01/11 03	3人	検出	6
7	神奈川23区	大塚駅	池袋駅	2012/01/18 03	4,500円	検出	30代
8	神奈川23区	池袋		2012/01/18 03	1人	検出	15

JP2003331013A SYSTEM, DEVICE AND METHOD FOR MEDIATING RIDE-SHARING OF VEHICLE

Data originating from sources other than the EPO may not be accurate, complete, or up to date.

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 a vehicle sharing intermediary system and apparatus and an intermediary method, and more particularly to a vehicle sharing intermediary system and apparatus and an intermediary method suitable for intermediation between persons having no knowledge.

[0002] 2. Description of the Related Art As a technique for solving problems such as urban congestion, nuisance parking, and environmental destruction, a technique for obliging efficient use of automobiles represented by carpooling (single-person vehicle regulation) is known. In addition, in areas where public transportation is not sufficient, car sharing is still an important means of transportation for those who cannot drive a car. Also, young people are increasingly interested in hitchhiking personal trips and group trips with strangers.

[0003] However, car sharing has the following problems and has not been widely spread. First of all, there is no method for efficiently searching for a rider who wishes to ride together and a side who wants to provide vacant seats. Finding a car that will share your car directly on the road, or finding someone who wants to share your car while driving is inefficient, unless you have time to spare. Absent.

[0004] Secondly, the needs of both the side wishing to ride aboard and the side wishing to provide vacant seats rarely coincide completely, and the destination and time are often different. For this reason, there are inconveniences such as abandoning the carpooling or making a detour. In addition, even if carpooling is performed, in a situation where the above needs do not match, either one will be inconvenienced.

[0005] Third, if the side wishing to ride together and the side wishing to provide vacant seats are different from each other, it cannot be denied that there is a sense of resistance to boarding (making). Even when the above needs are met, it is not possible to know any information about the other party such as preferences until the car is actually shared, which may cause unpleasant feelings or cause trouble.

[0006] The present invention has been made to solve the above-mentioned problems, and an object of the present invention is to provide a vehicle sharing intermediary system and apparatus suitable for intermediation between persons having no acquaintance and an intermediary method. It is in.

[0007] According to a first aspect of the present invention for providing means for solving the above-mentioned problems, an access from a terminal of a person who wishes to intermediary vehicle sharing is accepted, and A carpooling intermediary center terminal of a carpooling intermediary system that mediates carpooling, either from the terminal of the person who wants to intervene to request registration of mediation request data, either to request carpooling or to provide vacant seats Data registration means for accepting and storing registration of desired mediation data consisting of process information including designation of the user, personal attribute information including contact information, and a terminal of a mediator requesting a search for the desired mediation data From at least a request for sharing a ride or a request for vacant seats, and a search request with a desired condition of an item included in the mediation request data. In addition, the desired mediation request data is retrieved from the data search means for searching the stored mediation desired data and transmitting a search result that at least conceals the contact information and the terminal of the mediator who has received the search result. And a mediation information providing means for transmitting the contact information of the mediation desired data for which the designation has been made when a request for the contact information designated by designating is received. A terminal is provided.

[0008] Further, in the above-described carpooling broker center terminal, in place of the broker information providing means, a request for the contact information is received from the broker who desires the broker who has received the search result by specifying desired brokerage data. In this case, the information processing apparatus may further include means for requesting a message to the registrant of the mediation request data and transmitting the message to the contact information of the mediation request data that has been designated.

[0009] Further, from the viewpoint of maintaining the freshness of the desired mediation data, etc., in the above-mentioned shared intermediary center terminal, the departure date and time information included in the travel information of the desired mediation data has further passed at predetermined intervals. Means for deleting the desired data, or effective period management means for receiving the valid period information of the intermediation desired data and deleting the intermediary desired data for which the valid period has elapsed may be provided.

[0010] Further, the above-mentioned carpooling broker center terminal further includes means for counting the number of times contact information has been transmitted for each brokerage desired data, and transmits a search result including the number information. Good.

[0011] In addition to the departure point information and the destination information, the process information of the carpooling brokerage center terminal further includes departure region information and destination direction information. At least either the departure region or the destination direction is included. By specifying "" and enabling the search for suitable data, a carpooling mediation center terminal capable of more preferably setting the search conditions is provided.

[0012] In addition, the above-mentioned carpooling mediation terminal requests identification information and authentication information from a terminal attempting access, and includes user authentication means for permitting access to a correctly input terminal. It is preferable that the access can be accepted regardless of the owner or location.

[0013] According to a second aspect of the present invention, there is provided an intermediary applicant terminal comprising a switch mechanism for accessing the carpooling intermediary center terminal according to any one of claims 1 to 7 in one operation. .

[0014] According to a third aspect of the present invention, there is provided a carpooling mediation system in which the carpooling mediation center terminals are connected to the terminal of the person who wants to mediate.

[0015] According to a fourth aspect of the present invention, there is provided an intermediary method for a vehicle rider who wishes to share a vehicle, which is performed using each of the carpool brokerage center terminals.

[0016] DESCRIPTION OF THE PREFERRED EMBODIMENTS Next, a first embodiment of the present invention will be described in detail with reference to the drawings. FIG. 1 is a diagram showing the overall configuration of the first embodiment of the present invention. Referring to FIG. 1, there is shown a vehicle sharing intermediary system in which a vehicle intermediary requesting terminal 1 and a car sharing intermediary center terminal 3 are connected to each other via a network 2 such as the Internet.

[0017] The terminal 1 is an information processing device such as a personal computer, a mobile phone, a PDA (Personal Digital Assistant), or an in-vehicle information terminal operated by a person seeking a carpool partner (hereinafter referred to as an intermediary applicant). A browser is provided as means for transmitting and receiving information to the broker center terminal 3.

[0018] The car sharing center terminal 3 is an information processing device such as a workstation or a server. The car sharing center terminal 3 includes data registration means 31, data search means 32, mediation information providing means 33, registration data management means 34, user authentication means 35, and storage device 36.

[0019] The data registration means 31 is either of requesting a shared ride or requesting vacant seats from the terminal 1 operated by a person who requests registration of the mediation request data via the registration format of the mediation request data. It is means for accepting registration of mediation request data comprising process information including designation and personal attribute information including contact information, and storing and holding the data in the storage device 36.

[0020] The data search means 32 specifies from the terminal 1 of the person requesting the search for intermediation desired data, through the search format, at least one of requesting a shared ride or providing a vacant seat, and the intermediary 11 is means for receiving a search request to which a desired condition of an item included in desired data is attached, searching for intermediary desired data stored in the storage device 36,

and transmitting a search result concealing the contact information.

[0021] The mediation information providing unit 33 designates / selects desired mediation request data from the terminal 1 of the person who has received the search result and receives the request for the contact information, and the mediation information that has been designated / selected is received. This is means for transmitting contact information of desired data.

[0022] The registered data management means 34 is a means for managing the mediation desired data stored and held in the storage device 36, and the departure date and time information included in the process information of the mediation desired data has passed at a predetermined interval. To delete the desired mediation data.

[0023] The user authentication means 35 requests identification information (login name) and authentication information (password) from the terminal to which access is attempted, and is correctly input in light of the user authentication data stored and held in the storage device 36. This is a means for permitting access to the terminal.

[0024] The storage device 36 is a magnetic disk device or the like that stores and holds the mediation request data and user authentication data in which identification information (login name) and authentication information (password) are associated with each other.

[0025] Next, the operation of the present embodiment will be described with reference to the drawings. First, the registration process will be described with reference to FIGS. 2, 3 and 4 as appropriate. FIG. 2 is a flowchart showing an example of the operation in the registration process of the mediation request data. Referring to FIG. 2, first, when an intermediary applicant accesses the carpooling brokerage center terminal 3 using his / her terminal 1, the carpooling brokerage center terminal 3 activates the user authentication means 35 and displays a login screen. It is sent to the user terminal 1 (step S001).

[0026] FIG. 3 is an example of a login screen sent out by the user authentication means 35. The user authentication process is started by inputting identification information (login name) 101 and authentication information (password) 102 from the terminal 1, and selecting and inputting "registration" in the menu selection field 103 and transmitting it. Is done. The user authentication means 35 of the carpooling broker center terminal 3 compares the identification information (login name) 101 and the authentication information (password) 102 transmitted from the terminal 1 with the user authentication data stored in the storage device 36. And confirm the legitimacy of the person who attempted the access.

[0027] When the user authentication means 35 confirms the legitimacy of the intermediary applicant, the carpooling intermediary center terminal 3 subsequently activates the data registration means 31 and sends out the registration format of the intermediation desired data (step) S002).

[0028] FIG. 4 shows an example of the registration format of the mediation request data sent from the data registration means 31. Referring to FIG. 4, the registration format includes an intermediary section 201 for selecting whether to ride together or to provide vacant seats, a departure area 202 for the registrant, and a departure place 203 for the registrant. Registrant's destination area 204, registrant's destination 205, registrant's destination 206, registrant's departure date and time 207, destination arrival date and time 208, and registrant's desired wishes Process information consisting of the burden 209, the total number of people 210 on the registrant side, the registrant's preference 211 such as the presence or absence of smoking, the registrant's gender 212, the registrant's age 213, the registrant's phone number It consists of registrant data consisting of 214, the e-mail address 215 of the registrant, and the name 216 of the registrant. In the registrant data, the registrant's telephone number 214, mail address 215, and name 216 are contact information.

[0029] When the mediator wishes to input each item of the registration format illustrated in FIG. 4 and activates the "Register" button, the input content is transmitted from the terminal 1 to the carpooling mediation center terminal 3 as mediation request data. (Step S003).

[0030] The data registration means 31 of the carpooling mediation center terminal 3 that has received the mediation request data checks whether or not the content of the mediation request data is incomplete (step S004). As a result of the inspection, if there is an input omission, an excessive number of characters, or an input rule violation among the items to be input, this is notified and the registration format is transmitted again (step S003).

[0031] On the other hand, when there is no deficiency in the content of the mediation request data, the

carpooling mediation center terminal 3 registers the registration request data in the storage device 36 (step S005).

[0032] In this way, the carpooling broker center terminal 3 accepts input of brokerage request data from the broker requester via the terminal 1 and registers it in the storage device 36.

[0033] Next, the search process will be described with reference to FIGS. 5 and 6 to 8 as appropriate. FIG. 5 is a flowchart showing an example of the operation in the search process for the mediation desired data. Referring to FIG. 5, first, when an intermediary applicant accesses the carpooling brokerage center terminal 3 using his / her terminal 1, the carpooling brokerage center terminal 3 activates the user authentication means 35 and displays a login screen. The data is sent to the user terminal 1 (step S101). Here, the identification information (login name) 101 and the authentication information (password) 102 are input from the terminal 1, and further, "search" is selected and input in the menu selection field 103, and the user authentication is performed. The process is started (see FIG. 3).

[0034] When the user authentication means 35 confirms the legitimacy of the intermediary applicant, the carpooling intermediary center terminal 3 subsequently activates the data search means 32 and sends out the search format of the intermediation desired data (step S102).

[0035] FIG. 6 is a diagram showing a state in which a search condition is input to the search format of the mediation desired data sent from the data search means 32. Referring to FIG. 6, the search format includes an intermediary section 301 for selecting either carpooling or desiring to provide vacant seats, a departure area 302, a departure area 303, and a destination area 304. A search condition input field based on a process consisting of a destination 305, a stopover 306, a departure date and time 307, a scheduled arrival date and time 308, a desired burden amount 309, and the total number of people 310, and a preference 311 such as the presence or absence of smoking. And a search condition input field according to the attributes and preferences of the registrant consisting of gender 312 and age 313. The initial value of each item is "not specified", and only the item input from the mediator is transmitted as a search condition.

[0036] In addition, referring to the input search condition in FIG. 6, "Take a ride together" (providing vacant seats) is selected as the mediation category 301, and the conditions for searching for mediation desired data on the vacant seat providing side are designated. ing. Also, the search conditions according to the process are as follows: departure area 302 is "Tokyo 23 wards", destination area 304 is "Osaka Prefecture", departure date and time "2002/3/1 13: 00 to 18:00", desired amount of burden "5000 yen to 6000 yen" is entered, and search conditions based on individual attributes and preferences include preference 1 (smoking) 311 for "no smoking", gender 312 for "male", and age 313 for "20s" is entered.

[0037] When the mediator desires inputs the search conditions exemplified in FIG. 6 and activates the "search" button, the search conditions are transmitted from the terminal 1 to the carpooling mediation center terminal 3 (step S103).

[0038] The data search means 32 of the carpooling broker center terminal 3 that has received the search conditions searches for brokerage desired data registered in the storage device 36 (step S104), and lists the brokerage desired data that matches the search conditions. Is sent to the terminal 1 (step S105).

[0039] FIG. 7 is an example of a search result sent from the carpooling broker center terminal 3 when the search condition of FIG. 6 is designated. Referring to FIG. 7, departure area 402, departure place 403, destination area 404, destination 405, waypoint 406, departure date and time 407, estimated arrival date and time 408, desired burden amount 409, total number of people 410, information relating to the process comprising, preference 411 such as the presence or absence of smoking, sex 412, age 413, and information relating to personal attributes and preferences of the mediator wish data registrant are output as a list. On the other hand, contact information such as the telephone number 214, the mail address 215, and the name 216 of each intermediation request data is concealed.

[0040] The mediation applicant refers to the search result, and if mediation request data suitable for his / her request exists (Yes in step S106), the mediation applicant designates the mediation request data included in the search result / When the selection button or the like is activated, the terminal 1 requests the carpooling broker center terminal 3 to transmit the specified brokerage desired data (step S107). It should be noted that the search condition can be re-input or narrowed down when there is no intermediary request data suitable for the user's request in the search result, or when the number of hits is too large (step S110).

[0041] The carpooling mediation center terminal 3 that has received the transmission request for the mediation request data that has been designated / selected activates the mediation information providing means 33, retrieves the contact information of the mediation request data from the storage device 36, and 1 is transmitted (step S108).

[0042] FIG. 8 is an example of contact information transmitted from the carpooling broker center terminal 3. Referring to FIG. 8, the name 501, telephone number 502, and mail address 503 of the mediation request data are shown as contact information. The intermediary applicant can start negotiations for vehicle sharing by contacting the registrant of each intermediary data based on the contact information.

[0043] On the other hand, the carpooling intermediary center terminal 3 updates the mediation request data stored and held in the storage device 36 (step S109). The update contents here are not particularly defined. For example, when there are a plurality of mediation data, there is a process for reducing the number information, so that the mediation data can be displayed as "negotiating". What is necessary is just to perform the process to perform.

[0044] In addition, the registration data management means 34 of the carpooling broker center terminal 3 passes the departure date / time information included in the route information of the brokerage request data at predetermined intervals for the brokerage request data stored and held in the storage device 36. To delete the desired mediation data. For this reason, the freshness of the mediation request data displayed as a search result is maintained.

[0045] As mentioned above, those who wish to ride together or who want to provide vacant seats, if there is enough time, by registering the mediation request data themselves, and if there is no time, it is possible to find a partner who meets his / her wishes efficiently by taking only the search into account and taking into account the preferences of the partner. In particular, the route information of the mediation request data includes departure area information and destination information as well as departure area information and destination direction information as its superordinate concept. For those who wish to intervene regardless of their exact destination, it is easy to find suitable intermediation request data.

[0046] Further, since the user of the terminal 1 is authenticated by the user authentication means 35 of the carpooling broker center terminal 3, only a proper person can log on with his / her logon name (identification information) and password (authentication information). By preparing a system to issue, accidents and troubles can be prevented in advance. Of course, in place of the logon name (identification information) and password (authentication information), the unique identification information of the terminal 1 is used, or the registration or retrieval of mediation desired data is restricted by the user. Is also a preferred variant.

[0047] In addition, by making multiple carpooling promises (reservations), you can get on the vehicle and use it when you reach your final destination, or many short-distance travel candidates while traveling long distances. It is possible to realize the usage of getting on and boarding.

[0048] Next, a second embodiment of the present invention that enables mediation with a partner without directly providing contact information to a mediator-desired data searcher will be described. Since the configuration and operation of the present embodiment are substantially the same as those of the first embodiment, only the differences will be described.

[0049] In the present embodiment, the brokerage information providing means 33 of the carpooling brokerage center terminal 3 does not transmit the contact information of the brokerage request data that has been designated / selected, but instead transmits the brokerage request data to the terminal 1. A process of receiving a message input to the registered user, storing and holding it in a message storage area separately provided in the storage device 36, and notifying the mail address input as the contact information of the intermediation desired data. And a process of receiving and transmitting a message reference request from the person who has received the notification.

[0050] FIG. 9 is a flowchart showing the operation of the search processing for desired mediation data in the present embodiment. Referring to FIG. 9, the operation up to step S107 is the same as the operation of the first embodiment described above. In step S107, the carpooling intermediary center terminal 3 that has received the designation / selection of the mediation request data activates the mediation information providing means 33, and inputs a message to the registrant of the mediation request data to the terminal 1. The message transmission format is transmitted (step S108).

[0051] FIG. 10 is a diagram showing an example of the message transmission format described above and an input message. Referring to FIG. 10, a message 601 for a registrant, a telephone number 602, and a mail address 603 are input.

[0052] When the mediator desires inputs a message addressed to the registrant illustrated in FIG. 10 and activates the "send" button, the message and the like are transmitted from the terminal 1 to the carpooling mediation center terminal 3 (step S109). The carpooling intermediary center terminal 3 stores and holds the message in the storage device 36, and further notifies the mail address of the contact information of the intermediation desired data that the message is stored (step S110).

[0053] After that, when the mediation applicant who has received the notification accesses the carpooling brokerage center terminal 3 and makes a request for reference to the message, the carpooling brokerage center terminal 3 activates the user authentication means 35. After confirming the mediator requester, the message is transmitted.

[0054] According to this embodiment, since the personal information of the person who registered the mediation request data can be concealed, it is possible to avoid situations such as illegal use of contact information. The registration side is also given an opportunity to select a partner with better conditions.

[0055] In the embodiment described above, the carpooling intermediary center terminal 3 employs a method of storing a message and transmitting it in response to a request. However, the carpooling intermediary center terminal 3 does not store and hold the message in the storage device 36. A method of generating an e-mail and transferring it as it is may be adopted.

[0056] Next, a third embodiment of the present invention will be described in which the number of times contact information is transmitted is counted and provided together with the search result. Since the configuration and operation of the present embodiment are substantially the same as those of the first and second embodiments described above, they will be omitted and only the differences will be described.

[0057] In the present embodiment, the registration data management means 34 of the carpooling intermediary center terminal 3 further counts the number of times contact information is transmitted or a message is provided / transferred for each intermediation desired data. Processing to write the mediation request data.

[0058] FIG. 11 is an example of a search result sent from the carpooling broker center terminal 3 in the present embodiment. Referring to FIG. 11, there is a display column 701 of accumulated access at the right end, and the number of times contact information is transmitted for each intermediation desired data is displayed.

[0059] According to the present embodiment, a person who searches for intermediation desired data refers to the numerical value in the access accumulation column to determine whether to access the person who registered the intermediation desired data, be able to. This is because the number of accesses indicates the number of inquiries from other mediators.

[0060] In each of the above-described embodiments, it has been described that the broker 1 is not particularly limited. However, in a mobile phone or an in-vehicle terminal, a mechanism that can access the carpool broker center terminal 3 immediately after activation of a specific switch. You may prepare what provided. A hitchhiking enthusiast who continues to move around carpooling and a vehicle driver who wants to save travel costs can quickly find a partner for carpooling using the terminal.

[0061] The embodiments of the present invention have been described above with reference to the drawings. However, the matters described as the embodiments and the contents of the drawings do not limit the technical scope of the present invention. It goes without saying that various modifications and corrections that can be made by those skilled in the art within the scope of the claims are included. For example, the items registered as the mediation request data illustrated in FIG. 4 and the search condition items illustrated in FIG. 6 are merely illustrated for the purpose of explanation. For example, the data search means 32 does not handle the search as an object of search, even if it is before the departure date and time after the elapse of the period, including the valid period of the mediation desired data in the item of mediation desired data. The data management unit 34 may perform modifications such as performing a deletion process.

[0062] According to the present invention, it is possible for both the side wishing to ride together and the side

wishing to provide vacant seats to efficiently search for a partner who meets his / her desired conditions. The reason is that, in addition to the route, a configuration that preferably provides personal preference that can be a selection factor for the carpooling partner is adopted.



Consumer and
Corporate Affairs Canada

Consommation
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(19) (CA) **CANADIAN PATENT** (12)

(54) Automated, Door-To-Door, Demand-Responsive Public
Transportation System

(72) Behnke, Robert W.,
U.S.A.

(73) Granted to Behnke, Richard F.
U.S.A.

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Abstract of the Disclosure

A flexible-route transportation system, primarily utilizing privately-owned vehicles to provide ridesharing transportation for the public, is described. Interactive communications terminals are provided through which drivers of the vehicles may rapidly transmit ride offers via a telecommunications network to a central operations coordinating station, equipped with a general-purpose programmable computer. Rider interactive communications terminals, located at public and private facilities, are also connected by the telecommunications network with the central coordinating station, permitting eligible members of the public to quickly request rides from one location to another. The central coordinating station matches the ride requests with the ride offers, on a trip-by-trip basis, comparing the driver's indicated origin, destination, seating requirements and time with the rider's requested origin, destination, seat availability and time. If a ride offer and ride request can be matched within reasonable limits of space and time, the central coordinating station transmits to the driver the rider's identity and location and transmits to the rider the description and identity of the vehicle, so that the driver can pick up and drop off the rider en route to his or her destination. The system includes security features for preventing unauthorized access to the system by either drivers or riders, accounting features for properly billing riders and reimbursing vehicle owners for transportation services, and special terminals for entering trip information quickly and accurately.

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AUTOMATED, DOOR-TO-DOOR, DEMAND-RESPONSIVE
PUBLIC TRANSPORTATION SYSTEM

Background of the Invention

This invention relates to a door-to-door transit
5 system which primarily utilizes privately-owned vehicles to
provide high-volume, low-cost, energy-efficient and ecologi-
cally-sound transportation services for the public, including
the aged and the handicapped.

In view of the critical transportation, environmental
10 and energy problems now facing the world, new approaches are
constantly being sought to reduce the dependence upon single-
passenger automobile trips for transportation. Unfortunately,
attempts to eliminate the single-passenger auto have met with
only limited success to date. Consequently, gasoline con-
15 sumption, traffic congestion and air pollution levels remain
high.

Although great emphasis has been placed on mass
transit systems to alleviate these problems, mass transit
systems are extremely costly to build and operate. Bus
20 systems require large outlays for vehicles and operating
personnel, while fixed-guideway systems require capital
expenditures many times greater than those required for bus
systems. Equally important, the fact that both high-volume
bus systems and fixed-guideway systems must adhere to predeter-
25 mined routes, makes it impossible for such systems to provide
door-to-door service for most citizens.

Door-to-door transportation service is a requirement
for many aged and handicapped persons. Door-to-door service
is also desirable for other riders, since the time and energy
30 required to get riders to and from transit stations reduces



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both the convenience and the energy efficiency of mass transit systems. Although taxis, jitneys and dial-a-ride minibuses offer door-to-door convenience, the necessity of having a driver who makes his living providing such service to relatively few riders renders it far too expensive for most citizens to use on a regular basis. Hitchhiking is too dangerous to consider as a viable transportation system.

Although one of the least energy efficient forms of transportation is an automobile with a single occupant, one of the most energy efficient forms is an automobile with several occupants. Car pools, van pools and other ridesharing programs have been encouraged to reduce petroleum consumption while providing riders with economical, door-to-door transportation services. The advantages of ridesharing are well-known. By increasing the average number of passengers in each vehicle, the number of vehicle-miles can be reduced while keeping the number of passenger-miles constant. By sharing the operating costs both the rider and the driver save money, while gasoline consumption, parking, traffic congestion and air pollution problems are all reduced.

Despite these benefits and an intensive advertising campaign, 75% of all workers who commute by automobile drive by themselves. One of the reasons for this is the absence of suitable backup transportation for commuters who rideshare, such backup transportation being needed whenever a driver's or a rider's itinerary changes. Because noncommuter travel is less regular and repetitive than commuter travel, conventional ridesharing techniques have been used even less for this type of travel. Noncommuter travel currently represents 60% of all automobile trips.

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Our existing automobiles and roads constitute an effective door-to-door transportation system for many citizens. Because of the low occupancy rate of the vehicles, however, it is a very inefficient system. Furthermore, the system is not always responsive to the needs of those who either cannot afford an automobile or cannot drive. What is required is a method for using the existing inventory of empty auto seats on our highways to respond to the transportation demands of the general public, including the aged and the handicapped, on an individual trip basis. Voice systems, currently used by radio-dispatched taxi and dial-a-ride minibus services, are too slow and too labor-intensive to be used for high-volume transportation systems. The volume of information to be processed and the time constraints mandate that such a door-to-door, demand-responsive system be automated in all but the smallest towns.

In recent years a number of automated, demand-responsive mass transit systems have been developed with a view toward increasing their efficiency and cutting their cost of operation. Among these are the systems shown in the following U.S. patents:

3,268,727	4,023,753
3,895,584	4,092,718
3,953,714	4,181,945
4,015,804	4,208,717.

Also of interest is Bennett et al, IBM Technical Disclosure Bulletin, Volume 14, No. 2, pages 438-440 (July 1971). Most of these systems apply to fixed-guideway mass transit systems, although patent No. 4,092,718 and the IBM Technical Disclosure Bulletin pertain to bus systems. In every case,

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however, the mass transit system involves vehicles traveling along predetermined routes between predetermined stations. That is, each vehicle in the system has respective origins and destinations which bear a predetermined route relationship to one another. The route does not vary according to current rider needs. Accordingly, these systems share the major disadvantages of other mass transit systems in their high capital costs and inability to provide door-to-door transportation.

10 Unfortunately such automated, demand-responsive transportation systems of the fixed-route, station-to-station type are not easily adapted to a flexible-route system because of the many unique problems presented by door-to-door service. In order to be effective, a high-volume door-to-door system requires many more vehicles of smaller seating capacity than a station-to-station system. A door-to-door system must also be able to instantaneously match a large number of different ride requests with an equally large number of different ride offers. Common routing is not the only criterion for effective matching. Timing and seating needs of riders require matching with timing and seating capacities of vehicles.

 Because of the volume and complexity of the data required in a trip-by-trip scheduling system, special computer terminals should be used to permit both drivers and riders to enter trip information quickly and accurately and transmit this information to a computer for driver-rider matching. This matching must be accomplished on a real-time basis in response to current demands, and without the need for human intervention.

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In order to minimize capital costs, most of the transit vehicles should be privately owned. In order to minimize operating costs, extensive use should be made of volunteer and part-time drivers, particularly during peak traffic periods. The security of private citizens who do not know each other but nonetheless share rides with each other must be ensured. The current suitability, from a point of view of safety and liability, of private vehicles and their drivers to transport riders must be monitored continuously. Furthermore once a vehicle is assigned to a rider or group of riders, some method must be provided to ensure that vehicles and riders will make proper connections. The ability to deal with all of these variables on an instantaneous, real-time basis is far beyond the capability of known fixed-route automated transportation systems.

Summary of the Present Invention

The present invention is directed to an automated public transportation system adapted for high-volume usage and capable of providing door-to-door transportation while requiring a much smaller cost to build and operate than fixed-route mass transit systems. It is basically a ride-sharing system which makes use of modern communications and computerized control techniques to provide public ridesharing in an organized manner with sufficient instantaneous, demand-responsive flexibility to eliminate the present drawbacks of other ridesharing systems such as carpools and the like. Its extreme flexibility offers the potential of extending the benefits of ridesharing to noncommuter travel. It should also stimulate the growth of carpools and van pools by

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providing convenient backup transportation services, thereby eliminating a primary objection to conventional ridesharing systems.

5 The high-cost characteristics of other mass transit systems is eliminated in the present system by the use of existing roads and privately-owned vehicles whose drivers offer ridesharing services on a trip-by-trip basis to the public through a communications and automatic computerized coordinating network. Interactive terminals are provided, at
10 fixed locations and/or in vehicles, having registers of any suitable type for the entry of information, through which drivers of the vehicles may transmit ride offers by telecommunications to a central coordinating station containing a general-purpose, programmable computer. Each ride offer
15 indicates an origin and destination determined by the driver of the vehicle, such origin and destination therefore having no predetermined route relationship to one another. Rider interactive communications terminals are provided at public and private locations connected by telecommunications networks with the central coordinating station for permitting
20 licensed members of the public to request rides from any origin to any destination in the area served by the system, such origin and destination likewise having no predetermined route relationship to one another. The central coordinating
25 station coordinates the ride requests with the ride offers, comparing the driver's indicated origin and destination with the rider's requested origin and destination. Variable times and seating for ride requests and ride offers are also compared.

30 If a ride offer and ride request can be matched within predetermined geographical, time and seating limits,

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the central coordinating station transmits to the driver the rider's location (and preferably transmits to the rider a description of the driver's vehicle for recognition purposes) thereby instantly matching the rider with a ridesharing
5 vehicle and enabling the driver to pick up the rider. The matching process is accomplished to enable the driver to pick up the rider either close to his own origin or by stopping or detouring slightly along his route. According to the matching process, the rider's destination will be close to the
10 driver's destination or generally along the driver's route.

The system also includes security features for preventing unauthorized access to the system by drivers or riders, continuous monitoring of the suitability or eligibility of currently authorized drivers and riders to participate in
15 the system and accounting features for billing riders and reimbursing vehicle owners for transportation services.

Accordingly, it is a principal objective of the present invention to provide low-cost, energy-efficient, door-to-door transportation services usable by the public
20 on a high-volume basis.

It is a further principal objective of the present invention to provide public access to transportation by privately-owned vehicles on an instantaneous, trip-by-trip ridesharing basis, thereby increasing the utilization of
25 ridesharing not only for commuter travel but also enabling the use of ridesharing for noncommuter travel.

It is a further principal objective of the invention to give the public access to ridesharing vehicles by means of a highly automated system. This system links riders
30 and drivers by telecommunications to data processing equipment which automatically and instantly matches riders with

ridesharing vehicles according to origins and destinations indicated by riders and drivers.

It is a further principal objective of the invention to enable both riders and drivers to enter and receive trip information directly from a central computer system via easy-to-use electronic terminals. These terminals are designed to permit users to enter trip information quickly, accurately and with minimum training. Furthermore, when these terminals are not being used for transit applications, they may also be used to store, retrieve and process other types of data.

The foregoing and other objectives, features and advantages of the present invention will be more readily understood upon consideration of the following detailed description of the invention taken in conjunction with the accompanying drawings.

Brief Description of the Drawings

FIG. 1 is a schematic diagram of the major components of an exemplary system in accordance with the present invention.

FIG. 2 depicts an exemplary driver or rider terminal schematic by which ride offers and ride requests may be transmitted by users of the system and through which messages may be received.

FIG. 3 is a logic flow chart illustrating the exemplary function of a driver or rider terminal having an integral microcomputer control, and illustrating in simplified form the interaction of the terminal with a central coordinating station computer.

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FIG. 4 is a logic flow chart indicating an exemplary process by which the central coordinating station computer automatically limits use of the system to eligible drivers and riders.

5 FIG. 5 depicts an exemplary grid used by the central coordinating station computer to geographically match ride offers with ride requests.

FIG. 6 is a logic flow chart indicating an exemplary process by which the central coordinating station computer
10 geographically matches ride offers with ride requests.

Description of the Preferred Embodiment

In FIG. 1 the major components of a preferred embodiment of a door-to-door public ridesharing system
15 in accordance with the present invention are shown schematically. Prospective riders can request rides by utilizing electronic terminals such as 10 and 12 located in fixed locations such as their homes, offices, shops or public booths. These easy-to-use terminals are connected directly
20 to a central coordinating station computer 14 by telephone lines and/or cable. Drivers of vehicles can offer rides by means of the same type of fixed terminals or, preferably, by means of similar mobile terminals such as 16 located in each privately-owned vehicle in wireless communication with the
25 central coordinating station computer 14. Some riders may also use wireless terminals such as 16 to communicate with the central coordinating station.

The central coordinating station preferably includes a general-purpose, programmable computer 14 capable of auto-
30 matically processing ride offers and ride requests received

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from the respective terminals 10, 12 and 16 in the form of electromagnetic signals, with no human assistance or intervention being required. (As used herein, the term "electromagnetic signals" includes signals confined to electrical circuits as well as signals in any type of wave form.) However, if desired for greater public convenience, some telephone operators could be provided at the central coordinating station to accept conventional telephone ride requests and/or ride offers from persons not having access to terminals such as 10, 12 and 16.

FIG. 2 illustrates an exemplary terminal of the type suitable for any of the terminals 10, 12 or 16. Each such terminal contains a digital register, indicated generally as 20, by which the rider or driver can enter certain variable information, to be described in detail hereafter, enabling the system to determine and verify the rider or driver's identity, eligibility to use the system, and the details of his ride offer or ride request. The terminal also contains a display, usually a visual display indicated generally as 22, by which the system can interrogate the rider or driver and also provide instructions and other messages. Each terminal is an interactive terminal that is connected by two-way telecommunications with the central coordinating station computer 14.

While it is not critical that the terminal itself store any data or be programmed in any way, it is preferable that each terminal contain some capacity in these regards in a data storage unit and microcomputer control unit indicated generally as 24 and 26 respectively to make the terminals

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easier to use, to relieve some of the communications load between the terminals and the central coordinating station computer 14 and to relieve some of the data storage and processing requirements of the central coordinating station computer. In this regard, the microcomputer control 26 preferably contains sequential user interrogation programming and user identity-verification programming, to be explained hereafter. The data storage unit 24 of each privately-owned terminal may contain the terminal's serial number, coded names of regular users, their system enrollment or "license" numbers, security "passwords" associated with the respective users, coded addresses commonly used in the area, coded addresses unique to the users, the identity of the vehicle owned by each driver-user, and coded descriptions of trips habitually taken by the user. Publicly accessible terminals likewise contain similar programming in a microcomputer control 26, and the storage of data unique to the users of the terminal could be contained in or on individual insertable-removable data storage units in the form of unique cards or other devices carried by each respective user.

Electronic devices that could be used as interactive terminals in the present system are currently available on the market. For example, a convenient portable digital computer terminal with visual display and interchangeable plug-in programmable modules is marketed under the model designation LK-3000 by Nixdorf Computer AG of West Germany and Nixdorf Computer Personal System, Inc. of Burlington, Massachusetts. The same companies also market an acoustic telephone coupler which permits the terminal to communicate over standard telephone lines with any computer system. A

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5 somewhat similar interactive terminal is sold under the
trademark RDX 1000 by Motorola Communications and Electronics
Inc. of Schaumburg, Illinois and is adaptable for two-way
communication with a computer either through an FM radio
link or a landline communications link. The latter terminal
with an FM radio link would, for example, be suitable for
mobile vehicle-mounted terminals in the present system. Both
of the foregoing exemplary units feature a one-line visual
display; however, it would be preferable for use in the
10 present system to modify such units to provide a three-line
display or to display the information on the screen of a
television set connected to the terminal. It would also be
desirable to modify such units to be able to store and
retrieve trip information unique to each geographical area
15 and to each user in order to make them easier and faster
to use.

Some of the terminals (particularly public-access
terminals) may include special security devices to permit
operation by licensed users only. One such security device, a
20 magnetic-stripe credit card reader, is now used by banks
to permit credit card holders with the proper password to
obtain cash from automatic teller devices. Other security
devices might include equipment for recording and transmitting
voice prints, fingerprints, or other identifying information.
25 Other optional terminal facilities might include special
input and output equipment or devices. For example, register
inputs can be by keyboard, voice, pointer, or dial; display
outputs can be by alphanumeric display, video tube, printer,
voice or braille.

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The other primary component of the present system, the central coordinating station computer 14, may be virtually any standard large-scale general purpose programmable computer of sufficient capacity to process ride offers and ride requests in the manner to be described hereafter and in the volume to be expected for a particular transportation area. General purpose computers of this type are manufactured by companies such as IBM, Control Data Corporation and Digital Equipment Corporation and are commonly used for hotel or airlines reservation systems.

OPERATION

FIG. 3 depicts schematically the interaction between an exemplary terminal 10, 12 or 16 and the central coordinating station computer 14. The central coordinating station processes only ride offers or ride requests from authorized users of the system. These are persons who have applied for and been granted individual licenses to use the system either as drivers or riders or both. Persons who have applied to be licensed only as riders will have been required to provide adequate credit and personal references in order to obtain their licenses. Persons who wish also to be authorized as drivers will have additionally been required to satisfy predetermined requirements with respect to vehicle operator licensing, proper liability insurance and vehicle safety inspection.

Because of the importance, for purposes of security, of limiting access to the system to licensed users only, the user's identity and a unique coded indicia or "password" associated with such user are the first two items which the user must enter on the terminal. The terminal will display

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"IDENTITY?" and the user will usually enter a single character which the terminal storage unit 24 automatically translates into a full user license number. Alternatively, if the user is at a public terminal or at a friend's house, he may
5 have to enter his full license number or use a special data input device if the terminal is so equipped.

After the user's identity has been entered, the terminal displays "PASSWORD?". The user then enters this information, usually less than eight characters. The password
10 will often be a relative's birthdate or maiden name that is easy for the user to remember. If the terminal is a private one, the terminal's data storage unit 24 contains security data matching the identity of each person normally using the privately-owned terminal with a respective unique password
15 corresponding to such person, and the microcomputer control 26 compares the identity and password entered by the user with the corresponding identity and password stored in the data storage unit 24 to determine if the two match. If the match is satisfactory, the terminal then displays "SEATS?",
20 asking for additional information. Alternatively, if the password entered does not properly match the identity entered, the terminal continues to display the word "PASSWORD?" until a valid password is entered. If the user's failure to enter the proper password continues for a predetermined number
25 of tries, the terminal takes corrective action, for example, by sounding an alarm buzzer or visually displaying a message such as "PASSWORD INVALID" or by transmitting an alarm message to the central computer. No ride request or ride offer is processed until a satisfactory match of identity and password
30 is made, thereby verifying that the user is licensed to use

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the system. For public terminals not adapted for the insertion of individual data storage units, such verification could be carried out at the central coordinating station computer 14 rather than by the terminal.

5 Once a user's identity and password have been satisfactorily matched, the terminal then requests information concerning the details of the user's ride offer or ride request in the sequence indicated in FIG. 3 by the displayed inquiries "SEATS?", "FROM?", "TO?" and "WHEN?". In response to the
10 inquiry "SEATS?", the user enters the number of seats available for riders in his vehicle if he is transmitting a ride offer, or the number of seats required for his trip if he is transmitting a ride request.

 The next inquiry "FROM?" is optional for terminals
15 in fixed locations since, in most cases, the driver or rider's origin will be the same as such fixed location and therefore stored in the terminal's data storage unit 24 so that it can be automatically transmitted to the central coordinating station computer 14. However, for mobile terminals such as 16, in radio
20 communication with the central coordinating station, the inquiry "FROM?" would be utilized to permit the terminal user to register his present variable location. The preferred way to enter and process geographic locations corresponding to origins and destinations is to prestore commonly used addresses,
25 such as a person's home, place of employment, school and other locations, in the storage unit of the terminal of the control computer. For such commonly used locations, the user is simply required to register a single coded character such as "H" for home or "W" for work, which the terminal auto-
30 matically converts to an address to be transmitted to the

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central coordinating station. The preferred way to enter and process variable geographic locations corresponding to driver and rider origins and destinations that have not been prestored in the terminal or computer is by telephone numbers
5 corresponding to the locations, or by neighborhood codes although the capability for entering narrative location descriptions should not necessarily be foreclosed. The central coordinating station computer 14 contains stored data matching telephone numbers with their addresses and is
10 therefore automatically able to convert such numbers into neighborhood code or detailed addresses without requiring the entry of a large number of characters by the users.

After entry of the "FROM?" information, the terminal then displays the word "TO?", to which the user responds by
15 entering his intended destination by means of coded indicia or telephone number.

The next inquiry displayed by the terminal, "WHEN?", is optional since the system can alternatively interpret all ride offers and ride requests to be effective immediately
20 upon entry. However, affording the user the opportunity to enter variable time information adds flexibility to the system by enabling him to offer or request rides in advance.

All of the foregoing ride offer or ride request information is transmitted from the terminal to the central
25 coordinating station computer 14 which first checks the current eligibility of a particular licensed rider or driver to use the system. Because the system contemplates the involvement of large numbers of citizens authorized as drivers and/or riders to use the system, the security and safety of
30 these persons and the financial stability of the system require

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that current information be stored and constantly updated with respect to each user to ensure that he remains eligible to use the system after his initial application for licensing has been approved. The logic flow chart of FIG. 4 illustrates exemplary checks of current, updated information pertaining to each licensed user which the central computer 14 makes with respect to each user who transmits a ride request or ride offer. As indicated in FIG. 4, to determine whether a rider is currently eligible, the status of such rider's account with the system is checked to determine whether his payment for fares is current and whether he is within his authorized credit limit. If his account is unsatisfactory, the computer 14 takes corrective action by transmitting an appropriate display to the rider's terminal, such as "PLEASE PAY ACCOUNT" as shown in FIG. 4. Similarly, a check is made to determine whether there is any indication of recent criminal activity which might render the rider an unsafe passenger for a driver. Police authorities would be notified if a criminal was detected so they could take appropriate action. With respect to ride offers, the computer 14 stores current eligibility data regarding such matters as liability insurance coverage, status of vehicle safety inspections, operator's license status and criminal activity relative to respective drivers and their vehicles as depicted in FIG. 4 to determine whether the driver and/or his vehicle remain currently eligible to participate in the system. Such eligibility requirements must all be satisfied prior to the computer's forwarding a ride offer or ride request to the next processing step, i.e. that of matching ride offers with ride requests.

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The matching process is carried out automatically by the central coordinating station computer 14 by receiving and storing all eligible ride request and ride offer data in an active transaction file and comparing currently active ride offers (within a predetermined time boundary) with currently active ride requests. Terminals in homes, offices, automobiles etc. are continuously monitored by the central coordinating station computer 14 to determine if any ride requests or ride offers can be added. If a user's message is ready, and the central computer 14 is ready, the terminal will automatically transmit the message to the computer 14. Each user may also cancel any ride request or ride offer if he so desires by registering appropriate cancellation indicia on his keyboard, in which case the computer 14 removes the ride offer or ride request from its active transaction file and, if necessary, advises concerned parties of the changes.

The logical process by which the computer 14 matches ride offers with ride requests will be explained with respect to FIGS. 5 and 6. In FIG. 5, a rectangular grid has been applied to an exemplary geographical area served by a transportation system in accordance with the present invention. Each block defined by the grid represents a "neighborhood", and each neighborhood is assigned a "neighborhood code" such as "D2" or "B5". Each address stored in the central coordinating station computer 14 or data storage unit 24 is assigned the "neighborhood code" designating the neighborhood in which such address is located. The "neighborhood" and "neighborhood code" could alternatively be based on postal zip code areas, telephone prefix numbers areas, or other appropriate geographical neighborhood arrangements.

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Each ride request and ride offer as stored in the active transaction file is coded with respect to its origin neighborhood code and destination neighborhood code. This enables each current ride offer to be compared with the
5 current ride requests in the active transaction file by means of such codes and to be matched to a respective ride request in accordance with a predetermined matching procedure. As can be seen from the flow chart of FIG. 6, the matching procedure operates on the principle that the only
10 riders which should be matched with a particular driver are those whose indicated origins and destinations do not require the driver to detour far from a direct route between his own intended origin and destination. Moreover, of those potential riders whose origins and destinations satisfy this
15 test, the rider to be given priority is generally the one who will travel the furthest distance with the particular driver. Accordingly, pursuant to FIG. 6, the computer first attempts to find a rider whose origin neighborhood code and destination neighborhood code are the same as the
20 driver's origin and destination codes. If such a rider can be found, he is matched with the driver unless he requires more seats than the driver has indicated to be available. In some cases it may be necessary to assign a large rider group to more than one vehicle. Since a rider may request multiple
25 seats for his party, the term rider should not be viewed only as an individual but alternatively as a group. If no such rider is available, the computer next checks to determine whether any rider, having the same origin neighborhood code as the driver, has a destination code corresponding to the
30 next farthest neighborhood code along the intended route of the driver. If an appropriate rider can still not be found,

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the computer systematically checks for rider destination codes along the driver's intended route which are gradually closer to the driver's origin code. If an appropriate rider cannot be found by means of this procedure, the computer
5 considers riders whose origin is in the neighborhood closest to the driver's origin along the driver's route. The computer then begins checking for riders having the same destination code as that of the driver, and if necessary such checking continues sequentially with respect to rider origin
10 codes which are gradually closer to the driver's destination code.

In FIG. 5, for example, assuming that the driver's origin code is B5 and his destination code is D2, if the computer cannot find a rider having the same origin and
15 destination codes, it might assign a rider having an origin code of B5 and a destination code of D3 or, failing this, a rider having an origin code of B5 and a destination code of C4 or, failing this, a rider having an origin code of C4 and a destination code of D2.

20 Either the central computer or the rider could divide a trip into two or more segments for faster service. For example, if the trip between neighborhoods B5 and D2 in FIG. 5 is not heavily traveled during holidays, the rider or the computer might request a ride from B5 to C3 and then a
25 ride from C3 to D2. The central computer 14 can also be programmed to collect detailed statistical data on trips between each neighborhood during commuting hours, weekends, holidays etc. This origin-destination data can then be used by the central computer to adapt the rider-driver assignment
30 strategy to provide improved service for users of the system.

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Comparable computer programs for matching riders and drivers according to origins and destinations in a flexible-route system are well known in the field of computer-based carpooling systems, but such systems use computers only for
5 planning and design of the system, and not for real-time, trip-by-trip demand-responsive matching. Nor do such systems employ terminals by which current ride-requests or ride offers can be entered on a trip-by-trip basis directly by users of the system.

10 As soon as a rider has been matched with a driver, the computer transmits confirmation messages to the driver and, preferably, also to the rider. Since this is a point-to-point system, the driver should be informed at least as to the rider's location, and preferably also as to the rider's
15 identification. The computer 14 therefore transmits this information to the driver's terminal which presents it visually on the display 22.

Similarly, for the rider's security and to ensure that a proper connection is made, the rider should be informed
20 as to the vehicle's identity and estimated time of arrival. The computer 14 therefore likewise transmits this information to the rider's terminal for display thereon.

If the computer is unable to match a particular driver with a rider within a predetermined period of time, it trans-
25 mits the display "NO RIDERS" to the driver and cancels the ride offer, thereby permitting the driver to proceed on his way. Unmatched ride requests remain in the active transaction file until they are canceled by the rider or until a predetermined period of time has expired. The rider would
30 then have to re-enter the request.

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If a rider and driver are matched, the computer 14 automatically charges the rider's account for a fare appropriate to the rider's indicated origin and destination, and bills the rider periodically for his accumulated charges. 5 The computer may also enter credit to the driver's account and send him periodic payments for his accumulated fares. Similar computer accounting, billing and payment procedures are conventionally used at present by utilities and financial institutions. Since only a small portion of current transportation 10 fares are needed to support this transit system, the remainder of the fares can be used to reimburse drivers, subsidize taxi, bus or rail operations, repair roads, etc.

EXAMPLE

15 John Smith resides with his parents at 21 Kaiholu Place, Kailua, Hawaii. He works at the Honolulu International Center (HIC) at Kapiolani Boulevard and Ward Avenue and attends the University of Hawaii at night. John uses his mother's maiden name, Jones, as his personal security 20 password in order to request a ride. He is licensed to use the family car to offer rides on Mondays. The rest of the week, John requests rides to commute to work and night school.

Mary Tamura lives at 71 Kalaheo Place, a few blocks from the Smith residence. She requires a car for her employment as a visiting nurse. Because of her job requirements, 25 driving record and willingness to provide transportation services, Mary Tamura is licensed to use her vehicle to offer rides every day. Today, her first call is in Waikiki. To get there, she could drive down Kapiolani Boulevard, past 30 the HIC. She has already agreed to drive a neighbor to the

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Ala Moana Center en route. Mary Tamura uses her father's birthdate as her password to communicate with the central coordinating station. Her auto is a blue 1976 Ford-Sedan, license number 3Q-47G.

5 The following shows how John Smith would enter his ride request data in response to questions presented by the terminal in his home. It also shows how he would get a description of Mary Tamura's vehicle after the computer matched them.

10 <u>TYPICAL RIDE REQUEST</u>			
<u>STEP</u> <u>NUMBER</u>	<u>COMPUTER</u> <u>DISPLAYS</u>	<u>USER</u> <u>ENTERS</u>	<u>EXPLANATION</u> <u>COMMENTS</u>
1	IDENTITY?	2	John's family member code
2	PASSWORD?	JONES	He uses his mother's maiden name as security password.
15	3 SEATS?	1	Traveling alone today.
	4 FROM?	H	Home (21 Kaiholu Place, Kailua)
	5 TO?	W	Work (HIC, Honolulu)
	6 WHEN?	A	As Soon As Possible
	(short pause)		
20	7 76 FORD SEDAN-BLUE LIC. No. 3Q-47G ETA: 7:25AM		Description of Vehicle License Number Estimated Time of Arrival

TOTAL MESSAGE ENTERED -- 2 JONES LHWA (ten characters)

The terminal's microcomputer control and data storage unit would automatically translate John's coded entries (e.g. "H" equals 21 Kaiholu Place, Kailua, Hawaii 96734) into complete text for dispatching and display.

The following shows how Mary Tamura would enter her ride offer data and how she would receive John's address on her terminal. Since her family owns more than one automobile she will need to enter a code to identify the vehicle

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she will be driving so that the central coordinating station computer 14 can check its eligibility to transport passengers. Her destination entry is six characters longer than John's because she is using a phone number to specify her destination address. The central computer system will automatically convert this phone number into the address, 2341 Kalakaua Avenue, Waikiki, Hawaii 96815, and the proper neighborhood code.

TYPICAL RIDE OFFER

STEP NUMBER	COMPUTER DISPLAYS	USER ENTERS	EXPLANATION COMMENTS
1	IDENTITY?	M	Mary's family member code
2	VEHICLE CODE?	F	76 Ford Sedan 3Q-47G
3	PASSWORD?	11-11-24	She uses her father's birthdate as her security password.
4	SEATS?	2	Since Mary and a neighbor are riding together, only 2 seats are available.
5	FROM?	H	Home (71 Kalaheo Place, Kailua)
6	TO?	285-4632	Phone number of apartment at 2341 Kalakaua Avenue, Waikiki, Hawaii
7	WHEN?	N	Now
	(short pause)		
8	JOHN SMITH (1) 21 Kaiholu Pl. Kailua, HI 97034		Name & number of passengers Street Address
25	TOTAL MESSAGE ENTERED -- M F 11 11 24 2 H 285 4632 N		

OTHER OPTIONAL FEATURES

As mentioned previously, terminals in homes, shops, offices or other nonmobile facilities can be programmed to automatically generate the origin code for a ride offer or

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ride request to eliminate the need to have the user key this information into the terminal each time it is used. This will not only simplify the operation of the terminal, it will also reduce errors. In addition, the microcomputer-
5 controlled terminal can also be programmed so that a single character could represent a complete trip, including the number of seats, origin code, destination code and time. For example, the keyboard symbol "B" could represent John's regular request for a ride from home to work for one person
10 at 8:00 a.m. and could therefore replace the entries "1, H, W, A". This procedure would also simplify operation of the terminal and reduce errors.

In addition, for commuters who plan to use this system for their daily trips to and from their jobs or schools,
15 the central computer can be programmed to automatically generate a ride request or ride offer on a regular basis. This procedure would also minimize errors and reduce the communications and data processing workload of the central computer, particularly during peak travel times. A trip
20 cancellation entry would be entered by the driver or rider whenever the routine schedule was modified.

The terminals can be designed so that changes to user identity codes, addresses, passwords, origin and destination information, and vehicle identity information can be
25 made only by transit authorities. This would reduce theft of terminals and ensure that both the data storage in the terminal and the central computer were updated at the same time.

Alternatively, the terminals can be designed so that
30 the user, after entering the proper password, could change this information in the terminal's microcomputer. The

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next time that the terminal was used, the new passwords and other data would be transmitted to the central computer and its files would be updated automatically. The central computer would then send a signal back to the microcomputer terminal to set a switch so that the changes would not have to be transmitted again.

The capabilities of the modern general purpose computer used in the central coordinating station computer 14 can also be used to provide a flexible fare structure that can be based on a fixed fee, mileage or zone charges, time of day, etc., or a combination of these factors. Billing adjustments can also be easily made for handicapped riders or senior citizens. Likewise, the credits for drivers may be adjusted if, for example, the drivers are a mix of volunteers and professionals.

In the event of a severe gasoline shortage, the central computer may also be used to provide fuel allocations on a passenger-mile basis, for example, which would be more equitable than the fixed number of gallons-per-month-per-vehicle formula suggested during past crises.

Vehicles to be used for public transportation could also be modified to improve the security of both the driver and the riders. The driver could be required to enter a valid password on the terminal before the vehicle could be started or the hood opened. This would reduce the chance of vehicle theft. The vehicles could also be modified to prevent the driver from speeding while the vehicle was used for public transportation. Furthermore, the keyboard used for entering identification or trip information could also be used as a means of testing the driver's dexterity prior to assigning

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riders or prior to permitting the vehicle to be started.

For vehicles equipped with wireless terminals, it would be possible to have the driver or passenger log-in when the pickup or delivery were made. This would not only
5 provide better security, it would also permit the computer to assign additional riders to the vehicle at that time. This approach would increase both the efficiency and the effectiveness of the transportation system.

In highly congested areas, with multistoried office
10 and apartment buildings, it may be difficult to provide door-to-door pickup services during peak traffic hours. Under these circumstances it may be desirable to specify a sidewalk location as a common pickup point for all riders going to a given neighborhood. The rider would request a vehicle as
15 described earlier, but the only origin point that the central computer would accept during peak hours would be the designated pickup location. Similarly, during peak load hours, drivers in certain areas could be directed to use a common pickup point as their origin to reduce traffic congestion. In this
20 case, where the specific origin of any rider or driver going from a certain general area to a given neighborhood is predetermined, the central computer could direct the driver to the respective rider only by rider identity, and not by rider origin since the origin is already known to the driver.

Another use of the system that would also save fuel,
25 and reduce traffic congestion and air pollution problems, would be to move packages or other cargo in place of riders, particularly in trucks and vans. Instead of seating capacity the driver could specify cargo space availability, in cubic feet for example, and the shipper (taking the place of a
30

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rider) would specify space requirements instead of seat requirements. Billings for the shipper could be prepared automatically by the central computer and credits prepared for the driver or vehicle owner. Because of this alternative
5 application of the system, the term "ride-user" in the claims herein is intended to include either a rider or a shipper, and the term "amount of space" is intended to include either number of passenger seats or cargo space.

The terms and expressions which have been employed
10 in the foregoing specification are used therein as terms of description and not of limitation, and there is no intention, in the use of such terms and expressions, of excluding equivalents of the features shown and described or portions thereof, it being recognized that the scope of the invention is defined
15 and limited only by the claims which follow.

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THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. An automatic system for providing public ride-user access to transportation by driver-operated vehicles, each vehicle having independent variable origins and destinations and routes therebetween determined by its driver, said system comprising:

- (a) a central coordinating station comprising means for receiving ride-offer electromagnetic signals, indicative of driver-selected origins and destinations, and ride-request electromagnetic signals, indicative of ride-user-selected origins and destinations, respectively;
- (b) respective driver terminal means in telecommunication with said central coordinating station, each of said driver terminal means including driver register means for registering a driver-selected origin and variable driver-selected destinations from a plurality of possible destinations having no predetermined route relationship to one another and means for transmitting to said station said ride-offer electromagnetic signals;
- (c) respective ride-user terminal means in telecommunication with said central coordinating station, each of said ride-user terminal means including ride-user register means for registering a ride-user-selected origin and destination not necessarily located identically to said driver-selected origin and destination and means for transmitting to said station said ride-request electromagnetic signals;

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- (d) said central coordinating station including logical circuitry means automatically responsive to said ride-offer and ride-request electromagnetic signals respectively for comparing said respective electromagnetic signals with each other and matching together a respective driver and ride-user whose respective origins and destinations as indicated by said signals bear a predetermined geographical relationship to each other even though such respective origins and destinations are not located identically to each other;
- (e) said central coordinating station further including means automatically responsive to said respective electromagnetic signals for transmitting electromagnetic message signals to a respective driver directing said respective driver to the respective origin of a ride-user with which said respective driver has been so matched, each of said driver terminal means having receiver means in telecommunication with said central coordinating station for receiving said electromagnetic message signals.

2. The system of claim 1 wherein at least some of said respective driver terminal means comprise mobile terminals in said vehicles which are in wireless communication with said central coordinating station, each of said mobile terminals having driver-register means which includes means for selectively registering variable driver-selected origins from a plurality of possible origins having no predetermined route relationship to one another.

3. The system of claim 1 wherein each of said ride-user register means further includes means for selectively registering variable ride-user-selected destinations from a plurality of possible destinations having no predetermined route relationship to one another.

4. The system of claim 1 wherein said central coordinating station includes means automatically responsive to said ride-offer electromagnetic signals for transmitting vehicle-identifying electromagnetic signals, indicative of the identity of the vehicle driven by a respective driver who has transmitted said ride-offer signals, to a respective ride-user with which said respective driver has been so matched, each of said ride-user terminal means having receiver means in telecommunication with said central coordinating station for receiving said vehicle-identifying electromagnetic signals.

5. The system of claim 1 wherein said central coordinating station includes means automatically responsive to said ride-request electromagnetic signals for transmitting origin-identifying electromagnetic signals, indicative of the origin of a respective ride-user who has transmitted said ride-request signals, to a respective driver with which said respective ride-user has been so matched, each of said driver terminal means having receiver means in telecommunication with said central coordinating station for receiving said origin-identifying signals.

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6. The system of claim 1 wherein said central coordinating station includes means automatically responsive to said ride-request electromagnetic signals for transmitting ride-user-identifying electromagnetic signals, indicative of the identity of a respective ride-user who has transmitted said ride-request signals, to a respective driver with which said respective ride-user has been so matched, each of said driver terminal means having receiver means in telecommunication with said central coordinating station for receiving said ride-user-identifying electromagnetic signals.

7. The system of claim 1 wherein each of said driver register means includes means for selectively registering variable amounts of space in a respective vehicle and transmitting to said central coordinating station space-indicating electromagnetic signals indicative of the amount of space available in the respective vehicle.

8. The system of claim 1 wherein each of said ride-user register means includes means for selectively registering variable amounts of space required and transmitting to said central coordinating station space-identifying electromagnetic signals indicative of the amount of space required.

9. The system of claim 1 wherein each of said driver register means includes means for selectively registering variable times when a driver intends to travel between a respective origin and destination and transmitting to said central coordinating station time-indicating electromagnetic signals indicative of said time.

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10. The system of claim 1 wherein each of said ride-user register means includes means for selectively registering variable times when a ride-user requests transportation between a respective origin and destination and transmitting to said central coordinating station time-indicating electromagnetic signals indicative of said time.

11. The system of claim 1 wherein each of said driver register means includes means for selectively registering variable driver identities and variable coded identity-verification indicia associated with each driver identity, said system further including storage means containing security data matching driver identities with predetermined coded identity-verification indicia associated with each driver identity and means automatically responsive to said driver register means for comparing said driver identities and coded identity-verification indicia registered thereon with said security data.

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12. The system of claim 1 wherein each of said ride-user register means includes means for selectively registering variable ride-user identities and variable coded identity-verification indicia associated with each ride-user identity, said system further including storage means containing security data matching ride-user identities with predetermined coded identity-verification indicia associated with each ride-user identity and means automatically responsive to said ride-user register means for comparing said ride-user identities and coded identity-verification indicia registered thereon with said security data.

13. The system of claim 1 wherein said central coordinating station includes storage means containing variable eligibility data regarding the eligibility of respective vehicles to provide transportation and means automatically responsive to said ride-offer electromagnetic signals for comparing the identity of a respective vehicle for which said ride-offer signals have been transmitted with the eligibility data pertaining to said respective vehicle.

14. The system of claim 1 wherein said central coordinating station includes storage means containing variable eligibility data regarding the eligibility of respective drivers to provide transportation and means automatically responsive to said ride-offer electromagnetic signals for comparing the identity of a respective driver who has transmitted said ride-offer signals with the eligibility data pertaining to said respective driver.

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15. The system of claim 1 wherein said central coordinating station includes storage means containing variable eligibility data regarding the eligibility of respective ride-users to obtain transportation and means automatically responsive to said ride-request electromagnetic signals for comparing the identity of a respective ride-user who has transmitted said ride-request signals with the eligibility data pertaining to said respective ride-user.

16. The system of claim 1 wherein at least some of said respective terminal means include register means for registering variable geographical location-identifying coded indicia each uniquely associated with a respective origin or destination, said system further including storage means containing data matching geographical descriptions of respective origins or destinations with said respective coded indicia and means automatically responsive to the entry of a respective one of said coded indicia on said register means for transmitting electromagnetic signals indicative of the respective geographical description matched by said storage means with said respective one of said coded indicia.

17. The system of claim 16 wherein said storage means includes means containing data matching geographical descriptions of both an origin and a destination with a respective one of said coded indicia and means responsive to the entry of said respective one of said coded indicia on said register means for transmitting electromagnetic signals indicative of both of said geographical descriptions.

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18. The system of claim 16 or 17 wherein at least some of said respective terminal means include said storage means as a portion thereof remote from said central coordinating station.

19. The system of claim 16 or 17 wherein at least some of said respective terminal means include means for permitting at least a portion of said storage means to be selectively connected operatively and removably to said terminal means from the exterior thereof by a user of said terminal means.

20. The system of claim 1 wherein each of said receiver means comprises means for visually displaying variable messages.

21. The system of claim 1 wherein each of said register means includes means for digitally registering variable information.

22. A method for providing public ride-user access to transportation by driver-operated vehicles, each vehicle having independent variable origins and destinations and routes therebetween determined by its driver, said method comprising:

- (a) receiving respective ride offers, from a plurality of drivers, in the form of ride-offer electromagnetic signals indicative of respective driver-selected origins and destinations, each ride offer indicating a respective origin and destination having no predetermined route relationship to each other;
- (b) receiving respective ride requests, from a plurality of ride-users, in the form of ride-request electromagnetic signals indicative of respective ride-user-selected origins and destinations, each ride request indicating a respective origin and destination not necessarily located identically to said driver-selected origin and destination;
- (c) comparing said respective ride-offer and ride-request electromagnetic signals with each other and matching together a respective driver and ride-user whose respective origins and destinations as indicated by said signals bear a predetermined geographical relationship to each other even though such respective origins and destinations are not located identically to each other;
- (d) transmitting electromagnetic message signals to a respective driver directing said respective driver to the respective origin of a ride-user with which said respective driver has been so matched.

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23. The method of claim 22 wherein at least some of said vehicles have wireless terminals therein, said step (d) comprising transmitting said electromagnetic message signals to one of said wireless terminals.

24. The method of claim 22, further including transmitting vehicle-identifying electromagnetic signals, indicative of the identity of a vehicle driven by a respective driver, to a respective ride-user with which said respective driver has been so matched.

25. The method of claim 22, further including transmitting origin-identifying electromagnetic signals, indicative of the origin of a respective ride-user, to a respective driver with which said respective ride-user has been so matched.

26. The method of claim 22, further including transmitting ride-user identifying electromagnetic signals, indicative of the identity of a respective ride-user, to a respective driver with which said respective ride-user has been so matched.

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27. The method of claim 22, further including receiving space-indicating electromagnetic signals indicative of the amount of space made available by a respective driver in connection with a respective ride offer, receiving space-identifying electromagnetic signals indicative of the amount of space requested by a respective ride-user in connection with a respective ride request, comparing said respective space-identifying electromagnetic signals with each other and matching together a respective driver and ride-user whose respective origins and destinations bear said predetermined geographical relationship to each other and wherein the amount of space made available by the respective driver is at least as great as the amount of space requested by the respective ride-user.

28. The method of claim 22, further including receiving time-indicating electromagnetic signals indicative of the time for which a respective ride-offer is made available by a respective driver, receiving time-indicating electromagnetic signals indicative of the time for which a respective ride is requested by a respective ride-user, comparing said respective time-indicating electromagnetic signals with each other and matching together a respective driver and ride-user whose respective origins and destinations bear said predetermined geographical relationship to each other and whose respective times as indicated by said respective time-indicating signals are both within a predetermined time period.

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29. The method of claim 22, further including storing security data which matches respective driver identities with respective predetermined coded identity-verification indicia uniquely associated with each driver identity, receiving driver-identifying electromagnetic signals indicative of a respective driver identity and identity-verification electromagnetic signals indicative of respective coded indicia to be associated with said identity and comparing said driver-identifying and identity-verification electromagnetic signals with said security data.

30. The method of claim 22, further including storing security data which matches respective ride-user identities with respective predetermined coded identity-verification indicia uniquely associated with each ride-user identity, receiving ride-user-identifying electromagnetic signals indicative of a respective ride-user identity and identity-verification electromagnetic signals indicative of respective coded indicia to be associated with said identity and comparing said ride-user-identifying and identity-verification electromagnetic signals with said security data.

31. The method of claim 22, further including storing eligibility data regarding the eligibility of respective vehicles to provide transportation, modifying said eligibility data and comparing the identity of a respective vehicle for which ride-offer electromagnetic signals have been received with the modified eligibility data pertaining to said respective vehicle.

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32. The method of claim 22, further including storing eligibility data regarding the eligibility of respective drivers to provide transportation, modifying said eligibility data and comparing the identity of a respective driver from which ride-offer electromagnetic signals have been received with the modified eligibility data pertaining to said respective driver.

33. The method of claim 22, further including storing eligibility data regarding the eligibility of respective ride-users to obtain transportation, modifying said eligibility data and comparing the identity of a respective ride-user from which ride-request electromagnetic signals have been received with the modified eligibility data pertaining to said respective ride-user.



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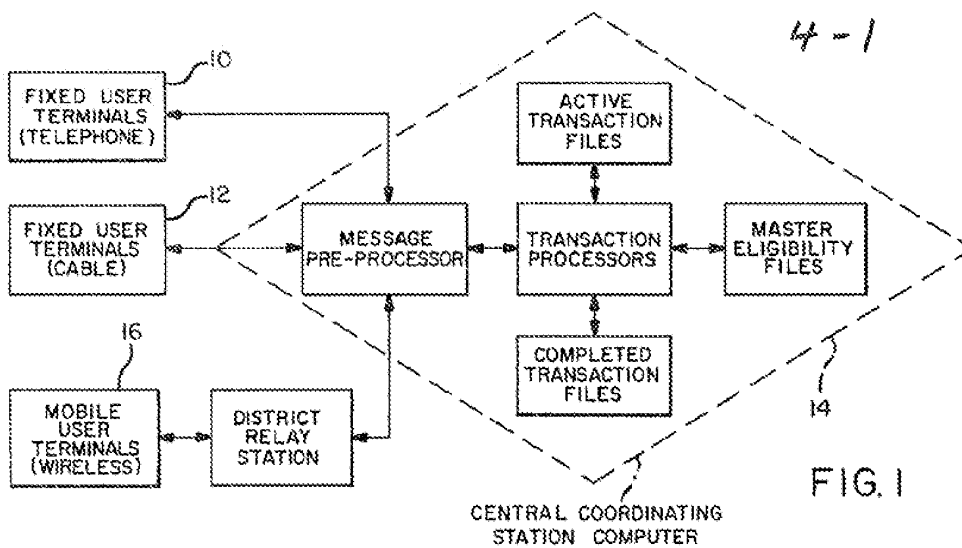
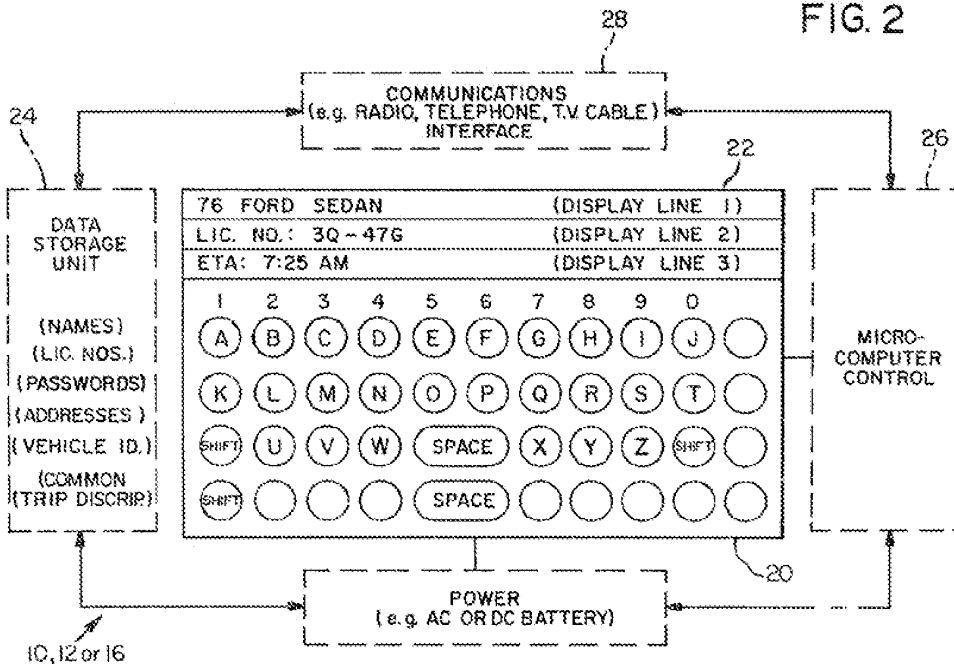


FIG. 2



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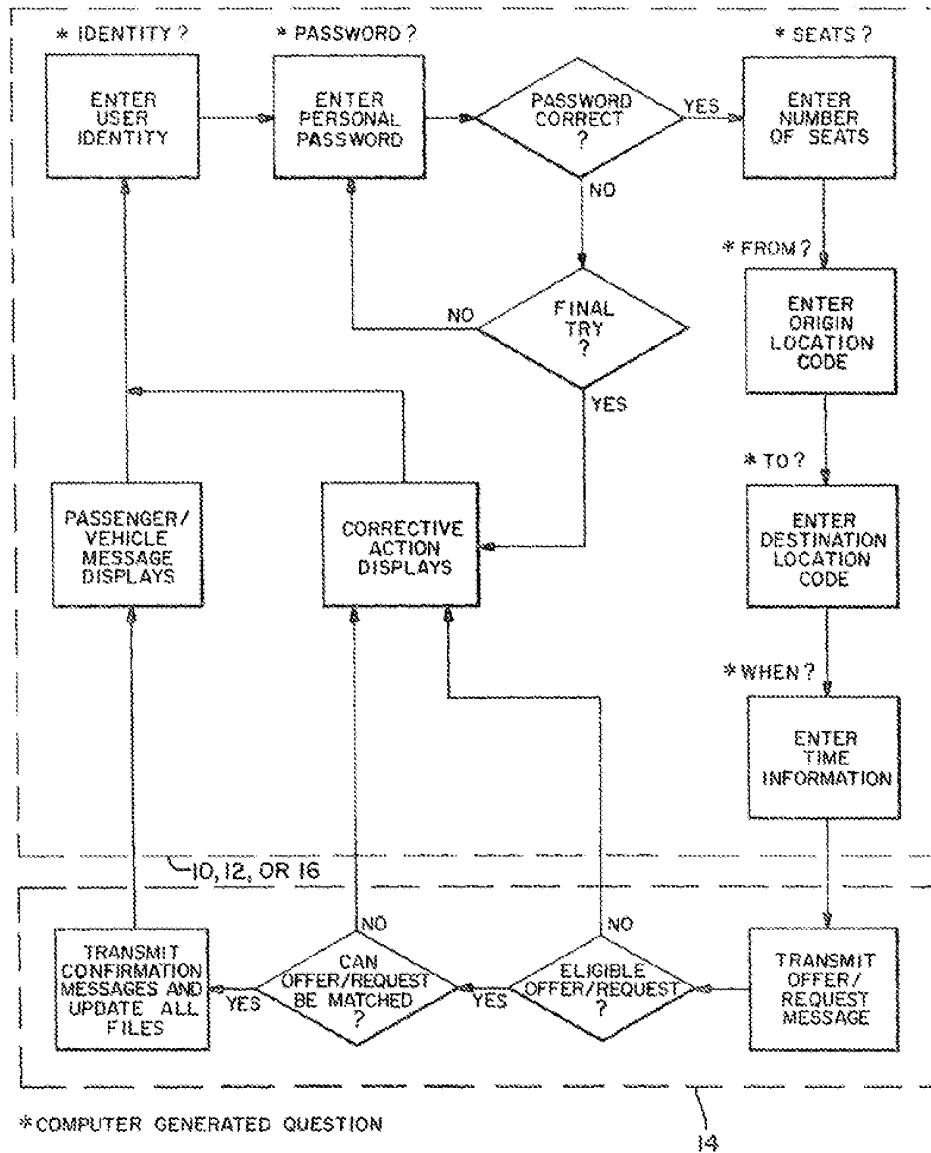


FIG. 3

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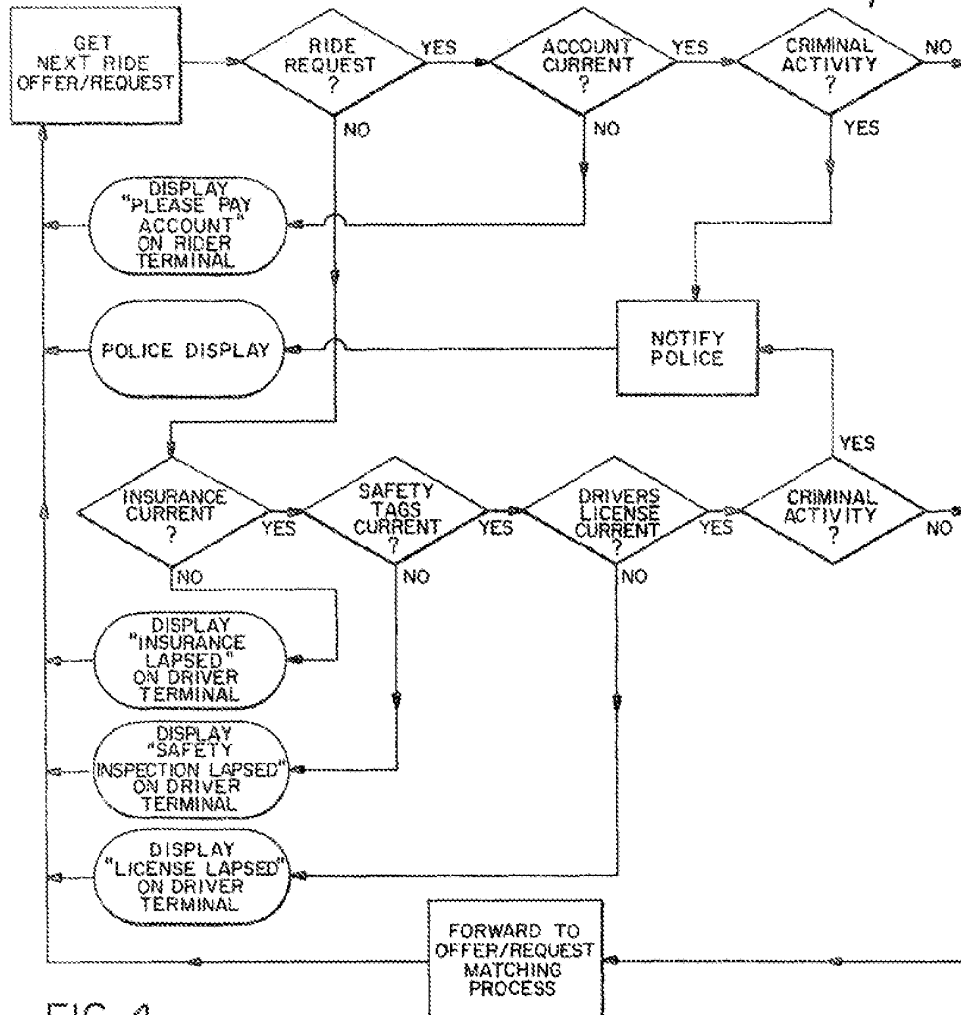
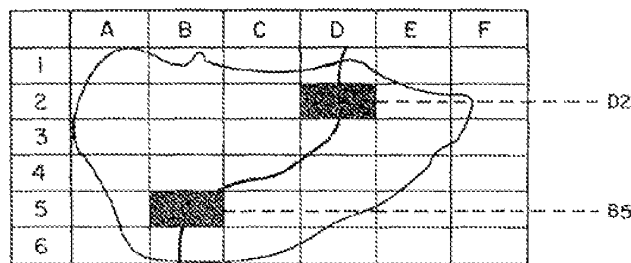


FIG. 4

FIG. 5



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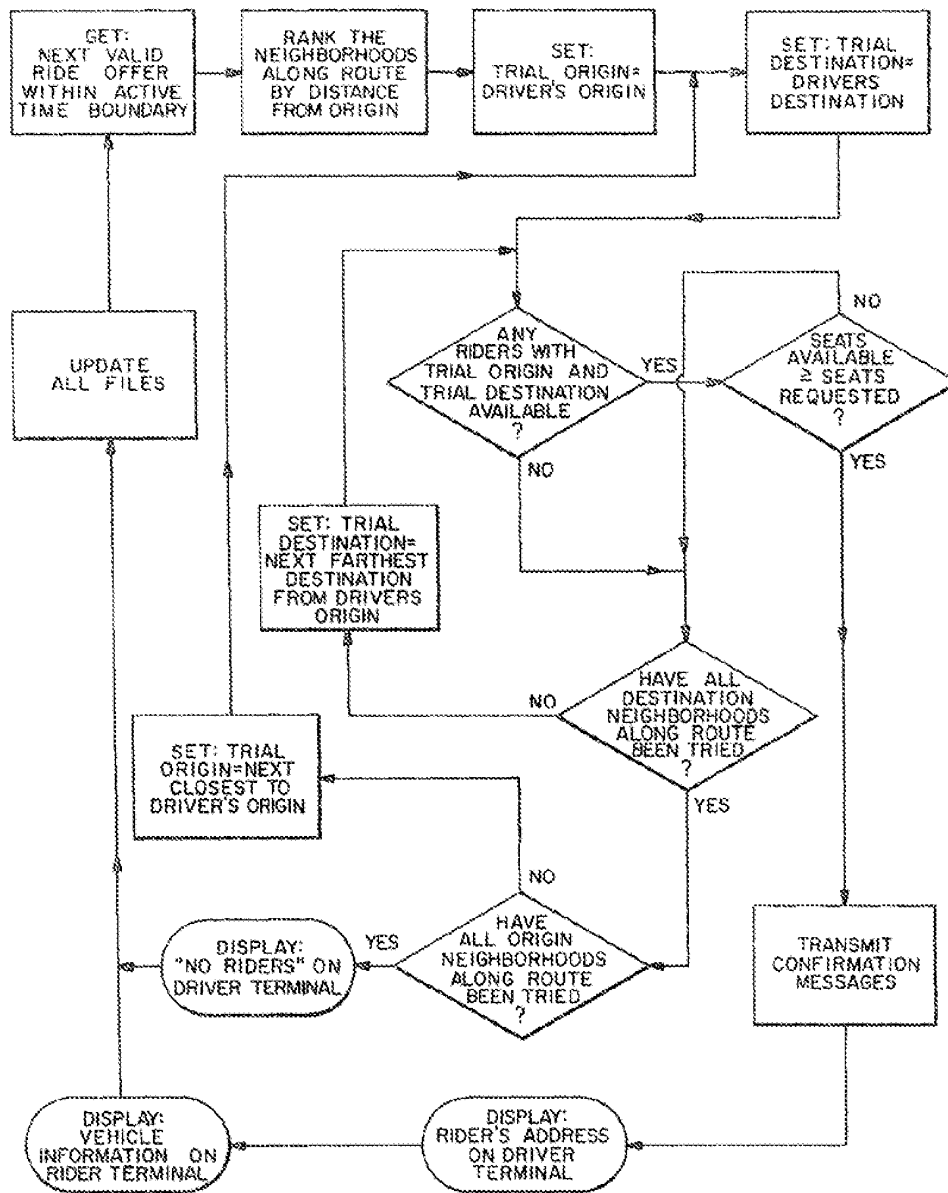


FIG. 6

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International Bureau



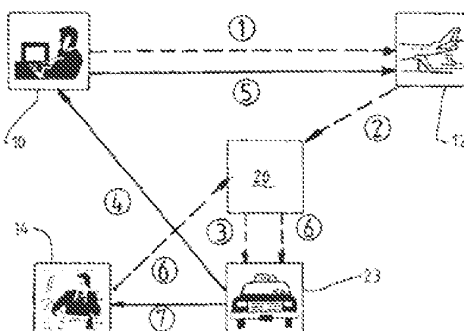
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- (71) Applicant (for all designated States except US): **P2P COMMUNITY PTY LTD** [AU/AU]; Level 1, 2 Epsom Road, Alexandria, New South Wales 2018 (AU).
- (72) Inventors; and
(75) Inventors/Applicants (for US only): **MORRISON, Grant** [AU/AU]; P2P Community Pty Ltd, Level 1, 2 Epsom Road, Alexandria, New South Wales 2018 (AU).
BROWN, Iain [GB/AU]; P2P Community Pty Ltd, Level 1, 2 Epsom Road, Alexandria, New South Wales 2018 (AU).
- (74) Agent: **GRIFFITH HACK**, GPO Box 4164, Sydney, New South Wales 2001 (AU).
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[Continued on next page]

(54) Title: DELIVERY SYSTEM AND METHOD



Key Characteristics

- Leverage Local Service Providers to perform local pick & delivery for International Air Express Operator.
- Eliminate wasted delivery trips.
- All parties pro-actively informed.

(57) Abstract: The present invention relates to a delivery system and method arranged to facilitate the pick-up and delivery of freight from a pick-up point to a delivery destination. The delivery system provides "job" information to local service providers, such as a taxi companies, who have a usual "primary" transport function (in the case of taxi companies this is transporting people). The local service provider can choose to take the "job" and, during or in between carrying out their primary function, can pick-up the freight item and deliver it to a designated destination.



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.

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DELIVERY SYSTEM AND METHODField of the Invention

5 The present invention relates to a delivery system and method arranged to facilitate the pick up and delivery of goods from a pick-up point to a delivery destination, and, particularly, but not exclusively, to a delivery system and method for dealing with pick-up and delivery in
10 the local pick-up area or delivery area for the local leg of international or inter-state freight.

Background of the Invention

15 There are a number of known systems which are presently available for facilitating transport and delivery of goods from origin to destination. Together, the presently available systems provide means by which goods may be moved from origin to destination world wide,
20 nationally or within a more local area (eg. city wide or state wide). Such systems include those provided by national postal services, Global Integrators, Combination Carriers, Freight Forwarders and local couriers (including local postal services).

25 Global Integrators include large international or state wide national courier operators, who aim to provide a "door-to-door" service. Such a service includes long distance transport, such as air transport, rail freight or ship, together with a local pick-up and delivery legs to
30 ensure that the freight is picked up from the point of origin and delivered to the final destination. Air transport is usually utilised, to facilitate express delivery.

35 A major problem experienced by such operators is the fact that up to 60 percent of costs for pick up and delivery of an item accumulate in the local pick up and delivery legs. Long-haul transport is relatively

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efficient. For example, using air transport to transport freight from port to port inter-state or internationally is relatively reliable, cost effective and also easy to monitor (e.g. to enable monitoring of the location of an item in transit). The large costs and problems arise in the local pick-up and delivery legs from port to destination (delivery) or from location of origin to port (pick-up). It is in the local legs, therefore, that "door-to-door" service providers such as the global integrators experience their major problems and costs.

Service providers such as the Combination Carriers (e.g. airlines) and Freight Forwarders (the traditional consolidators and movers of bulk cargo) in fact avoid providing a local pick-up and delivery service. More and more customers, however, are demanding a seamless one stop service from all service providers, so there is a great incentive for even the Combination Carriers, Freight Forwarders, and other pick-up and delivery service providers to provide full local pick-up and delivery legs, and therefore face the associated costs and problems.

There are presently a number of ways in which local pick up and delivery is addressed. The current models suffer from the problems of having large fixed costs (because of the necessity to, for example, employ delivery fleets), fixed fleet sizes (it is difficult to vary the size of fleets to meet periodic variations in demand) and are supply-driven models (eg. extent of service is determined by the service provider rather than by the customer).

The door-to-door service provides, such as the global integrators, may provide their own local transport fleets in addition to global and national transport systems such as air and sea freight. The provision of dedicated local transport fleets results in high fixed costs (cost of vehicles and personnel). Another problem arises because employed personnel will generally only be able to be employed for relatively inflexible hours. This generally

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means that the local pick-up and delivery fleets will only be able to provide pick-up operations and delivery operations at specific times in the day. Customers may therefore be required to be available to enable pick-up and delivery within fairly rigorous time windows. It may not be convenient for all the customers to make themselves available in those times. From a customer service point of view, therefore, the use of employed dedicated local transport fleets is not optimal.

Other solutions for local pick up and delivery involve utilising the local post office's services or local courier companies (again requiring expense and utilising fleets of vehicles and employees with inflexible work hours), or requiring the customer themselves to pick up and deliver. As discussed above, service providers such as Combination Carriers and Freight Forwarders are limited in their business because they must utilise one of these unsatisfactory methods.

Another requirement, particularly for express services, is a customer's requirement to be able to track the status of a freight item (i.e. to be aware of its location in transit at any particular time so that they can estimate time of delivery, or estimate a time when they may need to attend a port to pick up the item). Unfortunately, presently available services do not provide efficient systems for tracking freight status. Further, the presently available (albeit inadequate) tracking systems are not pro-active, and require the customer to make inquiry as to status eg. by phoning into the service provider or logging onto a web site, and do not provide information to the customer without prompting.

Generally, therefore, a customer cannot tell where in transit a particular item is. Although they can usually be advised that the item has been picked up, it is more difficult to provide information on where the item is in transit and when they are likely to receive it. Some carriers provide Web sites which enable a customer to look

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up status of a delivery. The information presently provided is limited, however. In particular, there is very little ability to provide detailed information on status during the local pick-up and delivery legs.

5 The problems discussed above relating to the inflexibility of dedicated local pick-up and delivery fleets or the absence of any dedicated pick-up and delivery fleet, lead to items not being delivered on time (which is particularly fatal from a customer service point
10 of view for service providers touting an "express" service) or not being delivered at all. Some services have been known to experience a failure rate (failing to deliver on time and failing to deliver altogether) of up to 50%. This is obviously unacceptable.

15 Because of all these problems, customers are not provided with an efficient service, and despite the fact that there are huge volumes of transactions, service providers are confounded by high operating costs which result in extremely low profit margins.

20

Summary of the Invention

In accordance with a first aspect, the present invention provides a method of facilitating pick-up and
25 delivery of goods to a destination from a pick-up location, comprising the steps of providing a first system arranged for coordinating pick-up and delivery of goods, the first system providing a first message over a communications network, the first message including
30 information on pick-up location and delivery location of goods, to a local service provider organisation which has an existing infrastructure for carrying on of a separate, primary transport function, so that a local service provider may pick-up and deliver the goods on the basis of
35 the pick-up and delivery information, as a secondary transport function.

Preferably, the method also includes the step of the

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first system being operated by a third party service provider. The delivery and pick-up information may therefore be provided as a service operated by a separate party to the local service provider eg. an organisation
5 whose function is purely to provide the pick-up and delivery information service.

There may be a plurality of local service providers. Preferably, the local service providers are local service provider organisations such as taxi companies, for
10 example. A taxi organisation's primary transport function is to pick-up and deliver people, not goods.

The local service provider is preferably associated with a second system, and the first system communicates with the second system by way of the communications
15 network. In the case of a taxi company, for example, the second system may be the taxi company's communication system (for communication with the drivers).

Preferably, the first system is a system which has been specifically designed to process information relating
20 to the pick-up and delivery of goods. The first system preferably includes a database for logging a plurality of "jobs" (each job concerning a pick-up and delivery operation). Preferably, the system is automated and is arranged to automatically receive job information and
25 provide job information, via the database.

Preferably, the system includes a communications interface to enable communications with the local service providers. The communication's interface may include means enabling communication in accordance with
30 communications protocols conforming to the local service provider's communications system.

The first system is preferably arranged to provide lists of jobs relating to the pick-up and delivery of a plurality of items of goods. Preferably, a plurality of
35 jobs may be provided to a local service provider in the form of a manifest, to enable the local service provider to pick-up and deliver a plurality of goods in a

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consolidated operation.

Preferably, the method also includes the steps of
liasing with a first freight carrier, whereby the pick-up
and delivery information can include as a pick-up or
5 delivery location a freight carrier depot or drop-off or
pick-up point.

The freight carrier may be a global integrator,
freight forwarder or combination carrier. The first
system may include a communications interface for
10 communicating with a freight carrier communications
system.

The method preferably also includes the step of the
first system providing goods location tracking
information, enabling the customer to track the location
15 of goods items in transit. The method further includes
the step of monitoring the location of an item of goods in
transit whereby to enable provision of the goods location
tracking information. Preferably, the step of monitoring
the location of the goods includes the step of monitoring
20 the location of the local service provider who is
transiting the goods.

Preferably, the method includes the further step of
providing information on pick-up time and/or information
on delivery time to a customer, to enable the customer to
25 be available at the appropriate time. Preferably, the
customer may specify the time that they will be available
and the method is arranged to enable that time to be
specified to the local service provider carrying out the
pick-up and/or delivery. The customer can therefore, in
30 this advantageous embodiment of the invention, specify
when they want the item to be delivered. The delivery
pick-up is therefore "customer driven", in contrast to
prior art systems.

The method of the present invention enables the
35 utilisation of local service providers, such as taxi
companies, local courier companies, even take away food
delivery services, that have a primary transport function

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(ie. carrying out their primary purpose such as ferrying passengers, delivering food) to carry out the secondary function of delivering freight, particularly in a local area from pick-up point to delivery point (door-to-door).

5 Under utilised service providers earn revenue for performing a secondary function and can therefore be more fully utilised. Further, the under-utilised service providers can earn as much or as little revenue for performing the secondary function as they want to and as

10 is convenient for them. They will earn incremental revenue, for incremental effort. A taxi driver, for example, may continue to ferry passengers whilst carrying goods from the pick-up point to the delivery destination. Preferably, the pick-up and delivery information includes

15 information on a time "window" during which pick-up and/or delivery may take place. As long as the pick-up and/or delivery take place within this time window, the local service provider can carry on with their primary operation.

20 The method also has the advantage that it provides a convenient process by which freight organisations, such as global integrators, may dispense with the high costs of maintaining their own local transport fleets for door-to-door delivery. Further, combination carriers and other

25 freight organisations that do not have their own local transport fleets are able to compete with the organisations presently able to provide a door-to-door service, by utilising the method of the present invention.

The method preferably includes the further step of

30 providing revenue to local service providers on the basis of delivery or pick-up jobs carried out. Preferably the revenue may be provided in the form of "reward" points, that the local service provider can exchange for goods or services with organisations recognising the reward points.

35 The organisations may include telecommunication service providers.

Preferably a further advantage of the invention is

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that it provides an instantaneous and variable pick-up and delivery fleet and variable cost model where there is no need for heavy up front investment (the delivery fleet already exists, as it is a fleet that already has a
5 primary transport function). This is a significant advantage, for both the Global Integrators and Combination Carriers and other freight organisations. For the Global Integrators, for example, the asset base is lowered (by removing the need for propriety fleets) and operational
10 costs are also lowered (costs incurred through running a propriety fleet).

In accordance with a second aspect, the present invention provides a method of facilitating the pick-up and delivery of goods, comprising the steps of providing a
15 system arranged to provide pick-up and delivery information to local service providers who already have an existing infrastructure for carrying on of a separate, primary transport function, so that a local service provider may pick-up and deliver the goods on the basis of
20 the pick-up and delivery information, as a secondary transport function, and comprising the further step of the system being operated by a third party service provider.

In accordance with a third aspect, the present invention provides a method of facilitating pick-up and
25 delivery of goods, comprising steps of providing a system arranged to provide pick-up and delivery information to local service provider who already have an existing infrastructure for the carrying on of a separate, primary transport function, so that the local service provider may
30 pick-up and deliver the goods on the basis of the pick-up and delivery information, as a secondary transport function, the system being specifically arranged to process information relating to the pick-up and delivery of goods.

35 The system preferably includes a database for receiving and rostering jobs relating to pick-up and delivery operations.

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In accordance with a fourth aspect, the present invention provides a method of facilitating pick-up and delivery of goods, comprising the steps of building a computing system which is arranged to log pick-up and delivery information, agreeing with a local service provider organisation already having an infrastructure for the carrying on of a separate, primary transport function, that the local service provider will pick-up and deliver the goods on the basis of pick-up and delivery information, as a secondary transport function, and providing interfaces between the computing system and a local service provider's system, so that the pick-up and delivery information can be provided from the computing system to the local service provider's system.

In accordance with a fifth aspect, the present invention further provides a method of liaising with a freight carrier in order to facilitate local pick-up and delivery legs of a freight service, comprising the steps of receiving information on pick-up and delivery jobs from the freight carrier, and providing, via an interface with a local service provider's system, the local service provider having an existing infrastructure for carrying on of a separate, primary transport function, pick-up and delivery information for the jobs so that the local service provider can deliver freight from a local freight carrier depot to a destination or from a destination to a local freight carrier depot, as a secondary transport function.

In accordance with a sixth aspect the present invention provides a system for facilitating pick-up and delivery of goods to a destination from a pick-up location, the system comprising a database for receiving and storing information on pick-up location and delivery location of goods, and messaging means arranged to provide a first message over a communications network, the first message including information on pick-up location and delivery location of goods from the database, to a local

- 10 -

service provider organisation which has an existing infrastructure for carrying out on of a separate, primary transport function, whereby the local service provider may pick-up and deliver the goods on the basis of the pick-up and delivery information, as a secondary transport function.

The system and method of the present invention may also be utilised to provide a novel method of "fulfilment" for good(s) ordered from an e-commerce network site, such as an e-commerce web site on the Internet. Preferably, a merchant web site may include a means for communicating pick-up and delivery information to a system in accordance with an embodiment of the present invention, wherein the system can then be utilised to provide delivery of goods ordered by a customer from that e-commerce web site, to the customer.

Advantageously, this enables relatively cheap fulfilment, and has the additional advantage of the merchant not having to worry about fulfilment themselves as it will be provided for by the system and method of the present invention.

Note that "e-commerce network site" is not limited to the Internet, but applies to any network where electronic commerce may be carried on.

25

Brief Description of the Drawings

Features and advantages of the present invention will become apparent from the following description of embodiments thereof, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a flow diagram illustrating a prior art process for a "door-to-door" freight service;

Figure 2 is a schematic block diagram illustrating a system in accordance with an embodiment of the present invention;

Figure 3 is a schematic block diagram of a part of

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the system of figure 2;

Figure 4 is a flow diagram of a door-to-door delivery method in accordance with an embodiment of the present invention; and

5 Figure 5 is a further flow diagram illustrating a door-to-door delivery method in accordance with a further embodiment of the present invention.

Description of the Preferred Embodiments

10

Figure 1 illustrates a prior art process for the delivery "door-to-door" of freight, as may be implemented by the large courier organisation such as a Global Integrator. This process illustrates the inefficiencies and expenses which are characteristic of the prior art.

15

In the following description, numerals in the left hand column correspond to the numerals designating the arrow indicators on the diagram. The arrow indicators are arranged to illustrate the process in a flow format.

20

1 A consumer 10 (this may be any person, eg. an individual, a merchant, any other organisation) initiates the process by contacting the freight operator (the freight operator may be a Combination Carrier, Freight Forwarder or Global Integrator) and provides them with consignment information.

25

2 Presently, the consumer 10 may be required to drop the item of goods at a designated drop-off point 11 (which may be a "port" associated with the operator, eg. such as a depot close to an airport). This would generally be the case for Freight Forwarders and Combination Carriers, who do not have their own transport fleets for local areas and need the consumer to organise for the freight to be dropped at the drop-off point.

30

35

3 As an alternative to "2", the operator (in this case they may be a Global Integrator with their own transport fleet) dispatches a vehicle to pick up the

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- parcel from a local pick-up location and return it the port 11 (destination).
- 4 The operator consolidates freight for international line haul leg 12.
- 5 5 In the meantime the customers (consumer 10 and receiver 11) may require tracking of the goods. This can be done presently via web or telephone (the customer having to be "pro-active" and take steps to obtain the information). It cannot, however, be done efficiently, as discussed above, and in particular cannot be done within the local pick-up and delivery legs.
- 10 6 When the international line haul leg 12 has been completed, the operator may dispatch a vehicle from the port (pick-up point) 13 to deliver to the receiver 11 at only pre-set local delivery times.
- 15 7 Multiple trips may be required to the customer 11 in order to complete delivery due to unavailability of the receiver 14.
- 20 8 Where the operator does not have the facility to provide transport for the local leg (eg. the operator is not a Global Integrator, but may be a Freight Forwarder or Combination Carrier) the receiver 14 may be required to perform the pick-up operation themselves from the port 13.
- 25

This prior art example illustrates the lack of operator service flexibility which results in bad customer service (where no local fleets are provided the customer will have to pick-up or drop-off goods themselves, and even where they are provided there is very little information regarding process of the item of goods in transit). It also illustrates that when local transport fleets have to be provided they are expensive and inflexible.

30

35

Figure 2 is a block diagram which illustrates a system in accordance with an embodiment of the present

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invention.

In this embodiment, the system comprises a computing system 20, including a job logging and distribution system 21 and communications interface arrangement 22. The
5 computing system may include any appropriate computing hardware and software to carry out the functions described in the following description, but will preferably include a server computing system arranged to serve via the communication interface and receive information relating
10 to pick-up and drop-off operations for delivery of freight.

The system 20 is set up as a separate system and is arranged to coordinate pick-up and delivery of goods. The system 20 is arranged to provide pick-up and delivery
15 information to local service providers 23, in this embodiment via a communications network 24. Local service providers include local service providers who already have an existing infrastructure for the carrying out of a separate, primary transport function. In this embodiment,
20 the local service providers are taxi companies, local courier companies, or "fast food" delivery organisations.

With the pick-up and delivery information, the local service provider can pick-up and deliver the goods, as a secondary transport function, which they are able to carry
25 on in tandem with their primary transport function.

In the case of a taxi driver, therefore, the taxi driver may be provided with the pick-up and delivery information for a particular item of goods. When the taxi driver picks-up the goods, they may still carry on their
30 primary function (transporting passengers) and "work" their way to the destination for the goods, to make a goods drop-off at the destination. This results in an increase in utilisation of the local service provider's infrastructure.

35 In this embodiment, the job system 21 is arranged to provide a time "window" during which the local service provider may pick-up and drop-off the goods. This may

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give the local service provider some time to continue carrying out their primary function while they are undertaking goods delivery.

The communications network from the system 20 to the
5 LSP (local service provider) 23 may be by any suitable communications network 24 and the system 20 preferably includes a plurality of methods of communication via the communications interface 22. The communications network
24 in one embodiment includes an interface with the LSP's
10 23 organisations system. For example, where the LSP 23 is a taxi service, the communications network 24 may include an interface with the taxi organisations communications system. It is known to provide computer arrangements in
15 cabs which deliver passenger job information to a screen viewable by the taxi driver. In one embodiment, the communications interface 22 provides an interface with this type of communications system, enabling presentation of pick-up and delivery information on the taxi driver's screen.

20 Another method of communication employable by the present embodiment is the mobile telephone network (for example, job information could be provided directly by broadcasting to the mobile phone system, to be picked up by taxi drivers via their mobile telephones). Either SMS
25 or voice (via interactive voice software) may be provided for communication.

Generally, any type of convenient communications may be utilised for communicating with the local service provider.

30 As well as providing information on jobs to LSP 23, the system 20 is arranged to receive and log requests for jobs to be carried out. Jobs may be given to the system 20 by any persons. In one embodiment, the system 20 is arranged to liaise via communications interface 22 and
35 communication network 24 with carriers 25, who may include operators such as Global Integrators, Freight Forwarders and Combination Carriers. Carriers 25 will receive job

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information from their customers and forward it on to the system 20 via the communications networks 24. The system 20 logs and processes the job information and then delivers it via the communications networks 24 in the form of pick-up and delivery information to LSPs 23. The system 20 therefore may deal with the local pick-up and delivery legs for global freight, on information provided by local freight transporters, such as Combination Carriers, Global Integrators and Freight Forwarders.

10 The system may also operate directly with customers, including individual customers 26 and merchants 27 to receive information relating to pick-up and deliver operations within local areas serviced by the LSPs 23 associated with the system 20. In this way, the system 20 may replace dedicated local courier services.

Because the system 20 can communicate with the LSPs 23, it is a simple matter for the system 20 to establish the location at any time for a particular LSP that has taken on a job. For example, if the LSP is a taxi driver, radio communication may be used, GPS (in the future a lot of taxis will be fitted with GPS), base station triangulation (mobile phone) or any other method of establishing the LSPs position. The position within the local area of a particular job can therefore be tracked by the system 20. In this embodiment, this information is "pushed" out to a Web site, which can be accessed by a customer 26 to enable the customer 26 to track their job. This local tracking information is not available, or is very difficult to obtain, with present services.

30 Another aspect of the present invention relates to the facilitating of electronic commerce. A customer 26 may log on to a merchants 27 Web site and order a item of goods. Presently, e-commerce delivery (fulfilment) is haphazard and discourages e-commerce. In one embodiment of the present invention, software 28 is provided on the merchants site to enable the site to log a job with the system 20. The system 20 can then push out the job to LSP

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23 (if pick-up and delivery is in the local area) or can go via LSPs 23 and international carriers 25 if the delivery is global.

Figure 2 is a block diagram showing the job system 21 block of the system 20 in a little more detail. In this embodiment, because the system 20 interfaces with a number of different systems (potentially) via the communications network 24, some method of importing/exporting data files which may have different formats (relating to the different systems) is required.

The job logging system 21 includes a database, which logs the pick-up and delivery information for export to the LSPs. In order to ensure the database stores the data in a consistent format, an importer 31 is provided to convert data from import files having different formats (ie. job information coming in from customers) to a consistent format for storage in the database 30. Similarly, an exporter 33 is provided to convert exported data into file formats 34 complying with interfaced systems requirements. This enables the system to be substantially automated.

Figure 4 is a flow diagram illustrating a process for implementing the local legs of an international delivery, utilising the embodiment of the present invention described above. In the following description of the flow process, numerals at the left correspond with the numerals adjacent the process indicator arrows in the figure.

- 1 A consumer 10 initiates the purchase and completes consignment via an operator 12 in a similar manner to the process described in relation to figure 1. The operator 12 may be any organisation, including Combination Carrier, Freight Forwarder or Global Integrator.
- 2 The operator provides, via the communication network 24, job information to the system 20 relating to the pick-up and delivery information.
- 3 Over the communications network 24, the system 20

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broadcasts details via convenient communications medium (eg. SMS, WAP or any other communications medium that is convenient) to LSPs, in this case taxis.

- 5 4 The taxi driver attends at the pick-up destination and the consumer 10 enters a PIN (or other security means) with the driver for authentication/confirmation of pick-up.
- 5 5 The taxi driver 23 delivers to the operator
- 10 6 consolidation point for global travel.
- 6 6 At the delivery locality (ie. after the international leg has occurred) the system 20 broadcasts pick-up details via the communications networks 24 to LSP 23 within the locality. At the same time the receiver
- 15 14 is advised by the system 20 via the communications network of a proposed delivery time. The receiver 14 confirms availability.
- 7 7 Delivery is completed, and all parties receive confirmation (proof of delivery).

20

As discussed above, a security means is utilised in the process of this embodiment in order to validate the delivery/pick-up process. In broad terms, the system is arranged to provide a security means to the customer

25 (either the shipper or receiver) via the communication means (eg. SMS, E-mail, automated voice). The security means is preferably, but not essentially, a PIN. The security means will also be sent to the driver of the vehicle (in this example the taxi driver). In the case of

30 the customer being the receiver of the parcel, the receiver is required to provide the security means (ie. match the PIN) to the driver so that the driver can validate that the receiver is the correct person to receiver the item. Where the customer is the shipper, the

35 driver will provide the security means (PIN) to the shipper to prove that the driver is the correct person for

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the pick-up.

The job information provided to the system and stored in the database (for use with various aspects of the process), in a preferred embodiment is as follows:

- 5 1. The file information should be in text file format - each record forming a new line.
2. The file should be sent via FTP format from International Air Express Operator to the system.
3. Information required per line includes:
 - 10 3.1. Id No.
 - 3.2. Consignment Number
 - 3.3. Shipper Name
 - 3.4. Shipper Number
 - 3.5. Pickup Address 1
 - 15 3.6. Pickup Address 2
 - 3.7. Pickup Town/State/Postcode
 - 3.8. Pickup Country
 - 3.9. Shipper Contact Name
 - 3.10. Shipper Contact Number
 - 20 3.11. Shipper Mobile Number
 - 3.12. Shipper Email Address
 - 3.13. Freight Carrier
 - 3.14. Freight Carrier Number
 - 3.15. Freight Carrier Service
 - 25 3.16. Expected Pickup Date
 - 3.17. Expected Pickup Time
 - 3.18. Number of Items
 - 3.19. Item Information:
 - 3.19.1. Item Numbers
 - 30 3.19.2. Item Weight
 - 3.19.3. Item Dimensions
 - 3.19.4. Item Cube
 - 3.20. Total Weight

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3.21. Total Cube

3.22. Status

It will be appreciated that other information or less information than this may be provided in other embodiments of the present invention. In this embodiment, as illustrated by this example, the system carries out the following:

1. information validation (is all the information in the right format and complete - such as complete pickup or delivery details),
2. load management including sortation of jobs into manifest or loads
3. pro-active customer service such as Advance Pickup and/or Delivery Notification and Shipper/Receiver availability confirmation via SMS, email, voice;

The system performs pro-active customer service tasks such as advance pick-up and/or delivery notification, shipper/receiver availability confirmation.

The process described in relation to figure 4 illustrates how easy it is to track the job in transit. Both the consumer and the receiver are able to track the job generally at any point, and are even able to track the status of the job within the local area. Because the system 20 establishes a time for pick-up with the receiver 14 before confirming with the LSP 23, delivery is substantially assured. The use of a security means, such as a PIN, assures that the item of goods is being picked up and delivered by the correct LSP, and that confirmation of receipt occurs. The present system handles job monitoring such as current status eg. in transit to job, pick-up complete, in transit to destination or drop-off complete.

Figure 4 shows a process for the delivery of freight which includes an international leg. As discussed above,

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the system and method of this embodiment can also be used for local delivery within a locality.

Such a process is illustrated in figure 5.

- 1 A consumer 10 (using interactive voice or any other
5 communications means available) orders pick-up from the system 20.
- 2 The system 20 broadcasts detail via the communication means 20 to LSPs 23.
- 3 The consumer 10 is informed of pick-up confirmation
10 and the consumer enters PIN with the driver for authentication/confirmation of the pick-up.
- 4 The system 20 broadcasts delivery time and confirms availability with the receiver 14.
- 5 Delivery is completed and all parties receive
15 confirmation (proof of delivery).

A LSP may earn revenue for carrying out the pick-up and delivery operation. The revenue may be cash or credit, but in one embodiment, the revenue includes
20 "reward points" which enable the receiver of the reward points to cash them in for goods/services with an organisation which accepts the reward points. The organisation may be a telecommunications organisation eg. a mobile phone operator.

25 As far as costing of delivery/pick-up for items is concerned, any model can be used. In a preferred embodiment, there are two models for costing jobs. Firstly, cost can be on flat fee per job (or batch of jobs) basis. Secondly, the system may be arranged to
30 determine a rate based on number of items, time taken, distance, destination points. Time taken distance require input from the driver to the system to calculate costing such as odometer readings at start and finish.

35 Modifications and variations as would be apparent to a skilled addressee are deemed to be within the scope of the present invention.

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CLAIMS

1. A method of facilitating pick-up and delivery of
5 goods to a destination from a pick-up location, comprising
the steps of providing a first system arranged for
coordinating pick-up and delivery of goods, the first
system providing a first message over a communications
10 network, the first message including information on pick-
up location and delivery location of goods, to a local
service provider organisation which has an existing
infrastructure for carrying on of a separate, primary
transport function, so that a local service provider may
15 pick-up and deliver the goods on the basis of the pick-up
and delivery information, as a secondary transport
function.
2. A method in accordance with claim 1, including the
step of the first system being operated by a third party
service provider.
- 20 3. A method in accordance with claim 1 or claim 2,
wherein the first system is a system which has been
specifically arranged to process information relating to
the pick-up and delivery of goods.
4. A method in accordance with any one of the preceding
25 claims, comprising the step of the first system receiving
a second message, the second message being from a local
service provider confirming that they have received the
information.
5. A method in accordance with any one of the preceding
30 claims, comprising the further step of the first system
receiving a third message, the third message being from a
customer requiring pick-up and delivery of goods and
providing information to the first system regarding the
pick-up and delivery location.
- 35 6. A method in accordance with claim 5, wherein the
customer is a freight carrier.
7. A method in accordance with any one of the preceding

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claims, wherein the local service provider is a taxi company.

8. A method in accordance with any one of the preceding claims, wherein the first message is provided to a second
5 system by way of communications network, the second system being the communication system for a local service provider organisation.

9. A method in accordance with any one of the preceding claims, wherein the first message includes information on
10 a plurality of jobs relating to the pick-up and delivery of a plurality of items of goods, whereby information on a plurality of jobs may be provided to a local service provider in the form of a manifest, to enable the local service provider to pick-up and deliver a plurality of
15 goods in a consolidated operation.

10. A method in accordance with any one of the preceding claims, including the further step of the first system providing goods location tracking information by way of the communications network, enabling a customer to track
20 the location of goods in transit.

11. A method in accordance with any one of the preceding claims, comprising the further step of monitoring the location of goods in transit whereby to enable provision of goods location tracking information.

25 12. A method in accordance with claim 11, wherein the step of monitoring the location of goods includes the step of monitoring the location of the local service provider who is transiting the goods.

13. A method in accordance with claim 12, wherein the
30 step of monitoring the location of the local service provider includes the step of determining the position of a communications device of the local service provider.

14. A method in accordance with any one of the preceding claims, comprising the further step of the first system
35 sending a fourth message over the communications network to a customer, providing information on potential pick-up and/or delivery times, to enable a customer to be

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available at the appropriate time.

15. A method in accordance with claim 14, wherein the first system is arranged to receive a fifth message from a customer, the fifth message including confirmation that
5 the customer will be available for pick-up and/or delivery at the appropriate time, or specifying a time that they will be available.

16. A method in accordance with any one of the preceding claims, wherein the first message includes information on
10 a time window during which pick-up and/or delivery may take place, the time window providing some time for the local service provider to carry out their primary function at the same time as undertaking the pick-up and/or delivery.

15 17. A method in accordance with any one of the preceding claims, comprising the further step of providing revenue to local service providers in the form of "reward" points that the local service provider can exchange for goods or services with organisations recognising the reward points.

20 18. A method in accordance with any one of the preceding claims, comprising the further step of a first system providing a seventh message to a customer advising them of a security means, whereby when the local service provider attends at the customer location the security means may be
25 utilised to enable confirmation of pick-up and delivery.

19. A method in accordance with claim 18, comprising the further step of the first system providing an eighth message to a local service provider advising them of a security means.

30 20. A method in accordance with claim 18 or 19, wherein the security means is a personal identification number.

21. A method of facilitating the pick-up and delivery of goods, comprising the steps of providing a system arranged to provide pick-up and delivery information to local
35 service providers who already have an existing infrastructure for carrying on of a separate, primary transport function, so that a local service provider may

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pick-up and deliver the goods on the basis of the pick-up and delivery information, as a secondary transport function, and comprising the further step of the system being operated by a third party service provider.

5 22. A method of facilitating pick-up and delivery of goods, comprising steps of providing a system arranged to provide pick-up and delivery information to local service provider who already have an existing infrastructure for the carrying on of a separate, primary transport function,
10 so that the local service provider may pick-up and deliver the goods on the basis of the pick-up and delivery information, as a secondary transport function, the system being specifically arranged to process information relating to the pick-up and delivery of goods.

15 23. A method of facilitating pick-up and delivery of goods, comprising the steps of building a computing system which is arranged to log pick-up and delivery information, agreeing with a local service provider organisation already having an infrastructure for the carrying on of a
20 separate, primary transport function, that the local service provider will pick-up and deliver the goods on the basis of pick-up and delivery information, as a secondary transport function, and providing interfaces between the computing system and a local service provider's system, so
25 that the pick-up and delivery information can be provided from the computing system to the local service provider's system.

24. A method of liasing with a freight carrier in order to facilitate local pick-up and delivery legs of a freight
30 service, comprising the steps of receiving information on pick-up and delivery jobs from the freight carrier, and providing, via an interface with a local service provider's system, the local service provider having an existing infrastructure for carrying on of a separate,
35 primary transport function, pick-up and delivery information for the jobs so that the local service provider can deliver freight from a local freight carrier

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depot to a destination or from a destination to a local freight carrier depot, as a secondary transport function.

25. A system for facilitating pick-up and delivery of goods to a destination from a pick-up location, the system
5 comprising a database for receiving and storing information on pick-up location and delivery location of goods, and messaging means arranged to provide a first message over a communications network, the first message including information on pick-up location and delivery
10 location of goods from the database, to a local service provider organisation which has an existing infrastructure for carrying on of a separate, primary transport function, whereby the local service provider may pick-up and deliver the goods on the basis of the pick-up and delivery
15 information, as a secondary transport function.

26. A system in accordance with claim 25, being specifically arranged to process information relating to the pick-up and delivery of goods.

27. A system in accordance with claim 25 or claim 26,
20 further comprising a receiving means, the receiving means being arranged to receive a second message, the second message being from a local service provider confirming that they have received the information.

28. A system in accordance with claim 27, the receiving
25 means being arranged to receive a third message, the third message being from a customer requiring pick-up of and delivery of goods and providing information regarding the pick-up and delivery location.

29. A system in accordance with any one of
30 claims 25 to 28, wherein the messaging means is arranged to include in the first message information on a plurality of jobs relating to the pick-up and delivery of a plurality of items of goods, in the form of a manifest, to enable the local service provider to pick-up and deliver a
35 plurality of goods in a consolidated operation.

30. A system in accordance with any one of claims 27 to 29, the system including goods location tracking means,

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arranged to provide goods location tracking information, enabling a customer to track the location of goods in transit.

31. A system in accordance with claim 30, wherein the
5 goods location tracking means includes means arranged to determine the position of a local service provider's communications device.

32. A system in accordance with any one of claims 27 to
10 31, messaging means being arranged to provide a fourth message over the communications network to a customer, the fourth message including information on potential pick-up and/or delivery times, to enable a customer to be available at an appropriate time.

33. A system in accordance with claim 32, the receiving
15 means being arranged to receive a fifth message from a customer, the fifth message including confirmation that the customer will be available for pick-up and/or delivery at the appropriate time, or specifying a time that they will be available.

20 34. A system in accordance with any one of claims 27 to 33, wherein the first message includes information on a time window during which pick-up and/or delivery may take place, the time window providing some time for the local service provider to carry out their primary function at
25 the same time as undertaking the pick up and/or delivery.

35. A system in accordance with any one of claims 27 to 34, wherein the messaging means is arranged to provide a seventh message to a customer advising them of a security means, whereby when the local service provider attends at
30 the customer location the security means may be utilised to enable confirmation of pick-up and delivery.

36. A system in accordance with claim 35, messaging means being arranged to provide an eighth message to a local service provider advising them of a security means.

35 37. A system in accordance with any one of claims 25 to 36, the system further including an interface to a local service provider system for providing the job information

- 27 -

to the local service provider.

38. A computer program arranged, when loaded on to a computing system, to cause the computing system to implement the system of any one of claims 25 to 37 or 43.

5 39. A computer readable medium providing a computer program in accordance with claim 38.

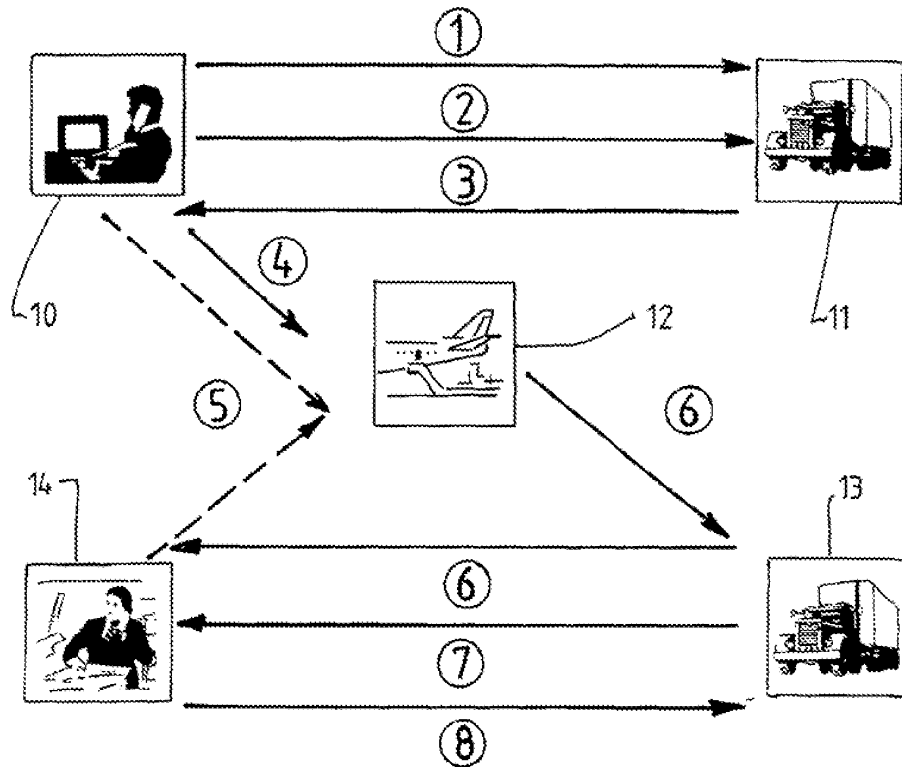
40. A computer program arranged, when loaded on to a computing system, to control the computing system to implement the method of any one of claims 1 to 24 or 43.

10 41. A computer readable medium providing a computer program in accordance with claim 40.

42. A method in accordance with any one of claims 1 to 20, comprising the further step of providing information from an e-commerce network site to the first system, the
15 information including information on the pick-up and delivery of items ordered by a customer from the e-commerce network site whereby the first system can then utilise that information to provide the first message, whereby pick-up and delivery of goods ordered from the e-commerce site can be made to the e-commerce customer.
20

43. A system in accordance with any one of claims 25 to 37, the receiving means being arranged to receive information from an e-commerce network site provider system, the information including information on the pick-up
25 up and delivery of good(s) ordered by a customer from the e-commerce network site, wherein the system is arranged to incorporate the information in the first message whereby to enable pick-up and delivery of good(s) ordered from the e-commerce network site by a customer.

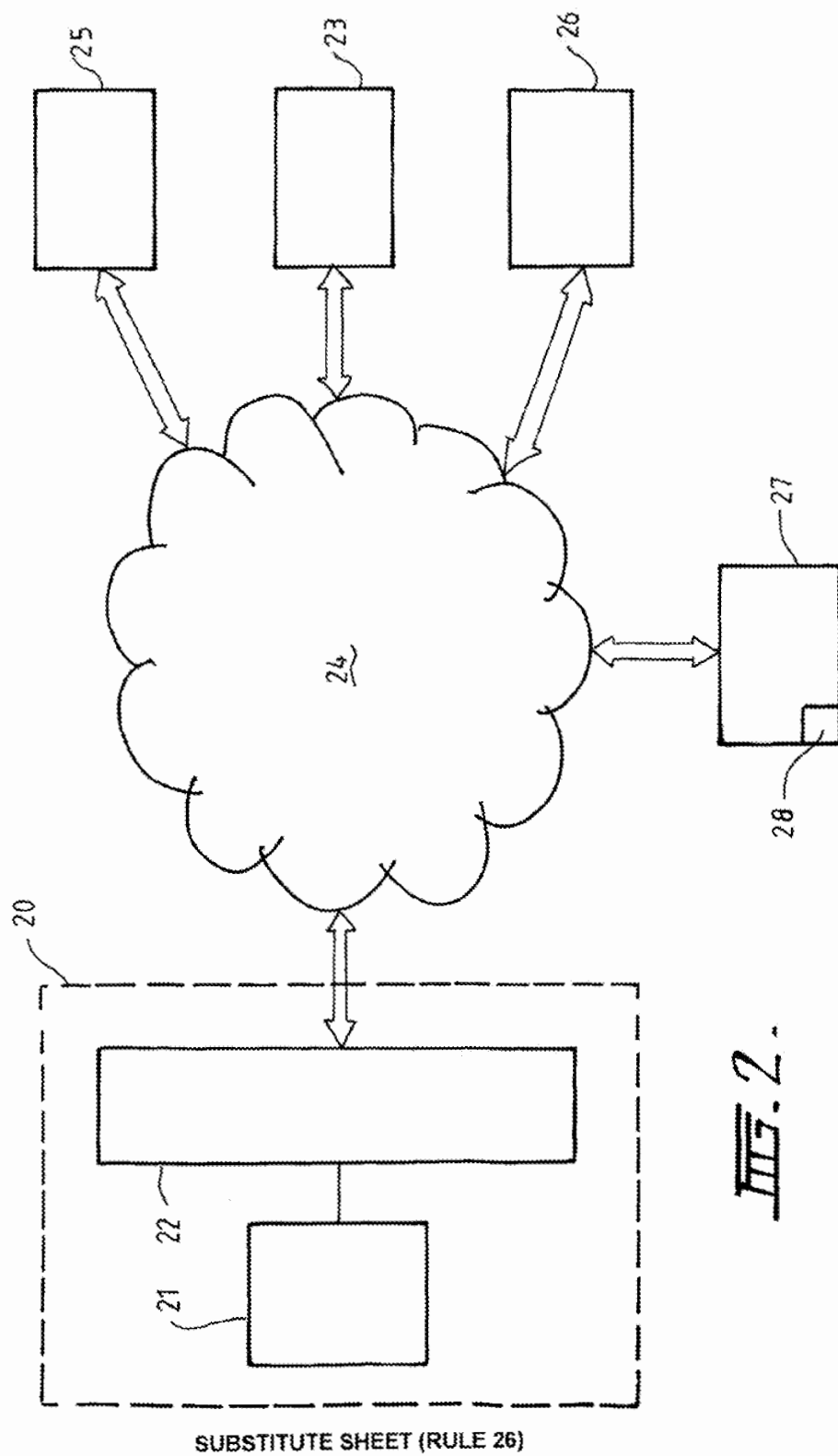
30 44. An e-commerce system, including server means for providing an e-commerce network site, a communications means arranged to send information to the system of claim 43, the information including information on the pick-up and delivery locations of good(s) ordered from the e-commerce web site by the customer.
35

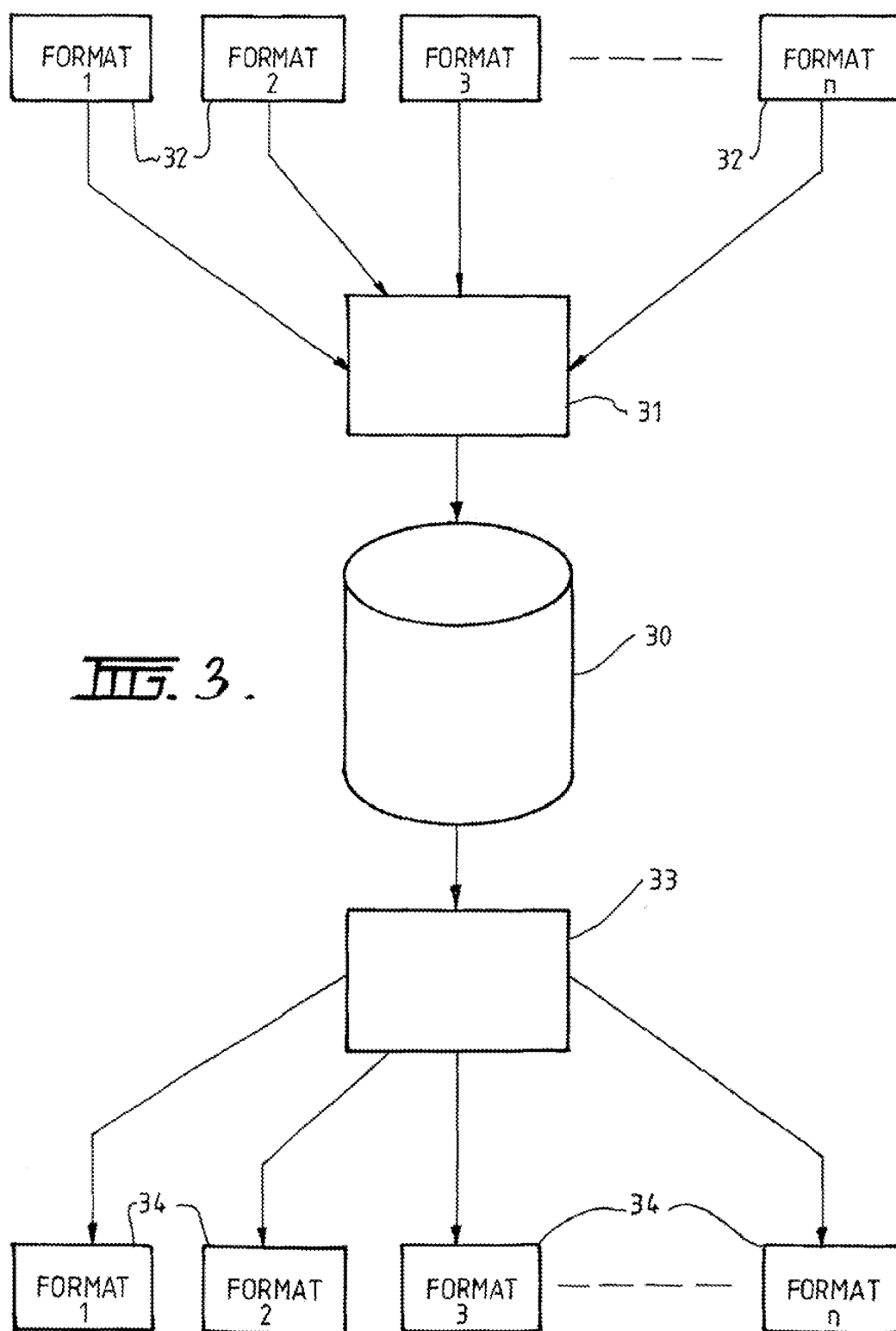


Key Characteristics

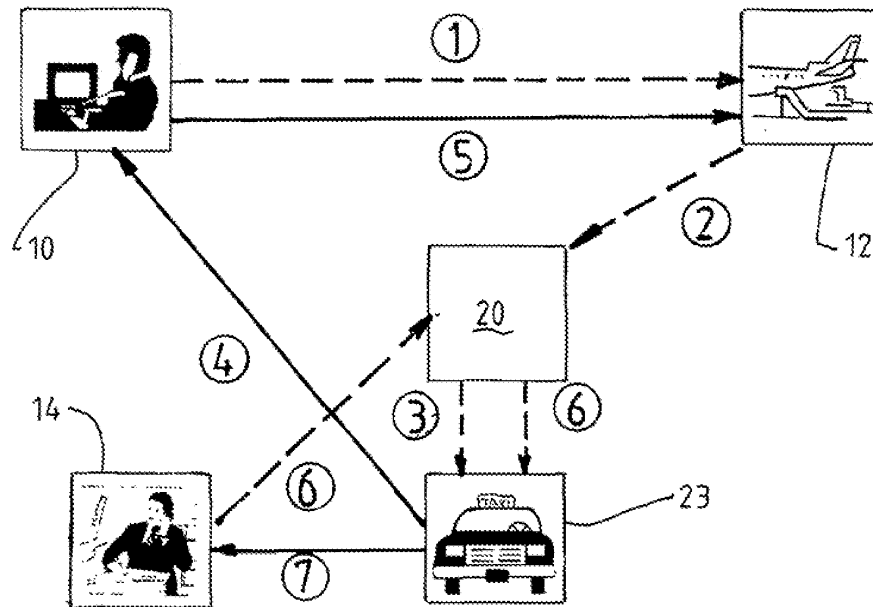
- . Inefficient and expensive local pickup & delivery of parcels.
- . Lack of Operator Service flexibility.
- . Consumer required to track parcel manually = poor customer service.

FIG. 1.





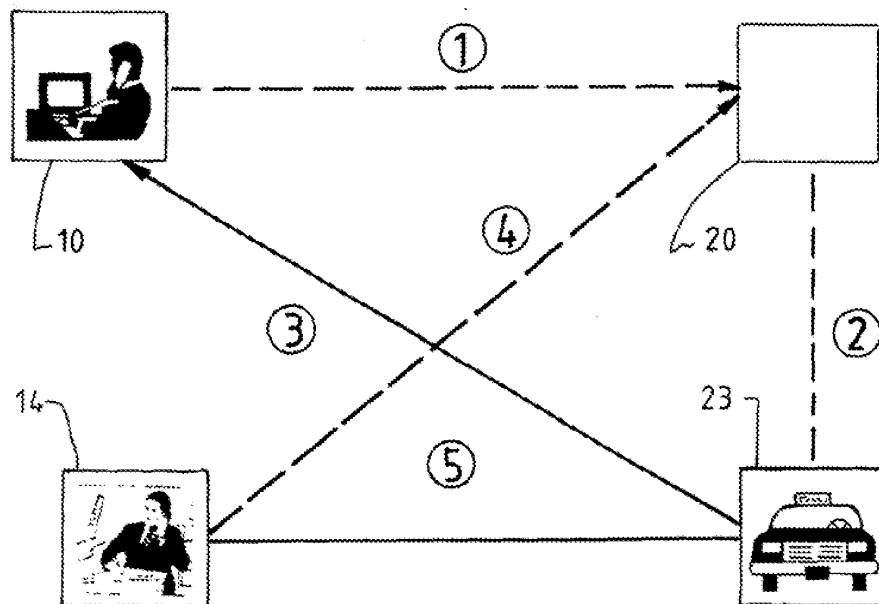
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Key Characteristics

- . Leverage Local Service Providers to perform local pick & delivery for International Air Express Operator.
- . Eliminate wasted delivery trips.
- . All parties pro-actively informed.

III. 4.



Key Characteristics
. High usage of common technology. . Increased service flexibility through greater number of service providers. . Decreased cost to consumers.

FIG. 5.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU02/01037

A. CLASSIFICATION OF SUBJECT MATTER		
Int. Cl. ⁷ : G06F 17/00		
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)		
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) WPAT USPTO (KEYWORDS): FREIGHT, PARCEL?, GOOD?, TRANSPORT+, DELIVER+, NETWORK, ...		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 02/05177 A1 (MARS, INCORPORATED) 17 January 2002 See whole document	
A	US 6240362 B1 (GASPARD, II) 29 May 2001 See whole document	
A	US 5835716 A (HUNT et al) 10 November 1998 See whole document	
☐ 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	"&" document member of the same patent family	
"P" document published prior to the international filing date but later than the priority date claimed		
Date of the actual completion of the international search 25 September 2002	Date of mailing of the international search report 7 OCT 2002	
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized officer Stephen Lee Telephone No : (02) 6283 2205	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/AU02/01037

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

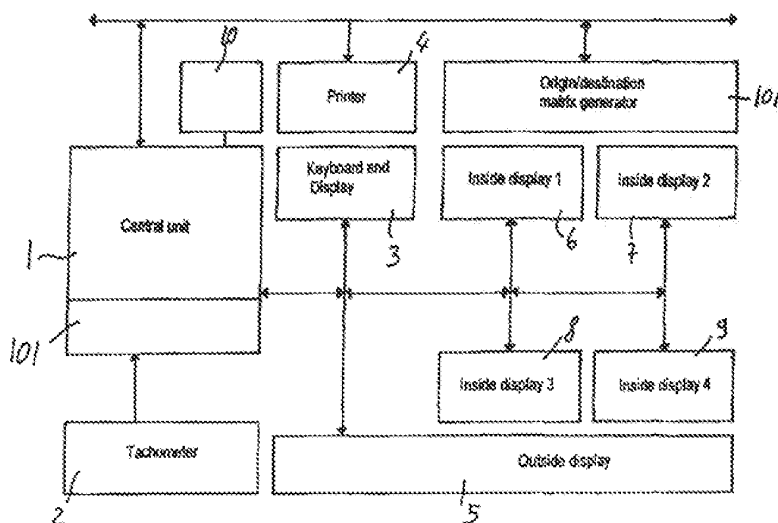
Patent Document Cited in Search Report			Patent Family Member		
WO	200205177	AU	200173155	US	2002038266
US	6240362	AU	200166581	US	2002004703
		US	6411897	WO	200204893
US	5835716	CA	2192303		
					END OF ANNEX



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : G07B 13/00		(11) International Publication Number: WO 99/52084
A1		(43) International Publication Date: 14 October 1999 (14.10.99)
(21) International Application Number: PCT/EP99/02135		(81) Designated States: US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LD, MC, NL, PT, SE).
(22) International Filing Date: 29 March 1999 (29.03.99)		Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>
(30) Priority Data: SV98A000020 3 April 1998 (03.04.98) IT		
(71)(72) Applicants and Inventors: GIACOPINELLI, Valerio (IT/IT); Via Pastorino 4/13, I-16100 Genova (IT). PRE-MUDA, Giovanni (IT/IT); Piazza Sarzana 22/3, I-16100 Genova (IT). RIVA, Giorgio (IT/IT); Via Val D'Astico 11/3, I-16100 Genova (IT).		
(74) Agent: KARAGHIOSOFF, Giorgio, A.; Via Pecotile, 27/B, I-17015 Celle Ligure (IT).		

(54) Title: **A DEVICE FOR CALCULATING FARES IN VEHICLES, PARTICULARLY TAXIS, COLLECTIVE TAXIS, BUSES, OR THE LIKE**



(57) Abstract

A device for calculating fares in vehicles, particularly in taxis, collective taxis, buses, or the like, comprising: a clock; a tachometer; means for displaying the trip cost and/or the relevant parameters for calculating said cost; one or more memories for reading and writing calculation parameters which can be either preset or determined in real time, and one or more memories containing the control and calculation programs; a central calculation and control unit, wherein the above listed means are connected and which coordinates and controls them to execute calculation and display procedures. According to the invention, the device also comprises: means for differentiated and customized calculation of the trip cost for each of several passengers who travel in the same vehicle at least for a part of the same route.

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5

A device for calculating fares in vehicles, particularly taxis, collective taxis, buses, or the like

10 The invention relates to a device for calculating fares in vehicles, particularly taxis, collective taxis, buses, or the like, comprising:

a clock;

a tachometer;

15 means for displaying the trip cost and/or the relevant parameters for calculating said cost;

one or more memories for reading and writing the calculation parameters which can be either preset or determined in real time and one or more memories

20 containing the control and calculation programs;

one central calculation and control unit, whereto the above means are connected and which coordinates and controls them to execute the calculation and display procedures.

25 The invention has the object to improve a device of the type described hereinbefore so that, thanks to relatively inexpensive arrangements, it is more appropriate for multi-user transport, while providing easier operations for determining the cost of single
30 trips.

Currently, there exist two opposing needs. On the one hand, the need to implement the so-called collective taxi services. These services are supposed to be used by a limited number of users, substantially
5 corresponding at the most to the load of people allowed by the homologation of vehicles, which travel in the same direction, but share one part only of the total route up to the final predetermined destination.

In this type of services, the determination of the
10 trip cost is very complex. Graded fare tables have been created which, however, cannot account for multiple variants and usually excessively penalize certain uses of the vehicle, such as particularly short routes, while being advantageous for long routes. Further,
15 these tables cannot easily account for the number of users traveling for the same part of the route, since this would involve a much more complex calculation by the driver, than the one required to determine the fare according to the route length.

20 Therefore, a further object of the invention is to provide a device as described hereinbefore, which completely, or at least significantly releases the driver from the difficulty to determine the trip price, and which can generate a fairer cost as related to
25 travel conditions, by constantly monitoring them during the trip.

The invention achieves the above purposes by providing a device as described hereinbefore, in which there are further provided means for differentiated and
30 customized calculation of the trip cost for each of

several passengers who travel in the same vehicle at least for one part of the same path.

According to their specific implementation, said means may consist of hardware or of software only, or
5 of a combination thereof.

Hence, for example, by using a calculation and control unit consisting of a processor circuit or the like, multi-user functions may be implemented by simply making one appropriate change to the control program,
10 and possibly by adding a peripheral unit, which is not provided for traditional single-user operations, not being required therefor.

A device in accordance with the invention is very flexible as to the development of automated operations,
15 so that the direct intervention of the customer or of the driver is increasingly reduced.

Particularly, the device according to the invention may comprise means for assigning and/or entering a reference or identification code for each
20 passenger. These means may be simply manual or vocal means, whereby the ID code is stored in the device and communicated to the customer. For instance, when the customer gets into the vehicle, he/she may take a progressive number, tearing it off a tape in an
25 appropriate distributor and tells it to the driver, who enters the new code into the taximeter.

A vocal interface, electronic customer identifying means, such as a card, a recognition signal transmitter, possibly a cellular phone, a magnetic or
30 processor card, a GPS device or the like can be

provided in combination with or alternatively to the manual means, and alternatively to or in combination with each other, the device being provided with the corresponding readers and/or receivers of user ID
5 signals. Hence, the user is automatically recognized and the taximeter is automatically advised so that it can open a new user entry. When the user gets out of the vehicle, he/she can indicate his/her code, displayed during the trip, to the driver or the
10 taximeter, which will display the trip cost and delete the memory area when the user has got out.

The user may be also vocally advised of his/her code, alternatively or in combination with the code display.

15 When automatic means for detecting the presence of the customer are provided, the trip cost may be also automatically charged, e.g. to a magnetic or microprocessor card, such as a credit card, an ATM card, or the like, or through a transceiver such as a
20 GPS terminal or a cellular phone with bill charging.

The display may have several functions. It can display the progressive cost for a user at a time, either on request or sequentially at a predetermined rate. Moreover, instead of displaying cost and trip
25 parameters of one user, it can also show such parameters for a user group, even partial, there being provided a control for recalling on the screen the parameters of the other user groups, or the latter being sequentially displayed at a predetermined rate.

30 With reference to the device operation, the latter

comprises a memory or a memory area which is subdivided into areas, being each reserved for an ID code of a passenger, and wherein the relevant parameters for calculating the trip cost, at least until the passenger
5 gets out of the vehicle, measured in real time and/or entered by the passenger, are stored by units which automatically detect when he/she gets in and/or out and/or by operating personnel.

The trip cost may be also printed by a printer
10 controlled by processing and controlling means.

According to an advantageous improvement, the trip parameters also include a reference parameter indicating the maximum trip cost.

This parameter may be dynamic, depending on the
15 trip length from origin to destination.

Advantageously, the device comprises display means outside the vehicle, which indicate the direction or the destination of the vehicle. Such indications may be preset manually by the driver or through a vocal
20 interface, or otherwise.

According to a preferred operation protocol, the device has a table of base cost correction coefficients, which account for the number of users traveling along the same route and for the trip
25 duration. The fare correction coefficients may change dynamically according to the different travel conditions for partial lengths of the trip. Particularly, a new correction coefficient may be applied to the next trip length when a user in the same
30 vehicle gets out of it or into it.

The above description clearly shows the advantages of this invention, consisting in that, by simple and relatively inexpensive means, the trip cost may be accurately calculated.

5 Therefore, the device provides a fair calculation of the costs for collective taxi services, thus considerably reducing travel expenses. All this by monitoring constantly and in real time the actual travel conditions for the user, the travel time and the
10 trip length. Each customer only pays for the service he/she has used, while the device for obtaining such effect does not have to be particularly complex, expensive and difficult to use.

 The outside indication of the taxi direction
15 allows the user to choose according to the substantial correspondence of the vehicle direction to the destination of the user. The destination may dynamically change during the trip.

 The invention also relates to further improvements
20 which form the subject of the dependent claims.

 The characteristics of the invention and the advantages derived therefrom will be more apparent from the following description of a non-limiting exemplary embodiment, illustrated in the accompanying drawing, in
25 which:

 Fig. 1 shows a block diagram of a preferred embodiment of the multi-user taximeter according to the invention.

 With reference to fig. 1, a taximeter for a multi-
30 user taxi as described hereinbefore comprises a central

unit 1, e.g. of the processor type with memories 101 for the control program, for storing parameters relating to the user code, the trip time, the trip length, the trip start and end time, as well as the
5 number of users and the travel time shared with a certain number of users.

Instead of a microprocessor structure, other more simplified hardware types may be provided, wherein the control program and the memory areas with allocations
10 and addresses for the different above listed parameters are predetermined.

The central unit 1 obviously has a clock, not shown in detail, or anyway a clock input, an input for a tachometer 2 and one or more inputs for a keyboard 3
15 and any other data entry means 10.

These other data entry means may consist of magnetic card readers, processor card readers, transceiver units, such as a transceiver for cellular phones or for the GPS system or other types of sensors,
20 which can be provided all together, in combinations or subcombinations with each other or alternatively to each other.

The central unit 1 also has several outputs, whereto a printer 4, an outside display 5, for
25 indicating the trip final destination, one or more inside displays 6, 7, 8, 9, for separately displaying relevant parameters of cost, time, distance in kilometers and the relevant ID code of each user whereto said parameters are related.

30 Similarly to the above indications about the means

for entering and assigning the user code, the central unit 1 may advantageously have, in combination or subcombination therewith or alternatively thereto, outputs for means for writing on magnetic cards, processor cards, or for means for transmitting data on
5 cellular phone networks and GPS or the like.

Displays may also consist of a number of small displays each reserved for a user, in case of a small maximum number of users that can travel along the same
10 trip or may consist of a single display, which is subdivided by the control program into several areas. A single display whose size allows to display data for at least one user and which is controlled in such a way as to sequentially display data for the other users may be
15 also provided, possibly allowing the first user who leaves the vehicle to have the display priority. Such sequential display method may obviously be used when there is a greater number of users, even when there are provided the other above listed types of displays.

20 Alternatively to or in combination with the tachometer, the central unit may have a connection interface or be a part of a computerized navigation device, in which the vehicle position is detected by the satellite network and is referred to and compared
25 with a map stored in the device. This may also provide advantages for users who can always rely on precise references for the way to reach the different destinations.

The device according to the invention has a very
30 easy operation.

When a first user gets into the vehicle, he/she informs the driver about his/her destination. Then, the driver enters the destination into the central unit, which displays it outside the vehicle, through outside
5 displays. The user is also assigned an identification code which is duly stored. The trip starts and so does the calculation of the cost based on time and distance in kilometers. The potential next customers, which could share at least a part of the trip can find if the
10 vehicle direction corresponds to their destination, thanks to the outside displays. When another user gets into the vehicle, he/she informs the driver about his/her destination, and the driver updates the indication of the trip destination if needed, i.e. if
15 the latter is more distant than the previous one. The second customer also is assigned an identification code and, like for the first one, the trip cost starts to be calculated. A correction coefficient is now added to the former parameters, which reduces the trip cost
20 according to the number of users who share the trip or a part thereof. This reduction coefficient increases with the number of passengers being in the vehicle at the same time, i.e. the trip cost decreases as the number of users sharing the vehicle increases, and
25 automatically increases when one or more users get out of the vehicle. In fact, when a user gets out, he/she tells the driver what his/her code is, and the driver collects the corresponding cost, resets the customer code and possibly issues a receipt, a ticket or an
30 invoice, by using the printer.

This operation can vary depending on the means for entering the user code and for executing the payment transaction as well as for deleting the user code. If credit cards or prepaid stored value cards of any type
5 are used, then the customer code can be entered into and deleted from the card when the card is read, that is when the user gets into the vehicle, and when it is written, that is when the user gets out of the vehicle. Communication with bank circuits for credit cards takes
10 place through radio transmission means, cellular phones or GPS network. In this case, the receiving-transmitting means of the cellular or GPS type associated to the central unit communicate through the cellular or GPS network by the cellular phone or the
15 GPS terminal of the user. In this manner, these means can detect the user presence and automatically start the procedures for assigning and deleting the user code. The procedures for charging the trip cost and for performing the transaction can be also executed through
20 the cellular or GPS network and the bill, or the stored value or reloadable card, associated to the cellular phones or to the GPS terminals can be charged therewith.

According to a further improvement, the central
25 unit 1 may be also possibly provided with an interface for communication with an automatic motorway toll charging system. In this case, the toll cost can be automatically loaded as a parameter for calculating the trip cost and subdivided among the users in the vehicle
30 at that moment.

Obviously, the motorway toll cost may be also manually loaded by the driver through the keyboard.

Instead of the keyboard, a data entry system operating with vocal controls or controls of any other
5 type may be also provided.

According to an improvement, one or more trip cost discount or surcharge coefficients may be also preset, such as discount coefficients for very high trip costs, above predetermined amounts, or different discounts
10 and/or surcharges for different time periods or days such as working days, holidays, or particular days.

CLAIMS

1. A device for calculating fares in vehicles, particularly taxis, collective taxis, buses, or the like, comprising:

5 a clock;

a tachometer;

means for displaying the trip cost and/or the relevant parameters for calculating said cost;

one or more memories for reading and writing the
10 calculation parameters which can be either preset or determined in real time and one or more memories containing the control and calculation programs;

one central calculation and control unit, whereto the above means are connected and which coordinates and
15 controls them to execute the calculation and display procedures, characterized in that it further comprises:

means for differentiated and customized calculation of the trip cost for each of several passengers who travel in the same vehicle at least for
20 one part of the same path.

2. A device as claimed in claim 1, characterized in that it comprises means for assigning and/or entering a reference or identification code for each passenger.

25 3. A device as claimed in claim 1 or 2, characterized in that it comprises a memory which is subdivided into areas, being each reserved for an ID code of a passenger, and wherein the relevant parameters for calculating the trip cost, at least
30 until the passenger gets out of the vehicle, measured

in real time and/or entered by the passenger, are stored by units which automatically detect when he/she gets in and/or out and/or by operating personnel.

4. A device as claimed in one or more of the
5 preceding claims, characterized in that it has means for displaying at least the passenger ID code and at least the relevant trip cost for each passenger in the vehicle.

5. A device as claimed in claim 4, characterized
10 in that said display means may be of the type that displays simultaneously the relevant parameters for at least a limited or partial number of travelers in each of several separate areas and/or of the type that is provided with means for scrolling or browsing the
15 screens one by one or a limited or partial set of screens of one or more passengers at a time.

6. A device as claimed in one or more of the preceding claims, characterized in that the means for assigning and entering the customer code may consist of
20 means for manually entering or signaling when the passenger gets into the vehicle, or of electronic customer identifying means, such as a card, a recognition signal transmitter, possibly a cellular phone, a magnetic or processor card, a GPS device or
25 the like and the corresponding readers and/or receivers of user ID signals.

7. A device as claimed in one or more of the preceding claims, characterized in that there may be provided means for identifying the customer when he/she
30 gets out of the vehicle and for indicating the trip

cost, which can be operated manually by the customer or others upon vocal indication of the customer ID code, or by a magnetic card, a radio signal transmitter, a microprocessor card, a cellular phone or a GPS terminal
5 or other recognition means.

8. A device as claimed in one or more of the preceding claims, characterized in that it has a memory area with a table or a program for calculating trip cost increasing or decreasing parameters according to
10 the number of users traveling along the same route, to the length of the shared route, and to the sharing time.

9. A device as claimed in one or more of the preceding claims, characterized in that it has at least
15 one display outside the vehicle for displaying the travel destination, in combination with means for entering the destination.

10. A device as claimed in one or more of the preceding claims, characterized in that it has an
20 interface for communication with an automatic motorway toll charging system.

11. A device as claimed in one or more of the preceding claims, characterized in that it has an interface for communication with a position detecting
25 system and with a route guide map.

12. A device as claimed in one or more of the preceding claims, characterized in that it has a central control and processing unit whereto at least one memory, at least one clock, at least one
30 tachometer, data entry means, means for deleting and

editing data, display means inside the vehicle and display means outside the vehicle, as well as printing means are connected.

13. A device as claimed in one or more of the
5 preceding claims, characterized in that the central unit has an interface for connection with means for reading/writing on magnetic or microprocessor cards.

14. A device as claimed in one or more of the
10 preceding claims, characterized in that the central unit has means for interface with a transmitting/receiving unit of the cellular or GPS network.

15. A device as claimed in one or more of the
15 preceding claims, characterized in that the central unit has means for interface with the electronic bank transaction network.

16. A device as claimed in one or more of the
preceding claims, characterized in that it comprises a program and memories for presetting one or more trip
20 cost discount or surcharge coefficients, such as discount coefficients for very high trip costs, above predetermined amounts, or different discounts and/or surcharges for different time periods or days such as working days, holidays, or particular days and for
25 calculating said discounts and said surcharges.

17. A device for calculating fares in vehicles, particularly taxis, collective taxis, buses, or the like, wholly or partly as described, illustrated and for the purposes stated herein.

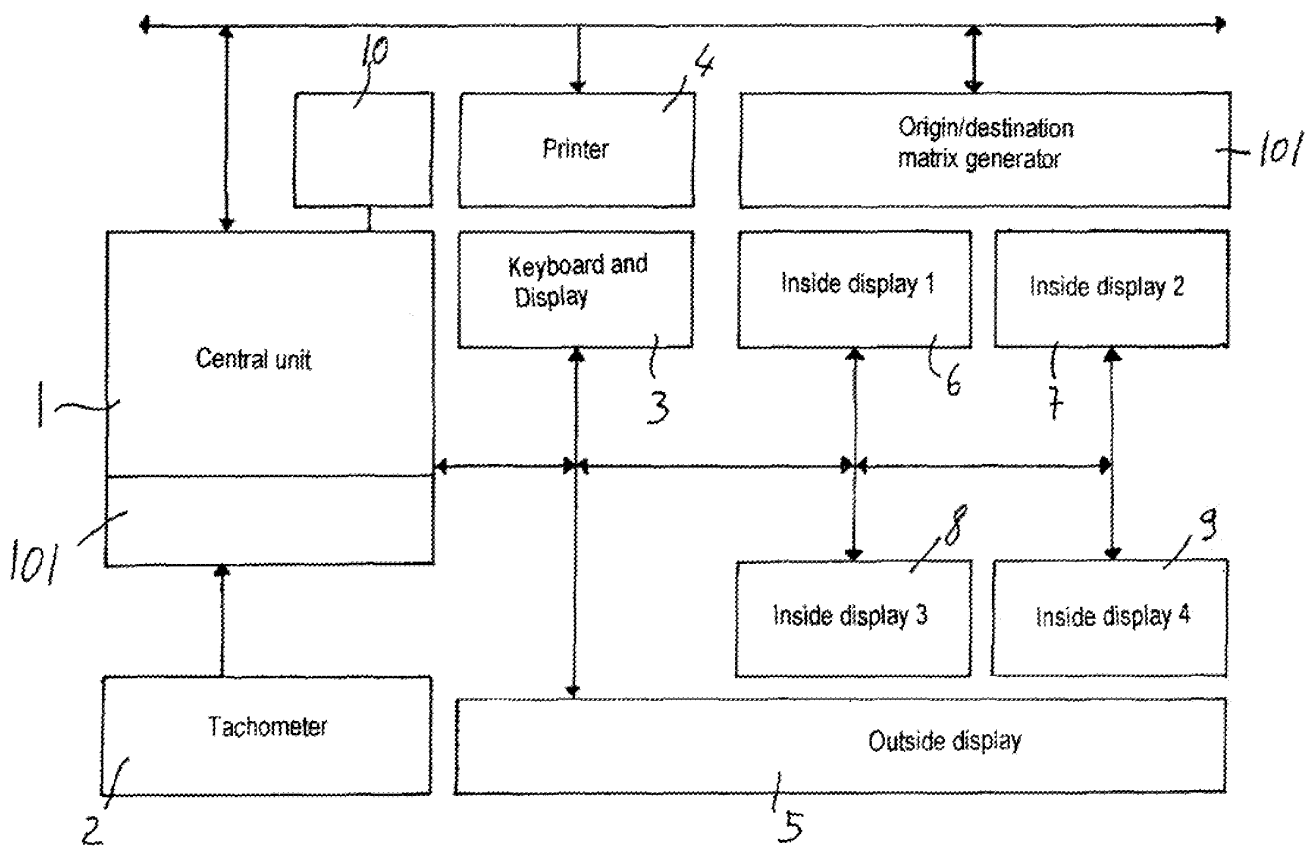


Fig. 1

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/EP 99/02135

A. CLASSIFICATION OF SUBJECT MATTER IPC 6 G07B13/00		
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) IPC 6 G07B		
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 practical, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	NL 9 202 084 A (COLLECT B.V.) 1 July 1994 (1994-07-01) abstract; claims; figures page 1, line 25 - page 7, line 18	1-8,17
Y		9,10
A		12-15
X	DE 196 39 042 A (REITER VITUS) 27 March 1997 (1997-03-27) abstract; claims; figures column 2, line 41 - column 4, line 36 column 7, line 26 - column 9, line 52 --- -/-	1,2,6,7, 13,14,17
☒ Further documents are listed in the continuation of box C. ☒ Patent family members are listed in annex.		
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "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 "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "Z" document member of the same patent family		
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Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3018		Authorized officer Meyl, D

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page 1 of 2

INTERNATIONAL SEARCH REPORT

Inter. Appl. No.
PCT/EP 99/02135

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	NL 1 004 698 C (ARNOLDUS LAMBERTUS MARIA JOZEF) 11 June 1998 (1998-06-11) abstract; claims; figures page 6, line 20 - page 15, line 38	1,2,4-6, 8,11, 13-15,17
A		3,7,9, 10,12
X	WO 82 02970 A (SCHMIDT ELECTRONIC LAB PTY LTD ;SCHMIDT GARY (AU)) 2 September 1982 (1982-09-02) abstract; claims; figures page 18, line 26 - page 21, line 17	1,3,8,17
X	GB 2 143 981 A (ELECTRONIC INNOVATIONS) 20 February 1985 (1985-02-20) page 1, line 29 - page 2, line 3; claims; figures	1,17
Y	DE 30 24 627 A (STERR KARL) 4 February 1982 (1982-02-04) page 2, line 3 - page 3, line 9; figures	9
A		1,3,12, 17
Y	DE 43 22 160 A (VOS VERKEHRS OPTIMIERUNGS SYST) 5 January 1995 (1995-01-05) abstract; claims; figures	10
A	WO 84 04414 A (HALDA SYSTEMS PTY LTD) 8 November 1984 (1984-11-08) page 4, line 31 - page 6, line 3; figures	1,17

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inter: International Application No

PCT/EP 99/02135

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
NL 9202084 A	01-07-1994	NONE	
DE 19639042 A	27-03-1997	NONE	
NL 1004698 C	02-07-1998	NL 1004698 A	11-06-1998
WO 8202970 A	02-09-1982	EP 0072833 A	02-03-1983
GB 2143981 A	20-02-1985	AU 2979384 A	03-01-1985
		DE 3423355 A	28-03-1985
		DK 308384 A	25-12-1984
		NL 8401984 A	16-01-1985
		SE 8403380 A	25-12-1984
DE 3024627 A	04-02-1982	NONE	
DE 4322160 A	05-01-1995	AT 150564 T	15-04-1997
		AU 687413 B	26-02-1998
		AU 7069994 A	17-01-1995
		BR 9406960 A	27-08-1996
		CA 2167517 A	05-01-1995
		DE 59402166 D	24-04-1997
		DK 706696 T	06-10-1997
		WO 9500928 A	05-01-1995
		EP 0706696 A	17-04-1996
		ES 2102233 T	16-07-1997
		JP 9500745 T	21-01-1997
WO 8404414 A	08-11-1984	EP 0142524 A	29-05-1985

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(72) Inventors:
 • **Kwok, Wing Fai**
 Yokohama-shi
 Kanagawa 221-0023 (JP)
 • **Sera, Manabu**
 Yokohama-shi
 Kanagawa 221-0023 (JP)

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(74) Representative: **Holmes, Matthew William**
 Nissan Technical Centre Europe Ltd,
 Intellectual Property Department,
 Cranfield Technology Park
 Bedfordshire, MK43 0DB (GB)

(71) Applicant: **NISSAN MOTOR CO., LTD.**
 Yokohama-City,
 Kanagawa 221-0023 (JP)

(54) **Navigation system and method**

(57) A navigation system comprising an apparatus and method for navigating a vehicle along a detour route when appropriate. A destination is set, and the current location, or site, is detected. Guiding is performed along an optimum route from the current location to the destination. When a traffic obstacle that requires a detour from the optimum route is detected, a detour to the destination

that detours the traffic obstacle is searched. The detour is a route having the shortest time and/or the shortest distance from the current location to the destination. Guiding is performed for the detour route at a site located a prescribed distance from a branching point where branching is to be made from the optimum route to one of at least two detour routes.

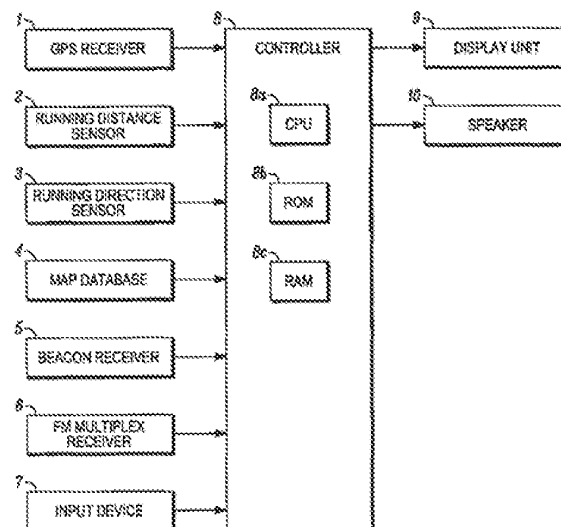


FIG. 1

Description

- [0001]** The present invention relates to a navigation system and method and particularly, but not exclusively, to a navigation system and method for navigating a vehicle along a route to a destination. Aspects of the invention also relate to an apparatus.
- [0002]** Known navigation devices perform routing functions. For example, Japanese Kokai Patent Application No. 2001-349735 teaches a navigation device wherein when a traffic restriction or traffic jam or the like arises on the route to a destination, the device guides a vehicle to a detour route at a predetermined distance or time from the site where the traffic restriction or traffic jam has arisen.
- [0003]** In the conventional navigation device, however, problems can arise because the driver may not be able to enter the optimal detour route because if the predetermined distance or time is short, guidance to a detour route can be provided after passing the branching point to the detour route.
- [0004]** It is an aim of the invention to address this problem. Other aims and advantages of the invention will become apparent from the following description, claims and drawings.
- [0005]** Aspects of the invention therefore provide a navigation system and a method of navigating a vehicle as set out in the appending claims.
- [0006]** According to another aspect of the invention there is provided an apparatus for navigating a vehicle, comprising an input device operable to set a destination, a location detector operable to detect a current location of the vehicle, at least one receiver operable to acquire traffic information, including an existence of a traffic obstacle on an optimum route from the current location to the destination and a controller operable to search for a detour having at least one of the shortest time to the destination and the shortest distance to the destination in order to detour around the traffic obstacle when the existence of the traffic obstacle is detected; and the controller operable to perform guidance related to the detour a prescribed distance before a branching point that branches from the optimum route to the detour.
- [0007]** In one embodiment the controller is operable to search for the optimum route from the current location to the destination.
- [0008]** In one embodiment the detour having the shortest time to the destination is an optimum detour route. The controller may be operable to search among a plurality of detours for detouring around the traffic obstacle for a last detour route to the destination branching from a branching site on the optimum route nearest the traffic obstacle. The controller may be operable to select one of the optimum detour route and the last detour route based on a branching site distance between the branching point for the optimum detour route on the optimum route and the branching point for the last detour route and a required time difference between a required running time from the current location via the optimum detour route to the destination and a required running time from the current location via the last detour route to the destination.
- [0009]** In one embodiment the controller is operable to create a linear relationship between the branching site distance and the required time difference whereby the slope is designated as k . The controller may be operable to select the optimum detour route when the time difference is greater than one of the branching point distance multiplied by k and a preset time difference threshold.
- [0010]** According to a further aspect of the invention there is provided an apparatus for navigating a vehicle, comprising destination setting means for setting a destination, current location detection means for detecting a current location of the vehicle, traffic information acquisition means for acquiring traffic information, route search means for searching for an optimum route from the current location to the destination, detour search means for searching for a detour having at least one of a shortest time and a shortest distance to the destination to detour around a traffic obstacle when the traffic obstacle is detected on the optimum route and detour guidance means for performing guidance at a prescribed distance before a branching point that branches from the optimum route to the detour.
- [0011]** In one embodiment the prescribed distance is based on a preparation time for branching to the detour and the vehicle speed.
- [0012]** In one embodiment the detour guidance means comprises re-searching means for searching the optimum route to the destination at the prescribed distance; and wherein the detour guidance means further comprises means for directing the vehicle along the detour at the branching point when the traffic obstacle still exists.
- [0013]** In one embodiment the detour with the shortest time to the destination is an optimum detour route. The detour search means may comprise means for searching for a last detour route that branches nearest the traffic obstacle from among a plurality of detour routes for detouring the traffic obstacle on the optimum route.
- [0014]** The apparatus may comprise means for selecting one of the optimum detour route and the last detour route based on a branching point distance between a first branching point for the optimum detour route on the optimum route and a second branching point for the last detour route and the time difference between a running time from the current location to the destination via the optimum detour route and a running time from the current location to the destination via the last detour route.
- [0015]** The apparatus may comprise a plane with the branching point distance and the time difference reflected in two

dimensions and a detour route selecting map wherein the last detour route has a largest branching point distance and the optimum detour route has a largest time difference. The route search means may be operable to select one of the optimum detour route and the last detour route according to the detour route selecting map.

[0016] In one embodiment the route search means is operable to select the optimum detour route when the time difference is longer than a preset threshold, even when the branching point distance is large.

[0017] According to yet another aspect of the invention there is provided a method for navigating a vehicle, comprising setting a destination, detecting a current location of the vehicle, acquiring traffic information, searching for an optimum route from the current location to the destination, searching for a detour having at least one of a shortest time and a shortest distance to the destination to detour around a traffic obstacle when the traffic obstacle is detected based on the acquired traffic information and performing guidance at a prescribed distance before a branching point that branches from the optimum route to the detour.

[0018] The method may include determining the prescribed distance based on a preparation time for branching to the detour and the vehicle speed at the branching point.

[0019] The method may comprise searching for a last detour route, wherein the last detour route branches from the optimum route at a point nearest the existence of the traffic obstacle and selecting one of the detour route and the last detour route for the vehicle to follow when performing guidance at the prescribed distance.

[0020] The method may comprise designating the detour having the shortest time as the optimum detour route searching for a last detour route, wherein the last detour route branches from the optimum route at a point nearest the existence of the traffic obstacle and selecting one of the optimum detour route and the last detour route for the vehicle to follow based on a branching point distance between the branching point for the optimum detour route and the branching point for the last detour route and a time difference between an expected running time from the current location to the destination via the optimum detour route and an expected running time from the current location to the destination via the last detour route.

[0021] The method may comprise selecting the optimum detour route for the vehicle to follow even when the branching point distance is large when the time difference is longer than a preset threshold.

[0022] The method may comprise creating a linear relationship between the branching point distance and the required time difference whereby the slope is designated as k and selecting the optimum detour route for the vehicle to follow when the time difference is greater than one of the branching point distance multiplied by k and a preset time difference threshold.

[0023] In one embodiment, performing guidance at the prescribed distance comprises detecting a continued existence of the traffic obstacle on the optimum route based on the acquired traffic information.

[0024] The method may comprise following the optimum route when detecting the continued existence of the traffic obstacle indicates that the traffic obstacle has cleared.

[0025] The method may comprise re-searching for a detour having at least one of a shortest time and a shortest distance to the destination to detour around the traffic obstacle when detecting the continued existence of the traffic obstacle indicates one of the traffic obstacle has not cleared and a new traffic obstacle has arisen.

[0026] According to a still further aspect of the invention there is provided a navigation system comprising an input device operable to set a destination, a location detector operable to detect a current location of the vehicle, at least one receiver operable to acquire traffic information, including an existence of a traffic obstacle on an optimum route from the current location to the destination, and a controller. The controller may be operable to search for a detour having the shortest time to the destination and/or the shortest distance to the destination in order to detour around the traffic obstacle when the existence of the traffic obstacle is detected. The controller may be operable to perform guidance related to the detour a prescribed distance before a branching point that branches from the optimum route to the detour.

[0027] According to another aspect of the invention there is provided a navigation system for navigating a vehicle comprising destination setting means for setting a destination, current location detection means for detecting a current location of the vehicle, traffic information acquisition means for acquiring traffic information, and route search means for searching for an optimum route from the current location to the destination. The apparatus may also include detour search means for searching for a detour having a shortest time and/or a shortest distance to the destination to detour around a traffic obstacle when the traffic obstacle is detected on the optimum route and detour guidance means for performing guidance at a prescribed distance before a branching point that branches from the optimum route to the detour.

[0028] According to yet another aspect of the invention there is provided a method for navigating a vehicle comprising setting a destination, detecting a current location of the vehicle, acquiring traffic information, and searching for an optimum route from the current location to the destination. The method may also include searching for a detour having a shortest time and/or a shortest distance to the destination to detour around a traffic obstacle when the traffic obstacle is detected based on the acquired traffic information and performing guidance at a prescribed distance before a branching point that branches from the optimum route to the detour.

[0029] Accordingly, the invention makes it possible to prompt the driver to make an appropriate judgment as to whether to advance to the detour route. Detour route guidance can be provided at the optimal location.

[0030] The various aspects, embodiments and alternatives set out in the preceding paragraphs, in the claims and in the following description may be implemented individually or in combination.

[0031] The present invention will now be described, by way of example only, with reference to the accompanying drawings in which:

FIG. 1 is a block diagram illustrating an apparatus embodying the invention;

FIG. 2 is a flow chart illustrating a first route guiding program embodying the invention;

FIG. 3 is a diagram illustrating the selection method of the detour route;

FIG. 4 is a graph of the difference in branching point, or site, distance plotted as a function of the required time difference according to the selection method of the detour route;

FIG. 5 is a diagram illustrating the computing method for the detour route guiding site; and

FIG. 6 is a flow chart showing a second route guiding program embodying the invention.

[0032] In the drawings, as far as possible, like reference numerals indicate like parts.

[0033] FIG. 1 is a block diagram illustrating an apparatus in one embodiment. A global positioning system (GPS) receiver 1 receives electromagnetic waves from a satellite and detects the vehicle using the satellite navigation method. A running distance sensor 2 detects the running distance of the vehicle, and a running direction sensor 3 detects the running direction of the vehicle. Together GPS receiver 1, running distance sensor 2 and running direction sensor 3 perform the function of detecting the current site of the vehicle. The current site of the vehicle is detected using the self-governing navigation method based on the running distance and running direction detected with the sensors 2, 3. A map database 4 works as a storage device for storing a road map.

[0034] A beacon receiver 5 receives beacon broadcasting signals emitted from optical beacon transmitters and electromagnetic wave beacon transmitters set by the road, and a FM multiplex receiver 6 receives FM multiplex broadcasting signals emitted from an FM broadcasting station. These beacon broadcasting signals and FM multiplex broadcasting signals contain all road traffic information, including traffic hazards that have arisen on roads due to a traffic restriction or traffic jam, projects, accidents, weather conditions, etc. Hence, the beacon receiver 5 and FM multiplex receiver 6 perform the function of acquiring traffic information.

[0035] In this embodiment, an input device 7 performs the function of setting a destination for the vehicle. More specifically, the input device 7 has switches, direction keys, and other manipulating members, and it changes the scale and scrolls a road map displayed on a display unit 9, sets the destination, etc. A controller 8 has CPU 8a, ROM 8b, RAM 8c, etc., and it displays on display unit 9 the road map around the current site and the route between the current site and the destination. At the same time, the controller 8 performs guiding announcements with a speaker 10 for searching of a route and guiding of the route. The controller 8 thus performs the functions of searching for a route and detecting traffic hazards as discussed in more detail hereinafter. Together, the controller 8, display unit 9 and speaker 10 perform the functions of guiding the vehicle along one or more routes.

[0036] FIG. 2 is a flow chart illustrating the route guiding program in an embodiment of the present invention. In the following, an explanation will be given regarding the operation of an embodiment with reference to this flow chart. Under controller 8, after the power is turned ON for the navigation device, the route guiding program is executed repeatedly.

[0037] In step S1, input device 7 is used to input the start site, destination and sites on the way. At the same time, the road traffic information is received with beacon receiver 5 and FM multiplex receiver 6. In step S2, using the well-known Dykstra method, a computation is performed for the shortest time in consideration of the newest road traffic information, and the optimum route to the destination (the shortest-time route) is searched. In step S3, the road map around the current site is displayed on display unit 9, the shortest-time route from the current site to the destination of the vehicle is displayed on the road map, and guiding for the route is started. One may also adopt a scheme in which by means of the Dykstra method, computation of the shortest distance is performed, and the shortest-distance route to the destination is searched.

[0038] In step S4, road traffic information is received with beacon receiver 5 and FM multiplex receiver 6. Then, in step S5, the received road traffic information is analyzed. Generation of traffic hazards, such as a traffic restriction or traffic jam, on the optimum route to the destination, that is, generation of a traffic hazard that requires a detour from the initial optimum route, is checked. Here, a traffic hazard refers to all traffic problems, such as a traffic jam, traffic restriction, road work, accidents, weather, etc., that can arise on roads. When no traffic hazard that requires a detour from the initial optimum route has arisen, the process returns to step S4. Then, while guiding of the route is continued along the optimum route to the destination, traffic information is received, and generation of a traffic hazard that requires a detour is checked.

[0039] On the other hand, when a traffic hazard that requires a detour from the optimum route has arisen, the process goes to step S6, and computation of the shortest time is performed using the Dijkstra method. Searching is performed for a detour route to the destination with the detour occurring at the site where the traffic hazard requiring a detour has arisen.

[0040] Here, the method for searching a detour route in an embodiment of the present invention will be explained. In this embodiment, two types of detour routes are searched, and one of them is selected. As shown in FIG. 3, two routes are selected from among plural candidate detour routes to destination D by detouring site I where a traffic hazard has arisen by branching from a branching site located between current site P and site I where the traffic hazard requiring a detour has arisen. First, the detour route with the shortest required time is designated optimum detour route R1, and the branching site where branching is performed from initial optimum detour route R0 to optimum detour route R1 is designated optimum branching site B1. Second, the last detour route prior to site I where a traffic hazard has arisen that does not require a U-turn after passing its branching site is designated last detour route R2, and the branching site for branching from initial optimum route R0 to last detour route R2 is designated last branching site B2.

[0041] It is possible to select the route that detours at optimum branching site B1 far away from site I where a traffic hazard has arisen on optimum detour route R1. In this case, if the traffic hazard on initial optimum route R0 is eliminated just after branching to detour route R1, the vehicle must wastefully follow detour route R1 longer than the required time as compared to initial optimum route R0.

[0042] On the other hand, when there is an expectation for elimination of the traffic hazard on initial optimum route R0 and a detour is made to last detour route R2 from last branching site B2 nearest site I where a traffic hazard has arisen, if the traffic hazard is not eliminated, the vehicle has to follow last detour route R2. As a result, although optimum detour route R1 with a shorter required time could have been selected, the vehicle still must follow last detour route R2 with a longer required time.

[0043] Here, as one embodiment, the following selection method is adopted to select one route from optimum detour route R1 and last detour route R2. First, the difference in the required time from current site P to destination D between optimum detour route R1 and last detour route R2, that is, the value obtained by subtracting required time T1 of optimum detour route R1 from required time T2 of last detour route R2, is designated ΔT . Also, the difference in distance between optimum branching site B1 from initial optimum route R0 to optimum detour route R1 and last branching site B2 from the initial optimum route R0 to last detour route R2, that is, the value obtained by subtracting distance L1 from current site P to optimum branching site B1 from distance L2 from current site P to last branching site B2, is designated ΔL .

[0044] When the following relationship (1) is met, optimum detour route R1 is selected. If not, last detour route R2 is selected.

$$\Delta T > \min \{k \cdot \Delta L, T_k\} \quad (1)$$

Relationship (1) is shown in FIG. 4. In relationship (1), k represents the slope of straight line a; T_k is a threshold of the required time; and $\min \{k \cdot \Delta L, T_k\}$ is a function that selects the smaller of the variable $k \cdot \Delta L$ and the threshold T_k .

[0045] As can be seen from relationship (1) and the relationship shown in FIG. 4, basically, the larger the branching site distance difference ΔL , the higher the possibility of elimination of the traffic hazard on optimum route R0 before the vehicle reaches last branching site B2, and last detour route R2 is selected. On the other hand, the larger the required time difference ΔT , the higher the possibility that the traffic hazard on optimum route R0 will not be eliminated even when last branching site B2 is reached. In consideration of the risk of using last detour route R2 with a longer required time, it is considered to be more beneficial that optimum detour route R1 with the required time shorter than that of last detour route R2 be selected initially, and optimum detour route R1 is selected. Also, when required time difference ΔT is so large that it is over threshold T_k , optimum detour route R1 is selected despite the length of branching point distance difference ΔL .

[0046] One may adjust slope a and threshold T_k in relationship (1) and FIG. 4 according to the rate of change of the traffic hazard as the cause of the detour, the preference of the user and the tolerance of the user for the risk.

[0047] Returning to FIG. 2, in step S7 after selection of the detour route, the detour route guiding site is computed. In this embodiment, as shown in FIG. 5, detour guiding is performed at site A at distance La from branching site B (optimum branching site B1 or last branching site B2) of the selected detour route (optimum detour route R1 or last detour route R2).

[0048] Distance La from branching site B to guiding site A is computed from detour preparation time Ta and current vehicle speed V using formula (2).

$$L_a = T_a \cdot V \quad (2)$$

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[0049] The optimum value is set for detour preparation time T_a , which includes the time for understanding the detour route guide, the time for judgment on whether the vehicle is to enter the detour route, the time of operation manipulation needed for changing lanes, etc. One may also change detour preparation time T_a corresponding to the traffic jam or other traffic state, the road type and other factors of the operating environment. On the other hand, in vehicle speed V the current vehicle speed, the newest average vehicle speed in a prescribed distance interval, the speed limit up to branching site B, etc., are set.

[0050] In step S8, judgment is made on whether detour guiding site A has been reached. If detour guiding site A has been reached, the process goes to step S9. In step S9, the optimum route is searched again. That is, based on the newest road traffic information received by beacon receiver 5 and/or FM multiplex receiver 5, the route with the shortest time from the current site to the destination is searched.

[0051] In step S10, as a result of re-search of the route, it is judged whether the traffic hazard on optimum route R0 has been eliminated, and initial optimum route R0 is searched again. When initial optimum route R0 is re-searched, detour guiding is stopped, and route guiding along initial optimum route R0 is continued. Then, the process returns to step S4, and the aforementioned process is repeated.

[0052] If, as a result of re-search of the route in step S9, the traffic hazard on initial optimum route R0 has not been eliminated, and a detour route is to be searched, the process goes to step S11. In step S11, judgment is made on whether a new detour route entirely different from optimum detour route R1 or last detour route R2 is searched. If a new detour route is to be searched, the process returns to step S7, and the aforementioned process is repeated. On the other hand, when previously searched optimum detour route R1 or last detour route R2 is re-searched, the process goes to step S12, and detour route guiding to optimum detour route R1 or last detour route R2 is announced.

[0053] In this way, as one embodiment, when the destination is set, the current site is detected. The optimum route from the current site to the destination is searched, and guiding is performed along the optimum route to the destination. Traffic information is acquired, and a traffic hazard that requires a detour from the optimum route undergoes detection. If a traffic hazard that requires a detour from the optimum route is detected, the traffic hazard is detoured, and a detour route to the destination is searched. Guiding is performed concerning the detour route at a site located a prescribed distance from the branching site where branching is to be made from the optimum route. Consequently, the persons in the vehicle can appropriately judge whether the vehicle should enter the detour route. That is, it is possible to perform guiding of the detour route at the optimum site. Consequently, it is possible to avoid the following problems of the prior art: wasteful detouring on the detour route while the traffic hazard has been eliminated, and the initial optimum route is available, or passing of the branching site to the detour route so that the vehicle has to execute a U-turn to go to the detour route.

[0054] In another embodiment, based on the detour preparation time for branching to the detour route and the vehicle speed, the distance from the branching site for the detour route to the route guiding site is determined. Consequently, it is possible to set the optimum detour route guiding site, so that the persons in the vehicle can appropriately judge whether the vehicle should enter the detour route.

[0055] In another embodiment, the optimum route to the destination is re-searched at a site located a prescribed distance from the branching site where branching is to be made from said optimum route. Only when the detour route for detouring to the optimum route is searched is guiding performed for the detour route. Consequently, it is possible to check whether the traffic hazard on the optimum route has been eliminated just before reaching the branching site to the detour route so that it is possible to follow the optimum route, and it is possible to avoid wasteful following of the detour route.

[0056] In another embodiment, based on the distance (branching site distance) between the branching site to the optimum detour route on the optimum route and the branching site to the last detour route and the difference between the required running time from the current site via the optimum detour route to the destination and the required running time from the current site via the last detour route to the destination (required time difference), either the optimum detour route or the last detour route is selected. Consequently, it is possible to avoid the problem of passing the branching site to the last detour route such that the vehicle must execute a U-turn on the optimum route, while it is possible to increase the probability of running on the initial optimum route after the traffic hazard has been eliminated.

[0057] In another embodiment, on a plane with the branching site distance and the required time difference taken as the two dimensions, a detour route selecting map is set so that for a large branching site distance, the last detour route is selected, and, for a large required time difference, the optimum detour route is selected. According to the detour route selection map, the optimum detour route or the last detour route is selected. Consequently, it is possible to avoid the

problem of passing the branching site to the last detour route such that the vehicle must execute a U-turn on the optimum route, while it is possible to increase the probability of running on the initial optimum route after the traffic hazard has been eliminated.

[0058] In another embodiment, when the required time difference exceeds a preset threshold, even when the branching site distance is large, the optimum detour route is still selected. Consequently, it is possible to avoid the problem of passing the branching site to the last detour route so that the vehicle must execute a U-turn on the optimum route, while it is possible to increase the probability of running on the initial optimum route after the traffic hazard has been eliminated.

[0059] According to the example herein, the distance from the branching point for the detour route to the location for providing the detour route guidance is determined based on the speed of the vehicle and the preparation time for branching to the detour route. Thus, the optimal location for providing the detour route guidance can be established, and the driver can be prompted to appropriately judge whether to advance to the detour route.

[0060] Also, according to the example herein, the optimal route to the destination is retrieved at a location that is a predetermined distance from the point for branching to the detour route from the optimal route, and provides a guide regarding the detour route only when a detour from the optimal route has been retrieved. Thus, the probability of being able to enter the optimal detour route can be enhanced.

[0061] Further according to the example herein, either the optimal detour route or the last detour route is selected based on the distance between the branching point to the optimal detour route from the optimal route and the branching point to the last detour route (branching point distance), and the difference between the travel time necessary to reach the destination from the present location via the optimal detour route and the travel time necessary to reach the destination via the last detour route from the present location (required time difference). Thus, the probability of being able to enter the optimal detour route can be enhanced.

[0062] In another benefit to the example herein, a detour route selection map that selects the last detour route when the branching point distance is great, and that selects the optimal detour route when the required time is great, is provided on a two dimensional plane comprised of the branching point distance and the necessary time difference, and either the optimal detour route or the last detour route is selected according to this detour route selection map. Thus, the probability of being able to enter the optimal detour route can be enhanced.

[0063] Also according to the example herein, the optimal detour route is selected even if the branching point distance is great when the required time difference exceeds the preset threshold value. Thus, the probability of being able to enter the optimal detour route can be enhanced.

[0064] In the previous example, the optimal route was retrieved again after reaching detour route guiding site, or location, A, and either the optimal route or a detour route was re-selected based on the retrieval result. However, it is possible to announce the detour route guidance without again retrieving the optimal route if detour guiding site A is reached. FIG. 6 shows a flow chart of the route guidance program in this modified example. The steps that perform the same processes as in the flow chart shown in FIG. 2 are given the same step numbers, and explanations of FIG. 6 will focus on areas of difference with FIG. 2.

[0065] In step S1, the starting location, destination and the route are input from input device 7, and road traffic information is transmitted from beacon receiver 5 and/or FM multiplex receiver 6. In step S2, the optimal route to the destination is retrieved by carrying out a calculation for the shortest cost in time, taking into consideration the road traffic information, according to the Dykstra method, or the optimal route to the destination is retrieved by carrying out a calculation for the shortest distance, as described above. In step S3, a road map of the present location and the optimal route from the current location of the vehicle to the destination are displayed on display 9, and road guidance begins.

[0066] In step S4, road traffic information is received by beacon receiver 5 and/or FM multiplex receiver 6. In the subsequent step S5, the road traffic information is analyzed, and a check is performed for development of traffic problems, such as restricted roads and traffic jams, along the optimal route to the destination, i.e., traffic problems that require a detour from the initial optimal route. If a traffic jam that needs to be detoured around has not developed on the optimal route, process flow returns to step S4 in which traffic information is received so that checks can again be performed for development of traffic problems and so that road guidance along the optimal route to the destination can continue. On the other hand, if a traffic problem develops on the optimum route that needs to be detoured around, process flow proceeds to step S6. In step S6, a calculation for the shortest time or the shortest distance is performed according to the Dykstra method, and a detour route to the destination is retrieved that goes around the location with the traffic problem.

[0067] The method for retrieving the detour route is the same as the retrieval method in the previous example. As shown in FIG. 3, the optimum detour route R1 requiring the shortest time or shortest distance for branching at the optimum branching point B1 and last detour route R2 for branching from the last branching point B2 are extracted from the plurality of detour route candidates for reaching destination D while avoiding traffic problem location I. Then, as described above, one of the detour routes is selected according to equation (1) based on the difference ΔT between the time required T1 for optimum detour route R1 and the time required T2 for the last detour route R2 and the distance ΔL from optimum branching point B1 to last branching point B2.

[0068] Returning now to FIG. 6, the detour route guidance location, detour guiding site A, is calculated in step S7 after

selecting the detour route. As was explained with reference to FIG. 5, distance La from branching point B back to guiding site A is obtained according to equation (2) based on detour preparation time Ta and vehicle speed V. Detour route guidance is provided at site A that is distance La from branching point B (optimum branching point B1 or last branching point B2) for the selected detour route (optimum detour route R1 or last detour route R2). In step S8, whether the detour guiding site A has been reached is checked, and if detour guiding site A has been reached, process flow proceeds to step S12, and the detour route guidance to the optimum detour route R1 or the last detour route R2 is revealed.

[0069] As described above, according to the modification of the application example, when providing guidance to the destination along the optimum route by setting the destination, detecting the present location, and retrieving the optimum route from the present location to the destination, a traffic problem on the optimum route that needs to be avoided is detected by obtaining the traffic information. The detour route requiring the shortest travel time to reach the destination by detouring around the traffic problem is retrieved when a problem requiring a detour is detected, and guidance related to the detour route is provided at a location that is an optimal distance from the point for branching from the optimum route to the detour route. This makes it possible to prompt the driver to judge whether to advance to the detour route. Specifically, detour route guidance can be provided at the optimum location, making it is possible to avoid missing the optimum detour route as was the case in the prior art.

[0070] Also according to this modified example, when providing guidance to the destination along the optimum route by setting the destination, detecting the present location, and retrieving the optimum route to the destination from the present location, a traffic problem on the optimum route that needs to be detoured around is detected by obtaining the traffic information. The detour route that requires the shortest distance to reach the destination by detouring around the traffic problem is retrieved when a traffic problem that needs to be avoided is detected on the optimum route, and guidance related to the detour route is provided at a location that is an optimal distance from the point for branching from the optimum route to the detour route. This makes it possible to prompt the driver to judge whether to advance to the detour route. As described, detour route guidance can be provided at the optimum location, making it is possible to avoid missing the optimal detour route as was the case in the prior art.

[0071] In the aforementioned embodiment, the search for the optimum route to the destination, the optimum detour route and the last detour route are executed in the vehicle. However, one may also adopt a scheme whereby the signals concerning the current site of the vehicle and the destination are sent to an information center, and routes are searched in the information center. At the same time, the optimum detour route or the last detour route is selected at the information center, and the signal of the route of the search result is sent to the vehicle.

[0072] The above-described embodiments have been described in order to allow easy understanding of the present invention, and do not limit the present invention. On the contrary, the invention is intended to cover various modifications and equivalent arrangements included within the scope of the appended claims, which scope is to be accorded the broadest interpretation so as to encompass all such modifications and equivalent structures as is permitted under the law.

[0073] This application claims priority from Japanese Patent Application Nos. 2005-097317, filed 30 March 2005 and 2005-327042, filed 11 November 2005, the contents of which are hereby incorporated by reference.

Claims

1. A navigation system comprising:

input means (7) operable to set a destination (D);

location detector means (1, 2, 3) operable to detect a current location (P) of the vehicle;

traffic information acquisition means (5, 6) operable to acquire traffic information, including an existence of a traffic obstacle (I) on an optimum route (R0) from the current location (P) to the destination (D); and

control means (8) for searching for a detour (R1, R2) having at least one of the shortest time to the destination (D) and the shortest distance to the destination (D) in order to detour around the traffic obstacle (I) when the existence of the traffic obstacle (I) is detected;

wherein the control means (8) is arranged to perform guidance related to the detour (R1) a prescribed distance (A, La) before a branching point (B1, B2) that branches from the optimum route (R0) to the detour (R1, R2).

2. A navigation system as claimed in claim 1 wherein the control means (8) is arranged to search for the optimum route (R0) from the current location (P) to the destination (D).

3. A navigation system as claimed in claim 1 or claim 2, wherein:

the detour having the shortest time is the optimum detour route (R1);

the control means (8) is arranged to search for a last detour route (R2).

wherein the last detour route branches from the optimum route (R0) at a point (B2) nearest the existence of the traffic obstacle (I); and

the control means (8) is arranged to select one of the optimum detour route (R1) and the last detour route (R2) based on a branching point distance (ΔL) between the branching point (B1) for the optimum detour route (R1) and the branching point (B2) for the last detour route (R2) and a time difference (ΔT) between an expected running time (T1) from the current location (P) to the destination (D) via the optimum detour route (R1) and an expected running time (T2) from the current location (P) to the destination (D) via the last detour route (R2).

4. A navigation system as claimed in claim 3 wherein the control means is arranged to create a substantially linear relationship (a) between the branching point distance (ΔL) and the time difference (ΔT) whereby the slope (k) is designated as k; and wherein the controller (8) selects the optimum detour route (R1) when the time difference (ΔT) is greater than one of the branching point distance (ΔL) multiplied by k and a preset time difference threshold (Tk).
5. A navigation system as claimed in any of claims 1-4, wherein the control means (8) is arranged to direct the vehicle along the detour (R1, R2) only when the optimum route (R0) to the destination is searched at a site (A) located the prescribed distance (La) from the branching site (B1, B2) where branching is to be made from the optimum route (R0), and when the detour (R1, R2) for detouring the optimum route (R0) is searched.
6. A method for navigating a vehicle comprising:
 - setting a destination (D);
 - detecting a current location (P) of the vehicle;
 - acquiring traffic information, including an existence of a traffic obstacle (I) on an optimum route (R0) from the current location (P) to the destination (D);
 - searching for a detour (R1, R2) having at least one of the shortest time to the destination (D) and the shortest distance to the destination (D) in order to detour around the traffic obstacle (I) when the existence of the traffic obstacle (I) is detected; and
 - performing guidance related to the detour (R1) a prescribed distance (A, La) before a branching point (B1, B2) that branches from the optimum route (R0) to the detour (R1, R2).
7. A method as claimed in claim 6 wherein the guidance at the prescribed distance (A, La) includes determining whether or not the traffic obstacle (I) has cleared from the optimum route (R0) based on the acquired traffic information.
8. A method as claimed in claim 7, comprising guiding the vehicle to follow the optimum route (R0) when the traffic obstacle (I) has cleared from the optimum route (R0) based on the acquired traffic information.
9. A method as claimed in claim 7 or claim 8, comprising repeating a search for a detour (R1, R2) having at least one of a shortest time and a shortest distance to the destination (D) to detour around the traffic obstacle (I) when the traffic obstacle (I) has not cleared or when a new traffic obstacle has arisen.
10. A system as claimed in any of claims 1 to 5 or a method as claimed in any of claims 6 to 9 wherein the prescribed distance (A, La) is based on a preparation time (Ta) for branching to the detour and a vehicle speed (V).
11. A vehicle having a system or using a method as claimed in any preceding claim.

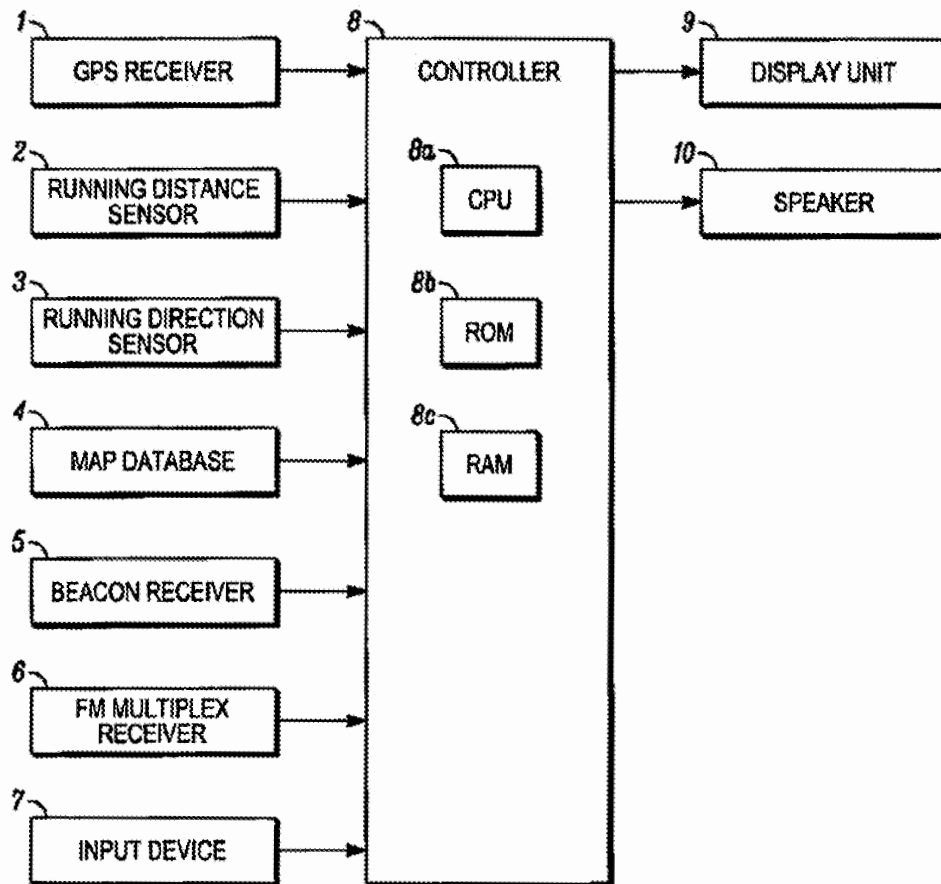


FIG. 1

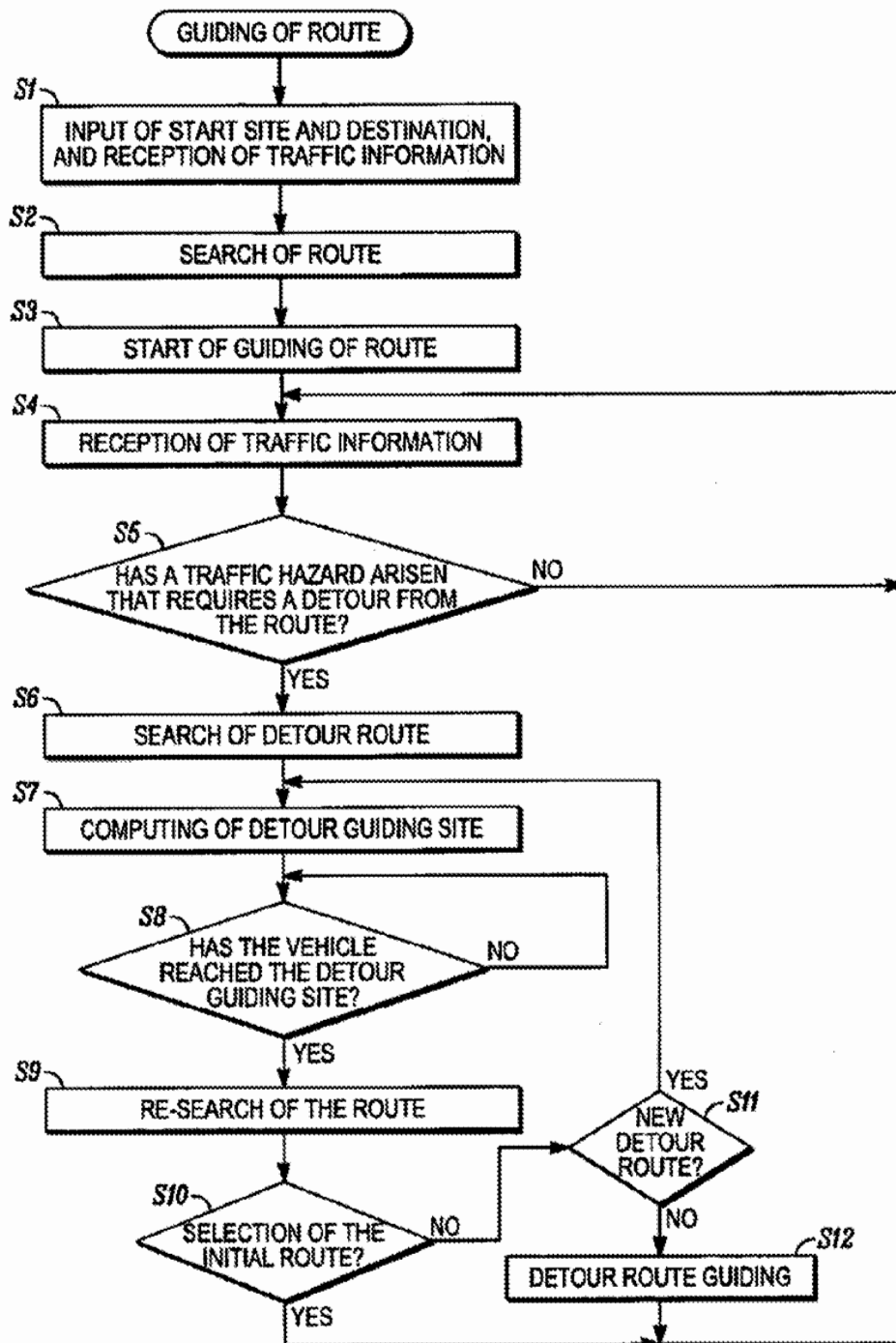


FIG. 2

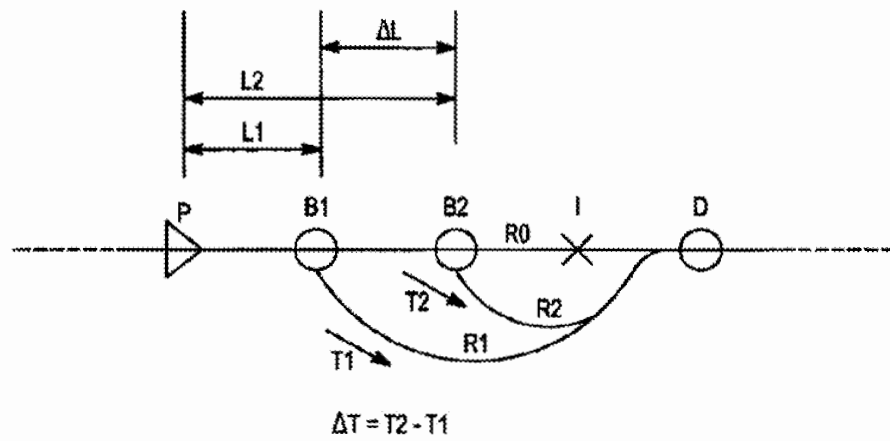


FIG. 3

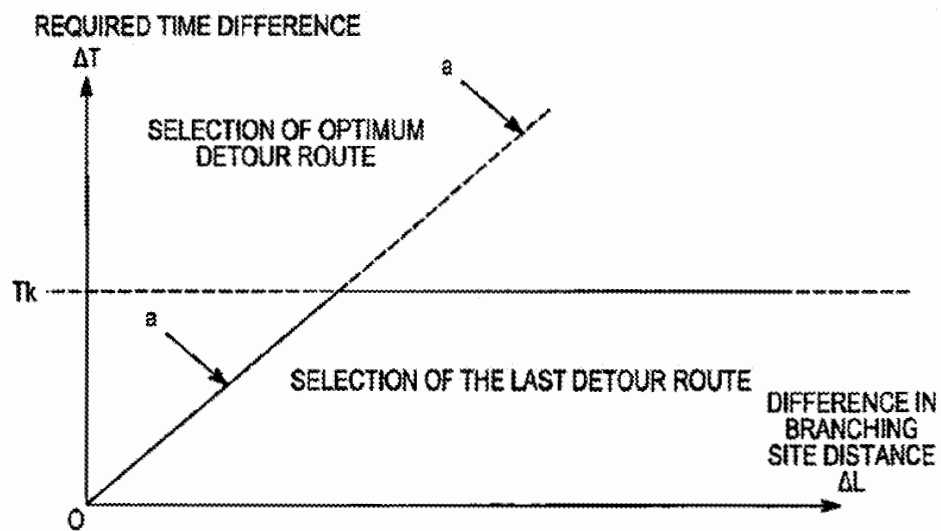


FIG. 4

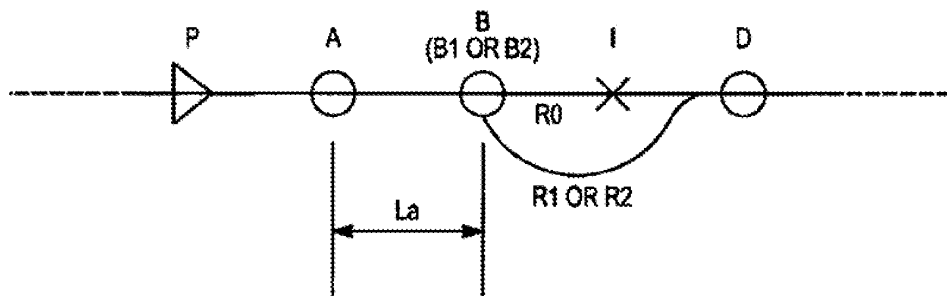


FIG. 5

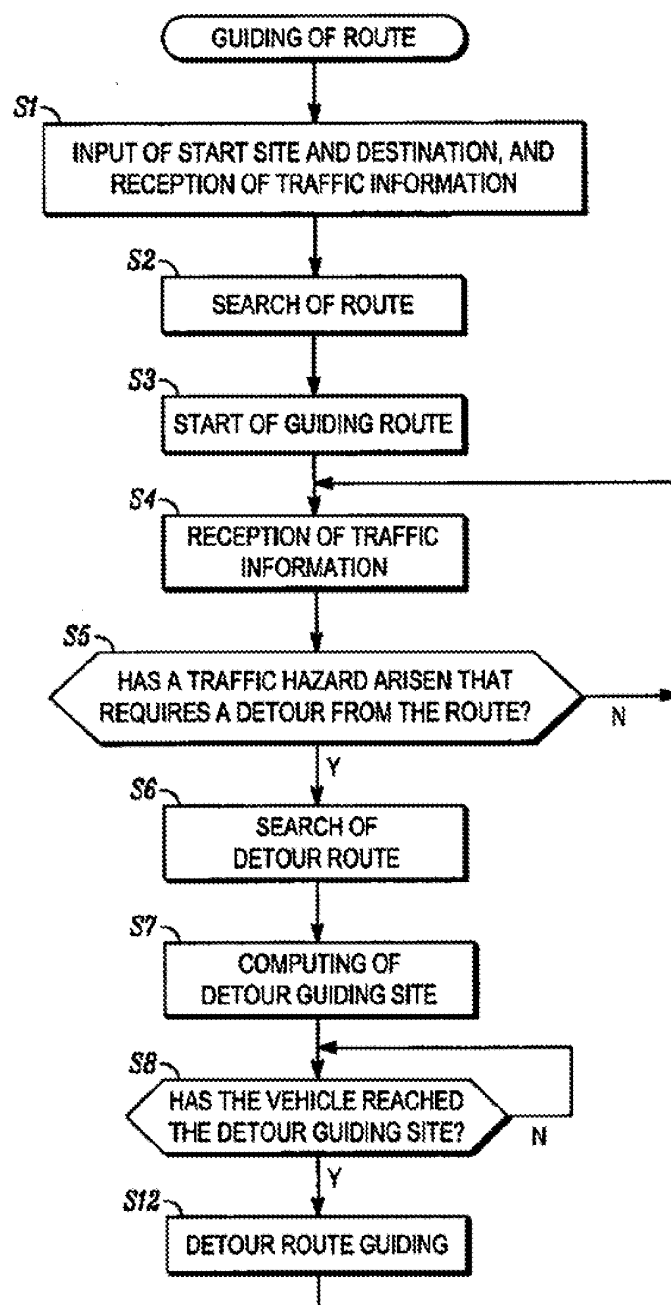


FIG. 6

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2001349735 A [0002]
- JP 2005097317 A [0073]
- JP 2005327042 A [0073]



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METHOD AND SYSTEM FOR SUPPORTING AUTOMOBILE RIDE SHARING

Inventor(s): NAKAGAWA JUNICHI ± (NAKAGAWA JUNICHI)

Applicant(s): NIPPON TELEGRAPH & TELEPHONE ± (NIPPON TELEGR & TELEPH CORP <NTT>)

Classification: - international: G06Q30/06; G06Q50/00; G06Q50/30; G08G1/13;
(IPC1-7): G06F17/60; G08G1/13
- cooperative:

Application number: JP20000336244 20001102

Priority number(s): JP20000336244 20001102

Abstract of JP2002140399 (A)

PROBLEM TO BE SOLVED: To provide a method and a system for supporting an automobile ride sharing which are very convenient to both a driver and a passenger riding together and to provide a method and a system for supporting an automobile ride sharing which accelerate ride sharing on an automobile by giving advantages of the ride sharing to the driver. **SOLUTION:** Drive schedule information inputted from a driver-side terminal 100 is matched against ride sharing desiring information inputted from a passenger-side terminal 200 and the place and time of meeting are sent to the respective terminals. Once the completion of ride sharing is received from each terminal, the driver is paid the points that the ride-shared passenger has.

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(71)出願人 000004226

日本電信電話株式会社
東京都千代田区大手町二丁目3番1号

(72)発明者 中川 純一

東京都千代田区大手町二丁目3番1号 日本
電信電話株式会社内

(74)代理人 100069081

弁理士 吉田 精孝

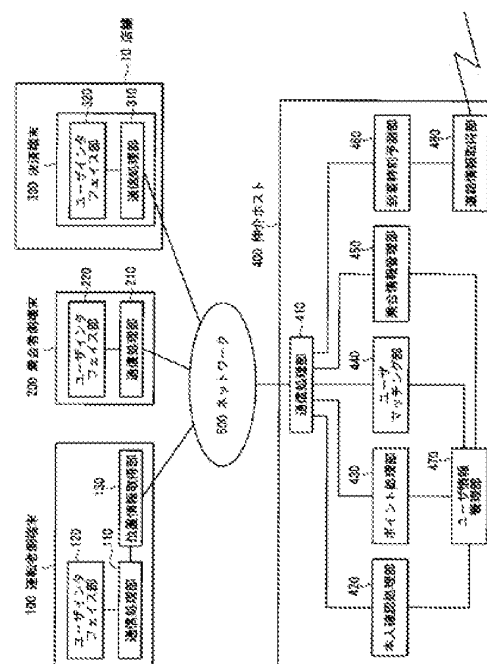
F ターム (参考) 5H180 AA01 BB15 FF01 FF13

(54)【発明の名称】 自動車乗合支援方法及びシステム

(57)【要約】

【課題】 運転者及び乗合者にとって利便性が高い自動車乗合支援方法及びシステムを提供する。また、運転者に対しても乗合のメリットを生じさせ自動車の乗合を促進できる自動車乗合支援方法及びシステムを提供する。

【解決手段】 運転者側端末100から入力された運転予定情報と、乗合者側端末200から入力された乗合希望情報をマッチング処理し、各端末に待ち合わせ場所及び時刻を送信する。各端末から乗合が終了したことを受信したら、乗合者が所有するポイントを運転者に支払う。



【特許請求の範囲】

【請求項1】 自動車の運転者の運転者側端末及び乗合者の乗合者側端末とネットワークを介して接続した仲介ホストにより自動車の乗合を支援する自動車乗合支援方法において、

自動車側端末から少なくとも出発地・目的地・出発時間を含む運転予定情報を受信する段階と、

乗合者側端末から少なくとも現在位置・目的地・目的地到着希望時間を含む乗合希望情報を受信する段階と、

複数の運転予定情報と複数の乗合希望情報とを比較して 10 運転者と乗合者の希望が合致する組み合わせを見つけ出す段階と、

合致した組み合わせに係る運転者側端末と乗合者側端末に待ち合わせ時刻・待ち合わせ場所を含む待ち合わせ情報を送信する段階と、

運転者側端末及び乗合者側端末の両方から乗合が終了したことを受信したときにその結果を記録する段階とを備えたことを特徴とする自動車乗合支援方法。

【請求項2】 運転者側端末から運転者の現在位置を受信する段階と、

道路の混雑情報を取得する段階と、

運転者の現在位置と混雑情報と運転予定情報に基づき運転者が待ち合わせ場所に到着する時刻を予測し、この予測した待ち合わせ時刻を乗合者側端末に送信する段階とを備えたことを特徴とする請求項1記載の自動車乗合支援方法。

【請求項3】 運転者側端末から乗合者の本人確認要求を受信する段階と、

本人確認要求を送信した運転者と乗り合う予定の乗合者の乗合者側端末に対して本人確認用の認証情報の入力を 30 促す段階と、

乗合者側端末から乗合者の認証情報を受信する段階と、

乗合者の認証情報を確認する段階と、

認証結果を運転者側端末に送信する段階とを備えたことを特徴とする請求項1又は2何れか1項記載の自動車乗合支援方法。

【請求項4】 乗合者側端末から運転者の本人確認要求を受信する段階と、

本人確認要求を送信した乗合者と乗り合う予定の運転者の運転者側端末に対して本人確認用の認証情報の入力を 40 促す段階と、

運転者側端末から運転者の認証情報を受信する段階と、

運転者の認証情報を確認する段階と、

認証結果を乗合者側端末に送信する段階とを備えたことを特徴とする請求項1乃至3何れか1項記載の自動車乗合支援方法。

【請求項5】 前記運転予定情報には運転者が取得を希望するポイント数を含めるとともに、前記乗合希望情報には乗合者が支払を許容する最大のポイント数を含め、前記運転予定情報と乗合希望情報とを比較する段階にお 50

いて、運転予定情報に含まれる希望ポイント数と乗合希望情報に含まれる最大ポイント数とを比較条件に含め、運転者側端末及び乗合者側端末の両方から乗合が終了したことを受信したときに、運転予定情報に含まれる希望ポイント数以上のポイントを乗合者から運転者へ移動させる段階を備えたことを特徴とする請求項1乃至4何れか1項記載の自動車乗合支援方法。

【請求項6】 ネットワークを介して仲介ホストと接続する決済端末から運転者又は乗合者の識別情報及びポイント数を受信する段階と、

決済端末から受信した識別情報に係る運転者又は乗合者の所有するポイント数が決済端末から受信したポイント数以上の場合にその運転者又は乗合者の端末に対してポイントを減算することの可否の入力を促す段階と、

運転者又は乗合者の端末からポイント減算の承認を受信した場合に決済端末から受信した識別情報に係る運転者又は乗合者の所有するポイントから決済端末から受信したポイント数を減算する段階とを備えたことを特徴とする請求項5記載の自動車乗合支援方法。

20 【請求項7】 前記ポイントの付与時にはそのポイントの対価を運転者又は乗合者に対して課金するとともに、前記ポイントの減算時には決済端末における決済額を仲介ホスト側から支払うことを特徴とする請求項6記載の自動車乗合支援方法。

【請求項8】 運転者側端末及び乗合者側端末とネットワークを介して接続した仲介ホストにより自動車の乗合を支援する自動車乗合支援システムにおいて、前記仲介ホストは、

自動車側端末から少なくとも出発地・目的地・出発時間を含む運転予定情報を受信する手段と、

乗合者側端末から少なくとも現在位置・目的地・目的地到着希望時間を含む乗合希望情報を受信する手段と、

複数の運転予定情報と複数の乗合希望情報とを比較して運転者と乗合者の希望が合致する組み合わせを見つけ出す手段と、

合致した組み合わせに係る運転者側端末と乗合者側端末に待ち合わせ時刻・待ち合わせ場所を含む待ち合わせ情報を送信する手段と、

運転者側端末及び乗合者側端末の両方から乗合が終了したことを受信したときにその結果を記録する手段とを備えたことを特徴とする自動車乗合支援システム。

【請求項9】 前記仲介ホストは、運転者側端末から運転者の現在位置を受信する手段と、道路の混雑情報を取得する手段と、

運転者の現在位置と混雑情報と運転予定情報に基づき運転者が待ち合わせ場所に到着する時刻を予測し、この予測した待ち合わせ時刻を乗合者側端末に送信する手段とを備えたことを特徴とする請求項8記載の自動車乗合支援システム。

【請求項10】 前記運転予定情報には運転者が取得を

希望するポイント数が含まれるとともに、前記乗合希望情報には乗合者が支払を許容する最大のポイント数が含まれ、

前記仲介ホストは、

運転者及び乗合者が所有するポイント数を保持する手段と、

運転者側端末及び乗合者側端末の両方から乗合が終了したことを受信したときに、運転予定情報に含まれる希望ポイント数以上のポイントを乗合者から運転者へ移動させる手段とを備えるとともに、

前記運転予定情報と乗合希望情報とを比較する手段は、運転予定情報に含まれる希望ポイント数と乗合希望情報に含まれる最大ポイント数とを比較条件に含めて比較を行うことを特徴とする請求項8又は9何れか1項記載の自動車乗合支援システム。

【請求項11】 ネットワークを介して仲介ホストと接続する決済端末を備えるとともに、

前記仲介ホストは、

決済端末から運転者又は乗合者の識別情報及びポイント数を受信する手段と、

決済端末から受信した識別情報に係る運転者又は乗合者の所有するポイント数が決済端末から受信したポイント数以上の場合にその運転者又は乗合者の端末に対してポイントを減算することの可否の入力を促す手段と、

運転者又は乗合者の端末からポイント減算の承認を受信した場合に決済端末から受信した識別情報に係る運転者又は乗合者の所有するポイントから決済端末から受信したポイント数を減算する手段とを備えたことを特徴とする請求項10記載の自動車乗合支援システム。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、自動車で移動する予定のある運転者と、他人の車に乗り合って目的地まで移動することを希望する乗合者との間で、自動車の乗合を支援するネットワークサービスに関する。

【0002】

【従来の技術】目的地を同一にする人同士が1台の自動車に乗り合って移動することは、自動車の台数を減らし、公害や交通渋滞を減少させる手段として行われているものである。従来、この乗合を行うためには、近所に知り合い同士が同じ方向に向かうのであれば乗せ合うか、若しくは、運転者や乗合希望者は指定された待ち合わせ場所に移動して行き先の合う人を探す必要があった。

【0003】

【発明が解決しようとする課題】しかし、このような乗合方法には以下のような課題がある。

【0004】(1) 近所に乗り合う人がいない場合、待ち合わせ場所まで移動する必要がある、余計な時間がかかってしまう。

【0005】(2) 待ち合わせ場所に行っても、乗り合う相手がすぐに見つかる保証はなく、目的地に到着する時間が不確定になってしまう。

【0006】(3) 見ず知らずの人と乗り合う場合、相手が信用できるかどうか定かではなく、最悪の場合強盗や殺人などの犯罪に巻き込まれる恐れがある。

【0007】(4) 乗合をした場合に、運転者にとってわざわざ他人を乗せるメリットが少ないため、運転者が余り乗合をやりたがらなくなってしまう。

10 【0008】本発明は、上記事情に鑑みてなされたものであり、その第1の目的とするところは、運転者及び乗合者にとって利便性が高い自動車乗合支援方法及びシステムを提供することにある。また、本発明の第2の目的は、運転者に対しても乗合のメリットを生じさせ自動車の乗合を促進できる自動車乗合支援方法及びシステムを提供することにある。

【0009】

【課題を解決するための手段】上記目的を達成するために、本発明では、運転者側端末及び乗合者側端末とネットワークを介して接続した仲介ホストにより自動車の乗合を支援する自動車乗合支援システムにおいて、前記仲介ホストは、自動車側端末から少なくとも出発地・目的地・出発時間を含む運転予定情報を受信し、乗合者側端末から少なくとも現在位置・目的地・目的地到着希望時間を含む乗合希望情報を受信し、複数の運転予定情報と複数の乗合希望情報とを比較して運転者と乗合者の希望が合致する組み合わせを見つけだし、合致した組み合わせに係る運転者側端末と乗合者側端末に待ち合わせ時刻・待ち合わせ場所を含む待ち合わせ情報を送信し、運転者側端末及び乗合者側端末の両方から乗合が終了したことを受信したときにその結果を記録することとを特徴とするものを提案する。

【0010】本発明によれば、運転者が運転者側端末に運転予定情報を入力して仲介ホストに送信し、一方、乗合者が乗合者側端末に乗合希望情報を入力して仲介ホストに送信すると、仲介ホストにおいて複数の運転予定情報及び乗合希望情報から双方の希望に合致するものが選出され、その待ち合わせ時刻及び場所を含む待ち合わせ情報が運転者側端末及び乗合者側端末に送信される。したがって、運転者及び乗合者は受信した待ち合わせ時刻に待ち合わせ場所に行くだけで自動車の乗合をスムーズに行うことができる。

【0011】本発明の態様の一例として、前記仲介ホストは、運転者側端末から運転者の現在位置を受信し、道路の混雑情報を取得し、運転者の現在位置と混雑情報と運転予定情報に基づき運転者が待ち合わせ場所に到着する時刻を予測し、この予測した待ち合わせ時刻を乗合者側端末に送信することとを特徴とするものを提案する。

50 【0012】本発明によれば、運転者の現在位置、道路の混雑状況及び運転予定情報に基づき運転者が待ち合

せ場所に到着する時刻が予測され、この予測到着時刻が乗合者側端末に送信されるので、乗合者はより正確な待ち合わせ時刻をリアルタイムで得ることができる。

【0013】さらに、本発明の態様の一例として、前記仲介サーバは、運転者側端末から乗合者の本人確認要求を受信し、本人確認要求を送信した運転者と乗り合う予定の乗合者の乗合者側端末に対して本人確認用の認証情報の入力进行を促し、乗合者側端末から乗合者の認証情報を受信し、乗合者の認証情報を確認し、認証結果を運転者側端末に送信することを特徴とするものを提案する。また、前記仲介サーバは、乗合者側端末から運転者の本人確認要求を受信し、本人確認要求を送信した乗合者と乗り合う予定の運転者の運転者側端末に対して本人確認用の認証情報の入力进行を促し、運転者側端末から運転者の認証情報を受信し、運転者の認証情報を確認し、認証結果を乗合者側端末に送信することを特徴とするものを提案する。

【0014】本発明によれば、運転者が運転者側端末を用いて仲介サーバに対して乗合者の本人確認を要求すると、仲介サーバにおいて乗合者から受信した認証情報に基づき本人確認が行われ、認証結果が運転者側端末に送信される。同様に、乗合者が乗合者側端末を用いて仲介サーバに対して運転者の本人確認を要求すると、仲介サーバにおいて運転者から受信した認証情報に基づき本人確認が行われ、認証結果が乗合者側端末に送信される。これにより、運転者と乗合者が互いに相手の本人確認を行うことができるので、他人同士が1つの自動車に乗り合うことに伴う種々の危険性を排除し、安心して自動車の乗合を行うことができる。

【0015】さらに、本発明の態様の一例として、前記運転予定情報には運転者が取得を希望するポイント数を含めるとともに、前記乗合希望情報には乗合者が支払を許容する最大のポイント数を含め、前記仲介ホストは、前記運転予定情報と乗合希望情報とを比較する際には、運転予定情報に含まれる希望ポイント数と乗合希望情報に含まれる最大ポイント数とを比較条件に含め、運転者側端末及び乗合者側端末の両方から乗合が終了したことを受信したときに、運転予定情報に含まれる希望ポイント数以上のポイント乗合者から運転者へ移動させることを特徴とするものを提案する。

【0016】本発明によれば、運転者が乗合を行うことにより取得したいポイント数を運転予定情報に含めて運転者側端末に入力して仲介サーバに送信し、一方、乗合者が乗合を行うことにより支払を許容する最大ポイント数を乗合希望情報に含めて乗合者側端末に入力して仲介サーバに送信すると、運転予定情報と乗合希望情報を比較する際にこのポイント数も比較対象となる。そして、乗合が終了した際には、乗合者から運転者に対して少なくとも運転者の希望ポイント数だけポイントが移動する。このように、運転者にとって乗合を行うことにより

ポイントの取得というメリットを得ることができる。これにより、自動車の乗合を促進できる。

【0017】さらに、本発明の態様の一例として、仲介サーバは、ネットワークを介して仲介ホストと接続する決済端末から運転者又は乗合者の識別情報及びポイント数を受信し、決済端末から受信した識別情報に係る運転者又は乗合者の所有するポイント数が決済端末から受信したポイント数以上の場合にその運転者又は乗合者の端末に対してポイントを減算することの可否の入力进行を促し、運転者又は乗合者の端末からポイント減算の承認を受信した場合に決済端末から受信した識別情報に係る運転者又は乗合者の所有するポイントから決済端末から受信したポイント数を減算することを特徴とするものを提案する。また、前記ポイントの付与時にはそのポイントの対価を運転者又は乗合者に対して課金するとともに、前記ポイントの減算時には決済端末における決済額を仲介ホスト側から支払うことを特徴とするものを提案する。

【0018】本発明によれば、運転者又は乗合者が決済端末において決済する際に、各運転者又は乗合者が所有するポイントをもって決済を行うことができる。すなわち、ポイントにより決済に係る商品やサービスの対価を決済することができる。一方で、前述したようにポイントは運転者が乗合を行うことにより取得できるので、これにより自動車の乗合を促進できる。

【0019】

【発明の実施の形態】本発明の一実施の形態に係る自動車乗合支援システムについて図面を参照して説明する。図1は自動車乗合システムの構成を示すブロック図である。

【0020】この自動車乗合支援システムは、運転者が利用する運転者側端末100と、乗合者が利用する乗合者側端末200と、ポイントサービスを利用可能な店舗10に設置される決済端末300と、乗合支援システムの提供者によって運営される仲介センタ400と、これらを接続するネットワーク500とを備えている。

【0021】運転者側端末100は、ネットワーク500を介して仲介センタ400と通信を行うための通信処理部110と、入力要求画面やメッセージを表示するとともにユーザからの入力を受け付けるユーザインタフェース部120と、運転者側端末100の現在位置を取得するための位置取得部130とを備えている。

【0022】乗合者側端末200は、ネットワーク500を介して仲介センタ400と通信を行うための通信処理部210と、入力要求画面やメッセージを表示するとともにユーザからの入力を受け付けるユーザインタフェース部220とを備えている。

【0023】決済端末300は、ネットワーク500を介して仲介センタ400と通信を行うための通信処理部310と、入力要求画面やメッセージを表示するととも

にユーザからの入力を受け付けるユーザインタフェース部320とを備えている。

【0024】仲介センタ400は、ネットワーク500を介して前記の端末と通信するための通信処理部410と、運転者や乗合者が待ち合わせ場所で互いに相手の素性を確認するために、運転者や乗合者の認証情報を用いて確認を行う本人確認処理部420と、乗合終了時の乗合者から運転者へのポイントの支払とポイントを使って店舗で買い物を行う際のポイントの支払を処理するポイント処理部430と、複数の運転者の運転予定情報と乗合者の乗合希望情報の中から、運転者の運転経路や乗合者の出発地から待ち合わせ場所への近さや、運転者の出発時刻と乗合者の到着希望時刻の近さ、及び運転者の希望最低ポイント数と乗合者の最大支払ポイント数の適合性に基づいて、最適な運転者と乗合希望者の組み合わせを探し出すユーザマッチング部440と、運転者が入力する運転予定情報と乗合希望者が入力する乗合希望情報と前記ユーザマッチング部440が出力する乗合組み合わせ情報とを蓄積する乗合情報管理部450と、この乗合情報管理部450が保持する運転予定情報中の運転経路情報と運転者側端末100の位置取得部130から送信される運転者側端末100の現在位置情報及び後述する道路情報取得部480から得られる道路混雑情報から待ち合わせ場所への到着時刻を予測する到着時刻予測部460と、この乗合支援システムを利用可能な運転者や乗合者などのユーザ毎の情報を保持するユーザ情報管理部470と、外部のサービスを使って道路の混雑状況を取得する道路情報取得部480とを有している。

【0025】本実施の形態では、ユーザ情報管理部470は、乗合支援システムを利用可能なユーザを管理するため、図2に示すユーザ管理表471を保持している。このユーザ管理表471のデータ形式を図3に示す。図3において、項目1はユーザの氏名、項目2はユーザを一意に識別するためのコード、項目3はユーザが所有するポイント数、項目4はユーザが所有して本システムで利用する端末を識別するためのコード、項目5はユーザ本人を確認を行うために利用する認証情報（本実施の形態ではパスワードを用いる）を表す。

【0026】乗合情報管理部450は、運転者の運転予定を管理するため、図4に示す運転予定管理表451を保持している。この運転予定管理表451のデータ形式を図5に示す。図5において、項目1は運転者を識別するためのコードで、ユーザ管理表471のユーザ識別コードを用いる。項目2は運転者の出発地の位置情報を表す。項目3は運転者の目的地の位置情報を表す。項目4は運転者が出発地を出る事項を表す。項目5は前記の出発地から目的地までの経路の情報を表す。項目6は運転者が運転予定での乗合で少なくとも受け取りたい最低のポイント数を表す。これらの出発地や目的地の位置情報及び経路の情報は、ユーザマッチング部440、到着時

刻予想部460及び道路情報取得部480が利用可能な形式である。

【0027】また、乗合情報管理部450は、乗合希望者の乗合希望情報を管理するため、図6に示す乗合希望管理表452を保持している。この乗合希望管理表452のデータ形式を図7に示す。図7において、項目1は乗合希望者を識別するコードで、ユーザ管理表471のユーザ識別コードを用いる。項目2は乗合希望者の出発地の位置情報を表す。項目3は乗合希望者の目的地の位置情報を表す。項目4は乗合者が出発地を出発する希望の時刻を表す。項目5は乗合者がこの乗合で運転者に支払っても良い最大のポイント数を表す。これらの出発地や目的地の位置情報は、前記の運転予定管理表451と同様にユーザマッチング部440などが利用可能な形式である。

【0028】さらに乗合情報管理部450は、ユーザマッチング部440が見つけた乗合の組み合わせを保持するため、図8に示す乗合組み合わせ管理表453を保持している。この乗合組み合わせ管理表453のデータ形式を図9に示す。図9において、項目1はこの組み合わせを利用する運転者を識別するためのコードを表す。項目2はこの組み合わせを利用する乗合者を識別するためのコードを表す。項目3は運転者と乗合者が待ち合わせる場所の位置情報を表す。項目4は前記の場所に待ち合わせる事項を表す。項目5はこの乗合によって運転者が乗合者から受け取るポイント数を表す。項目6はこの組み合わせを仲介ホスト400内で一意に識別するための識別子を表す。

【0029】次に、本実施の形態に係る乗合支援システムを使って運転者が乗合希望者を見つげるところから乗合を完了するまでの手順について図10のフローチャートに沿って説明する。

【0030】（ステップS1）本実施の形態では、まず初期登録として、ユーザは乗合支援システムの提供者に依頼してユーザ情報管理部470のユーザ管理表471に登録してもらう。このとき、他人の自動車への乗合を希望するものは、運転者に支払うポイントをシステム提供者より購入し所有ポイントとしてこのユーザ管理表471に登録する必要がある。また、ポイントが不足した場合も新たにシステム提供者からポイントを購入してチャージする。本実施の形態では、図2のユーザ管理表471に示すように、利用者1と利用者2と利用者3と利用者4が登録されているものとする。

【0031】（ステップS2）次に、前記の利用者1が乗合希望者として仲介ホスト400に乗合希望情報を登録する手順を示す。乗合者は乗合者側端末200に対して、出発地と目的地の住所、出発希望時刻、及びこの乗合で支払っても良いポイント数を入力すると、乗合者側端末200は、これらの情報に乗合者の識別コードを付加し、通信処理部210を介して仲介ホスト400に送信