

する。このメッセージを受け取った通信処理部410はメッセージを乗合情報管理部450に転送する。乗合情報管理部450は、出発地と目的地の住所を前述したような処理可能な形式に変換し、図6の乗合希望管理表452に格納する。

【0032】(ステップS3)次に、前記利用者2が運転者として仲介ホスト400を使って乗合者を探す手段を示す。運転者は、運転者側端末100に対して、出発地と目的地の住所、出発予定時刻、この運転で乗合をしたときに受け取りたい最低ポイント数を入力する。また、この運転で使用する運転経路を道路名などを使って入力する。運転者側端末100は、これらの情報に運転者の識別コードを付加し、通信処理部110を介して仲介ホスト400に送信する。このメッセージを受け取った通信処理部410は、メッセージを乗合情報管理部452に転送する。乗合情報管理部450は、出発地と目的地の住所を前述したような処理可能な形式に変換し、また運転者が入力した経路情報も前述したような処理可能な形式に変換して、図4の運転予定管理表451の2行目のように格納する。次に、乗合情報管理部450は、ユーザマッチング部440にこの利用者2の運転予定情報を送り、適合する乗合希望情報があるかの検索処理を依頼する。

【0033】ユーザマッチング部440は、乗合情報管理部450の乗合希望管理表452に格納された乗合希望情報の中から、既存のアルゴリズムを使用して、この運転予定情報中の経路に近い出発地と到着地をもち、この出発地への到着時刻が乗合希望者の出発希望時刻に近く、乗合者の最大支払ポイント数が運転者の最低受け取りポイント数以上の乗合希望情報を検索する。ここでは、利用者4の乗合希望情報が条件に適合したものとす。ユーザマッチング部440は、この乗合を受け入れるかどうかを運転者に確認するため、この乗合希望情報を前述した運転者の運転者側端末100に送信するとともに、乗合希望者にこの待ち合わせ場所と時刻でよいかどうかを問い合わせるため、利用者の乗合者識別コードを用いてユーザ管理表471からこの乗合希望者のユーザ端末識別コードを取り出して、利用者4の乗合者側端末200に問い合わせのメッセージを送信する。利用者2の運転者側端末100と利用者4の乗合者側端末200から了承のメッセージがユーザマッチング部440に送信されると、ユーザマッチング部440はこの情報を乗合情報管理部450にこの組み合わせの情報を渡し、乗合情報管理部450は新たに乗合識別コードを生成して乗合組み合わせ管理表453にこの組み合わせの情報を格納する。格納された情報は、図8の乗合組み合わせ管理表453の1行目のようになる。格納が終了すると、乗合情報管理部450は、この乗合識別コードを後の本人確認に利用するために、利用者2の運転者側端末100と利用者4の乗合者側端末200に送信する。

【0034】(ステップS4)次に、運転者が出発地を出発した後に、待ち合わせ時刻を再計算する手順を示す。待ち合わせ時刻の再計算は、運転者又は乗合者からの要求があった場合に行う。

【0035】まず、運転者から再計算を要求する場合には、運転者側端末100は、位置取得部130が取得した現在位置及び乗合識別コードを含む再計算要求メッセージを仲介ホスト400に送信する。仲介ホスト400の通信処理部410は、このメッセージを到着時刻予測部460に転送する。到着時刻予測部460は、乗合情報管理部450の乗合組み合わせ管理表453から、受信した乗合識別コードをもつ情報を検索し、その乗合組み合わせ情報を用いて運転者の運転予定情報に含まれる経路情報と待ち合わせ場所を取得する。そして、取得した情報、運転者側端末100から受信した現在位置情報及び道路情報取得部480から取得した道路混雑状況を用いて、既存のカーナビゲーションシステムなどで用いられるアルゴリズムにより、待ち合わせ場所に到着する時刻を再計算する。そして、この時刻を運転者側端末100及び乗合者側端末200に送信する。

【0036】一方、乗合者から再計算を要求する場合には、乗合者側端末200は、乗合識別コードを含む再計算要求メッセージを仲介ホスト400に送信する。仲介ホスト400の通信処理部410は、このメッセージを到着時刻予測部460に転送する。到着時刻予測部460は、乗合情報管理部450の乗合組み合わせ管理表453から、受信した乗合識別コードをもつ情報を検索し、その乗合組み合わせ情報の運転者の識別コードを取得して、この識別コードを参照して運転者側端末100に対して現在位置の送信を要求するメッセージを送信する。そして、位置情報取得部120が取得した現在位置情報を運転者側端末100が返信し、この現在位置情報を受信すると、前述のように、乗合組み合わせ管理表453から、先に乗合者側端末200から受信した乗合識別コードをもつ情報を検索し、その乗合組み合わせ情報を用いて運転者の運転予定情報に含まれる経路情報と待ち合わせ場所を取得する。そして、取得した情報、運転者側端末100から受信した現在位置情報及び道路情報取得部480から取得した道路混雑状況を用いて、待ち合わせ場所に到着する時刻を再計算する。そして、この時刻を運転者側端末100及び乗合者側端末200に送信する。

【0037】(ステップS5)次に、利用者2と利用者4が待ち合わせ場所で出会ったときに、利用者2が利用者4の本人確認を行う手順を示す。まず利用者2は、先ほど送信された乗合識別コードを付加した乗合者確認要求を仲介ホスト400に送信する。仲介ホスト400の通信処理部410は、このメッセージを本人確認処理部420に転送する。

【0038】本人確認処理部420は、乗合識別コード

を用いて乗合情報管理部450の乗合組み合わせ管理表453からこの乗合の乗合者の識別コードを取り出し、このコードを用いてユーザ情報管理部470のユーザ情報管理表471から乗合者の端末識別コードを取り出し、この識別コードを用いて、利用者4の乗合者側端末200に本人確認のためのパスワード入力要求メッセージを送信する。この本人確認要求メッセージを受け取った乗合者側端末200は、本人確認を行うためのパスワードを要求する画面を表示し、利用者4が予め登録されたパスワードを入力すると、このパスワードを仲介ホスト400に送り返す。このパスワードを受け取った仲介ホスト400の本人確認処理部420は、ユーザ情報管理部470に格納された利用者4のパスワードと受け取ったパスワードを比較し、もし合致した場合は本人確認が完了したことを知らせるメッセージに乗合識別コードを付加して運転者側端末100と乗合者側端末200に送信する。運転者である利用者2は、この完了メッセージが表示されると、乗合者である利用者4に乗合者側端末200の画面を見せてもらい、同じ乗合識別コードを含む完了メッセージが表示されているのを見ることにより、本人確認を完了することができる。乗合者が運転者の本人確認をする場合は、前述した手順の運転者と乗合者を入れ替えた手順を行えばよい。

【0039】(ステップS6)次に、乗合終了時に、乗合者の所有ポイントを運転者に支払う手順を説明する。乗合が終了したときに、利用者2が運転者側端末100から乗合識別コードを付加した乗合終了メッセージをネットワーク500を介して仲介センタ400の乗合情報管理部450に送信し、利用者4が乗合者側端末200から同じく乗合識別コードを付加した乗合終了メッセージを乗合情報管理部450に送信する。

【0040】乗合情報管理部450は、1つの乗合組み合わせ情報の運転者と乗合者の両方から終了メッセージを受け取ったときに、この乗合が完了したこととみなす。本実施形態では、識別コード200009080001の乗合組み合わせ情報に関して利用者2と利用者4から乗合終了メッセージを受け取ったため、この乗合が終了したと決定する。次に、乗合情報管理部450は、予め両者の間で決められたポイント数だけ乗合者から運転者に支払ってよいかを確認するため、ポイント処理部430に支払処理を依頼する。

【0041】ポイント処理部430は、乗合組み合わせ管理表453中の乗合識別コード200009080001の項目5の支払ポイント数13を抽出し、利用者4の乗合者側端末200に対してこのポイント数を付加した支払確認メッセージを送信する。このメッセージを受け取った乗合者側端末200は、利用者4に対して13ポイントを運転者である利用者2に支払ってよいかを表示する。利用者4が承認の入力をする、乗合者側端末200は、仲介ホスト400に支払承認メッセージを送信し、仲介ホ

スト400の通信処理部410はこのメッセージをポイント処理部430に転送する。次に、ポイント処理部430は、受け取るポイント数を確認するために、ポイント13を付加した受け取り確認メッセージを利用者2の運転者側端末100に送信する。運転者側端末100で利用者2が受け取りを承認すると、承認メッセージがポイント処理部430に返信され、ポイント処理部430は両者の承認が得られたため、ユーザ情報管理部470のユーザ管理表471中の利用者4の項目3の所有ポイント数を13だけ減らし、利用者2の所有ポイント数を13だけ増やす。ポイント処理部420がこの処理の終了を乗合情報管理部450に通知すると、乗合情報管理部450は、乗合組み合わせ管理表453から今処理した乗合識別コード200009080001の乗合レコードを削除する。

【0042】以上の手順により、運転者は予め自分の運転経路と離れていない待ち合わせ場所で、予め決められた待ち合わせ時刻に乗合希望者を乗せることができ、効率の良い乗合を実現することができる。また、待ち合わせ場所で、運転者と乗合者は端末のみを用いて互いに信頼性の高い本人確認を行うことが可能となり、乗合に伴う危険性が排除され安全性を確保することができる。

【0043】次に、この乗合支援システムのユーザ(運転者又は乗合者)が自分の所有するポイントを用いて、決済端末300が設置された店舗10で買い物をする手順を示す。ここでは、利用者3が決済端末300を備えた店舗10で買い物をする手順を示す。

【0044】利用者3が店舗10で買い物をしたとき、その代金の代わりに30ポイントを支払う際、まず決済端末300のポイント支払要求画面に自分のユーザ識別コード00003と支払ポイント数30を入力すると、端末300はネットワーク500を介して仲介ホスト400にこの支払要求メッセージを送信し、仲介ホスト400の通信処理部410はこのメッセージをポイント処理部430に転送する。この支払要求メッセージを受け取ったポイント処理部430はユーザ識別コード00003を用いてユーザ情報管理部470のユーザ管理表471からこの利用者3のレコードからこの利用者3のレコードを取り出し、その所有ポイント数と支払ポイント数を比較して支払可能かどうかを確認する。この場合支払が可能のため、ポイント処理部430は、利用者3のレコードからこの利用者の端末識別コードを取り出し、利用者の端末に支払確認要求メッセージを送信する。この支払確認要求メッセージを受信した端末は支払確認のための確認要求メッセージを送信する。この支払確認メッセージを受信した端末は支払確認のための利用のパスワードの入力を要求し、利用者3がパスワードを入力するとそれを仲介ホスト400に送信する。このパスワードを受け取ったポイント処理部430は、ユーザ情報管理部470のユーザ管理表471の利用者3のレ

コードの項目5に格納されたパスワードと受信したパスワードを比較する。両方のパスワードが合致すると、ポイント処理部430はユーザ管理表471の利用者3の項目3のポイント数100から30だけ減らすとともに、支払完了メッセージを決済端末300に送信する。このメッセージを受け取った決済端末300は支払が完了したことを表示する。

【0045】以上の手順により、利用者3は自分が所有するポイントを用いて、決済端末300を設置した店舗10での支払を行うことが可能となる。

【0046】以上本発明の一実施形態について説明したが、本発明はこの実施形態に限定されるものではない。例えば、本実施の形態では、運転側端末100から入力する運転予定情報に経路情報を含めるものとしたが、この経路情報は含めないものであっても良い。この場合には、仲介ホスト400において、道路情報を備えるとともに、運転予定情報に含まれる出発地及び目的地並びに道路情報に基づき、経路情報を探索すると好適である。

【0047】また、本実施の形態では、運転側端末100の位置取得部130において現在位置を取得するようにしたが、この位置取得の手段はどのようなものを用いてもよい。例えば、GPS (Global Positioning System) やITS (Intelligent Transport Systems) などを用いて自動的に位置情報を取得しても、運転者が現在の位置情報を入力するようにしてもよい。

【0048】さらに、本実施の形態では、待ち合わせ時刻の再計算は運転者又は乗合者の要求に応じて行っていたが、本発明はこれに限定されるものではない。運転者側端末100又は乗合者側端末200が定期的に仲介ホスト400に対して再計算要求を行うようにしてもよく、また、再計算要求を受けることなく仲介ホスト400が定期的に再計算を行うようにしてもよい。さらに、待ち合わせ時刻を再計算した場合、新たに予測した待ち合わせ時刻が従前の待ち合わせ時刻よりも遅れる場合にのみ、運転者側端末100及び乗合者側端末200に通知するようにしてもよい。

【0049】さらに、本実施の形態では、マッチング処理部において一の運転予定情報に対して一人の乗合希望者の乗合希望情報を検索するようにしたが、複数の乗合希望情報を抽出してもよい。この場合には、運転予定情報に自動車に乗せても良い乗合者の人数を含め、この人数内で抽出すると好適である。

【0050】さらに、本実施の形態では、マッチング処理部において運転者が取得を希望する最低ポイント数と乗合者が支払を許容する最大ポイント数を条件の一つにしてマッチング処理を行い、乗合が終了した時点で最低ポイント数を乗合希望者から運転者に対して支払を行っているが、このポイントに関する処理は種々のものが考えられる。例えば、乗合者からは前記許容最大ポイント数の他に、支払を希望する希望ポイント数を入力するよ

うにし、この希望ポイント数が最低ポイント数以上であれば条件が合致するように処理してもよい。この場合には、この希望ポイント数だけ乗合者から運転者に移動するようにすればよい。また、乗合希望者が多数いる場合には、先着順やオークションなどで乗合希望者を決定する方法などが考えられる。

【0051】

【発明の効果】以上詳述したように、本発明では、運転者と乗合希望者が仲介ホストを介して互いの予定を照合することにより、従来のように指定の待ち合わせ場所に行ってみなければ自分の希望の相手がいるかどうか分からないといった不確定さもなく、また限られた待ち合わせ場所まで出向く必要がなく、お互いの予定の経路と時間にあった待ち合わせ場所と時刻で乗合を行うことが可能となる。また、乗合の場合は、お互いの見ず知らずのもの同士が一緒に車で移動することが多いため、強盗などの事件が起こる可能性もあるが、仲介ホストに登録する際に十分な身元調査を行い、この上でこれらの登録された運転者と乗合者が待ち合わせ場所であったときに、仲介ホストに蓄積された認証情報と端末を用いることによる本人確認を行い、信用できる相手のみと乗り合うことが可能となり、安全性を確保することが可能となる。

【0052】また、従来の乗合の仕組みでは運転者側のメリットが、例えば米国などで実施されているような道路の専用レーンを走行可能であるという程度の十分なものではなく、地域によってはこうした専用レーンの実現は困難な場合も多かったが、本発明では乗合者から運転者に支払うポイントシステムを導入し、このポイントを店舗などで支払に利用可能にする仕組みを導入することにより、運転者が積極的に乗合を行うようなメリットを提供可能とした。

【図面の簡単な説明】

【図1】自動車乗合システムの構成を示すブロック図

【図2】仲介ホストのユーザ管理部が保持するユーザ管理表の一例を説明する図

【図3】図2のユーザ管理表のデータ形式を説明する図

【図4】仲介ホストの乗合情報管理部が保持する運転予定管理表の一例を説明する図

【図5】図4の運転予定管理表のデータ形式を説明する図

【図6】仲介ホストの乗合情報管理部が保持する乗合希望管理表の一例を説明する図

【図7】図6の乗合希望管理表のデータ形式を説明する図

【図8】仲介ホストの乗合情報管理部が保持する乗合組み合わせ管理表の一例を説明する図

【図9】図8の乗合組み合わせ管理表のデータ形式を説明する図

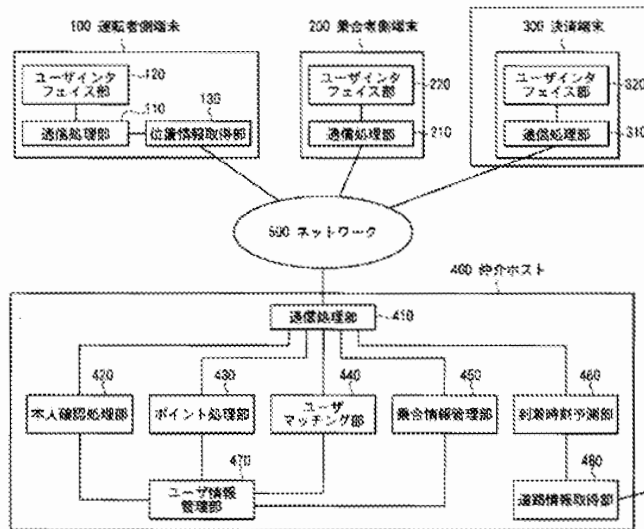
【図10】自動車乗合支援システムの動作を説明するフローチャート

【符号の説明】

100…運転者側端末、110…通信処理部、120…ユーザインタフェース部、130…位置取得部、200…乗合者側端末、210…通信処理部、220…ユーザインタフェース部、300…決済端末、310…通信処理部、320…ユーザインタフェース部、400…仲介

*ホスト、410…通信処理部、420…本人確認処理部、430…ポイント処理部、440…ユーザマッチング部、450…乗合情報管理部、460…到着時刻予測部、470…ユーザ情報管理部、480…道路情報取得部

【図1】



【図3】

項目番号	項目名	データ型
1	ユーザ氏名	文字列
2	ユーザ識別コード	文字列
3	所有ポイント数	数値
4	ユーザ端末識別コード	文字列
5	パスワード	文字列

【図7】

項目番号	項目名	データ型
1	運転者識別コード	文字列
2	出発地	位置
3	目的地	位置
4	出発時刻	日時
5	最大ポイント数	数値

【図2】

【図4】

472 ユーザ管理表

ユーザ氏名	ユーザ識別コード	所有ポイント数	ユーザ端末識別コード	パスワード
利用者1	00001	0	0312345678	××××
利用者2	00002	10	0456789012	×△□○
利用者3	00003	100	0471234567	○×○×
利用者4	00004	50	0434321987	○□△×

451 運転予定管理表

運転者識別コード	出発地	目的地	出発時刻	経路	ポイント
00002	X919Y020	X080Y180	200009081000	-----	13

【図5】

【図6】

項目番号	項目名	データ型
1	運転者識別コード	文字列
2	出発地	位置
3	目的地	位置
4	出発時刻	日時
5	経路	経路
6	ポイント	数値

452 乗合希望管理表

運転者識別コード	出発地	目的地	出発時刻	最大ポイント数
00004	X055Y006	X010Y090	200009081020	15
00003	X100Y200	X150Y190	200009101930	10

【図8】

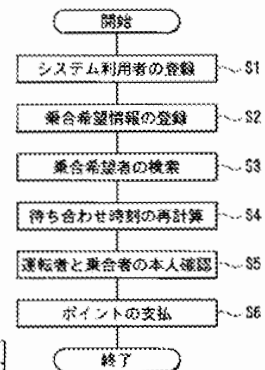
【図9】

453 乗合組み合わせ管理表

運転者識別コード	乗合者識別コード	待ち合わせ場所	待ち合わせ時刻	支払いポイント数	乗合識別コード
00002	00004	X40Y120	200009061010	13	200009080001

項目番号	項目名	データ型
1	運転者識別コード	文字列
2	乗合者識別コード	文字列
3	待ち合わせ場所	位置
4	待ち合わせ時刻	日時
5	支払いポイント	数値
6	乗合識別コード	文字列

【図10】



JP2002140399A METHOD AND SYSTEM FOR SUPPORTING AUTOMOBILE RIDE SHARING

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 assists a vehicle rider between a driver who intends to travel by car and a passenger who wants to travel to a destination by riding in another person's car. Related to network services.

[0002] 2. Description of the Related Art Traveling between people having the same destination while riding in one vehicle is performed as a means for reducing the number of vehicles and reducing pollution and traffic congestion. Conventionally, in order to carry out this ride, if acquaintances in the neighborhood are heading in the same direction, they will either ride each other, or the driver or applicant will move to the designated meeting place to find a person with a suitable destination. There was a need.

[0003] However, such a riding method has the following problems.

[0004] (1) If there are no people in the neighborhood, it is necessary to move to the meeting place, which takes extra time.

[0005] (2) Even if you go to a meeting place, there is no guarantee that you will be able to find a partner to ride with you immediately, and the time to reach your destination will be uncertain.

[0006] (3) When riding a stranger, it is not clear if the other person can be trusted, and in the worst case, there is a risk of being involved in a crime such as robbery or murder.

[0007] (4) Since there is little merit for the driver to put another person on board in the case of the passenger boarding, the driver is less reluctant to carry out the boarding.

[0008] The present invention has been made in view of the above circumstances, and a first object of the present invention is to provide a method and a system for supporting a vehicle passenger connection, which is highly convenient for a driver and a passenger. A second object of the present invention is to provide a method and system for assisting passengers in a vehicle, which can provide a driver with a benefit of passengers in a vehicle and promote a passenger in a vehicle.

[0009] In order to achieve the above object, according to the present invention, there is provided a vehicle riding assistance system for assisting vehicle riding by an intermediary host connected to a driver side terminal and a passenger side terminal via a network. In the above, the intermediary host receives the driving schedule information including at least the departure place, the destination and the departure time from the car side terminal, and the at least the current position, the destination and the desired arrival time at the destination from the passenger side terminal. The information is received, a plurality of driving schedule information and a plurality of passenger's desire information are compared to find a combination in which the driver's and passenger's wishes match, and the driver side terminal and the passenger side terminal relating to the matched combination are detected. It is proposed that the meeting information including the meeting time and meeting place is transmitted, and the result is recorded when the completion of the meeting is received from both the driver side terminal and the passenger side terminal.

[0010] According to the present invention, when the driver inputs the driving schedule information to the driver side terminal and transmits it to the intermediary host, while the passenger inputs the passenger's desire information to the passenger side terminal and transmits it to the intermediary host, In the intermediary host, one that matches both wishes is selected from a plurality of driving schedule information and passenger wish information, and the waiting information including the meeting time and place is transmitted to the driver side terminal and the passenger side terminal. Therefore, the driver and the passenger can smoothly join the vehicle only by going to the meeting place at the received meeting time.

[0011] As an example of the aspect of the present invention, the intermediary host receives the driver's current position from the driver side terminal, acquires road congestion information, and drives based on the driver's

current position, congestion information, and driving schedule information. We propose a method that predicts the time when a person arrives at the meeting place and transmits the predicted meeting time to the passenger side terminal.

[0012] According to the present invention, the time at which the driver arrives at the meeting place is predicted based on the current position of the driver, the congestion status of the road, and the driving schedule information, and the predicted arrival time is transmitted to the passenger side terminal. The passenger can get a more accurate meeting time in real time.

[0013] Further, as an example of an aspect of the present invention, the intermediary server receives a passenger confirmation request from a driver terminal, and transmits a passenger confirmation request to the driver. Prompts the user to enter authentication information for identity verification, receives the passenger authentication information from the passenger terminal, confirms the passenger authentication information, and sends the authentication result to the driver terminal. And suggest what to do. Further, the intermediary server receives the driver's identity confirmation request from the passenger side terminal, and authenticates the driver's terminal of the driver who is going to ride with the passenger who has transmitted the identity verification request for identity verification. It is proposed to prompt the user to input information, receive the driver authentication information from the driver side terminal, confirm the driver authentication information, and send the authentication result to the passenger side terminal.

[0014] According to the present invention, when the driver uses the driver-side terminal to request the intermediary server for identity verification of the passenger, the intermediary server performs identity verification based on the authentication information received from the passenger, and the authentication result is transmitted to the driver side terminal. Similarly, when the passenger uses the passenger terminal to request the identity verification of the driver to the intermediary server, the identity verification is performed on the intermediary server based on the authentication information received from the driver, and the authentication result is the passenger sent to the side terminal. This allows the driver and the passenger to identify each other's identities, eliminating the various risks associated with another person riding in a single car, and allowing the automatic passenger to ride with peace of mind. You can

[0015] Further, as an example of the aspect of the present invention, the driving schedule information includes the number of points that the driver wants to acquire, and the riding request information includes the maximum number of points that the passenger allows payment, The intermediary host, when comparing the driving schedule information and the desired ride information, includes the desired number of points included in the scheduled driving information and the maximum number of points included in the desired ride information in the comparison condition, and the driver side terminal. Also, it is proposed that when more than one desired number of points included in the driving schedule information is moved from the passenger to the driver when the completion of the riding is received from both the passenger side terminal and the passenger side terminal.

[0016] According to the present invention, the number of points that the driver wants to obtain by carrying out the ride is included in the driving schedule information and input to the driver side terminal and transmitted to the intermediary server, while the rider pays by carrying out the ride. If the maximum number of points allowed for is included in the passenger desired information and is input to the passenger side terminal and transmitted to the intermediary server, this number of points will also be a target for comparison when the driving schedule information and the passenger desired information are compared. Then, when the riding is completed, points are moved from the passenger to the driver by at least the number of points desired by the driver. In this way, the driver can obtain the advantage of acquiring points by carrying out the riding. Thereby, the riding of the automobile can be promoted.

[0017] Further, as an example of the aspect of the present invention, the mediation server receives the identification information and the number of points of the driver or the passenger from the payment terminal connected to the mediation host via the network, and relates to the identification information received from the payment terminal. If the number of points owned by the driver or passenger is equal to or greater than the number of points received from the settlement terminal, the driver or passenger's terminal will be prompted to input whether or not points can be subtracted, and the driver or passenger Proposes that the number of points received from the payment terminal is subtracted from the points owned by the driver or the passenger relating to the identification information received from the payment terminal when the approval of the point subtraction is received from the terminal .. Further, it is proposed to charge the driver or passenger with the value of the points when the points are given, and to pay the settlement amount at the settlement terminal from the intermediary host side when the points are subtracted.

[0018] According to the present invention, when the driver or the passenger makes a payment at the payment terminal, the payment can be made with the points owned by the driver or the passenger. That is, it is possible to settle the consideration for the product or service related to the settlement by using points. On the other hand, as described above, the points can be acquired by the driver when the driver joins the vehicle, so that the driver can accelerate the vehicle riding.

[0019] BEST MODE FOR CARRYING OUT THE INVENTION A vehicle riding assistance system according to an embodiment of the present invention will be described with reference to the drawings. FIG. 1 is a block diagram showing the configuration of a vehicle sharing system.

[0020] This vehicle-ride support system includes a driver-side terminal 100 used by a driver, a passenger-side terminal 200 used by a passenger, a payment terminal 300 installed in a store 10 that can use point services, and a passenger support. The system includes a mediation center 400 operated by a system provider and a network 500 connecting these.

[0021] The driver-side terminal 100 has a communication processing unit 110 for communicating with the intermediary center 400 via the network 500, a user interface unit 120 for displaying an input request screen and a message, and receiving an input from a user, and a driver. The position acquisition unit 130 for acquiring the current position of the person-side terminal 100 is provided.

[0022] The passenger side terminal 200 includes a communication processing unit 210 for communicating with the intermediary center 400 via the network 500, and a user interface unit 220 for displaying an input request screen and a message and receiving an input from the user. ing.

[0023] The payment terminal 300 includes a communication processing unit 310 for communicating with the broker center 400 via the network 500, and a user interface unit 320 for displaying an input request screen and a message and receiving an input from the user. . .

[0024] The agent center 400 communicates with the above-mentioned terminal via the network 500 and authentication of the driver and passengers so that the driver and passengers can confirm the identity of each other at the meeting place. An identity verification processing unit 420 that performs confirmation using information, and a point processing unit 430 that processes payment of points from the passenger to the driver at the end of the ride and payment of points when shopping at the store using the points. From the driving schedule information of multiple drivers and the passenger's hope of riding, the driver's driving route, the proximity of the passenger's departure point to the meeting place, the driver's departure time and the arrival of the passenger. Based on the closeness of the desired time and the suitability of the driver's desired minimum number of points and the passenger's maximum paid points, the user matching unit 440 that finds the optimum driver/passenger combination and the driver A riding information management unit 450 that stores the driving schedule information to be input, the riding desire information to be input by the passenger who wants to ride, and the riding combination information output from the user matching unit 440, and the driving schedule information held by the riding information management unit 450. The arrival time at the meeting place from the driving route information in the middle, the current position information of the driver side terminal 100 transmitted from the position acquisition unit 130 of the driver side terminal 100, and the road congestion information obtained from the road information acquisition unit 480 described later. Arrival time predicting unit 460, a user information management unit 470 that holds information for each user such as a driver or a passenger who can use this passenger assistance system, and an external service to check the congestion status of the road. It has the road information acquisition part 480 to acquire.

[0025] In the present embodiment, the user information management unit 470 holds the user management table 471 shown in FIG. 2 in order to manage the users who can use the boarding assistance system. The data format of this user management table 471 is shown in FIG. In FIG. 3, item 1 is the name of the user, item 2 is a code for uniquely identifying the user, item 3 is the number of points owned by the user, and item 4 is the terminal owned by the user and used by this system. The code for doing so, item 5 represents authentication information (a password is used in the present embodiment) used to confirm the user himself/herself.

[0026] The riding information management unit 450 holds a driving schedule management table 451 shown in FIG. 4 in order to manage the driving schedule of the driver. The data format of this operation schedule management table 451 is shown in FIG. In FIG. 5, item 1 is a code for identifying the driver and uses the user identification code of the user management table 471. Item 2 represents the position information of the departure

place of the driver. Item 3 represents the position information of the driver's destination. Item 4 represents an item where the driver leaves the place of departure. Item 5 represents information on the route from the starting point to the destination. Item 6 represents the minimum number of points that the driver wants to receive at least in the riding schedule. The position information and the route information of the departure place and the destination are in a format that can be used by the user matching unit 440, the arrival time prediction unit 460, and the road information acquisition unit 480.

[0027] Further, the boarding information management unit 450 holds a boarding desire management table 452 shown in FIG. 6 in order to manage the boarding desire information of the boarding applicant. The data format of this ride wish management table 452 is shown in FIG. In FIG. 7, item 1 is a code for identifying a passenger who wants to board, and the user identification code in the user management table 471 is used. Item 2 represents the position information of the departure place of the passenger who wants to board. Item 3 represents the position information of the destination of the passenger who wants to get on the bus. Item 4 represents the desired time when the passenger leaves the place of departure. Item 5 represents the maximum number of points a passenger may pay to the driver in this ride. The position information of these starting points and destinations is in a format that can be used by the user matching unit 440 and the like, like the driving schedule management table 451.

[0028] Further, the riding information management unit 450 holds the riding combination management table 453 shown in FIG. 8 in order to hold the riding combinations found by the user matching unit 440. The data format of this combination management table 453 is shown in FIG. In FIG. 9, item 1 represents a code for identifying the driver who uses this combination. Item 2 represents a code for identifying a passenger who uses this combination. Item 3 represents position information of a place where the driver and the passenger meet. Item 4 represents a matter to meet at the above-mentioned place. Item 5 represents the number of points the driver receives from the rider by this ride. Item 6 represents an identifier for uniquely identifying this combination in the intermediary host 400.

[0029] Next, a procedure from when the driver finds a passenger who wants to get on to using the riding assistance system according to the present embodiment to when the riding is completed will be described with reference to the flowchart of FIG. 10.

[0030] (Step S1) In the present embodiment, first, as initial registration, the user requests the provider of the passenger assistance system to register in the user management table 471 of the user information management unit 470. At this time, a person who wants to get on another person's vehicle needs to purchase points paid to the driver from the system provider and register them in the user management table 471 as owned points. Also, when points are insufficient, points are newly purchased from the system provider and charged. In the present embodiment, it is assumed that user 1, user 2, user 3, and user 4 are registered as shown in the user management table 471 of FIG.

[0031] (Step S2) Next, a procedure in which the user 1 registers the desired ride information in the intermediary host 400 as a desired rider is shown. When the passenger inputs the departure place and the destination address, the desired departure time, and the number of points that may be paid in this combination to the passenger side terminal 200, the passenger side terminal 200 outputs the information to the passengers. Is added to the intermediary host 400 via the communication processing unit 210. Upon receiving this message, the communication processing unit 410 transfers the message to the passenger information management unit 450. The boarding information management unit 450 converts the addresses of the departure place and the destination into a processable format as described above, and stores them in the boarding wish management table 452 of FIG.

[0032] (Step S3) Next, a means for the user 2 to search for a passenger using the intermediary host 400 as a driver will be described. The driver inputs the addresses of the departure place and the destination, the scheduled departure time, and the minimum number of points that the driver wants to receive at the time of boarding in this driving, to the driver terminal 100. In addition, the driving route used for this driving is input using the road name and the like. The driver-side terminal 100 adds the driver's identification code to these pieces of information, and transmits the information to the intermediary host 400 via the communication processing unit 110. The communication processing unit 410 that receives this message transfers the message to the passenger information management unit 452. The boarding information management unit 450 converts the addresses of the departure point and the destination into the processable format described above, and also converts the route information input by the driver into the processable format described above. The data is stored as in the second row of the operation schedule management table 451 of FIG. Next, the riding information management unit 450

sends the driving schedule information of the user 2 to the user matching unit 440, and requests the user matching unit 440 to perform a search process for matching riding desire information.

[0033] The user matching unit 440 uses the existing algorithm from among the ride request information stored in the ride request management table 452 of the ride information management unit 450, and uses the existing algorithm to set the departure point and the arrival point near the route in the driving schedule information. With the arrival time at the point of departure being close to the desired departure time of the passenger who wants to board, the passenger's desired payment information with the maximum number of paying points of the passenger being equal to or greater than the minimum number of receiving points of the driver is searched. Here, it is assumed that the passenger's desired passenger information meets the conditions. The user matching unit 440 transmits this desired ride information to the driver side terminal 100 of the driver described above in order to confirm with the driver whether or not to accept this ride, and also informs the desired rider of this waiting place and time. In order to inquire whether or not it is good, the user's passenger identification code is used to retrieve the user terminal identification code of the passenger who wants to be connected from the user management table 471, and the inquiry message is sent to the passenger side terminal 200 of the user 4. To do, When an approval message is transmitted from the driver side terminal 100 of the user 2 and the passenger side terminal 200 of the user 4 to the user matching unit 440, the user matching unit 440 combines this information with the passenger information management unit 450 for this combination. Of the information, the riding information management unit 450 newly generates a riding identification code and stores the information of this combination in the riding combination management table 453. The stored information is as shown in the first row of the combination management table 453 of FIG. When the storage is completed, the passenger information management unit 450 transmits the passenger identification code to the driver side terminal 100 of the user 2 and the passenger side terminal 200 of the user 4 for use in later identification.

[0034] (Step S4) Next, a procedure of recalculating the waiting time after the driver departs from the place of departure will be described. Recalculation of the meeting time will be performed when there is a request from the driver or passenger.

[0035] First, when the driver requests recalculation, the driver terminal 100 transmits a recalculation request message including the current position and the passenger identification code acquired by the position acquisition unit 130 to the intermediary host 400. The communication processing unit 410 of the mediation host 400 transfers this message to the arrival time prediction unit 460. The arrival time prediction unit 460 searches the passenger combination management table 453 of the passenger information management unit 450 for information having the received passenger identification code, and uses the passenger combination information to obtain the route information included in the driving schedule information of the driver. And get a meeting place. Then, using the acquired information, the current position information received from the driver's terminal 100, and the road congestion status acquired from the road information acquisition unit 480, the vehicle arrives at the meeting place by an algorithm used in an existing car navigation system or the like. Recalculate the time. Then, this time is transmitted to the driver side terminal 100 and the passenger side terminal 200.

[0036] On the other hand, when the passenger requests recalculation, the passenger terminal 200 transmits a recalculation request message including the passenger identification code to the intermediary host 400. The communication processing unit 410 of the mediation host 400 transfers this message to the arrival time prediction unit 460. The arrival time prediction unit 460 searches the passenger combination management table 453 of the passenger information management unit 450 for information having the received passenger identification code, obtains the driver's identification code of the passenger combination information, and uses this identification code. Referring to, a message requesting transmission of the current position is transmitted to the driver side terminal 100. Then, the driver side terminal 100 returns the current position information acquired by the position information acquisition unit 120, and when this current position information is received, as described above, from the passenger combination management table 453, the passenger side terminal 200 first. The information having the boarding identification code received from is retrieved, and the boarding information and the meeting place included in the driving schedule information of the driver are acquired using the boarding combination information. Then, the time to arrive at the meeting place is recalculated using the acquired information, the current position information received from the driver side terminal 100, and the road congestion status acquired from the road information acquisition unit 480. Then, this time is transmitted to the driver side terminal 100 and the passenger side terminal 200.

[0037] (Step S5) Next, a procedure in which the user 2 confirms the identity of the user 4 when the user 2 and the user 4 meet at the meeting place will be described. First, the user 2 transmits a passenger confirmation request to which the passenger identification code transmitted earlier is added to the intermediary host 400. The

communication processing unit 410 of the intermediary host 400 transfers this message to the principal confirmation processing unit 420.

[0038] The principal confirmation processing unit 420 retrieves the identification code of the passenger of this passenger from the passenger combination management table 453 of the passenger information management unit 450 using the passenger identification code, and uses this code to manage the user information of the user information management unit 470. The terminal identification code of the passenger is extracted from the table 471, and a message requesting the password input for the identity verification is transmitted to the passenger terminal 200 of the user 4 using this identification code. The passenger terminal 200 receiving this identity verification request message displays a screen requesting a password for identity verification, and when the user 4 inputs the password registered in advance, this password is sent to the intermediary host 400. Send back. The identity verification processing unit 420 of the intermediary host 400 that received this password compares the password of the user 4 stored in the user information management unit 470 with the received password, and if they match, the identity verification is completed. The passenger identification code is added to the notification message and transmitted to the driver side terminal 100 and the passenger side terminal 200. When this completion message is displayed, the user 2 who is a driver causes the user 4 who is a passenger to show the screen of the passenger side terminal 200, and a completion message including the same passenger identification code is displayed. You can complete the identity verification by seeing the presence. When the passenger confirms the identity of the driver, the procedure of exchanging the driver and the passenger in the above-described procedure may be performed.

[0039] (Step S6) Next, a procedure for paying the driver the owned points of the passenger when the passenger ends the passenger will be described. When the boarding is completed, the user 2 transmits a boarding end message with the boarding identification code added from the driver side terminal 100 to the boarding information management unit 450 of the intermediary center 400 via the network 500, and the user 4 is boarded. Similarly, the passenger terminal 200 transmits to the passenger information management unit 450 a passenger end message to which the passenger identification code is added.

[0040] When the ride information management unit 450 receives end messages from both the driver and the rider of one ride combination information, it is considered that the ride is complete. In the present embodiment, since the ride-completion message is received from the users 2 and 4 regarding the ride-combination information of the identification code 200009080001, it is determined that the ride-in has ended. Next, the riding information management unit 450 requests the point processing unit 430 to perform a payment process in order to confirm whether the driver can pay the driver the number of points determined in advance between the two.

[0041] The point processing unit 430 extracts the payment point number 13 of item 5 of the passenger identification code 200009080001 in the passenger combination management table 453, and adds this point number to the passenger terminal 200 of the user 4 to confirm the payment. To send. The passenger side terminal 200 having received this message displays to the user 4 whether 13 points may be paid to the user 2 who is the driver. When the user 4 inputs the approval, the passenger terminal 200 sends a payment approval message to the intermediary host 400, and the communication processing unit 410 of the intermediary host 400 transfers this message to the point processing unit 430. Next, the point processing unit 430 transmits a reception confirmation message to which the point 13 is added to the driver side terminal 100 of the user 2 in order to confirm the number of points to be received. When the user 2 approves the receipt at the driver-side terminal 100, an approval message is returned to the point processing unit 430, and the point processing unit 430 obtains both approvals. Therefore, in the user management table 471 of the user information management unit 470, the number of owned points of item 3 of user 4 is reduced by 13, and the number of owned points of user 2 is increased by 13. When the point processing unit 420 notifies the passenger information management unit 450 of the end of this processing, the passenger information management unit 450 deletes the passenger record of the passenger identification code 200009080001 just processed from the passenger combination management table 453.

[0042] According to the above procedure, the driver can put the passenger who wants to board at the predetermined meeting time at the meeting place which is not separated from his driving route in advance, and realize the efficient boarding. In addition, at the meeting place, the driver and the passenger can verify each other's identities with high reliability by using only the terminal, and the danger associated with the passenger can be eliminated and the safety can be ensured.

[0043] Next, a procedure for a user (driver or passenger) of the passenger connection support system to shop at the store 10 in which the payment terminal 300 is installed by using points owned by the user will be described.

Here, a procedure for the user 3 to shop at the store 10 equipped with the payment terminal 300 is shown.

[0044] When the user 3 makes a purchase at the store 10 and pays 30 points instead of the price, first, by inputting his/her user identification code 00003 and the number of payment points 30 on the point payment request screen of the payment terminal 300, the terminal 300 Transmits this payment request message to the intermediary host 400 via the network 500, and the communication processing unit 410 of the intermediary host 400 transfers this message to the point processing unit 430. The point processing unit 430 that has received this payment request message retrieves the record of this user 3 from the record of this user 3 from the user management table 471 of the user information management unit 470 using the user identification code 00003, and the number of owned points And compare the number of points to pay to see if you can pay. In this case, since payment is possible, the point processing unit 430 extracts the terminal identification code of this user from the record of the user 3 and sends a payment confirmation request message to the terminal of the user. The terminal receiving this payment confirmation request message sends a confirmation request message for payment confirmation. The terminal receiving this payment confirmation message requests the input of the password for use for confirmation of payment, and when the user 3 inputs the password, it transmits it to the intermediary host 400. The point processing unit 430 that has received this password compares the received password with the password stored in item 5 of the record of the user 3 in the user management table 471 of the user information management unit 470. If both passwords match, the point processing unit 430 reduces the number of points 100 of item 3 of the user 3 of the user management table 471 by 100 to 30 and sends a payment completion message to the payment terminal 300. The payment terminal 300 receiving this message displays that the payment is completed.

[0045] Through the procedure described above, the user 3 can make payment at the store 10 in which the payment terminal 300 is installed, using the points owned by the user 3.

[0046] Although one embodiment of the present invention has been described above, the present invention is not limited to this embodiment. For example, although the route information is included in the driving schedule information input from the driving-side terminal 100 in the present embodiment, this route information may not be included. In this case, it is preferable that the intermediary host 400 be provided with road information and search for route information based on the starting point, the destination, and the road information included in the driving schedule information.

[0047] Further, in the present embodiment, the current position is acquired by the position acquisition unit 130 of the driving-side terminal 100, but any means may be used for this position acquisition. For example, the position information may be automatically acquired by using GPS (Global Positioning System) or ITS (Intelligent Transport Systems), or the driver may input the current position information.

[0048] Further, in the present embodiment, the recalculation of the waiting time is performed according to the request of the driver or the passenger, but the present invention is not limited to this. The driver-side terminal 100 or the passenger-side terminal 200 may periodically make a recalculation request to the intermediary host 400, or the intermediary host 400 may periodically recalculate without receiving a recalculation request. May be performed. Further, when the waiting time is recalculated, the driver side terminal 100 and the passenger side terminal 200 may be notified only when the newly predicted waiting time is later than the previous waiting time.

[0049] Further, in the present embodiment, the matching processing unit searches for the desired riding information of one passenger for the driving schedule information, but a plurality of desired riding information may be extracted. In this case, it is preferable that the driving schedule information includes the number of passengers who may be in the vehicle and is extracted within this number.

[0050] Further, in the present embodiment, the matching processing unit performs the matching processing under one of the conditions of the minimum number of points that the driver desires to obtain and the maximum number of points that the passenger allows to pay, and when the riding is completed. Therefore, the minimum number of points is paid to the driver by the passenger who wants to be connected, but various processes regarding this point can be considered. For example, from the passenger, in addition to the above-mentioned maximum allowable number of points, the desired number of points desired to be paid may be input, and if the desired number of points is at least the minimum number of points, processing may be performed so that the conditions are met. Good. In this case, the desired number of points may be moved from the passenger to the driver. Further, when there are many passengers who want to join, a method of deciding the passengers to join can be considered on a first-come-first-served basis, an auction, or the like.

[0051] As described above in detail, according to the present invention, the driver and the passenger who want to get on can check each other's schedules via the intermediary host so that they can go to the designated meeting place as in the conventional case. For example, there is no uncertainty that you will not know if you have the other person you want, you do not have to go to a limited meeting place, you can board at the meeting place and time that match each other's scheduled route and time. Becomes In addition, in the case of boarding, since strangers of each other often move in the same car, there is a possibility that an incident such as robbery may occur, but when registering as an intermediary host, do a thorough background check. When these registered drivers and passengers are at the meeting place, verify the identity by using the authentication information stored in the intermediary host and the terminal, and get on with only trusted parties. It becomes possible to secure safety.

[0052] In addition, the conventional ride-on mechanism does not have enough merit on the driver's side to be able to drive on a dedicated lane on a road, such as that implemented in the United States, etc. Although it was often difficult to realize, the present invention introduces a point system in which the driver pays the driver from the passenger, and by introducing a mechanism that allows the point to be used for payment at the store, the driver is positive. It has become possible to provide the benefits of being able to get on board.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
15 May 2003 (15.05.2003)

PCT
(10) International Publication Number
WO 03/040971 A1

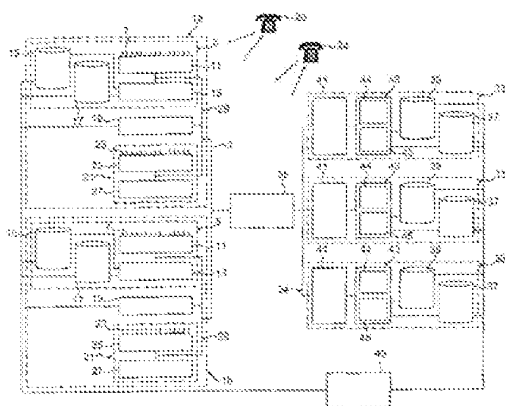
- (51) International Patent Classification⁷: G06F 17/60
- (21) International Application Number: PCT/GB02/04957
- (22) International Filing Date:
6 November 2002 (06.11.2002)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
0126809.3 7 November 2001 (07.11.2001) GB
0129265.5 6 December 2001 (06.12.2001) GB
0202864.5 7 February 2002 (07.02.2002) GB
0221614.1 18 September 2002 (18.09.2002) GB
- (71) Applicant (for all designated States except US): SITRA LTD [GB/GB]; Street Cottage, Heyshott, Midhurst, West Sussex, GU29 0DP (GB).
- (72) Inventor: and
- (75) Inventor/Applicant (for US only): ISAAC, Stephen, John [GB/GB]; Street Cottage, Heyshott, Midhurst, West Sussex, GU29 0DP (GB).
- (74) Agent: BODEN, Keith, McMurray; Fry Heath & Spence LLP, The Gables, Massetts Road, Horley, Surrey RH6 7DQ (GB).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR), OAPI patent (BF, BI, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

[Continued on next page]

(54) Title: REQUEST MATCHING SYSTEM AND METHOD



(57) Abstract: A real-time request matching system for and method of matching free-format requests of users, as requestors, to providers in servicing the requests, each of the requestors having at least one communicator for making requests and addressing replies thereto and each of the providers having at least one communicator for addressing requests and respective replies thereto, the method comprising the steps of: receiving requests from requestors; for each request, providing for the request to be relayed to selected providers as addressed thereby; receiving replies from selected providers, the replies received being made by the respective providers based on the respective requests; and one or both of supplying, for each request, information regarding the respective requestor to any providers having provided a positive reply to the respective request, with a positive reply indicating that a provider is able to meet a request, and information regarding replies from selected providers to the respective request to the respective requestor.

WO 03/040971 A1



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.

REQUEST MATCHING SYSTEM AND METHOD

The present invention relates to a request matching system for and a method of matching requests of users, as requestors, to providers in servicing the requests.

The present invention finds application in many fields, but particularly in classification structures where a user, as a requestor, wants to make a request of a community of interest, that is, a plurality of providers who are commonly classified.

It is envisaged that the present invention will find particular application in relation to trade classifications, where providers are grouped according to the goods or services provided.

Such trade classifications are currently embodied in a local trade directory, such as the Yellow Pages® or Thomson Directory®. In the UK, and, when seeking goods or services, a person would use the local directory to locate a provider for the goods or services.

In using such a directory, a person would first determine the classification most likely to supply the goods or services, review the corresponding section in the directory, select one or more providers, and then telephone those providers. When telephoning the providers, the same request, for example, "Can you provide goods/service X, for cost Y and before date Z?", would have to be made repeatedly to each provider. Often, especially if the request is specific, for example, "Do you have car part X in stock?", the person would have to telephone many of the selected providers before finding a provider that can satisfy the request. This is particularly the case where more than one provider has to be identified, for example, such as to allow for a comparison of costs, delivery times, etc.

Such a process is both time consuming, in having first to identify possible providers and subsequently establish conversation with many providers until

one or more providers are identified who can satisfy the request, and also relatively costly, in incurring the telephone costs associated with telephoning each of the many providers.

- 5 Although it is envisaged that the present invention will find particular application in relation to trade classifications, the present invention also has application in relation to many other classification structures.

One such other classification structure is broadcast classifications, where a
10 request is broadcast to a plurality of providers, which enables replies to be obtained from all of the providers, and provides for the logging of one or both of positive and negative replies from providers, and also those providers who do not reply. It is envisaged that such classifications could find application in obtaining information in response to a query, for example,
15 in building marketing lists or polling.

Another such other classification structure is community classifications, where persons having a common interest are commonly classified such as to allow a request to be made by a requestor, who may be a provider in the
20 community classification, of ones or all of the other persons in the community classification, as providers. One example of a community classification is a local help group whose members offer assistance on an *ad hoc* basis, where requests for assistance can be made of the members.

- 25 A further such other classification structure is tasking classifications, where a request is made to a plurality of providers requiring performance of a task. It is envisaged that such classifications will find particular application in the corporate environment, where requests can be made of particular departments, for example, the purchasing or marketing departments.

30 A yet further such other classification structure is promotion classifications, where a particular promotion is run, typically for a short period of time, and supported by a plurality of providers. One example of a promotion classification is holiday breaks, for example, fixed-price weekend breaks,

where providers wishing to join the promotion opt into the classification. In a preferred embodiment the providers would have the ability to opt into and out of the classification subject to the availability of the goods or services provided by the respective providers.

5

It is an aim of the present invention to provide a matching system and method which provides for the matching of requests of users, as requestors, to providers without a requestor having to identify possible providers and contact those providers to determine whether a request can be met.

10

In one aspect the present invention provides a matching system for matching requests of users, as requestors, to providers in servicing the requests, each of the requestors having at least one communicator for making requests and addressing respective replies thereto and each of the
15 providers having at least one communicator for addressing requests and respective replies thereto, the system comprising: at least one request receiving unit for receiving requests from requestors; at least one request relaying unit for providing for each of the requests to be relayed to selected providers as addressed thereby; at least one reply receiving unit for
20 receiving replies from providers, the replies received being made by the respective providers, as human decision-makers, based on the respective requests; and at least one information supplying unit for one or both of supplying, for each request, information regarding the respective requestor to any providers having provided a positive reply to the respective request,
25 with a positive reply indicating that a provider is able meet a request, and information regarding replies from selected providers to the respective request to the respective requestor.

Preferably, the system is a real-time matching system.

30

Preferably, the requests are free-format requests.

Preferably, the requests include voice requests.

Preferably, the communicators include mobile communicators, such as telephones, PDAs, personal computers and games devices.

- 5 Preferably, the communicators include fixed communicators, such as telephones, fax machines, personal computers, set-top boxes and games consoles.

Preferably, the communicators include combination fixed/mobile
10 communicators, such as telephones.

In one embodiment the system comprises: at least one inbound communications unit, each comprising at least one request receiving unit.

- 15 In one embodiment the system comprises: at least one outbound communications unit, each comprising at least one request relaying unit, at least one reply receiving unit and at least one information supplying unit.

In another embodiment the system comprises: at least one
20 communications unit, each comprising at least one request receiving unit, at least one request relaying unit, at least one reply receiving unit and at least one information supplying unit.

In one embodiment the at least one request relaying unit is configured to
25 relay a request directly to the communicators of selected providers.

Preferably, the at least one request relaying unit is configured to provide for a request to be relayed without any interrogation thereof to establish content.

30

Preferably, the at least one request receiving unit includes a plurality of receivers for receiving requests, each request having a classification contact address associated with a predeterminable classification.

More preferably, the classification contact addresses are dialling numbers.

In one embodiment the system further comprises: at least one provider selection unit for selecting providers to address a request.

5

Preferably, the at least one provider selection unit is configured to select providers for a request based at least in part on a geographic location assigned to the respective request and one or both of geographic locations or geographic zones assigned to the providers.

10

In one embodiment the geographic location assigned to the respective request is a current geographic location of the respective requestor.

Preferably, the current geographic location is determined from a
15 communicator contact address of the communicator of the respective requestor, where the communicator contact address has an assigned location.

More preferably, the communicator contact address is a dialling number.

20

In one embodiment the geographic location assigned to the respective request is an alternate geographic location as assigned by the respective requestor.

25 Preferably, the alternate geographic location is determined from a communicator contact address of a communicator, where the communicator contact address has an assigned location.

More preferably, the communicator contact address is a dialling number.

30

Preferably, geographic location of mobile communicators is determined from one of cell identification, triangulation, radio positioning or satellite positioning, such as GPS.

Preferably, geographic location of fixed communicators is determined from respective assigned locations.

Preferably, the at least one provider selection unit is configured to select
5 providers for a request within a predeterminable spatial geographic zone relative to the geographic location assigned to the respective request.

More preferably, the predeterminable spatial geographic zone is one of a geographic radius relative to the geographic location assigned to the
10 respective request, a distance of travel relative to the geographic location assigned to the respective request, or a time of travel relative to the geographic location assigned to the respective request.

Preferably, the at least one provider selection unit is configured to select
15 providers for a request based at least in part on at least one requestor characteristic for the respective requestor, such as geographically-related and socio-economic information, as an assigned characteristic for the respective requestor or a characteristic input by the respective requestor in making the request.

20

Preferably, the at least one provider selection unit is configured to select providers for a request based at least in part on at least one provider characteristic for the providers, such as requiring requestors to have a predeterminable profile or to provide contact details, as an assigned
25 characteristic for the respective providers.

Preferably, the at least one provider selection unit is configured to select providers for a request based at least in part on current time.

30 Preferably, the at least one provider selection unit is configured to select providers for a request based at least in part on at least one classification characteristic, such as a selection mechanism for selecting providers, as an assigned characteristic for the respective classification.

Preferably, the at least one request relaying unit is configured to relay a request to a predeterminable number of selected providers as addressed thereby.

- 5 Preferably, the at least one request relaying unit is configured to multicast a request to selected providers where the request is to be relayed to a plurality of providers as addressed thereby.

Preferably, the at least one information supplying unit is configured, for a
10 request, to supply information regarding providers having provided a positive reply to the respective request to the respective requestor.

In another aspect the present invention provides a matching system for matching requests of users, as requestors, to providers in servicing the
15 requests, the system comprising: a plurality of requestor communicators, each being for use by requestors in making requests and addressing replies thereto, at least ones of the replies including information regarding replies from selected providers, as human decision-makers, to respective requests; and a plurality of provider communicators, each being for use by providers
20 in addressing requests and replies thereto, the requests being relayed to respective selected providers as addressed and at least ones of the replies including information regarding the requestor of a respective request where having provided a positive reply to the respective request, with a positive reply indicating that a provider is able to meet a request.

25

Preferably, the system is a real-time matching system.

Preferably, the requests are free-format requests.

- 30 Preferably, the requests include voice requests.

Preferably, the communicators include mobile communicators, such as telephones, PDAs, personal computers and games devices.

Preferably, the communicators include fixed communicators, such as telephones, fax machines, personal computers, set-top boxes and games consoles.

- 5 Preferably, the communicators include combination fixed/mobile communicators, such as telephones.

In one embodiment a request is relayed directly to respective selected providers.

10

Preferably, a request is relayed without any interrogation thereof to establish content.

- 15 Preferably, the system further comprises: a communications unit including a plurality of receivers for receiving requests, each request having a classification contact address associated with a predeterminable classification.

More preferably, the classification contact addresses are dialling numbers.

20

Preferably, providers are selected for a request based at least in part on a geographic location assigned to the respective request and one or both of geographic locations or geographic zones assigned to the providers.

- 25 In one embodiment the geographic location assigned to the respective request is a current geographic location of the respective requestor.

- 30 Preferably, the current geographic location is determined from a communicator contact address of the communicator of the respective requestor, where the communicator contact address has an assigned location.

More preferably, the communicator contact address is a dialling number.

In one embodiment the geographic location assigned to the respective request is an alternate geographic location as assigned by the respective requestor.

- 5 Preferably, the alternate geographic location is determined from a communicator contact address of a communicator, where the communicator contact address has an assigned location.

More preferably, the communicator contact address is a dialling number.

10

Preferably, providers are selected within a predeterminable spatial geographic zone relative to the geographic location assigned to the respective request.

- 15 Preferably, providers are selected for a request based at least in part on at least one requestor characteristic for the respective requestor, such as geographically-related and socio-economic information, as an assigned characteristic for the respective requestor or a characteristic input by the respective requestor in making the request.

20

Preferably, providers are selected for a request based at least in part on at least one provider characteristic for the providers, such as requiring requestors to have a predeterminable profile or to provide contact details, as an assigned characteristic for the respective providers.

25

Preferably, providers are selected for a request based at least in part on current time.

- 30 Preferably, providers are selected for a request based at least in part on at least one classification characteristic, such as a selection mechanism for selecting providers, as an assigned characteristic for the respective classification.

In a further aspect the present invention provides a matching system for matching requests of users, as requestors, to providers in servicing the requests, each of the requestors having at least one communicator for making requests and addressing replies thereto and each of the providers
5 having at least one communicator for addressing requests, the system comprising: at least one request receiving unit for receiving requests from requestors; at least one request relaying unit for providing for each of the requests to be relayed to selected providers as addressed thereby; and at least one reply receiving unit for receiving replies from providers, the
10 replies received being made by the respective providers, as human decision-makers, based on the respective requests.

In a yet further aspect the present invention provides a matching system for matching requests of users, as requestors, to providers in servicing the
15 requests, the system comprising: a plurality of requestor communicators, each being for use by requestors in making requests and addressing respective replies thereto; a plurality of provider communicators, each being for use by providers in addressing requests and respective replies thereto; and at least one communications unit communicatable with the
20 requestor communicators and the provider communicators, and including at least one provider selection unit for selecting providers to address a request made by a requestor; wherein, for each request, the system is configured such that the request is provided to be relayed to selected providers, as human decision-makers, as addressed thereby.

25 Preferably, the system is further configured such that, for a request, the respective requestor is supplied with information regarding replies from selected providers to the respective request.

30 Preferably, the system is a real-time matching system.

Preferably, the requests are free-format requests.

Preferably, the requests include voice requests.

Preferably, the communicators include mobile communicators, such as telephones, PDAs, personal computers and games devices.

- 5 Preferably, the communicators include fixed communicators, such as telephones, fax machines, personal computers, set-top boxes and games consoles.

Preferably, the communicators include combination fixed/mobile
10 communicators, such as telephones.

In one embodiment the system is configured such that a request is relayed directly to the provider communicators of selected providers.

- 15 Preferably, the system is configured to provide that a request is relayed without any interrogation thereof to establish content.

Preferably, the at least one communications unit includes a plurality of receivers for receiving requests, each request having a classification contact
20 address associated with a predeterminable classification.

More preferably, the classification contact addresses are dialling numbers.

Preferably, the at least one provider selection unit is configured to select
25 providers for a request based at least in part on a geographic location assigned to the respective request and one or both of geographic locations or geographic zones assigned to the providers.

In one embodiment the geographic location assigned to the respective
30 request is a current geographic location of the respective requestor.

Preferably, the current geographic location is determined from a communicator contact address of the communicator of the respective

requestor, where the communicator contact address has an assigned location.

More preferably, the communicator contact address is a dialling number.

5

In one embodiment the geographic location assigned to the respective request is an alternate geographic location as assigned by the respective requestor.

- 10 Preferably, the alternate geographic location is determined from a communicator contact address of a communicator, where the communicator contact address has an assigned location.

More preferably, the communicator contact address is a dialling number.

15

Preferably, the at least one provider selection unit is configured to select providers within a predeterminable spatial geographic zone relative to the geographic location assigned to the respective request.

- 20 More preferably, the predeterminable spatial geographic zone is one of a geographic radius relative to the geographic location assigned to the respective request, a distance of travel relative to the geographic location assigned to the respective request, or a time of travel relative to the geographic location assigned to the respective request.

25

Preferably, the at least one provider selection unit is configured to select providers for a request based at least in part on at least one requestor characteristic for the respective requestor, such as geographically-related and socio-economic information, as an assigned characteristic for the
30 respective requestor or a characteristic input by the respective requestor in making the request.

Preferably, the at least one provider selection unit is configured to select providers for a request based at least in part on at least one provider

characteristic for the providers, such as requiring requestors to have a predeterminable profile or to provide contact details, as an assigned characteristic for the respective providers.

- 5 Preferably, the at least one provider selection unit is configured to select providers for a request based at least in part on current time.

Preferably, the at least one provider selection unit is configured to select providers for a request based at least in part on at least one classification
10 characteristic, such as a selection mechanism for selecting providers, as an assigned characteristic for the respective classification.

Preferably, the system is configured such as to provide for a request to be relayed to the provider communicators of a predeterminable number of
15 respective selected providers as addressed thereby.

Preferably, the system is configured to multicast a request to the provider communicators of respective selected providers where the respective request is to be relayed to a plurality of providers as addressed thereby.

20

In yet another aspect the present invention provides a method of matching requests of users, as requestors, to providers in servicing the requests, each of the requestors having at least one communicator for making requests and addressing replies thereto and each of the providers having at
25 least one communicator for addressing requests and replies thereto, the method comprising the steps of: receiving requests from requestors; for each request, providing for the request to be relayed to selected providers as addressed thereby; receiving replies from selected providers, the replies received being made by the respective providers, as human decision-
30 makers, based on the respective requests; and one or both of supplying, for each request, information regarding the respective requestor to any providers having provided a positive reply to the respective request, with a positive reply indicating that a provider is able to meet a request, and

information regarding replies from selected providers to the respective request to the respective requestor.

Preferably, the method is a real-time matching method.

6

Preferably, the requests are free-format requests.

Preferably, the requests include voice requests.

10 Preferably, the communicators include mobile communicators, such as telephones, PDAs, personal computers and games devices.

Preferably, the communicators include fixed communicators, such as telephones, fax machines, personal computers, set-top boxes and games
15 consoles.

Preferably, the communicators include combination fixed/mobile communicators, such as telephones.

20 In one embodiment the step of providing for a request to be relayed to selected providers as addressed thereby comprises the step of: relaying a request directly to the communicators of selected providers.

Preferably, a request is relayed without any interrogation thereof to
25 establish content.

Preferably, the step of receiving requests from requestors comprises the step of: receiving requests from requestors at a plurality of receivers, each of the requests having a classification contact address associated with a
30 predeterminable classification.

More preferably, the classification contact addresses are dialling numbers.

In one embodiment the method further comprises the step of: selecting respective providers to address a request.

Preferably, the step of selecting respective providers to address a request
5 comprises the step of: selecting respective providers to address a request based at least in part on a geographic location assigned to the respective request and one or both of geographic locations or geographic zones assigned to the providers.

10 In one embodiment the geographic location assigned to the respective request is a current geographic location of the respective requestor.

Preferably, the current geographic location is determined from a communicator contact address of the communicator of the respective
15 requestor, where the communicator contact address has an assigned location.

More preferably, the communicator contact address is a dialling number.

20 In one embodiment the geographic location assigned to the respective request is an alternate geographic location as assigned by the respective requestor.

Preferably, the alternate geographic location is determined from a
25 communicator contact address of a communicator, where the communicator contact address has an assigned location.

Preferably, the communicator contact address is a dialling number.

30 Preferably, geographic location of mobile communicators is determined from one of cell identification, triangulation, radio positioning or satellite positioning, such as GPS.

Preferably, geographic location of fixed communicators is determined from an assigned location.

Preferably, the step of selecting respective providers to address a request
5 comprises the step of: selecting respective providers to address a request within a predeterminable spatial geographic zone relative to the geographic location assigned to the respective request.

More preferably, the predeterminable spatial geographic zone is one of a
10 geographic radius relative to the geographic location assigned to the respective request, a distance of travel relative to the geographic location assigned to the respective request, or a time of travel relative to the geographic location assigned to the respective request.

15 Preferably, the step of selecting respective providers to address a request comprises the step of: selecting respective providers to address a request based at least in part on at least one requestor characteristic for the respective requestor, such as geographically-related and socio-economic information, as an assigned characteristic for the respective requestor or a
20 characteristic input by the respective requestor in making the request.

Preferably, the step of selecting respective providers to address a request comprises the step of: selecting respective providers to address a request based at least in part on at least one provider characteristic for the
25 providers, such as requiring requestors to have a predeterminable profile or to provide contact details, as an assigned characteristic for the respective providers.

Preferably, the step of selecting respective providers to address a request
30 comprises the step of: selecting respective providers to address a request based at least in part on current time.

Preferably, the step of selecting respective providers to address a request comprises the step of: selecting respective providers to address a request

based at least in part on at least one classification characteristic, such as a selection mechanism for selecting providers, as an assigned characteristic for the respective classification.

- 5 Preferably, the step of providing for a request to be relayed to selected providers as addressed thereby comprises the step of: providing for a request to be relayed to a predeterminable number of selected providers as addressed thereby.
- 10 Preferably, the step of providing for a request to be relayed to selected providers as addressed thereby comprises the step of: multicasting a request to selected providers where the request is to be relayed to a plurality of providers as addressed thereby.
- 15 Preferably, the step of supplying information comprises the step of: supplying, for a request, information regarding providers having provided a positive reply to the request to the respective requestor.

In still yet another aspect the present invention provides a method of
20 matching requests of users, as requestors, to providers in servicing the requests, each of the requestors having at least one communicator for making requests and addressing replies thereto and each of the providers having at least one communicator for addressing requests, the method comprising the steps of: receiving requests from requestors; for each
25 request, providing for the request to be relayed to selected providers as addressed thereby; and receiving replies from providers, the replies received being made by the respective providers, as human decision-makers, based on the respective requests.

- 30 In a still yet further aspect the present invention provides a method of matching requests of users, as requestors, to providers in servicing the requests, the method comprising the steps of: receiving signals comprising requests from requestors; for each request, transmitting a signal to selected providers comprising the request as received; receiving signals

comprising replies from selected providers, the replies being made by the respective providers based on the respective requests; and for each request, transmitting one or both of a signal comprising information regarding the respective requestor to any providers having provided a
5 positive reply to the respective request, with a positive reply indicating that a provider is able to meet a request, and a signal comprising information regarding replies from selected providers to the respective request to the respective requestor.

10 The present invention, to be known as the ResponsaTM matching system, provides an automated matching system, allowing in particular voice requests, and especially free-format requests, to be matched with providers that have received a request and have confirmed that the request can be met.

15

In a preferred embodiment this matching is achieved based on a location associated with the requestor, typically the location of the communicator of the requestor, the assigned locations of the providers in the classification selected, and the classification selected. In other embodiments the current
20 time and characteristics of one or both of the requestor and the providers can be utilized in the selection of providers.

With the present invention, the request as received is relayed, re-played for voice requests, to selected providers, and, if any provider cannot satisfy the
25 request, the provider simply has to decline the request, typically through one a "Decline" reply, a keystroke corresponding to a "Decline" reply, or simply hanging up the communicator. As the request is relayed, all communication by the requestors and the providers is a one-way communication. Thus, there is no direct conversation required between the requestor and a
30 provider, both parties avoiding the time consuming task of having to establish a polite discussion when the provider cannot satisfy the request. A direct conversation ensues only between the requestor and a provider who can satisfy the request.

The present invention provides for automated matching and yet allows the personal, free-format style of human communication. Preferred embodiments of the present invention, in utilizing free-format requests, provide the requestors with the freedom to frame the requests as desired; the language and form of the requests not being constrained, such as by requiring the requestor to utilize predetermined keywords.

In addition, the present invention only relays requests to providers who wish to receive requests and are in a position to service the requests, for example, providers who are open and within a specific geographic zone, as dictated by the particular classification.

In the present invention, it is human decision-makers, as opposed to a computer, who receive the requests and can intelligently interpret the requests. This avoids the problems associated with matching systems which require the requests to be defined using predetermined keywords, for example, by the use of drop-down menus.

Moreover, the present invention finds application both within a private environment, such as operated by organisations for use by members of the organisation, and a public environment, which allows use by members of the public.

In certain embodiments the present invention can be configured to bias a match in favour of either the requestor or selected providers. This is envisaged to be appropriate within some niche applications, notably in the private environment.

Preferred embodiments of the present invention will now be described hereinbelow by way of example only with reference to the accompanying drawings, in which:

Figure 1 diagrammatically illustrates a matching system for matching requests of users, as requestors, to providers in servicing requests in accordance with a preferred embodiment of the present invention.

5 The matching system comprises at least one telephony management (TM) system 1, in this embodiment first and second TM systems 1a, 1b, for managing inbound telephone calls to and outbound telephone calls from the matching system. In another embodiment the matching system could include a single TM system 1, and in further embodiments could include any
10 number, from tens to hundreds, of TM systems 1.

In this embodiment the TM systems 1a, 1b are co-located, but in other embodiments could be remotely located. In one such other embodiment the TM systems 1a, 1b could be located at separate locations in a geographic
15 region. By way of example, in the UK, one TM system 1a could be located at one center, for example, London, to serve the Southern half of the UK, and the other TM system 1b could be located at another center, for example, Glasgow, to serve the Northern half of the UK. In other embodiments which include many TM systems 1, the TM systems 1 could be located at principal
20 centers, for example, cities and towns, throughout a geographic region.

The matching system further comprises a first communications network 3 which provides a communications link to and between the TM systems 1a, 1b.

25

In this embodiment, where the TM systems 1a, 1b are co-located, the communications network 3 comprises a local area network (LAN), such as an Ethernet.

30 In other embodiments, where the TM systems 1a, 1b are remotely located, the communications network 3 could comprise a telephone network, preferably an integrated services digital network (ISDN).

The TM systems 1a, 1b each comprise an inbound telephony management (ITM) unit 5 for managing inbound telephone calls from requestors on inbound telephone lines 7, preferably ISDN lines. In this embodiment multiple subscriber numbering (MSN) is employed such that a plurality of requestors each requiring the same classification can be supported simultaneously.

The ITM unit 5 comprises an inbound interactive voice response (IIVR) module 11 which is connected to the inbound telephone lines 7 to monitor for inbound telephone calls and supports voice and keytones, an inbound telephony application management (ITAM) module 13 for generating request documents corresponding to the requests, in this embodiment voice requests, in each of the inbound telephone calls and transmitting the same to a provider selection unit 33a, 33b, 33c, as will be described in more detail hereinbelow, a first, classification characteristics (CC) database 15 for storing the classification characteristics for each classification which is connected to the ITAM module 13, and a requestor information (RI) database 17 for storing information relating to requestors which is connected to the ITAM module 13.

With this configuration, the CC database 15 and the RI database 17 are not accessible to the IIVR module 11, thereby securing the RI database 17 from being accessed by a third party. In this embodiment the ITM unit 5 includes an intrusion detector between the IIVR module 11 and the ITAM module 13 such as to monitor, typically by the identification of unusual packets, for third party intrusion, and thereby provide for the security of the ITAM module 13.

In this embodiment communication between the IIVR module 11 and the ITAM module 13 is by the VoiceXML communications protocol.

In this embodiment a request document generated by the ITAM module 13 includes at least a classification identifier which, in this embodiment, is the called number, that is, the telephone number called by the requestor, and identifies the classification to which the request is to be matched, a requestor

identifier which, in this embodiment, is the calling line identification (CLI) of the telephone of the requestor, that is, the telephone number to which the system or positive-reply providers are to contact in reply to the request, and identifies the requestor, and a request file corresponding to the request to be
5 relayed to providers, in this embodiment a voice file corresponding to the voice request to be re-played to providers. In an alternative embodiment the requestor identifier is a telephone number derived either from the CLI of the telephone of a requestor or information, for example, including an authentication code, provided by the requestor in making the request.

10

In an alternative embodiment, as will be described in more detail hereinbelow, a request document generated by the ITAM module 13 could omit the request file for the request where the file is stored in a file store 19 which is accessible to enable the request subsequently to be relayed.

15

In this embodiment, a request document generated by the ITAM module 13 includes a location identifier which identifies the location of the search center, where the location of the requestor cannot be determined from the requestor identifier at the provider identification unit 33a, 33b, 33c. Typical examples
20 where the requestor identifier does not allow for the location of the requestor to be determined are as a result of the requestor being ex-directory and the requestor not having otherwise provided an address for the calling number or the calling telephone being a mobile telephone, or where the requestor requires an alternate location for the search center. In this embodiment the
25 location identifier is a telephone number, other than the number of the calling telephone, which is provided by the requestor to represent the location of the search center.

In this embodiment the CC database 15 is a structured query language (SQL)
30 database.

In this embodiment the components of the ITM unit 5, namely the IIVR module 11, the ITAM module 13, the CC database 15 and the RI database 17, are co-located.

In other embodiments the IIVR module 11 and the ITAM module 13, can be co-located, and one or both of the CC database 15 and the RI database 17 remotely located. In this embodiment the communications network between
5 the ITAM module 13 and the CC database 15 and the RI database 17 is a virtual private network (VPN).

In further embodiments one or both of the IIVR module 11 and the ITAM module 13 can be remotely located, and the CC database 15 and the RI
10 database 17 co-located.

In a still further embodiment all of the components of the ITM unit 5, namely the IIVR module 11, the ITAM unit 13, the CC database 15 and the RI database 17, can be remotely located.
15

The TM systems 1a, 1b each further comprise a file store 19 for storing classification greetings and prompts for the supported classifications. As mentioned hereinabove, in one embodiment the file store 19 stores the request files for each of the requests from the requestors. This storage of
20 the request files enables the request files to be retrieved, and thus the request documents need not include the request files, which provides for significantly higher traffic flows for the same system capacity, as the request documents are much smaller in size.

25 The operation of the ITM units 5 of the TM systems 1a, 1b will now be described hereinbelow.

The ITM units 5 each receive inbound telephone calls on the respective inbound telephone lines 7 from requestor communicators 20, in this
30 embodiment telephones, with the particular ITM unit 5 which receives the telephone call being dictated by the called number, that is, the telephone number called by a requestor.

In this embodiment, where the matching system is configured to operate as a trade classification matching system, a requestor is able to select from a plurality of classification entries which correspond to different kinds of goods and service providers. Each classification entry has an associated telephone
5 number which a requestor has to dial to access the matching system for that classification, and in this embodiment is the classification identifier which determines the search criteria, the matching criteria and the termination criteria by which the matching operation is performed, as will be described in more detail hereinbelow. In one embodiment each classification entry can
10 include a summary of one or both of the service or goods in order to enable a requestor to determine that the correct classification is being selected for the particular request.

For each inbound call, the IIVR module 11 transmits the called number and
15 the calling number, that is, the calling line identification (CLI) of the communicator 20 of the requestor, the calling communicator, to the ITAM module 13. In this embodiment the requestor communicator 20 can be a fixed telephone, a mobile telephone, a combination fixed/mobile telephone or a PDA.

20 The ITAM module 13 then looks up the called number in the CC database 15, and retrieves the classification greeting file identifier for the "Classification" greeting to be played to the requestor.

25 Where the called number is not associated with a classification, for example, where the called number was previously used in association with a classification but is not currently in use, the ITAM module 13 instructs the IIVR module 11 to execute an "Unassigned Classification" script, which plays an "Unassigned Classification" greeting and closes the call connection.

30 Where the calling communicator 20 has no CLI, as when CLI barred, the ITAM module 13 instructs the IIVR module 11 to execute a "Number Withheld" script, which plays a "Number Withheld" greeting which instructs

the requestor to enable the CLI of the calling telephone or provide an authentication code relating to register as an authenticated requestor.

In this embodiment the system is configured to allow a requestor to proceed
5 with a request only when the inbound call has a CLI. By requiring the use of CLI-enabled communicators 20, abuse of the system by requestors directing replies to third parties can be prevented.

Where the calling communicator 20 has a CLI, the ITAM module 13 then
10 looks up the CLI of the calling communicator 20 in the RI database 17 to confirm requestor information, including confirmation that location information is available for the CLI, and obtain the default requestor preferences, such as whether the requestor details for the requestor are to be provided to providers or withheld.

15 Where the CLI of the calling communicator 20 is that of a fixed communicator and the RI database 17 includes location information for the CLI of the calling telephone, the ITAM module 13 instructs the IIVR module 11 to execute a "Fixed Requestor" script.

20 Where the CLI of the calling communicator 20 is that of a mobile communicator and the RI database 17 includes no default location information for the CLI of the calling communicator 20, the ITAM module 13 determines the location of the calling communicator 20 from network
25 information and instructs the IIVR module 11 to execute the "Mobile Requestor" script. In this embodiment the cell ID for the calling communicator 20 is utilized to determine the location of the requestor, which cell ID is representative of the cell, that is a geographic zone, in which the calling communicator 20 is located, with the ITAM module 13 looking up the
30 cell ID in the RI database 17 to obtain the location of the calling communicator 20. In other embodiments the calling communicator 20 of the requestor can be determined by triangulation, radio positioning or satellite positioning, such as GPS.

Where there is a CLI, but the location cannot be determined from the CLI, such as when the requestor is ex-directory, that is, where the requester has required the service provider not to disclose location information corresponding to the number of the requestor communicator 20, and no location information has been otherwise provided by the requestor, the ITAM module 13 looks up the search vector for the classification corresponding to the called number in the CC database 15 to determine whether there is a vector for handling location-independent requestors. Where there is a vector for handling location-independent requestors, the ITAM module 13 utilizes that vector. Where there is no vector for handling location-independent requestors, the ITAM module 13 instructs the IIVR module 11 to execute a "Location Required" script which plays a "Location Required" greeting and prompts the requestor for location information, typically the number of a known CLI-enabled telephone, for which location information is held in the CC database 15, to act as the search center.

Where there is a CLI, but the calling number is of a switchboard (manned or automated), the ITAM module 13 instructs the IIVR module 11 to execute an appropriate "Switchboard Requestor" script.

Under the "Fixed Requestor" and "Mobile Requestor" scripts, the IIVR module 11 plays a "Classification Title" greeting corresponding to the retrieved classification greeting identifier, and then a "Request Prompt" greeting which prompts for the request from the requestor. For example, where the called number corresponds to the classification "Toy Shops", in this embodiment the classification greeting would be "Welcome to the ResponsaTM classification for Toy Shops", and the "Request Prompt" greeting would be "Please leave your request after the tone and hang up when completed".

Under the "Switchboard Requestor" script, the IIVR module 11 plays in turn the "Classification Title" greeting corresponding to the retrieved classification greeting identifier, an "Extension Identification" greeting which prompts the requestor to provide an extension number, typically, through the keying in of the number or through a voice reply, and the "Request Prompt" greeting

which prompts for the request from the requestor. In this embodiment the "Request Prompt" greeting is played only following a predetermined keystroke on the calling communicator 20, which keystroke confirms the provision of the extension number of the calling communicator 20. For example, where the called number corresponds to the classification "Toy Shops", in this embodiment the "Classification Title" greeting would be "Welcome to the Responsa[™] classification for Toy Shops", the "Extension Identification" greeting would be "Please leave your extension number after the tone, followed by the X key", and, following the required keystroke, the "Request Prompt" greeting would be "Please leave your request after the tone and hang up when completed".

Where a requestor wishes to set alternative preferences, for example, to withhold contact details from providers where the default is to provide details to providers, provide an alternative search center location, or alternative search parameters, the IIVR module 11 provides for the input of keystrokes to set these preferences.

In this embodiment the IIVR module 11 is configured to allow for the re-recording of requests, such as where a requestor makes a mistake in recording a request, through the keying of a predetermined keystroke.

Also in this embodiment the IIVR module 11 is configured to enable requests to be reviewed, here re-played, prior to initiating a matching operation.

In this embodiment the call connection is closed after the elapse of a predetermined period of time following the "Request Prompt" greeting, or on the requestor hanging up where this event can be identified by the IIVR module 11.

In one embodiment the ITAM module 13 stores each request in the file store 19 under an assigned file name.

The TM systems 1a, 1b each further comprise an outbound telephony management (OTM) unit 21 for managing outbound calls on outbound lines 23, preferably ISDN lines, to providers on provider communicators 24 and requestors on requestor communicators 20.

5

The OTM unit 21 comprises an outbound interactive voice response (OIVR) module 25 which is connected to the outbound lines 23 for effecting outbound calls to providers and requestors, and an outbound telephony application management (OTAM) module 27 for scheduling and instructing
10 calls to the OIVR module 25 in accordance with call documents as received from a provider selection unit 33a, 33b, 33c. In this embodiment call documents can be scheduled in accordance with a priority flag, with, for example, status reports for requestors having a lower priority than requests for providers.

15

In operation, where effecting an outbound call to a provider, the OIVR module 25 dials the number of the provider communicator 24 as identified in the call document.

20 Where the call effected by the OIVR module 25 to the provider communicator 24 is answered, the OIVR module 25 executes a "Request Playback" script, which first plays a "VRS Welcome" greeting, for example "VRS for hairdressers", followed by a first short tone, and subsequently re-plays the request to the provider followed by a second short tone. In this embodiment
25 the request is relayed, here re-played, without any interrogation, such as by speech recognition, since such is not necessary; the classification being dictated by the called number. In an alternative embodiment the request could be interrogated, where a more refined or elaborate matching system is required.

30

On hearing the request, the provider has the following reply options, which each have an associated keystroke:

"Accept" which is confirmation that the request can be satisfied. For example, where the request is "Do you cut hair?", that is, where the requester is merely attempting to obtain details of local hairdressers, and the request is appropriate, the provider would reply "Accept".

5

"Probably" which is an indication that the request can probably be satisfied, but the provider has to confirm. Where the request is more complex, such as "Can you fit me in for a haircut next Thursday at 1530?", the provider may recall that next Thursday afternoon is not fully booked, but would need
10 to check if that exact time is free, in which case the provider would reply "Probably".

"Decline" which confirms that the request cannot be satisfied. In this embodiment hanging up is the equivalent of the reply option "Decline".

15

"Inappropriate" which indicates that the request is either inappropriate for the classification or Incomprehensible.

"Abusive" which indicates that the request is considered abusive.

20

In this embodiment the replies of the providers are logged, such as to enable the classification managers to monitor the behaviour of the providers and in part the requestors, which *inter alia* allows for the targeted provision of guidance to requestors and providers, and even the barring of requestors or
25 providers where behaviour is unacceptable.

For example, "Inappropriate" replies are logged against both the providers so replying and the requestors who made the requests, as repeated "Inappropriate" replies may be caused by either the requestors or the
30 providers being confused about the purpose of a classification.

Also, "Abusive" replies are logged against both the providers so replying and the requestors who made the requests, and, in this embodiment, in addition to terminating a matching operation, repeated abusive requests, as

established by confirmed "Abusive" replies, result in the respective requestors being barred from use of classifications or even the entire matching system. In this embodiment, repeated "Abusive" replies by providers, typically significantly above the average for a classification, would
5 also be investigated.

On the provider providing a positive reply, that is, in this embodiment one of the reply options "Accept" or "Probably", the OIVR module 25 executes an "Acknowledgement" script, which plays a "Reply Acknowledged" greeting
10 followed by a short tone, and updates the call document to include a positive reply identifier and transmits the updated call document to the originating provider selection unit 33a, 33b, 33c.

Where the contact details of the requestor have been withheld, the
15 "Acknowledgement" script also plays a "Contact Details Withheld" greeting.

Where the contact details are not withheld, the "Acknowledgement" script also provides contact details for the requestor followed by a short tone. In one embodiment the provider can record the details of the requestor
20 subsequently to call the requestor. In another embodiment the provider can contact the requestor directly through a predetermined keystroke. Where the requestor is following the process on line, the requestor is able to connect directly to the provider while the provider is still on line.

25 Where the calling communicator 20 is from an extension off a manned switchboard, the "Acknowledgement" script also provides the switchboard telephone number and the extension of the requestor so as to allow the provider to navigate the switchboard.

30 Where the calling communicator 20 is from an extension off an unmanned switchboard, the "Acknowledgement" script also plays a "Please stay on line until a tone is heard" greeting. In the period prior to the tone, the details of the provider are provided to the requestor and the requestor is thus provided an opportunity to connect directly to the provider who is still on line. Where

immediate connection is required, the requestor is connected to the provider and thereby establishes a conversation. Where immediate connection is not established, the requestor can contact the provider later.

- 5 In this embodiment the system is configured such as to allow the "Acknowledgement" script to be re-executed with a predetermined keystroke.

In this embodiment a positive reply is either of the reply options "Accept" or
10 "Probably". In other embodiments, and particularly for some classifications, the matching system can be configured to seek only "Accept" replies as positive replies, in which embodiments the "Request Playback" script also plays a "Decline or accept only, please" greeting, with all "Probably" and "Decline" replies being taken as negative replies.

15

Where the call effected by the OIVR module 25 to the provider is not answered, the OIVR module 25 assigns one of the following states as a call state identifier to the call document, that is, "Number Unobtainable" where the number held for the provider communicator 24 is unobtainable,
20 "Engaged" where the number held for the provider is engaged, and "Rings Out" where the number held for the provider rings out and there is no reply, updates the call document to include the relevant call state identifier and transmits the updated call document to the originating provider selection unit 33a, 33b, 33c.

25

The TM systems 1a, 1b each further comprise a telephony management (TM) communications network 29 which provides a communications link to the first main communications network 3 and between the ITM unit 5, in this embodiment both the IIVR module 11 and the ITAM module 13 separately,
30 the file store 19, and the OTM unit 21, in this embodiment both the OIVR module 25 and the OTAM module 27 separately. In one embodiment the communication with the ITM unit 5, the file store 19 and the OTM unit 21, and between the IIVR module 11 and the ITAM module 13, is coded, typically

either an encrypted communication or an authenticated communication, such as a signed communication.

In this embodiment, where the ITM unit 5, the file store 19 and the OTM unit
5 21 are co-located, the TM communications network 29 comprises a local area network (LAN), such as an Ethernet.

In other embodiments, where the ITM unit 5, the file store 19 and the OTM
10 unit 21 are remotely located, the TM communications network 29 could comprise an established telephone network, preferably an ISDN network.

The matching system further comprises at least one provider selection unit 33, in this embodiment three provider selection units 33a, 33b, 33c, for
15 selecting the providers to be contacted in matching a request and scheduling the contact with the providers by the OTM units 21 of the TM systems 1a, 1b. It will be appreciated that the matching system can include any number of provider selection units 33; this embodiment including three provider selection systems 33a, 33b, 33c simply by way of exemplification.

20 In this embodiment the provider selection units 33a, 33b, 33c are co-located, but in other embodiments ones or all of the provider selection units 33a, 33b, 33c could be remotely located.

In this embodiment the provider selection units 33a, 33b, 33c are each
25 configured to support all of the addressable classifications, but in other embodiments, particularly where there are many tens or hundreds of the provider selection units 33a, 33b, 33c, the provider selection units 33a, 33b, 33c could be configured to support only one classification or a sub-set of the addressable classifications.

30

The matching system further comprises a second main communications network 34 which provides a communications link to and between the provider selection units 33a, 33b, 33c.

In this embodiment, where the provider selection units 33a, 33b, 33c are co-located, the second main communications network 34 comprises a local area network (LAN), such as an Ethernet.

5 In other embodiments, where the provider selection units 33a, 33b, 33c are remotely located, the second main communications network 34 could comprise a telephone network, preferably an integrated services digital network (ISDN).

10 The matching system further comprises a router 35 for routing request documents and call documents between respective ones of the TM systems 1a, 1b and the provider selection units 33a, 33b, 33c.

The provider selection units 33a, 33b, 33c each include a classification
15 Information (CI) database 37 which contains information, including provider characteristics, regarding each of the providers in each of the classifications supported by the respective provider selection unit 33a, 33b, 33c, provider list building parameters for each classification, match criteria for each classification and termination criteria for each classification, a second
20 requestor information (RI) database 39 which contains information, including requestor characteristics, regarding each of the requestors, a document scheduler 41 for scheduling documents to and from the respective one of the provider selection units 33a, 33b, 33c, and a provider list building unit 43 which, for each request, builds a sorted provider list of providers from the
25 providers contained in the CI database 37 for the classification to which the request is directed.

The CI database 37 contains information regarding each of the providers in each classification, each provider being referenced by a provider identifier.

30 The information held for each provider includes the name of the provider, the address of the provider, the contact number for the provider, provider characteristics, and system history information, including the number of requests delivered, the number of positive replies, that is, in this embodiment as one of "Accept" or "Probably" replies, and in other

embodiments as an "Accept" reply, the number of negative replies, that is, in this embodiment as a "Decline" reply, and in other embodiments as one of "Decline" or "Probably" replies, the number of "Inappropriate" replies, and the number of "Abusive" replies. In this embodiment the CI database 37 is a
5 spatial-join database, that is, a database which provides for spatial operations.

The provider list building unit 43 includes a provider selection module 44 which is configured to create one or more candidate provider lists in
10 accordance with a predetermined listing mechanism for the classification to which the request is addressed, and, where the listing mechanism utilizes a location-based vector, based on a search center, which is usually the location of the requestor, but can be an alternative location as specified by the requestor, or the location of the first provider having replied positively to a
15 request where a search is re-centered. As will be described in more detail hereinbelow, the creation of a plurality of candidate provider lists provides for a mix of providers, for example, a mix of local and national providers.

In this embodiment the provider selection module 44 employs the following
20 listing mechanisms to create the one or more candidate provider lists:

Listing Mechanism A - Closest

This listing mechanism creates a candidate provider list of candidate
25 providers closest, in terms of a spatially-related parameter, typically direct (point-to-point) distance, travelling distance or travelling time, to the search center. In one embodiment the candidate provider list can be truncated by number, that is, to include a predetermined number of closest providers to the search center. In another embodiment the candidate provider list can be
30 truncated by an upper limit to the spatially-related parameter, that is, to include all of the providers within a spatial zone of predetermined size.

Listing Mechanism B - Closest Cluster

This listing mechanism creates a candidate provider list of candidate providers which represent the closest set of providers, as a closest cluster, which satisfy the cluster characteristics for the classification to which the request is addressed. In this embodiment the cluster characteristics define the closest cluster as the closest set of providers comprising at least a predetermined number of providers within a spatial zone, typically direct (point-to-point) distance, travelling distance or travelling time, of predetermined size.

10 Listing Mechanism C - Greatest Density Cluster

This listing mechanism creates a candidate provider list of candidate providers which represent the set of providers, as a cluster but not necessarily the closest cluster, which satisfy the density characteristics for the classification to which the request is addressed. In this embodiment the density characteristics define the cluster as the set of providers comprising the highest number of providers within a first spatial zone, typically direct (point-to-point) distance, travelling distance or travelling time, of a first predetermined size within a second spatial zone of a second predetermined size of greater size than the first spatial zone and centered about the search center. This listing mechanism is effective to locate the largest town or city within the geographic zone, and avoids providers outside of the main concentrations, which are likely to be more widely dispersed. For this reason, it is expected that this listing mechanism will commonly be used as part of a series of searches.

Listing Mechanism D - Segment

This listing mechanism creates a candidate provider list of candidate providers from within a segment of a circle which has a predetermined segment angle and a radius of either a first predetermined size, typically direct (point-to-point) distance, travelling distance or travelling time, to the search center or a second smaller, distance where the segment of the smaller radius encompasses a predetermined number of candidate providers.

In this embodiment the candidate provider list is ordered in terms of a spatially-related parameter, typically direct (point-to-point) distance, travelling distance or travelling time, from the search center, with the closest being listed first in the list. Where re-invoked as result of the matching
5 operation not being successful, a subsequent segment, either in a clockwise or counter-clockwise sense, is utilized. This listing mechanism has been developed for use where there is a variable, but high density of providers in a region of interest, and the requestor is keen to identify providers within a general travel direction extending from the search center. In this
10 embodiment the segment of the circle is randomly selected.

Listing Mechanism E – All

This listing mechanism creates a candidate provider list of all of the candidate
15 providers with a spatial zone, in terms of a spatially-related parameter, typically direct (point-to-point) distance, travelling distance or travelling time, of a predetermined size centered about the search center.

Listing Mechanism F – Threshold

20 This listing mechanism creates a candidate provider list of candidate providers which satisfy the threshold characteristics for the classification to which the request is addressed. In this embodiment the threshold characteristics define providers which satisfy a predetermined threshold
25 criteria, for example, above or below at least one predetermined threshold value. Examples of threshold criteria include turnover, number of employees, quality rating, and speed of delivery.

The provider list building unit 43 further includes a provider sorting module
30 45 for creating provider contact lists by sorting the candidate providers in the candidate provider lists created by the provider selection module 44 in accordance with a predetermined sorting mechanism for the classification to which the request is addressed. In one embodiment the created provider contact lists can be truncated.

In this embodiment the provider sorting module 45 can employ the following sorting mechanisms:

5 Sorting Mechanism A – None

This sorting mechanism provides for no sorting of a candidate provider list. The provider contact list has the order of the candidate provider list as created by the provider selection module 44.

10

Sorting Mechanism B – Random

This sorting mechanism creates a provider contact list by randomizing a candidate provider list as created by the provider selection module 44.

15

Sorting Mechanism C – Take-Turns

This sorting mechanism creates a provider contact list by sorting a candidate provider list as created by the provider selection module 44 in accordance
20 with the last contact with the providers so as to ensure that the providers are contacted in turn according to a specified ratio, with the last-contacted provider being at the bottom of the list. In this embodiment a log is maintained as to the previous contact with the providers.

25 Sorting Mechanism D – Closest

This sorting mechanism creates a provider contact list by sorting a candidate provider list as created by the provider selection module 44 in terms of a spatially-related parameter, typically direct (point-to-point) distance,
30 travelling distance or travelling time, to the search center, with the closest being listed first and so on.

Sorting Mechanism E – Ranked

This sorting mechanism creates a provider contact list by sorting a candidate provider list as created by the provider selection module 44 into ranked order
5 in accordance with a particular ranking parameter, for example, by turnover, number of employees, quality rating, and speed of delivery. This sorting mechanism is particularly suited to searching for providers where the location is unimportant. These providers will tend to be national providers, and the location of these providers is only relevant insofar that the providers
10 encompass the location of the requestor. A typical classification would be insurance services where contact with the providers would be by telephone. It will be appreciated that this sorting mechanism can create lists that never include certain providers and, for that reason, is usually utilized as one of a series of searches.

15 In this embodiment, where the list building criteria for a selected classification requires more than one contact provider list, the list building unit 43 is configured to merge the plurality of provider contact lists to create a single provider contact list. The creation of a single provider contact list
20 from a plurality of provider contact lists finds application where a mix of providers, for example, local and national providers, are to be selected. A typical classification to which such a provider contact list is appropriate is that of computer suppliers, where a requestor may want a local provider or perhaps a national provider.

25 The provider contact lists built by the list building unit 43 include a plurality of state fields for each provider entry, but with the restriction that a provider can be included in only one field. In this way, the state of the provider can be maintained. Several states can be grouped as meaning that the request
30 has not yet been delivered, these including the "Available", "Out of Hours", "Engaged" and "Ring Out" states. Final response states include the "Accepted", "Declined", "Probably", "Inappropriate" and "Abusive" states.

In building a provider contact list, a database query is performed to establish which providers are available. This list is examined and the providers are sorted into "Available" and "Out of Hours" states. As each "Out of Hours" provider becomes available, an event is queued to move the provider from the "Out of Hours" field to the "Available" field. Similarly, as each "Available" provider becomes unavailable, an event is queued to move the provider from the "Available" to the "Out of Hours" state.

In one embodiment the provider selection units 33a, 33b, 33c can be configured to provide for re-centering of the search center to the location of a provider providing the first positive reply. Where re-centering is enabled, and a provider has been identified who has provided a positive reply, the provider list building unit 43 is re-invoked to create a further provider contact list which utilizes the location of the identified provider as the search center. Such re-centering is utilized to identify providers which are as close together as possible, thereby attempting to avoid the identification of providers which are widely spaced, for example, two providers which are in opposite directions, and hence widely separated, from the search center. It is envisaged that re-centering will find application in identifying a number of relatively-closely located providers to be visited by the requestor, such as would be desired in enabling a comparison of the services or goods provided by the providers.

The document scheduler 41, in scheduling call documents to the OTM units 21 of the TM systems 1a, 1b is configured to perform a calculation to compute how many providers can be concurrently called and whether the calls are "Accept-Only". That number is used to determine if the "In Progress" list of providers to be contacted can accommodate another provider. If another provider can be accommodated, the first provider from the "Available" list is used. If the "Available" list is empty, the document scheduler 41 waits for an "Engaged", "Ring Out" or "Out of Hours" provider to become available. A further interface method is utilized to move a provider from one list to another, thereby allowing the document scheduler 41 to move an "In Progress" provider to the final response state, such as

"Accepted", "Declined", "Probably", etc. This is the same method used to move providers between "Available" and "Out of Hours" and vice versa. The use of the same method allows multiple checks to be performed, such as re-queuing an "Engaged" provider when the provider is "Out of Hours".

5

The provider selection units 33a, 33b, 33c are configured to terminate searching where the match criteria is satisfied, or, if the match criteria is not met, one of the following termination criteria where enabled. In this embodiment, for each classification, any of the termination criteria can be enabled or disabled. Where any of the termination criteria are enabled, the
10 provider selection units 33a, 33b, 33c terminate searching where termination criteria are satisfied, and a termination report is delivered to the respective provider.

15 In this embodiment the termination criteria are as follows:

Termination Event A – Number of Declines

For this termination event, termination occurs when a predetermined
20 percentage of the providers on the provider contact list for the respective request have been contacted. The provider selection units 33a, 33b, 33c are configured to contact as many of the selected providers as possible, in re-trying providers where the telephone numbers for those providers are engaged or ring out without answer. As will be appreciated, the telephone
25 numbers for some providers may be permanently engaged or ring out, and, as such, the system cannot necessarily contact all selected providers.

Termination Event B – Elapse of Predetermined Period

30 For this termination event, termination occurs where a predetermined time limit has elapsed. In preferred embodiments termination occurs at the first of a predetermined time period having elapsed since the request was made by the requestor or a predetermined percentage of providers on the provider

contact list for a request have not been contacted within a predetermined period since the request was made by the requestor.

Termination Event C – Abusive Request

5

For this termination event, termination occurs where a predetermined number, in this embodiment two, of the providers report a request as abusive, an "Abusive" reply being a reply option of the providers.

10 Termination Event D – Inappropriate Request

For this termination event, termination occurs where a predetermined number, in this embodiment two, of the providers report a request as inappropriate, an "Inappropriate" reply being a reply option of the providers.

15

Termination Event E – List Exhausted

For this termination event, termination occurs where the contact provider list is exhausted.

20

In a preferred embodiment the number of "Incomprehensible" or "Inappropriate" replies is set at a number greater than one, for example, two or three, such that a single "Incomprehensible" or "Inappropriate" reply is not sufficient to cause termination of the matching operation, as could be
25 provided by a rogue provider or as a result of a simple mistake on the part of a provider.

Where the system has not satisfied the matching criteria within a reasonable time, the requestor is contacted and provided with a progress report. The
30 system continues until either satisfying the matching criteria or one of the termination criteria. If the termination criteria is satisfied for a request, the requestor is contacted to report the end of the search and the results achieved. In general, if the requestor hears nothing, the requestor can be confident that the system has been successful in matching the request in

accordance with the matching criteria for the classification. Progress or termination reports are returned to a switchboard requestor, but the reports are always preceded by the recorded name and extension number of the requestor, so that the switchboard operator can pass the message on to the
5 requestor.

In this embodiment the system also provides for the initiation of the matching operation to be delayed. Often there are occasions when a person would like to make a request, but he is aware that most or all of the potential
10 offers are currently closed. The system can still be used on these occasions. A requestor can make a request at any time of the day, for example, at 0200, knowing that the request is unlikely to be matched. Any selected providers active at that time will be contacted, allowing those providers an opportunity to respond to the request. The active periods will be known for
15 all providers. During normal daytime working hours for many providers, the number of available providers will be much greater. If this is the case, the requestor will be given a termination report as usual, but the system is configured to relay the request again at a specified other time when a greater number of providers in the given classification are active. In this
20 embodiment the system is configured such as to allow this feature to be over-ridden through the application of a predetermined keystroke. As a default, the act of hanging up is taken to require that the request be relayed at a time that is more likely to obtain a match.

25 In this embodiment the system is also configured such that a requester can specify an alternate location for the search center which is not that associated with the CLI of the calling telephone. In this embodiment, the IIVR module 11 provides for this feature to be enabled with a predetermined keystroke, and, when enabled, the IIVR module 11 executes an "Alternate
30 Location" script which plays the "Alternate Location" greeting and prompts the requestor to input the telephone number of the alternate search center, followed by another predetermined keystroke. The system then utilizes the alternate location telephone number to determine the search center. The system only uses the alternate location telephone number for building the

provider contact list and not as the calling number. The calling number, usually the CLI, is utilized as the telephone number to which status or termination reports are delivered.

- 5 This feature provides for the circumstance where the requestor wishes to identify providers within a different geographic region. For example, suppose the requestor is travelling away to visit friends for a weekend and wants to locate a French restaurant in the region to be visited, the requestor would perform the "Alternate Location" keystroke during the classification greeting,
10 and enter the alternate telephone number, typically the telephone number of the friends to be visited, followed by a "Completion" keystroke, and then leave the request, for example, "A nice French restaurant, table for four, 1930 Saturday night, please phone back tonight.". Where the contact mode is set to provide requestor details, any providers giving a positive reply
15 would be provided with the calling number of the requestor, as opposed to the alternate location telephone number.

In this embodiment the system is also configured to allow a requestor to remain on line and follow the matching operation. This would typically be
20 where a requester believes that a match is quite likely to be achieved quickly. In this embodiment this feature is enabled through a predetermined keystroke on completion of the recording of the request, and disabled by repeating the predetermined keystroke. The matching system reports each event in real-time, for example, "Just Cuts, declined", "His Hair, declined",
25 "Cool Cuts, accepted", etc.. In this mode, each provider which provides a positive reply, in this embodiment one of an "Accept" or a "Probably", is assigned a particular keystroke, and performing the relevant keystroke establishes a call to the provider.

- 30 In this embodiment, for each requestor, the configuration options include a contact mode setting, which allows the requestor to configure the system, in default, either to withhold the contact details of the requestor from providers, in which case any reports to the requestor are provided with the details of the identified providers which have provided a positive reply in

order to allow the requestor to contact the providers, or provide the contact details of the requestor to the identified providers on acceptance of the request, such that the accepting provider can contact the requestor directly.

- 5 In this embodiment the system is configured to enable a requestor to override the default contact mode setting, here by performing a predetermined keystroke during the classification greeting. In this embodiment, unless specifically configured, the default reply mode setting is to provide requestor details. Where the default contact mode setting is set
10 to provide details, the application of the predetermined key acts to switch the contact mode setting to from that of provide requestor details to withhold requestor details, whereupon the contact mode greeting "Requestor details will be withheld" is played, followed by the usual record request tone. Where the default contact mode setting is set to withhold details, application of the
15 predetermined key acts to switch the contact mode setting from that of withhold requestor details to provide requestor details, whereupon the contact mode greeting "Requestor details will be supplied" is played, followed by the usual record request tone.
- 20 Where the contact mode setting is set to withhold requestor details, the system, having identified the providers for a request, calls the requestor on the calling number, and provides the termination report which includes the details of the providers, in this embodiment, for each provider, a contact name, either the name of the provider or a contact person at the provider,
25 and the contact number. In this embodiment each of the providers mentioned in the termination report is assigned an associated key on the keypad, such as to allow the requestor to speed dial a selected one of the providers. Where the requestor does not take the return call from the system, and the calling number of the requestor has an attached answer
30 machine, the call is taken by the answer machine, with the termination report being recorded such as to enable the requestor to listen to the return call later. Where the calling number rings out, and the calling number of the requestor does not have an attached answer machine, the system calls back at set intervals until the call is made.

At the time of registration, the configuration details include the business availability of the provider, that is, the business working hours for each of the seven days of the week. Within these working hours, the system, as a default, is configured to assume that the provider wishes to receive requests. In this embodiment the system is configured such as to allow the provider to remove himself/herself from the classification and therefore not receive any further requests. Note that if the provider removes himself/herself from the classification, the provider will not appear in any lists built by the list building units 43 of the provider selection units 33a, 33b, 33c until the provider positively re-introduces himself/herself into the classification. This feature allows businesses to turn the service off for long breaks, for example, holidays. Outside business hours, the system does not contact the provider, who, it is assumed, does not want to receive requests. In this embodiment a provider can temporarily alter the assigned business hours by setting one of "Open" or "Closed" states, but so setting the business is only a temporary function, and, if the assigned business are not reset before the next business hours session, the default times for hours of business are adopted.

In this embodiment the system enables a provider to block requests from requestors who cannot be serviced. A typical example is because the location of the requestor is not a location served by the requestor. Another typical example is where the provider only provides a service for a particular group of people, such as for the young as opposed to the elderly, and a request from an elderly person could not be serviced. This does not bias the search, but merely obviates inappropriate contacts.

In this embodiment the system also enables a provider to block requests from requestors where the contact details of the requestors are withheld. In such circumstances, a provider could be concerned that competitors would covertly use the system to gather intelligence.

In this embodiment these preferences are set by a classification manager using the classification management unit 49.

The matching system further comprises a classification management unit 49 which provides for the maintenance of the classification databases, that is, the CC database 15 and the CL database 37, and the requestor databases, that is, the first and second RI databases 17, 39. In particular, the classification management unit 49 provides for the updating of provider entries, the inclusion of new provider entries, the alteration of the list building parameters for any classification, and the inclusion of new classifications. In this embodiment the classification management unit 49 includes a web interface to allow for remote operation. In a preferred embodiment the classification management unit 49 is operated by a plurality of classification managers, each of which are assigned to and manage one or more classifications.

Finally, it will be understood that the present invention has been described in its preferred embodiments and can be modified in many different ways without departing from the scope of the invention as defined by the appended claims.

For example, in the described embodiments, the system is configured to utilize voice requests made using a telephone, but the use of other communicators 20, 24 is envisaged, for example, PDAs, personal computers, set-top boxes, games devices and games consoles, that is, any apparatus which has a communications function, and also other formats for the receipt and delivery of requests, for example, text-encoded requests, such as SMS and e-mail, pictorial requests, typically containing drawings, stills or video, such as MMS and EMS, and fax requests. Indeed, requests could be made in one format, for example, as voice requests, and delivered in another format, for example, SMS requests. Also, requests could be multi-format requests, for example, comprising voice and text-encoded request components or text-encoded and pictorial request components.

In general, the providers are the persons who respond to the respective requests, but there are exceptions. One such other provider is an observing

provider who can only receive requests, but not respond to the requests. Another such provider is a split provider, where a request is received by one person, usually the decision-maker who replies to the request, and transferred to another person further to handle the request, for example, in
5 handling the customer engagement. A further such provider is a sorting provider who receives the request and acts to re-direct the request to another provider.

As an example of a sorter provider, the providers can have a hierarchy. Thus, "Car Sales" could have children of "New Cars" and "Second Hand
10 Cars", which could themselves have children by make of car, for example, Ford, Vauxhall, VW etc. The system can support this hierarchy, but, consistent with the philosophy that humans are the best people to process requests, the system only supports cascading of classifications via human
15 sorters. The matching process is as follows. A requester decides that he/she is looking for a new blue Ford Focus 1.8 Ghia. The requestor dials the telephone number for the classification "Car Sales" and leaves a request. The request is passed to selected providers within that classification. One provider may, however, be a dealership which sells many makes of car. For
20 this provider, other departments have previously been configured with children described as hereinabove. In this case, the person that hears the request acts a sorter who decides to which department the request should be presented. The system is configured to recognize that this provider is a sorter and therefore expects to receive a keycode related to one of the
25 previously set up departments. On receiving this keycode, the system presents the request to the newly-identified provider, which itself could be set up as a sorter provider. After looping through this procedure one or more times, the request will be made to a provider where no further sorting is required.

30

Further, where the system is to be utilized as a private matching system, the set-up for a private matching system is similar to above except that the matching system presents the request to a provider which has an internal, private matching system. In this situation, all the keycodes that are used to

obtain a response are logged, as these codes allow the hierarchy to be navigated to report and provide contact details.

CLAIMS

1. A matching system for matching requests of users, as requestors, to providers in servicing the requests, each of the requestors having at least one communicator for making requests and addressing respective replies thereto and each of the providers having at least one communicator for addressing requests and respective replies thereto, the system comprising:
at least one request receiving unit for receiving requests from requestors;
at least one request relaying unit for providing for each of the requests to be relayed to selected providers as addressed thereby;
at least one reply receiving unit for receiving replies from providers, the replies received being made by the respective providers based on the respective requests; and
at least one information supplying unit for one or both of supplying, for each request, information regarding the respective requestor to any providers having provided a positive reply to the respective request, with a positive reply indicating that a provider is able meet a request, and information regarding replies from selected providers to the respective request to the respective requestor.
2. The system of claim 1, wherein the system is a real-time matching system.
3. The system of claim 1 or 2, wherein the requests are free-format requests.
4. The system of any of claims 1 to 3, wherein the requests include voice requests.
5. The system of any of claims 1 to 4, wherein the communicators include mobile communicators, such as telephones, PDAs, personal computers and games devices.

6. The system of any of claims 1 to 5, wherein the communicators include fixed communicators, such as telephones, fax machines, personal computers, set-top boxes and games consoles.
- 5 7. The system of any of claims 1 to 6, wherein the communicators include combination fixed/mobile communicators, such as telephones.
- 10 8. The system of any of claims 1 to 7, comprising:
at least one inbound communications unit, each comprising at least one request receiving unit.
9. The system of any of claims 1 to 8, comprising:
15 at least one outbound communications unit, each comprising at least one request relaying unit, at least one reply receiving unit and at least one information supplying unit.
10. The system of any of claims 1 to 7, comprising:
20 at least one communications unit, each comprising at least one request receiving unit, at least one request relaying unit, at least one reply receiving unit and at least one information supplying unit.
11. The system of any of claims 1 to 10, wherein the at least one request
25 relaying unit is configured to relay a request directly to the communicators of selected providers.
12. The system of any of claims 1 to 11, wherein the at least one request
30 relaying unit is configured to provide for a request to be relayed without any interrogation thereof to establish content.
13. The system of any of claims 1 to 12, wherein the at least one request receiving unit includes a plurality of receivers for receiving requests,

each request having a classification contact address associated with a predeterminable classification.

- 5 14. The system of claim 13, wherein the classification contact addresses are dialling numbers.
- 15 15. The system of any of claims 1 to 14, further comprising:
at least one provider selection unit for selecting providers to address a request.
- 10 16. The system of claim 15, wherein the at least one provider selection unit is configured to select providers for a request based at least in part on a geographic location assigned to the respective request and one or both of geographic locations or geographic zones assigned to
15 the providers.
17. The system of claim 16, wherein the geographic location assigned to the respective request is a current geographic location of the respective requestor.
- 20 18. The system of claim 17, wherein the current geographic location is determined from a communicator contact address of the communicator of the respective requestor, where the communicator contact address has an assigned location.
- 25 19. The system of claim 18, wherein the communicator contact address is a dialling number.
- 30 20. The system of claim 16, wherein the geographic location assigned to the respective request is an alternate geographic location as assigned by the respective requestor.
21. The system of claim 20, wherein the alternate geographic location is determined from a communicator contact address of a

communicator, where the communicator contact address has an assigned location.

- 5 22. The system of claim 21, wherein the communicator contact address is a dialling number.
23. The system of any of claims 15 to 22, wherein geographic location of mobile communicators is determined from one of cell identification, triangulation, radio positioning or satellite positioning, such as GPS.
- 10 24. The system of any of claims 15 to 23, wherein geographic location of fixed communicators is determined from respective assigned locations.
- 15 25. The system of any of claims 15 to 24, wherein the at least one provider selection unit is configured to select providers for a request within a predeterminable spatial geographic zone relative to the geographic location assigned to the respective request.
- 20 26. The system of claim 25, wherein the predeterminable spatial geographic zone is one of a geographic radius relative to the geographic location assigned to the respective request, a distance of travel relative to the geographic location assigned to the respective request, or a time of travel relative to the geographic location assigned to the respective request.
- 25 27. The system of any of claims 15 to 26, wherein the at least one provider selection unit is configured to select providers for a request based at least in part on at least one requestor characteristic for the respective requestor, such as geographically-related and socio-economic information, as an assigned characteristic for the respective requestor or a characteristic input by the respective requestor in making the request.
- 30

28. The system of any of claims 15 to 27, wherein the at least one provider selection unit is configured to select providers for a request based at least in part on at least one provider characteristic for the providers, such as requiring requestors to have a predeterminable profile or to provide contact details, as an assigned characteristic for the respective providers.
29. The system of any of claims 15 to 28, wherein the at least one provider selection unit is configured to select providers for a request based at least in part on current time.
30. The system of any of claims 15 to 29, wherein the at least one provider selection unit is configured to select providers for a request based at least in part on at least one classification characteristic, such as a selection mechanism for selecting providers, as an assigned characteristic for the respective classification.
31. The system of any of claims 1 to 30, wherein the at least one request relaying unit is configured to relay a request to a predeterminable number of selected providers as addressed thereby.
32. The system of any of claims 1 to 31, wherein the at least one request relaying unit is configured to multicast a request to selected providers where the request is to be relayed to a plurality of providers as addressed thereby.
33. The system of any of claims 1 to 32, wherein the at least one information supplying unit is configured, for a request, to supply information regarding providers having provided a positive reply to the request to the respective requestor.
34. A matching system for matching requests of users, as requestors, to providers in servicing the requests, the system comprising:

a plurality of requestor communicators, each being for use by requestors in making requests and addressing any respective replies thereto, at least ones of the replies including information regarding replies from selected providers to respective requests; and

5 a plurality of provider communicators, each being for use by providers in addressing requests and any respective replies thereto, the requests being relayed to respective selected providers as addressed and at least ones of the replies including information regarding the requestor of a respective request where having

10 provided a positive reply to the respective request, with a positive reply indicating that a provider is able to meet a request.

35. The system of claim 34, wherein the system is a real-time matching system.
- 15 36. The system of claim 34 or 35, wherein the requests are free-format requests.
37. The system of any of claims 34 to 36, wherein the requests include
- 20 voice requests.
38. The system of any of claims 34 to 37, wherein the communicators include mobile communicators, such as telephones, PDAs, personal computers and games devices.
- 25 39. The system of any of claims 34 to 38, wherein the communicators include fixed communicators, such as telephones, fax machines, personal computers, set-top boxes and games consoles.
- 30 40. The system of any of claims 34 to 39, wherein the communicators include combination fixed/mobile communicators, such as telephones.

41. The system of any of claims 34 to 40, wherein a request is relayed directly to respective selected providers.
42. The system of any of claims 34 to 41, wherein a request is relayed without any interrogation thereof to establish content.
43. The system of any of claims 34 to 42, further comprising:
a communications unit including a plurality of receivers for receiving requests, each request having a classification contact address associated with a predeterminable classification.
44. The system of claim 43, wherein the classification contact addresses are dialling numbers.
45. The system of any of claims 34 to 44, wherein providers are selected for a request based at least in part on a geographic location assigned to the respective request and one or both of geographic locations or geographic zones assigned to the providers.
46. The system of claim 45, wherein the geographic location assigned to the respective request is a current geographic location of the respective requestor.
47. The system of claim 46, wherein the current geographic location is determined from a communicator contact address of the communicator of the respective requestor, where the communicator contact address has an assigned location.
48. The system of claim 47, wherein the communicator contact address is a dialling number.
49. The system of claim 45, wherein the geographic location assigned to the respective request is an alternate geographic location as assigned by the respective requestor.

50. The system of claim 49, wherein the alternate geographic location is determined from a communicator contact address of a communicator, where the communicator contact address has an assigned location.
51. The system of claim 50, wherein the communicator contact address is a dialling number.
52. The system of any of claims 34 to 51, wherein providers are selected within a predeterminable spatial geographic zone relative to the geographic location assigned to the respective request.
53. The system of any of claims 34 to 52, wherein providers are selected for a request based at least in part on at least one requestor characteristic for the respective requestor, such as geographically-related and socio-economic information, as an assigned characteristic for the respective requestor or a characteristic input by the respective requestor in making the request.
54. The system of any of claims 34 to 53, wherein providers are selected for a request based at least in part on at least one provider characteristic for the providers, such as requiring requestors to have a predeterminable profile or to provide contact details, as an assigned characteristic for the respective providers.
55. The system of any of claims 34 to 54, wherein providers are selected for a request based at least in part on current time.
56. The system of any of claims 34 to 55, wherein providers are selected for a request based at least in part on at least one classification characteristic, such as a selection mechanism for selecting providers, as an assigned characteristic for the respective classification.

57. A matching system for matching requests of users, as requestors, to providers in servicing the requests, each of the requestors having at least one communicator for making requests and addressing replies thereto and each of the providers having at least one communicator for addressing requests, the system comprising:
- 5 at least one request receiving unit for receiving requests from requestors;
- at least one request relaying unit for providing for each of the requests to be relayed to selected providers as addressed thereby;
- 10 and
- at least one reply receiving unit for receiving replies from providers, the replies received being made by the respective providers based on the respective requests.
- 15 58. A matching system for matching requests of users, as requestors, to providers in servicing the requests, the system comprising:
- a plurality of requestor communicators, each being for use by requestors in making requests and addressing respective replies thereto;
- 20 a plurality of provider communicators, each being for use by providers in addressing requests and respective replies thereto; and
- at least one communications unit communicatable with the requestor communicators and the provider communicators, and including at least one provider selection unit for selecting providers to address
- 25 each request made by a requestor;
- wherein, for each request, the system is configured such that the request is provided to be relayed to selected providers as addressed thereby.
- 30 59. The system of claim 58, wherein the system is further configured such that, for a request, the respective requestor is supplied with information regarding replies from selected providers to the request.

60. The system of claim 58 or 59, wherein the system is a real-time matching system.
61. The system of any of claims 58 to 60, wherein the requests are free-format requests.
62. The system of any of claims 58 to 61, wherein the requests include voice requests.
63. The system of any of claims 58 to 62, wherein the communicators include mobile communicators, such as telephones, PDAs, personal computers and games devices.
64. The system of any of claims 58 to 63, wherein the communicators include fixed communicators, such as telephones, fax machines, personal computers, set-top boxes and games consoles.
65. The system of any of claims 58 to 64, wherein the communicators include combination fixed/mobile communicators, such as telephones.
66. The system of any of claims 58 to 65, wherein the system is configured such that a request is relayed directly to the provider communicators of selected providers.
67. The system of any of claims 58 to 66, wherein the system is configured to provide that a request is relayed without any interrogation thereof to establish content.
68. The system of any of claims 58 to 67, wherein the at least one communications unit includes a plurality of receivers for receiving requests, each request having a classification contact address associated with a predeterminable classification.

69. The system of claim 68, wherein the classification contact addresses are dialling numbers.
- 5 70. The system of any of claims 58 to 69, wherein the at least one provider selection unit is configured to select providers for a request based at least in part on a geographic location assigned to the respective request and one or both of geographic locations or geographic zones assigned to the providers.
- 10 71. The system of claim 70, wherein the geographic location assigned to the respective request is a current geographic location of the respective requestor.
- 15 72. The system of claim 71, wherein the current geographic location is determined from a communicator contact address of the communicator of the respective requestor, where the communicator contact address has an assigned location.
- 20 73. The system of claim 72, wherein the communicator contact address is a dialling number.
- 25 74. The system of claim 70, wherein the geographic location assigned to the respective request is an alternate geographic location as assigned by the respective requestor.
- 30 75. The system of claim 74, wherein the alternate geographic location is determined from a communicator contact address of a communicator, where the communicator contact address has an assigned location.
76. The system of claim 75, wherein the communicator contact address is a dialling number.

77. The system of any of claims 58 to 76, wherein the at least one provider selection unit is configured to select providers within a predeterminable spatial geographic zone relative to the geographic location assigned to the respective request.
- 5
78. The system of claim 77, wherein the predeterminable spatial geographic zone is one of a geographic radius relative to the geographic location assigned to the respective request, a distance of travel relative to the geographic location assigned to the respective request, or a time of travel relative to the geographic location assigned to the respective request.
- 10
79. The system of any of claims 58 to 78, wherein the at least one provider selection unit is configured to select providers for a request based at least in part on at least one requestor characteristic for the respective requestor, such as geographically-related and socio-economic information, as an assigned characteristic for the respective requestor or a characteristic input by the respective requestor in making the request.
- 15
80. The system of any of claims 58 to 79, wherein the at least one provider selection unit is configured to select providers for a request based at least in part on at least one provider characteristic for the providers, such as requiring requestors to have a predeterminable profile or to provide contact details, as an assigned characteristic for the respective providers.
- 20
81. The system of any of claims 58 to 80, wherein the at least one provider selection unit is configured to select providers for a request based at least in part on current time.
- 25
82. The system of any of claims 58 to 81, wherein the at least one provider selection unit is configured to select providers for a request based at least in part on at least one classification characteristic,
- 30

such as a selection mechanism for selecting providers, as an assigned characteristic for the respective classification.

- 5 83. The system of any of claims 58 to 82, wherein the system is configured such as to provide for a request to be relayed to the provider communicators of a predeterminable number of respective selected providers as addressed thereby.
- 10 84. The system of any of claims 58 to 83, wherein the system is configured to multicast a request to the provider communicators of respective selected providers where the request is to be relayed to a plurality of providers as addressed thereby.
- 15 85. A method of matching requests of users, as requestors, to providers in servicing the requests, each of the requestors having at least one communicator for making requests and addressing replies thereto and each of the providers having at least one communicator for addressing requests and respective replies thereto, the method comprising the steps of:
- 20 receiving requests from requestors;
for each request, providing for the request to be relayed to selected providers as addressed thereby;
receiving replies from selected providers, the replies received being made by the respective providers based on the respective requests;
25 and
one or both of supplying, for each request, information regarding the respective requestor to any providers having provided a positive reply to the respective request, with a positive reply indicating that a provider is able to meet a request, and information regarding replies
30 from selected providers to the respective request to the respective requestor.
86. The method of claim 85, wherein the method is a real-time matching method.

87. The method of claim 85 or 86, wherein the requests are free-format requests.
- 5 88. The method of any of claims 85 to 87, wherein the requests include voice requests.
89. The method of any of claims 85 to 88, wherein the communicators include mobile communicators, such as telephones, PDAs, personal computers and games devices.
- 10 90. The method of any of claims 85 to 89, wherein the communicators include fixed communicators, such as telephones, fax machines, personal computers, set-top boxes and games consoles.
- 15 91. The method of any of claims 85 to 90, wherein the communicators include combination fixed/mobile communicators, such as telephones.
- 20 92. The method of any of claims 85 to 91, wherein the step of providing for a request to be relayed to selected providers as addressed thereby comprises the step of:
relaying a request directly to the communicators of selected providers.
- 25 93. The method of any of claims 85 to 92, wherein a request is relayed without any interrogation thereof to establish content.
94. The method of any of claims 85 to 93, wherein the step of receiving requests from requestors comprises the step of:
30 receiving requests from requestors at a plurality of receivers, each of the requests having a classification contact address associated with a predeterminable classification.

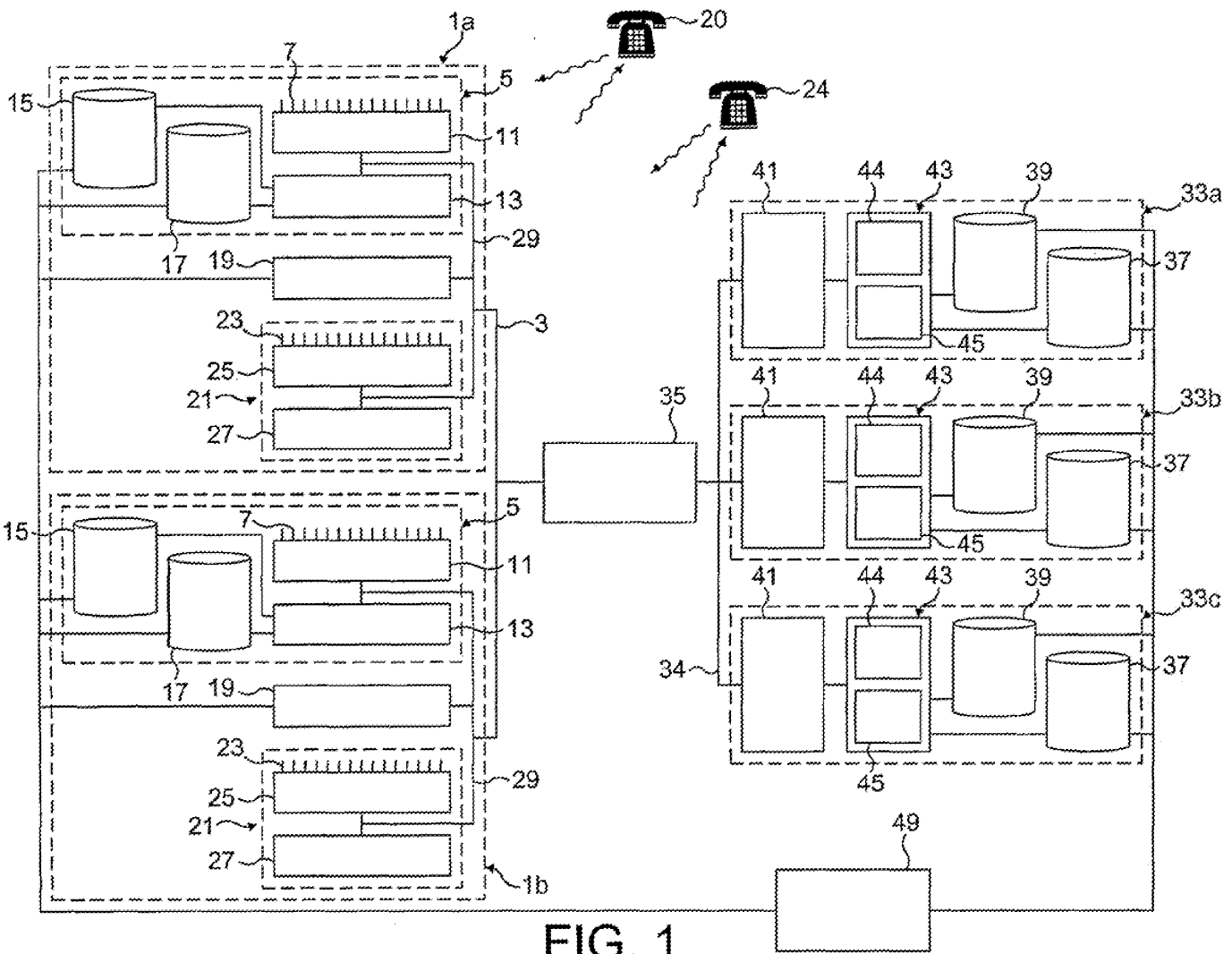
95. The method of claim 94, wherein the classification contact addresses are dialling numbers.
96. The method of any of claims 85 to 95, further comprising the step of:
5 selecting respective providers to address a request.
97. The method of claim 96, wherein the step of selecting respective providers to address a request comprises the step of:
selecting respective providers to address a request based at least in
10 part on a geographic location assigned to the respective request and one or both of geographic locations or geographic zones assigned to the providers.
98. The method of claim 97, wherein the geographic location assigned to
15 the respective request is a current geographic location of the respective requestor.
99. The method of claim 98, wherein the current geographic location is determined from a communicator contact address of the
20 communicator of the respective requestor, where the communicator contact address has an assigned location.
100. The method of claim 99, wherein the communicator contact address is a dialling number.
25
101. The method of claim 97, wherein the geographic location assigned to the respective request is an alternate geographic location as assigned by the respective requestor.
- 30 102. The method of claim 101, wherein the alternate geographic location is determined from a communicator contact address of a communicator, where the communicator contact address has an assigned location.

103. The method of claim 102, wherein the communicator contact address is a dialling number.
104. The method of any of claims 96 to 103, wherein geographic location
5 of mobile communicators is determined from one of cell identification, triangulation, radio positioning or satellite positioning, such as GPS.
105. The method of any of claims 96 to 104, wherein geographic location
10 of fixed communicators is determined from an assigned location.
106. The method of any of claims 96 to 105, wherein the step of selecting respective providers to address a request comprises the step of:
selecting respective providers to address a request within a
15 predeterminable spatial geographic zone relative to the geographic location assigned to the respective request.
107. The method of claim 106, wherein the predeterminable spatial
20 geographic zone is one of a geographic radius relative to the geographic location assigned to the respective request, a distance of travel relative to the geographic location assigned to the respective request, or a time of travel relative to the geographic location assigned to the respective request.
- 25 108. The method of any of claims 96 to 107, wherein the step of selecting respective providers to address a request comprises the step of:
selecting respective providers to address a request based at least in part on at least one requestor characteristic for the respective requestor, such as geographically-related and socio-economic
30 information, as an assigned characteristic for the respective requestor or a characteristic input by the respective requestor in making the request.

109. The method of any of claims 96 to 108, wherein the step of selecting
respective providers to address a request comprises the step of:
selecting respective providers to address a request based at least in
part on at least one provider characteristic for the providers, such as
5 requiring requestors to have a predeterminable profile or to provide
contact details, as an assigned characteristic for the respective
providers.
110. The method of any of claims 96 to 109, wherein the step of selecting
10 respective providers to address a request comprises the step of:
selecting respective providers to address a request based at least in
part on current time.
111. The method of any of claims 96 to 110, wherein the step of selecting
15 respective providers to address a request comprises the step of:
selecting respective providers to address a request based at least in
part on at least one classification characteristic, such as a selection
mechanism for selecting providers, as an assigned characteristic for
the respective classification.
- 20 112. The method of any of claims 85 to 111, wherein the step of providing
for a request to be relayed to selected providers as addressed
thereby comprises the step of:
providing for a request to be relayed to a predeterminable number of
25 selected providers as addressed thereby.
113. The method of any of claims 85 to 112, wherein the step of providing
for a request to be relayed to selected providers as addressed
thereby comprises the step of:
30 multicasting a request to selected providers where the request is to
be relayed to a plurality of providers as addressed thereby.
114. The method of any of claims 85 to 113, wherein the step of supplying
information comprises the step of:

supplying, for a request, information regarding providers having provided a positive reply to the request to the respective requestor.

- 5 115. A method of matching requests of users, as requestors, to providers in servicing the requests, each of the requestors having at least one communicator for making requests and addressing replies thereto and each of the providers having at least one communicator for addressing requests, the method comprising the steps of:
receiving requests from requestors;
10 for each request, providing for the request to be relayed to selected providers as addressed thereby; and
receiving replies from providers, the replies received being made by the respective providers based on the respective requests.
- 15 116. A method of matching requests of users, as requestors, to providers in servicing the requests, the method comprising the steps of:
receiving signals comprising requests from requestors;
for each request, transmitting a signal to selected providers comprising the request as received;
20 receiving signals comprising replies from selected providers, the replies being made by the respective providers based on the respective requests; and
for each request, transmitting one or both of a signal comprising information regarding the respective requestor to any providers
25 having provided a positive reply to the respective request, with a positive reply indicating that a provider is able to meet a request, and a signal comprising information regarding replies from selected providers to the respective request to the respective requestor.



INTERNATIONAL SEARCH REPORT

PCT/GB 02/04987

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 606F17/60

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 7 606F

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)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2001/037280 A1 (HUNTER ALLAN O ET AL) 1 November 2001 (2001-11-01) abstract; claims 1,34; figures 1,2 paragraphs '0006!', '0030!', '0035!'-'0040!	1-116
X	US 2001/037174 A1 (DICKERSON STEPHEN L) 1 November 2001 (2001-11-01) abstract; claims 1-43; figure 9 paragraphs '0019!'-'0043!	1-116
A	WO 01 33429 A (GRAVITATE INC) 10 May 2001 (2001-05-10) abstract; claims 1,14; figures 1,3,4	1-116



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

Date of the actual completion of the international search

25 March 2003

Date of mailing of the international search report

09/04/2003

Name and mailing address of the ISA

European Patent Office, P.O. Box 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 eps nl,
Fax: (+31-70) 340-3016

Authorized officer

Höhn, M

INTERNATIONAL SEARCH REPORT

PCT/GB 02/04987

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 2001037280	A1	01-11-2001	NONE		
US 2001037174	A1	01-11-2001	NONE		
WO 0133429	A	10-05-2001	AU	1345801 A	14-05-2001
			WO	0133429 A2	10-05-2001

Form PCT/ISA/210 (patent family search) (July 1992)



UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC PAYMENT RECEIPT

APPLICATION #
17/236,491

RECEIPT DATE / TIME
07/12/2021 10:50:53 AM ET

ATTORNEY DOCKET #
00199-0001-25000

Title of Invention

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

Application Information

APPLICATION TYPE Utility - Nonprovisional Application
under 35 USC 111(a)

PATENT # -

CONFIRMATION # 7940

FILED BY Jeovany Cantillano

PATENT CENTER # 60237279

AUTHORIZED BY Joel Simon

CUSTOMER # 108449

FILING DATE 04/21/2021

CORRESPONDENCE ADDRESS -

FIRST NAMED INVENTOR Sean O'SULLIVAN

Payment Information

PAYMENT METHOD
CARD / 1006

PAYMENT TRANSACTION ID
E202178A53023455

PAYMENT AUTHORIZED BY
Jeovany Cantillano

FEE CODE	DESCRIPTION	ITEM PRICE(\$)	QUANTITY	ITEM TOTAL(\$)
2806	SUBMISSION OF AN INFORMATION DISCLOSURE STATEMENT	130.00	1	130.00
TOTAL AMOUNT:				\$130.00

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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



Espacenet

Bibliographic data: DE10237831 (A1) — 2004-02-26

Access control and data acquisition system for vehicles in shared use, employs simple hand controller with keypad and built-in display

Inventor(s): HARTUNG MICHAEL [DE]; LUECK MATTHIAS [DE];
GRUENEBAUM ULRICH [DE] ± (HARTUNG, MICHAEL, ; LUECK,
MATTHIAS, ; GRUENEBAUM, ULRICH)

Applicant(s): HARTUNG MICHAEL [DE] ± (HARTUNG, MICHAEL)

Classification: - international: B60R25/23; B60R25/24; G07C9/00; (IPC1-
7); B60R25/00; G07C9/00
- cooperative: B60R25/23 (EP); B60R25/24 (EP); G07C9/00309
(EP); H04W4/40 (EP, US); B60R2325/202 (EP);
G07C2009/00793 (EP); G07C9/00896 (EP)

Application number: DE20021037831 20020809

Priority number(s): DE20021037831 20020809

Abstract of DE10237831 (A1)

Users communicate with the vehicle equipment, using a conveniently-carried and economical hand controller with a built-in display and keypad. Data exchange with the communication unit installed in the vehicle is wireless.



(19)
Bundesrepublik Deutschland
Deutsches Patent- und Markenamt

(10) DE 102 37 831 A1 2004.02.26

(12)

Offenlegungsschrift

(21) Aktenzeichen: 102 37 831.2
(22) Anmeldetag: 09.08.2002
(43) Offenlegungstag: 26.02.2004

(51) Int. Cl.⁷: B60R 25/00
G07C 9/00

(71) Anmelder:
Hartung, Michael, 44137 Dortmund, DE

(72) Erfinder:
Hartung, Michael, 44137 Dortmund, DE; Lück,
Matthias, 44139 Dortmund, DE; Grünebaum,
Ulrich, 58239 Schwerte, DE

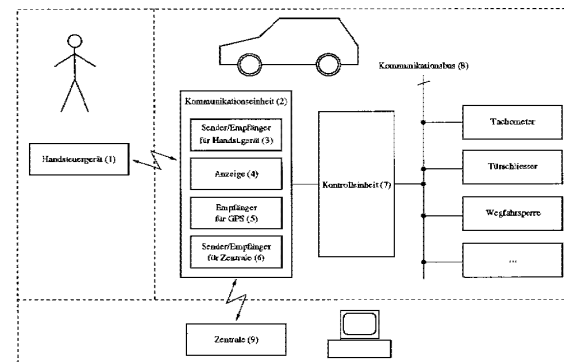
Die folgenden Angaben sind den vom Anmelder eingereichten Unterlagen entnommen

(54) Bezeichnung: Zugangskontroll- und Datenerfassungssystem für gemeinschaftlich genutzte Kraftfahrzeuge

(57) Zusammenfassung: Für die Zugangskontrolle, Datenerfassung und Verwaltung von gemeinschaftlich genutzten Fahrzeugen, z. B. beim Car-Sharing, ist eine kostengünstige und benutzerfreundliche elektronische Lösung notwendig. Existierende Lösungen verursachen hohe Geräte- und Einbaukosten im Fahrzeug und sind zu wenig benutzerfreundlich.

Das beschriebene System verursacht nur geringe Geräte- und Einbaukosten im Fahrzeug, ist einfach zu bedienen und daher sehr wirtschaftlich und benutzerfreundlich.

Das System kann von Car-Sharing-Organisationen oder Autovermietern eingesetzt werden.



Beschreibung

Einführung

[0001] In vielen Ländern existieren oder entstehen sogenannte Car-Sharing-Organisationen, bei denen ein Park von Kraftfahrzeugen durch verschiedene Personen gemeinschaftlich genutzt wird. Voraussetzung für die Nutzung ist dabei üblicherweise die Mitgliedschaft in der Car-Sharing-Organisation. Für die Nutzung eines Fahrzeugs wird dem Nutzer eine Gebühr berechnet, die von der Nutzungsdauer und der mit dem Fahrzeug gefahrenen Strecke abhängt.

[0002] Das Betreiben eines Car-Sharing-Angebots setzt voraus, dass Berechtigten der Zugang zu den Fahrzeugen automatisch gewährt werden kann, da keine persönliche Übergabe stattfindet. Zudem müssen die relevanten Nutzungsdaten ermittelt und den einzelnen Nutzern zugeordnet werden können, um sie anschließend den Nutzern in Rechnung stellen zu können. Moderne Systeme erlauben dies unter Zuhilfenahme elektronischer Datenverarbeitungs- und Übertragungssysteme.

Stand der Technik

[0003] Stand der Technik sind Systeme, bei denen ein potentieller Nutzer ein Fahrzeug zunächst unter Angabe des gewünschten Zeitraums bei einer Zentrale buchen muss. Für die Benutzung des gebuchten Fahrzeugs existieren dann im wesentlichen zwei Schemata:

1. Der Nutzer verschafft sich mittels einer persönlichen Chip-Karte und einer persönlichen PIN (persönliche Identifikationsnummer) Zugang zu einem in der Nähe des Fahrzeugstellplatzes angebrachten Tresor. Aus diesem erhält er den Fahrzeugschlüssel, der mit einem transportablen, kontaktlosen Speichermedium (Transponder) verbunden ist. Nach dem Öffnen des Fahrzeugs mittels Schlüssel muss zunächst eine elektronische Wegfahrsperre durch Vorhalten des Transponders vor eine spezielle Elektronikereinheit im Fahrzeug freigeschaltet werden. Nach der Nutzung ist erneut ein solcher Kontakt notwendig, um die Fahrdaten auf den Transponder zu übertragen. Danach wird das Fahrzeug mittels Schlüssel abgeschlossen, anschließend der in der Nähe des Fahrzeugstellplatzes angebrachte Tresor mit der persönlichen Chip-Karte und der persönlichen PIN geöffnet und der Schlüssel zusammen mit dem Transponder zurückgesteckt, wobei die Fahrdaten aus dem Transponder ausgelesen und zwecks Abrechnung an die Zentrale übermittelt werden.
2. Der Nutzer verschafft sich mittels einer persönlichen Chip-Karte direkt Zugang zum Fahrzeug, indem ein elektrischer Türschliesser das Fahrzeug öffnet, nachdem die Chip-Karte von außen vor eine Elektronikereinheit hinter der Windschutz-

scheibe gehalten wurde. Anschließend muss der Nutzer seine persönliche PIN an einem speziell dafür im Fahrzeug installierten Gerät eingeben, wodurch eine elektronische Wegfahrsperre freigeschaltet wird. Anschließend kann der Fahrzeugschlüssel aus einer Halterung im Handschuhfach entnommen werden. Nach der Nutzung wird der Schlüssel wieder in der Halterung im Handschuhfach deponiert.

[0004] Die bestehenden Systeme besitzen wesentliche Nachteile:

- Sie verursachen prinzipbedingt hohe Geräte- und Einbaukosten, die die Wirtschaftlichkeit der Car-Sharing-Organisation stark beeinträchtigen,
- Sie erzwingen vom Benutzer bestimmte unbequeme Vorgehensweisen, z. B. das zwangsläufig einer Fahrzeugnutzung vorhergehende Buchen bei einer Zentrale und bestimmte Handlungsabläufe beim Benutzen des Fahrzeugs, was die Attraktivität des Car-Sharing-Angebots mindert.
- Sie erfordern ein hohes Maß an Kooperation der Nutzer, da ein Abweichen des Nutzerverhaltens vom Systemschema zu einem Versagen des Systems führen kann.

Aufgabenstellung

[0005] Diese Nachteile behindern den Aufbau weiterer Car-Sharing-Organisationen und stehen einer weiten Verbreitung solcher Systeme im Wege.

Erfindung

[0006] Die geschilderten Nachteile bestehender Systeme werden durch das in Abschnitt "Patentansprüche" auf Seite 2 beschriebene System aufgehoben. Das System kann sehr wirtschaftlich eingesetzt werden durch seine kostengünstigen Fahrzeugkomponenten, erlaubt fahrzeugseitig einen einfachen und kostengünstigen Einbau und bietet dem Nutzer eine wesentlich vereinfachte Handhabung bei größerem Bedienkomfort. Möglichkeiten der Fehlbedienung durch den Nutzer sind weitgehend ausgeschlossen, da es im Fahrzeug kein komplexes Systemschema gibt, welches vom Nutzer zu befolgen wäre. Zudem können die Fahrzeugkomponenten im Fall der Veräußerung oder Umnutzung des Fahrzeugs leicht wieder entfernt und in einem anderen Fahrzeug installiert werden.

[0007] Durch fehlende Geschäftskunden bleiben viele Fahrzeuge klassischer Autovermieter an Wochenenden ungenutzt. Im Gegensatz dazu ist der Bedarf an Car-Sharing-Fahrzeugen an Wochenenden besonders hoch. Durch die besonderen Eigenschaften des hier beschriebenen Systems können Fahrzeuge des klassischen Mietgeschäfts mit wenigen Handgriffen in Car-Sharing-Fahrzeuge umgewandelt werden, was einen erheblichen wirtschaftlichen Vorteil darstellt.

Ausführungsbeispiel

[0008] Die folgende Beschreibung bezieht sich auf die Systemübersichtszeichnung in **Abb. 1** auf Seite 7.

[0009] Die Fahrzeugkomponenten können weitgehend aus handelsüblichen und damit kostengünstigen Elektronikkomponenten aufgebaut werden und verwenden vorhandene Standards, wie z. B. einen bereits im Fahrzeug vorhandenen Kommunikationsbus. Im Wesentlichen müssen in das Fahrzeug nur die Kommunikationseinheit (2) und die Kontrolleinheit (7) als kompakte Einheiten eingesetzt und letztere mit dem bereits im Fahrzeug vorhandenen Kommunikationsbus (8) (z. B. CAN oder MOST) verbunden werden.

[0010] Die Kommunikationseinheit (2) kann mit einer entfernten Zentrale (9) mittels einer Sende- und Empfangseinrichtung (6) drahtlos Daten austauschen (z. B. über GSM). Von der Zentrale (9) erhält sie die das Fahrzeug betreffenden Buchungsinformationen und meldet an die Zentrale (9) automatisch am Fahrzeug vorgenommene Buchungen ("Spontanbuchungen") und abrechnungsrelevanten Informationen, wie z. B. Nutzer, Nutzungsdauer, Benzinverbrauch und gefahrene Strecke.

[0011] Mit der Mitgliedschaft in der Car-Sharing-Organisation wird dem Nutzer entweder ein Handsteuergerät (1) mit eingebauter Anzeige und Bedientasten zur Verfügung gestellt, welches mit einer persönlichen Nutzernummer fest programmiert ist. Das Handsteuergerät (1) kann z. B. in Form einer "Contactless SmartCard" sehr kostengünstig realisiert werden. Alternativ kann z. B. auch ein bereits beim Nutzer vorhandenes Gerät verwendet werden, wie z. B. ein Mobiltelefon oder Taschencomputer (PDA) mit geeigneter Ausstattung, z. B. mit "BlueTooth"-Funktionalität. Beide Varianten erlauben in Zusammenhang mit einer vom Nutzer einzugebenden PIN die eindeutige Identifizierung eines Nutzers.

[0012] Das Handsteuergerät (1) erlaubt eine Kommunikation mit dem im Fahrzeug eingebauten System über die hinter einer Scheibe montierte Kommunikationseinheit (2), die u. a. einen entsprechenden Sender/Empfänger (3) für das Handsteuergerät, eine Anzeige (4) für den Nutzer und die Sende- und Empfangseinrichtung (6) für die Zentrale (9) enthält. Der Sender/Empfänger (3) für das Handsteuergerät kommuniziert kontaktlos mit dem Handsteuergerät des Nutzers, z. B. über Induktionswirkung (z. B. bei "Contactless SmartCard") oder über Funk (z. B. bei "BlueTooth"). Das Handsteuergerät (1) wird dabei auch zur Anzeige der von der Kommunikationseinheit (2) übermittelten Daten verwendet.

[0013] Durch Eingabe seiner PIN auf dem Handsteuergerät (1) und Übermittlung an das Fahrzeug kann der Nutzer ein vorher gebuchtes Fahrzeug aufschließen und erhält dann den im Fahrzeug aufbewahrten Fahrzeugschlüssel. Ebenso kann über die Kommunikationseinheit (2) eine Spontanbuchung am

Fahrzeug (ohne vorherige Zentralenanmeldung) erfolgen, sofern das Fahrzeug nicht bereits anderweitig gebucht wurde. In diesem Fall erhält der Nutzer Zugang zum Fahrzeug, sofern es frei ist, andernfalls erhält er über die Anzeige (4) eine entsprechende Belegtmeldung und ggf. weitere Informationen. Falls der Standort von in der Nähe stehenden, mit dem System ausgerüsteten Fahrzeugen der Zentrale (9) bekannt ist, können bei einer Spontanbuchung im Falle einer Belegtmeldung zusätzlich Informationen zu Standorten alternativer Fahrzeuge in der Anzeige (4) dargestellt werden.

[0014] Das System verzichtet, im Gegensatz zu existierenden Systemen, auf ein aufwändig im Fahrzeug zu installierendes Anzeige- und Bediengerät und verwendet stattdessen nur die schnell und einfach einzubauende Kommunikationseinheit (2) sowie ggf. Anzeige und Bedientasten des Handsteuergeräts (1) für die Kommunikation mit dem Nutzer, letztere auch innerhalb des Fahrzeugs. Dabei ist eine Anwendung des Handsteuergeräts (1) nur von außerhalb des Fahrzeugs notwendig, um Zugang zum Fahrzeug zu erhalten oder das Fahrzeug bei der Abgabe abzuschließen; innerhalb des Fahrzeugs kann das Handsteuergerät (1) jedoch auf Nutzerwunsch zur Anzeige der aktuellen Fahrdaten verwendet werden.

[0015] Die Kontrolleinheit (7) kann verborgen an nahezu beliebiger Stelle im Fahrzeug untergebracht werden, so dass in jedem Fahrzeugtyp eine Stelle gefunden werden kann, von der aus sie einfach mit der Kommunikationseinheit (2) und dem Kommunikationsbus (8) verbunden werden kann. Durch den Anschluss an den Kommunikationsbus (8) ist die Kontrolleinheit (7) in der Lage, sowohl die relevanten Aggregate im Fahrzeug anzusteuern, wie z. B. Wegfahrsperre oder Türschliesser, als auch die relevanten Nutzungsinformationen zu ermitteln, wie z. B. die gefahrene Strecke aus dem elektronischen Tachometer.

[0016] Da zusätzliche Benutzereingabegeräte, spezielle Anzeigen oder weitere Aggregate sowie die dazugehörige Verkabelung nicht ins Fahrzeug eingebaut werden müssen, ist eine kostengünstige Montage und der Einsatz standardisierter, fahrzeugunabhängiger und damit kostengünstiger Komponenten möglich.

[0017] Durch die fortschreitende Entwicklung der Elektronik ist zudem absehbar, dass das beschriebene System auch so realisiert werden kann, dass die Fahrzeugkomponenten untereinander drahtlos oder über einen vorhandenen Kommunikationsbus kommunizieren können oder zu einer einzigen Einheit, die die Kommunikationseinheit (2) und die Kontrolleinheit (7) in einem Gerät enthält, zusammengefasst werden können, wodurch die Einbaukosten weiter reduziert werden. Bei drahtloser Kommunikation zwischen Kommunikationseinheit (2) und Kontrolleinheit (7) kann sekundenschneller Austausch der Kommunikationseinheit (2) ermöglicht werden, indem diese

die benötigte Energie ebenfalls drahtlos erhält (z. B. mittels Induktion) oder über eine autarke Energieversorgung verfügt (z. B. mittels Batterie oder Solarzellen). Zudem ist bei Verfügbarkeit kostengünstiger, entsprechend leistungsfähiger Handsteuergeräte denkbar, die Funktion der Anzeige (4) durch das Handsteuergerät (1) ausüben zu lassen, wodurch eine weitere Kostenreduktion bewirkt werden kann.

Vorteile

[0018] Zusammenfassend bietet das System gegenüber bestehenden Lösungen folgende Vorteile:

1. System besteht aus wenigen, kostengünstigen Komponenten, die schnell und einfach im Fahrzeug ein- und auszubauen sind, dadurch hohe Wirtschaftlichkeit.
2. Kein kompliziertes Systemschema im Fahrzeug, dadurch intuitiver Umgang der Nutzer mit dem System, geringere Fehlerwahrscheinlichkeit, größere Akzeptanz und dadurch weitere Verbreitung.
3. Kommunikationseinheit mit Anzeige hinter Fahrzeugscheibe liefert Informationen, ermöglicht Fahrzeugzugang und wickelt Spontanbuchungen direkt am Fahrzeug ab, noch ohne dass das Fahrzeug betreten werden muss oder kann.
4. Preisgünstiges, kontaktloses Handsteuergerät des Nutzers mit Anzeige und Bedientasten (z. B. "Contactless SmartCard", Mobiltelefon, Taschencomputer (PDA)) ermöglicht Zugang zum Fahrzeug und dient gleichzeitig als Bedien- und Anzeigegerät im Fahrzeuginnenen; dadurch entfällt die Notwendigkeit eines nutzerzugänglichen, fest zu montierenden Anzeige- und Eingabegeräts im Innenraum.
5. Durch die Möglichkeit von Spontanbuchungen kann das vorherige Buchen bei der Zentrale entfallen.
6. Zugriff auf alle für das System relevanten Fahrzeugaggregate und -Informationen erfolgt über einen im Fahrzeug bereits vorhandenen Kommunikationsbus (z. B. CAN, MOST).
7. Datentransport zwischen Fahrzeug und Zentrale erfolgt über eine drahtlose Weistreckenverbindung (z. B. GSM), es ist kein transportables Speichermedium erforderlich.

[0019] Dadurch bietet das beschriebene System wesentliche Kostenvorteile bei der Installation und eine deutlich einfachere Bedienung für die Nutzer, womit eine hohe Wirtschaftlichkeit für den Betreiber und eine weite Verbreitung möglich ist.

Patentansprüche

1. Zugangskontroll- und Datenerfassungssystem für gemeinschaftlich genutzte Kraftfahrzeuge, **dadurch gekennzeichnet**, dass die Kommunikation des Nutzers mit den Fahrzeugkomponenten mittels

eines leicht mitführbaren und kostengünstig realisierbaren Handsteuergeräts mit eingebauter Anzeige und mit eingebauten Bedientasten erfolgt, welches drahtlos mit einer im Fahrzeug installierten Kommunikationseinheit Daten austauschen kann.

2. Zugangskontroll- und Datenerfassungssystem für gemeinschaftlich genutzte Kraftfahrzeuge gemäß Patentanspruch 1, dadurch gekennzeichnet, dass die im Fahrzeug installierte Kommunikationseinheit, welche mit dem in Patentanspruch 1 beschriebenen Handsteuergerät Daten austauschen kann, eine für den Nutzer sichtbare Schrift- oder Grafikanzeige besitzt, über die eine Benutzerführung möglich ist und dadurch Buchungen an jedem Fahrzeug ermöglicht werden.

3. Zugangskontroll- und Datenerfassungssystem für gemeinschaftlich genutzte Kraftfahrzeuge gemäß Patentanspruch 1, dadurch gekennzeichnet, dass die im Fahrzeug installierte Kommunikationseinheit, welche mit dem in Patentanspruch 1 beschriebenen Handsteuergerät Daten austauschen kann, die in Patentanspruch 2 geschilderte Anzeigefunktionalität nicht selbst enthält, sondern durch das Handsteuergerät ausführen lässt.

4. Zugangskontroll- und Datenerfassungssystem für gemeinschaftlich genutzte Kraftfahrzeuge gemäß Patentanspruch 1, 2 und 3, dadurch gekennzeichnet, dass die im Fahrzeug installierte Kommunikationseinheit wenigstens teilweise drahtlos mit anderen Einheiten im Fahrzeug verbunden ist.

5. Zugangskontroll- und Datenerfassungssystem für gemeinschaftlich genutzte Kraftfahrzeuge gemäß Patentanspruch 1, 2, 3 und 4, dadurch gekennzeichnet, dass die im Fahrzeug installierte Kommunikationseinheit mit wenigen Handgriffen ein- und auszubauen ist und im ausgebauten Zustand keine sichtbaren mechanischen Elemente verbleiben, die den äußeren Eindruck des Fahrzeugs bei einer Nutzung ohne das beschriebene System mindern.

Es folgt ein Blatt Zeichnungen

Anhängende Zeichnungen

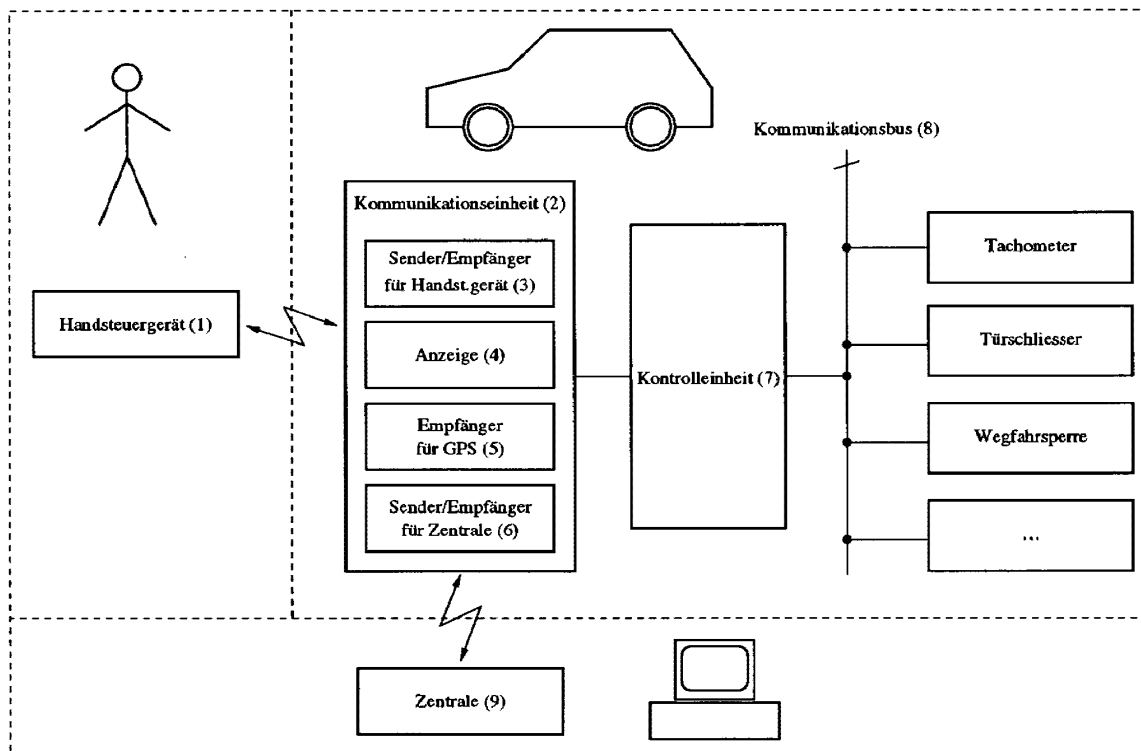


Abbildung 1: Systemübersicht

**Espacenet****Bibliographic data: DE10113803 (A1) — 2002-09-26**

System for arranging transport between driver and passenger by transmitting information relating to offered and requested journeys via e.g. mobile telephone

Inventor(s): NIEMEYER MATTHIAS [DE]; SASSE ANDREAS [DE] ±
(NIEMEYER, MATTHIAS, ; SASSE, ANDREAS)

Applicant(s): SIEMENS BUSINESS SERVICES GMBH [DE] ± (SIEMENS
BUSINESS SERVICES GMBH & CO. OHG)

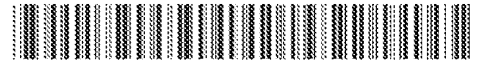
Classification: - international: G06Q40/00; (IPC1-7): G06F17/60
- cooperative: G06Q40/04 (EP)

Application number: DE20011013803 20010321

Priority number(s): DE20011013803 20010321

Abstract of DE10113803 (A1)

In the vehicle, a device wirelessly transmits to an agent an offer including details about a planned route and the driver's identity. The agent stores the data in a database. A passenger wirelessly transmits to the agent a request including details of the required route and the identity of the passenger. The agent searches for a suitable offer and transmits the data to the driver and the passenger.



① BUNDESREPUBLIK
DEUTSCHLAND



DEUTSCHES
PATENT- UND
MARKENAMT

Offenlegungsschrift DE 101 13 803 A 1

⑤ Int. Cl.⁷:
G 06 F 17/60

② Aktenzeichen: 101 13 803.2
③ Anmeldetag: 21. 3. 2001
④ Offenlegungstag: 26. 9. 2002

DE 101 13 803 A 1

⑦ Anmelder:
Siemens Business Services GmbH & Co. oHG,
81739 München, DE

⑧ Vertreter:
Berg, P., Dipl.-Ing., Pat.-Ass., 80339 München

⑨ Erfinder:
Niemeyer, Matthias, 59494 Soest, DE; Sasse,
Andreas, 59609 Anröchte, DE

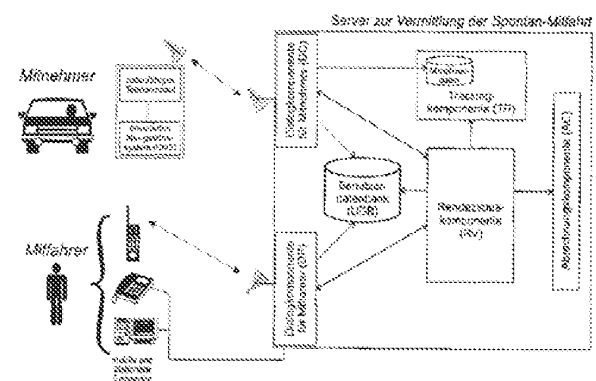
⑥ Entgegenhaltungen:
FR 26 92 064 A1
EP 10 67 480 A2
EP 10 11 085 A2

Die folgenden Angaben sind den vom Anmelder eingereichten Unterlagen entnommen

Prüfungsantrag gem. § 44 PatG ist gestellt

④ Vermittlung von Transportdiensten mittels mobiler Geräte

⑤ System zur durch einen Vermittler bewirkten Vermittlung einer durch ein Fahrzeug bewirkten Transportleistung eines Mitnehmers an einen Mitfahrer, umfassend:
- in dem Fahrzeug eine erste Einrichtung zum drahtlosen Senden eines Angebotssatzes, umfassend Angaben zum geplanten Fahrweg und der Identität des Mitnehmers, an einen Vermittler,
- bei dem Vermittler eine zweite Einrichtung zum Empfang des Angebotssatzes und Ablage desselben in einer Datenbank,
- seitens des Mitfahrers eine dritte Einrichtung zum drahtlosen Senden eines Angebotssatzes, umfassend Angaben zum gewünschten Fahrweg und der Identität des Mitfahrers, an den Vermittler,
- bei dem Vermittler eine vierte Einrichtung zum Empfang des Anfragesatzes, der an eine Sucheinheit weitergegeben wird, welche in der Datenbank einen zu dem Anfragesatz passenden Angebotssatz unter Verwendung des gewünschten und geplanten Fahrwegs ermittelt,
- bei dem Vermittler eine fünfte Einrichtung, welche von der Sucheinheit einen Ergebnissatz erhält, der den gefundenen Angebotssatz oder daraus abgeleitete Daten und den dazu passenden Anfragesatz oder daraus abgeleitete Daten umfaßt, und den Ergebnissatz über die jeweiligen drahtlosen Verbindungen an den Mitnehmer und den Mitfahrer übermittelt.



DE 101 13 803 A 1

Beschreibung

[0001] Die Erfindung betrifft ein Verfahren und die entsprechenden Einrichtungen, um mittels Mobiltelefonen und vergleichbaren Geräten Transportdienste zu vermitteln und in Anspruch zu nehmen.

[0002] Es ist bekannt, daß insbesondere die privaten Verkehrsmittel selten ausreichend ausgelastet sind. Dies betrifft sowohl die Anzahl der jeweils transportierten Personen wie auch die Zeiten der Benutzung.

[0003] Eine Anzahl von zunächst nicht zueinander in Bezug stehenden Verhaltensweisen und Maßnahmen versucht bislang, hier eine Verbesserung zu bringen.

[0004] Zum einen ist da die Mitnahme fremder Personen im Automobil zu nennen, beginnend mit der ad-hoc Mitnahme von am Straßenrand auf sich aufmerksam machenden Personen ("trampen") über Mitfahrzentralen, in denen, auch computergestützt, Mitfahrer vermittelt werden, bis zu dem auch als "car sharing" bezeichneten gemeinsamen Besitz eines Automobils durch eine nur zu diesem Zweck geschlossene Vereinigung.

[0005] Beim "trampen" stellt sich einerseits ein Sicherheitsproblem sowohl für den Fahrer als auch den Mitfahrer als auch das Problem, daß der Trampler nur über statistische Erfahrungswerte verfügt, ob und wie lange eine Reise benötigt. Mitfahrzentralen eignen sich mehr für längere Strecken, da die Reservierung über die Zentrale einen gewissen Aufwand bedeutet. Beim "car sharing" ist nicht nur die zeitliche Reservierung ein Problem, sondern auch, daß der jeweilige Standort nicht unbedingt passend ist, so daß in praxi die Wagen immer wieder zu festen Positionen (z. B. in eine zugeordnete Garage) zurückgebracht werden müssen.

[0006] Beispielsweise ist in der Offenlegungsschrift DE 22 10 088 ein System beschrieben, bei dem an Parkplätzen durch elektronische Mittel Fahrzeuge entliehen und an anderen Stationen wieder freigegeben werden, wobei der gesamte Vorgang von einer zentralen Datenbank gesteuert wird.

[0007] Ein ähnliches System beschreibt die Patentschrift US 5,168,451, bei dem die Fahrzeuge über Funkverbindungen mit einer Zentrale verbunden sind und sich autonom innerhalb von Zellen bewegen. Ähnlich zeigt die Patentschrift US 5,726,885 ein Mietfahrzeugsystem für Fahrzeuge, bei dem die Fahrzeuge an festen Parkplätzen gemietet und abgegeben werden können.

[0008] In der Patentschrift US 5,835,376 wird ein automatisiertes System für das Anmieten von Fahrzeugen beschrieben. Hierbei werden die Positionen der Fahrzeuge beispielsweise durch Satellitennavigation ständig mitgeführt, so daß die Zuordnung jederzeit und automatisch an Hand der jeweiligen Position erfolgen kann. Die Anforderung der Fahrten jedoch erfolgt in traditioneller Weise durch Eingabe der entsprechenden Daten.

[0009] Die Erfindung erlaubt es, das sowohl bringt eine wesentliche Verbesserung dieser Situation.

[0010] Dabei wird ausgenutzt, daß bei heutigen drahtlosen Kommunikationsgeräten, wie sie durch Mobiltelefone repräsentiert werden, die Position des Mobiltelefons relativ genau und in absoluten geographischen Koordinaten bestimmbar ist. Hinzu kommt, daß ein Mobiltelefon eine Datenverbindung zu einem Rechner in kurzer Zeit aufbauen kann.

[0011] Die Erfindung benutzt daher in der einfachsten Version diese automatische Positionsbestimmung, um eine Anfrage an einen Server zu richten und eine Transportdienstleistung anzufordern. Der Server verwaltet eine Anzahl von dafür freien Geräten und kann dann eine Transportdienstleistung vermitteln.

[0012] Weitere Vorteile und Abwandlungen ergeben sich aus der folgenden Beschreibung verschiedener Ausführungsbeispiele.

[0013] Die Erfindung soll die in der Regel geringe Besetzung von PKW's erhöhen und damit Autofahrten vermeiden helfen, indem sie potenzielle Mitfahrer und Mitnehmer in einer Weise zusammenbringt, die die Vorteile des "Trampens" mit denen einer durch z. B. eine Mitfahrzentrale organisierten Mitfahrt in neuartiger Weise verbindet. Das wesentliche Merkmal ist, daß – hinreichend viele Teilnehmer vorausgesetzt – zwischen Äußerung des Mitfahrtwunschs und der Mitnahme nur wenige Minuten liegen, d. h. daß eine spontane Mitfahrt automatisch organisiert wird.

[0014] Die Erfindung ermöglicht einen Dienst, bei dem

- a) die Teilnehmer (Mitfahrer bzw. Mitnehmer) über ihre Kommunikations-Endgeräte (z. B. Mobiltelefon, in Autonavigations-System integriertes Autotelefon) automatisch an einen Rechner an dritter Stelle ("Server") ihre Position und Reises Strecke sowie ggf. weitere Charakteristika übermitteln;
- b) der Server in Echtzeit potenzielle Mitfahrer/Mitnehmerpaare identifiziert und (auch im Misserfolgsfall) benachrichtigt;
- c) die Teilnehmer sofort automatisch einen standardisierten (durch die Anmeldung an den Dienst vereinbarten) "Beförderungsvertrag" abschließen;
- d) der Server die Abrechnung der Fahrt automatisch durchführt.

[0015] Dieser Dienst kann in jeweils besonderer Ausprägung (insbesondere des Servers) darüber hinaus leisten:

- e) eine direkte Mobiltelefonverbindung zwischen Mitnehmer und Mitfahrer vermitteln;
- f) bei der Bildung der Mitfahrer/Mitnehmerpaare Nutzerprofile berücksichtigen;
- g) "Vertrauensgemeinschaften" bilden, bei denen z. B. für den Transport von Kindern zu Kindergarten, Schule usw. nur Mitnehmer eines bestimmten Kreises (z. B. Nachbarschaft) in Frage kommen.

[0016] Zusätzlich zum erwähnten Nutzen für die Beteiligten ist bei diesem Dienst anders als bei sonstigen Mehrwertdiensten in und außerhalb der Verkehrstelematik zu betonen, daß ein solcher Dienst relativ wenig Vorlauf- bzw. Grundkosten für einen potenziellen Betreiber voraus setzt. Die Finanzierung eines solchen Dienstes würde erfolgsabhängig durch die Teilnehmer erfolgen. Sowohl Mitnehmer als auch Mitfahrer haben einen ökonomischen Nutzen, der unmittelbar aus der Leistung des Dienstes entsteht, von dem ein Anteil bei der Abrechnung einbehalten werden kann. Damit entfällt das Risiko, daß die in Anspruch genommene Leistung nicht bezahlt wird. Wegen des beiderseitigen Nutzens ist nicht zu erwarten, daß es eine große Diskrepanz zwischen der Zahl möglicher Mitnehmer und Mitfahrer geben wird. Außer dem Server ist keine weitere Ausstattung durch den Dienstbetreiber zu finanzieren. Nur die Kosten für den Server und Teilnehmerwerbung sind im Prinzip Kosten, die auch bei sehr kleinen Teilnehmerzahlen, d. h. geringem Umsatz, anfallen.

[0017] Damit sinken die Eintrittsschwelle und das Risiko für den Betreiber eines solchen Dienstes. Als Betreiber kommen besonders Telekommunikations- und Internetunternehmen in Frage, aber auch die Betreiber von Mitfahrzentralen.

3 Wirkungsweise der Erfindung

[0018] Die Wirkungsweise der Erfindung wird nachfolgend anhand eines Nutzungs-Szenarios für den Spontan-Mitfahrdienst in einer leicht zu beschreibenden Standard-Ausführung beschrieben. Die Erfindung besteht hauptsächlich aus einem auf einem Server ablaufenden Dienstprogramm sowie einer erweiterten Funktionalität eines Autonavigationsystems (beim Mitnehmer). Diese beiden Komponenten sind untereinander sowie mit einem WAP-fähigen Handy (beim Mitfahrer) über Telefonverbindungen verbindbar.

[0019] **Abb. 1** veranschaulicht das Zusammenspiel der Komponenten.

Hintergrundsituation

- a) Mitfahrer und Mitnehmer sind bei dem Dienst registriert mit Daten wie: Name, Alter, Geschlecht, Abrechnungsdaten, Handy- bzw. Autotelefonnummer, ggf. Autokennzeichen, Autotyp, Mitfahrkapazität. Sie haben damit die Bereitschaft erklärt, einen "Beörderungsvertrag" unter den mit der Mitgliedschaft verbundenen Bedingungen mit jedem anderen nach diesen Bedingungen registrierten Partner automatisch durch den Server für sich rechtsverbindlich abschließen zu lassen.
- b) Die Fahrzeuge der potenziellen Mitnehmer sind mit einem erweiterten Autonavigationssystem (CNS) mit GPS zur automatischen Positionsbestimmung und einem damit verbundenen datenfähigen Autotelefon ausgerüstet. Das CNS ist Hausadressen-genau.
- c) Die potenziellen Mitnehmer besitzen ein WAP-fähiges Handy.

Ausgangssituation

- d) Die potenziellen Mitnehmer haben ihre Fahrtroupe in das CNS eingegeben und den "Bereit-zur-Mitnahme"-Knopf des CNS gedrückt, sind vom Dienst verifiziert und befinden sich auf der Fahrt. Sie haben sich damit bereit erklärt, registrierte Mitfahrer auf ihrer Strecke mitzunehmen.
- e) Ein potenzieller Mitfahrer wählt am Ort und zum Zeitpunkt der gewünschten Mitfahrt über Handy den Dienst per WAP-Dialog an. Dabei werden die aktuelle Position und das gewünschte Ziel erfragt und an den Server übertragen.
- f) Der Server ist über den augenblicklichen Ort, Fahrziel und Route aller sich unterwegs befindenden potenziellen Mitnehmer informiert.

Vermittlung aufgrund der Anforderung durch den Mitfahrer

- g) Der Server identifiziert den Mitfahrer und prüft seine Berechtigung (Verifikation).
- h) Der Server prüft, ob es potenzielle Mitnehmer gibt, deren Route innerhalb "kurzer Zeit" am Abholort vorbeiführt und den Wunschzielort des Mitfahrers berührt.
- i) Im Misserfolgsfall wird dem Mitfahrer über sein Handy mitgeteilt, dass es keinen Mitnehmer gibt.
- j) Im Erfolgsfall wird der "beste" Mitnehmer vom Server ausgewählt. Damit kommt die Vermittlung (der "Beörderungsvertrag") zu Stande.
- k) Der Mitfahrer erhält vom Dienst über sein Handy eine Nachricht, welches Fahrzeug wann am Abholort zur Mitfahrt erscheinen wird. Außerdem wird ihm die Autotelefonnummer des Mitnehmers mitgeteilt.

l) Über das Autotelefon wird an den Mitnehmer eine Nachricht gesandt, wo er den Mitfahrer findet und wohin dieser mitgenommen werden möchte. Dies wird ihm optional über sein Navigationssystem graphisch dargestellt. Außerdem wird ihm die Handynummer des Mitfahrers mitgeteilt.

m) Bei der Aufnahme des Mitfahrers drückt der Mitnehmer den "Mitnahme-Knopf", wodurch der Server die Bearbeitung des Mitfahrtwunsches abschließt und die entsprechenden Daten des Mitfahrtvorgangs zur Berechnungskomponente weiterleitet.

Abrechnung

n) erfolgt in herkömmlicher Weise, wobei geleistete mit in Anspruch genommenen Mitfahrdiensten verrechnet werden.

4 Beschreibung der einzelnen Elemente der Erfindung anhand einer möglichen Ausführungsform

4.1 Server zur Vermittlung der Spontan-Mitfahrt

[0020] Der Server ist ein an beliebigem Ort stehender leistungsfähiger Rechner oder ein Rechnerverbund, der an das Telefonnetz angeschlossen ist.

[0021] Auf dem Server läuft das den Kern der Erfindung ausmachende Dienstprogramm, das die Informationen über die Nutzer (Mitfahrer und Mitnehmer) entgegennimmt, verwaltet und aus ihnen die für die Mitfahrt relevanten Daten berechnet und mit den Beteiligten kommuniziert. Das Programm besteht aus den nachfolgend beschriebenen Komponenten.

[0022] Die Arbeitsweise des Dienstprogramms zur Vermittlung der Spontan-Mitfahrt, wie sie unten detailliert beschrieben wird, gibt das Ablaufschema in **Abb. 2** wieder.

4.2 Dienstprogramm-Komponente: Benutzerdatenbank (UDB)

[0023] Dies ist eine herkömmliche Datenbank, die z. B. die folgenden Daten (Teilnehmerprofil) über die Nutzer des Dienstes (Mitnehmer und Mitfahrer) enthält: Name, Alter, Geschlecht, Handy- bzw. Autotelefonnummer, ggf. Autokennzeichen, Autotyp, Mitfahrkapazität, Eigene Besonderheiten (Behinderung, Zugehörigkeit zu einer bestimmten Gruppe ["Vertrauenskreise"], Wartezeit-Toleranz), Abrechnungsdaten.

[0024] Diese Daten werden bei der Registrierung in herkömmlicher Weise ein einziges Mal je Teilnehmer erfasst und können später modifiziert werden (nicht Gegenstand der Erfindung). Die Übereinstimmung mit den angegebenen Daten wird verifiziert. Die Tatsache, dass die Teilnehmer "verifiziert" sind, schafft erst die notwendige Sicherheit (im nicht-technischen Sinn) für den Dienst. Die Registrierung ermöglicht es optional, besondere "Vertrauenskreise" zu schaffen, d. h. für die registrierte Person nur bestimmte Personen als Mitfahrer bzw. Mitnehmer zuzulassen.

[0025] Die Benutzerdatenbank bietet folgende für die Spontan-Mitfahrt durch andere Komponenten des Dienstprogramms nutzbare Funktionalität:

- UBD_idem: Identifikation des sich für einen Spontanvermittlungsvorgang Anmeldenden
- UBD_query: Abfrageschnittstelle für Daten aus dem Benutzerprofil

4.3 Dienstprogramm: Dialogkomponente für den Mitfahrer (DP)

[0026] Dieser Bestandteil des Dienstprogramms regelt die Kommunikation mit dem potenziellen Mitfahrer über dessen WAP-fähiges Handy:

[0027] Folgende Funktion steht der Rendezvous-Komponente (RV) zur Verfügung:

- DP_call: Aufbau der Verbindung zum Handy eines potenziellen Mitfahrers auf Anforderung der Rendezvous-Komponente (RV) und Übermittlung des Ergebnisses der Vermittlung (per WAP-Seite, per SMS-Message oder Voice-Mail) mit folgenden von der Rendezvous-Komponente (RV) gelieferten Informationen: Bestätigung bzw. Absage der Mitfahrt sowie bei erfolgreicher Vermittlung: Ankunftszeit, Kennzeichen des abholenden Wagens, Handy-Nummer des Mitnehmers.

Arbeitsweise der Dialogkomponente für den Mitfahrer (DP)

- a) Entgegennahme des Anmelde-Anrufs vom Mitfahrer; Bereitstellen und Übermitteln eines WAP-Diologs an das Mitfahrer-Handy zur Abfrage von:
- b) Identifikationsdaten, Abholort, gewünschtes Ziel, Zahl der mitzunehmenden Personen, Besonderheiten (analog zu den im Benutzerprofil verwalteten Daten). Dazu werden die Identifizierungsfunktionen UBD_ident und Abfragefunktion UBD_query der Benutzerdatenbank zur Ermittlung der für den Dialog notwendigen Daten genutzt. Dieser Dialog kann interaktiv wie bei entsprechenden Internetseiten oder analog zur Zieleingabe des Autonavigationssystems gestaltet sein.

4.4 Dienstprogramm: Dialogkomponente für den Mitnehmer (DC)

[0028] Dieser Bestandteil des Dienstprogramms regelt die Kommunikation mit dem potenziellen Mitnehmer über dessen mit dem erweiterten Autonavigationssystem (CNS) verbundenen Autotelefon:

[0029] Folgende Funktion steht der Rendezvous-Komponente (RV) und dem erweiterten Autonavigationssystem (CNS) zur Verfügung:

- a) DC_match: Aufbau der Verbindung zu dem mit dem erweiterten Autonavigationssystem (CNS) verbundenen Autotelefon des potenziellen Mitnehmers und mit CNS_display Übermittlung des Ergebnisses der Vermittlung (per SMS-Message oder Voice-Mail) mit folgenden Informationen: Abholort, Ziel des Mitfahrers, Anzahl der Mitfahrer, Handy-Nummer des Mitfahrers.

[0030] Folgende Funktion steht der Tracking-Komponente (TR) zur Verfügung:

- b) DC_posqry: Aufbau der Verbindung zu dem mit dem erweiterten Autonavigationssystem (CNS) verbundenen Autotelefon des potenziellen Mitnehmers auf Anforderung der Tracking-Komponente (TR) zur Abfrage der momentanen Position des Mitnehmers durch CNS_pos und Weiterleitung dieser Information an die Tracking-Komponente (TR) durch Aufruf von TR_posupd.

[0031] Folgende Funktionen stehen dem erweiterten Au-

tonavigationssystem (CNS) zur Verfügung:

- c) DC_confirm: Entgegennahme des Mitfahrtestätigungsanrufs des erweiterten Autonavigationssystems (CNS) des Mitnehmers bei Aufnahme des/der am Abholort aufgenommenen Mitfahrers und Weiterleitung an die Rendezvous-Komponente (RV) durch Aufruf von RV_close.

- d) DC_cancel: Entgegennahme des Abmeldeanrufs des erweiterten Autonavigationssystems (CNS) des Mitnehmers (Bei Erreichen des Ziels, Änderung der Route oder aus sonstigen Gründen) und Weiterleitung dieser Information an die Tracking-Komponente (TR) durch Aufruf von TR_close.

Arbeitsweise der Dialogkomponente für den Mitfahrer (DP)

- e) Entgegennehmen Mitfahrervorgangsdaten (Zeit, Position, Ziel, Route, Routenparameter, Besonderheiten aus dem Benutzerprofil usw.) an die Tracking-Komponente (TR) durch Aufruf der Funktion TR_init.

4.5 Dienstprogramm: Tracking-Komponente (TR)

[0032] Dieser Bestandteil des Dienstprogramms verwaltet, berechnet und ermittelt durch Abfrage die aktuelle Position für jeden angemeldeten potenziellen Mitnehmer und stellt diese Information über entsprechende Abfragefunktionen der Rendezvous-Komponente (RV) zur Verfügung.

[0033] Für jeden Mitnehmer wird eine Tracking-Datenstruktur geführt, die folgende Daten enthält: Mitnehmer-Identifikation, Datum der letzten tatsächlichen Positionsaktualisierung, Datum der vorausgerechneten Positionsaktualisierung sowie eine Liste von Zeit-Ort-Paaren. Ein Element dieser Liste gibt Zeit der letzten Positionsaktualisierung und zugehörige Position an, während die übrigen Elemente weitere Orte der Route und die vorausgerechnete Ankunftszeit an diesen Orten repräsentieren. Folgende Funktionen stehen der Dialogkomponente für den Mitnehmer (DC) zur Verfügung:

- a) TR_init: Initialisierung einer neuen Tracking-Datenstruktur für einen Mitnehmer mit folgenden Eingabe-Parametern: (Mitnehmer-Identifikation, aktuelle Position, Ziel, Routenparameter wie z. B. Folge der Knotenpunkte oder Typ des Navigationsprogramms und vom Mitnehmer eingestellte Routing-Parameter, Mitfahrerkapazität);
- b) TR_close: Löschen einer Tracking-Datenstruktur;

[0034] Folgende Funktionen stehen der Rendezvous-Komponente (RV) zur Verfügung:

- a) TR_pos: Ermittlung der aktuellen Position eines bestimmten Mitnehmers durch i) Positionsabfrageanruf DC_posqry durch die Dialogkomponente für den Mitfahrer (DP) oder – bei erst vor kurzem erfolgtem Positionsabfrageanruf – ii) Fortschreibung der Position anhand der Routing-Parameter;
- b) TR_getcars: Ermittlung aller Mitnehmer, die sich aktuell in einem bestimmten Umkreis einer bestimmten Position befinden und auf deren weiterer Route ein bestimmtes Ziel liegt und die den Besonderheiten eines bestimmten Mitfahrers (z. B. aufgrund des Benutzerprofils) entsprechen;
- c) TR_capupd: Änderung der Mitfahrerkapazität in der Tracking-Datenstruktur bei Aufnahme oder Absetzen

von Mitfahrern.

[0035] Folgende Funktionen stehen der Dialogkomponente für den Mitnehmer (DC) zur Verfügung:

- d) TR_posupd: Übernahme der durch Positionsabfrageanruf (DC_posqry) oder bei Gelegenheit eines sonstigen Anrufs übermittelten tatsächlichen Positionsdaten eines bestimmten Mitnehmers in die Tracking-Datenstruktur mit anschließender Aktualisierung.

Arbeitsweise der Tracking-Komponente (TR)

- e) Wenn in einem bestimmten Zeitintervall A keine neuen tatsächlichen Positionsdaten einer Tracking-Datenstruktur durch die Dialogkomponente für den Mitnehmer (DC) über TR_posupd gemeldet wurden, wird über die Dialogkomponente für den Mitnehmer (DC) ein Positionsabfrageanruf über DC_posqry gestartet.
- f) Wenn in einem bestimmten Zeitintervall B ($B < A$) keine Positionsdaten aktualisiert worden sind, wird eine neue Position anhand des Zeitverlaufs, der Routingparameter und der Extrapolation des bisherigen Geschwindigkeitsprofils berechnet – analog zu einem handelsüblichen Routenplaner oder Navigationssystem.
- g) Bei Vorliegen neuer Positionsdaten werden folgende Daten in der betreffenden Tracking-Datenstruktur aktualisiert:
- Aktualisierungsdatum und die Zeit-Ort-Liste. Dabei werden alle Zeit-Ort-Paare vor dem Aktualisierungsdatum entfernt und die übrigen neu berechnet (anhand des Zeitverlaufs, der Routingparameter und der Extrapolation des bisherigen Geschwindigkeitsprofils berechnet – analog zu einem handelsüblichen Routenplaner oder Navigationssystem). Hierbei werden auch Abweichungen der tatsächlichen Fahrtroute von der vorher Berechneten berücksichtigt.
- h) Bei Vorliegen neuer tatsächlicher Positionsdaten findet ein Vergleich mit den vorausberechneten Daten statt, aus dem das Geschwindigkeitsprofil für Routenvorausberechnung ermittelt bzw. angepasst wird.

4.6 Dienstprogramm: Rendezvous-Komponente (RV)

[0036] Dieser Bestandteil des Dienstprogramms bearbeitet die eingehenden Mitfahrtswünsche, indem passende Mitnehmer ermittelt werden und das Vermittlungsergebnis den Nutzern mitgeteilt wird. Darüber hinaus wird der Status der Mitfahrtvorgänge in einer Datenstruktur verwaltet.

[0037] Für jeden angemeldeten Mitfahrer wird eine Rendezvous-Datenstruktur geführt, die folgende Daten enthält: Mitfahrer-Identifikation, Abholort, späteste Abholzeit, Ziel, Besonderheiten (z. B. aus Benutzerprofil), Mitnehmer. Da der Dienst in der hier beschriebenen Form auf spontane Mitfahrt abzielt, existiert eine Rendezvous-Datenstruktur also nur wenige Minuten, bis die Mitfahrt zu Stande gekommen ist bzw. die Nichtverfügbarkeit der Mitfahrt kommuniziert worden ist.

[0038] Die Rendezvous-Komponente (RV) wird durch Aufrufe der beiden Dialogkomponenten DC und DP aktiviert, d. h. durch An- und Abmeldevorgänge.

[0039] Folgende Funktionen stehen der Dialogkomponente für den Mitfahrer (DP) zur Verfügung:

- a) RV_init: Initialisierung einer neuen Rendezvous-Datenstruktur bei Übergabe der folgenden Parameter

(aufgrund eines Mitfahrtswunsches): Mitfahrer-Identifikation, Abholort, späteste Abholzeit, Ziel, Besonderheiten (z. B. aus Benutzerprofil).

b) Folgende Funktionen stehen der Dialogkomponente für den Mitnehmer (DC) zur Verfügung:

- c) RV_close: Terminierung des Vermittlungsvorgangs durch einen bestimmten Mitnehmer bei Aufnahme des Mitfahrers: Anhand der Mitnehmer-Identifikation und der aktuellen Position des Mitnehmers wird die zugehörige Rendezvous-Datenstruktur (d. h. der Mitfahrer) ermittelt. Die Abrechnungskomponente wird mit den relevanten Daten aufgerufen. Weiterhin wird die Tracking-Komponente (TR) per TR_capupd aufgerufen, um die Mitfahrkapazität des Mitnehmers anzupassen. Anschließend wird die Rendezvous-Datenstruktur gelöscht.

Arbeitsweise der Rendezvous-Komponente (RV)

d) RV_query: Nach der Initialisierung einer neuen Rendezvous-Datenstruktur RV_init wird die Tracking-Komponente (TR) mit TR_getcars aufgerufen mit folgenden Parametern: Abholort, Ziel, Besonderheiten des Mitfahrtswunsches sowie Toleranz bezüglich des Abholorts (Umkreis). Als Ergebnis sieht eine Menge von potenziellen Mitnehmern bereit. Ist sie leer, wird mit RV_nomatch die Bearbeitung beendet, sonst wird sie mit RV_select fortgesetzt.

e) RV_select: Aus der mit RV_query erhaltenen Liste der potenziellen Mitnehmer wird einer nach folgenden Kriterien ausgewählt: Länge der Route zum Ziel, Nähe zum Abholort, ggf. nach Übereinstimmung mit optionalen Kriterien des Benutzerprofils. Für den ausgewählten Mitnehmer wird über TR_pos die aktuelle exakte Position ermittelt. Weicht diese soweit von der bei der Auswahl zu Grunde liegenden ab, dass ein anderer Mitnehmer ausgewählt worden wäre, wird die Auswahl neu durchgeführt. Andernfalls wird mit RV_match die Vermittlung durchgeführt.

f) RV_match: Über die beiden Dialogkomponenten DC und DP werden Mitnehmer und Mitfahrer über die Vermittlung mit DC match bzw. DP call informiert. Die Beendigung des Vorgangs wird später durch Aufruf von RV_close seitens des Mitnehmers eingeleitet.

g) RV_nomatch: Dem Mitfahrer wird über DP call mitgeteilt, dass momentan keine Mitfahrtsmöglichkeit besteht. Die Rendezvous-Datenstruktur wird entfernt.

4.7 Dienstprogramm: Abrechnungs-Komponente (AC)

[0040] Dieser Bestandteil des Dienstprogramms bearbeitet in herkömmlicher Weise die nach erfolgreicher Vermittlung von der Rendezvous-Komponente (RV) übergebenen Vermittlungsdaten und führt die Verrechnung durch.

4.8 Erweitertes Autonavigationssystem (CNS)

[0041] Das erweiterte Autonavigationssystem (CNS) besteht aus einem herkömmlichen Navigationssystem (GPS-Positionsbestimmung, Zieleingabe per Dialog, Eingabe von weiteren Routenparametern, Display zur alphanumerischen oder graphischen Anzeige von Text und Routeninformation) und einem damit verbundenen datenfähigen Autotelefon mit folgenden zusätzlichen Funktionen:

[0042] Folgende Funktionen stehen dem Autofahrer (Mitnehmer) zur Verfügung:

- a) **CNS_mit**: Dialog-Element, mit dem der Mitnehmer seine Bereitschaft zur Mitfahrt eingibt ("Bereit-zur-Mitnahme-Knopf"). Dieses Dialog-Element wird dem Mitnehmer angeboten, nachdem er dem Navigationssystem sein Fahrziel und ggf. weitere Parameter eingegeben hat. Wenn die Mitfahrerbereitschaft bestätigt wurde, werden ohne weiteres Zutun des Mitnehmers die Routendaten und die Identifikationskennung des Mitnehmers über das Autotelefon an die Dialogkomponente für den Mitnehmer (DC) übermittelt (Anmeldeanruf).
- b) **CNS_confirm**: Dialog-Element, mit dem der Mitnehmer die Aufnahme des Mitfahrers bestätigt. Ohne weiteres Zutun des Mitnehmers wird über das Autotelefon die Funktion **DC_confirm** der Dialogkomponente für den Mitnehmer (DC) ausgelöst.
- c) **CNS_cancel**: Dialog-Element, mit dem der Mitnehmer seine Bereitschaft zur Mitfahrt widerruft. Ohne weiteres Zutun des Mitnehmers wird über das Autotelefon die Funktion **DC_cancel** der Dialogkomponente für den Mitnehmer (DC) ausgelöst. Eine Routenänderung durch den Mitnehmer erfolgt durch **CNS_cancel** gefolgt von **CNS_init** (siehe **CNS_change**).

[0043] Folgende Funktionen stehen der Dialogkomponente für den Mitnehmer (DC) zur Verfügung:

- d) **CNS_pos**: Ermittlung der momentanen Position (GPS-Koordinaten) und Rückmeldung über das Autotelefon an die Dialogkomponente für den Mitnehmer (DC);
- e) **CNS_display**: Datenschnittstelle, die dem Navigationssystem eine Meldung mit den Koordinaten des Orts der Aufnahme des Mitfahrers zur Darstellung in dem durch das Display dargestellten Kartenausschnitt sowie die übrigen von **DC_match** übermittelten Daten zur vermittelten Mitnahme übermittelt.

Arbeitsweise des erweiterten Autonavigationssystems

- f) **CNS_change**: Eine Routenänderung durch den Mitnehmer (erkennlich durch Neueingabe des Fahrziels) wird vom CNS automatisch erkannt und dem Server mitgeteilt durch **CNS_cancel**. Nach Neueingabe des Ziel wird dem Mitnehmer wieder **CNS_init** angeboten.
- g) **CNS_close**: Bei Erreichen des eingegebenen Ziels meldet sich das erweiterte Autonavigationssystem (CNS) automatisch bei der Tracking-Komponente (TR) durch **TR_close** ab.

5 Weitere Ausführungsformen der Erfindung

[0044] U. a. folgende Verallgemeinerungen der dargestellten Ausführungsform sind möglich:

- a) Mitfahrer: Die Übermittlung des Abholorts kann durch ein GPS-Handy automatisiert werden.
- b) Mitfahrer: Ein WAP-fähiges-Handy kann durch ein normales Handy ersetzt werden, wenn die Dialogkomponente für den Mitfahrer (DP) um Spracherkennung und Sprachsynthese erweitert wird.
- c) Mitfahrer: Statt Handy kann auch eine normale Telefonverbindung (Telefonzelle, Festnetz-Telefon) verwendet werden.
- d) Dienstweiterung auf Benachrichtigung über potenzielle Mitfahrten: Die Rendezvouskomponente (RV) kann so erweitert werden, dass, falls keine Spon-

tan-Mitfahrt vermittelt werden konnte, der Mitfahrer über sein Handy benachrichtigt wird, wenn sich ein potenzieller Mitnehmer angemeldet hat, der ihn mitnehmen kann. Aufgrund der Informationen der Tracking-Komponente (TR) über die aktuell angemeldeten potenziellen Mitnehmer werden ihm die voraussichtlichen späteren Mitfahrsmöglichkeiten und deren Abholzeiten mitgeteilt.

e) Dienstweiterung auf nicht-spontane Mitnahme: Die Rendezvouskomponente (RV) kann so erweitert werden, dass nicht nur Spontan-Mitfahrten, sondern auch solche mit Anmeldung und Wartezeit vermittelt werden. Dazu kann optional eine Prognosekomponente eingerichtet werden, die dem Mitfahrer aufgrund der Informationen der Tracking-Komponente (TR) voraussichtliche Mitfahrsmöglichkeiten und deren Abholzeit anbietet. Die Erweiterung beinhaltet, dass bei Abweichungen des Mitnehmers von der angekündigten Route der Mitfahrer über sein Handy darüber automatisch informiert wird.

f) Dienstweiterung auf Benachrichtigung: Die Rendezvouskomponente (RV) kann so erweitert werden, dass der Mitfahrer nach einer Absage über einen evtl. später eintreffenden bereits angemeldeten Mitnehmer informiert wird. Dazu kann optional eine Prognosekomponente eingerichtet werden, die dem Mitfahrer aufgrund der Informationen der Tracking-Komponente (TR) voraussichtliche Mitfahrsmöglichkeiten und deren Abholzeit anbietet.

g) Dienstweiterung auf Umwege des Mitnehmers: Die Rendezvouskomponente (RV) kann so erweitert werden, dass nicht nur Mitfahrten, die auf der vom Mitnehmer bei Fahrtantritt festgelegten Route liegen, sondern auch solche, die gewisse Umwege verlangen, vermittelt werden (Beispiel: Raststätten auf Autobahnen oder Abfahrten von der Autobahn). Dazu wird die Dialogkomponente für den Mitnehmer so erweitert, dass ihm Vorschläge für Umwege gemacht werden, die er akzeptiert oder ablehnt.

Patentansprüche

1. System zur durch einen Vermittler bewirkten Vermittlung einer durch ein Fahrzeug bewirkten Transportleistung eines Mitnehmers an einen Mitfahrer, umfassend:
in dem Fahrzeug eine erste Einrichtung zum drahtlosen Senden eines Angebotssatzes, umfassend Angaben zum geplanten Fahrweg und der Identität des Mitnehmers, an einen Vermittler,
bei dem Vermittler eine zweite Einrichtung zum Empfang des Angebotssatzes und Ablage desselben in einer Datenbank,
seitens des Mitfahrers eine dritte Einrichtung zum drahtlosen Senden eines Anfragesatzes, umfassend Angaben zum gewünschten Fahrweg und der Identität des Mitfahrers, an den Vermittler;
bei dem Vermittler eine vierte Einrichtung zum Empfang des Anfragesatzes, der an eine Sucheinheit weitergegeben wird, welche in der Datenbank einen zu dem Anfragesatz passenden Angebotssatz unter Verwendung des gewünschten und geplanten Fahrwegs ermittelt,
bei dem Vermittler eine fünfte Einrichtung, welche von der Sucheinheit einen Ergebnissatz erhält, der den gefundenen Angebotssatz oder daraus abgeleitete Daten und den dazu passenden Anfragesatz oder daraus

abgeleitete Daten umfaßt, und den Ergebnissatz über die jeweiligen drahtlosen Verbindungen an den Mitnehmer und den Mitfahrer übermittelt.

2. Verfahren zur Vermittlung einer durch ein Fahrzeug bewirkten Transportleistung eines Mitnehmers an einen Mitfahrer, mit den Schritten:

über eine drahtlose Datenverbindung sendet eine Einrichtung in dem Fahrzeug einen Angebotssatz, umfassend Angaben zum geplanten Fahrweg und seiner Identität, an einen Vermittler, 5
der Vermittler speichert den Angebotssatz in einer Datenbank, 10

der Mitfahrer sendet über eine drahtlose Datenverbindung einen Anfragesatz, umfassend Angaben zum gewünschten Fahrweg und seiner Identität, über eine 15
zweite Datenverbindung an den Vermittler;

der Vermittler sucht in der Datenbank einen zu dem Anfragesatz passenden Angebotssatz unter Verwendung des gewünschten und geplanten Fahrwegs,

der Vermittler sendet über die jeweiligen drahtlosen Verbindungen den Angebotssatz oder daraus abgeleitete Daten an den Kunden und den Anfragesatz oder daraus abgeleitete Daten an den Dienstleister. 20

Hierzu 2 Seite(n) Zeichnungen

25

30

35

40

45

50

55

60

65

- Leerseite -

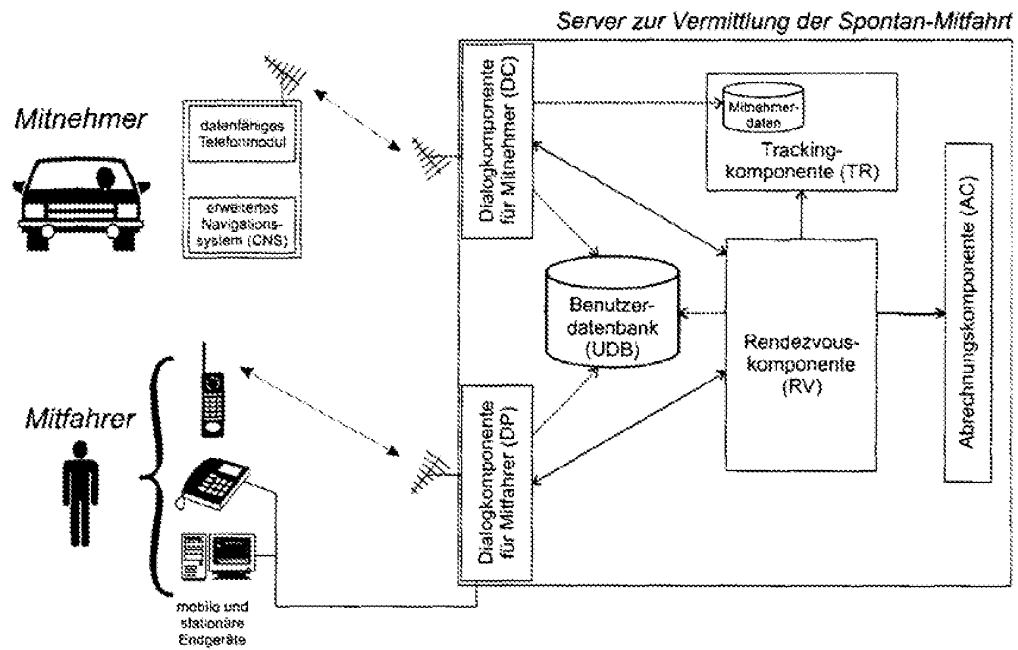


Fig. 1: Komponenten

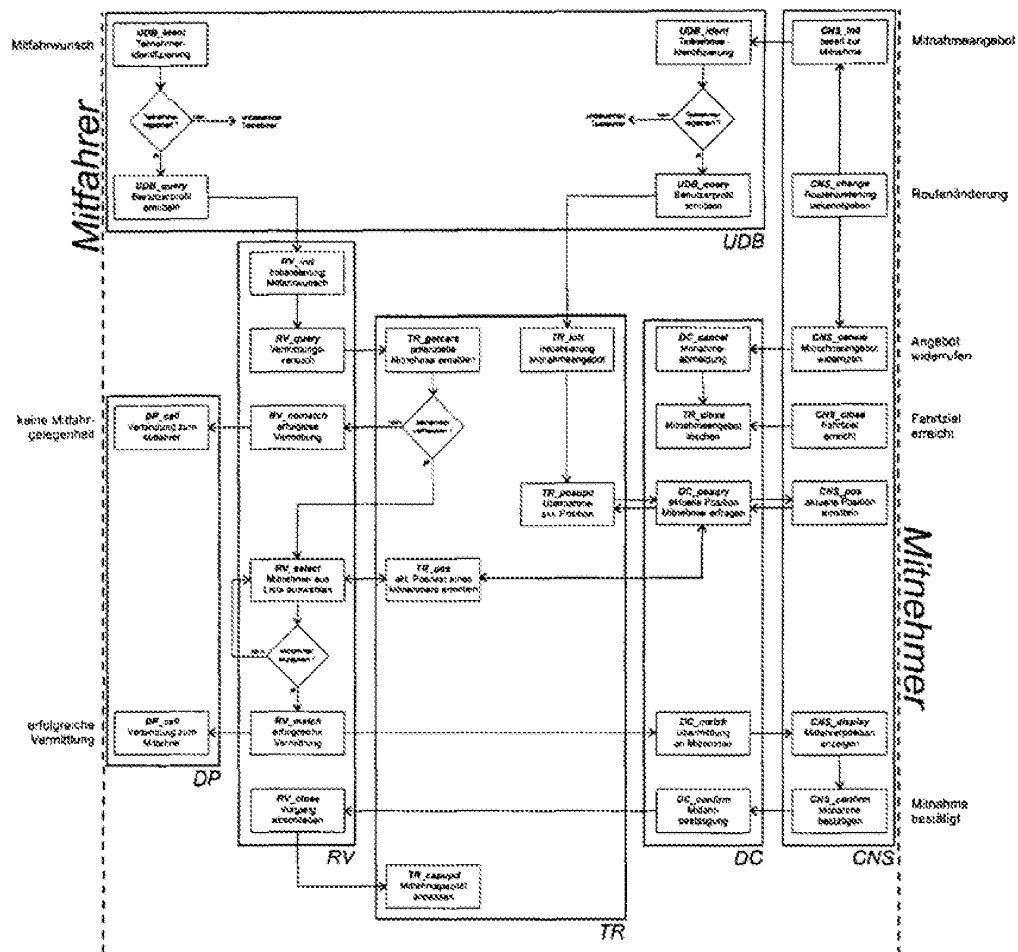


Fig. 2: Ablaufschema



Notice

This translation is machine-generated. It cannot be guaranteed that it is intelligible, accurate, complete, reliable or fit for specific purposes. Critical decisions, such as commercially relevant or financial decisions, should not be based on machine-translation output.

DESCRIPTION DE10113803A1

[0001]

12 The invention relates to a method and the corresponding devices for conveying and using transport services by means of mobile telephones and comparable devices.

16 Die Erfindung betrifft ein Verfahren und die entsprechenden Einrichtungen, um mittels Mobiltelefonen und vergleichbaren Geräten Transportdienste zu vermitteln und in Anspruch zu nehmen.

[0002]

24 It is known that private means of transport in particular are rarely used to capacity.

28 Es ist bekannt, daß insbesondere die privaten Verkehrsmittel selten ausreichend ausgelastet sind.

30 This affects both the number of people transported and the times of use.

32 Dies betrifft sowohl die Anzahl der jeweils transportierten Personen wie auch die Zeiten der Benutzung.

[0003]

39 A number of initially unrelated behaviors and measures have tried so far to bring about an improvement.

42 Eine Anzahl von zunächst nicht zueinander in Bezug stehenden Verhaltensweisen und Maßnahmen versuchten bislang, hier eine Verbesserung zu bringen.

[0004]

49 On the one hand, there is the entrainment of strangers in automobiles, starting with the ad-hoc entrainment of people who draw attention to themselves on the roadside ("hitchhiking") via car sharing centers, in which, also computer-assisted, passengers are arranged, up to and including "car sharing" referred to as the joint ownership of an automobile by an association that is only closed for this purpose.

55 Zum einen ist da die Mitnahme fremder Personen im Automobil zu nennen, beginnend mit der ad-hoc Mitnahme von am Straßenrand auf sich aufmerksam machenden Personen ("trampen") über Mitfahrzentralen, in denen, auch computergestützt, Mitfahrer vermittelt werden, bis zu dem auch als "car sharing" bezeichneten gemeinsamen Besitz eines Automobils durch eine nur zu diesem Zweck geschlossene Vereinigung.

[0005]

65 "Hitchhiking" poses a safety problem for both the driver and the passenger as well as the problem that the hitchhiker only has statistical empirical values as to whether and how long a trip takes.

69 Beim "trampen" stellt sich einerseits ein Sicherheitsproblem sowohl für den Fahrer als auch den Mitfahrer als auch das Problem, daß der Tramper nur über statistische Erfahrungswerte verfügt, ob und wie lange eine Reise benötigt.

74 Carpooling agencies are more suitable for longer journeys, as the reservation via the headquarters means a certain amount of effort.

77 Mitfahrzentralen eignen sich mehr für längere Strecken, da die Reservierung über die Zentrale einen gewissen Aufwand bedeutet.

81 With "car sharing", not only the time reservation is a problem, but also that the respective location is not necessarily suitable, so that in practice the cars always move to fixed positions (e.g.

85 Beim "car sharing" ist nicht nur die zeitliche Reservierung ein Problem, sondern auch, daß der jeweilige Standort nicht unbedingt passend ist, so daß in praxi die Wagen immer wieder zu festen Positionen (z.

90 B. in an assigned garage) must be returned.

92 B. in eine zugeordnete Garage) zurückgebracht werden müssen.

[0006]

98 For example, the laid-open specification DE 22 10 088 describes a system in which vehicles are borrowed by electronic means at parking lots and released again at other stations, the entire process being controlled by a central database.

102 Beispielsweise ist in der Offenlegungsschrift DE 22 10 088 ein System beschrieben, bei dem an Parkplätzen durch elektronische Mittel Fahrzeuge entliehen und an anderen Stationen wieder freigegeben werden, wobei der gesamte Vorgang von einer zentralen Datenbank gesteuert wird.

[0007]

111 A similar system is described in US Pat. No. 5,168,451, in which the vehicles are connected to a control center via radio links and move autonomously within cells.

114 Ein ähnliches System beschreibt die Patentschrift US 5,168,451, bei dem die Fahrzeuge über Funkverbindungen mit einer Zentrale verbunden sind und sich autonom innerhalb von Zellen bewegen.

119 Similarly, US Pat. No. 5,726,885 shows a rental system for vehicles in which the vehicles can be rented and returned at fixed parking spaces.

¹²² Ähnlich zeigt die Patentschrift US 5,726,885 ein Mietsystem für Fahrzeuge, bei dem die Fahrzeuge an festen Parkplätzen gemietet und abgegeben werden können.

[0008]

¹²⁹ In US Pat. No. 5,835,376 an automated system for renting vehicles is described.

¹³¹ In der Patentschrift US 5,835,376 wird ein automatisiertes System für das Anmieten von Fahrzeugen beschrieben.

¹³⁵ The positions of the vehicles are constantly tracked, for example by satellite navigation, so that the assignment can be made at any time and automatically based on the respective position.

¹³⁸ Hierbei werden die Positionen der Fahrzeuge beispielsweise durch Satellitennavigation ständig mitgeführt, so daß die Zuordnung jederzeit und automatisch an Hand der jeweiligen Position erfolgen kann.

¹⁴³ However, the requests for journeys are made in the traditional way by entering the relevant data.

¹⁴⁶ Die Anforderung der Fahrten jedoch erfolgt in traditioneller Weise durch Eingabe der entsprechenden Daten.

[0009]

¹⁵³ The invention allows that both brings a substantial improvement in this situation.

¹⁵⁵ Die Erfindung erlaubt es, das sowohl bringt eine wesentliche Verbesserung dieser Situation.

[0010]

¹⁶¹ This makes use of the fact that in today's wireless communication devices, as represented by mobile telephones, the position of the mobile telephone can be determined relatively precisely and in absolute geographic coordinates.

185 Dabei wird ausgenutzt, daß bei heutigen drahtlosen Kommunikationsgeräten, wie sie durch Mobiltelefone repräsentiert werden, die Position des Mobiltelefons relativ genau und in absoluten geographischen Koordinaten bestimmbar ist.

170 In addition, a mobile phone can set up a data connection to a computer in a short time.

172 Hinzu kommt, daß ein Mobiltelefon eine Datenverbindung zu einem Rechner in kurzer Zeit aufbauen kann.

[0011]

179 In its simplest version, the invention therefore uses this automatic position determination in order to send a request to a server and request a transport service.

182 Die Erfindung benutzt daher in der einfachsten Version diese automatische Positionsbestimmung, um eine Anfrage an einen Server zu richten und eine Transportdienstleistung anzufordern.

187 The server manages a number of devices that are free for this and can then provide a transport service.

190 Der Server verwaltet eine Anzahl von dafür freien Geräten und kann dann eine Transportdienstleistung vermitteln.

[0012]

197 Further advantages and modifications emerge from the following description of various exemplary embodiments.

200 Weitere Vorteile und Abwandlungen ergeben sich aus der folgenden Beschreibung verschiedener Ausführungsbeispiele.

[0013]

207 The invention is to increase the usually low occupancy of cars and thus help avoid car journeys by bringing potential passengers and passengers together in a way that the advantages of "hitchhiking" with those of a by z.

211 Die Erfindung soll die in der Regel geringe Besetzung von PKW's erhöhen und damit Autofahrten vermeiden helfen, indem sie potenzielle Mitfahrer und Mitnehmer in einer Weise zusammenbringt, die die Vorteile des "Trampens" mit denen einer durch z.

216 B. connects a rider center organized ride in a new way.

218 B. eine Mitfahrerzentrale organisierten Mitfahrt in neuartiger Weise verbindet.

221 The essential feature is that - assuming a sufficient number of participants - there are only a few minutes between expressing the wish to take a ride and taking it along. H. that a spontaneous ride is organized automatically.

225 Das wesentliche Merkmal ist, dass - hinreichend viele Teilnehmer vorausgesetzt - zwischen Äußerung des Mitfahrtwunschs und der Mitnahme nur wenige Minuten liegen, d. h. dass eine spontane Mitfahrt automatisch organisiert wird.

[0014]

233 The invention enables a service in which

235 Die Erfindung ermöglicht einen Dienst, bei dem

238 a) the participants (passengers or

240 a) die Teilnehmer (Mitfahrer bzw.

243 Carier) via their communication end devices (e.g.

245 Mitnehmer) über ihre Kommunikations-Endgeräte (z.

248 B. mobile phone, car phone integrated in car navigation system) automatically transmit your position and travel route and possibly other characteristics to a computer in the third place ("server").

252 B. Mobiltelefon, in Autonavigations-System integriertes Autotelefon) automatisch an einen Rechner an dritter Stelle ("Server") ihre Position und Reisedstrecke sowie ggf. weitere Charakteristika übermitteln;

257 b) the server identifies potential passengers / pairs of passengers in real time and notifies them (even in the event of failure);

260 b) der Server in Echtzeit potenzielle Mitfahrer/Mitnehmerpaare identifiziert und (auch im Misserfolgsfall) benachrichtigt;

264 c) the participants immediately and automatically conclude a standardized "contract of carriage" (agreed by registering for the service);

267 c) die Teilnehmer sofort automatisch einen standardisierten (durch die Anmeldung an den Dienst vereinbarten) "Beförderungsvertrag" abschließen;

271 d) the server automatically settles the journey.

273 d) der Server die Abrechnung der Fahrt automatisch durchführt.

[0015]

279 This service can also provide in a special form (in particular the server):

291 Dieser Dienst kann in jeweils besonderer Ausprägung (insbesondere des Servers) darüber hinaus leisten:

285 a) provide a direct mobile phone connection between the passenger and the passenger;

287 a) eine direkte Mobiltelefonverbindung zwischen Mitnehmer und Mitfahrer vermitteln;

290 b) take user profiles into account when creating the passenger / driver pairs;

292 b) bei der Bildung der Mitfahrer/Mitnehmerpaare Nutzerprofile berücksichtigen;

295 c) Form "trust communities" where z.

297 c) "Vertrauensgemeinschaften" bilden, bei denen z.

300 E.g. for the transport of children to kindergarten, school, etc. only passengers from a certain group (e.

303 B. für den Transport von Kindern zu Kindergarten, Schule usw. nur Mitnehmer eines bestimmten Kreises (z.

307 B. Neighborhood) come into question.

309 B. Nachbarschaft) in Frage kommen.

[0016]

315 In addition to the benefits mentioned for those involved, it should be emphasized that this service, unlike other value-added services in and outside of traffic telematics, has relatively little lead time or

319 Zusätzlich zum erwähnten Nutzen für die Beteiligten ist bei diesem Dienst anders als bei sonstigen Mehrwertdiensten in und außerhalb der Verkehrstelematik zu betonen, dass ein solcher Dienst relativ wenig Vorlauf- bzw.

324 Assumes basic costs for a potential operator.

326 Grundkosten für einen potenziellen Betreiber voraus setzt.

329 Such a service would be financed by the participants depending on the success.

331 Die Finanzierung eines solchen Dienstes würde erfolgsabhängig durch die Teilnehmer

erfolgen.

335 Both passengers and passengers have an economic benefit that arises directly from the performance of the service, a portion of which can be retained in the billing.

338 Sowohl Mitnehmer als auch Mitfahrer haben einen ökonomischen Nutzen, der unmittelbar aus der Leistung des Dienstes entsteht, von dem ein Anteil bei der Abrechnung einbehalten werden kann.

343 This eliminates the risk that the service used will not be paid for.

345 Damit entfällt das Risiko, dass die in Anspruch genommene Leistung nicht bezahlt wird.

348 Because of the mutual benefit, it is not to be expected that there will be a large discrepancy between the number of possible passengers and passengers.

351 Wegen des beiderseitigen Nutzens ist nicht zu erwarten, dass es eine große Diskrepanz zwischen der Zahl möglicher Mitnehmer und Mitfahrer geben wird.

355 Apart from the server, no further equipment is to be financed by the service operator.

357 Außer dem Server ist keine weitere Ausstattung durch den Dienstbetreiber zu finanzieren.

360 Only the costs for the server and participant recruitment are in principle costs that even with a very small number of participants, i.e. H. low turnover.

363 Nur die Kosten für den Server und Teilnehmerwerbung sind im Prinzip Kosten, die auch bei sehr kleinen Teilnehmerzahlen, d. h. geringem Umsatz, anfallen.

[0017]

370 This reduces the entry threshold and the risk for the operator of such a service.

372 Damit sinken die Eintrittsschwelle und das Risiko für den Betreiber eines solchen Dienstes.

375 Telecommunications and Internet companies are particularly suitable as operators, but also the operators of car sharing agencies.

378 Als Betreiber kommen besonders Telekommunikations- und Internetunternehmen in Frage, aber auch die Betreiber von Mitfahrzentralen.

382 3 Mode of operation of the invention

384 3 Wirkungsweise der Erfindung

[0018]

390 The mode of operation of the invention is described below on the basis of a usage scenario for the spontaneous ride-along service in a standard version that is easy to describe.

393 Die Wirkungsweise der Erfindung wird nachfolgend anhand eines Nutzungs-Szenarios für den Spontan-Mitfahrtdienst in einer leicht zu beschreibenden Standard-Ausführung beschrieben.

397 The invention mainly consists of a service program running on a server and an extended functionality of a car navigation system (at the carrier).

400 Die Erfindung besteht hauptsächlich aus einem auf einem Server ablaufenden Dienstprogramm sowie einer erweiterten Funktionalität eines Autonavigationssystems (beim Mitnehmer).

405 These two components can be connected to each other and to a WAP-enabled cell phone (for the passenger) via telephone connections.

408 Diese beiden Komponenten sind untereinander sowie mit einem WAP- fähigen Handy (beim Mitfahrer) über Telefonverbindungen verbindbar.

[0019]

415 Fig. 1 illustrates the interaction of the components.

417 Abb. 1 veranschaulicht das Zusammenspiel der Komponenten.

420 Background situation

422 Hintergrundsituation

425 initial situation

427 Ausgangssituation

430 Mediation based on the request by the passenger

432 Vermittlung aufgrund der Anforderung durch den Mitfahrer

435 Billing

437 Abrechnung

440 4 Description of the individual elements of the invention based on a possible embodiment

442 4 Beschreibung der einzelnen Elemente der Erfindung anhand einer möglichen Ausführungsform

446 4.1 Server for arranging spontaneous rides

448 4.1 Server zur Vermittlung der Spontan-Mitfahrt

[0020]

454 The server is a powerful computer or a network of computers that is located anywhere and is connected to the telephone network.

457 Der Server ist ein an beliebigem Ort stehender leistungsfähiger Rechner oder ein

Rechnerverbund, der an das Telefonnetz angeschlossen ist.

[0021]

464 The service program that forms the core of the invention runs on the server, which receives and manages the information about the users (passengers and passengers) and uses them to calculate the data relevant for the journey and to communicate with those involved.

468 Auf dem Server läuft das den Kern der Erfindung ausmachende Dienstprogramm, das die Informationen über die Nutzer (Mitfahrer und Mitnehmer) entgegennimmt, verwaltet und aus ihnen die für die Mitfahrt relevanten Daten berechnet und mit den Beteiligten kommuniziert.

473 The program consists of the components described below.

475 Das Programm besteht aus den nachfolgend beschriebenen Komponenten.

[0022]

481 The flow chart in Fig. 2 reproduces the operation of the service program for arranging spontaneous rides, as described in detail below.

484 Die Arbeitsweise des Dienstprogramms zur Vermittlung der Spontan-Mitfahrt, wie sie unten detailliert beschrieben wird, gibt das Ablaufschema in Abb. 2 wieder.

488 4.2 Utility Component: User Database (UDB)

490 4.2 Dienstprogramm-Komponente: Benutzerdatenbank (UDB)

[0023]

496 This is a conventional database, e.g.

498 Dies ist eine herkömmliche Datenbank, die z.

501 B. contains the following data (subscriber profile) about the users of the service (passengers and passengers): name, age, gender, mobile phone or

504 B. die folgenden Daten (Teilnehmerprofil) über die Nutzer des Dienstes (Mitnehmer und Mitfahrer) enthält: Name, Alter, Geschlecht, Handy- bzw.

508 Car phone number, if applicable

510 Autotelefonnummer, ggf.

513 Car registration number, type of car, passenger capacity, personal characteristics (disability, belonging to a certain group ["trust circles"], waiting time tolerance), accounting data.

516 Autokennzeichen, Autotyp, Mitfahrerkapazität, Eigene Besonderheiten (Behinderung, Zugehörigkeit zu einer bestimmten Gruppe ["Vertrauenskreise"], Wartezeit-Toleranz), Abrechnungsdaten.

[0024]

524 During registration, these data are conventionally recorded once for each participant and can be modified later (not the subject of the invention).

527 Diese Daten werden bei der Registrierung in herkömmlicher Weise ein einziges Mal je Teilnehmer erfasst und können später modifiziert werden (nicht Gegenstand der Erfindung).

531 The compliance with the given data is verified.

533 Die Übereinstimmung mit den angegebenen Daten wird verifiziert.

536 The fact that the subscribers are "verified" creates the necessary security (in the non-technical sense) for the service.

539 Die Tatsache, dass die Teilnehmer "verifiziert" sind, schafft erst die notwendige Sicherheit (im nicht-technischen Sinn) für den Dienst.

543 The registration optionally makes it possible to create special "circles of trust", i. H. for the registered person only certain persons as passengers or

546 Die Registrierung ermöglicht es optional, besondere "Vertrauenskreise" zu schaffen, d. h. für die registrierte Person nur bestimmte Personen als Mitfahrer bzw.

550 Allow drivers.

552 Mitnehmer zuzulassen.

[0025]

558 The user database offers the following functionality that can be used for spontaneous rides by other components of the utility program:

561 Die Benutzerdatenbank bietet folgende für die Spontan- Mitfahrt durch andere Komponenten des Dienstprogramms nutzbare Funktionalität:

565 - UBD_ident: Identification of the person registering for a spontaneous mediation process

567 - UBD_ident: Identifikation des sich für einen Spontanvermittlungsvorgang Anmeldenden

570 - UBD_query: query interface control for data from the user profile

572 - UBD_query: Abfrageschnittstelle für Daten aus dem Benutzerprofil

575 4.3 Utility program: Dialog component for the passenger (DP)

577 4.3 Dienstprogramm: Dialogkomponente für den Mitfahrer (DP)

[0026]

583 This part of the service program regulates the communication with the potential passenger via

their WAP-enabled mobile phone:

588 Dieser Bestandteil des Dienstprogramms regelt die Kommunikation mit dem potenziellen
Mitfahrer über dessen WAP-fähiges Handy:

[0027]

593 The following function is available to the rendezvous component (RV):

595 Folgende Funktion steht der Rendezvous-Komponente (RV) zur Verfügung:

598 - DP_call: Establishing the connection to the mobile phone of a potential passenger upon
request of the rendezvous component (RV) and transmission of the result of the mediation (via
WAP, SMS message or voice mail) with the following from the rendezvous component (RV)
supplied information: confirmation or

603 - DP_call: Aufbau der Verbindung zum Handy eines potenziellen Mitfahrers auf Anforderung
der Rendezvous-Komponente (RV) und Übermittlung des Ergebnisses der Vermittlung (per
WAP-Seite, per SMS-Message oder Voice-Mail) mit folgenden von der Rendezvous-
Komponente (RV) gelieferten Informationen: Bestätigung bzw.

609 Cancellation of the ride as well as successful mediation: arrival time, license plate number of
the picking up car, mobile phone number of the passenger.

612 Absage der Mitfahrt sowie bei erfolgreicher Vermittlung: Ankunftszeit, Kennzeichen des
abholenden Wagens, Handy-Nummer des Mitnehmers.

616 Functioning of the dialogue component for the passenger (DP)

618 Arbeitsweise der Dialogkomponente für den Mitfahrer (DP)

621 4.4 Utility program: dialog component for the driver (DC)

623 4.4 Dienstprogramm: Dialogkomponente für den Mitnehmer (DC)

[0028]

639 This part of the service program regulates the communication with the potential carrier via the car phone connected to the advanced car navigation system (CNS):

632 Dieser Bestandteil des Dienstprogramms regelt die Kommunikation mit dem potenziellen Mitnehmer über dessen mit dem erweiterten Autonavigationssystem (CNS) verbundenen Autotelefon:

[0029]

640 The following function is available to the rendezvous component (RV) and the extended car navigation system (CNS):

643 Folgende Funktion steht der Rendezvous-Komponente (RV) und dem erweiterten Autonavigationssystem (CNS) zur Verfügung:

647 a) DC_match: Establishment of the connection to the car phone of the potential driver connected to the extended car navigation system (CNS) and transmission of the result of the mediation with CNS_display (by SMS message or voice mail) with the following information: pick-up location, destination of the passenger, number the passenger, mobile phone number of the passenger.

653 a) DC_match: Aufbau der Verbindung zu dem mit dem erweiterten Autonavigationssystem (CNS) verbundenen Autotelefon des potenziellen Mitnehmers und mit CNS_display Übermittlung des Ergebnisses der Vermittlung (per SMS-Message oder Voice-Mail) mit folgenden Informationen: Abholort, Ziel des Mitfahrers, Anzahl der Mitfahrer, Handy-Nummer des Mitfahrers.

[0030]

663 The following function is available to the tracking component (TR):

666 Folgende Funktion steht der Tracking-Komponente (TR) zur Verfügung:

668 a) DC_posqry: Establishing the connection to the car phone of the potential carrier connected to the extended car navigation system (CNS) at the request of the tracking component (TR) to query the current position of the carrier by CNS_pos and forwarding this information to the tracking component (TR) by calling TR_posupd.

673 a) DC_posqry: Aufbau der Verbindung zu dem mit dem erweiterten Autonavigationssystem (CNS) verbundenen Autotelefon des potenziellen Mitnehmers auf Anforderung der Tracking-Komponente (TR) zur Abfrage der momentanen Position des Mitnehmers durch CNS_pos und Weiterleitung dieser Information an die Tracking-Komponente (TR) durch Aufruf von TR_posupd.

[0031]

683 The following functions are available to the extended car navigation system (CNS):

685 Folgende Funktionen stehen dem erweiterten Autonavigationssystem (CNS) zur Verfügung:

688 a) DC_confirm: Receipt of the ride confirmation call of the extended car navigation system (CNS) of the passenger when picking up the passenger (s) at the pick-up location and forwarding them to the rendezvous component (RV) by calling RV_close.

692 a) DC_confirm: Entgegennahme des Mitfahrtbestätigungsanrufs des erweiterten Autonavigationssystems (CNS) des Mitnehmers bei Aufnahme des/der am Abholort aufgenommenen Mitfahrer und Weiterleitung an die Rendezvous-Komponente (RV) durch Aufruf von RV_close.

698 b) DC_cancel: Receipt of the cancellation call from the extended car navigation system (CNS) of the driver (when reaching the destination, changing the route or for other reasons) and forwarding this information to the tracking component (TR) by calling up TR_close.

702 b) DC_cancel: Entgegennahme des Abmeldeanrufs des erweiterten Autonavigationssystems (CNS) des Mitnehmers (Bei Erreichen des Ziels, Änderung der Route oder aus sonstigen Gründen) und Weiterleitung dieser Information an die Tracking- Komponente (TR) durch Aufruf von TR_close.

708 Functioning of the dialogue component for the passenger (DP)

710 Arbeitsweise der Dialogkomponente für den Mitfahrer (DP)

713 4.5 Utility: Tracking Component (TR)

715 4.5 Dienstprogramm: Tracking-Komponente (TR)

[0032]

721 This component of the service program manages, calculates and determines the current position for each registered potential driver by querying it and makes this information available to the rendezvous component (RV) using appropriate query functions.

725 Dieser Bestandteil des Dienstprogramms verwaltet, berechnet und ermittelt durch Abfrage die aktuelle Position für jeden angemeldeten potenziellen Mitnehmer und stellt diese Information über entsprechende Abfragefunktionen der Rendezvous- Komponente (RV) zur Verfügung.

[0033]

733 A tracking data structure is maintained for each driver, which contains the following data: driver identification, date of the last actual position update, date of the precalculated position update and a list of time-location pairs.

737 Für jeden Mitnehmer wird eine Tracking-Datenstruktur geführt, die folgende Daten enthält: Mitnehmer-Identifikation, Datum der letzten tatsächlichen Positionsaktualisierung, Datum der vorausgerechneten Positionsaktualisierung sowie eine Liste von Zeit-Ort-Paaren.

742 One element of this list indicates the time of the last position update and the associated position, while the other elements represent further locations on the route and the anticipated arrival time at these locations.

746 Ein Element dieser Liste gibt Zeit der letzten Positionsaktualisierung und zugehörige Position an, während die übrigen Elemente weitere Orte der Route und die vorausgerechnete Ankunftszeit an diesen Orten repräsentieren.

751 The following functions are available to the dialog component for the driver (DC):

753 Folgende Funktionen stehen der Dialogkomponente für den Mitnehmer (DC) zur Verfügung:

756 a) TR_init: Initialization of a new tracking data structure for a driver with the following input parameters: (driver identification, current position, destination, route parameters such as

759 a) TR_init: Initialisierung einer neuen Tracking- Datenstruktur für einen Mitnehmer mit folgenden Eingabe- Parametern: (Mitnehmer-Identifikation, aktuelle Position, Ziel, Routenparameter wie z.

764 B. sequence of nodes or type of navigation program and routing parameters set by the driver, passenger capacity);

767 B. Folge der Knotenpunkte oder Typ des Navigationsprogramms und vom Mitnehmer eingestellte Routing-Parameter, Mitfahrerkapazität);

771 b) TR_close: deletion of a tracking data structure;

773 b) TR_close: Löschen einer Tracking-Datenstruktur;

[0034]

779 The following functions are available to the rendezvous component (RV):

781 Folgende Funktionen stehen der Rendezvous-Komponente (RV) zur Verfügung:

784 a) TR_pos: Determination of the current position of a specific carrier by i) position request call DC_posqry by the dialogue component for the passenger (DP) or - if the position request call was made only recently - ii) updating of the position based on the routing parameters;

788 a) TR_pos: Ermittlung der aktuellen Position eines bestimmten Mitnehmers durch i) Positionsabfrageanruf DC_posqry durch die Dialogkomponente für den Mitfahrer (DP) oder - bei erst vor kurzem erfolgtem Positionsabfrageanruf - ii) Fortschreibung der Position anhand der Routing-Parameter;

794 b) TR_getcars: Determination of all drivers who are currently in a certain area around a certain position and on whose further route a certain destination lies and which is specific to a certain passenger (e.g.

798 b) TR_getcars: Ermittlung aller Mitnehmer, die sich aktuell in einem bestimmten Umkreis einer bestimmten Position befinden und auf deren weiterer Route ein bestimmtes Ziel liegt und die den Besonderheiten eines bestimmten Mitfahrers (z.

803 E.g. based on the user profile);

805 B. aufgrund des Benutzerprofils) entsprechen;

808 c) TR_capupd: Change of the passenger capacity in the tracking data structure when picking up or dropping off passengers.

811 c) TR_capupd: Änderung der Mitfahrerkapazität in der Tracking- Datenstruktur bei Aufnahme oder Absetzen von Mitfahrern.

[0035]

818 The following functions are available to the dialog component for the driver (DC):

820 Folgende Funktionen stehen der Dialogkomponente für den Mitnehmer (DC) zur Verfügung:

823 a) TR_posupd: Adoption of the actual position data of a specific carrier transmitted by a position request call (DC_posqry) or on the occasion of another call into the tracking data structure with subsequent updating.

827 a) TR_posupd: Übernahme der durch Positionsabfrageanruf (DC_posqry) oder bei Gelegenheit eines sonstigen Anrufs übermittelten tatsächlichen Positionsdaten eines bestimmten Mitnehmers in die Tracking-Datenstruktur mit anschließender Aktualisierung.

832 How the tracking component (TR) works

834 Arbeitsweise der Tracking-Komponente (TR)

837 4.6 Utility: Rendezvous Component (RV)

839 4.6 Dienstprogramm: Rendezvous-Komponente (RV)

[0036]

845 This component of the service program processes the incoming ride requests by identifying suitable drivers and communicating the result to the users.

848 Dieser Bestandteil des Dienstprogramms bearbeitet die eingehenden Mitfahrtswünsche, indem passende Mitnehmer ermittelt werden und das Vermittlungsergebnis den Nutzern mitgeteilt wird.

853 In addition, the status of the rides is managed in a data structure.

855 Darüber hinaus wird der Status der Mitfahrtvorgänge in einer Datenstruktur verwaltet.

[0037]

861 A rendezvous data structure is maintained for each registered passenger, which contains the following data: passenger identification, pick-up location, latest pick-up time, destination, special features (e.g.

865 Für jeden angemeldeten Mitfahrer wird eine Rendezvous- Datenstruktur geführt, die folgende Daten enthält: Mitfahrer- Identifikation, Abholort, späteste Abholzeit, Ziel, Besonderheiten (z.

869 B. from user profile), driver.

871 B. aus Benutzerprofil), Mitnehmer.

874 Since the service in the form described here is aimed at spontaneous rides, a rendezvous data structure only exists for a few minutes until the ride has come about or the unavailability of the ride has been communicated.

878 Da der Dienst in der hier beschriebenen Form auf spontane Mitfahrt abzielt, existiert eine
Rendezvous-Datenstruktur also nur wenige Minuten, bis die Mitfahrt zu Stande gekommen ist
bzw. die Nichtverfügbarkeit der Mitfahrt kommuniziert worden ist.

[0038]

886 The rendezvous component (RV) is activated by calling the two dialog components DC and
DP, i. H. through registration and deregistration processes.

899 Die Rendezvous-Komponente (RV) wird durch Aufrufe der beiden Dialogkomponenten DC und
DP aktiviert, d. h. durch An- und Abmeldevorgänge.

[0039]

896 The following functions are available to the dialogue component for the passenger (DP):

898 Folgende Funktionen stehen der Dialogkomponente für den Mitfahrer (DP) zur Verfügung:

901 a) RV_init: Initialization of a new rendezvous data structure when the following parameters are
transferred (due to a desire to ride along): Passenger identification, pick-up location, latest
pick-up time, destination, special features (e.g.

905 a) RV_init: Initialisierung einer neuen Rendezvous- Datenstruktur bei Übergabe der folgenden
Parameter (aufgrund eines Mitfahrtwunschs): Mitfahrer-Identifikation, Abholort, späteste
Abholzeit, Ziel, Besonderheiten (z.

910 B. from user profile).

912 B. aus Benutzerprofil).

915 b) The following functions are available to the dialog component for the driver (DC):

917 b) Folgende Funktionen stehen der Dialogkomponente für den Mitnehmer (DC) zur Verfügung:

920 c) RV_close: Termination of the switching process by a specific driver when the passenger is picked up: The associated rendezvous data structure (i.e. the passenger) is determined on the basis of the driver identification and the current position of the driver.

924 c) RV_close: Terminierung des Vermittlungsvorgangs durch einen bestimmten Mitnehmer bei Aufnahme des Mitfahrers: Anhand der Mitnehmer-Identifikation und der aktuellen Position des Mitnehmers wird die zugehörige Rendezvous- Datenstruktur (d. h. der Mitfahrer) ermittelt.

929 The billing component is called up with the relevant data.

931 Die Abrechnungskomponente wird mit den relevanten Daten aufgerufen.

934 Furthermore, the tracking component (TR) is called via TR_capupd in order to adjust the passenger capacity.

937 Weiterhin wird die Tracking-Komponente (TR) per TR_capupd aufgerufen, um die Mitfahrerkapazität des Mitnehmers anzupassen.

941 The rendezvous data structure is then deleted.

943 Anschließend wird die Rendezvous-Datenstruktur gelöscht.

946 How the rendezvous component (RV) works

948 Arbeitsweise der Rendezvous-Komponente (RV)

951 4.7 Utility: Billing Component (AC)

953 4.7 Dienstprogramm: Abrechnungs-Komponente (AC)

[0040]

959 This component of the service program processes the switching data transferred by the rendezvous component (RV) after successful switching in a conventional manner and carries out the billing.

963 Dieser Bestandteil des Dienstprogramms bearbeitet in herkömmlicher Weise die nach
erfolgreicher Vermittlung von der Rendezvous-Komponente (RV) übergebenen
Vermittlungsdaten und führt die Verrechnung durch.

968 4.8 Advanced car navigation system (CNS)

970 4.8 Erweitertes Autonavigationssystem (CNS)

[0041]

976 The extended car navigation system (CNS) consists of a conventional navigation system (GPS
position determination, destination entry via dialog, entry of further route parameters, display
for alphanumeric or graphic display of text and route information) and an associated data-
enabled car phone with the following additional functions:

981 Das erweiterte Autonavigationssystem (CNS) besteht aus einem herkömmlichen
Navigationssystem (GPS-Positionsbestimmung, Zieleingabe per Dialog, Eingabe von weiteren
Routenparametern, Display zur alphanumerischen oder graphischen Anzeige von Text und
Routeninformation) und einem damit verbundenen datenfähigen Autotelefon mit folgenden
zusätzlichen Funktionen:

[0042]

991 The following functions are available to the driver (driver):

993 Folgende Funktionen stehen dem Autofahrer (Mitnehmer) zur Verfügung:

996 a) CNS_mit: Dialog element with which the driver enters his readiness to ride ("Ready-to-be-
taken button").

999 a) CNS_mit: Dialog-Element, mit dem der Mitnehmer seine Bereitschaft zur Mitfahrt eingibt
("Bereit-zur-Mitnahme- Knopf").

1003 This dialog element is offered to the driver after he has entered his destination and possibly

other parameters into the navigation system.

1006 Dieses Dialog-Element wird dem Mitnehmer angeboten, nachdem er dem Navigationssystem sein Fahrtziel und ggf. weitere Parameter eingegeben hat.

1010 If the willingness to ride has been confirmed, the route data and the identification code of the driver are transmitted to the dialog component for the driver (DC) via the car phone without any further action on the part of the driver (registration call).

1014 Wenn die Mitfahrbereitschaft bestätigt wurde, werden ohne weiteres Zutun des Mitnehmers die Routendaten und die Identifikationskennung des Mitnehmers über das Autotelefon an die Dialogkomponente für den Mitnehmer (DC) übermittelt (Anmeldeanruf).

1019 b) CNS_confirm: Dialog element with which the driver confirms that the passenger has been accepted.

1022 b) CNS_confirm: Dialog-Element, mit dem der Mitnehmer die Aufnahme des Mitfahrers bestätigt.

1026 Without any further action on the part of the carrier, the DC_confirm function of the dialog component for the carrier (DC) is triggered via the car phone.

1029 Ohne weiteres Zutun des Mitnehmers wird über das Autotelefon die Funktion DC_confirm der Dialogkomponente für den Mitnehmer (DC) ausgelöst.

1033 c) CNS_cancel: Dialog element with which the driver cancels his willingness to ride.

1035 c) CNS_cancel: Dialog-Element, mit dem der Mitnehmer seine Bereitschaft zur Mitfahrt widerruft.

1039 Without any further action on the part of the driver, the DC_cancel function of the dialog component for the driver (DC) is triggered via the car phone.

1042 Ohne weiteres Zutun des Mitnehmers wird über das Autotelefon die Funktion DC_cancel der Dialogkomponente für den Mitnehmer (DC) ausgelöst.

1046 A route change by the driver takes place with CNS_cancel followed by CNSJnit (see CNS_change).

1049 Eine Routenänderung durch den Mitnehmer erfolgt durch CNS_cancel gefolgt von CNSJnit (siehe CNS_change).

[0043]

1056 The following functions are available to the dialog component for the driver (DC):

1058 Folgende Funktionen stehen der Dialogkomponente für den Mitnehmer (DC) zur Verfügung:

1061 a) CNS_pos: Determination of the current position (GPS coordinates) and feedback via the car phone to the dialog component for the driver (DC);

1064 a) CNS_pos: Ermittlung der momentanen Position (GPS- Koordinaten) und Rückmeldung über das Autotelefon an die Dialogkomponente für den Mitnehmer (DC);

1068 b) CNS_display: data interface that transmits a message to the navigation system with the coordinates of the place where the passenger was recorded for display in the map section shown on the display, as well as the other data transmitted by DC_match for conveyance.

1072 b) CNS_display: Datenschnittstelle, die dem Navigationssystem eine Meldung mit den Koordinaten des Orts der Aufnahme des Mitfahrers zur Darstellung in dem durch das Display dargestellten Kartenausschnitt sowie die übrigen von DC_match übermittelten Daten zur vermittelten Mitnahme übermittelt.

1076 How the advanced car navigation system works

1080 Arbeitsweise des erweiterten Autonavigationssystems

1083 5 Further embodiments of the invention

1085 5 Weitere Ausführungsformen der Erfindung

[0044]

1091 I.a. the following generalizations of the embodiment shown are possible:

1093 U. a. folgende Verallgemeinerungen der dargestellten Ausführungsform sind möglich:

1095 a) Passengers: The transmission of the pick-up location can be automated by a GPS cell phone.

1099 a) Mitfahrer: Die Übermittlung des Abholorts kann durch ein GPS-Handy automatisiert werden.

1102 b) Passenger: A WAP-enabled cell phone can be replaced by a normal cell phone if the dialogue component for the passenger (DP) is expanded to include voice recognition and speech synthesis.

1106 b) Mitfahrer: Ein WAP-fähiges-Handy kann durch ein normales Handy ersetzt werden, wenn die Dialogkomponente für den Mitfahrer (DP) um Spracherkennung und Sprachsynthese erweitert wird.

1111 c) Passengers: Instead of a mobile phone, a normal telephone connection (telephone booth, landline telephone) can be used.

1114 c) Mitfahrer: Statt Handy kann auch eine normale Telefonverbindung (Telefonzelle, Festnetz-Telefon) verwendet werden.

1118 d) Service extension to notification of potential rides: The rendezvous component (RV) can be extended so that, if a spontaneous rider could not be arranged, the passenger is notified via his mobile phone when a potential passenger has registered who can take him with him.

1122 d) Dienstenerweiterung auf Benachrichtigung über potenzielle Mitfahrten: Die Rendezvouskomponente (RV) kann so erweitert werden, dass, falls keine Spontan-Mitfahrt vermittelt werden konnte, der Mitfahrer über sein Handy benachrichtigt wird, wenn sich ein potenzieller Mitnehmer angemeldet hat, der ihn mitnehmen kann.

1128 On the basis of the information from the tracking component (TR) about the currently registered potential passengers, he is informed of the likely future ridesharing options and

their pick-up times.

1132 Aufgrund der Informationen der Tracking-Komponente (TR) über die aktuell angemeldeten potenziellen Mitnehmer werden ihm die voraussichtlichen späteren Mitfahrtmöglichkeiten und deren Abholzeiten mitgeteilt.

1137 e) Service extension to non-spontaneous entrainment: The rendezvous component (RV) can be extended so that not only spontaneous rides, but also those with registration and waiting time can be arranged.

1141 e) Dienstenerweiterung auf nicht-spontane Mitnahme: Die Rendezvouskomponente (RV) kann so erweitert werden, dass nicht nur Spontan-Mitfahrten, sondern auch solche mit Anmeldung und Wartezeit vermittelt werden.

1146 For this purpose, a forecast component can optionally be set up which, based on the information from the tracking component (TR), offers the passenger anticipated ride options and their pick-up time.

1150 Dazu kann optional eine Prognosekomponente eingerichtet werden, die dem Mitfahrer aufgrund der Informationen der Tracking-Komponente (TR) voraussichtliche Mitfahrtmöglichkeiten und deren Abholzeit anbietet.

1155 The extension includes that if the passenger deviates from the announced route, the passenger is automatically informed via his mobile phone.

1156 Die Erweiterung beinhaltet, dass bei Abweichungen des Mitnehmers von der angekündigten Route der Mitfahrer über sein Handy darüber automatisch informiert wird.

1162 f) Service extension to notification: The rendezvous component (RV) can be extended in such a way that the passenger is informed about a later arriving passenger who may already be registered after a cancellation.

1166 f) Dienstenerweiterung auf Benachrichtigung: Die Rendezvouskomponente (RV) kann so erweitert werden, dass der Mitfahrer nach einer Absage über einen evtl. später eintreffenden bereits angemeldeten Mitnehmer informiert wird.

1171 For this purpose, a prognosis component can optionally be set up which, based on the

information from the tracking component (TR), offers the passenger anticipated ride opportunities and their collection time.

1175 Dazu kann optional eine Prognosekomponente eingerichtet werden, die dem Mitfahrer aufgrund der Informationen der Tracking- Komponente (TR) voraussichtliche Mitfahrtmöglichkeiten und deren Abholzeit anbietet.

1180 g) Service expansion by detours of the driver: The rendezvous component (RV) can be expanded so that not only rides that are on the route determined by the driver at the start of the journey, but also those that require certain detours are arranged (example: service areas at Motorways or exits from the motorway).

1185 g) Dienstenerweiterung auf Umwege des Mitnehmers: Die Rendezvouskomponente (RV) kann so erweitert werden, dass nicht nur Mitfahrten, die auf der vom Mitnehmer bei Fahrtantritt festgelegten Route liegen, sondern auch solche, die gewisse Umwege verlangen, vermittelt werden (Beispiel: Raststätten auf Autobahnen oder Abfahrten von der Autobahn).

1191 For this purpose, the dialogue component for the driver is expanded in such a way that suggestions for detours are made which he accepts or rejects.

1194 Dazu wird die Dialogkomponente für den Mitnehmer so erweitert, dass ihm Vorschläge für Umwege gemacht werden, die er akzeptiert oder ablehnt.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
23 September 2004 (23.09.2004)

PCT

(10) International Publication Number
WO 2004/081833 A1

(51) International Patent Classification⁷: G06F 17/60,
G08G 1/123

[FI/FI]: Keijimäki 1 172, FI-02130 Espoo (FI), RUUTU,
Ville [FI/FI]: Blansoo 204, FI-02210 Espoo (FI).

(21) International Application Number:
PCT/FI2004/000138

(74) Agent: BERGGREN OY AB, P.O. Box 16, Jaakonkatu
3 A), FI-00101 Helsinki (FI).

(22) International Filing Date: 11 March 2004 (11.03.2004)

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
20030359 11 March 2003 (11.03.2003) FI

(71) Applicant (for all designated States except US):
ECOLANE FINLAND OY [FI/FI]: Tekniikkatie 14,
FI-02150 Espoo (FI).

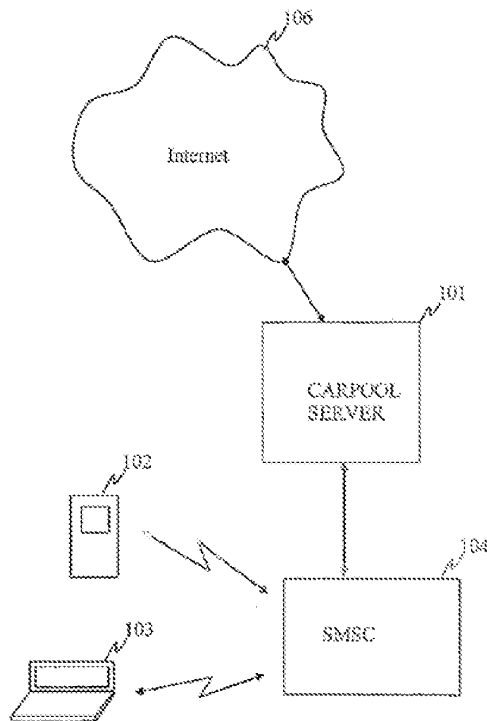
(72) Inventors; and

(75) Inventors/Applicants (for US only): PÖYKKÖ, Sami

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),

[Continued on next page]

(54) Title: METHOD AND SYSTEM FOR IMPROVING COMMUTING TRAFFIC



(57) Abstract: A method and a system are provided for
assigning transportation for a passenger for transporting
the passenger from an origination to a destination by a
vehicle driven by a driver. A transportation request from
a passenger comprises a route and a time of transporta-
tion. A transportation offering from a driver comprises
at least a route and a time of transportation. A driver is
matched with at least one passenger having substantially
similar route and time information. Information is sent
to said matched driver comprising identification of said
matched passenger, and to said matched passenger com-
prising identification of said matched driver. Information
is received of successful assignment from said matched
passenger in response to successful identification of the
matched driver.

WO 2004/081833 A1



Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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.

Published:

--- with international search report

Method and system for improving commuting traffic

The present invention relates to a method and system for improving commuting traffic and particularly, for improving easiness and safety of the ride sharing when
5 using mobile communication system.

Background of the invention

Traffic congestion costs as wasted time and in wasted gasoline \$100 billion per year in USA alone. Carpooling is one of the possibilities to ease the flow of the traffic. Currently carpooling systems are more or less based on agreements
10 between participants well ahead the trip.

A lot has been done in metropolitan areas in USA to attract users for carpooling, but carpooling has not reached widespread acceptance among the commuters and its popularity has actually decreased in recent years.

According to the bureau of transport statistics 87.7% of 118 million workers in USA
15 use private car as a principal mean of transportation to work (78.2% only driver in a car, 9.4% at least one passenger in a car). The percentage of carpoolers has decreased from 14.1% in year 1985 to 9.4% in year 1999.

According to a survey of San Francisco Bay Area Commute Patterns in 2001, 17% percent of the commuters in the area are using carpools already now, roughly 10%
20 use public transportation, and 69% use single occupancy vehicle (SOV). The most common reasons for using the SOV mode for commuting are "no other way to get to work" (18% of SOV users), "work hours/work schedule" 16%, "travel time to work" 12%, while "privacy, not being dependent on the others, Come and go as I please, like to drive" consisted only 9% of SOV users as main reason for the
25 commute mode choice. The average time saved using a carpool is 23 minutes (per direction). From all carpoolers 80% indicated that carpooling is saving time. The average travel distance and time of the commute are 17 miles and 34 minutes. Average travel distance for carpool users is 22 miles.

In US patent 4360875 a flexible-route transportation system, primarily utilizing
30 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
5 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
10 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,
15 accounting features for properly billing riders and reimbursing vehicle owners for transportation services, and special terminals for entering trip information quickly and accurately.

Somewhat similar systems have been described in the US Patent Application Publication No: 2001/0037174 (Filed Apr. 4., 2001) that generally relates to an
20 automated transit system, and more particularly to an urban transit system that minimizes the social costs of urban transportation, the transit system being based on digital cellular communication, GPS locating technology and digital computers to provide real-time command and control of passengers and vehicles.

In casual/real-time creation of carpools the participants are sharing a car with
25 stranger. This creates a possible security risk for the carpool participants.

Summary of the invention

The present invention describes how a casual carpool can be set up and how the security of the participants can be increased without any complicated actions from the users. The invented method relies on the use of mobile communications
30 devices in the setting up the carpool and solves two important issues: how the carried mobile devices can be used to increase the safety and how the system can confirm the identity of a person using the mobile communications device. Equally important for the system is that it introduces minimal amount of work for the carpool participants.

In the present invention it is described in details how the matching of the needs is done in real-time using mobile communications as well as how the easiness of use (needed messaging to set up the ride-sharing) is improved and the setting up the carpool is integrated to the features increasing the safety of carpoolers.

- 5 According to a first aspect of the invention a method is provided for arranging transportation for at least two persons by a same vehicle driven by one of said persons. Each of said persons has a communication device capable of establishing a communication connection to a server connected to a communication network. The communication devices can send and receive
10 messages to and from said server. The method comprises at the server:

- receiving registration information from a person, which registration information comprises at least an origination and a destination of at least one route to be transported, an identification identifying said person and registration to at least one of the following category: a driver of a vehicle and a passenger of a vehicle;
- 15 - receiving a message from at least one registered driver, said message indicating a route of transportation,
- receiving a message from at least one registered passenger, said message indicating a route of transportation,
- matching one registered driver and at least one registered passenger having
20 substantially similar route,
- sending a message to said registered driver comprising at least identification and the route of said passenger,
- sending a message to said at least one registered passenger comprising identification of said driver.

- 25 The method is characterized in that it comprises:

- receiving a start message indicating successful start of transportation from said at least one registered passenger in response to successful identification of said driver, and
- receiving an ending message indicating successful end of transportation from
30 said at least one registered passenger.

According to a second aspect of the invention an electronic device is provided for arranging transportation for at least two persons by a same vehicle driven by one of said persons. The electronic device is essentially a server for implementing the method described above, so it is characteristic to the electronic device according to the invention that it comprises means for executing the steps of the method.

According to a third aspect of the invention a system is provided for arranging transportation for at least two persons by a same vehicle driven by one of said persons. The system is built essentially around a server for implementing the method described above, so it is characteristic to the system according to the invention that it comprises means for executing the steps of the method.

According to a fourth aspect of the invention a computer program product is provided for an electronic device for arranging transportation for at least two persons by a same vehicle driven by one of said persons. The computer program product is essentially a computer program to be stored into a program memory of a server according to the invention, so the characteristic features of the computer program product comprise means for causing the server to execute the steps of the method.

In the following, the invention will be described in greater detail with reference to the accompanying drawings, in which

- Figure 1a illustrates a system according to an embodiment of the invention;
- Figure 1b illustrates a system according to another embodiment of the invention;
- Figure 2 illustrates a flow diagram of registration to the system according to an embodiment of the invention;
- Figure 3a illustrates a flow diagram of a method according to an embodiment of the invention;
- Figure 3b illustrates a flow diagram of a method according to another embodiment of the invention;
- Figure 4a illustrates a signaling diagram of a method according to an embodiment of the invention;

Figure 4b illustrates a signaling diagram of a method according to another embodiment of the invention;

Figure 5 illustrates a block diagram of a device according to an embodiment of the invention.

5 Detailed description of the invention

Figure 1a illustrates a system according to an embodiment of the invention. In the following the term SMS (Short Message Service) is used as an example of data transfer means. However, other techniques, such as multimedia messages (MMS; Multimedia Messaging Service), WAP (Wireless Application Protocol) or more
10 advanced mobile Internet approaches can be used. Similarly the Mobile Station (MS) is used as an example of the mobile communications device.

The system comprises a centralized server 101 (a Carpool server) that is capable of communication with the other network elements, for example to mobile communication devices 102 and 103. In this exemplary illustration the
15 communication devices 102 and 103 are operating in a GSM network. However a communication device disclosed hereinafter can also be other than a one operating in a GSM network. Other communication devices operating in different networks can be used as well when implementing the present invention. In the example set-up in figure 1a the server 101 is connected to a Short Message
20 Service Center 104 (SMSC) allowing it to exchange short messages between it and MSs 102 and 103. Connection to the Internet 106 allows service profiles to be generated by users of MSs 102 and 103.

The operation of the system of figure 1a will be disclosed later in detail with reference to figures 2 and 3a.

25 Figure 1b illustrates a system according to an alternative embodiment of the invention. The system comprises a centralized server 101 (a Carpool server) that is capable of communication with the other network elements, for example to MSs 102 and 103. In the example set-up in figure 1b the server 101 is connected to a Short Message Service Center 104 (SMSC) allowing it to exchange short
30 messages between it and MSs 102 and 103. Connection to the Internet 106 allows service profiles to be generated by users of MSs 102 and 103.

The system can further comprise e.g. the Gateway Mobile Location Center 105 (GMLC) that can provide location information on Mobile Stations 102 and 103 to

the Carpool server 101 it is connected to. In the case of detected emergency situation connections to Public Safety Answering Points 107 (PSAP), such as the police, etc. are provided. GMLC is used as a generic name for a network element or feature in the passenger's or driver's MS capable for providing a location estimate of the said Ms to a server connected to a communications network.

The capabilities to calculate the location of mobile communication devices (MS) are opening the possibility to collect a large amount of data about the movements of individuals. Most likely a majority of people would find the location tracking of their MS as a violation of their privacy and therefore they are likely to disable the tracking of their phones if possible. For the persons using intelligent ride-sharing systems the tracking of the person's MS location can be used to increase the security of the tracked person and it is very likely that the persons using these systems will not only allow, but will insist that the location of their MS is traced when they are using intelligent ride-sharing system. Location information can be used also to enhance the easiness of the service. For example, the passenger can be located so that the starting point of the route is not needed to be indicated, or the arrival time of the driver can be estimated etc.

By utilizing mobile phones and the capability to locate them it is possible to create a system that enables fully dynamical, on demand creation of carpool. In instant/dynamic carpool one would not have to make any commitment well before the proposed trip, instead user can indicate the system his/hers willingness to participate immediately or short time before the trip should take place.

The proposed system of figure 1b utilizes the capability to locate a mobile communications device (from this on referred as MS). According to the proposed system the users MS locations can be traced from the user indicated starting point to a user indicated stop point. The safety of a carpooler is increased as both partners are aware that their location can be continuously traced and an alarm might be triggered if they are diverting from the route to the destination more than allowed, or if either one's MS will be switched off.

The operation of the system of figure 1b will be disclosed later in detail with reference to figures 2 and 3b.

Figure 2a illustrates a flow diagram of registration to the system according to an embodiment of the invention. A reference has been made to the system disclosed in the figures 1a and 1b. The steps of the method can be preferably implemented

as a computer program code stored into the memory of an electronic device 101, which can be e.g. a server in a communication network.

The system has two types of users: passengers and drivers. A driver is providing a lift for a trip to a passenger. Reference numeral 102 in figures 1 and 2 is referring to a passenger and reference numeral 103 is referring to a driver. Both driver 103 and passenger 102 have to register to the system in order to be able to use it. The task of the system is to dynamically in real-time match the needs of the passengers to the offerings of the drivers. A single person can register to both a driver and a passenger.

- 10 Drivers and passengers register to the system using for example their mobile identity e.g. a mobile subscriber identifier. The registration can be done e.g. via Internet by using a desktop or laptop computer that is connected to the Internet. A connection to the server 101 is established e.g. by using either mobile or fixed line Internet access (step 201). Before registration is completed both passenger and
- 15 driver have to fill in the profile questionnaire. The user profiles should contain at least identity, gender and age of the user as well as at least one approximate route for which the user would need or offer a carpool. The last-mentioned means typically giving a starting point and an end point, or identifying a starting area and an end area from a list of default areas. For the driver also his/her car type, model,
- 20 color, license plate number, available number of seats and model year have to be entered. The driver has to also report the status of his/her driving license and possible points in the insurance. Depending on local legislation also permission to do certain checks on criminal record or traffic violations might be asked. The system generates an account for the user who is registering to the system. The
- 25 meaning of the account is to credit or debit the user depending on whether he/she is registered as a driver or a passenger. Alternatively the user can give his/hers bank account number for this purpose. Optionally credit cards or accounts in the known person to person, person to business or business to person payment systems such as paypal can be used.
- 30 If the system and the method disclosed in figures 1b and 3b is in question, the driver and the passenger have also to sign a waiver in order to authorize the system to track his/her mobile phone while he/she is active participant or is actively querying for participation in carpool in a carpool.

- To validate the registration (step 203) the user has to send a message to the
- 35 system using the mobile communications device. This message can be sent to the

system before registration in order to gain access to the registration system (in this case he/she receives password to the system as return message). Other possibility is that the user selects the password in the registration and sends that password using mobile communications device to the system. In both cases the
5 system gets a confirmation that the user registered to the system has the mobile communications device he/she registered in his/her possession (step 204).

In addition to the initial confirmation of the identity of the user, the system needs to be able to confirm the identity of the person each time he/she uses the system later on. This confirmation can be done for example using one or several from the
10 following: a picture (of person registering), a fingerprint (of person registering), any digital identity (digital identity card etc.), code sentences (question and answer pair), a pass code, a personal identity code (actually a special case of question and answer pair, not connected to the PIN code of passenger's mobile device). In setting-up the carpool these are used to confirm the identities of the persons.

15 At step 205 the system provides a pass code to the user (optionally the system can ask the user to form a pass code), which is needed to confirm the identity of the user when the transportation begins. The pass code is not sent to a communication device by which the user makes a transportation request and/or offer. That is because if the communication device is stolen, it cannot be used for
20 making successful transportations for a person who stole the device. At step 206 the registration has ended and the communication connection is terminated.

In the following an example of confirmation of an identity of a user is illustrated. The system provides a pass code "asdf" to a passenger when he/she has registered to the system. Further the system also sends a pass code "zxcv" to a
25 driver when he/she has registered to the system. Pass codes can also be allocated dynamically per transaction, i.e. code "zxcv" is sent to the driver, when he/she offers to share a ride. Likewise the passenger is given the code "asdf" when he/she is requesting a ride. The passenger and driver may be requested to renew his/ her pass codes either periodically or upon usage. Now, if the driver
30 and the passenger are matched by the system (i.e. they have similar starting point and ending point), the pass code ("zxcv") of the driver is sent to the passenger (for example to a communication device of the passenger) and the pass code ("asdf") of the passenger is sent for example to the communication device of the driver. When the passenger and the driver meets, the passenger utters the pass code
35 "asdf" to the driver. If the pass code the driver has received is identical with the uttered code of the passenger, the driver can be sure that the passenger is the

right person. Also the driver utters the pass code "zxcv" to the passenger and if the pass code the passenger has received is identical with the uttered code of the driver, the passenger can be sure that the driver is the right person.

Figure 3a illustrates a flow diagram of a method according to an embodiment of the invention. The steps of the method can be implemented for example in a computer program code stored in a memory of an electronic device such as the server 101 in figures 1a and 1b. In the real time operation the following identifies the actions needed for the driver and for a passenger to set up a carpool. At step 310 the system receives a message from the driver 102 or the passenger 103.

10 If the message is from the driver indicating offering (step 311), the flow proceeds to step 313, wherein the information received in the message is stored in the memory of the server 101. This message includes information, which the system uses to identify the route the driver is driving.

15 If the message received at step 311 is from passenger (step 312) indicating need for ride, the flow proceeds to step 314, wherein the information received in the message is stored in the memory of the server 101. This message includes information, which the system uses to identify the route for which the passenger is requesting ride.

20 At step 315 the server 101 finds matches of drivers and passengers having substantially similar route and time information and ask confirmation from driver (step 316). The message the system sends to driver includes the pick-up address of the passenger and either: a picture (of passenger), a fingerprint (of passenger), any digital identity (needed information about passenger's digital identity), code sentences (question and answer pair of passenger has registered), a previously mentioned pass code, personal identity code (of the passenger). Using the above information the driver can confirm the personality of the passenger as he/she sees the passenger. In the simplest method requiring least technology, the driver is delivered the passenger's personal identity code.

30 Next the flow proceeds to step 325, wherein a message from the driver is received. The message indicates (e.g. "accepted" or "not accepted") whether he/she accepts the passenger or not. If the driver accepts the passenger, the flow proceeds to step 317. If the driver does not accept the passenger, the flow proceeds to step 324, wherein the process ends. Alternatively the flow can continue to step 315, wherein a new match is searched to the passenger. Step

325 is optional, as well it can be always assumed that the driver accepts the passenger if he/she does not answer to the message.

Next (at step 317) the server 101 sends a message to the passenger in order to inform the passenger about the ride. The message the system sends to passenger
5 includes the identification information about the driver's car and either: a picture of driver, a fingerprint (of driver), any digital identity (needed information about driver's digital identity), code sentences (question and answer pair of driver has registered), a previously mentioned pass code, personal identity code (of the driver). Using the above information the passenger can confirm the personality of
10 the driver as he/she sees the driver. In the simplest method requiring least technology, the passenger is delivered the driver's personal identity code.

In the meeting place driver and passenger confirm identify of each other based on descriptions sent. If pictures are sent they compare what they see. If personal identity codes are used driver ask from passenger passenger's personal identity
15 code and compares the answer from passenger to the one he/she received from the system (and vice versa). This procedure is used to confirm the identity of the participants and therefore a person cannot use a stolen mobile device (mobile identity) in the system.

Passenger then sends a message to the server 101 informing the system that
20 he/she has been picked-up by the driver (step 318). This message's meaning is to indicate that the passenger and the driver have met and that they have agreed to share a ride. At step 319 the passenger's account is debited with a predetermined amount of e.g. money or credits. At step 320 it is checked whether the end message from the passenger is received or not within a predetermined time. If the
25 end message from the passenger is received at step 320, the system knows that the transportation was successful and the flow proceeds to step 321 wherein the driver's account is credited with a predetermined amount of money or credits. From the step 321 the flow proceeds to step 324 wherein the process ends. If the end message from the passenger was not received at step 320, the system knows
30 that the transportation was not successful and the flow proceeds to step 322 wherein an enquiry is sent to the passenger. At step 323 a response to the enquiry from the passenger is waited. If one is received, the flow proceeds to step 321 as if the response was the usual end message. If the end response is still not received, the system assumes that something went wrong and skips step 321
35 before ending. This course of action follows a "minimal security" assumption; not

receiving an appropriate end message could also be interpreted as an alarming condition, which is described in more detail later in association of figure 3b.

As is seen from the above a driver in carpool has to send maximum of two simple messages, a passenger three. It should be emphasized that the end-users are
5 using the service multiple times a week so remembering the message structure is not difficult. Furthermore personalized credit card sized instructions for the users can be made. The mobile device can also support the process, e.g. in the form of JAVA application or similar acting as a user interface.

Figure 3b illustrates a flow diagram of a method according to another embodiment
10 of the invention. The steps of the method can be implemented for example in a computer program code stored in a memory of an electronic device such as the server 101 in figures 1a and 1b.

At step 330 the server of the system receives a message from the driver 102 or the passenger 103. If the message is an offering message from the driver
15 indicating offering (step 331), the flow proceeds to step 333, wherein the information received in the message is stored in the memory of the server 101. This message includes information, which the system uses to identify the route the driver is driving.

If the message received at step 331 is a request message from passenger (step
20 332) indicating need for ride, the flow proceeds to step 334, wherein the information received in the message is stored in the memory of the server 101. This message includes information, which the system uses to identify the route for which the passenger is requesting ride. The request message and the offering message authorizes the system to locate the passenger's and the driver's mobile
25 phone for a time period that could be, for example, equal to estimated drive time to work + N minutes, where N is a sum of maximum wait time, maximum drive time increase and tolerance time.

At step 335 the server 101 finds matches of drivers and passengers having substantially similar route and time information and ask confirmation from driver
30 (step 336). The message the system sends to driver includes the pick-up address of the passenger and either: a picture (of passenger), a fingerprint (of passenger), any digital identity (needed information about passenger's digital identity), code sentences (question and answer pair of passenger has registered), a previously mentioned pass code, personal identity code (of the passenger). Using the above

information the driver can confirm the personality of the passenger as he/she sees the passenger. In the simplest method requiring least technology, the driver is delivered the passenger's personal identity code.

- 5 The driver either accepts or rejects the passenger by sending a message e.g. "accept" or "reject" to the server (step 337). Optionally it can be always assumed that the driver accepts the passenger if he/she does not answer to the message e.g. within a predetermined time, like 5 minutes for example.

- 10 Next (at step 338) the server 101 sends a message to the passenger in order to inform the passenger about the ride. The message the system sends to passenger includes the identification information about the driver's car and either: a picture of driver, a fingerprint (of driver), any digital identity (needed information about driver's digital identity), code sentences (question and answer pair of driver has registered), a previously mentioned pass code, personal identity code (of the driver). Using the above information the passenger can confirm the personality of
15 the driver as he/she sees the driver. In the simplest method requiring least technology, the passenger is delivered the driver's personal identity code.

- 20 In the meeting place driver and passenger confirm identify of each other based on descriptions sent. If pictures are sent they compare what they see. If personal identity codes are used driver ask from passenger passenger's personal identity code and compares the answer from passenger to the one he/she received from the system (and vice versa). This procedure is used to confirm the identity of the participants and therefore a person cannot use a stolen mobile device (mobile identity) in the system.

- 25 Passenger then sends a message to the server 101 informing the system that he/she has been picked-up by the driver (step 339). Also the driver can send a message to the server 101 informing the system that a passenger is now picked-up. These messages meaning is to indicate that the passenger and the driver have met and that they have agreed to share a ride. This message optionally authorizes (if not already done at steps 331 or 332) the system to locate
30 passenger's and driver's mobile phone for a time period that could be, for example, equal to estimated drive time to work + N minutes, where N is a sum of maximum wait time, maximum drive time increase and tolerance time. Alternatively the system could be allowed to locate both the driver and the passenger after offering (step 333) and request messages (step 334),
35 respectively. The system can then track the positions of the driver and the

passenger at the approximate time of the pick-up. If the locations match, and the passenger does not send in the step 339 a negative confirmation about the pick-up, i.e. that the pick-up is unsuccessful, the system assumes that the pick-up has happened, and the process continues.

- 5 As the meeting place is communicated through the system the system knows the exact location of passenger and driver at the moment this message was sent. The system can perform location update (step 340) for passenger's and driver's mobile devices to confirm the location. The system continuously tracks the location of the passenger and the driver (step 341). If the MS location is too much diverted from
10 the route a check request is sent or directly an alarm would be triggered (step 342) and sent to the police or other emergency system together with the latest known location of the MS.

- Finally the passenger indicates the system that he/she is approaching drop-off location (step 343). This message's meaning is to indicate that shared part of trip
15 is made. As the drop-off location is communicated through the system the system knows the exact location of passenger and driver at the moment this message was sent. The system can perform location update for passenger's and driver's mobile devices to confirm the location. After the server 101 receives the message indicating that the trip is made (at step 343) the system considers the carpool as
20 done. Optionally the system communicates to driver that the arriving message was received from the passenger. Location tracking is disabled (step 344) for driver's and passenger's mobile communications devices and the process ends. Location tracking can be disabled either immediately or short time after the last messages are sent. Optionally the system can perform one more location update for
25 passenger's and driver's mobile devices to make sure that they are not driving together anymore.

- At step 345 the passenger's account is debited with a predetermined amount of e.g. money or credits and the flow proceeds to step 346 wherein the driver's account is credited with a predetermined amount of money or credits. From the
30 step 346 the flow proceeds to step 347 wherein the process ends.

Figure 4a illustrates a signaling diagram of a method according to an embodiment of the invention. In order to simplify this illustration, the system serves only one passenger and one driver. In real situation the amount of drivers and passengers is usually more than one.

A passenger registers him/herself to the system by making a communication connection (401, 402) to the server. Also a driver registers him/herself to the system by making a communication connection (403, 404) to the server. The registration can be done e.g. via Internet. A service profile is generated in this stage. It can comprise parameters such as usual routes, location checking
5 periodicity, allowed deviation from the route, actions when some anomaly is detected (check SMS or call, alarm, etc.).

After registration the passenger and the driver may want to benefit from the services the system provides. The passenger sends a message (405) to the
10 server, via SMSC, to inform the server that he/she would now use the route being stored in the server. A little later also the driver (406) sends a message to the server via SMSC in order to inform the server that he/she would now drive the route being stored in the server.

When the server receives messages (405 and 406) from passengers and drivers it
15 starts to match them by comparing the route of the messages to each other. A starting point and an ending point of a passenger is compared to corresponding starting point and ending point of a driver. If the starting points are located sufficiently close each other and/or the ending points are sufficiently close each other, the server matches a driver and a passenger. The server sends a message
20 407 to the driver, wherein the message comprises the identification information of the passenger (e.g. name, picture, and/or pass code of the passenger, etc) and a location (street address) he/she is waiting lift. The message may further comprise time of arrival when the driver should meet the passenger. The server sends a message 408 to the passenger, wherein the message comprises the identification
25 information of the driver (e.g. name, picture, and/or pass code of the driver, etc) and a car he/she is driving (e.g. mark model and color) is coming to pick-up. The message may further comprise estimated time of arrival.

Next the passenger and the driver meets and identify each other and the passenger sends a message 409 to the server indicating that the trip has started
30 successfully. When the trip ends the passenger sends another message 410 indicating that the trip has ended successfully. Now the server 101 informs the passenger with a message 411 that the passenger's account at the server 101 has been debited with an amount of money or credits. Next the server 101 sends a message 412 to the driver informing him/her that the account of his/hers has been
35 credited with an amount of money or credits.

Figure 4b illustrates a signaling diagram of a method according to another embodiment of the invention. A passenger registers him/herself to the system by making a communication connection (420, 421) to the server. Also a driver registers him/herself to the system by making a communication connection (422, 423) to the server. The registration can be done e.g. via Internet. When a user (driver or passenger) wants that his/hers location should be traced he/she informs the system about it when registering to the system. The message should also contain the information about the route, which he/she has agreed with the other partner. The route information might be delivered by the initiation of tracing or it might be stored in the server, in which case the user has to only indicate which route he/she is using. The information should (if the route is not stored in the server) include at least the start and the stop points.

The passenger sends a message 424 to the server, via SMSC, to inform the server that he/she would now use the route being stored in the server. A little later also the driver 425 sends a message to the server via SMSC in order to inform the server that he/she would now drive the route being stored in the server.

When the server receives messages (424 and 425) from passengers and drivers it starts to match them by comparing the route of the messages to each other. A starting point and an ending point of a passenger is compared to corresponding starting point and ending point of a driver. If the starting points are located sufficiently close each other and/or the ending points are sufficiently close each other, the server matches a driver and a passenger. The server sends a message 426 to the driver, wherein the message comprises the identification information of the passenger (e.g. name, picture, and/or pass code of the passenger, etc) and a location (street address) he/she is waiting lift. The message may further comprise time of arrival when the driver should meet the passenger. The server sends a message 427 to the passenger, wherein the message comprises the identification information of the driver (e.g. name, picture, and/or pass code of the driver, etc) and a car he/she is driving (e.g. mark model and color) is coming to pick-up. The message may further comprise estimated time of arrival.

Next the passenger and the driver meets and identify each other and the passenger sends a message 428 to the server indicating that the trip has started successfully. Alternatively the system can track the positions of the driver and the passenger at the approximate time of the pick-up. If the locations match, and the passenger does not send in the step 428 a negative confirmation about the pick-up, i.e. that the pick-up is unsuccessful, the system assumes that the pick-up has

happened, and the process continues. The location of the MS would then be traced (429) and if the MS location is too much diverted from the route (Step 430) a check request is sent (431) to the passenger's communication device. If no response (432) is received an alarm would be triggered (433) and sent to the police or other emergency system together with the latest known location of the MS. A user who's phone is set to be traced has to keep his/her phone on for the whole trip. After the ridesharing route is performed the user sends a message indicating that the tracing should be disabled and the server would disable the tracing provided that the MS is in the target area (sufficiently close to stop point).

10 A user might also be able to configure the tracing of his/hers phone in such a way that the server is automatically disabling the tracking as soon as the traced MS arrives to the target area. Naturally some password or pin codes should be used for disabling the tracking and also for the safety check some pin code or password can be used. If the users are participating in the ride-sharing organized by a server which creates matching of the drivers and passengers in real-time, the triggering of the safety features on and off can be included in the messaging used to set up the ride-sharing trip, therefore enabling the safety features would not require any further actions from the users.

20 In connection to carpool service the needed messages to authorize the system to perform location updates for the mobile devices can be fully integrated to the messages used to set up a carpool. Importantly the system knows the drive time estimate from the pick-up location to the drop-off location and thus the system can expect the arrival confirmation message. If arrival confirmation message is not received in time the safety procedure can be initialized.

25 If a problematic situation is detected code sentences the user has selected in the registration can be used to further improve the safety. As the safety procedure is initialized the system asks for certain (user selected) question from the user and depending on the validity of the answer the safety procedure is stopped or continued without indicating it to the user. This question and answer pair have to be different from the one delivered to a carpool partner in setting up the carpool.

30 Figure 5 illustrates a block diagram of a device according to an embodiment of the invention. The device 500 comprises a processor 501 and a memory 502 for processing the tasks to be performed in the device. The memory 502 can comprise for example random access memory (RAM) and read only memory (ROM). The device further comprises a storage medium 503, for example like a

hard disk of a desktop computer or a RAM memory, which further comprises an application 504 that may be for example a computer program product according to the invention. The storage medium may further comprise a register 505 for storing information of the drivers and the passengers that are using the services of the system. The device 500 is for example a server located in a communication network. The device further has input and output means for establishing a connection to other elements of the network, such as SMSC 104, GMLC 105, Internet 106 and PSAP 107 as illustrated in figure 1b.

The server 500 is capable of receiving registration information of passengers and drivers via Internet. All the registration information is stored to the register 505. The server 500 receives request and offer messages from drivers and passengers via SMSC 104. The messages are stored in the register 505 and the application 504 performs matching of requests and offers in the register. When matched driver passenger pair is found, the server requests location information from GMLC 105 for the communication devices of the matched driver and passenger. If a problem situation is detected, the server 400 sends a message to the PSAP 107 in order to inform of the problem situation. The message can comprise for example the name of the owner a communication device having a problem and the location information of the communication device.

The above disclosure illustrates the implementation of the invention and its embodiments by means of examples. A person skilled in the art will find it apparent that the invention is not restricted to the details of the above-described embodiments and that there are also other ways of implementing the invention without deviating from the characteristics of the invention. The above embodiments should thus be considered as illustrative and not restrictive. Hence the possibilities of implementing and using the invention are only restricted by the accompanying claims and therefore the different alternative implementations of the invention, including equivalent implementations, defined in the claims also belong to the scope of the invention.

30

Claims

1. A method for arranging transportation for at least two persons by a same vehicle driven by one of said persons, each of said persons having a communication device being capable of establishing a communication connection
5 to a server connected to a communication network and sending and receiving messages to and from said server, the method comprising at the server:
receiving registration information from a person wherein said registration information comprises at least an origination and a destination of at least one route to be transported, an identification identifying said person and registration to at
10 least one of the following category: a driver of a vehicle and a passenger of a vehicle
receiving a message from at least one registered driver, said message indicating a route of transportation,
receiving a message from at least one registered passenger, said message
15 indicating a route of transportation,
matching one registered driver and at least one registered passenger having substantially similar route,
sending a message to said registered driver comprising at least identification and the route of said passenger,
20 sending a message to said at least one registered passenger comprising identification of said driver;
characterized in that the method comprises at the server:
receiving a start message indicating successful start of transportation from said at least one registered passenger in response to successful identification of
25 said driver, and
receiving an ending message indicating successful end of transportation from said at least one registered passenger.
2. A method according to claim 1, **characterized** in that the method further comprises at the server, in response to said start message, enabling location
30 tracking of a communication device of said passenger and said driver in order to confirm the location of said passenger and said driver.
3. A method according to claim 1, **characterized** in that the method further comprises at the server, in response to said route of transportation messages, enabling location tracking of a communication device of said passenger and said
35 driver in order to confirm the location of said passenger and said driver.

4. A method according to claim 2, **characterized** in that the method further comprises at the server, sending a check request to the passenger if the location is diverted too much from the route.
5. A method according to claim 1, **characterized** in that the method further comprises at the server disabling location tracking of the communication devices of said passenger and said driver in response to said ending message.
6. A method according to claim 1, **characterized** in that the method further comprises at the server charging said passenger a certain amount of money in response to one of the following messages: said start message and said ending message.
7. A method according to claim 1, **characterized** in that the method further comprises at the server crediting said driver a certain amount of money in response to at least one of the following messages: said start message and said ending message.
8. A method according to claim 1, **characterized** in that the method further comprises at the server sending messages to be used to confirm the identity of passenger for a driver and messages to be used to confirm the identity of the driver to the passenger.
9. An electronic device (500) for arranging transportation for at least two persons by a same vehicle driven by one of said persons, said persons having a communication device being capable of establishing a communication connection to said device (500) connected to a communication network and sending and receiving messages to and from said device (500), the device comprising:
receiving means for receiving registration information from a person wherein said registration information comprises at least an origination and a destination of at least one route to be transported, an identification identifying said person and registration to at least one of the following category: a driver of a vehicle and a passenger of a vehicle,
receiving means for receiving a message from at least one registered driver, said message indicating a route of transportation,
receiving means for receiving a message from at least one registered passenger, said message indicating a route of transportation,
matching means for matching one registered driver and at least one registered passenger having substantially similar route,

sending means for sending a message to said registered driver comprising at least identification and the route of said passenger,

sending means for sending a message to said at least one registered passenger comprising identification of said driver;

5 **characterized** in that the server comprises:

receiving means for receiving a start message indicating successful start of transportation from said at least one registered passenger in response to successful identification of said driver, and

10 receiving means for receiving an ending message indicating successful end of transportation from said at least one registered passenger.

10. A device according to claim 9, **characterized** in that the device further comprises enabling means for enabling location tracking of a communication device of said passenger and said driver in order to confirm the location of said passenger and said driver in response to said start message.

15 11. A device according to claim 9, **characterized** in that the device further comprises enabling means for enabling location tracking of a communication device of said passenger and said driver in order to confirm the location of said passenger and said driver in response to said route indication messages.

20 12. A device according to claims 10 or 11, **characterized** in that the device further comprises sending means for sending a check request to the passenger if the location is diverted too much from the route.

13. A device according to claim 9, **characterized** in that the device further comprises disabling means for disabling location tracking of the communication devices of said passenger and said driver in response to said ending message.

25 14. A device according to claim 9, **characterized** in that the device further comprises charging means for charging said passenger a certain amount of money in response to one of the following messages: said start message and said ending message.

30 15. A device according to claim 9, **characterized** in that the device further comprises crediting means for crediting said driver a certain amount of money in response to at least one of the following messages: said start message and said ending message.

16. A device according to claim 9, **characterized** in that the device further comprises sending means for sending messages to be used to confirm the identity of passenger for a driver and messages to be used to confirm the identity of the driver to the passenger.

- 5 17. A system for arranging transportation for at least two persons by a same vehicle driven by one of said persons, said persons having a communication device being capable of establishing a communication connection to a device (500) connected to a communication network and sending and receiving messages to and from said device (500), the system comprising:
- 10 receiving means for receiving registration information from a person wherein said registration information comprises at least an origination and a destination of at least one route to be transported, an identification identifying said person and registration to at least one of the following category: a driver of a vehicle and a passenger of a vehicle,
- 15 receiving means for receiving a message from at least one registered driver, said message indicating a route of transportation,
receiving means for receiving a message from at least one registered passenger, said message indicating a route of transportation,
matching means for matching one registered driver and at least one
20 registered passenger having substantially similar route,
sending means for sending a message to said registered driver comprising at least identification and the route of said passenger,
sending means for sending a message to said at least one registered passenger comprising identification of said driver;
- 25 **characterized** in that the system comprises:
receiving means for receiving a start message indicating successful start of transportation from said at least one registered passenger in response to successful identification of said driver, and
receiving means for receiving an ending message indicating successful end
30 of transportation from said at least one registered passenger.

18. A computer program product for an electronic device (500) for arranging transportation for at least two persons by a same vehicle driven by one of said persons, said persons having a communication device being capable of establishing a communication connection to said device (500) connected to a
35 communication network and sending and receiving messages to and from said device (500), the computer program product comprising:

computer program means for causing the device to receive registration information from a person wherein said registration information comprises at least an origination and a destination of a route to be transported, an identification identifying said person and registration to at least one of the following category: a

5 driver of a vehicle and a passenger of a vehicle,

computer program means for causing the device to receive a message from at least one registered driver, said message indicating a route of transportation,

computer program means for causing the device to receive a message from at least one registered passenger, said message indicating a route of transportation,

10 computer program means for causing the device to match one registered driver and at least one registered passenger having substantially similar route,

computer program means for causing the device to send a message to said registered driver comprising at least identification and the route of said passenger,

15 computer program means for causing the device to send a message to said at least one registered passenger comprising identification of said driver;

characterized in that the computer program product comprises:

computer program means for causing the device to receive a start message indicating successful start of transportation from said at least one registered passenger in response to successful identification of said driver, and

20 computer program means for causing the device to receive an ending message indicating successful end of transportation from said at least one registered passenger.

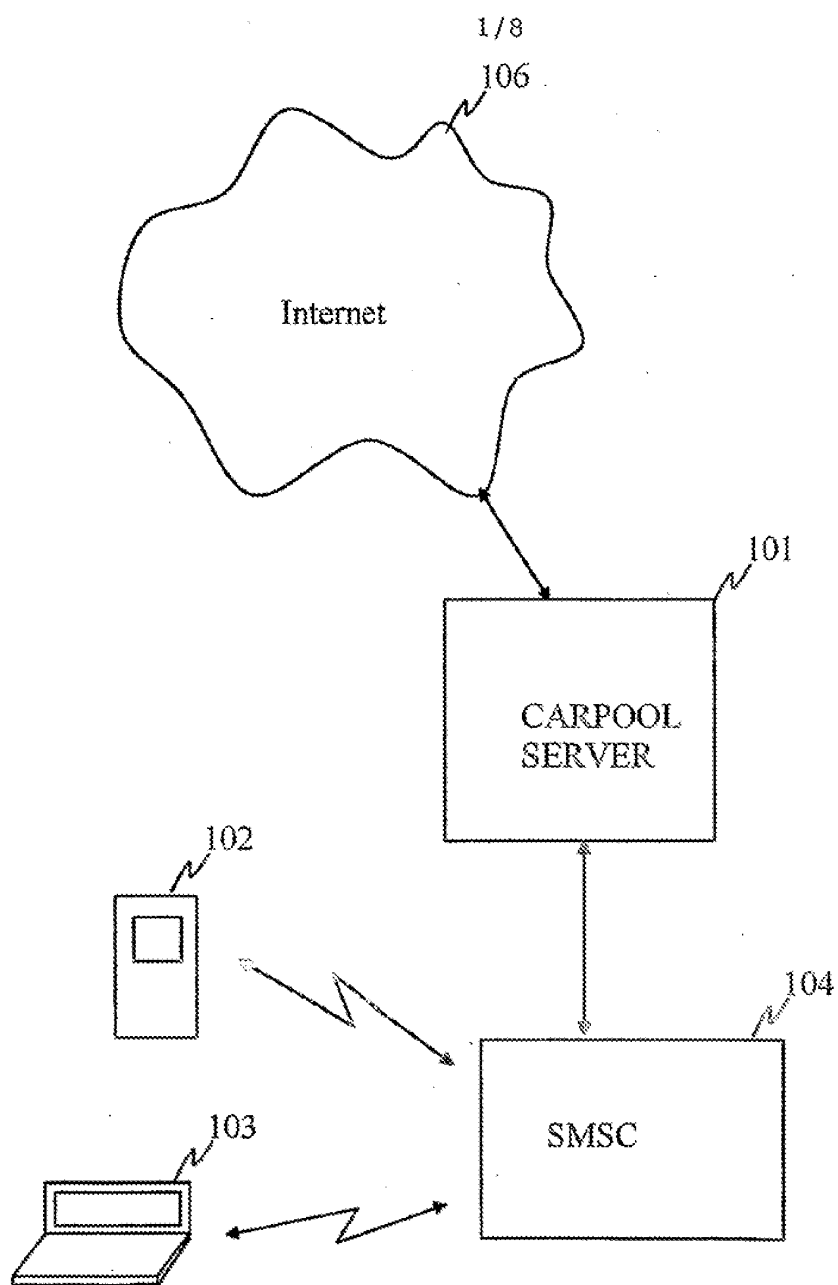


Fig. 1a

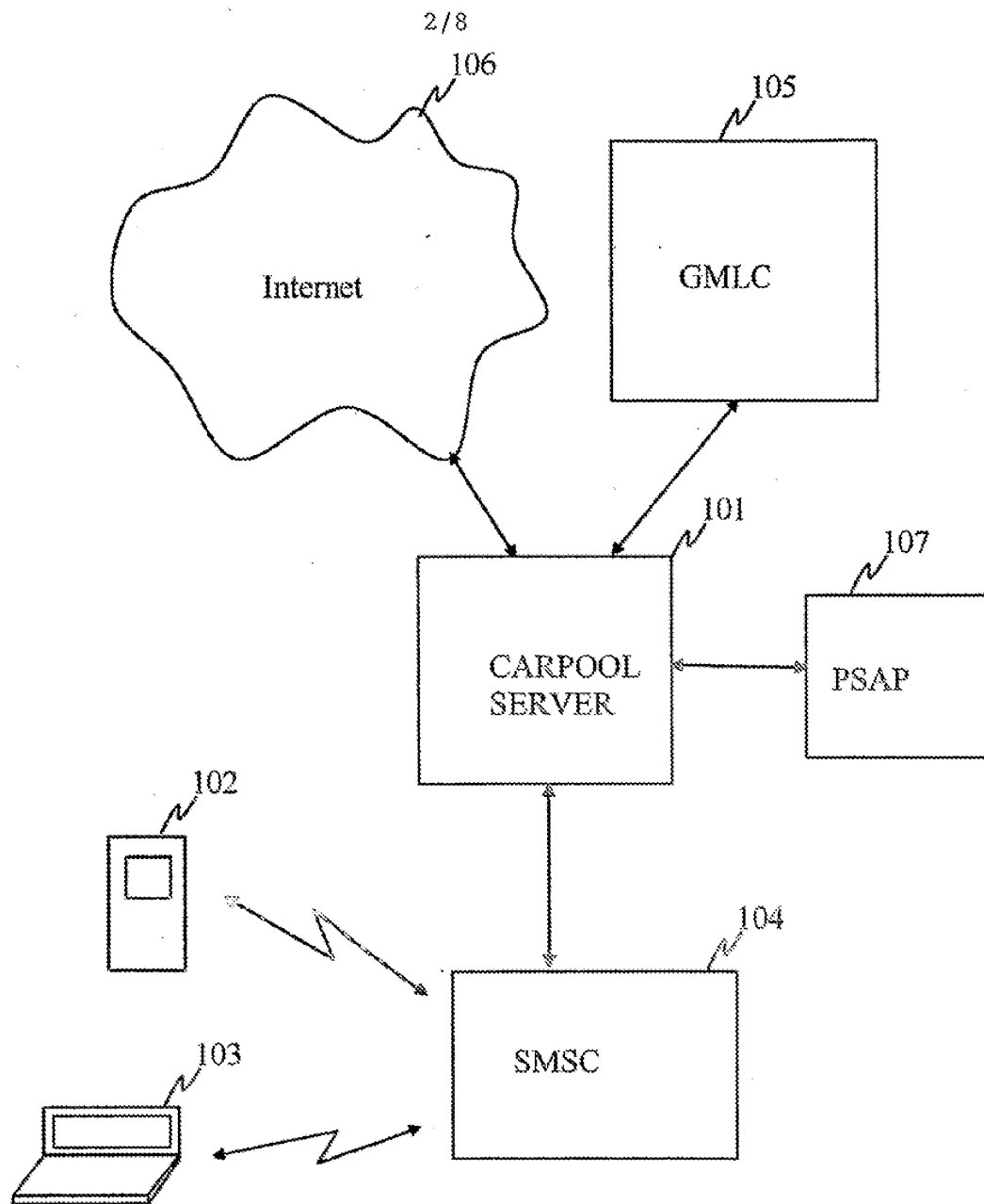


Fig. 1b

3/8

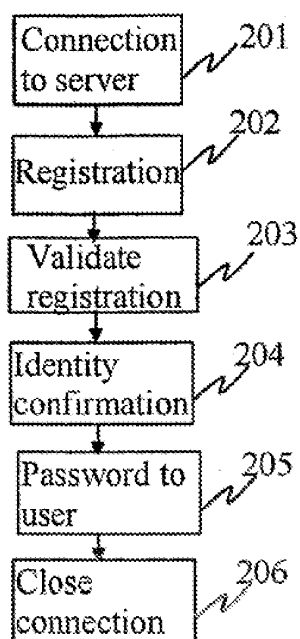


Fig. 2

4/8

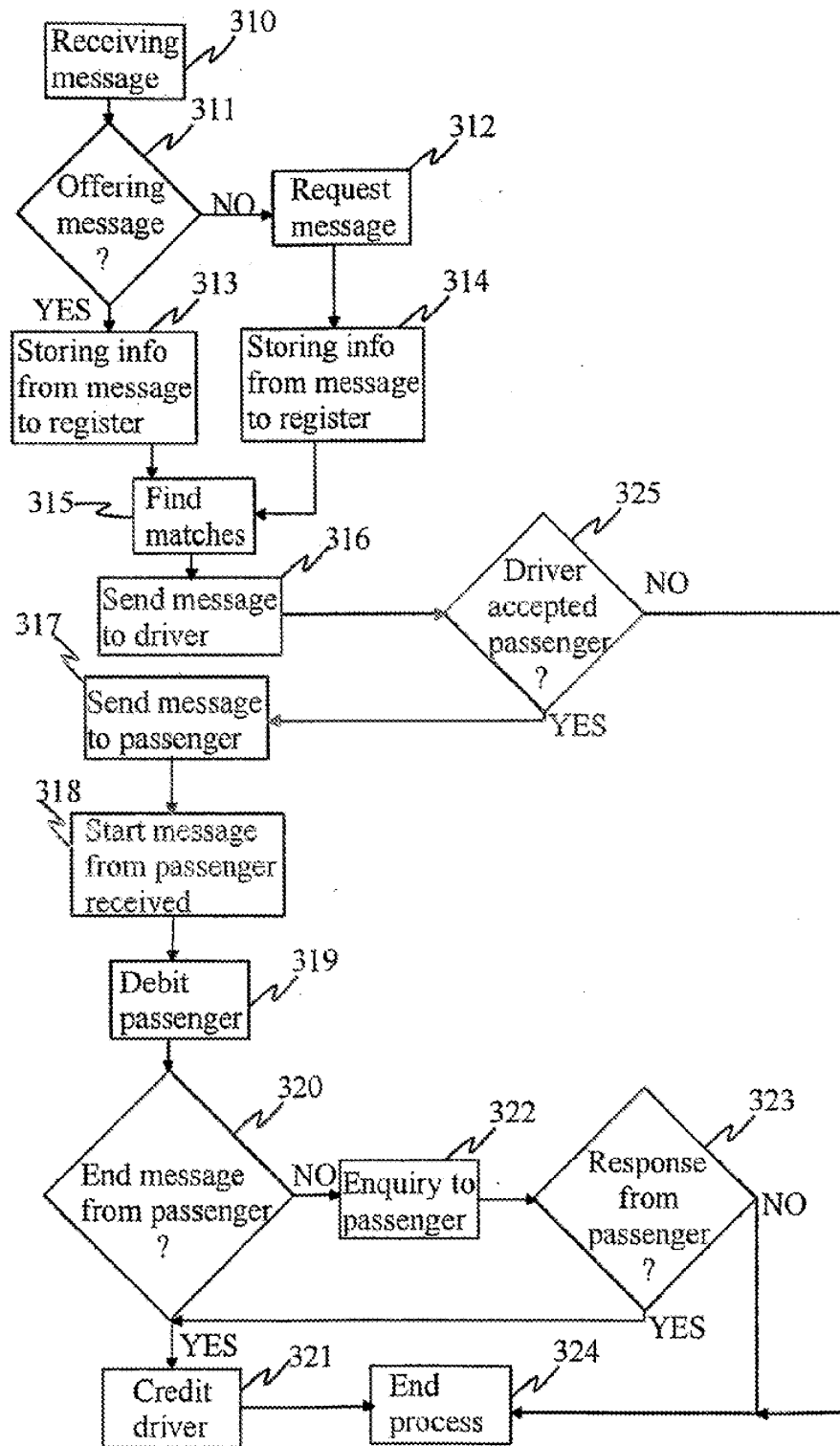


Fig. 3a

5/8

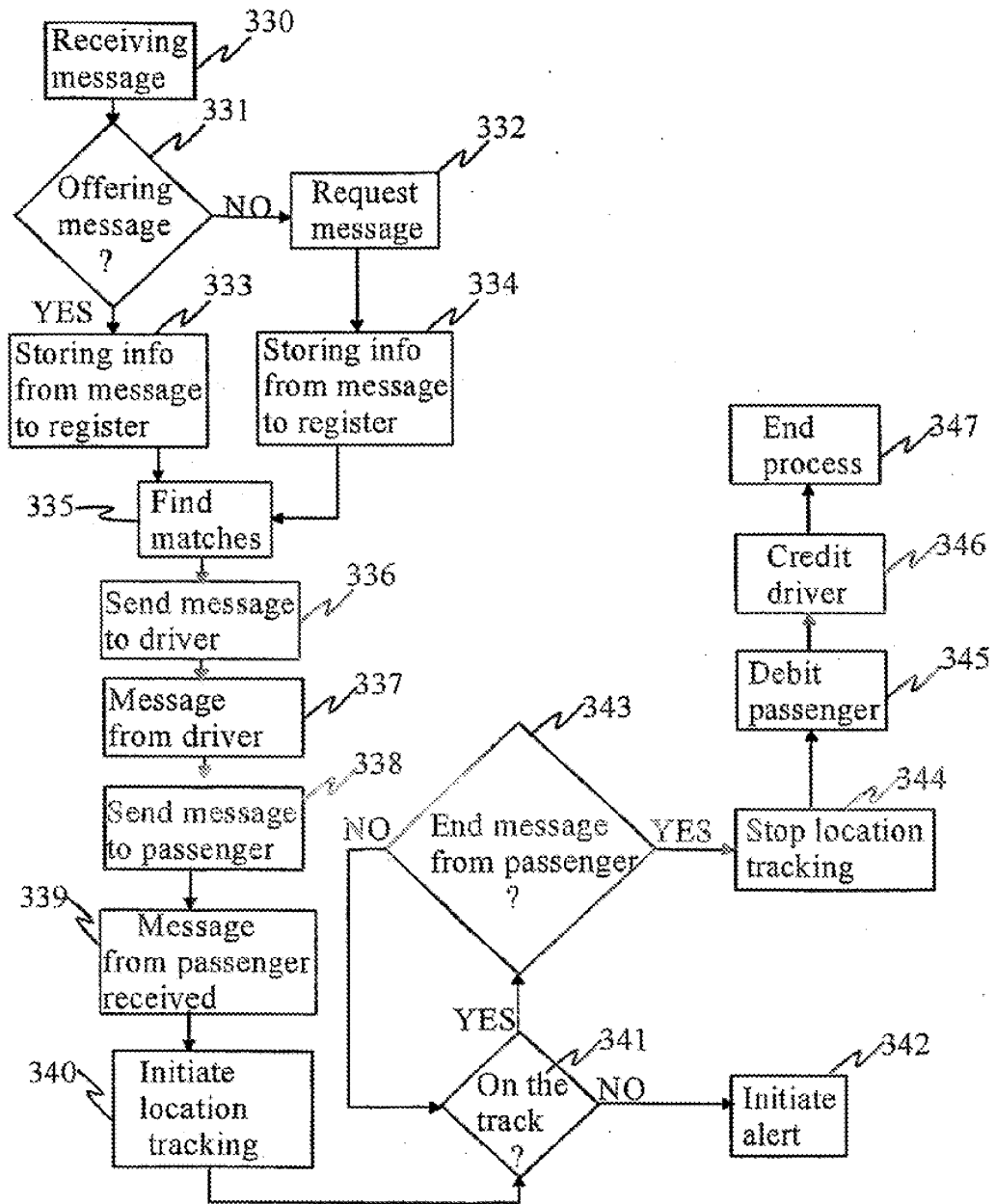


Fig. 3b

6/8

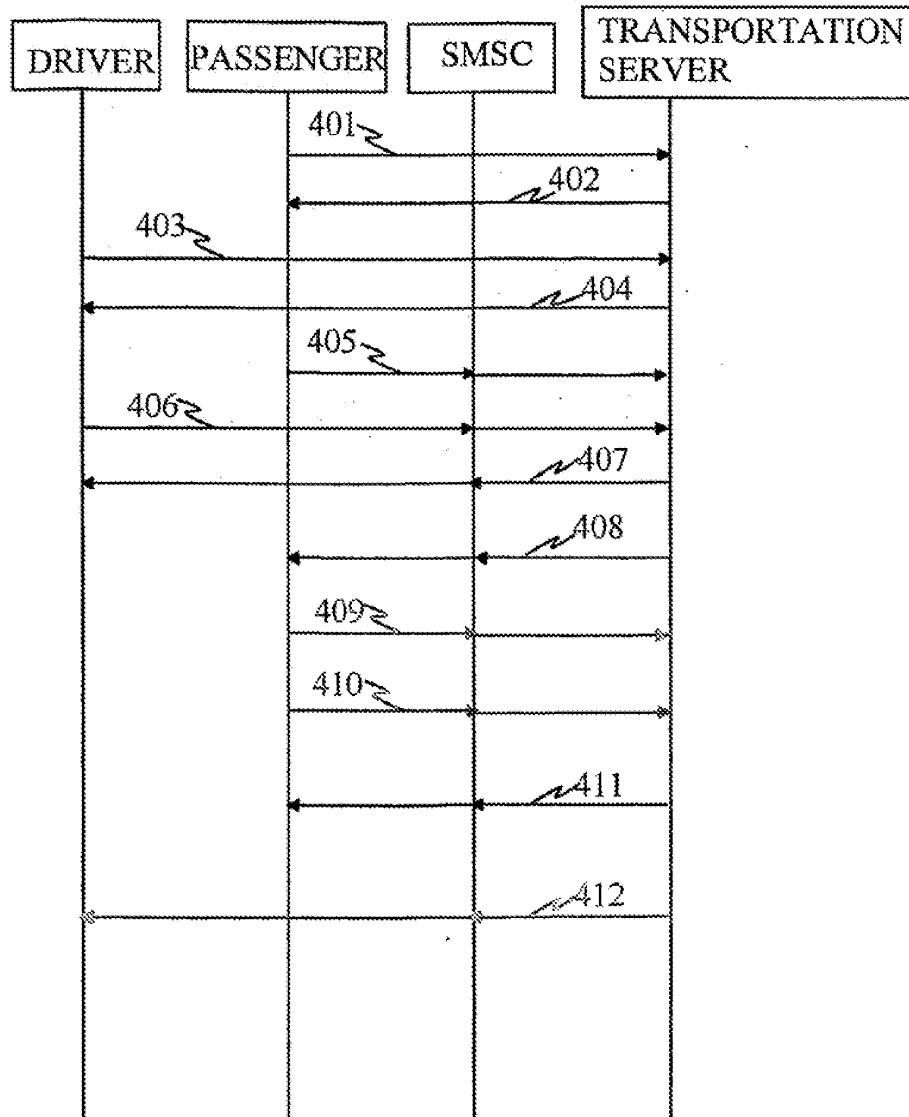


Fig. 4a

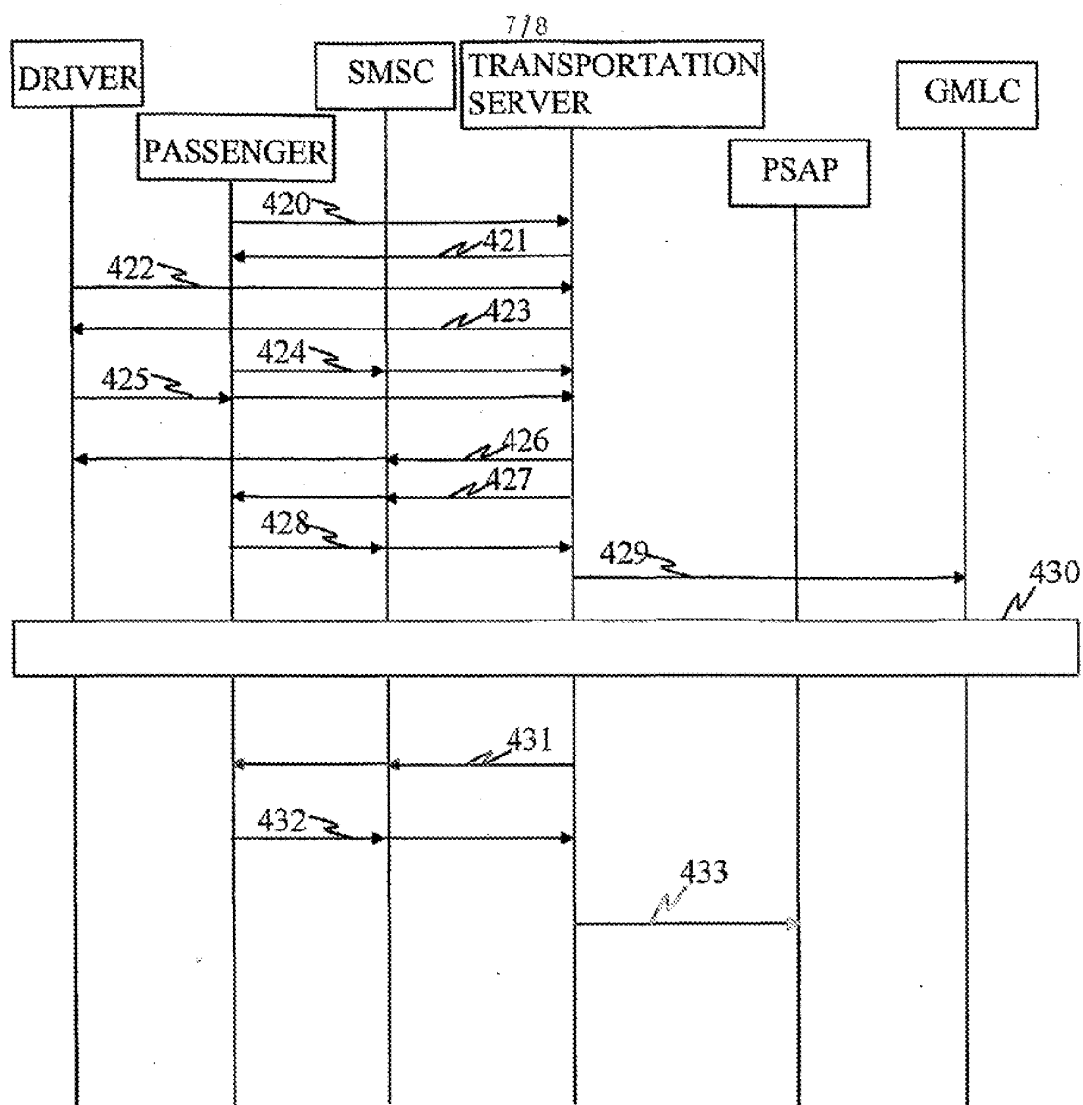


Fig. 4b

8/8

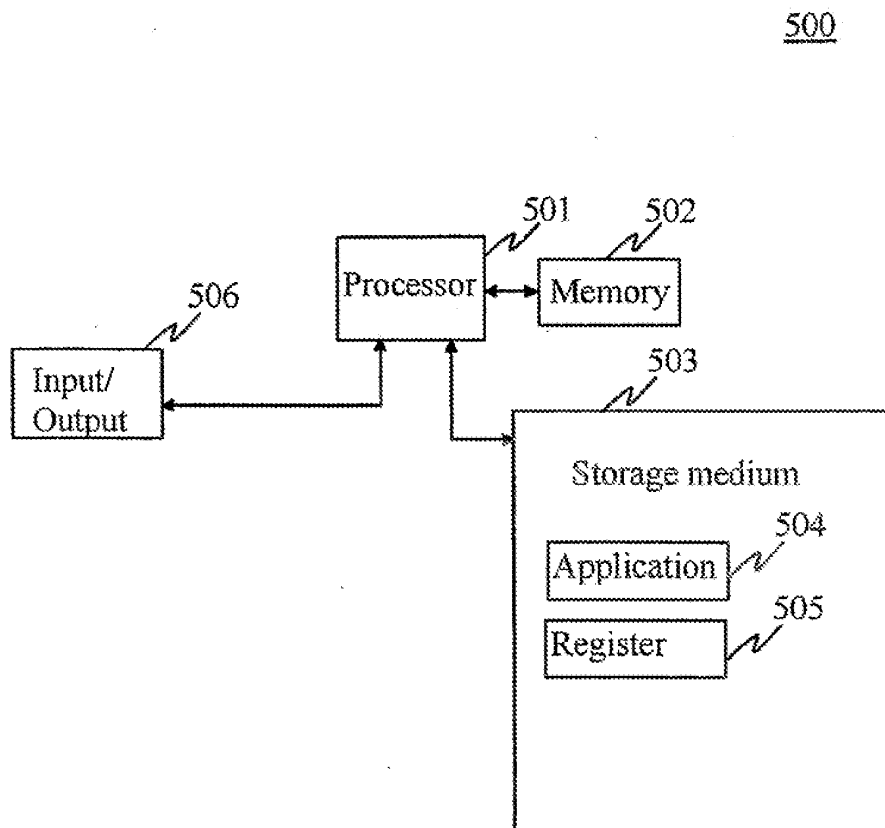


Fig. 5

INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 2004/000138

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: G06F 17/60, G08G 1/123

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)

IPC7: G06F, G08G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	FR 2824937 A1 (CHARRON JEAN YVES), 22 November 2002 (22.11.2002), page 8, line 14 - line 20; page 11, line 15 - line 24; page 17, line 19 - line 24, page 18, line 1-line 23, figures 1,2 --	1-18
Y	US 6356838 B1 (SUNIL PAUL), 12 March 2002 (12.03.2002), column 5, line 50 - line 53; column 6, line 52 - line 58 --	1-18
A	US 2002011940 A1 (J. CAPPEL), 31 January 2002 (31.01.2002), paragraphs 0041, 0042, 0050 - 0055, 0060, 0065, figures 1-3 -- -----	1-18

☐ Further documents are listed in the continuation of Box C.☒ See patent family 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 application or patent 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

"&" document member of the same patent family

Date of the actual completion of the international search

15 June 2004

Date of mailing of the international search report

21-06-2004

Name and mailing address of the ISA/

Swedish Patent Office

Box 5055, S-102 42 STOCKHOLM

Facsimile No. +46 8 666 02 86

Authorized officer:

Göran Magnusson /itw

Telephone No. +46 8 782 25 00

Form PCT/ISA/210 (second sheet) (January 2004)

INTERNATIONAL SEARCH REPORT
Information on patent family members

30/04/2004

International application No.
PCT/FI 2004/000138

FR	2824937	A1	22/11/2002	NONE		
US	6356838	B1	12/03/2002	AU	7693701 A	30/01/2002
				WO	0206994 A	24/01/2002
US	2002011940	A1	31/01/2002	EP	1168275 A	02/01/2002



Espacenet

Bibliographic data: JP2005182146 (A) — 2005-07-07

TRANSFER ROUTE GUIDANCE SYSTEM AND ROUTE GUIDANCE SERVER

Inventor(s): UEDA HIDEFUMI; HATAYA TAKAFUMI ± (UEDA HIDEFUMI, ; HATAYA TAKAFUMI)

Applicant(s): FUJITSU LTD ± (FUJITSU LTD)

Classification: - international: *G06Q50/00; G06Q50/30; G08G1/00; G09B29/00;*
(IPC1-7): G06F17/60; G08G1/00; G09B29/00
- cooperative:

Application number: JP20030418090 20031216 [Global Dossier](#)

Priority number(s): JP20030418090 20031216

Abstract of JP2005182146 (A)

PROBLEM TO BE SOLVED: To provide an efficient transfer route guidance system of a high security effect. ;**SOLUTION:** In the transfer route guidance system, a route guidance server (10) accepts registration of car sharing information at any time from a second user terminal (50B) of a car sharing provider, while registering beforehand user's action schedule inputted through a first user terminal (50A). Based on user's action schedule, car sharing information, and available means of transfer, one or more transfer routes which reach destinations are calculated and shown to the first user terminal. When a transfer route which includes at least car sharing partly is chosen from one or more transfer routes, the route guidance server creates information before agreement about the car sharing and transmits it to the first and second user terminals. When agreement of car sharing is reached based on information before agreement from the first and second user terminals, the server identifies the user and a car sharing provider, and transmits information after the agreement about the car sharing concerned to the first and second user terminals. ;**COPYRIGHT:** (C)2005,JPO&NCIP

(19) 日本国特許庁(JP)

(12) 公開特許公報(A)

(11) 特許出願公開番号

特開2005-182146

(P2005-182146A)

(43) 公開日 平成17年7月7日(2005.7.7)

(51) Int. Cl.⁷

F1

テーマコード(参考)

G06F 17/60

G06F 17/60

112G

2C032

G08G 1/00

G08G 1/00

Z

5H180

G09B 29/00

G09B 29/00

A

審査請求 未請求 請求項の数 5 O L (全 24 頁)

(21) 出願番号

特願2003-418090(P2003-418090)

(22) 出願日

平成15年12月16日(2003.12.16)

(71) 出願人 000005223

富士通株式会社

神奈川県川崎市中原区上小田中4丁目1番1号

(74) 代理人 100070150

弁理士 伊東 忠彦

(72) 発明者 植田 秀文

神奈川県川崎市中原区上小田中4丁目1番1号 富士通株式会社内

(72) 発明者 端谷 隆文

神奈川県川崎市中原区上小田中4丁目1番1号 富士通株式会社内

Fターム(参考) 2C032 HC08 HD13 HD17

5H180 BB05 EE05 PF13

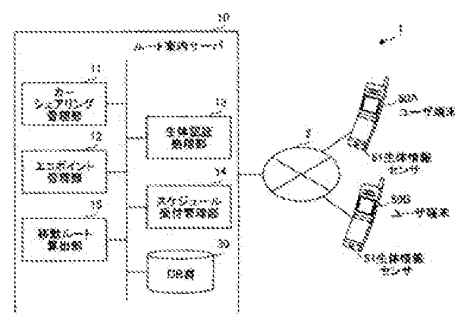
(54) 【発明の名称】 移動ルート案内システムおよびルート案内サーバ

(57) 【要約】

【課題】 効率的かつセキュリティ効果の高い移動ルート案内システムを提供する。

【解決手段】 移動ルート案内システムにおいて、ルート案内サーバ(10)は、第1のユーザ端末(50A)を介して入力されるユーザの行動予定をあらかじめ登録するとともに、カーシェアリング提供者の第2のユーザ端末(50B)からカーシェアリング情報の登録を随時受け付ける。ユーザの行動予定、カーシェアリング情報、および利用可能な移動手段に基づいて、目的地に至る1以上の移動ルートを算出して第1のユーザ端末に提示する。1以上の移動ルートの中から少なくとも一部にカーシェアリングを含む移動ルートが選択された場合に、ルート案内サーバは当該カーシェアリングについての合意前情報を作成して、第1および第2のユーザ端末に送信する。第1および第2のユーザ端末から合意前情報に基づくカーシェアリングの合意が得られた場合に、ユーザおよびカーシェアリング提供者の認証を行い、第1および第2のユーザ端末に、当該カーシェアリングについての合意後情報を送信する。

本発明の一実施形態に係る移動ルート案内システム



【特許請求の範囲】

【請求項1】

移動ルートを案内するルート案内サーバと、ネットワークを介して前記ルート案内サーバに接続される第1のユーザ端末と、前記ネットワークを介して前記ルート案内サーバに接続されるカーシェアリング提供者の第2のユーザ端末とを含む移動ルート案内システムであって、前記ルート案内サーバは、

ユーザの行動予定をあらかじめ登録するとともに、前記カーシェアリング提供者からカーシェアリング情報の登録を随時受け付け、

前記ユーザの行動予定、前記カーシェアリング情報、および利用可能な移動手段に基づいて、目的地に至る1以上の移動ルートを算出して前記第1のユーザ端末に提示し、

前記1以上の移動ルートの中から、少なくとも一部にカーシェアリングを含む移動ルートが選択された場合に、当該カーシェアリングについての合意前情報を作成して、前記第1および第2のユーザ端末に送信し、

前記合意前情報に基づいて、前記第1および第2のユーザ端末から前記カーシェアリングの合意が得られた場合に、前記ユーザおよび前記カーシェアリング提供者の認証を行い、前記第1および第2のユーザ端末に、当該カーシェアリングについての合意後情報を送信することを特徴とする移動ルート案内システム。

【請求項2】

前記第1および第2のユーザ端末は、生体情報検出部を備え、前記合意の際に生体情報を取り込み、前記ルート案内サーバに対して、検出された生体情報を送信し、前記ルート案内サーバは、当該生体情報に基づいて前記ユーザおよびカーシェアリング提供者の生体認証を行うことを特徴とする請求項1に記載の移動ルート案内システム。

【請求項3】

前記ルート案内サーバは、前記ユーザの行動予定の変更、前記カーシェアリング情報の更新、および交通状況の変化の少なくとも1つが発生した場合に、移動ルートを再算出して、再算出した移動ルートを前記第1のユーザ端末に送信することを特徴とする請求項1または2に記載の移動ルート案内システム。

【請求項4】

ユーザの行動予定をあらかじめ登録し、管理するスケジュール管理部と、

カーシェアリング提供者から提供されるカーシェアリング情報を管理するカーシェアリング管理部と、

前記ユーザの行動予定、前記カーシェアリング情報、および利用可能な移動手段に基づいて、1以上の移動ルートを算出する移動ルート算出部と、

前記ユーザを認証する認証部と、
を備え、前記カーシェアリング管理部は、前記ユーザによって、前記1以上の移動ルートの中から、少なくとも一部にカーシェアリングを含む移動ルートが選択された場合に、当該ユーザと前記カーシェアリング提供者との間の合意の成否を判断する合意前情報を作成し、前記合意が成立した場合に、前記ユーザおよびカーシェアリング提供者に、前記カーシェアリングについての合意後情報を供給することを特徴とするルート案内サーバ。

【請求項5】

前記移動ルート算出部によって算出された移動ルートごとに、環境負荷を表わすエコポイントを計算するエコポイント管理部をさらに備え、前記移動ルート算出部は、前記算出された移動ルートと前記エコポイントを対応付けた一覧を、前記ユーザに提示することを特徴とする請求項4に記載のルート案内サーバ。

【発明の詳細な説明】

【技術分野】

【0001】

本発明は、広くはネットワークを利用したルート案内システムに関し、特に、効率のよい移動を支援するとともに、CO₂排出量の低減に寄与することのできる移動ルート案内

システムに関する。

【背景技術】

【0002】

地球温暖化を防止するため、人類の生産活動におけるCO₂排出量の削減が急務となっている。中でも、運輸部門からのCO₂排出について対策の遅れが著しい。ハード面においては、従来のガソリン車、ディーゼル車の燃費の向上や、ハイブリッドカーや燃料電池搭載車の開発などに向けた努力がなされているにもかかわらず、一般利用者の生活様式の変化、生活レベルの向上などから、自家用車を利用する機会が増加し続けていることが、一因として挙げられる。

【0003】

このため、自家用車の利用を抑制してCO₂排出を低減させるべく、既存の乗合バス、電車等の公共交通機関の利便性を向上させて、自家用車利用からの転換を促進させることが提案されている。また、カーシェアリング、カープーリングといった自家用車の共同利用や、自家用車と公共交通機関の併用（パーク・アンド・ライド）も提案されており、これらの一部は、運用試験、さらには実用化へと進んでいる。

【0004】

公共交通機関の利便性を高める方法として、携帯電話などの携帯情報端末を使用した種類のサービスが実用化されている。電車の時刻表・運賃を表示するサービス、目的地までの最終電車を検索できるサービス、目的地までの最適な鉄道乗り継ぎ経路を提供するサービス、乗合バスの運行状況を携帯電話に配信するサービスなどである。

【0005】

携帯端末を利用したルート提供サービスの一例として、DDIポケットのPメールDXがある。これは路線・運賃検索ソフト「駅すばあと」を携帯電話で利用できるサービスである。出発地、目的地の駅名を入力すると、経路・所要時間・運賃・路線情報が最大5経路まで回答される。電話をしている場所の最寄り駅を自動的に求めて出発地にすることもできる。また、探索結果の駅周辺地図が表示可能である。他の携帯電話会社においても、大体類似したサービスを提供している。

【0006】

他の公知例としては、携帯端末から現在地、目的地を送信すると、サーバあるいはサーバから、公共交通機関によるルートを適宜提供するサービスが知られている（たとえば、特許文献1～3参照）。また、GPS携帯端末から現在位置が送信されると、サーバが最寄り駅および最適な乗換えを含む最適ルートを検索し、提供するサービスも知られている（たとえば特許文献4参照）。

【0007】

一方、自家用車の共同利用の形態として、カーシェアリングがある。カーシェアリングは、北米やヨーロッパで広く実践されており、自家用車への相乗りを行うことで、自家用車の利用の効率化と、利用台数の低減を図ることができる。わが国においても、実用化に向けた実験が盛んに行われている。

【0008】

カーシェアリングを実施する場合、相乗りするグループをどのように決定するのかという課題がある。これまで実用化されている事例としては、通勤時に近隣の住民同士でグループを形成する、運転者と乗客者が約束の時間に所定の乗り合わせ場所で合流する、という方法が採用されている。

【0009】

情報ネットワーク技術を利用した自家用車の相乗り提供サービスも提案されている。ネットワークを介して運転者側から入力された運転予定情報と、乗客側から入力された乗客希望情報とをマッチング処理し、各端末に待ち合わせ場所および時刻を送信する方法や（たとえば特許文献5および6参照）、相乗りを希望するユーザが、サーバに登録された相乗り提供情報を検索して、自分の希望にあった条件の相乗り提供者に対して同乗の申し込みをする方法（たとえば特許文献7参照）が知られている。ネットワークとユーザ端末

を利用することによって、グループ形成の自由度は大幅に高くなる。

【0010】

ネットワークを介したマッチングに基づくカーシェアリングの場合、他人同士が同乗することへの不安が大きな問題となる。これについて特許文献5では、運転者、乗合者の双方が仲介サーバを通して、本人確認用の認証情報の入力并要求し、それぞれの端末において受信・確認を可能とするシステムを提案している。

【特許文献1】特開2002-298284号公報

【特許文献2】特開2003-35552号公報

【特許文献3】特開2003-323473号公報

【特許文献4】特開2003-058663号公報

【特許文献5】特開2002-140399号公報

【特許文献6】特開2003-281238号公報

【特許文献7】特開2002-140402号公報

【発明の開示】

【発明が解決しようとする課題】

【0011】

上述した従来の移動ルート探索サービスを利用する場合、ルート探索の都度、少なくとも目的地を含む必要情報を入力する必要がある。時間に余裕のない時は、この操作が意外と面倒であり、入力に要する時間によっては、利用可能であったはずの交通手段を乗り過ごす可能性もある。

【0012】

また、公共交通機関のみを組み合わせた移動ルートでは、交通機関が網の目のように張り巡らされた都会では機能するが、都市郊外や地方では、必ずしも適切なルートが提供されるとは限らない。運行本数が乏しく、公共交通機関ではカバーできない地域も多くなることから、煩雑な移動ルートあるいは現実的とは言えない移動ルートしか提供できない場合が生じるからである。公共交通機関の利便性向上による自家用車利用のモデルシフトは、本来このような地域での自家用車をターゲットにしたものであるにもかかわらず、従来の技術では十分な効果が得られない。

【0013】

一方、従来方法のカーシェアリングシステムでは、他人同士であるドライバと乗合者との間のセキュリティ対策が講じられていない。特許文献5では、かろうじてID番号とパスワードを用いた認証を含んでいるが、複製が可能な情報を用いており、他人の認証情報を利用した所謂「なりすまし」への対策が不十分である。「なりすまし」は、他人を装って運転者あるいは乗合者となり、会員資格の不正利用を行うものである。密室性の高い車内に同乗するカーシェアリングでは、「なりすまし」の防止対策が十分出ない場合、強盗や傷害、殺人といった犯罪行為にまで及ぶ危険性がある。

【0014】

そこで、本発明は、必要に応じて公共交通機関とカーシェアリングを効果的に組み合わせ、効率のよい移動ルートを提供するとともに、移動ルートにカーシェアリングを含む場合には、セキュリティ効果の高い認証を行うことによって、利用者の安全を確保する移動ルート案内システムを提供することを目的とする。

【課題を解決するための手段】

【0015】

上記目的を達成するために、本発明のひとつの側面では、ユーザに適切な移動ルートを提供する移動ルート案内システムを提供する。移動ルート案内システムは、ルート案内サーバと、ネットワークを介してルート案内サーバに接続される第1のユーザ端末と、前記ネットワークを介して前記ルート案内サーバに接続されるカーシェアリング提供者の第2のユーザ端末とを含む。この移動ルート案内システムでは、ルート案内サーバは、ユーザの行動予定を示す個人スケジュールを、あらかじめ登録するとともに、カーシェアリング提供者から、カーシェアリング情報の登録を随時受け付ける。そして、ユーザの行動予定

、カーシェアリング情報、および利用可能な移動手段に基づいて、ユーザが予定する目的地に至る1以上の移動ルートを算出して、前記第1のユーザ端末に提示する。提示された移動ルートの中から、少なくとも一部にカーシェアリングを含む移動ルートが選択された場合に、ルート案内サーバは、当該カーシェアリングについての合意前情報を作成し、この合意前情報を第1および第2のユーザ端末に送信する。合意前情報に基づいて、第1および第2のユーザ端末からカーシェアリングの合意が得られた場合に、ルート案内サーバは、ユーザおよびカーシェアリング提供者の認証を行い、第1および第2のユーザ端末に、カーシェアリングについての合意後情報を送信する。

【0016】

第1および第2のユーザ端末は、生体情報検出部を備え、合意の際に生体情報を取り込み、ルート案内サーバに対して、検出された生体情報を送信し、前記ルート案内サーバは、当該生体情報に基づいて前記ユーザおよびカーシェアリング提供者の生体認証を行う。

【0017】

ルート案内サーバは、ユーザの行動予定の変更、カーシェアリング情報の更新、および交通状況の変化の少なくとも1つが発生した場合に、移動ルートを再算出して、再算出した移動ルートを、第1のユーザ端末に送信する。

【0018】

このような移動ルート案内システムによると、状況に応じて適宜更新される最適な移動ルートが常に提示されており、ユーザは何時でも携帯端末からサーバにアクセスして、移動ルートを確認することができる。

【0019】

また、移動ルートにカーシェアリングが含まれる場合、運転者、同乗者ともに、ユーザIDとして生体情報を用いた認証が行われるので、「なりすまし」の可能性を排除したセキュリティの高いシステムを実現できる。

【0020】

本発明の第2の側面では、最適な移動ルートを案内する提供するルート案内サーバを提供する。ルート案内サーバは、(a)ユーザの行動予定をあらかじめ登録管理するスケジュール管理部と、(b)カーシェアリング提供者から提供されるカーシェアリング情報を管理するカーシェアリング管理部と、(c)ユーザの行動予定、カーシェアリング情報、および利用可能な移動手段に基づいて、1以上の移動ルートを算出する移動ルート算出部と、(d)ユーザを認証する認証部とを備え、前記カーシェアリング管理部は、前記ユーザによって、前記1以上の移動ルートの中から、少なくとも一部にカーシェアリングを含む移動ルートが選択された場合に、当該ユーザと、前記カーシェアリング情報の提供者との間の合意の成否を判断する合意前情報を作成し、前記合意が成立した場合に、前記ユーザおよびカーシェアリング提供者に、前記カーシェアリングについての合意後情報を供給する。

【0021】

好ましくは、ルート案内サーバは、算出された移動ルートごとに、移動により創出される環境負荷を表わすエコポイントを計算するエコポイント管理部をさらに備え、スケジュール管理部は、算出された移動ルートとエコポイントを対応付けた一覧を、ユーザに提示する。

【発明の効果】

【0022】

本発明にかかる移動ルート案内システムによれば、カーシェアリングの提供と公共交通機関を柔軟に組み合わせて、目的地までの1以上の移動ルートが提示される。移動ルートは、スポット的に登録されるカーシェアリングの提供や、ユーザのスケジュール変更、交通状況の変化に応じて、再計算され、ユーザはいつでもサーバにアクセスして、移動ルートを選択、確認することができる。

【0023】

移動ルートにカーシェアリングが含まれる場合に、生体情報を用いた個人認証方法を採用

することにより、システムに対する信頼性と安全性を確立できる。

【0024】

更には、カーシェアリングの場合に、運転者と同乗者の間で一定の合意が得られる前には、カーシェアリングの対象となる相手方に対して、合意に必要とされる簡易な情報（合意前情報）のみが提供される。一方、合意が得られた後に、スムーズなカーシェアリングを可能とするために、例えば車の車種、色などの、より詳細な情報（合意後情報）が提供される。これにより、利用者のプライバシーが不必要に公表されることが回避される。

【発明を実施するための最良の形態】

【0025】

以下で、図面を参照して本発明の実施形態を説明する。

【0026】

図1は、本発明の一実施形態に係る移動ルート案内システムの概略構成図である。移動ルート案内システム1は、ユーザに移動ルートを案内するルート案内サーバ10と、ネットワーク2を介してルート案内サーバ10に接続される第1のユーザ端末50Aと、ネットワーク2を介してルート案内サーバ10に接続されるカーシェアリング提供者の第2のユーザ端末50Bとを含む。

【0027】

移動ルート案内システム1を利用するユーザは、ユーザ端末50Aを介して、ルート案内サーバ10に、行動予定をあらかじめ登録する。カーシェアリング提供者は、カーシェアリングを提供し得る場合に、ユーザ端末50Bを介してカーシェアリング情報を登録する。カーシェアリング提供者もまた、移動ルート案内システム1の利用者であり、ルート案内サーバ10から、適切な移動ルートの案内を受けることができる。同様に、第1ユーザ端末50Aの利用者もカーシェアリング提供者となることができるが、ここでは、説明の便宜上、第1端末50Aの利用者を「ユーザ」または「乗合者」と称し、第2端末50Bの利用者を「カーシェアリング提供者」または「ドライバ」と称することとする。

【0028】

ルート案内サーバ10は、カーシェアリング管理部11、エコポイント管理部12、生体認証処理部13、スケジュール受付管理部14、移動ルート算出部15、およびデータベース群30を含む。スケジュール受付管理部14は、ユーザ端末50Aからユーザの行動予定をあらかじめ受け付け、個人スケジュールとして管理する。カーシェアリング管理部11は、ユーザ端末50Bからカーシェアリングの提供を随時受け付け、管理する。ユーザの行動予定およびカーシェアリング情報は、データベース群30の所定の領域に格納される。移動ルート算出部15は、ユーザの行動予定と、カーシェアリング情報と、データベース群30に格納された公共交通機関情報に基づいて、ユーザが予定する目的地までの移動ルートを1以上算出し、ユーザ端末50Aに送信する。

【0029】

ユーザ端末50Aによって、移動ルートの中から、少なくとも一部にカーシェアリングを含む移動ルートが選択された場合に、カーシェアリング管理部11は、このカーシェアリングについての合意前情報を作成して、ユーザの第1ユーザ端末50Aと、カーシェアリング提供者の第2ユーザ端末50Bに送信する。第1および第2のユーザ端末50A、50Bから、合意前情報に基づく合意が得られたときに、生体認証処理部13は、ユーザとカーシェアリング提供者の生体認証を行い、カーシェアリング管理部11は、第1および第2のユーザ端末50A、50Bに対し、カーシェアリングについての詳細情報（合意後情報）を送信する。

【0030】

エコポイント管理部12は、移動ルート算出部15が算出した移動ルートごとに、移動により創出される環境負荷を表わすエコポイントを計算する。良好な実施形態では、環境負荷としてCO₂排出量をエコポイントとして計算する。エコポイントが低いほど、環境負荷（CO₂排出）低減への寄与度が高いことになる。移動ルート算出部15は、ユーザ端末50Aに対して、算出された移動ルートとエコポイントとを対応付けた一覧を提示す

る。

【0031】

図2は、図1に示すルート案内サーバ10の詳細な機能構成を示す図である。ルート案内サーバ10は、ネットワーク2(図1参照)を介してユーザ端末50A、50Bと通信するための通信処理部40と、アプリケーションサーバ20およびデータベースサーバ30を備える。通信処理部40はwwwサーバ41とメールサーバ42を含む。図2の構成例では、ルート案内サーバ10は複数のサーバ群を含むが、wwwサーバ41をwww処理部、メールサーバ42をメール処理部、アプリケーションサーバ20をデータ処理部、データベースサーバ30をデータベース保存部で構成することにより、単一のサーバ構成としてもよい。

【0032】

アプリケーションサーバ20において、位置情報処理部19は、ユーザ端末50A、50Bから送られてくる測位情報に基づいて、ユーザ端末50A、50Bの位置を求め、ユーザおよびカーシェアリング提供者の現在位置を把握する。交通状況観測部21は、ネットワーク2を介して外部の交通情報提供システムに接続し、公共交通機関の運行状況や道路交通状況、事故、渋滞などの発生をモニタリングする。モニタリング結果に基づいて、交通機関運行状況表を作成する。

【0033】

スケジュール受付管理部14は、ユーザ端末50Aから入力されるユーザスケジュール(行動予定)の登録情報に基づいて、ユーザスケジュール表を作成し管理する。

【0034】

カーシェアリング受付処理部18は、ユーザ端末50Bを介してカーシェアリング提供者(ドライバ)から入力されるカーシェアリング情報に基づいて、ドライバ走行情報表を作成する。カーシェアリング情報は、毎日決まったルートを走行するドライバから提供される固定的な情報と、走行の日程、ルートが不確定なドライバから提供されるスポット情報の双方を含む。受け付けられたカーシェアリング情報は、カーシェアリング提供情報データベース31に格納される。

【0035】

カーシェアリング管理部11は、カーシェアリング情報の運用を管理し、カーシェアリングが選択された場合には、その開始から終了までの処理を管理する。カーシェアリングの運用は、カーシェアリング運用情報データベース32に格納される。

【0036】

移動ルート算出部15は、ユーザの個人スケジュールに含まれる目的地や到着予定時刻、カーシェアリング情報、公共交通機関の運行予定、ユーザの現在位置、地図情報などに基づき、移動ルートの提示が必要とされるクイミングで、1以上の移動ルートを算出する。算出された移動ルートの一覧は、通信処理部40を介して、ユーザ端末50Aに提示される。移動ルート算出部15はまた、ユーザ端末50Aからユーザスケジュール変更情報を受け取った場合や、交通状況観測部21により交通状況の変化が観測された場合、カーシェアリング情報が更新された場合に、移動ルートを再計算し、更新後の移動ルートを提示する。

【0037】

エコポイント管理部12は、移動ルート算出部15が算出した移動ルートごとに、CO₂排出量を表わすエコポイントを計算し、ユーザおよびドライバごとにエコポイントを集計する。集計されたエコポイントは、各ユーザおよびドライバと対応付けてエコポイントデータベース33に格納され、管理される。また、上述の移動ルート算出部15は、移動ルートとエコポイントとを対応付けて、ユーザ端末50Aに提示する。

【0038】

生体認証処理部13は、カーシェアリングが行われる場合に、ユーザとカーシェアリング提供者(ドライバ)の生体認証を行う。

【0039】

メール作成部16と、HTML文書作成部17は、ユーザ端末50A、50Bに提供可能な形態に情報を加工する。

【0040】

データベースサーバ(データベース群)30に含まれるユーザ情報データベース34は、ユーザ登録情報、ユーザスケジュール、ユーザ認証情報、ユーザ評価情報を記録する。ユーザ登録情報は、移動ルート案内システム1への加入時に登録されるユーザの基本情報である。ユーザスケジュールは、ユーザがあらかじめ登録する個人スケジュールであり、スケジュール受付管理部14を介して格納される。

【0041】

ユーザ認証情報は、ユーザおよびドライバの生体情報を含む。生体情報は、移動ルート案内システム1への加入時に採取され、登録される。生体情報は、たとえば指紋、虹彩、静脈パターンなどである。生体情報の登録は、ユーザ端末50A、50Bから直接行われてもよいが、セキュリティ面を重視すると、面接審査などによる身元確認と併行して行われるのが望ましい。カーシェアリングの際には、ユーザ情報データベース34に格納された生体情報を参照して生体認証が行われるからである。なお、個人認証情報には、生体認証情報の他に、電話番号、IPアドレスなどのユーザ端末IDや、パスワードなどが含まれてもよい。

【0042】

ユーザ評価情報は、カーシェアリングの終了後にカーシェアリングの提供者と、同乗者とは相互に行う相手に対する評価である。これについては後述する。

【0043】

地図データベース35および公共交通機関データベース36は、移動ルート算出部15による移動ルート算出の際に参照される。

【0044】

図3および図4は、図1のユーザ端末50の構造を示す図である。図3に示すように、ユーザ端末50は、生体情報センサ51、入力ボタン52、マイク53、ディスプレイ54、スピーカ55、アンテナなどの通信インターフェイス56を有する。また、図4(a)の機能ブロックに示すように、生体情報センサ51が取り込んだデータを生体情報として読み取る生体情報検知部60と、ネットワーク2を介して生体情報を送信する際に生体情報を暗号化する暗号化処理部58と、通信処理部57と、ユーザインターフェイス59を有する。さらに、図4(b)に示すように、入力ボタン52、マイク53、ディスプレイ54、スピーカ55などのユーザインターフェイス、生体情報センサ51、通信I/F56、ディスプレイ54、CPU62、ROM63、RAM64、メモ리카ードスロット65などがバス61を介して相互に接続されている。メモ리카ードスロット65にメモ리카ード66が挿入される。

【0045】

図3に示す例では、生体情報センサ51は、静電容量方式による指紋パターンの取り込みを行うが、この例に限定されず、近赤外線を用いて、接触状態あるいは非接触状態で静脈パターンの読み取りを行ってもよい。また、撮像機能を用いて、光彩パターンや網膜パターンを検出してもよい。

【0046】

図5は、ルート案内サーバ10の基本的な処理フローを示す図である。まず、ルート案内サーバ10は、通信処理部40を介して、ユーザスケジュールを受け付ける(S101)。ユーザスケジュールは、日付、時間、目的地、目的地住所、目的地到着予定時刻などを含む。ユーザ受付管理部14は、入力されたスケジュールに基づいて、個人スケジュール表を作成し、これをユーザ情報データベース34に格納する(S103)。

【0047】

個人スケジュール表の一例を図9に示す。図9(a)はユーザ端末50Aの使用者であるユーザAのスケジュール表S1A、図9(b)は、ユーザ端末50Bの使用者であるユーザBのスケジュール表S1Bである。図9の例では、行動予定番号0として、通常の行

動予定が記録され、行動予定番号1以下で、出張、休暇などの個別予定が記録される。スケジュールの変更がユーザ端末50A、50Bから入力されたときは、スケジュール受付管理部14により、個人スケジュール表81A、81Bが更新される。

【0048】

ルート案内サーバ10は、このような個人スケジュール表81に基づき、カーシェアリング情報DB31と、公共交通機関時刻表DB36を参照して、利用可能な交通機関から考えられ得るすべての移動ルートを計算する(S105)。そして、計算した移動ルートごとに、移動の手段、時間、費用、エコポイントなどを対応付けて、一覧表を作成し(S107)、作成した一覧表を、ユーザ端末50Aに配信する(S109)。

【0049】

図10(a)に、作成された移動ルート一覧表の一例を示す。ルート案内サーバ10は、ユーザAの11月25日の予定2(図9(a)参照)について、勤務地Xから目的地までの移動ルートを2種類算出する。この例では、移動ルート算出の時点で、カーシェアリング情報DB31の中に、ユーザAの移動にマッチするカーシェアリング情報が存在せず、公共交通機関のみを利用した移動ルートが算出されている。算出された移動ルートごとに、交通手段、到着予定時刻、費用、乗り換え回数、エコポイントが表示される。その後、新たなカーシェアリング情報が登録される、交通状況が変化する、あるいはユーザが予定を変更するなどの要因が生じた場合は、以下で説明するように、ルート案内サーバ10は、移動ルートを再算出する。

【0050】

図6は、変更要因、すなわち、ユーザのスケジュール変更、交通状況の変化、スポット的なカーシェアリング情報の登録などが発生した場合の、ルート案内サーバ10とユーザ端末50Aの処理フローを示す図である。図中、点線はデータの流れを示し、実線はユーザ端末50Aとルート案内サーバ10の動作の手順を示す。

【0051】

ユーザ端末50Aは、ルート案内サーバ10から配信された移動ルート一覧、たとえば図10(a)に示す移動ルート一覧を取得し(S201)、所望の移動ルートを選択する(S203)。図示はしないが、選択された移動ルートは、ルート案内サーバ10のユーザ情報DB34に登録され、この移動ルートに対応するエコポイントが、エコポイント管理部12によりエコポイントDB33に記録される。

【0052】

選択した移動ルートの少なくとも一部にカーシェアリングが含まれる場合(S205でYES)は、図7に示すカーシェアリングの処理フローに移行する。図10(a)の例では、移動ルートはカーシェアリングを含まないので(S205でNO)、ユーザAは行動当日に選択した移動ルートにしたがって移動を開始する(S207)。

【0053】

ここで、ユーザAのスケジュールに変更が発生し、選択した移動経路からはずれた場合(S209でYES)、ユーザ端末50Aは、ルート案内サーバ10に現在地を送信し、移動ルートの再計算を要求する(S215)。

【0054】

ルート案内サーバ10は、ユーザの現在地情報を取得し(S301)、取得した現在地情報と、ユーザスケジュール表81、利用可能な移動手段の現況情報から、移動ルートを再計算する(S305)。ルート案内サーバ10は、再作成した一覧表を、メールなどの臨時メッセージとともに、ユーザ端末50Aに送信する。

【0055】

ルート案内サーバ10は、ユーザAの行動日当日に、交通状況観測部21のモニタリングに基づき、軌道交通運行情報71、道路混雑情報72、バス運行情報73を取得する。また、ユーザ端末50Bから入力されるカーシェアリング提供者からのカーシェアリング情報74も、随時取得する(S303)。これらの情報に基づき、ユーザが選択した移動ルートに、事故、天候不順、渋滞などによる遅延、運行停止が発生した場合、あるいは新

規登録のカーシェアリング提供情報が利用可能になった場合に、ルート案内サーバ10は、自動的にユーザの移動ルート一覧表を再計算する(S307)。再作成された一覧表は、メールなどの臨時メッセージとともに、ユーザ端末50Aに送信される(S309)。

【0056】

ユーザ端末50Aは、ルート案内サーバ10からの臨時メッセージの着信により(S211でYES)、現況を反映した新たな移動ルートの一覧を取得する(S217)。

【0057】

一方、ユーザが予定を変更せずに、選択した移動ルートにしたがった場合でも(S209でYES)、交通状況に変化が生じた場合や、カーシェアリング提供情報がスポットで登録された場合は、ユーザ端末50Aはルート案内サーバ10から緊急メッセージを受け取り(S211でYES)、更新された移動ルート一覧を取得する(S217)。

【0058】

ユーザは、移動ルートを変更する必要性(カーシェアリングの場合は、移動ルート変更の可能性)に応じて、再配信された移動ルート一覧表の中から、所望のルートを再度選択する(S219)。再選択で、カーシェアリングが含まれる移動ルートが選択された場合は(S222でYES)、図7の処理に移行する。カーシェアリングが含まれない場合は(S222でNO)、移動を再開し(A)、ユーザ端末50AでステップS209以降の処理が繰り返えられる。ユーザAがスケジュールを変更せず、サーバ10からの臨時メッセージも受信しない場合は(S209およびS211でNO)、最初に選択した移動ルートを利用して目的地に到着する(S213)。

【0059】

図12は、ルート案内サーバからユーザ端末50Aに送られる移動ルート一覧の詳細表示例を示す。図12(a)は、図9(a)に示すユーザAの11月25日の出張予定に対してルート案内サーバ10が提示した移動ルート1の詳細情報である。利用交通手段に加え、各区間での発着時間、乗り換え時間などの詳細情報が表示される。図12(b)は、ユーザAが出張当日に、ルート案内サーバ10に確認したときに表示される移動ルート1の詳細情報である。現時点では、利用交通機関はすべて平常運行されており、移動ルート1が有効であることが確認される。

【0060】

図12(c)は、ユーザAが移動を開始した後に事故が発生し、移動ルート1で予定されていた交通機関が使用できなくなった場合の詳細表示画面である。この場合、ルート案内サーバ10からユーザAのユーザ端末50Aに臨時メッセージが送信される。ユーザAが臨時メッセージの受信に応じてルート案内サーバ10にアクセスすると、図12(c)に示す詳細情報が提示される。詳細情報において、事故が発生した区間が表示され、代替ルートとして、ルート2への変更が促される。ユーザAは、乗換駅への到着前に事故の発生を認識できるだけでなく、代替ルートと、ルート内の各区間での詳細な発着時刻を知ることができる。

【0061】

次に、図7を参照して、ユーザにより選択された移動ルートにカーシェアリングが含まれる場合の処理フローを示す。図7においても、点線はデータの流れを示し、実線は動作手順を示す。

【0062】

まず、カーシェアリング提供者(ドライバ)は、カーシェアリングを提供する機会がある場合に、ユーザ端末50Bから、カーシェアリングの提供をルート案内サーバ10に登録する(S601)。登録の際に、出発地、目的地、到着希望時間などを指定する。登録後、走行を開始する(S602)。

【0063】

ルート案内サーバ10は、カーシェアリングの提供情報を受信し(S501)、カーシェアリング受付処理部18を介して、カーシェアリング提供情報DB31に新規のカーシェアリング情報を登録する。そして、登録されたカーシェアリング情報とユーザの行動と

のマッチングをとる。

【0064】

具体的には、図6のステップS305、S307、S309に示すように、ルート案内サーバ10は、ユーザの現在位置情報を特定し、ユーザの現在位置周辺および目的地周辺の歩行距離範囲と、ドライバの寄り道許容範囲とが重なる場合に、マッチングありと判断する。ドライバの寄り道許容範囲は、目的地への到着希望時間から求められる。ルート案内サーバ10は、マッチングの成立により、提供されたカーシェアリング情報を利用した移動ルートを再算出し、ユーザ端末50Aに提示する。

【0065】

この状態を、図9～11および図13を参照して、具体的に説明する。図9(b)に示すユーザBのスケジュールでは、11月25日の予定(予定番号1)が「半休」になっており、12時に出社すればよい状況である。そこで、ユーザB(ドライバ)は、当日の朝、出発地、目的地、到着希望時間を指定して、カーシェアリングの提供をルート案内サーバ10に登録する。ルート案内サーバ10の移動ルート算出部15は、ユーザBによるカーシェアリングの提供と、図9(a)に示すユーザAの出張予定(予定番号2)がマッチすることを検出し、移動ルートを再算出する。

【0066】

図10(b)は、再算出された移動ルート一覧を示す。図10(b)の例では、バスの利用に代えて、カーシェアリングを用いる新たな移動ルート(No. 2およびNo. 4)が追加されており、ユーザAのユーザ端末50Aに、この再算出された移動ルート一覧が提示される。新たに提示された移動ルートでは、図11に示すように、バス路線(1)に代わって、本厚木駅までユーザBの車でカーシェアリングし、その後、鉄道(2)を利用して出張先のA研究所へ向かうことになる。ユーザBは、破線の矢印で示すように、勤務地Yに向かう途中で、若干迂回してユーザAをピックアップすることになる。

【0067】

このような移動ルートの詳細情報を図13に示す。図13(a)は、図12(a)と同様に、あらかじめ登録されたユーザAの行動予定に基づいて作成された移動ルート1の詳細情報である。その後、ユーザBによるカーシェアリングの提供を受けて、カーシェアリングを含む移動ルート2が提示された場合の詳細情報は、図13(b)に示すとおりである。

【0068】

なお、図10および図13の例では、公共交通機関とカーシェアリングを組み合わせた移動ルートが提示されているが、カーシェアリング提供者の目的地と、ユーザの目的地のマッチングによっては、全区間をカーシェアリングとする移動ルートも提示され得る。

【0069】

図7に戻り、ユーザAは移動ルート一覧の中から、所望の移動ルートを選択する(S401)。カーシェアリングを含むルートが選択されると(S402でYES)、ユーザ端末50Aからルート案内サーバ10に、カーシェアリング要求が送信される(S403)。

【0070】

ルート案内サーバ10は、ユーザ端末50Aから送られてくるカーシェアリング要求を受けて(S502)、ユーザおよびドライバについての合意前情報を作成する。合意前情報は、カーシェアリングに合意するか否かの判断材料として用いられる簡易情報である。合意前情報は、それぞれカーシェアリングの相手方に関する情報を含み、乗合者側のユーザ端末50Aと、ドライバ側のユーザ端末50Bの双方に送信される(S503)。

【0071】

乗合者側のユーザ端末50Aは、ドライバについての合意前情報を取得し(S404)、ドライバ側のユーザ端末50Bは、ユーザについての合意前情報を取得する。合意前情報に基づいて、乗合者およびドライバは、カーシェアリングに合意するか否かを判断する(S405、S604)。

【0072】

図14に、ルート案内サーバ10から送信される合意前情報の一例を示す。図14(a)は、乗合者のユーザ端末50Aの表示画面54Aに表示される合意前のドライバ情報、図14(b)はドライバのユーザ端末50Bの表示画面54Bに表示される合意前ユーザ情報である。

【0073】

合意前情報は、カーシェアリングに合意するか否かを判断するために最小限必要な情報を含む。たとえば、会員番号、性別、年齢などのユーザおよびドライバに関する基本情報と、およそその乗車地点、降車地点、目的地到着時間などである。乗車地点と降車地点は、ルート案内サーバ10により、ユーザの現在位置からの歩行距離範囲と、ドライバの寄り道許容範囲とが重なるエリア内で決定される。

【0074】

合意前情報はまた、有効時間情報91と、ユーザ評価点数情報92を含む。乗合希望者であるユーザと、カーシェアリングを提供するドライバのそれぞれの位置は、動的に変化する。ので、ルート案内サーバ10は、カーシェアリング情報を有効に利用することのできる時間を計算して、合意前情報に含ませる。

【0075】

ユーザ評価点数情報92は、ユーザおよびドライバのこれまでのカーシェアリングの実績を示すものであり、カーシェアリングに合意するか否かを判断する際の基準として用いられる。図14(a)の例では、ドライバはこれまで5人、カーシェアリングの実績があり、同乗者から得られた評価の平均点は、10点中の8.8点である。図14(b)の例では、ユーザはこれまで23人とカーシェアリングの実績があり、同乗者から得られた評価の平均点は10点中の9.2点である。

【0076】

必須ではないが、合意前情報に相手の顔写真などの画像情報を含めてもよい。また、ユーザ情報DB34に格納される履歴情報から、過去に何度同じルートを使用したことがあるかという情報を含めてもよい。

【0077】

図7の処理フローに戻り、ユーザがカーシェアリングに合意する場合(S405でYES)、ユーザ端末50Aからルート案内サーバ10に、合意する旨とともに、自己の生体認証情報を送信する(S406)。合意する旨は、図示はしないが、たとえば合意前情報に含まれる合意ボタンを選択することでサーバ10に通知される。生体認証情報は、たとえばユーザ端末50Aの生体情報センサ51に指を押し付けることで指紋パターンが検出され、ルート案内サーバ10に送信される。同様に、ドライバがカーシェアリングに合意する場合も(S604でYES)、合意する旨と、生体認証情報とをルート案内サーバ10に送信する(S606)。

【0078】

一方、カーシェアリングに合意しない場合は、ユーザおよびドライバは合意しない旨をルート案内サーバ10に送信する(S409、S605)。

【0079】

ルート案内サーバ10は、ユーザ端末50A、50Bから合意の可否と生体認証情報を受信し(S504)、合意が成立するか不成立かを判断する(S505)。そして、ユーザおよびドライバから送られてきた生体認証情報が、ルート案内サーバ10に登録されている生体情報と一致するかどうかを判断することによって、ユーザとドライバの生体認証を行う(S506)。

【0080】

合意が成立し(S505でYES)、生体認証が成功すると(S506でYES)、ルート案内サーバ10は、ユーザおよびドライバのユーザ端末50A、50Bに合意後情報としての詳細情報を送信する(S507)。合意が成立しない場合(S505でNO)、ルート案内サーバ10はユーザ端末50Aおよび50Bに、合意不成立の旨を通知する。

同様に、生体認証が成功しない場合（S506でNO）も、ルート案内サーバ10からユーザ端末50Aおよび50Bに、生体認証失敗の旨を通知する。

【0081】

ユーザ端末50Aおよび50Bは、詳細情報（合意後情報）が受信されたかどうかを判断する（S407、S607）。ユーザ端末50A、50Bで詳細情報（合意後情報）が受信されると（S407およびS607でYES）、ユーザとドライバは、詳細な合意後情報に含まれる正確なピックアップ地点へ移動し（S408、S608）、カーシェアリングを開始する（S609）。なお、図示はしないが、実際にカーシェアリングが開始される時に、ユーザ端末50A、50Bの双方から、カーシェアリングの開始通知をルート案内サーバ10に送信する構成としてもよい。

【0082】

図15は、ルート案内サーバ10から乗合者側のユーザ端末50Aに送信される合意後情報の例を示す。図16は、ルート案内サーバ10からドライバ側のユーザ端末50Bに送信される合意後情報の例を示す。

【0083】

図15に示すように、乗合者側のユーザ端末50Aに表示される合意後情報は、具体的な乗合場所を示すランドマーク情報95、車種情報96、カーシェアリングの提供者であるドライバの会員識別情報97を含む。良好な実施形態では、ドライバは車に会員識別のようなステッカーを貼付している。合意後情報はまた、現在地から乗合ポイントまでの地図情報と、合意前情報に含まれていたドライバに関する基本情報を含む。

【0084】

図16に示すように、ドライバ側のユーザ端末50Bに表示される合意後情報は、具体的な乗合場所を示すランドマーク情報85と、同乗者となるユーザの会員識別情報97を含む。また、現在地から乗合ポイントまでの地図情報と、合意前情報に含まれていた乗合者に関する基本情報を含む。

【0085】

このような詳細な合意後情報を、合意が成立し、生体認証が成功した時点で、ユーザ端末50Aおよび50Bに送信することにより、カーシェアリングの安全性と信頼性が確保される。また、ユーザとドライバが乗合ポイントまで円滑に移動できるように支援することができる。

【0086】

図8は、カーシェアリング終了後のルート案内サーバ10およびユーザ端末50A、50Bの処理フローを示す。

【0087】

カーシェアリングが終了すると（S901）、ユーザおよびドライバの各々は、カーシェアリングの相手についての評価をルート案内サーバ10に送信して、カーシェアリングが完了したことを通知する。すなわち、乗合者であるユーザは、ユーザ端末50Aからドライバについての評価を入力し（S701）、評価結果をルート案内サーバ10に送信して（S702）、移動を再開する。移動再開後の処理は、図6のA（移動再開）に戻る。

【0088】

同様に、ドライバはユーザ端末50Bに乗合者についての評価を入力し（S902）、評価結果をルート案内サーバ10に送信する（S903）。そして、目的地まで移動を再開する（S904、S905）。

【0089】

ルート案内サーバ10は、ユーザおよびドライバから互いの評価結果を受信し（S801）、ユーザ登録データベース34の評価情報を更新する（S802）。この評価情報は、以降のカーシェアリングのマッチングの際に、合意前情報（図14参照）の作成に用いられる。

【0090】

次に、図17および図18を用いて、エコポイントの算出方法を説明する。図17は、

各旅客輸送機関のCO₂ 排出原単位を示すグラフである。ここで、CO₂ の排出原単位は、人1人を1km運ぶのに排出されるCO₂ の量(g)で表わされる。営業用の乗用車が一人当たりのCO₂ 排出原単位が最も高く、414g-CO₂/人・Kmである。次いで、自家用乗用車、自家用軽乗用車の順となっている。

【0091】

各交通手段のCO₂ 排出原単位に、各区間の距離を掛け合わせると、CO₂ 排出量が求まる。

【0092】

CO₂ 排出量[g-CO₂/人]＝距離[Km]×原単位[g-CO₂/Km・人]

カーシェアリングの場合、1人で移動する自家用車に複数人が相乗りすることになるので、

CO₂ 排出量[g-CO₂/人]＝距離/原単位÷同乗人数

となる。

【0093】

たとえば2人でカーシェアすると、自家用乗用車のCO₂ 排出量が1/2になる。3人でカーシェアする場合は1/3になり、CO₂ 排出による環境負荷が低減される。

【0094】

このような計算式に基づいて、ルート案内サーバ10で算出された移動ルートごとに、エコポイントを計算する。図18(a)に示す移動ルートでは、公共交通機関として、バスと、2種類の鉄道を利用する。それぞれの区間で移動距離を掛け合わせると、図18(a)の例では、エコポイント(CO₂ 排出)が1601.6g-CO₂/人となる。

【0095】

一方、図18(b)に示す移動ルートはカーシェアリングを含み、エコポイントは、1432.4g-CO₂/人まで低減される。図18(b)のエコポイントは、乗合者側であるユーザAのエコポイントであるが、同様にして、ドライバ側のエコポイントも、算出される。ドライバの場合も、カーシェアリングを行った区間でCO₂ 値が半分になるので、環境負荷(CO₂ 排出)の低減に寄与することになる。

【0096】

各ユーザ(ドライバを含む)のエコポイントは、たとえば月ごとに集計され、トータルのエコポイントが低いユーザに、システムの使用料金を割り引くなどのサービスを提供する。このようなサービスを前提として、エコポイントと各移動ルートとを対応付けた一覧表示を行うことにより、ユーザが移動ルートを選択する際の環境負荷低減へのモチベーションとすることができる。

【0097】

図19は、図7に示したカーシェアリング利用の場合の処理フローの変形例である。図19の変形例において、カーシェアリングを含むルートが選択されると、ルート案内サーバ10からユーザ端末50A、50Bに合意前情報が送信され(S503)、ユーザおよびドライバが、カーシェアリングの合意を判断する(S404、S603)。ここまでは、図7に示す処理フローと同様であるので、説明を省略する。

【0098】

図7の処理では、カーシェアリングの合意の旨と同時に、生体情報を送信していたが、図19の変形例では、生体情報は、合意後、ユーザとドライバが乗合地点に到着したときに行われる。

【0099】

すなわち、ルート案内サーバ10は、ユーザ端末50Aと50Bから、合意前情報に基づくカーシェアリングへの合意の可否を受信して、カーシェアリングの成立、不成立を確認する(S1504)。そして、確認結果をユーザ端末50Aおよび50Bに送信する(S1505)。このとき、成立通知の場合には、カーシェアリングについての合意後情報(図15、16参照)も送信する。

【0100】

ユーザ端末50Aおよび50Bは、カーシェアリングの成立通知を受信すると(S1407およびS1607で、“1”が成立)、合意後情報を参照して、それぞれ乗合地点へ移動する(S1408、S1608)。乗合者であるユーザがカーシェアリング不成立の通知を受信した場合は(S1407で“2”が成立)、ステップS401に戻って、移動ルートを選択する。ドライバがカーシェアリング不成立の通知を受信した場合は、走行を継続する(S1614)。

【0101】

乗合地点に到着したならば(S1409、S1609)、互いに、自己が所有するユーザ端末50A、50Bに実装されている生体情報センサ51で、相手の生体認証情報を取り込み、ルート案内サーバ10に送信する。

【0102】

すなわち、乗合者であるユーザは、ユーザ端末50Aでドライバの生体認証情報を取り込み(S1410)、これをルート案内サーバ10に送信する(S1411)。一方、ドライバは、ユーザ端末50Bで乗合者の生体認証情報を取り込んで(S1610)、これをルート案内サーバ10に送信する(S1611)。

【0103】

ルート案内サーバ10は、ユーザおよびドライバの生体認証情報をそれぞれ受信し(S1506)、ユーザ情報データベース34に格納されている生体認証情報と照合する(S1507)。生体認証が成功すると(S1508でYES)、ルート案内サーバ10は、ユーザ端末50A、50Bに、照合結果が一致した旨を送信する(S1509)。ユーザ端末50A、50Bで認証確認通知を受信することで、乗合者とドライバの双方は、互いに相手の認証が正常に終了したことを確認する(S1412、S1612)。生体認証の成功後、カーシェアリングを開始する(S1613)。

【0104】

カーシェアリング終了後の処理は、図8に示した処理と同様である。カーシェアリングの開始から終了までの流れは、ルート案内サーバ10のカーシェアリング管理部11によって管理される。カーシェアリングの終了処理が行われない場合は、警告を送信するなど、セキュリティ上の対策を発動するのが望ましい。なお、ルート案内サーバ10とユーザ端末50A、50Bの間で送受信される情報は、全て暗号化した状態で行う。

【0105】

以上説明したように、本発明の移動ルート案内システムによれば、ユーザが個人スケジュール管理として日常的に行っている程度の行動予定の入力だけで、目的地までの移動手段および経路を自動的に把握することができる。

【0106】

利用できる移動手段として、公共交通機関とともにカーシェアリングを利用することで、公共交通機関が充実していない地域でも、移動ルートを柔軟に設定することが可能となる。

【0107】

公共交通機関の利用だけを考えているユーザに対して、カーシェアリング機会を紹介することにより、カーシェアリングという新しい交通システムの普及を促進できる。

【0108】

個人スケジュールのネットワーク上での送受信や、密着性の高い車内における他人同士の相乗りという高度なセキュリティ管理を要求される状況に対して、生体情報を用いた個人認証方法を採用することにより、システムに対する信頼性を確立できる。

【0109】

ルート案内サーバが、交通機関の運行状況をリアルタイムで観測し、必要に応じて移動手段および経路を再設定して、ユーザ端末に送信することにより、電車事故や天候不順による遅延、道路渋滞といった突発的状況を事前に把握するとともに、いち早く代替ルートを案内することができる。

以上の効果に加えて、自家用車を効率的に利用することにより、全体として自家用車利用

の台数を低減することができ、自家用車利用に由来するCO₂の排出量を低減できる。すなわち、有効な地球温暖化防止対策となる。

【0110】

なお、実施形態では、公共交通機関として、バス、鉄道を例にとって説明したが、鉄道、モノレール、新交通システム、LRTなど、任意の公共交通機関を含む。

【0111】

最後に、上記説明に関して、以下の付記を開示する。

(付記1) 移動ルート案内するルート案内サーバと、ネットワークを介して前記ルート案内サーバに接続される第1のユーザ端末と、前記ネットワークを介して前記ルート案内サーバに接続されるカーシェアリング提供者の第2のユーザ端末とを含む移動ルート案内システムであって、前記ルート案内サーバは、

ユーザの行動予定をあらかじめ登録するとともに、前記カーシェアリング提供者からカーシェアリング情報の登録を随時受け付け、

前記ユーザの行動予定、前記カーシェアリング情報、および利用可能な移動手段に基づいて、目的地に至る1以上の移動ルートを算出して前記第1のユーザ端末に提示し、

前記1以上の移動ルートの中から、少なくとも一部にカーシェアリングを含む移動ルートが選択された場合に、当該カーシェアリングについての合意前情報を作成して、前記第1および第2のユーザ端末に送信し、

前記合意前情報に基づいて、前記第1および第2のユーザ端末から前記カーシェアリングの合意が得られた場合に、前記ユーザおよび前記カーシェアリング提供者の認証を行い、前記第1および第2のユーザ端末に、当該カーシェアリングについての合意後情報を送信する

ことを特徴とする移動ルート案内システム。

(付記2) 前記第1および第2のユーザ端末は、生体情報検出部を備え、前記合意の際に生体情報を取り込み、前記ルート案内サーバに対して、検出された生体情報を送信し、前記ルート案内サーバは、当該生体情報に基づいて前記ユーザとカーシェアリング提供者の生体認証を行うことを特徴とする付記1に記載の移動ルート案内システム。

(付記3) 前記ルート案内サーバは、前記ユーザの行動予定の変更、前記カーシェアリング情報の更新、および交通状況の変化の少なくとも1つが発生した場合に、移動ルートを再算出して、再算出した移動ルートを前記第1のユーザ端末に送信することを特徴とする請求項1または2に記載の移動ルート案内システム。

(付記4) 前記ルート案内サーバは、移動ルート算出の際に、各移動ルートをを用いた場合の環境負荷を表わすエコポイントを計算し、前記移動ルートとエコポイントとを対応づけて、前記第1のユーザ端末に提示することを特徴とする付記1～3のいずれかに記載の移動ルート案内システム。

(付記5) 前記ルート案内サーバは、前記カーシェアリングが終了した場合に、前記第1および第2のユーザ端末から、それぞれカーシェアリングの相手方に関する評価結果を受信することを特徴とする付記1～4のいずれかに記載の移動ルート案内システム。

(付記6) 前記合意前情報は、当該合意前情報の有効時間を含むことを特徴とする付記1に記載の移動ルート案内システム。

(付記7) ユーザの行動予定をあらかじめ登録し、管理するスケジュール管理部と、カーシェアリング提供者から提供されるカーシェアリング情報を管理するカーシェアリング管理部と、

前記ユーザの行動予定、前記カーシェアリング情報、および利用可能な移動手段に基づいて、1以上の移動ルートを算出する移動ルート算出部と、

前記ユーザを認証する認証部と、

を備え、前記カーシェアリング管理部は、前記ユーザによって、前記1以上の移動ルートの中から、少なくとも一部にカーシェアリングを含む移動ルートが選択された場合に、当該ユーザと前記カーシェアリング情報の提供者との間の合意の成否を判断する合意前情報を作成し、合意が成立した場合に、前記ユーザおよびカーシェアリング提供者に、前記カ

ーシェアリングについての合意後情報を供給することを特徴とするルート案内サーバ。

(付記8) 前記認証部は、前記カーシェアリングを含む移動ルートが選択された場合に、前記ユーザおよび前記カーシェアリング提供者の生体情報に基づいて生体認証を行うことを特徴とする付記7に記載のルート案内サーバ。

(付記9) 前記移動ルート算出部によって算出された移動ルートごとに、環境負荷を表わすエコポイントを計算するエコポイント管理部をさらに備え、前記移動ルート算出部は、前記算出された移動ルートと前記エコポイントを対応付けた一覧を、前記ユーザに提示することを特徴とする付記7に記載のルート案内サーバ。

(付記10) 前記カーシェアリング管理部は、前記合意が成立し、かつ認証部による前記ユーザおよびカーシェアリング提供者の生体情報の認証が成功した場合に、前記ユーザおよびカーシェアリング提供者に、前記カーシェアリングについての合意後情報を供給することを特徴とする付記8に記載のルート案内サーバ。

(付記11) 前記認証部は、前記ユーザおよびカーシェアリング提供者に合意後情報が供給された後に、前記ユーザおよびカーシェアリング提供者の生体情報の認証を行い、前記カーシェアリング管理部は、前記生体情報の認証が成功した場合に、前記カーシェアリングを許可することを特徴とする付記8に記載のルート案内サーバ。

【図面の簡単な説明】

【0112】

【図1】本発明の一実施形態にかかる移動ルート案内システムの構成図である。

【図2】図1に示すルート案内サーバの詳細構成を示すブロック図である。

【図3】図1のシステムで用いられるユーザ端末の外観構成図である。

【図4】図1のシステムで用いられるユーザ端末の機能構成およびハードウェア構成を示す図である。

【図5】ルート案内サーバによる移動ルート案内処理を示すフローチャートである。

【図6】スケジュール変更要因が発生した場合の、ルート案内サーバとユーザ端末の処理動作を示すフローチャートである。

【図7】ユーザがカーシェアリングを含む移動ルートを選択した場合の、ルート案内サーバとユーザ端末の処理動作を示すフローチャートである。

【図8】カーシェアリング終了後の、ルート案内サーバとユーザ端末の処理動作を示すフローチャートである。

【図9】ルート案内サーバで管理される個人スケジュールの構成例を示す図である。

【図10】ユーザ端末に提示される移動ルート一覧の構成例であり、図10(a)は、マッチするカーシェアリング情報がない場合の移動ルート一覧の例を、図10(b)は、マッチするカーシェアリング情報がある場合の移動ルート一覧の例を示す図である。

【図11】スポットで登録されるカーシェアリング情報による移動ルート変更の一例を示す図である。

【図12】移動ルート一覧の詳細表示例を示す図である。

【図13】移動ルート一覧の詳細表示例を示す図である。

【図14】カーシェアリングを含む移動ルートが選択された場合にルート案内サーバからユーザ端末に送信される合意前情報の一例を示す図である。

【図15】カーシェアリングの合意後にユーザ（乗合者側）に送信される合意後情報の一例である。

【図16】カーシェアリングの合意後にユーザ（ドライバ側）に送信される合意後情報の一例である。

【図17】旅客運送帰還のCO₂排出を示すグラフである。

【図18】ルート案内サーバにおけるエコポイントの計算例を示す図である。

【図19】カーシェアリングの合意がある場合の処理フローの変形例を示す図である。

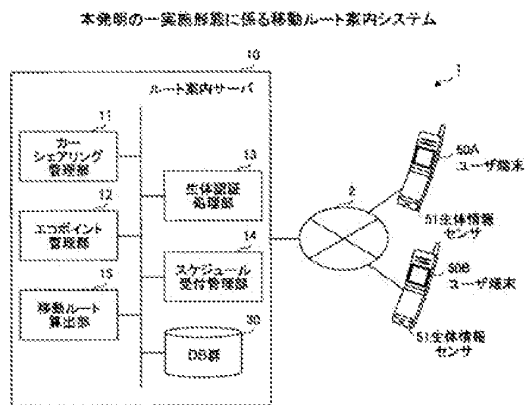
【符号の説明】

【0113】

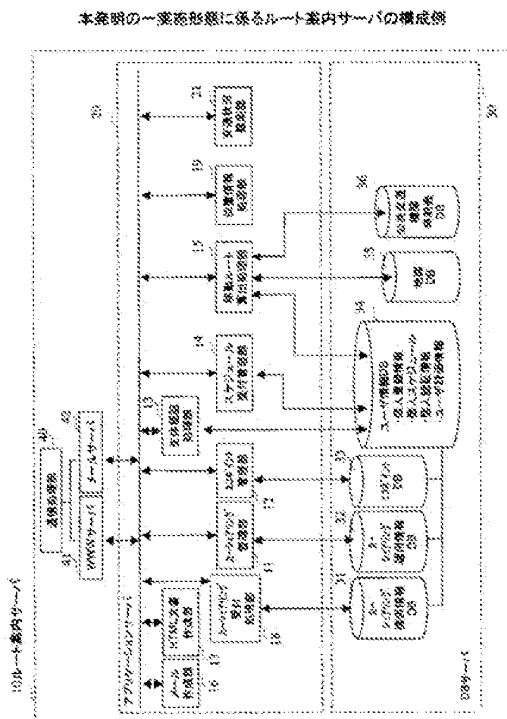
1 移動ルート案内システム

- 2 ネットワーク
 10 ルート案内サーバ
 11 カーシェアリング管理部
 12 エコポイント管理部
 13 生体認証処理部
 14 スケジュール受付部
 15 移動ルート算出部
 16 メール作成部
 17 HTML文書作成部
 18 カーシェアリング受付処理部
 19 位置情報処理部
 21 交通状況観測部
 30 データベース群 (DBサーバ)
 34 ユーザ情報データベース
 40 通信処理部
 50A、50B ユーザ端末
 51 生体情報センサ
 54A、54B 表示画面(ディスプレイ)
 81A、81B 個人スケジュール

【図1】

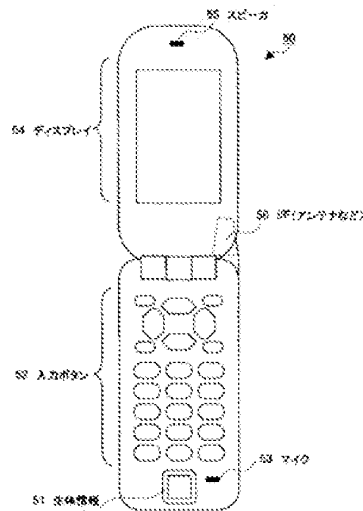


【図2】



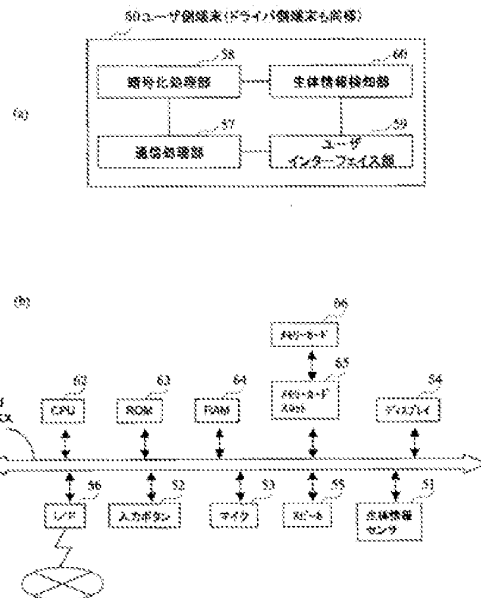
【図3】

ユーザが使用する携帯情報端末の外観の一例



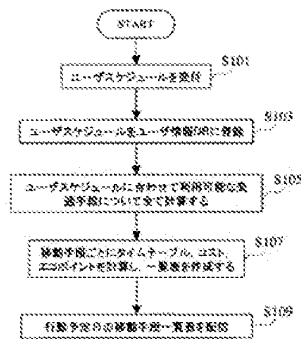
【図4】

ユーザが使用する携帯端末の構成例



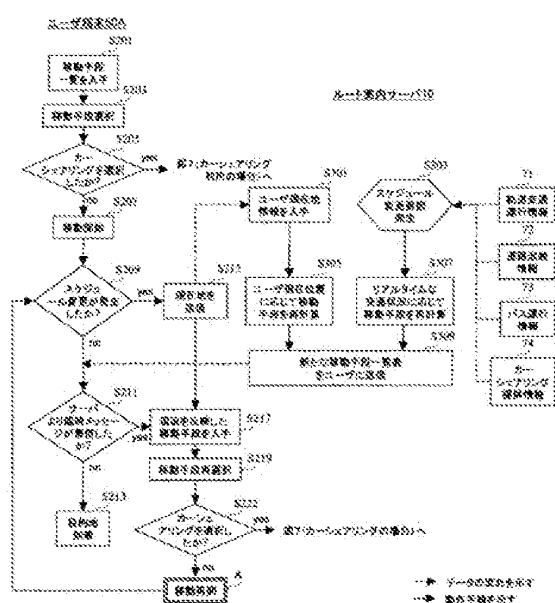
【図5】

ルート案内サービスの処理フロー



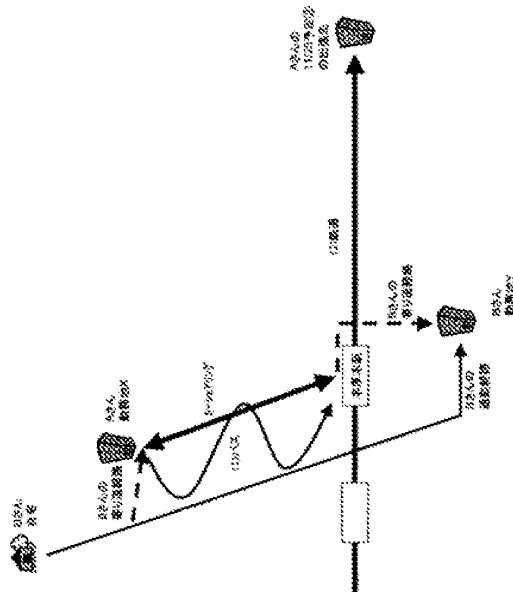
【図6】

移動ルート案内システムの処理フロー

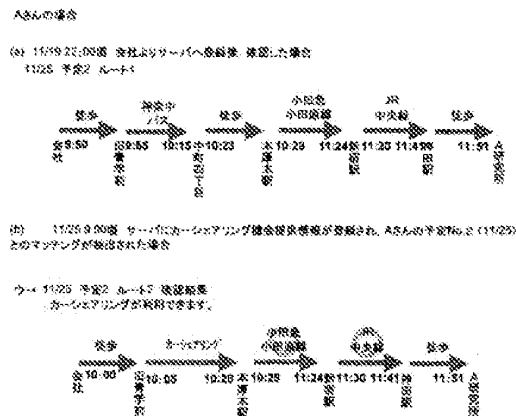


【図11】

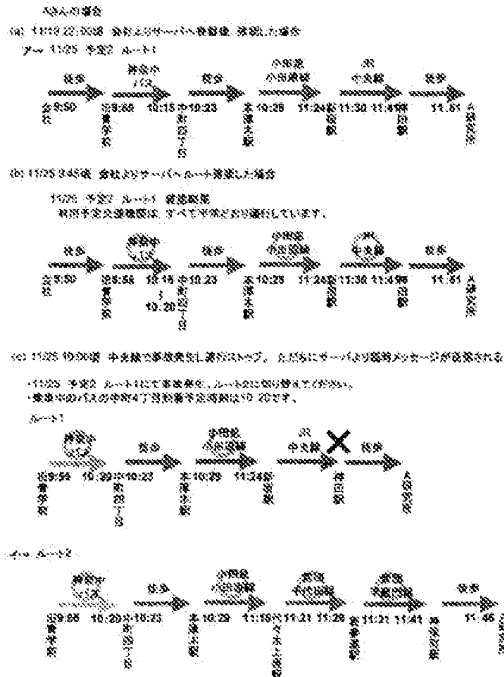
カーシェアリング情報(スポット)による経路変更の一例



【図13】

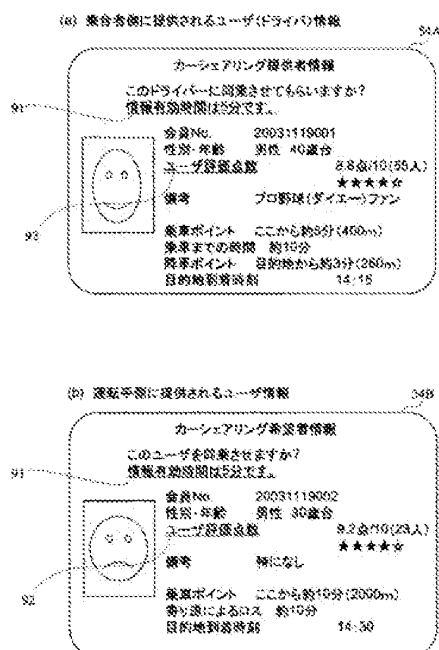
移動ルート一覧表(詳細表示)による実施例
(カーシェアリング機会が提供された場合)

【図12】

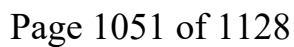
移動ルート一覧表(詳細表示)による実施例
(カーシェアリング機会が提供されない場合)

【図14】

カーシェアリングにおいて合意前に提供されるユーザ情報



カーシェアリング利用の場合の処理フローの変形例



【要約の続き】

【選択図】 図1

JP2005182146A TRANSFER ROUTE GUIDANCE SYSTEM AND ROUTE GUIDANCE SERVER

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] The present invention relates generally to a route guidance system using a network, and more particularly to a movement route guidance system that supports efficient movement and can contribute to a reduction in CO₂ emissions.

[0002] In order to prevent global warming, there is an urgent need to reduce CO₂ emissions in human production activities. In particular, the delay in measures for CO₂ emissions from the transport sector is significant. In terms of hardware, despite efforts to improve the fuel economy of conventional gasoline and diesel vehicles and the development of hybrid and fuel cell vehicles, changes in lifestyles of general users, One of the reasons is that the opportunities to use private cars are increasing due to the improvement of living standards.

[0003] For this reason, in order to suppress the use of private cars and reduce CO₂ emissions, it is proposed to improve the convenience of public transportation such as existing shared buses and trains and promote the shift from private car use. ing. In addition, shared use of private vehicles such as car sharing and car pooling, and the combination of private vehicles and public transportation (park and ride) have been proposed. It is progressing.

[0004] As a method for improving the convenience of public transportation, various services using portable information terminals such as mobile phones have been put into practical use. Services that display train timetables and fares, services that can find the last train to the destination, services that provide the optimal rail transit route to the destination, and services that deliver ride bus operation status to mobile phones is there.

[0005] An example of a route providing service using a portable terminal is a P-mail DX in a DDI pocket. This is a service that allows you to use the station / fare search software "Station Spago" on your mobile phone. When the departure and destination station names are entered, routes, required time, fares, and route information are answered up to a maximum of five routes. It is also possible to automatically find the nearest station of the place where you are calling and use it as your departure point. In addition, a map around the station as a search result can be displayed. Other mobile phone companies offer similar services.

[0006] As another known example, a service that appropriately provides a route by public transportation from a center or a server when a current location and a destination are transmitted from a mobile terminal is known (see, for example, Patent Documents 1 to 3). There is also known a service in which the server searches for and provides the optimum route including the nearest station and the optimum transfer when the current position is transmitted from the GPS portable terminal (see, for example, Patent Document 4).

[0007] On the other hand, there is car sharing as a form of shared use of private cars. Car sharing is widely practiced in North America and Europe. By sharing a car with a private car, the use of the private car can be made more efficient and the number of used cars can be reduced. In Japan, too, experiments for practical application are being actively conducted.

[0008] When carrying out car sharing, there is a problem of how to decide the group to share. As examples that have been put into practical use, a method has been adopted in which neighboring residents form a group during commuting, and a driver and a passenger meet at a predetermined meeting place at a predetermined time.

[0009] A private car sharing service using information network technology has also been proposed. A method of matching the driving schedule information input from the driver side via the network with the desired ride information input from the passenger side, and transmitting the meeting place and time to each terminal (for example, Patent Document 5 and 6), a method in which a user who wishes to share a car searches for the carpool providing information registered in the server and applies to the carpooling provider who meets his / her desired conditions (see, for example, Patent Document 7))It has been known. By using the network and user terminals, the degree of freedom of group formation is greatly increased.

[0010] In the case of car sharing based on matching via a network, anxiety that other people ride together is a big problem. In this regard, Patent Document 5 proposes a system in which both a driver and a passenger request input of authentication information for identity verification through an intermediary server, and reception and confirmation can be performed at each terminal. 特開 2 0 0 2-2 9 8 2 8 4 号公報 特開 2 0 0 3-3 5 5 5 2 号公報 特開 2 0 0 3-3 2 3 4 7 3 号公報 特開 2 0 0 3-0 5 8 6 6 3 号公報 特開 2 0 0 2-1 4 0 3 9 9 号公報 特開 2 0 0 3-2 8 1 2 3 8 号公報 特開 2 0 0 2-1 4 0 4 0 2 号公報

[0011] When using the above-described conventional travel route search service, it is necessary to input necessary information including at least a destination each time a route search is performed. When there is not enough time, this operation is unexpectedly troublesome, and depending on the time required for input, there is a possibility that the user will get over the transportation means that should have been available.

[0012] In addition, a travel route that combines only public transport functions in urban areas where the transport is stretched like a mesh, but an appropriate route is not always provided in urban suburbs and regions. This is because there are cases where the number of operations is scarce and there are many areas that cannot be covered by public transportation, so that only complicated travel routes or unrealistic travel routes can be provided. Although the modal shift of using private cars by improving the convenience of public transportation is originally targeted at private cars in such areas, the conventional technology cannot provide sufficient effects.

[0013] On the other hand, in the car sharing system of the conventional method, no security measure is taken between the driver and the passenger who are others. Patent Document 5 barely includes authentication using an ID number and a password, but uses information that can be copied, and measures against so-called "spoofing" using other person's authentication information are insufficient. "Spoofing" is to impersonate another person and become a driver or a passenger, and illegally use the membership. In car sharing with passengers in highly closed rooms, there is a risk of criminal acts such as robbery, injury and murder if there are insufficient measures to prevent "spoofing".

[0014] Therefore, the present invention provides an efficient travel route by effectively combining public transportation and car sharing as necessary, and performs authentication with a high security effect when the travel route includes car sharing. Accordingly, an object of the present invention is to provide a travel route guidance system that ensures the safety of the user.

[0015] In order to achieve the above object, according to one aspect of the present invention, there is provided a travel route guidance system for providing an appropriate travel route to a user. The moving route guidance system includes a route guidance server, a first user terminal connected to the route guidance server via a network, and a second car sharing provider connected to the route guidance server via the network. User terminal. In this travel route guidance system, the route guidance server registers in advance a personal schedule indicating a user's action schedule and accepts registration of car sharing information from a car sharing provider as needed. Then, based on the user's action schedule, car sharing information, and available travel means, one or more travel routes to the destination planned by the user are calculated and presented to the first user terminal. When a travel route including at least a part of car sharing is selected from the presented travel routes, the route guidance server creates pre-agreement information about the car sharing and uses the pre-agreement information as the first information. And to the second user terminal. When a car sharing agreement is obtained from the first and second user terminals based on the pre-agreement information, the route guidance server authenticates the user and the car sharing provider, and the first and second users Send post-agreement information about car sharing to the terminal.

[0016] The first and second user terminals include a biometric information detection unit, take in biometric information at the time of agreement, and transmit the detected biometric information to a route guidance server. Based on the information, biometric authentication of the user and car sharing provider is performed.

[0017] The route guidance server recalculates the travel route when at least one of a change in the user's action schedule, an update of car sharing information, and a change in traffic occurs, and the recalculated travel route is determined as the first route. Send to user terminal.

[0018] According to such a travel route guidance system, an optimal travel route that is appropriately updated according to the situation is always presented, and the user can access the server from the mobile terminal at any time and check the travel route. .

[0019] Further, when car sharing is included in the travel route, both the driver and the passenger are authenticated using biometric information as the user ID, so that a system with high security that eliminates the possibility of "spoofing" can be realized.

[0020] According to a second aspect of the present invention, there is provided a route guidance server that provides an optimum travel route. The route guidance server includes: (a) a schedule management unit that registers and manages a user's action schedule in advance; (b) a car sharing management unit that manages car sharing information provided by a car sharing provider; The car sharing management unit includes a travel route calculation unit that calculates one or more travel routes based on an action schedule, car sharing information, and available travel means, and (d) an authentication unit that authenticates a user. When the user selects a travel route including at least a part of car sharing from the one or more travel routes, the agreement between the user and the provider of the car sharing information When the agreement is established, the user and the car sharing provider are And it supplies the agreement after information about the serial car sharing.

[0021] Preferably, the route guidance server further includes an eco point management unit that calculates an eco point representing an environmental load created by the movement for each calculated travel route, and the schedule management unit includes the calculated travel route and the eco point. A list in which points are associated is presented to the user.

[0022] According to the travel route guidance system of the present invention, one or more travel routes to a destination are presented by flexibly combining the provision of car sharing and public transportation. The travel route is recalculated according to the provision of car sharing that is registered in spot, the user's schedule change, and the traffic situation change, and the user can access the server at any time to select and confirm the travel route. Can do.

[0023] When a car sharing rig is included in the travel route, the reliability and security of the system can be established by adopting a personal authentication method using biometric information.

[0024] Furthermore, in the case of car sharing, before a certain agreement is obtained between the driver and the passenger, simple information required for the agreement (before the agreement) information) only. On the other hand, after an agreement is obtained, in order to enable smooth car sharing, more detailed information (post-agreement information) such as the vehicle type and color of the vehicle is provided. This avoids unnecessary disclosure of user privacy.

[0025] Embodiments of the present invention will be described below with reference to the drawings.

[0026] FIG. 1 is a schematic configuration diagram of a travel route guidance system according to an embodiment of the present invention. The travel route guidance system 1 includes a route guidance server 10 that guides a travel route to a user, a first user terminal 50A connected to the route guidance server 10 via the network 2, and a route guidance server 10 via the network 2. And the second user terminal 50B of the car sharing provider connected to.

[0027] A user who uses the travel route guidance system 1 registers an action schedule in advance in the route guidance server 10 via the user terminal 50A. The car sharing provider registers car sharing information via the user terminal 50B when car sharing can be provided. The car sharing provider is also a user of the travel route guidance system 1 and can receive guidance on an appropriate travel route from the route guidance server 10. Similarly, the user of the first user terminal 50A can also be a car sharing provider. Here, for convenience of explanation, the user of the first terminal 50A is referred to as "user" or "passenger", and The user of the two-terminal 50B is referred to as "car sharing provider" or "driver".

[0028] The route guidance server 10 includes a car sharing management unit 11, an eco point management unit 12, a biometric authentication processing unit 13, a schedule reception management unit 14, a travel route

calculation unit 15, and a database group 30. The schedule reception management unit 14 receives a user's action schedule from the user terminal 50A in advance and manages it as a personal schedule. The car sharing manager 11 receives and manages the provision of car sharing from the user terminal 50B as needed. The user's action schedule and car sharing information are stored in a predetermined area of the database group 30. The travel route calculation unit 15 calculates one or more travel routes to the destination planned by the user based on the user's action schedule, car sharing information, and public transportation information stored in the database group 30. Transmit to terminal 50A.

[0029] When the user terminal 50A selects a travel route including at least a part of car sharing from the travel routes, the car sharing management unit 11 creates pre-agreement information about the car sharing, and it transmits to the first user terminal 50A and the second user terminal 50B of the car sharing provider. When an agreement based on the pre-agreement information is obtained from the first and second user terminals 50A and 50B, the biometric authentication processing unit 13 performs biometric authentication between the user and the car sharing provider, and the car sharing management unit 11 transmits detailed information (post-agreement information) about car sharing to the first and second user terminals 50A and 50B.

[0030] The eco point management unit 12 calculates an eco point representing an environmental load created by movement for each movement route calculated by the movement route calculation unit 15. In a preferred embodiment, the CO2 emission amount is calculated as an eco point as an environmental load. The lower the eco point, the higher the contribution to reducing environmental impact (CO2 emissions). The travel route calculation unit 15 presents a list in which the calculated travel route and eco points are associated with each other to the user terminal 50A.

[0031] FIG. 2 is a diagram showing a detailed functional configuration of the route guidance server 10 shown in FIG. The route guidance server 10 includes a communication processing unit 40 for communicating with the user terminals 50A and 50B via the network 2 (see FIG. 1), an application server 20, and a database server 30. The communication processing unit 40 includes a www server 41 and a mail server 42. In the configuration example of FIG. 2, the route guidance server 10 includes a plurality of server groups. The www server 41 is a www processing unit, the mail server 42 is a mail processing unit, the application server 20 is a data processing unit, and the database server 30 is a database storage. It is good also as a single server structure by comprising in a part.

[0032] In the application server 20, the position information processing unit 19 obtains the positions of the user terminals 50A and 50B based on the positioning information transmitted from the user terminals 50A and 50B, and grasps the current positions of the user and the car sharing provider. The traffic condition observation unit 21 is connected to an external traffic information providing system via the network 2 and monitors the operation status of public transportation, road traffic conditions, accidents, traffic jams, and the like. Based on the monitoring results, a transportation operation status table is created.

[0033] The schedule reception management unit 14 creates and manages a user schedule table based on registration information of a user schedule (schedule for action) input from the user terminal 50A.

[0034] The car sharing acceptance processing unit 18 creates a driver travel information table based on car sharing information input from a car sharing provider (driver) via the user terminal 50B. The car sharing information includes both fixed information provided from a driver who travels on a predetermined route every day, and spot information provided from a driver whose travel schedule is uncertain. The accepted car sharing information is stored in the car sharing provision information database 31.

[0035] The car sharing management unit 11 manages the operation of the car sharing information, and manages the process from the start to the end when the car sharing is selected. The car sharing operation is stored in the car sharing operation information database 32.

[0036] The travel route calculation unit 15 needs to present a travel route based on the destination and estimated arrival time included in the user's personal schedule, car sharing information, public transportation operation schedule, the user's current location, map information, and the like. The one or more travel routes are calculated at the timing. The calculated list of travel routes is presented to the user terminal 50A via the communication processing unit 40. The travel route calculation unit 15 also receives the travel route when the user schedule change information is received from the user terminal 50A, when a traffic state change is observed by the traffic state observation unit 21, or when the car sharing information is updated. Is recalculated and the updated travel route is presented.

[0037] The eco point management unit 12 calculates an eco point representing the CO₂ emission amount for each travel route calculated by the travel route calculation unit 15, and totals the eco points for each user and driver. The collected eco points are stored and managed in the eco point database 33 in association with each user and driver. In addition, the travel route calculation unit 15 described above associates the travel route and the eco point and presents them to the user terminal 30A.

[0038] The biometric authentication processing unit 13 performs biometric authentication between the user and the car sharing provider (driver) when car sharing is performed.

[0039] The mail creation unit 16 and the HTML document creation unit 17 process the information into a form that can be provided to the user terminals 50A and 50B.

[0040] The user information database 34 included in the database server (database group) 30 records user registration information, user schedule, user authentication information, and user evaluation information. The user registration information is basic user information that is registered when the mobile route guidance system 1 is subscribed. The user schedule is a personal schedule registered in advance by the user, and is stored via the schedule reception management unit 14.

[0041] The user authentication information includes user and driver biometric information. The biological information is collected and registered when the mobile route guidance system 1 is joined. The biometric information is, for example, a fingerprint, an iris, a vein pattern, or the like. The registration of the biometric information may be performed directly from the user terminals 50A and 50B. However, if importance is placed on the security, it is desirable that the registration of the biometric information is performed in parallel with the identification check by interview examination or the like. This is because, during car sharing, biometric authentication is performed with reference to biometric information stored in the user information database 34. The personal authentication information may include a user terminal ID such as a telephone number and an IP address, a password, and the like in addition to the biometric authentication information.

[0042] The user evaluation information is an evaluation with respect to the partner that the car sharing provider and the passenger carry out after the end of the car sharing. This will be described later.

[0043] The map database 35 and the public transport database 36 are referred to when the travel route calculation unit 15 calculates the travel route.

[0044] 3 and 4 are diagrams showing the structure of the user terminal 50 shown in FIG. As illustrated in FIG. 3, the user terminal 50 includes a biological information sensor 51, an input button 52, a microphone 53, a display 54, a speaker 55, and a communication interface 56 such as an antenna. Also, as shown in the functional block of FIG. 4A, the biometric information is detected when the biometric information is transmitted via the network 2 and the biometric information detection unit 60 that reads the data captured by the biometric information sensor 51 as biometric information. An encryption processing unit 58 for encryption, a communication processing unit 57, and a user interface 59 are provided. Further, as shown in FIG. 4B, the user interface such as the input button 52, the microphone 53, the display 53, the speaker 55, the biological information sensor 51, the communication I/F 56, the display 54, the CPU 62, the ROM 63, the RAM 64, and the memory card. Slots 65 and the like are connected to each other via a bus 61. A memory card 66 is inserted into the memory card slot 65.

[0045] In the example shown in FIG. 3, the biometric information sensor 51 captures a fingerprint pattern by a capacitance method, but the present invention is not limited to this example, and the vein pattern is read in a contact state or a non-contact state using near infrared rays. May be performed. Moreover, you may detect a glow pattern and a retina pattern using an imaging function.

[0046] FIG. 5 is a diagram showing a basic processing flow of the route guidance server 10. First, the route guidance server 10 receives a user schedule via the communication processing unit 40 (S101). The user schedule includes date, time, destination, destination address, destination arrival scheduled time, and the like. The user reception management unit 14 creates a personal schedule table based on the input schedule and stores it in the user information database 34 (S103).

[0047] An example of the personal schedule table is shown in FIG. FIG. 9A shows a schedule table 81A of the user A who is the user of the user terminal 50A, and FIG. 9B shows a schedule table 81B of the user B who is the user of the user terminal 50B. In the example of FIG. 9, a normal action schedule is recorded as the action

schedule number 0, and individual schedules such as business trips and vacations are recorded at the action schedule number 1 or less. When the schedule change is input from the user terminals 50A and 50B, the schedule reception management unit 14 updates the personal schedule tables 81A and 81B.

[0048] Based on such a personal schedule table 81, the route guidance server 10 refers to the car sharing information DB 31 and the public transportation timetable DB 36, and calculates all travel routes that can be considered from available transportation facilities (S105). Then, for each calculated travel route, the travel means, time, expense, eco point, etc. are associated with each other to create a list (S107), and the created list is distributed to the user terminal 50A (S109).

[0049] FIG. 10A shows an example of the created travel route list. The route guidance server 10 calculates two types of travel routes from the work location X to the destination for the schedule 2 of the user A on November 25 (see FIG. 9A). In this example, there is no car sharing information that matches the movement of the user A in the car sharing information DB 31 at the time of travel route calculation, and a travel route that uses only public transportation is calculated. For each calculated travel route, transportation means, estimated arrival time, cost, number of transfers, and eco points are displayed. Thereafter, when a new car sharing information is registered, traffic conditions change, or a user changes the schedule, as described below, the route guidance server 10 determines the travel route. Recalculate.

[0050] FIG. 6 is a diagram showing a processing flow of the route guidance server 10 and the user terminal 50A when a change factor, that is, a user's schedule change, a change in traffic situation, registration of spot-like car sharing information, or the like occurs. In the figure, dotted lines indicate the flow of data, and solid lines indicate the operation procedure of the user terminal 50A and the route guidance server 10.

[0051] The user terminal 50A acquires the travel route list distributed from the route guidance server 10, for example, the travel route list shown in FIG. 10A (S201), and selects a desired travel route (S203). Although not shown, the selected travel route is registered in the user information DB 34 of the route guidance server 10, and the eco point corresponding to this travel route is recorded in the eco point DB 33 by the eco point management unit 12.

[0052] When car sharing is included in at least a part of the selected travel route (YES in S205), the process proceeds to the car sharing process flow shown in FIG. In the example of FIG. 10A, since the moving route does not include car sharing (NO in S205), the user A starts moving according to the moving route selected on the day of action (S207).

[0053] Here, when a change occurs in the schedule of the user A and it deviates from the selected travel route (YES in S209), the user terminal 50A transmits the current location to the route guidance server 10 and requests recalculation of the travel route. (S215).

[0054] The route guidance server 10 acquires the current location information of the user (S301), and recalculates the travel route from the acquired current location information, the user schedule table 81, and the current status information of available travel means (S305). The route guidance server 10 transmits the re-created list to the user terminal 50A together with a temporary message such as an email.

[0055] The route guidance server 10 acquires track traffic operation information 71, road congestion information 72, and bus operation information 73 based on the monitoring of the traffic condition observation unit 21 on the day of action of the user A. Moreover, the car sharing information 74 from the car sharing provider input from the user terminal 50B is also acquired as needed (S303). Based on this information, if the travel route selected by the user is delayed due to an accident, bad weather, traffic jams, etc., or if the information on newly provided car sharing is available, route guidance The server 10 automatically recalculates the user travel route list (S307). The re-created list is transmitted to the user terminal 50A together with a temporary message such as an email (S309).

[0056] Upon receiving a temporary message from the route guidance server 10 (YES in S211), the user terminal 50A acquires a list of new travel routes reflecting the current state (S217).

[0057] On the other hand, even if the user follows the selected travel route without changing the schedule (YES in S209), if the traffic situation changes or the car sharing provision information is registered at the spot, the user The terminal 50A receives an emergency message from the route guidance server 10 (YES in S211), and acquires an updated travel route list (S217).

[0058] The user selects a desired route again from the redistributed moving route list according to the necessity of changing the moving route (in the case of car sharing, the possibility of changing the moving route) (S219). If a travel route including car sharing is selected in the reselection (YES in S222), the process proceeds to FIG. 12. If car sharing is not included (NO in S222), the movement is resumed (A), and the processing from step S209 onward is repeated on the user terminal 50A. When the user A does not change the schedule and does not receive the temporary message from the server 10 (NO in S209 and S211), the user A arrives at the destination using the travel route selected first (S213).

[0059] FIG. 12 shows a detailed display example of a travel route list sent from the route guidance server to the user terminal 50A. FIG. 12A shows detailed information of the travel route 1 presented by the route guidance server 10 for the business trip schedule for November 25 of the user A shown in FIG. 9A. In addition to the means of transportation used, detailed information such as departure and arrival times and transfer times in each section is displayed. FIG. 12B shows detailed information of the travel route 1 displayed when the user A confirms with the route guidance server 10 on the day of the business trip. At present, all the transportation systems are operating normally, and it is confirmed that the route 1 is effective.

[0060] FIG. 12C is a detailed display screen when an accident occurs after the user A starts moving, and the transportation planned for the moving route 1 becomes unusable. In this case, a temporary message is transmitted from the route guidance server 10 to the user terminal 50A of the user A. When the user A accesses the route guidance server 10 in response to receiving the temporary message, the detailed information shown in FIG. 12C is presented. In the detailed information, the section where the accident occurred is displayed, and a change to route 2 is prompted as an alternative route. The user A can not only recognize the occurrence of the accident before arrival at the transfer station, but also know the alternative route and detailed arrival and departure times in each section of the route.

[0061] Next, with reference to FIG. 7, a processing flow in the case where car sharing is included in the travel route selected by the user is shown. Also in FIG. 7, the dotted line indicates the flow of data, and the solid line indicates the operation procedure.

[0062] First, when there is an opportunity to provide car sharing, the car sharing provider (driver) registers the provision of car sharing with the route guidance server 10 from the user terminal 50B (S601). When registering, specify the departure point, destination, and desired arrival time. After registration, traveling is started (S602).

[0063] The route guidance server 10 receives the provision information of car sharing (S501), and registers new car sharing information in the car sharing provision information DB 31 via the car sharing acceptance processing unit 18. The registered car sharing information is matched with the user's behavior.

[0064] Specifically, as shown in steps S305, S307, and S309 in FIG. 6, the route guidance server 10 identifies the current position information of the user, the walking distance range around the current position of the user and the destination, the driver B it is determined that there is matching when the allowable detour range overlaps. The allowable range for the driver's detour is obtained from the desired arrival time at the destination. The route guidance server 10 recalculates the travel route using the provided car sharing information when matching is established, and presents it to the user terminal 50A.

[0065] This state will be specifically described with reference to FIGS. In the schedule of the user B shown in FIG. 9B, the schedule for November 25 (schedule number 1) is "half holiday", and it is sufficient to go to work at 12:00. Accordingly, the user B (driver) registers the provision of car sharing in the route guidance server 10 by designating the departure place, the destination, and the desired arrival time on the morning of the day. The travel route calculation unit 15 of the route guidance server 10 detects that the provision of car sharing by the user B matches the business trip plan of the user A (schedule number 2) shown in FIG. calculate.

[0066] FIG. 10B shows a recalculated travel route list. In the example of FIG. 10B, new travel routes (No. 2 and No. 4) using car sharing are added instead of using the bus, and this recalculation is performed on the user terminal 50A of the user A. A list of travel routes is presented. In the newly presented travel route, as shown in FIG. 11, instead of the bus route (1), car sharing is carried out with the user B's car to Hon-Atsugi Station, and then the business trip destination is used using the railroad (2). I will head for A Laboratory. As indicated by the dashed arrow, user B picks up user A with a slight detour on the way to work location Y.

[0067] Detailed information of such a travel route is shown in FIG. FIG. 13A shows detailed information of the

travel route 1 created based on the action schedule of the user A registered in advance, as in FIG. Subsequently, detailed information when the travel route 2 including the car sharing is presented in response to the provision of the car sharing by the user B is as shown in FIG.

[0068] In the examples of FIGS. 10 and 13, a travel route combining public transportation and car sharing is presented. However, depending on the match between the destination of the car sharing provider and the destination of the user, the entire route may be A travel route for car sharing can also be presented.

[0069] Returning to FIG. 7, the user A selects a desired travel route from the travel route list (S401). When a route including car sharing is selected (YES in S402), a car sharing request is transmitted from the user terminal 50A to the route guidance server 10 (S403).

[0070] In response to the car sharing request sent from the user terminal 50A (S502), the route guidance server 10 creates pre-agreement information about the user and the driver. The pre-agreement information is simple information used as a material for determining whether or not to agree to car sharing. The pre-agreement information includes information related to the car sharing partner and is transmitted to both the user terminal 50A on the passenger side and the user terminal 50B on the driver side (S503).

[0071] The user terminal 50A on the passenger side acquires pre-agreement information about the driver (S404), and the user terminal 50B on the driver side acquires pre-agreement information about the user. Based on the pre-agreement information, the rider and the driver determine whether or not they agree to car sharing (S405, S604).

[0072] FIG. 14 shows an example of pre-agreement information transmitted from the route guidance server 10. FIG. 14A shows driver information before agreement displayed on the display screen 54A of the passenger user terminal 50A, and FIG. 14B shows user information before agreement displayed on the display screen 54B of the user terminal 50B of the driver. It is.

[0073] The pre-agreement information includes information necessary for determining whether or not to agree to car sharing. For example, basic information about the user and driver such as membership number, gender, and age, approximate boarding point, getting off point, destination arrival time, and the like. The boarding point and the getting-off point are determined by the route guidance server 10 in an area where the walking distance range from the current position of the user overlaps with the allowable range for the driver's sidewalk.

[0074] The pre-agreement information also includes valid time information 91 and user evaluation score information 92. Since each position of the user who wants to ride and the driver who provides car sharing dynamically changes, the route guidance server 10 calculates the time when the car sharing information can be used effectively. Include in pre-agreement information.

[0075] The user evaluation score information 92 indicates the past car sharing performance of the user and the driver, and is used as a reference when determining whether or not to agree to car sharing. In the example of FIG. 14A, the driver has a record of car sharing with 55 people so far, and the average score obtained from the passengers is 8.8 points out of 10. In the example of FIG. 14 (b), the user has a track record of car sharing with 23 people so far, and the average score obtained from the passengers is 9.2 out of 10.

[0076] Although not essential, image information such as a face photo of the other party may be included in the pre-agreement information. In addition, the history information stored in the user information DB 34 may include information indicating how many times the same route has been used in the past.

[0077] Returning to the processing flow of FIG. 7, when the user agrees to car sharing (YES in S405), the user terminal 50A transmits the biometric authentication information to the route guidance server 10 together with the agreement (S406). Although not shown, the agreement is notified to the server 10 by selecting an agreement button included in the pre-agreement information, for example. The biometric authentication information is transmitted to the route guidance server 10 by detecting a fingerprint pattern by pressing a finger against the biometric information sensor 51 of the user terminal 50A, for example. Similarly, when the driver agrees to car sharing (YES in S604), the driver agrees and transmits biometric authentication information to the route guidance server 10 (S606).

[0078] On the other hand, if the car sharing is not agreed, the user and the driver transmit the fact that they do not agree to the route guidance server 10 (S409, S605).

[0079] The route guidance server 10 receives approval / disapproval and biometric information from the user terminals 50A and 50B (S504), and determines whether the agreement is established or not (S505). Then, by determining whether the biometric authentication information sent from the user and the driver matches the biometric information registered in the route guidance server 10, biometric authentication between the user and the driver is performed (S506).

[0080] When an agreement is established (YES in S505) and biometric authentication is successful (YES in S506), the route guidance server 10 transmits detailed information as post-agreement information to the user terminals 50A and 50B of the user and the driver (S507). When the agreement is not established (NO in S505), the route guidance server 10 notifies the user terminals 50A and 50B that the agreement is not established. Similarly, when biometric authentication is not successful (NO in S506), the route guidance server 10 notifies the user terminals 50A and 50B that biometric authentication has failed.

[0081] The user terminals 50A and 50B determine whether or not detailed information (post-agreement information) has been received (S407, S607). When the detailed information (post-agreement information) is received by the user terminals 50A and 50B (YES in S407 and S607), the user and the driver move to an accurate pickup point included in the detailed post-agreement information (S408, S608).), And starts car sharing (S609). Although not shown in the figure, when car sharing is actually started, a car sharing start notification may be transmitted to the route guidance server 10 from both of the user terminals 50A and 50B.

[0082] FIG. 15 shows an example of post-agreement information transmitted from the route guidance server 10 to the user terminal 50A on the passenger side. FIG. 16 shows an example of post-agreement information transmitted from the route guidance server 10 to the driver-side user terminal 50B.

[0083] As shown in FIG. 15, the post-agreement information displayed on the user terminal 50 (/ b) A on the passenger side is landmark information 95 indicating a specific meeting place, vehicle type information 96, and member identification of a driver who is a car sharing provider Information 97 is included. In a preferred embodiment, the driver puts a sticker on the car to identify the member. The post-agreement information also includes map information from the current location to the riding point and basic information about the driver that was included in the pre-agreement information.

[0084] As shown in FIG. 16, the post-agreement information displayed on the user terminal 50B on the driver side includes landmark information 85 that indicates a specific boarding location and member identification information 97 of the user who is the passenger. Moreover, the map information from the present location to the riding point and the basic information about the rider included in the pre-agreement information are included.

[0085] By sending such detailed post-agreement information to the user terminals 50A and 50B when the agreement is established and biometric authentication is successful, the safety and reliability of car sharing are ensured. Moreover, it can assist so that a user and a driver can move to a riding point smoothly.

[0086] FIG. 8 shows a processing flow of the route guidance server 10 and the user terminals 50A, 50B after the end of car sharing.

[0087] When the car sharing is completed (S901), each of the user and the driver transmits an evaluation of the car sharing partner to the route guidance server 10 to notify the completion of the car sharing. That is, the user who is a passenger inputs evaluation about the driver from the user terminal 50A (S701), transmits the evaluation result to the route guidance server 10 (S702), and resumes movement. The processing after resuming movement returns to A (resuming movement) in FIG.

[0088] Similarly, the driver inputs the evaluation about the passenger to the user terminal 50B (S902), and transmits the evaluation result to the route guidance server 10 (S903). Then, the movement is resumed to the destination (S904, S905).

[0089] The route guidance server 10 receives mutual evaluation results from the user and the driver (S801), and updates the evaluation information in the user registration database 34 (S802). This evaluation information is used to create pre-agreement information (see FIG. 14) during subsequent car sharing matching.

[0090] Next, an eco point calculation method will be described with reference to FIGS. 17 and 18. FIG. 17 is a graph showing the CO2 emission intensity of each passenger transport. Here, the CO2 emission intensity is

represented by the amount (g) of CO₂ emitted to carry one person by 1 km. Commercial passenger cars have the highest CO₂ emission intensity per person, which is 414 g-CO₂ / person · Km. Next, private passenger cars, followed by private mini cars.

[0091] Multiply the CO₂ emission basic unit of each means of transportation by the distance of each section to obtain the CO₂ emission amount.

[0092] When CO₂ emissions [g-CO₂ / person] = distance [Km] x basic unit [g-CO₂ / Km / person] car sharing, multiple people will ride in a private car that moves by one person. CO₂ emissions [g-CO₂ / person] = distance x basic unit ÷ passengers.

[0093] For example, if two people share a car, the CO₂ emission of a private passenger car is halved. When three people share a car, it becomes 1/3, reducing the environmental impact of CO₂ emissions.

[0094] Based on such a calculation formula, an eco point is calculated for each travel route calculated by the route guidance server 10. In the travel route shown in FIG. 18A, a bus and two types of railways are used as public transportation. When the travel distance is multiplied in each section, the eco point (CO₂ emission) is 1601.6 g-CO₂ / person in the example of FIG.

[0095] On the other hand, the travel route shown in FIG. 18B includes car sharing, and the eco point is reduced to 1432.4 g-CO₂ / person. The eco point in FIG. 18B is the eco point of the user A on the passenger side, but the eco point on the driver side is calculated in the same manner. In the case of the driver, the CO₂ value is halved in the section where the car sharing is performed, which contributes to reduction of environmental load (CO₂ emission).

[0096] The eco-points of each user (including the driver) are aggregated every month, for example, and a service such as discounting the system usage fee is provided to a user with a low total eco-point. On the premise of such a service, by displaying a list in which eco points are associated with each travel route, it is possible to motivate the environment load reduction when the user selects a travel route.

[0097] FIG. 19 is a modification of the processing flow in the case of using the car sharing shown in FIG. In the modification of FIG. 19, when a route including car sharing is selected, pre-agreement information is transmitted from the route guidance server 10 to the user terminals 50A and 50B (S503), and the user and the driver determine an agreement for car sharing. (S404, S603). The processing so far is the same as the processing flow shown in FIG.

[0098] In the process of FIG. 7, the biometric information is transmitted simultaneously with the agreement of the car sharing. However, in the modification of FIG. 19, the biometric information is transmitted when the user and the driver arrive at the boarding point after the agreement. Is called.

[0099] That is, the route guidance server 10 receives from the user terminals 50A and 50B the approval / disapproval of the car sharing based on the pre-agreement information, and confirms the establishment / non-establishment of the car sharing (S1504). Then, the confirmation result is transmitted to the user terminals 50A and 50B (S1505). At this time, in the case of establishment notification, post-agreement information on car sharing (see FIGS. 15 and 16) is also transmitted.

[0100] When the user terminals 50A and 50B receive the notification of the establishment of car sharing ("1" is established in S1407 and S1607), the user terminals 50A and 50B refer to the post-agreement information and move to the intersection (S1408, S1608), respectively. When the user who is a passenger receives the notification that the car sharing is not established ("2" is established in S1407), the process returns to step S401 to select a moving route. If the driver receives a notification that car sharing is not established, the vehicle continues to travel (S1614).

[0101] If they have arrived at the boarding point (S1409, S1609), the biometric information sensors 51 installed in the user terminals 50A and 50B owned by the self each other capture the biometric authentication information of the other party and transmit it to the route guidance server 10. .

[0102] That is, the user who is a passenger takes in the biometric information of the driver at the user terminal 50A (S1410) and transmits it to the route guidance server 10 (S1411). On the other hand, the driver captures the biometric information of the passenger at the user terminal 50B (S1610) and transmits it to the route guidance

server 10 (S1611).

[0103] The route guidance server 10 receives the biometric authentication information of the user and the driver (S1506), and collates with the biometric authentication information stored in the user information database 34 (S1507). If the biometric authentication is successful (YES in S1508), the route guidance server 10 transmits to the user terminals 50A and 50B that the matching result is matched (S1509). By receiving the authentication confirmation notification at the user terminals 50A, 50B, both the passenger and the driver confirm that the other party's authentication has been completed successfully (S1412, S1612). After successful biometric authentication, car sharing is started (S1613).

[0104] The process after the end of car sharing is the same as the process shown in FIG. The flow from the start to the end of car sharing is managed by the car sharing management unit 11 of the route guidance server 10. When the car sharing end process is not performed, it is desirable to activate security measures such as sending a warning. All information transmitted and received between the route guidance server 10 and the user terminals 50A and 50B is encrypted.

[0105] As described above, according to the moving route guidance system of the present invention, the moving means and the route to the destination are automatically set only by inputting the action schedule to the extent that the user performs daily as personal schedule management. I can grasp it.

[0106] By using car sharing together with public transportation as an available transportation means, it is possible to flexibly set a travel route even in areas where public transportation is not sufficient.

[0107] By introducing car sharing opportunities to users who are only considering the use of public transportation, the spread of a new transportation system called car sharing can be promoted.

[0108] By adopting a personal authentication method using biometric information for situations where high-level security management is required, such as sending and receiving personal schedules over a network and sharing other people in a car with a high closed room, Reliability can be established.

[0109] The route guidance server observes the operation status of the transportation system in real time, resets the transportation means and route as necessary, and sends it to the user terminal. As well as grasping the target situation in advance, it is possible to quickly guide alternative routes. In addition to the above effects, by efficiently using private cars, the number of private cars used can be reduced as a whole, and the amount of CO₂ emitted from private cars can be reduced. In other words, it is an effective measure to prevent global warming.

[0110] In the embodiment, buses and railways have been described as examples of public transportation, but any public transportation such as railways, monorails, new transportation systems, and LRTs is included.

[0111] Finally, the following notes are disclosed regarding the above description. (Supplementary note 1) A route guidance server for guiding a travel route, a first user terminal connected to the route guidance server via a network, and a car sharing provider connected to the route guidance server via the network A route guidance system including a second user terminal, wherein the route guidance server registers a user's action schedule in advance, accepts registration of car sharing information from the car sharing provider as needed, and One or more travel routes to the destination are calculated and presented to the first user terminal based on the action schedule, the car sharing information, and the available travel means. If a travel route that includes at least a part of car sharing is selected from The pre-agreement information about the alling is created and transmitted to the first and second user terminals, and the car sharing agreement is obtained from the first and second user terminals based on the pre-agreement information. A travel route guidance system that authenticates the user and the car sharing provider and transmits post-agreement information about the car sharing to the first and second user terminals. (Supplementary Note 2) The first and second user terminals include a biological information detection unit, capture biological information at the time of the agreement, and transmit the detected biological information to the route guidance server. The route guidance system according to appendix 1, wherein the route guidance server performs biometric authentication between the user and the car sharing provider based on the biometric information. (Supplementary Note 3) The route guidance server recalculates and recalculates the travel route when at least one of the change of the user's action schedule, the update of the car sharing information, and the change of the traffic situation occurs. The travel route guidance system according to claim 1 or 2, wherein a travel route is transmitted to the first user terminal. (Additional remark 4) The said route guidance server calculates the eco point showing the environmental load at the time of using each movement route at the time of movement route calculation, matches the said movement route and an eco point,

said 1st The travel route guidance system according to any one of appendices 1 to 3, wherein the travel route guidance system is presented to a user terminal. (Additional remark 5) When the said car sharing is complete | finished, the said route guidance server receives the evaluation result regarding the other party of a car sharing from the said 1st and 2nd user terminal, respectively. The additional remarks 1-4 characterized by the above-mentioned. The travel route guidance system according to any one of the above. (Supplementary note 6) The travel route guidance system according to supplementary note 1, wherein the pre-agreement information includes a valid time of the pre-agreement information. (Additional remark 7) The schedule management part which registers and manages a user's action plan beforehand, the car sharing management part which manages the car sharing information provided from a car sharing provider, the said user's action schedule, the said car sharing information And a travel route calculation unit that calculates one or more travel routes based on available travel means, and an authentication unit that authenticates the user. Create pre-agreement information that determines whether or not an agreement has been established between the user and the provider of the car sharing information when a travel route that includes car sharing at least in part is selected from the above travel routes If an agreement is reached, the user and the car sharing provider are notified of the car sharing. Route guidance server, characterized in that the supply agreement after information about. (Supplementary note 8) The supplementary note 7, wherein the authentication unit performs biometric authentication based on biometric information of the user and the car sharing provider when a travel route including the car sharing is selected. Route guidance server. (Supplementary Note 9) For each travel route calculated by the travel route calculation unit, the travel route calculation unit further includes an eco point management unit that calculates an eco point representing an environmental load, and the travel route calculation unit includes the calculated travel route and the calculated travel route. The route guidance server according to appendix 7, wherein a list in which eco points are associated is presented to the user. (Supplementary Note 10) When the agreement is established and the authentication of the biometric information of the user and the car sharing provider is successful by the authentication unit, the car sharing management unit informs the user and the car sharing provider of the car sharing The route guidance server according to appendix 8, wherein post-agreement information about sharing is supplied. (Additional remark 11) The said authentication part authenticates the biometric information of the said user and a car sharing provider after the information after an agreement is supplied to the said user and a car sharing provider. The said car sharing management part The route guidance server according to appendix 8, wherein the car sharing is permitted when the information authentication is successful.

[0112] It is a block diagram of the movement route guidance system concerning one Embodiment of this invention. It is a block diagram which shows the detailed structure of the route guidance server shown in FIG. It is an external appearance block diagram of the user terminal used with the system of FIG. It is a figure which shows the function structure and hardware constitutions of a user terminal used with the system of FIG. It is a flowchart which shows the movement route guidance process by a route guidance server. It is a flowchart which shows the processing operation of a route guidance server and a user terminal when a schedule change factor generate | occur | produces. It is a flowchart which shows the processing operation of a route guidance server and a user terminal when a user selects the movement route containing a car sharing. It is a flowchart which shows the processing operation of a route guidance server and a user terminal after completion | finish of car sharing. It is a figure which shows the structural example of the personal schedule managed by a route guidance server. FIG. 10A is a configuration example of a travel route list presented to the user terminal, FIG. 10A shows an example of a travel route list when there is no matching car sharing information, and FIG. 10B shows matching car sharing information. It is a figure which shows the example of a movement route list when there exists. It is a figure which shows an example of the movement route change by the car sharing information registered by a spot. It is a figure which shows the example of a detailed display of a movement route list. It is a figure which shows the example of a detailed display of a movement route list. It is a figure which shows an example of the information before agreement transmitted to a user terminal from a route guidance server, when the movement route containing car sharing is selected. It is an example of the information after agreement transmitted to a user (passenger side) after agreement of car sharing. It is an example of the information after agreement transmitted to a user (driver side) after agreement of car sharing. It is a graph which shows CO2 discharge | release of a passenger transportation return. It is a figure which shows the example of calculation of the eco point in a route guidance server. It is a figure which shows the modification of a processing flow when there exists an agreement of car sharing.

Explanation of symbols

[0113] DESCRIPTION OF SYMBOLS 1 Travel route guidance system 2 Network 10 Route guidance server 11 Car sharing management part 12 Eco point management part 13 Biometric authentication process part 14

Schedule acceptance part 15 Travel route calculation part 16 Mail preparation part 17 HTML document creation
part 18 Car sharing acceptance process part 19 position information processing unit 21 traffic condition
observation unit 30 database group (DB server) 34 user information database 40 communication processing unit
50A, 50B user terminal 51 biological information sensor 54A, 54B display screen (display) 81A, 81B personal
schedule



Espacenet

Bibliographic data: JP2002367086 (A) — 2002-12-20

SYSTEM AND METHOD FOR ARRANGING TAXI AND PROGRAM FOR MAKING COMPUTER PERFORM THE METHOD

Inventor(s): KIMURA CHIEKO; SHIRAI YASUYUKI; IMANISHI MASAOKI ±
(KIMURA CHIEKO, ; SHIRAI YASUYUKI, ; IMANISHI MASAOKI)

Applicant(s): FFC KK ± (FFC:KK)

Classification: - international: G06Q10/00; G06Q50/00; G06Q50/30; G08G1/123;
(IPC1-7): G06F17/60; G08G1/123
- cooperative:

Application number: JP20010171684 20010606

Priority number(s): JP20010171684 20010606

Abstract of JP2002367086 (A)

PROBLEM TO BE SOLVED: To arrange a taxi a user likes and also to allow the user to smoothly specify and get in the arrange taxi. **SOLUTION:** The user displays a menu for requesting a taxi arrangement on the screen of his/her portable terminal, inputs his/her name, the number of passengers, etc., and in addition, specifies the type (small size/large size), model, color, company, etc., of a desired taxi. A service center (vehicle allocation center) receives these items and the current location measured by a GPS(global positioning system) of the terminal, and notifies the user of the scheduled arrival time of a taxi allocated to the user and the features of the vehicle body such as a color in a document. Thus, the user can easily specify the taxi that has been arranged by the user himself/herself. Further, since the document is quoted to user comment information (card) that the user sends to the center, it is possible to easily specify when and about which taxi a comment and a request are made in the user comment information.

【特許請求の範囲】

【請求項1】 携帯端末からの手配要求をホストコンピュータで受信してタクシーの手配をおこなうタクシー手配システムにおいて、
前記携帯端末は、
当該端末の位置を測定する位置測定手段と、
タクシーの満たすべき条件を指定する条件指定手段と、
前記位置測定手段によって測定された位置および前記条件指定手段によって指定された条件を送信する手配要求送信手段と、
を備え、
前記ホストコンピュータは、
前記手配要求送信手段によって送信されてきた位置および条件を受信する手配要求受信手段と、
前記手配要求受信手段によって受信された条件にしたがって選定されたタクシーの特徴および／または到着予定時間を送信する手配連絡送信手段と、
を備えたことを特徴とするタクシー手配システム。

【請求項2】 前記条件指定手段によって指定される条件は、タクシーの種類、車種、色、会社、喫煙の可／不可、あるいは運転手の性別であることを特徴とする前記請求項1に記載のタクシー手配システム。

【請求項3】 前記携帯端末は、さらに、前記手配連絡送信手段によって送信されてきたタクシーの特徴および／または到着予定時間と対応づけて利用者の意見や要望などの利用者感想情報を送信する利用者感想情報送信手段を備えたことを特徴とする前記請求項1または請求項2に記載のタクシー手配システム。

【請求項4】 携帯端末からの手配要求をホストコンピュータで受信してタクシーの手配をおこなうタクシー手配方法において、
前記携帯端末で、当該端末の位置を測定する位置測定工程と、
タクシーの満たすべき条件を指定する条件指定工程と、
前記位置測定工程で測定された位置および前記条件指定工程で指定された条件を送信する手配要求送信工程と、
前記ホストコンピュータで、前記手配要求送信工程で送信された位置および条件を受信する手配要求受信工程と、
前記手配要求受信工程で受信された条件にしたがって選定されたタクシーの特徴および／または到着予定時間を送信する手配連絡送信工程と、
を含んだことを特徴とするタクシー手配方法。

【請求項5】 前記条件指定工程で指定される条件は、タクシーの種類、車種、色、会社、喫煙の可／不可、あるいは運転手の性別であることを特徴とする前記請求項4に記載のタクシー手配方法。

【請求項6】 前記携帯端末で、さらに、前記手配連絡送信工程で送信されたタクシーの特徴および／または到着予定時間と対応づけて利用者の意見や要望などの利用

者感想情報を送信する利用者感想情報送信工程を含んだことを特徴とする前記請求項4または請求項5に記載のタクシー手配方法。

【請求項7】 前記請求項4～請求項6のいずれか一つに記載された方法をコンピュータに実行させるプログラム。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】この発明は、携帯端末からの手配要求をホストコンピュータで受信してタクシーの手配をおこなうタクシー手配システム、タクシー手配方法およびその方法をコンピュータに実行させるプログラムに関する。

【0002】

【従来の技術】タクシーを利用したいがうまく空車のタクシーを拾うことができない場合、利用者はタクシー会社やサービスセンターに電話をかけ、タクシーの手配を申し込む。サービスセンターとは、たとえば複数のタクシー会社の配車業務を一括して代行する配車センターなどである。

【0003】ここで、携帯電話機（あるいはPHS）を使用してタクシーの手配を申し込む場合、携帯電話機（あるいはPHS）が備えている位置情報通知機能や電話番号通知機能を用いて手配位置と利用者の連絡先をサービスセンターへ容易に伝えることができるものがある。

【0004】また、サービスセンターは、あらかじめタクシー会社と契約を結び、カーナビゲーション機能、空車手配機能、決済機能を持たせることができ、また、契約タクシー会社のタクシーには現在位置に関する情報を受信発信するGPSアンテナとPHSなどの携帯端末を車両に設定し、空車のサインと連動してタクシーの位置と状況をサービスセンターに識別させることができるものがある。

【0005】また、タクシー代金についてカード決済可能な装置を搭載しているタクシーもあり、さらに、上記カード決済可能な装置を搭載していないタクシーであっても、携帯電話機などによって、サービスセンターへ電話することによって決済をおこなうことができるものもある。

【0006】

【発明が解決しようとする課題】しかしながら、上記従来技術においては、車酔いしやすいので煙草のにおいのする車は避けたい、夜間で女性一人のため運転手も女性の方がよい、などの要望が利用者にあっても、どのタクシーが回されてくるかはもっぱら配車元の都合によって、利用者は関与できないのが通常であった。

【0007】さらに、出先などで利用者が自分のいる場所をうまく説明できない場合、タクシーが見当違いの場所に配車されてしまうことがある。また、ごく近い場所

でお互いに気付かず待ってしまうこともあり、その事実が利用者が再度配車元に問い合わせるまで分からない。また、同じ場所でタクシーを待つ利用者が多い場合、利用者は自分の手配したタクシーを、タクシーの運転手は当該利用者を、それぞれ特定するのに手間や時間を要してしまうという問題があった。これらの問題は特に夜間や雨天時に顕著である。

【0008】また、タクシー利用者の意見や苦情などの利用者の声をタクシー会社が的確に把握できないため、よりよいサービスの向上を十分に図ることができなかつたという問題もあった。

【0009】この発明は、上記従来技術による問題を解決するため、利用者が好みのタクシーを手配できるとともに、手配されたタクシーをスムーズに特定して乗車することが可能なタクシー手配システム、タクシー手配方法およびその方法をコンピュータに実行させるプログラムを提供することを目的とする。

【0010】また、この発明は、タクシー利用者の声を容易に収集し、より効率的にサービス向上の参考とすることが可能なタクシー手配システム、タクシー手配方法およびその方法をコンピュータに実行させるプログラムを提供することを目的とする。

【0011】

【課題を解決するための手段】上述した課題を解決し、目的を達成するため、請求項1に記載の発明にかかるタクシー手配システムは、携帯端末からの手配要求をホストコンピュータで受信してタクシーの手配をおこなうタクシー手配システムにおいて、前記携帯端末が、当該端末の位置を測定する位置測定手段と、タクシーの満たすべき条件を指定する条件指定手段と、前記位置測定手段によって測定された位置および前記条件指定手段によって指定された条件を送信する手配要求送信手段と、を備え、前記ホストコンピュータが、前記手配要求送信手段によって送信されてきた位置および条件を受信する手配要求受信手段と、前記手配要求受信手段によって受信された条件にしたがって選定されたタクシーの特徴および／または到着予定時間を送信する手配連絡送信手段と、を備えたことを特徴とする。

【0012】この請求項1に記載の発明によれば、利用者の指定した条件通りのタクシーが当該利用者のいる場所に正確に差し向けられるとともに、当該利用者にはあらかじめその特徴や到着予定時間が通知される。

【0013】また、請求項2に記載の発明にかかるタクシー手配システムは、前記請求項1に記載の発明において、前記条件指定手段によって指定される条件が、タクシーの種別、車種、色、会社、喫煙の可／不可、あるいは運転手の性別であることを特徴とする。

【0014】この請求項2に記載の発明によれば、利用者はタクシーの種別、車種、色、会社、喫煙の可／不可、あるいは運転手の性別を指定することができる。

【0015】また、請求項3に記載の発明にかかるタクシー手配システムは、前記請求項1または請求項2に記載の発明において、前記携帯端末が、さらに、前記手配連絡送信手段によって送信されてきたタクシーの特徴および／または到着予定時間と対応づけて利用者の意見や要望などの利用者感想情報を送信する利用者感想情報送信手段を備えたことを特徴とする。

【0016】この請求項3に記載の発明によれば、利用者から寄せられた意見や要望などが、いつどのタクシーを利用した際のものであるかが容易に特定できる。

【0017】また、請求項4に記載の発明にかかるタクシー手配方法は、携帯端末からの手配要求をホストコンピュータで受信してタクシーの手配をおこなうタクシー手配方法において、前記携帯端末で、当該端末の位置を測定する位置測定工程と、タクシーの満たすべき条件を指定する条件指定工程と、前記位置測定工程で測定された位置および前記条件指定工程で指定された条件を送信する手配要求送信工程と、前記ホストコンピュータで、前記手配要求送信工程で送信された位置および条件を受信する手配要求受信工程と、前記手配要求受信工程で受信された条件にしたがって選定されたタクシーの特徴および／または到着予定時間を送信する手配連絡送信工程と、を含んだことを特徴とする。

【0018】この請求項4に記載の発明によれば、利用者の指定した条件通りのタクシーが当該利用者のいる場所に正確に差し向けられるとともに、当該利用者にはあらかじめその特徴や到着予定時間が通知される。

【0019】また、請求項5に記載の発明にかかるタクシー手配方法は、前記請求項4に記載の発明において、前記条件指定工程で指定される条件が、タクシーの種別、車種、色、会社、喫煙の可／不可、あるいは運転手の性別であることを特徴とする。

【0020】この請求項5に記載の発明によれば、利用者はタクシーの種別、車種、色、会社、喫煙の可／不可、あるいは運転手の性別を指定することができる。

【0021】また、請求項6に記載の発明にかかるタクシー手配方法は、前記請求項4または請求項5に記載の発明において、前記携帯端末で、さらに、前記手配連絡送信工程で送信されたタクシーの特徴および／または到着予定時間と対応づけて利用者の意見や要望などの利用者感想情報を送信する利用者感想情報送信工程を含んだことを特徴とする。

【0022】この請求項6に記載の発明によれば、利用者から寄せられた意見や要望などが、いつどのタクシーを利用した際のものであるかが容易に特定できる。

【0023】また、請求項7に記載の発明にかかるプログラムによれば、前記請求項4～請求項6のいずれか一つに記載された方法がコンピュータによって実行される。

【0024】

【発明の実施の形態】以下に添付図面を参照して、この発明にかかるタクシー手配システム、タクシー手配方法およびその方法をコンピュータに実行させるプログラムの好適な実施の形態を詳細に説明する。

【0025】タクシー手配システムの概要：まず、この発明の本実施の形態にかかるタクシー手配システムの概要について説明する。図1は、この発明の本実施の形態にかかるタクシー手配システムの概要を示す説明図である。図1に示したタクシー手配システムにおいて、100はサービスセンターであり、101は人工衛星であ

り、102はタクシーであり、103はタクシー利用者（以下「利用者」という）であり、104は顧客が所有する携帯電話などの携帯情報端末装置（以下「携帯端末」という）である。

【0026】ここで、サービスセンター100は、一つまたは複数のタクシー会社と契約して、契約したタクシー会社が所有するタクシーの配車管理をおこなう。具体的には、後述するホストコンピュータ100aを備えており、一つまたは複数のタクシー会社と契約して、契約したタクシー会社が所有するタクシーの配車管理をお

こなう。また、ホストコンピュータ100aには、タクシー102に搭載された図示を省略する通信装置あるいは利用者103が所有する携帯端末104からの通信情報を受信して、タクシーの配車処理をおこなう。

【0027】人工衛星101は、複数個の米国GPS衛星を示している。GPSとは、米国GPS衛星（人工衛星）からの電波を受信し、GPS衛星との幾何学的位置を求めるものであり、地球上どこでも計測可能である。電波としては、1.575.42MHzの搬送波で、C/A (Coarse and Access) コードお

よび航法メッセージが乗っているL1電波を用いておこなわれる。

【0028】C/Aコードはビット率1.023Mbpsで、コードの長さは1023bit=1msである。また、航法メッセージはビット率50bpsで、コードの長さは、サブフレームが300bit=6sであり、メインフレームが1500bit=30sであり、5サブフレームが1メインフレームであり、25メインフレームが1マスターフレームである。さらに、航法メッセージ中には、測量や単独測位に必要なその人工衛星自

身の軌道情報、前衛性の概略軌道情報、衛星時計の補正係数、電離層補正係数などが入っている。

【0029】利用者103は、時間優先でない場合に、タクシー会社、追加料金でタクシーの種類（大型・中型、女性運転手、禁煙車、車種など）をメニューから選択できるようにする。かつ、音声にて近くの目印や依頼主の名前、服装などを細く情報として連絡することもできる。本サービスを介してタクシーを利用することによって割引特典などを受けられるようにしてもよい。

【0030】また、その際、サービスセンター100

は、利用者からの上記選択情報・補足情報に基づいて効率的に最適なタクシーを選択し、そのタクシーを迎車とすることができる。

【0031】そして、迎車の指示を受けたタクシー102の運転手が了解の返信をおこなって、このタイミングで利用者の携帯電話機に音声またはEメールによって、後述するカーナビゲーション機能を使って計算した到着時間、タクシー会社名や車体の色などの配車状況に関する情報（配車状況情報）を返信する。

【0032】さらに、利用者103はタクシーが目的地に到着し、タクシーを降車後、何か不満などがあれば利用者感想情報（利用者の声）として携帯端末104を用いてサービスセンター100（ホストコンピュータ100a）へEメールを送信することができる。サービスセンター100は利用者の声を集積し、タクシー会社へ随時あるいは定期的に連絡することができる。

【0033】携帯端末のハードウェア構成：つぎに、この発明の実施の形態にかかる携帯端末のハードウェア構成について説明する。図2はこの発明の実施の形態にかかる携帯端末104のハードウェア構成を示す説明図である。携帯端末は、後述する図20で示す携帯電話機104aのほか、PDA104bやラップトップパーソナルコンピュータなどのノートPC104cで通信機能を備えたものであればよい。

【0034】図2において、201は携帯端末104の装置全体を制御するCPUを、202はCPU201によって実行されるプログラムなどを記憶したROMを、203はCPU201のワークエリアとして使用されるRAMを、それぞれ示している。RAM203は、各種情報を記憶する不揮発性RAMであってもよい。

【0035】また、204は電話番号や文字列などを入力するための、数字ボタンをはじめとする各種のボタンを、205は後述するメニューなどを表示するディスプレイを、それぞれ示している。

【0036】また、206は、図示を省略する基地局との電波の送受信をおこなう送受信機を、207は送受信機206から入力した電気信号を音声に変換して出力するスピーカを、208は操作者から入力した音声を電気信号に変換して送受信機206に出力するマイクを、それぞれ示している。また、209はGPS衛星101からの電波を受信するためのGPSアンテナを、200は上記各部を接続するためのバスを、それぞれ示している。

【0037】さらに、図示は省略するが、撮像装置（デジタルカメラ）を搭載していてもよい。そのデジタルカメラを用いて撮影した利用者本人の顔写真や、容姿、現在地の風景画像をネットワークを通じてサービスセンター100のホストコンピュータ100aに送信するようにしてもよい。これによって、より明確に利用者の位置または利用者本人を特定することができるように

なる。

【0038】ホストコンピュータのハードウェア構成：つぎに、この発明の実施の形態にかかるホストコンピュータ100aのハードウェア構成について説明する。図3はこの発明の実施の形態にかかるホストコンピュータ100aのハードウェア構成を示す説明図である。図3において、301は装置全体を制御するCPUを、302は基本入出力プログラムを記憶したROMを、303はCPU301のワークエリアとして使用されるRAMを、それぞれ示している。

【0039】また、304はCPU301の制御にしたがってHD（ハードディスク）305に対するデータのリード／ライトを制御するHDD（ハードディスクドライブ）を、305はHDD304の制御にしたがって書き込まれたデータを記憶するHDを、それぞれ示している。

【0040】また、306はCPU301の制御にしたがってFD（フロッピー（登録商標）ディスク）307に対するデータのリード／ライトを制御するFDD（フロッピーディスクドライブ）を、307はFDD306の制御にしたがって書き込まれたデータを記憶する着脱自在の記録媒体の一例としてのFDを、それぞれ示している。

【0041】FD307のほか、メモリーカードなどの着脱自在の記録媒体であってもよい。このFD307によって、後述する各種データベースに登録する情報を入力したり、ホストコンピュータ100aを制御するためのプログラムのメンテナンス情報やバージョンアップ情報などを入力することができる。

【0042】また、308はカーソル、メニュー、ウィンドウ、あるいは文字や画像などの各種データを表示するディスプレイを、309は通信回線310を介してネットワークNETに接続され、当該ネットワークとCPU301とのインターフェースとして機能するネットワークインターフェースを、それぞれ示している。

【0043】また、311は文字、数値、各種指示などの入力のための複数のキーを備えたキーボードを、312は各種指示の選択や実行、処理対象の選択、カーソルの移動などをおこなうマウスを、それぞれ示している。

【0044】また、313は文字や画像を光学的に読み取るスキャナを、314はCPU301の制御にしたがって文字や画像を印刷するプリンタを、315は着脱可能な記録媒体であるCD-ROMを、316はCD-ROM315に対するデータのリードを制御するCD-ROMドライブを、300は上記各部を接続するためのバスまたはケーブルを、それぞれ示している。

【0045】スキャナ313は、利用者の顔写真情報、運転手の顔写真情報、タクシーの外観に関する写真情報を入力（読み込み）するのに用いる。そして、スキャナ313によって読み込まれた利用者や運転手への通信の

際にその社員情報もあわせて送るようにするとよい。さらにOCR機能を搭載し、OCR用紙によって、各種データベースへの情報の入力などをおこなうことができる。また、プリンタ314は、利用伝票などの出力（印刷）に用いることができる。

【0046】さらに、CD-ROM315は、FD307と同様に、各種データベースに登録する情報を入力したり、ホストコンピュータ100aを制御するためのプログラムのメンテナンス情報やバージョンアップ情報などを入力することができる。CD-ROM315のほか、CD-R、CD-RW、DVD-ROMであってもよい。

【0047】携帯端末およびホストコンピュータの機能的構成：つぎに、この発明の実施の形態にかかる携帯端末104およびホストコンピュータ100aの機能的構成について説明する。図4はこの発明の実施の形態にかかる携帯端末104およびホストコンピュータ100aの構成を機能的に示す説明図である。

【0048】この発明の実施の形態にかかる携帯端末104は、制御部400a、メニュー記憶部400b、表示部400c、入力部400d、位置測定部400e、連絡先記憶部400f、手配要求作成部400g、送受信部400h、手配連絡記憶部400iおよび利用者感想情報作成部400jを含む構成である。

【0049】制御部400aは、各機能（構成）部400b～400jの処理制御をおこなう。メニュー記憶部400bは、利用者103がタクシー手配要求をおこなう際に、表示部400cに表示させる各種メニュー画面に関する情報を記憶する。入力部400dは、表示部400cに表示されたメニュー画面の操作指示にしたがって、タクシー配車要求の指示情報を入力したり、利用者感想情報を入力したりする。

【0050】位置測定部400eは、GPSアンテナ209によって受信した電波に基づいて現在位置を測定（算出）する。連絡先記憶部400fは、自己の電話番号およびEメールアドレスおよびサービスセンター100等の電話番号、Eメールアドレスなどの連絡先などに関する情報を記憶する。手配要求作成部400gは、入力部400dによって入力されたタクシー配車要求の指示情報に基づいて、サービスセンター100へ送信する手配要求情報を作成する。

【0051】送受信部400hは、ホストコンピュータ100aとのデータの送受信を司る。手配連絡記憶部400iは、手配連絡には選定されたタクシーの到着予定時間（タクシー選定部401cによって算出）と、車体の色や運転手の性別など当該タクシーの特徴（車両情報DBや運転手情報DBから抽出）などに関する情報を記憶する。利用者感想情報作成部400jは、入力部400dから入力された意見や要望に関する情報に基づいて利用者感想情報（利用者の声）を作成する。

【0052】なお、これらの機能（構成）部のうち、制御部400a、位置測定部400e、手配要求作成部400g、利用者感想情報作成部400jは、携帯端末104のROM202からRAM203に読み出されたプログラムにしたがってそのCPU201が命令処理を実行することによって実現されるものである。

【0053】また、メニュー記憶部400b、連絡先記憶部400f、手配連絡記憶部400iは、携帯端末104のRAM203によってその機能を実現する。また、表示部400cは、携帯端末104のディスプレイ205によってその機能を実現する。また、入力部400dは、携帯端末のボタン204によってその機能を実現する。また、送受信部400hは、携帯端末104の送受信機206によってその機能を実現する。

【0054】したがって、この位置測定部400eが請求項にいう「位置測定手段」に、またそのおこなう処理が請求項にいう「位置測定工程」に、それぞれ相当する。また、入力部400dが請求項にいう「条件指定手段」に相当し、そのおこなう処理の一つに請求項にいう「条件指定工程」が含まれる。また、この送受信部400hが請求項にいう「手配要求送信手段」および「利用者感想情報送信手段」を兼ね、そのおこなう処理の一つに請求項にいう「手配要求送信工程」および「利用者感想情報送信工程」が含まれる。

【0055】また、この発明の実施の形態にかかるホストコンピュータ100aは、制御部401a、送受信部401b、タクシー選定部401c、車両情報記憶部401d、運転手情報記憶部401e、位置情報記憶部401f、利用情報記憶部401gおよび手配連絡作成部401hを含む構成である。

【0056】制御部401aは、各機能（構成）部401b～401hの処理制御をおこなう。送受信部401bは、各携帯端末104とのデータの送受信を司る。タクシー選定部401cは、送受信部401bが受信した配車要求情報に基づいて配車をおこなうタクシーの選定をおこなう。

【0057】車両情報記憶部401d、運転手情報記憶部401e、位置情報記憶部401f、利用情報記憶部401gの各種記憶部には、後述するデータベース化された各種情報が記憶されている。各記憶部に記憶されている情報の内容の詳細については後述する。また、手配連絡作成部401hは、利用者に送信するための手配連絡に関する情報を作成する。

【0058】これらの機能部のうち、制御部401a、タクシー選定部401c、手配連絡作成部400hは、ホストコンピュータ100aのHD305やFD307、あるいはCD-ROM315などの各種記録媒体からRAM303に読み出されたプログラムにしたがって、そのCPU301などが命令処理を実行することによって実現されるものである。

【0059】また、送受信部401bは、ホストコンピュータ100aのI/F309によってその機能を実現する。また、車両情報記憶部401d、運転手情報記憶部401e、位置情報記憶部401f、利用情報記憶部401gは、ホストコンピュータ100aのRAM303、HD305、FD307、CD-ROM315などの各記録媒体によってその機能を実現する。

【0060】したがって、この送受信部401bが請求項にいう「手配要求受信手段」および「手配連絡送信手段」を兼ね、そのおこなう処理の一つに請求項にいう「手配要求受信工程」および「手配連絡送信工程」が含まれる。

【0061】各データベースの構成：つぎに、サービスセンター100が蓄積しているデータベースの構成について説明する。図5～図13は、この発明の本実施の形態にかかるタクシー手配システムのサービスセンター100が蓄積しているデータベースの構成を示す説明図である。これらのデータベースは、サービスセンターが備えているホストコンピュータ100aの記憶手段（たとえば、RAM303、HD305、FD307、CD-ROM315）に一括して記憶されていてもよく、また、ホストコンピュータ100aにネットワークで接続された他の情報処理装置（データベースサーバ（図示省略））などに分散して記憶されていてもよい。

【0062】図5は、顧客情報ファイルに関するデータベースである。このデータベースはホストコンピュータ100aの利用情報記憶部401gに記憶されていてもよい。この顧客情報ファイルは、顧客ID（1. 顧客ID）と、顧客の電話番号（2. 電話番号）と、顧客の氏名（3. 氏名）と、決済に用いられるクレジットカード番号（4. クレジットカード番号）と、を少なくとも含んでいる。顧客IDは、登録される順序で自動的に付番される。サービスセンター100は、配車の手配や決済をこの顧客IDに基づいて一元管理する。

【0063】また、顧客の電話番号は、配車に関する情報の連絡先であればよく、携帯電話機の電話番号や、携帯情報端末装置のEメールアドレスであってもよい。また、顧客の氏名は、個人名であっても法人名であってもよい。さらにまた、クレジットカード番号とともに、そのクレジットカードの暗証番号などもあわせて登録されていてもよい。

【0064】図6は、利用情報ファイルに関するデータベースである。このデータベースはホストコンピュータ100aの利用情報記憶部401gに記憶されていてもよい。この利用情報ファイルは、上記顧客がこのタクシー手配システムを利用した際に付される利用ID（1. 利用ID）と、タクシーの配車要求をおこなった日時（2. 利用日時）と、タクシーの配車要求をおこなった際の現在地がわかる目印あるいは利用者の容姿・服装など（3. 目印）と、配車の対象となったタクシーの運転

手に付されたID（4. 運転手ID）と、利用した料金（5. 利用料金）と、その際タクシーの種類の指定があった場合はその旨（6. 種類の指定）と、利用者の支払い（決済）の方法（7. 決済記録（現金、カード））と、を少なくとも含んでいる。

【0065】図7は、利用者側評価ファイルに関するデータベースである。このデータベースはホストコンピュータ100aの利用情報記憶部401gに記憶されていてもよい。この利用者側評価ファイルは、図6に示した利用情報ファイルの「1. 利用ID」とリンクした利用ID（1. 利用ID）と、利用者のタクシー車両についての評価（2. 車両についての評価）と、利用したタクシーの運転手についての評価（3. 運転手についての評価）と、利用したタクシーの全体的な評価（4. サービス全体の評価）と、を少なくとも含んでいる。

【0066】ここで、車両についての評価としては、たとえば、よい評価としては『シートの座り心地がよい』、『エンジン音が静か』などであり、悪い評価としては『社内が狭い』、『色がよくない』、『車内のおいが気になる』などである。また、運転手についての評価は、よい評価としては『愛想がよい』、『運転が丁寧（加速・減速がスムーズ）』などであり、悪い評価としては『荷物を破んでくれなかった』、『道順を間違えた』などである。また、サービス全体の評価として、たとえば『また是非利用したい』、『二度と利用したくない』、『〇〇について改善した方がよい』などである。

【0067】図8は、運転手側評価ファイルに関するデータベースである。このデータベースはホストコンピュータ100aの運転手情報記憶部401eに記憶されていてもよい。この運転手側評価ファイルは、図6、図7に示した利用情報ファイルの「1. 利用ID」とリンクした利用ID（1. 利用ID）と、運転手の顧客（利用者）についての評価（2. 顧客についての評価）と、顧客に対する注意事項（3. 注意事項）と、を少なくとも含んでいる。

【0068】ここで、運転手の顧客（利用者）についての評価とは、たとえば、よい評価としては『紳士的である』などであり、悪い評価としては『運転についての文句をいう』、『シートを蹴ったりする』などである。また、顧客に対する注意事項としては、たとえば『必要なとき以外は話しかけないようにする』、『急ブレーキは極力さける』、『乗り物酔いをしやすい』などである。

【0069】図7に示した利用者側評価ファイルと図8に示した運転手側評価ファイルとは、両者を連動させ、評価をおこなう際、相互の評価内容を比較することによって、総合的な評価をおこなうようにするとよい。これによって、たとえば、利用者側の一方的な評価（愚評価）によって、運転手の偏見的评价とならないようにすることができる。

【0070】また、図7に示した利用者側評価ファイル

および図8に示した利用者側評価ファイルは、利用IDから利用者ごとの各運転手の評価、あるいは運転手ごとの各利用者の評価を集計できるようにし、それによって、利用者あるいは運転手の総合的な評価の参考とすることができる。

【0071】図9は、車両情報ファイルに関するデータベースである。このデータベースはホストコンピュータ100aの車両情報記憶部401dに記憶されていてもよい。この車両情報ファイルは、タクシー車両に関するID（1. 車両ID）と、そのタクシー車両の車種に関する情報（2. 車種）と、そのタクシー車両が禁煙車（運転手も含め）であるか喫煙可能車であるか否かに関する情報（3. 禁煙・喫煙）と、そのタクシー車両の大きさに関する情報（4. 大型・中型・小型）と、そのタクシー車両の年式に関する情報（5. 年式）と、を少なくとも含んでいる。なお、年式に関する情報については、特に設ける必要はなく、また、車種に関する情報に含めるようにしてもよい。

【0072】図10は、位置情報ファイルに関するデータベースである。このデータベースはホストコンピュータ100aの位置情報記憶部401fに記憶されていてもよい。この位置情報ファイルは、図9に示した車両情報ファイルの「1. 車両ID」とリンクした、タクシー車両に関するID（1. 車両ID）と、そのタクシー車両の現在位置のうちの2次元の位置を特定するためのX座標（2. X座標）およびY座標（3. Y座標）と、そのタクシー車両が空車であるか否かに関する情報（4. 空車状況）と、を少なくとも含んでいる。このX座標およびY座標は、タクシー車両が移動中であれば、刻々と変化するものであり、所定時間隔で測定して把握しその都度データベースを書き換えておく必要がある。

【0073】また、空車であるか否かに関する情報は、タクシー車両の料金メーターと連動させ、その情報を取得し、その都度データベースを書き換える。

【0074】図11は、現在情報ファイルに関するデータベースである。このデータベースはホストコンピュータ100aの車両情報記憶部401dまたは運転手情報記憶部401eに記憶されていてもよい。この現在情報ファイルは、図9および図10に示したファイルの「1. 車両ID」とリンクした、タクシー車両に関するID（1. 車両ID）と、後述する図12に示す運転手情報ファイルの「1. 運転手ID」とリンクした、運転手に関するID（2. 運転手ID）と、を少なくとも含んでいる。

【0075】この現在情報ファイルは、たとえばある特定のタクシー車両については常に同一の運転手が乗車する場合は不要であるが、それ以外、たとえば勤務行程によって乗車する車両が異なる場合などに、現在の車両とその車両に乗車している運転手とを把握するためのデータベースである。したがって、勤務開始、勤務終了、勤

務交代などの際に、このデータベースの内容が書き換えられる。これによって、利用者がより好む配車を可能にすることができる。すなわち、『禁煙車で鈴木一郎運転手』という希望にも容易に答えることができる。

【0076】図12は、運転手情報ファイルに関するデータベースである。このデータベースはホストコンピュータ100aの運転手情報記憶部401eに記憶されていてもよい。この運転手情報ファイルは、運転手に付されたIDに関する情報(1. 運転手ID)と、その運転手の氏名に関する情報(2. 氏名)と、その運転手の性別に関する情報(3. 性別)と、その運転手の年齢に関する情報(4. 年齢)と、を少なくとも含んでいる。

【0077】特に運転手の性別や年齢によって容易に検索できるようにすることで、タクシーを選定する際に、利用者の要求に迅速に対応することができる。また、図示は省略するが、乗務経験年数に関する情報や、交通違反情報などもあわせて登録するようにしてもよい。VIP利用者などの場合には選定の対象となる場合がある。

【0078】図13は、配車情報ファイルに関するデータベースである。このデータベースはホストコンピュータ100aの利用情報記憶部401gに記憶されていてもよい。配車情報ファイルには、図9、図10および図11に示したファイルの「1. 車両ID」とリンクした、タクシー車両に関するID(1. 車両ID)と、図5に示した顧客情報ファイルの「1. 顧客ID」とリンクした、顧客に関するID(2. 顧客ID)と、図6に示した利用情報ファイルの「1. 利用ID」とリンクした、利用に関するID(3. 利用ID)と、を少なくとも含んでいる。これによって、現在の配車(実車)状況を容易に把握することができる。

【0079】タクシー手配システムの動作内容：つぎに、この発明の実施の形態にかかるタクシー手配システムの動作内容について説明する。図14および図15は、この発明の実施の形態にかかるタクシー手配システムにおける、タクシー利用の申し込みから利用後の利用者感想情報の返信までの一連の流れを示すフローチャートである。このフローチャートに沿って、図4に示す各部の機能の詳細も順次説明する。

【0080】ステップS1401～S1403で、利用者は自己の携帯端末104からサービスセンターのホストコンピュータ100aに対して、タクシー利用の申し込みすなわちタクシーの手配要求を送信する。

【0081】まず、ステップS1401で携帯端末104の制御部400aは、図16に示すようなメニューをメニュー記憶部400bから取り出し、表示部400cによって表示させる。なお、ここでは接続時間の短縮のため、メニューはあらかじめ携帯端末104に内蔵しておくようにしたが、ホストコンピュータ100aで公開されているメニューをダウンロードして表示するのであってももちろんよい。

【0082】そして、同図のメニューで利用者の氏名、人数、目的地および目印(「〇〇駅前の電光掲示板の下」など周辺の目標物や、「茶色のコートに緑の傘」など利用者の服装、「70代女性」など利用者の年齢や性別、その他運転手が利用者を選定するのに有益な情報)を入力させる。そして、図中「送信」が選択・決定されるとステップS1402に移行するが、「条件指定」が選択・決定されると、図16に代えてさらに図17に示すようなメニューを表示する。

【0083】同図のメニューで特定のボタンを押下すると、反転カーソルの位置している「種別」項目の「希望なし」が、順次「小型」→「中型」→「大型」→「希望なし」のようにサイクリックに切り替わる。反転カーソルを「車種」項目に移動して、同様に上記ボタンを押下すると、「希望なし」→「クラウン」→「グロリア」→・・・→「希望なし」のように切り替わる。

【0084】同様に、「色」項目は「希望なし」→「黄」→「黒」→・・・→「希望なし」、「会社」項目は「希望なし」→「〇〇タクシー(有)」→「××タクシー(株)」→・・・→「希望なし」、「喫煙」項目は「希望なし」→「可」→「不可」→「希望なし」、「運転手」項目は「希望なし」→「男性」→「女性」→「希望なし」のように、それぞれ切り替わる。そして、図中「送信」が選択・決定されると、ステップS1402へ移行する。

【0085】ステップS1402で携帯端末104の制御部400aは、その位置測定部400eで従来技術のGPSによって測定された、自己の位置を取得する。また、あらかじめ連絡先記憶部400fに格納された、自己の電話番号およびメールアドレスを取得する。

【0086】そして、ステップS1403で制御部400aは、手配要求作成部400gを制御して、以下の内容(1)～(4)からなる手配要求を作成するとともに、これを送受信部400hからホストコンピュータ100aに送信する。

【0087】(1)ステップS1401の図16に示すメニューによって入力された利用者の氏名、人数、目的地および目印。

(2)ステップS1401の図17に示すメニューによって指定されたタクシーの種別、車種、色、会社、喫煙の可/不可および運転手の性別。

(3)ステップS1402で取得した位置。

(4)ステップS1402で取得した連絡先。

【0088】ステップS1404でサービスセンター100のホストコンピュータ100aは、その送受信部401bで上記手配要求を受信する。そして、ステップS1405でその制御部401aは、タクシー選定部401cに指示して、上記手配要求に応ずるのに最適なタクシーを選定させる。

【0089】最適なタクシーとは、利用者の待つ場所に

最も早く到着でき、かつ遅くともその時点までに空車になっており、さらに上述のメニューで種別などの条件が指定されている場合には、当該条件をできるだけ充足するタクシーである。タクシー選定部401cは、受信した手配要求と以下に説明する車両情報DB、運転手情報DBおよび位置情報DBとを照らし合わせて、上記最適なタクシーを検索する。

【0090】ホストコンピュータ100aの車両情報記憶部401dには、下記諸項目からなる図9に示した車両情報ファイル（データベース）があらかじめ保持して

- (1) 車両ID：個々のタクシーの識別番号
- (2) 車種
- (3) 喫煙：可／不可のいずれか
- (4) 大型／中型／小型
- (5) 年式、色など

【0091】さらには、

- (6) 会社：当該タクシーを保有する法人名
- (7) 連絡先：車載されている携帯端末のアドレスなどが含まれていてもよい。

【0092】また、その運転手情報記憶部401eには、下記諸項目からなる運転手情報DBがあらかじめ保持されている。

- (1) 運転手ID：個々の運転手の識別番号
- (2) 氏名：運転手の氏名
- (3) 性別：運転手の性別
- (4) 年齢：運転手の年齢

【0093】また、その位置情報記憶部401fには、下記諸項目からなる位置情報ファイルおよび現在情報ファイルが保持されている。下記のうち「位置」項目と「状態」項目の内容は、各タクシー102からホストコンピュータ100aに定期的に通知され、随時更新される。

- 【0094】(1) 車両ID
- (2) 運転手ID：乗務する運転手のID
- (3) 位置：タクシーの現在位置
- (4) 状態：空車／貸走／予約のいずれか

【0095】利用者とタクシーとの距離が近くても、渋滞状況などによっては到着に時間を要する場合があるので、タクシー選定部401cはVICSなどの従来技術を利用して、空車の状態で利用者の元に到着するのが最先となるタクシーを選び出す。なお、利用者の現在位置は受信した手配要求から、タクシーの現在位置は位置情報DBから、また到着時にタクシーが空車になっているかどうかは、位置情報DBの「状態」項目と降車場所に関する情報から、それぞれ判定することができる。

【0096】そして、タクシー選定部401cは上記で選出したタクシーが、上述のメニューで指定された条件を満たしているかどうかを調べ、条件を充足する場合やそもそも条件が指定されていない場合は、ステップS1

405に移行する。

【0097】また、選出したタクシーが指定された条件を充足しない場合、そのつぎに到着できるタクシー、さらにそのつぎに到着できるタクシー・・・のように順次調べてゆき、条件を充足するタクシーを発見した時点でステップS1406に移行する。ただし、現地到着までに要する時間が所定の閾値を超えたときは、指定された条件中のいずれかの項目を無視し、この緩和後の条件を充足する最先のタクシーを発見した時点で、ステップS1406に移行する。

【0098】ステップS1406でホストコンピュータ100aは、ステップS1405で選定したタクシーに向けて、利用者の現在位置や目的地（手配要求中より抽出）を添えて対応可能かどうかの確認をおこなう。そして、運転手の了解を得たときは（ステップS1406：Yes）ステップS1407に移行する。また、運転手の了解を得られないときは（ステップS1406：No）、ステップS1405に戻って次善のタクシーの検索を続行する。

20 【0099】ステップS1407でホストコンピュータ100aの制御部401aは、その手配連絡作成部401bに指示して利用者に送信するための手配連絡を作成させ、これをその送受信部401bから、利用者の携帯端末104に向けて送信する。

【0100】ステップS1408で、携帯端末104は上記連絡をその送受信部400hで受信し、表示部400cによって表示する。図18は、表示部400cによって表示される手配連絡の一例を示す説明図である。同図に示すように、手配連絡には選定されたタクシーの到着予定時間（タクシー選定部401cによって算出）と、車体の色や運転手の性別など当該タクシーの特徴（車両情報DBや運転手情報DBから抽出）とが記述されている。

【0101】そして、同図において「OK」が選択・決定されると（ステップS1409：Yes）、ステップS1410で制御部400aは、ステップS1408で受信した手配連絡を手配連絡記憶部400iに保存する。

【0102】また、ステップS1411でホストコンピュータ100aでは、ステップS1404で受信した手配要求を、制御部401aの制御のもとに利用情報記憶部401g内の利用情報ファイル（DB）に登録する。この利用情報DBには、下記の諸項目が保持される。

【0103】(1) 利用ID：個々の利用の識別番号であり、DB登録時に付与

- (2) 日時：手配要求の登録日時
- (3) 氏名：手配要求中の利用者の氏名
- (4) 人数：手配要求中の利用者の人数
- (5) 乗車場所：手配要求中の利用者の位置
- (6) 降車場所：手配要求中の目的地または現実の降車

場所

(7) 連絡先：手配要求中の利用者の電話番号およびメールアドレス

(8) 条件：手配要求中で指定された種別、車種、色、会社、喫煙の可／不可、運転手の性別（もしあれば）

(9) 車両ID：選定されたタクシーのID

(10) 運転手ID：上記タクシーに乗務する運転手のID

(11) 利用料金：タクシーの利用料金

【0104】つぎに、ステップS1412でホストコンピュータ100aは、ステップS1405で選定したタクシーに対して利用者の氏名や目印など必要事項を連絡し、現地へ向かうよう指示する。

【0105】この後、ステップS1413でタクシーの利用がおこなわれ、何か意見や要望があれば、ステップS1414で利用者は携帯端末104の入力部400dから当該意見／要望を入力する。そして、ステップS1415で、制御部400aは利用者感想情報作成部400jに指示して、上記意見／要望にステップS1410で保存しておいた手配連絡を連結させ、これら全体を利用者感想情報（離脱者の声）として、送受信部400bからホストコンピュータ100aに送信する。その後、本フローチャートによる処理を終了する。

【0106】図19は、携帯端末104からホストコンピュータ100aに送信される利用者感想情報（カード）の一例を示す説明図である。利用者の入力した文章の下に、図18に示す手配連絡の内容が追記された形となっている。

【0107】また、図15は、この発明の実施の形態にかかるタクシー手配システムにおける、タクシー利用の申し込みから利用後の利用者感想情報の返信までの一連の流れの別の一部を示すフローチャートである。図15のフローチャートにおいて、配車要求のメニュー画面を表示させる際に、優先情報表示をおこなう（ステップS1501）。この優先情報表示（画面）は、図示は省略するが、タクシーの迎車時間を優先させるのか、あるいは、迎車の時間には余裕があり、それよりもタクシー車両の種類を優先させるのかを選択できる表示画面である。

【0108】この優先情報表示画面において、利用者がいずれかの選択をおこなった（ステップS1502）結果、タクシー車両の種類を優先するように選択された場合（ステップS1502：「種類」）は、つぎに、その種類に関する条件の入力を待って、すべての条件の入力が終了し、その条件に関する情報が受信された場合（ステップS1503：Yes）は、つぎに、受信された情報に基づいて条件に該当するタクシー車両を選定する（ステップS1504）。

【0109】その後、選定したタクシー車両の運転手と交信し、運転手が迎車OKであるか否かを確認する（ス

テップS1505）。ここで、運転手がOKでない場合（ステップS1505：No）は、ステップS1504へ戻って、当該運転手のタクシー車両以外で条件に該当するタクシーを再度選定し直す（ステップS1504）。

【0110】そして、ステップS1504およびステップS1505の各工程は、運転手がOKとなるまで繰り返しておこなわれ、運転手がOKとなった場合（ステップS1505：Yes）は、つぎに、選定され、運転手がOKとなったタクシー車両（運転手を含む）で利用者がよいか否かを確認する（ステップS1506）。ここで、利用者がOKでない場合（ステップS1506：No）は、ステップS1504へ戻って、再度、選定のし直しをおこなう（ステップS1506）。このようにして運転手および利用者ともにOKとなった場合（ステップS1504：Yes）は、図14に示したステップS1407へ移行する。

【0111】一方、ステップS1502において、時間を優先する場合、すなわちできるだけ早く来て欲しい場合（ステップS1502：「時間」）は、つぎに、利用者の所在位置から最寄りのタクシーを選定（把握）する（ステップS1507）。その後、選定したタクシー車両の運転手と交信し、運転手が迎車OKであるか否かを確認する（ステップS1508）。ここで、運転手がOKでない場合（ステップS1508：No）は、ステップS1507へ戻って、当該運転手のタクシー車両以外で条件に該当するタクシーを再度選定し直す（ステップS1507）。

【0112】そして、ステップS1507およびステップS1508の各工程は、運転手がOKとなるまで繰り返しておこなわれ、運転手がOKとなった場合（ステップS1508：Yes）は、図14に示したステップS1407へ移行する。

【0113】このようにして、利用者のそのときの状況に応じて、より柔軟な対応をすることができる。

【0114】タクシー手配システムのシステム構成：この発明の実施の形態にかかるタクシー手配システムのシステム構成の一例について説明する。図20は、この発明の実施の形態にかかるタクシー手配システムのシステム構成の一例を示す説明図である。図20において、104aはタクシーの利用者が携行する携帯端末であり、典型的には携帯電話機104aであるが、PDA104bやノートPC104cなどであってもよい。また、100aは上述のサービスセンター100に設置されたホストコンピュータであり、102a、102bはサービスセンター100と契約した各タクシー会社のタクシーである。

【0115】それぞれのタクシー102a、102bは、GPSを搭載のカーナビゲーションシステム121a、121bによって把握される現在位置と、現在の状

態（空車であるかどうかなど）とをホストコンピュータ100aに通知する。そして、ホストコンピュータ100aは利用者の携帯端末104からタクシーの手配要求があると、利用者と各タクシーの相対位置などから最適なタクシーを選出し、その到着予定時間や車体の色などの特徴を携帯端末104に連絡することができる。

【0116】以上説明した実施の形態によれば、GPSによって測定された利用者の現在位置が自動的にサービスセンターに送信されるので、利用者は出発などで苦勞して場所の説明をする必要がなく、サービスセンターも誤った場所への無駄な配車を回避することができる。

【0117】また、利用者には到着するタクシーの特徴や到着予定時間などを、運転手には利用者に入力させた目印などを、あらかじめ通知するようにしているので、両者が現地より容易にお互いを特定することができる。なお、利用者には手配連絡中で、さらに利用料金の概算値（これは手配要求中の利用者の位置と目的地とから算出できる）を通知するようにしてもよい。これによって、利用者は所持金が足りるかどうかの心配をせずにタクシーを利用することができる。

【0118】また、利用者がタクシーの条件を細かく指定できるようにしているので、より顧客のニーズに適合したサービスがおこなえるほか、指定のための追加料金を徴収するビジネスチャンスもあるとともに、タクシー会社は、稼働率を上げることができる。

【0119】さらに、好みのタクシーに乗車することも選択でき、タクシー料金の割引を受けることもできる。たとえば、一人で乗るので、軽自動車のタクシーでよいからその分料金を割引するような制度を設けるようにしてもよい。

【0120】なお、指定できる条件は図17に示すような車両や運転手関係のものに限らず、たとえば「決済」項目を設けてクレジットカードでの支払いを指定できるようにしてもよい。このように、手配要求時にあらかじめカード番号を入力させておくことで、タクシー利用中にサービスセンターはカード会社への確認を終えておけるので、降車時の決済にかかる時間を短縮できる。

【0121】また、上述の実施の形態では、利用者から寄せられた意見や要望がいつのどの利用に関するものであるかが利用者感想情報（カード）中で明確になっているので、サービスセンターは問題のあったタクシーなどを容易・迅速に特定することができる。また、意見や要望の代わりに「30分前に乗ったタクシーのトランクに鞆を置き忘れました」などと記入すれば、利用者が運転手名や車両IDなどを覚えていなくとも、サービスセンターによって即座にどのタクシーであるかが特定され、忘れ物の回収がスムーズにおこなえる。

【0122】なお、利用者だけでなくタクシーの運転手も「傘の忘れ物がありました」、「この顧客は車酔いしやすいため次回から運転に注意です」などの情報をサー

ビスセンターに送信できるようにしてもよい。このとき、運転手への確認時（ステップS1406）や連絡時（ステップS1412）に送信された文書などを引用するようにし、いつのどの利用に関するものであるかの対応づけが容易におこなえるようにする。

【0123】さらに、利用後の利用者の声を容易に反映することができるので、運転手のモラルやサービスを向上することが期待でき、利用者とのトラブルもできるだけ減少させることができる。

【0124】また、本実施の形態におけるタクシー手配方法は、あらかじめ用意されたコンピュータ読み取り可能なプログラムであってもよく、またそのプログラムをパーソナルコンピュータやワークステーションなどのコンピュータで実行することによって実現される。このプログラムは、HD（ハードディスク）、FD（フロッピーディスク）、CD-ROM、MO、DVDなどのコンピュータで読み取り可能な記録媒体に記録され、コンピュータによって記録媒体から読み出されることによって実行される。また、このプログラムは、インターネットなどのネットワークを介して配布することが可能な伝送媒体であってもよい。

【0125】

【発明の効果】以上説明したように請求項1に記載の発明は、携帯端末からの手配要求をホストコンピュータで受信してタクシーの手配をおこなうタクシー手配システムにおいて、前記携帯端末が、当該端末の位置を測定する位置測定手段と、タクシーの満たすべき条件を指定する条件指定手段と、前記位置測定手段によって測定された位置および前記条件指定手段によって指定された条件を送信する手配要求送信手段と、を備え、前記ホストコンピュータが、前記手配要求送信手段によって送信されてきた位置および条件を受信する手配要求受信手段と、前記手配要求受信手段によって受信された条件にしたがって選定されたタクシーの特徴および／または到着予定時間を送信する手配連絡送信手段と、を備えたので、利用者の指定した条件通りのタクシーが当該利用者のいる場所に正確に差し向けられるとともに、当該利用者にはあらかじめその特徴や到着予定時間が通知され、これによって、利用者が好みのタクシーを手配できるとともに、手配されたタクシーをスムーズに特定して乗車することが可能なタクシー手配システムが得られるという効果を奏する。

【0126】また、請求項2に記載の発明は、前記請求項1に記載の発明において、前記条件指定手段によって指定される条件が、タクシーの種別、車種、色、会社、喫煙の可／不可、あるいは運転手の性別であるので、利用者はタクシーの種別、車種、色、会社、喫煙の可／不可、あるいは運転手の性別を指定することができ、これによって、利用者が好みのタクシーを手配することが可能なタクシー手配システムが得られるという効果を奏す

る。

【0127】また、請求項3に記載の発明は、前記請求項1または請求項2に記載の発明において、前記携帯端末が、さらに、前記手配連絡送信手段によって送信されてきたタクシーの特徴および／または到着予定時間と対応づけて利用者の意見や要望などを送信する利用者感想情報送信手段を備えたので、利用者から寄せられた意見や要望などが、いつどのタクシーを利用した際のものであるかが容易に特定でき、これによって、利用者の声を効率的に収集することが可能なタクシー手配システムが得られるという効果を奏する。

【0128】また、請求項4に記載の発明は、携帯端末からの手配要求をホストコンピュータで受信してタクシーの手配をおこなうタクシー手配方法において、前記携帯端末で、当該端末の位置を測定する位置測定工程と、タクシーの満たすべき条件を指定する条件指定工程と、前記位置測定工程で測定された位置および前記条件指定工程で指定された条件を送信する手配要求送信工程と、前記ホストコンピュータで、前記手配要求送信工程で送信された位置および条件を受信する手配要求受信工程と、前記手配要求受信工程で受信された条件にしたがって選定されたタクシーの特徴および／または到着予定時間を送信する手配連絡送信工程と、を含んだので、利用者の指定した条件通りのタクシーが当該利用者のいる場所に正確に差し向けられるとともに、当該利用者にはあらかじめその特徴や到着予定時間が通知され、これによって、利用者が好みのタクシーを手配できるとともに、手配されたタクシーをスムーズに特定して乗車することが可能なタクシー手配方法が得られるという効果を奏する。

【0129】また、請求項5に記載の発明は、前記請求項4に記載の発明において、前記条件指定工程で指定される条件が、タクシーの種別、車種、色、会社、喫煙の可／不可、あるいは運転手の性別であるので、利用者はタクシーの種別、車種、色、会社、喫煙の可／不可、あるいは運転手の性別を指定することができ、これによって、利用者が好みのタクシーを手配することが可能なタクシー手配方法が得られるという効果を奏する。

【0130】また、請求項6に記載の発明は、前記請求項4または請求項5に記載の発明において、前記携帯端末で、さらに、前記手配連絡送信工程で送信されたタクシーの特徴および／または到着予定時間と対応づけて利用者の意見や要望などを送信する利用者感想情報送信工程を含んだので、利用者から寄せられた意見や要望などが、いつどのタクシーを利用した際のものであるかが容易に特定でき、これによって、利用者の声を効率的に収集することが可能なタクシー手配方法が得られるという効果を奏する。

【0131】また、請求項7に記載の発明によれば、前記請求項4～請求項6のいずれか一つに記載された方法

をコンピュータに実行させることが可能なプログラムが得られるという効果を奏する。

【図面の簡単な説明】

【図1】この発明の実施の形態にかかるタクシー手配システムの概要を示す説明図である。

【図2】この発明の実施の形態にかかる携帯端末104のハードウェア構成を示す説明図である。

【図3】この発明の実施の形態にかかるホストコンピュータ100aのハードウェア構成を示す説明図である。

【図4】この発明の実施の形態にかかる携帯端末104およびホストコンピュータ100aの構成を機能的に示す説明図である。

【図5】この発明の実施の形態にかかるタクシー手配システムにおいて用いられるデータベースの内容を示す説明図である。

【図6】この発明の実施の形態にかかるタクシー手配システムにおいて用いられる別のデータベースの内容を示す説明図である。

【図7】この発明の実施の形態にかかるタクシー手配システムにおいて用いられる別のデータベースの内容を示す説明図である。

【図8】この発明の実施の形態にかかるタクシー手配システムにおいて用いられる別のデータベースの内容を示す説明図である。

【図9】この発明の実施の形態にかかるタクシー手配システムにおいて用いられる別のデータベースの内容を示す説明図である。

【図10】この発明の実施の形態にかかるタクシー手配システムにおいて用いられる別のデータベースの内容を示す説明図である。

【図11】この発明の実施の形態にかかるタクシー手配システムにおいて用いられる別のデータベースの内容を示す説明図である。

【図12】この発明の実施の形態にかかるタクシー手配システムにおいて用いられる別のデータベースの内容を示す説明図である。

【図13】この発明の実施の形態にかかるタクシー手配システムにおいて用いられる別のデータベースの内容を示す説明図である。

【図14】この発明の実施の形態にかかるタクシー手配システムにおける処理の一連の流れを示すフローチャートである。

【図15】この発明の実施の形態にかかるタクシー手配システムにおける処理の別の流れの一部を示すフローチャートである。

【図16】この発明の実施の形態にかかるメニューの一例を示す説明図である。

【図17】この発明の実施の形態にかかる他のメニューの一例を示す説明図である。

【図18】この発明の実施の形態にかかる手配連絡の一

例を示す説明図である。

【図19】この発明の実施の形態にかかる利用者感情情報（カード）の一例を示す説明図である。

【図20】この発明の実施の形態にかかるタクシー手配システムのシステム構成の一例を示す説明図である。

【符号の説明】

100 サービスセンター

100a ホストコンピュータ

101 人工衛星

102 (102a, 102b) タクシー（車両）

103 利用者（顧客）

104 携帯端末

104a 携帯電話機

104b PDA

104c ノートPC

121 (121a, 121b) カーナビゲーションシステム

200 バス

201 CPU

202 ROM

203 RAM

204 ボタン

205 ディスプレイ

206 送受信機

207 スピーカ

208 マイク

209 GPSアンテナ

300 バスまたはケーブル

301 CPU

302 ROM

303 RAM

*304 HDD

305 HD

306 FDD

307 FD

308 ディスプレイ

309 ネットワーク1/F

310 通信回線

311 キーボード

312 マウス

313 スキャナ

314 プリンタ

315 CD-ROM

316 CD-ROMドライブ

400a 制御部

400b メニュー記憶部

400c 表示部

400d 入力部

400e 位置測定部

400f 連絡先記憶部

400g 手配要求作成部

400h 送受信部

400i 手配連絡記憶部

400j 利用者感情情報作成部

401a 制御部

401b 送受信部

401c タクシー選定部

401d 車両情報記憶部

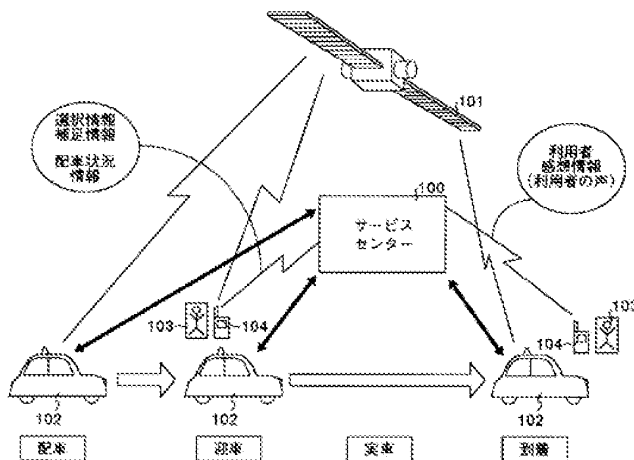
401e 運転手情報記憶部

401f 位置情報記憶部

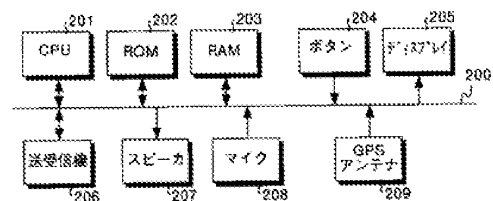
401g 利用情報記憶部

401h 手配連絡作成部

【図1】



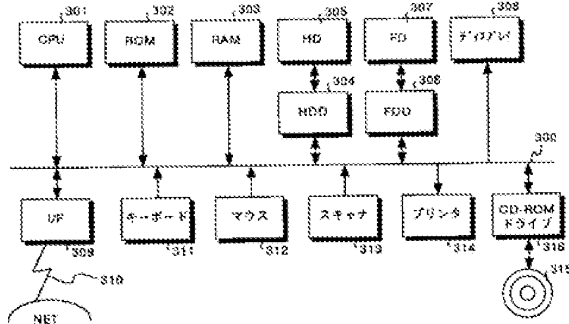
【図2】



【図5】

顧客情報ファイル	
1	顧客ID (自動付番)
2	電話番号
3	氏名
4	クレジットカード番号

【図3】



【図6】

利用情報ファイル	
1	利用ID
2	利用日時
3	目的
4	運転手ID
5	利用料金
6	種別の指定
7	決済記録(現金、カード)

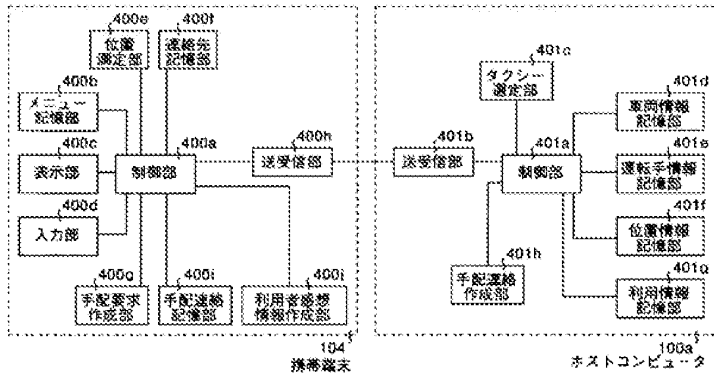
【図8】

運転手側評価ファイル	
1	利用ID
2	顧客についての評価
3	注意事項

【図7】

利用者側評価ファイル	
1	利用ID
2	車両についての評価
3	運転手についての評価
4	サービス全体の評価

【図4】



【図12】

運転手情報ファイル	
1	運転手ID
2	氏名
3	性別
4	年齢

【図13】

配車情報ファイル	
1	車両ID
2	顧客ID
3	利用ID

【図9】

車両情報ファイル	
1	車両ID
2	車種(クラウン、グロリア等)
3	禁煙・喫煙
4	大型・中型・小型
5	車式

【図10】

位置情報ファイル	
1	車両ID
2	X座標
3	Y座標
4	空車状況

【図11】

現在情報ファイル	
1	車両ID
2	運転手ID

【図19】

雨の中荷物が多いにもかかわらず
運転手の方が親切で助かりまし
た。ありがとうございました。

ご利用ありがとうございます。
4月10日(火)21時10分頃下記
タクシーが参りますので、申し
ければOKして下さい。

種別: 小型
車種: グロリア
色: 黄
会社: ○○タクシー(有)
喫煙: 不可
運転手: 鈴木花子(女性)

【図16】

タクシー手配
お名前:
人数:
目的地:
目印:

☒ 送付
条件指定
終了

【図17】

条件指定
種別: ☒ 希望なし
車種: ☒ 希望なし
色: ☒ 希望なし
会社: ☒ 希望なし
喫煙: ☒ 希望なし
運転手: ☒ 希望なし

☒ 送信
戻る
終了

【図18】

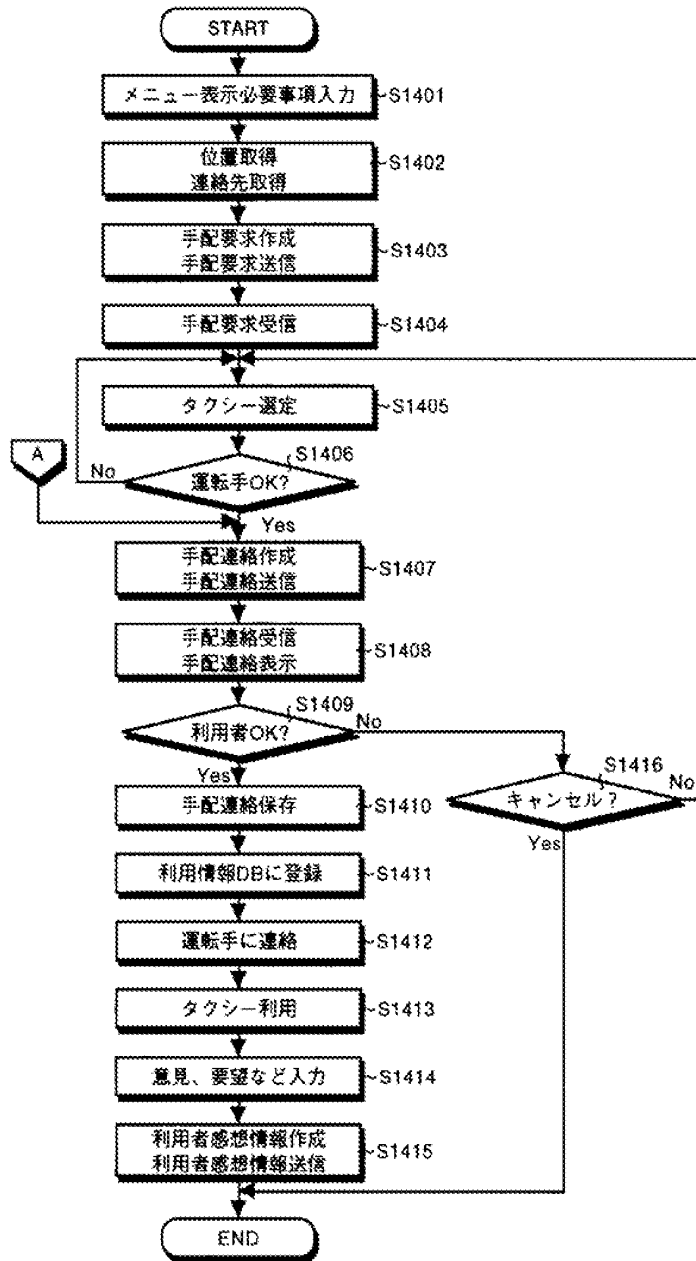
ご利用ありがとうございます。
4月10日(火)21時10分頃下記
タクシーが参りますので、申し
ければOKして下さい。

種別: 小型
車種: グロリア
色: 黄
会社: ○○タクシー(有)
喫煙: 不可
運転手: 鈴木花子(女性)

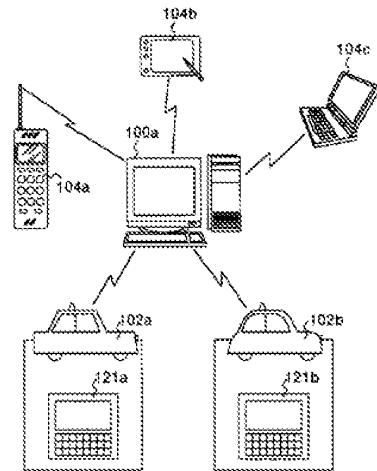
☒ OK

キャンセル
別のタクシーを検索

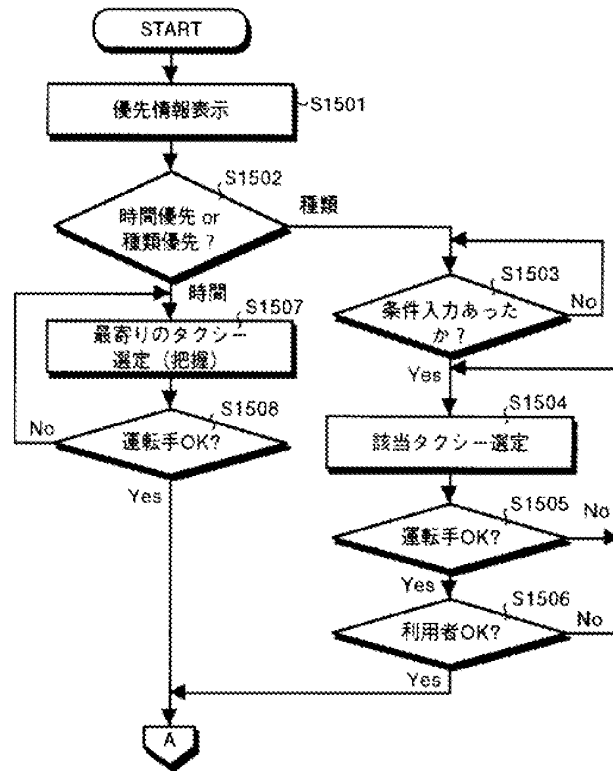
【図14】



【図20】



【図15】



フロントページの続き

(72)発明者 今西 正明
東京都目野市富士町1番地 株式会社エ
フ・エフ・シー内

Fターム(参考) 5H180 AA14 BB05 BB13 BB15 CC04
FF05 FF13 FF27

**JP2002367086A SYSTEM AND METHOD FOR ARRANGING TAXI AND PROGRAM FOR MAKING
COMPUTER PERFORM THE METHOD**

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 taxi arrangement system in which a host computer receives an arrangement request from a portable terminal and arranges a taxi, a taxi arrangement method, and a program for causing a computer to execute the method.

[0002] 2. Description of the Related Art When a user wants to use a taxi but cannot pick up an empty taxi, the user calls a taxi company or a service center to apply for a taxi arrangement. The service center is, for example, a vehicle dispatch center that collectively handles vehicle dispatch operations of a plurality of taxi companies.

[0003] If you request a taxi arrangement using a mobile phone (or PHS), you can use the location information notification function and phone number notification function of the mobile phone (or PHS) to arrange the location and contact information of the user. Can be easily communicated to the service center.

[0004] In addition, the service center can make a contract with a taxi company in advance and have a car navigation function, a vacant vehicle arrangement function, and a payment function, and a taxi of the contracted taxi company can receive and send information about the current position of the GPS antenna. There is a mobile terminal such as a PHS that can be set in a vehicle and linked with an empty sign to identify the position and status of a taxi to a service center.

[0005] In addition, some taxis are equipped with a card payment device for tax payments, and even taxis that do not have the above card payment device can call the service center using a mobile phone. Some can be settled.

[0006] However, in the above-mentioned prior art, it is easy to get motion sick and it is desirable to avoid a car that smells of cigarettes. However, it was usually impossible for the user to get involved in which taxi would come to the customer, mainly due to the circumstances of the dispatcher.

[0007] Further, if the user cannot explain where he/she is, such as when traveling, a taxi may be dispatched to a misplaced place. In addition, they may wait in a very close place without noticing each other, and the fact cannot be understood until the user inquires the dispatcher again. In addition, when there are many users waiting for a taxi at the same place, there is a problem that it takes time and time for the user to identify the taxi arranged by the user and the taxi driver for the user, there were. These problems are particularly noticeable at night and in rainy weather.

[0008] In addition, the taxi company cannot accurately understand the opinions and complaints of the taxi users, so that it is not possible to sufficiently improve the service.

[0009] In order to solve the above-mentioned problems of the prior art, the present invention allows a user to arrange a taxi of his or her preference and to smoothly identify and board the arranged taxi, a taxi arrangement method, and It is an object to provide a program that causes a computer to execute the method.

[0010] Further, the present invention provides a taxi arrangement system, a taxi arrangement method and a program for causing a computer to execute the method, which can easily collect voices of taxi users and can be referred to for more efficient service improvement. The purpose is to

[0011] In order to solve the above-mentioned problems and to achieve the object, a taxi arrangement system according to the invention of claim 1 is arranged such that the host computer receives an arrangement request from a portable terminal and a taxi is received. In the taxi arrangement system for making arrangements, the mobile terminal measures position of the terminal, position measuring means, condition specifying means for specifying conditions to be met by a taxi, position measured by the position measuring means, and Arrangement request transmitting means for transmitting the condition designated by the condition designating means, the host computer receiving the position and the condition transmitted by the arrangement request transmitting means, and the arrangement request Arrangement contact transmitting means for transmitting the characteristics

of the taxi and/or the estimated arrival time selected according to the conditions received by the receiving means.

[0012] According to the invention of claim 1, a taxi according to the conditions specified by the user is accurately directed to the place where the user is, and the user is notified in advance of its characteristics and estimated arrival time. To be done.

[0013] In the taxi arrangement system according to the invention described in claim 2, in the invention described in claim 1, the conditions designated by the condition designating means are taxi type, vehicle type, color, company, and smoking /No, or characterized by the gender of the driver.

[0014] According to the second aspect of the invention, the user can specify the type of taxi, the type of vehicle, the color, the company, whether smoking is allowed or not, or the gender of the driver.

[0015] The taxi arrangement system according to the invention of claim 3 is the taxi arrangement system according to the invention of claim 1 or 2, wherein the portable terminal is further transmitted by the arrangement contact transmitting means. And/or user impression information transmitting means for transmitting user impression information such as a user's opinion or request in association with the estimated arrival time.

[0016] According to the invention as set forth in claim 3, it is possible to easily specify when and which taxi is used when the opinion or request sent from the user.

[0017] The taxi arrangement method according to the invention of claim 4 is a taxi arrangement method in which a host computer receives an arrangement request from a mobile terminal to arrange a taxi, and the position of the terminal is measured with the mobile terminal. Position measuring step, a condition specifying step for specifying conditions to be met by the taxi, an arrangement request transmitting step for transmitting the position measured in the position measuring step and the condition specified in the condition specifying step, and the host computer, The arrangement request receiving step of receiving the position and the condition transmitted in the arrangement request transmitting step, and the characteristics and/or estimated arrival time of the taxi selected according to the condition received in the arrangement request receiving step. It is characterized by including an arrangement contact transmission process.

[0018] According to the invention of claim 4, the taxi according to the conditions specified by the user is accurately directed to the place where the user is, and the user is notified in advance of its characteristics and estimated arrival time. To be done.

[0019] Further, in the taxi arrangement method according to the invention described in claim 5, in the invention described in claim 4, the conditions specified in the condition specifying step are taxi type, vehicle type, color, company, and smoking /No, or characterized by the gender of the driver.

[0020] According to the invention described in claim 5, the user can specify the type of taxi, the type of vehicle, the color, the company, whether smoking is allowed or not, or the gender of the driver.

[0021] Further, the taxi arrangement method according to the invention of claim 6 is characterized in that, in the invention of claim 4 or 5, the taxi characteristics transmitted by the mobile terminal and in the arrangement contact transmission step are: And/or a user impression information transmitting step of transmitting user impression information such as a user's opinion or request in association with the estimated arrival time.

[0022] According to the invention as set forth in claim 6, it is possible to easily specify when and which taxi is used when an opinion or request sent from the user.

[0023] According to the program of the invention described in claim 7, the method described in any one of claims 4 to 6 is executed by a computer.

[0024] BEST MODE FOR CARRYING OUT THE INVENTION Preferred embodiments of a taxi arrangement system, a taxi arrangement method, and a program for causing a computer to execute the method will be described in detail below with reference to the accompanying drawings.

[0025] Outline of Taxi Arrangement System: First, an outline of the taxi arrangement system according to the embodiment of the present invention will be described. FIG. 1 is an explanatory diagram showing an outline of

a taxi arrangement system according to the embodiment of the present invention. In the taxi arrangement system shown in FIG. 1, 100 is a service center, 101 is an artificial satellite, 102 is a taxi, 103 is a taxi user (hereinafter referred to as "user"), and 104 is a customer. It is a mobile information terminal device such as a mobile phone owned by the owner (hereinafter referred to as "mobile terminal").

[0026] Here, the service center 100 contracts with one or more taxi companies and manages the allocation of taxis owned by the contracted taxi companies. Specifically, the host computer 100a, which will be described later, is provided, and contracts with one or more taxi companies to manage taxi allocation of taxis owned by the contracted taxi companies. Further, the host computer 100a receives communication information from a communication device (not shown) mounted in the taxi 102 or a mobile terminal 104 owned by the user 103, and performs taxi dispatch processing.

[0027] The artificial satellite 101 represents a plurality of US GPS satellites. GPS is a signal that receives radio waves from US GPS satellites (artificial satellites) and obtains a geometric position with respect to GPS satellites, and can be measured anywhere on the earth. As the radio wave, an L1 radio wave having a carrier of 1.575.42 MHz and carrying a C/A (Coarse and Access) code and a navigation message is used.

[0028] The C/A code has a bit rate of 1.023 Mbps and the code length is 1023 bits=1 ms. In addition, the navigation message has a bit rate of 50 bps, the code length is 300 bits=6s for subframes, 1500 bits=30s for mainframes, 5 subframes are 1 mainframe, and 25 mainframes are 1 master. It is a frame. In addition, the navigation message contains the orbit information of the artificial satellite required for surveying and independent positioning, the general orbit information of the avant-garde property, the correction coefficient of the sanitary clock, and the ionosphere correction coefficient.

[0029] When the time is not prioritized, the user 103 enables the taxi company to select the type of taxi (large/medium-sized, female driver, non-smoking car, vehicle type, etc.) from the menu at an additional charge. At the same time, it is possible to contact by voice with detailed information such as nearby landmarks, the name of the client, and clothes. You may be able to receive a discount privilege by using a taxi via this service.

[0030] In addition, at that time, the service center 100 can efficiently select the optimum taxi based on the above selection information/supplementary information from the user, and use the taxi as a stop.

[0031] Then, the driver of the taxi 102 who has received the instruction to pick up the vehicle replies with an understanding, and at this timing, the arrival time calculated by using the car navigation function described later, the taxi by voice or e-mail to the user's mobile phone, and the taxi. Information about the vehicle dispatch status such as the company name and body color (vehicle dispatch status information) is returned.

[0032] Furthermore, the user 103 uses the mobile terminal 104 as the user's impression information (user's voice) if the taxi arrives at the destination and leaves the taxi, and if there is any dissatisfaction, the service center 100 (host computer 100a).) Can be sent by email. The service center 100 collects user's voice and can contact the taxi company at any time or periodically.

[0033] Hardware Configuration of Mobile Terminal: Next, the hardware configuration of the mobile terminal according to the embodiment of the present invention will be described. FIG. 2 is an explanatory diagram showing the hardware configuration of the mobile terminal 104 according to the embodiment of the present invention. In addition to the mobile phone 104a shown in FIG. 20, which will be described later, the mobile terminal may be a notebook PC 104c such as a PDA 104b or a laptop personal computer having a communication function.

[0034] In FIG. 2, 201 indicates a CPU that controls the entire device of the mobile terminal 104, 202 indicates a ROM that stores programs executed by the CPU 201, and 203 indicates a RAM that is used as a work area of the CPU 201. . The RAM 203 may be a non-volatile RAM that stores various information.

[0035] Reference numeral 204 denotes various buttons such as numeric buttons for inputting a telephone number or character string, and 205 denotes a display for displaying a menu described later.

[0036] Further, 206 is a transceiver that transmits and receives radio waves to and from a base station (not shown), 207 is a speaker that converts an electric signal input from the transceiver 206 into voice and outputs the voice, and 208 is input by an operator. Microphones that convert voice into an electric signal and output the electric signal to the transceiver 206 are shown. Reference numeral 209 indicates a GPS antenna for receiving

radio waves from the GPS satellite 101, and reference numeral 200 indicates a bus for connecting the above-mentioned units.

[0037] Further, although not shown, an image pickup device (digital camera) may be mounted. It is also possible to transmit a facial photograph of the user himself/herself, a physical appearance, and a landscape image of the present location taken by using the digital camera to the host computer 100a of the service center 100 through the network. This makes it possible to more clearly specify the position of the user or the user himself.

[0038] Hardware Configuration of Host Computer: Next, the hardware configuration of the host computer 100a according to the embodiment of the present invention will be described. FIG. 3 is an explanatory diagram showing the hardware configuration of the host computer 100a according to the embodiment of the present invention. In FIG. 3, 301 is a CPU that controls the entire apparatus, 302 is a ROM that stores basic input/output programs, and 303 is a RAM that is used as a work area of the CPU 301.

[0039] Reference numeral 304 denotes an HDD (hard disk drive) that controls reading/writing of data from/to an HD (hard disk) 305 under the control of the CPU 301, and 305 denotes an HD that stores written data under the control of the HDD 304. There is.

[0040] Further, 306 stores an FDD (floppy disk drive) that controls reading/writing of data from/to an FD (floppy (registered trademark) disk) 307 under the control of the CPU 301, and 307 stores data written under the control of the FDD 306. An FD as an example of a removable recording medium is shown.

[0041] In addition to the FD 307, a removable recording medium such as a memory card may be used. With this FD 307, it is possible to be registered in various databases, which will be described later, and maintenance information and version upgrade information of a program for controlling the host computer 100a.

[0042] Further, 308 is a cursor, menu, window, or display for displaying various data such as characters and images, 309 is a network interface that is connected to the network NET via the communication line 310 and functions as an interface between the network and the CPU 301. Are shown respectively.

[0043] Reference numeral 311 denotes a keyboard having a plurality of keys for inputting characters, numerical values, various instructions, and 312, a mouse for selecting and executing various instructions, selecting a processing target, moving a cursor, and the like. ing.

[0044] Further, 313 is a scanner for optically reading characters and images, 314 is a printer for printing characters and images under the control of the CPU 301, 315 is a removable recording medium CD-ROM, and 316 is a CD-ROM 315. Reference numeral 300 denotes a CD-ROM drive for controlling the reading of data from, and reference numeral 300 denotes a bus or cable for connecting the above-mentioned units.

[0045] The scanner 313 is used to input (read) facial photograph information of the user, facial photograph information of the driver, and photograph information regarding the appearance of the taxi. Then, at the time of communication with the user or driver read by the scanner 313, the employee information may be sent together. Further, it is equipped with an OCR function, and it is possible to input information to various databases using OCR paper. Further, the printer 314 can be used to output (print) a usage slip or the like.

[0046] Further, as with the FD 307, the CD-ROM 315 can input information to be registered in various databases and maintenance information and version upgrade information of a program for controlling the host computer 100a. In addition to the CD-ROM 315, it may be a CD-R, a CD-RW, or a DVD-ROM.

[0047] Functional Configuration of Mobile Terminal and Host Computer: Next, the functional configurations of the mobile terminal 104 and the host computer 100a according to the embodiment of the present invention will be described. FIG. 4 is an explanatory diagram functionally showing the configurations of the mobile terminal 104 and the host computer 100a according to the embodiment of the present invention.

[0048] The mobile terminal 104 according to the embodiment of the present invention includes a control unit 400a, a menu storage unit 400b, a display unit 400c, an input unit 400d, a position measurement unit 400e, a contact storage unit 400f, an arrangement request creation unit 400g, and a transmission/reception unit 400h. The arrangement contact storage unit 400i and the user impression information creation unit 400j are included.

[0049] The control unit 400a controls the processing of each function (configuration) unit 400b to 400j. The menu storage unit 400b stores information on various menu screens displayed on the display unit 400e when the user 103 makes a taxi arrangement request. The input unit 400d inputs instruction information of a taxi dispatch request or user impression information according to an operation instruction on the menu screen displayed on the display unit 400e.

[0050] The position measuring unit 400e measures (calculates) the current position based on the radio waves received by the GPS antenna 209. The contact address storage unit 400f stores information about its own telephone number and e-mail address, the telephone number of the service center 100 and the like, and contact information such as an e-mail address. The arrangement request preparation unit 400g prepares arrangement request information to be transmitted to the service center 100 based on the taxi dispatch request instruction information input by the input unit 400d.

[0051] The transmission/reception unit 400h controls data transmission/reception with the host computer 100a. The arrangement contact storage unit 400i stores the estimated arrival time of the selected taxi (calculated by the taxi selection unit 401c) and the characteristics of the taxi such as the color of the vehicle body and the gender of the driver (vehicle information DB or driver information). Information related to (extracted from DB) is stored. The user impression information creation unit 400j creates user impression information (user's voice) based on the information regarding the opinions and requests input from the input unit 400d.

[0052] Among these function (configuration) parts, the control part 400a, the position measuring part 400e, the arrangement request creating part 400g, and the user impression information creating part 400j are the programs read from the ROM 202 of the mobile terminal 104 to the RAM 203. Therefore, it is realized by the CPU 201 executing instruction processing.

[0053] Further, the menu storage unit 400b, the contact address storage unit 400f, and the arrangement contact storage unit 400i realize their functions by the RAM 203 of the mobile terminal 104. Further, the display unit 400e realizes its function by the display 205 of the mobile terminal 104. Moreover, the input unit 400d realizes its function by the button 204 of the mobile terminal. Further, the transmission/reception unit 400h realizes its function by the transceiver 206 of the mobile terminal 104.

[0054] Therefore, the position measuring section 400e corresponds to the "position measuring means" in the claims, and the process performed by the position measuring section 400e corresponds to the "position measuring step" in the claims. The input unit 400d corresponds to the "condition designating means" in the claims, and one of the processes to be performed includes the "condition designating step" in the claims. Further, the transmission/reception unit 400h also serves as the "arrangement request transmitting means" and the "user impression information transmitting means" in the claims, and one of the processes to be performed is "arrangement request transmitting step" and "user" in the claims. The impression information transmitting step" is included.

[0055] Further, the host computer 100a according to the embodiment of the present invention includes a control unit 401a, a transmission/reception unit 401b, a taxi selection unit 401c, a vehicle information storage unit 401d, a driver information storage unit 401e, a position information storage unit 401f, and a usage information storage. This is a configuration including a section 401g and an arrangement contact creation section 401h.

[0056] The control unit 401a controls the processing of each function (configuration) unit 401b to 401h. The transmission/reception unit 401b controls transmission/reception of data to/from each mobile terminal 104. The taxi selecting unit 401c selects a taxi to be dispatched based on the dispatch request information received by the transmitting/receiving unit 401b.

[0057] Various information stored in a database, which will be described later, is stored in various storage units of the vehicle information storage unit 401d, the driver information storage unit 401e, the position information storage unit 401f, and the usage information storage unit 401g. Details of the contents of the information stored in each storage unit will be described later. Further, the arrangement contact creating unit 401h creates information regarding arrangement contact to be transmitted to the user.

[0058] Among these functional units, the control unit 401a, the taxi selection unit 401c, and the arrangement contact creation unit 400h follow the programs read into the RAM 303 from various recording media such as the HD 305 and FD 307 of the host computer 100a or the CD-ROM 315. The CPU 301 and the like execute the

command processing.

[0059] Further, the transmission/reception unit 401b realizes its function by the I/F 309 of the host computer 100a. Further, the vehicle information storage unit 401d, the driver information storage unit 401e, the position information storage unit 401f, and the usage information storage unit 401g have their functions by the respective recording media such as the RAM 303, the HDD 305, the FD 307, and the CD-ROM 315 of the host computer 100a. Realize.

[0060] Therefore, the transmitting/receiving unit 401b also serves as "arrangement request receiving means" and "arrangement contact transmitting means" in the claims, and one of the processes to be performed is "arrangement request receiving step" and "arrangement contact transmitting step" in the claims. Is included.

[0061] Configuration of each database: Next, the configuration of the database stored in the service center 100 will be described. 5 to 13 are explanatory views showing the structure of the database accumulated in the service center 100 of the taxi arrangement system according to the embodiment of the present invention. These databases may be collectively stored in a storage means (for example, RAM 303, HD 305, FD 307, CD-ROM 315) of the host computer 100a provided in the service center, or connected to the host computer 101a via a network. It may be stored in a distributed manner in another information processing device (database server (not shown)) that has been stored.

[0062] FIG. 5 is a database of customer information files. This database may be stored in the usage information storage unit 401g of the host computer 100a. This customer information file includes a customer ID (1. customer ID), a customer phone number (2. phone number), a customer name (3. name), and a credit card number (4. credit card) used for payment. Number) and at least. Customer IDs are automatically numbered in the order in which they are registered. The service center 100 centrally manages the arrangement and settlement of the vehicle dispatch based on this customer ID.

[0063] Further, the customer's telephone number may be a contact for information regarding vehicle allocation, and may be the telephone number of a mobile phone or the email address of a mobile information terminal device. The name of the customer may be an individual name or a corporate name. Furthermore, the credit card number and the personal identification number of the credit card may be registered together.

[0064] FIG. 6 is a database of usage information files. This database may be stored in the usage information storage unit 401g of the host computer 100a. This usage information file includes a usage ID (1. usage ID) attached when the customer uses the taxi arrangement system, a date and time when a taxi allocation request is made (2. usage date and time), and a taxi allocation A mark that shows the current location when making a request or the appearance and clothes of the user (3. mark), the ID given to the driver of the taxi targeted for dispatch (4. driver ID), and the usage The fee (5. usage fee) and the taxi type specified at that time (6. type specification) and the user's payment (settlement) method (7. settlement record (cash, cash, Card)), and at least.

[0065] FIG. 7 is a database relating to user side evaluation files. This database may be stored in the usage information storage unit 401g of the host computer 100a. This user-side evaluation file includes a usage ID (1. usage ID) linked to "1. usage ID" of the usage information file shown in FIG. 6, and an evaluation of the user's taxi vehicle (2. At least the evaluation), the evaluation of the driver of the taxi used (3. Evaluation of the driver), and the overall evaluation of the used taxi (4. Evaluation of the entire service).

[0066] Here, the evaluation of the vehicle is, for example, "comfortable seat comfort" or "quiet engine sound" as a good evaluation, and "narrow office space" or "bad color" as a bad evaluation. , "I'm worried about the smell inside the car." In addition, the good evaluations of the driver were "good feeling" and "polite driving (smooth acceleration/deceleration)" as good evaluations, and "did not load luggage" as bad evaluations. I made a mistake in the route.' Further, the evaluation of the entire service is, for example, "I want to use it again", "I do not want to use it again", "It is better to improve XX", etc.

[0067] FIG. 8 is a database regarding the driver side evaluation file. This database may be stored in the driver information storage unit 401e of the host computer 100a. This driver-side evaluation file is an evaluation of the usage ID (1. usage ID) linked to the "1. usage ID" of the usage information file shown in FIGS. 6 and 7, and the driver's customer (user). It includes at least (2. customer evaluation) and notes (3. notes) to the customer.

[0068] Here, the driver's customer (user) evaluation is, for example, "gentlemanly" or the like as a good evaluation, and "complains about driving" or "kick the seat" as a bad evaluation. It's like that.' Further, as notes

to the customer, for example, "do not speak unless necessary", "reduce sudden braking as much as possible", and "prone to motion sickness".

[0069] The user-side evaluation file shown in FIG. 7 and the driver-side evaluation file shown in FIG. 8 are linked to each other, and when the evaluations are performed, the evaluation contents are compared with each other to perform a comprehensive evaluation. It is good to do so. Accordingly, for example, it is possible to prevent the driver's one-sided evaluation (bad evaluation) from becoming a prejudicial evaluation of the driver.

[0070] The user-side evaluation file shown in FIG. 7 and the user-side evaluation file shown in FIG. 8 compile the evaluation of each driver for each user or the evaluation of each user for each driver from the usage ID. It can be used as a reference for comprehensive evaluation of the user or driver.

[0071] FIG. 9 is a database relating to vehicle information files. This database may be stored in the vehicle information storage unit 401d of the host computer 100a. This vehicle information file is an ID about the taxi vehicle (1. vehicle ID), information about the vehicle type of the taxi vehicle (2. vehicle type), and whether the taxi vehicle is a non-smoking vehicle (including driver) or a smokeable vehicle. Whether or not it is (3. Smoking cessation/smoking), Information on the size of the taxi vehicle (4. Large/medium/small), and Information on the year of the taxi vehicle (5. Year) , At least is included. It is not necessary to provide the information regarding the model year, and it may be included in the information regarding the vehicle type.

[0072] FIG. 10 is a database regarding the position information file. This database may be stored in the position information storage unit 401f of the host computer 100a. This position information file is a two-dimensional position of the taxi vehicle ID (1. vehicle ID) linked to the "1. vehicle ID" of the vehicle information file shown in FIG. 9 and the current position of the taxi vehicle. It includes at least an X coordinate (2. X coordinate) and a Y coordinate (3. Y coordinate) for identifying the vehicle, and information regarding whether the taxi vehicle is an empty vehicle (4. empty vehicle status). The X-coordinate and the Y-coordinate change every moment if the taxi vehicle is moving, and it is necessary to measure and grasp them at predetermined time intervals and rewrite the database each time.

[0073] In addition, the information regarding whether or not the vehicle is empty is interlocked with the fare meter of the taxi vehicle, the information is acquired, and the database is rewritten each time.

[0074] FIG. 11 is a database relating to the current information file. This database may be stored in the vehicle information storage unit 401d or the driver information storage unit 401e of the host computer 100a. This current information file is an ID related to a taxi vehicle (1. vehicle ID) linked to "1. vehicle ID" in the files shown in FIGS. 9 and 10, and a driver information file "1. At least the driver-related ID linked with the driver ID (2. driver ID).

[0075] This current information file is not necessary, for example, when the same driver always rides on a certain taxi vehicle, but in other cases, such as when the riding vehicle changes depending on the work schedule, the current vehicle and its This is a database for understanding the driver who is in the vehicle. Therefore, the contents of this database are rewritten at the start of work, end of work, change of work, etc. This makes it possible for the user to make a vehicle allocation that he/she prefers. In other words, it is possible to easily answer the wish of "Ichiro Suzuki driver with a non-smoking car".

[0076] FIG. 12 is a database relating to driver information files. This database may be stored in the driver information storage unit 401e of the host computer 100a. This driver information file includes information (1. driver ID) about the ID assigned to the driver, information (2. name) about the driver's name, and information (3. gender) about the driver's gender.) And information about the age of the driver (4. age).

[0077] In particular, when the taxi is selected, it is possible to promptly respond to the user's request by making it easy to search according to the sex and age of the driver. Although illustration is omitted, information about years of crew experience, traffic violation information, and the like may also be registered together. In the case of a VIP user or the like, it may be a target for selection.

[0078] FIG. 13 is a database relating to vehicle allocation information files. This database may be stored in the usage information storage unit 401g of the host computer 100a. The vehicle allocation information file includes an ID (1. vehicle ID) relating to a taxi vehicle linked to "1. vehicle ID" of the file shown in FIGS. 9, 10 and 11, and a customer information file shown in FIG. An ID related to the customer (2. customer ID) linked to "1. customer ID" and an ID related to usage (3. usage ID) linked to "1. usage ID" in the usage information file

shown in FIG. 9. At least is included. As a result, it is possible to easily grasp the current vehicle allocation (actual vehicle) situation.

[0079] Operation contents of taxi arrangement system: Next, operation contents of the taxi arrangement system according to the embodiment of the present invention will be described. FIG. 14 and FIG. 15 are flowcharts showing a series of flows from application for taxi use to reply of user impression information after use in the taxi arrangement system according to the embodiment of the present invention. The details of the functions of the respective units shown in FIG. 4 will be sequentially described along this flowchart.

[0080] In steps S1401 to S1403, the user sends a taxi application, that is, a taxi arrangement request, from his/her mobile terminal 104 to the host computer 100a of the service center.

[0081] First, in step S1401, the control unit 400a of the mobile terminal 104 retrieves a menu as shown in FIG. 16 from the menu storage unit 400b and displays it on the display unit 400c. Although the menu is built in the mobile terminal 104 in advance in order to reduce the connection time, the menu published by the host computer 100a may be downloaded and displayed.

[0082] Then, in the menu shown in the figure, the user's name, number of people, destination and landmarks (such as "underneath the electronic bulletin board in front of XX station" and other target objects, such as "brown coat and green umbrella"), "70s female", and other information useful for the driver to identify the user). Then, when "transmission" is selected and determined in the figure, the process proceeds to step S1402, but when "condition designation" is selected and determined, a menu as shown in FIG. 17 is displayed instead of FIG. 16.

[0083] When you press a specific button in the menu shown in the figure, "No hope" in the "Type" item where the reverse cursor is positioned appears in the order of "Small size" → "Medium size" → "Large size" → "No hope". Switch to cyclic. When the reversing cursor is moved to the "Vehicle type" item and the above button is pressed in the same manner, the selection is switched to "no hope" → "crown" → "gloria" → ... → "no hope".

[0084] Similarly, the "color" item is "no hope" → "yellow" → "black" → ... → "no hope", and the "company" item is "no hope" → "○○ taxi (yes)" → "××Taxi Co., Ltd." → ... → "No Hope", "No Smoking" for "No Hope" → "Yes" → "No" → "No Hope", "No Hope" for "Driver" → "Men" → "Women" → "No hope". Then, when "transmission" is selected and determined in the figure, the process proceeds to step S1402.

[0085] In step S1402, the control unit 400a of the mobile terminal 104 acquires its own position, which is measured by the position measurement unit 400e by the conventional GPS. Further, it acquires its own telephone number and mail address stored in advance in the contact address storage section 400f.

[0086] Then, in step S1403, the control unit 400a controls the arrangement request creation unit 400g to create an arrangement request having the following contents (1) to (4), and transmits this to the host computer 100a from the transmission/reception unit 400h. To do.

[0087] (1) User's name, number of people, destination, and landmark input by the menu shown in FIG. 16 in step S1401. (2) Taxi type, vehicle type, color, company, smoking allowed/not allowed, and driver's gender specified by the menu shown in FIG. 17 in step S1401. (3) The position acquired in step S1402. (4) The contact information obtained in step S1402.

[0088] In step S1404, the host computer 100a of the service center 100 receives the arrangement request by the transmission/reception unit 401b. Then, in step S1405, the control unit 401a instructs the taxi selection unit 401c to select the optimal taxi to meet the above-mentioned arrangement request.

[0089] The optimal taxi is that if you can arrive at the place where the user waits earliest, and it is vacant by that time at the latest, and if conditions such as type are specified in the above-mentioned menu, select the condition. It is a taxi that can be satisfied as much as possible. The taxi selection unit 401c compares the received arrangement request with the vehicle information DB, driver information DB, and position information DB described below to search for the optimal taxi.

[0090] The vehicle information storage unit 401d of the host computer 100a holds in advance the vehicle information file (database) shown in FIG. 9 and including the following items. (1) Vehicle ID: Individual taxi identification number (3) Smoking: Yes/No (4) Large/Medium/Small (5) Year, color, etc.

[0091] Furthermore, (6) company: the name of the corporation that owns the taxi, (7) contact information: the address of the mobile terminal mounted in the vehicle, etc. may be included.

[0092] Further, the driver information storage unit 401e holds in advance a driver information DB including the following items. (1) Driver ID: Individual driver identification number (2) Name: Driver name (3) Gender: Driver gender (4) Age: Driver age

[0093] In addition, the position information storage unit 401f holds a position information file and a current information file that include the following items. The contents of the "position" item and the "state" item of the following are periodically notified from each taxi 102 to the host computer 100a and updated at any time.

[0094] (1) Vehicle ID (2) Driver ID: Driver ID on board (3) Position: Current position of taxi (4) State: Either empty/rented/reserved

[0095] Even if the distance between the user and the taxi is short, it may take some time to arrive depending on the traffic conditions. Therefore, the taxi selection unit 401c uses the conventional technology such as VICS, and the taxi selection unit 401c is in the state of an empty car. Pick the taxi that will arrive first in. The current position of the user is from the received arrangement request, the current position of the taxi is from the position information DB, and whether or not the taxi is vacant when arriving is determined by the "status" item in the position information DB and information regarding the exit location. It can be determined from each.

[0096] Then, the taxi selection unit 401c checks whether or not the taxi selected above satisfies the conditions specified in the above menu, and if the conditions are satisfied or the condition is not specified in the first place, the process proceeds to step S1405. To do.

[0097] If the selected taxi does not meet the specified conditions, the taxi that can arrive next, the taxi that can arrive next, and so on, are searched in sequence, and when a taxi that meets the conditions is found. The process moves to step S1406. However, when the time required to arrive at the site exceeds the predetermined threshold, any item in the specified conditions is ignored, and when the earliest taxi that satisfies this condition after relaxation is found. The process moves to step S1406.

[0098] In step S1406, the host computer 100a confirms whether the taxi selected in step S1405 can be handled with the user's current position and destination (extracted from the request for arrangement). When the driver's consent is obtained (step S1406: YES), the process proceeds to step S1407. If the driver's consent cannot be obtained (step S1406: NO), the process returns to step S1405 to continue the search for the next best taxi.

[0099] In step S1407, the control unit 401a of the host computer 100a instructs the ordering contact creating unit 401h to create an ordering contact to be sent to the user, and the sending/receiving unit 401b sends it to the user's mobile terminal 104. Send to.

[0100] In step S1408, the mobile terminal 104 receives the notification by the transmission/reception unit 400h and displays it on the display unit 400c. FIG. 18 is an explanatory diagram showing an example of arrangement contact displayed by the display unit 400c. As shown in the figure, for the arrangement contact, the estimated arrival time of the selected taxi (calculated by the taxi selection unit 401c) and the characteristics of the taxi such as the color of the vehicle and the gender of the driver (vehicle information DB and driver information) (Extracted from DB) is described.

[0101] Then, when "OK" is selected and determined in the figure (step S1409: Yes), the control unit 400a saves the arrangement report received in step S1408 in the arrangement communication storage unit 400i in step S1410.

[0102] In step S1411, the host computer 100a registers the arrangement request received in step S1404 in the usage information file (DB) in the usage information storage unit 401g under the control of the control unit 401a. The following items are held in this usage information DB.

[0103] (1) Usage ID: It is an identification number of each usage, and is given at the time of DB registration (2) Date and time: Registration date and time of request for arrangement (3) Name: Name of user requesting arrangement (4) Number of people: Requesting arrangement Number of passengers (5) Boarding place: Location of the user requesting arrangement (6) Place of disembarkation: Destination or actual disembarking

place of the requesting arrangement (7) Contact: Telephone of the user requesting arrangement Number and email address (8) Conditions: Type, vehicle type, color, company, smoking allowed/not allowed, gender of driver (if any) specified in the request for arrangement (9) Vehicle ID: of the selected taxi ID (10) Driver ID: Driver ID for the above taxi (11) Usage fee: Taxi usage fee

[0104] Next, in step S1412, the host computer 100a informs the taxi selected in step S1405 of the necessary information such as the user's name and mark, and instructs the taxi to head to the site.

[0105] After that, if a taxi is used in step S1413 and there is any opinion or request, the user inputs the opinion/request from the input unit 400d of the mobile terminal 104 in step S1414. Then, in step S1415, the control unit 400a instructs the user impression information creation unit 400j to connect the arrangement contact saved in step S1410 to the above-mentioned opinion/request, and the entire user impression information (remote information). The voice of the reef) is transmitted from the transmitting/receiving unit 400h to the host computer 100a. Then, the process according to this flowchart is completed.

[0106] FIG. 19 is an explanatory diagram showing an example of user impression information (card) transmitted from the mobile terminal 104 to the host computer 100a. The contents of the arrangement contact shown in FIG. 18 are added below the text input by the user.

[0107] FIG. 15 is a flowchart showing another part of a series of flow from application for taxi use to reply of user impression information after use in the taxi arrangement system according to the embodiment of the present invention. In the flowchart of FIG. 15, priority information is displayed when the vehicle allocation request menu screen is displayed (step S1501). Although not shown in the figure, this priority information display (screen) allows the user to select whether to prioritize the taxi arrival time or whether the taxi vehicle type has priority over the taxi arrival time. It is a screen.

[0108] If the user makes a selection on this priority information display screen (step S1502) and the taxi vehicle type is selected to be prioritized (step S1502: "type"), then When the input of all the conditions is completed after waiting for the input of the condition related to the type and the information related to the condition is received (step S1503: Yes), the taxi corresponding to the condition is next based on the received information. A vehicle is selected (step S1504).

[0109] After that, the driver of the selected taxi vehicle is contacted to confirm whether or not the driver is OK at the intercepting vehicle (step S1505). If the driver is not OK (step S1505: No), the process returns to step S1504 to reselect a taxi other than the taxi vehicle of the driver that meets the conditions (step S1504).

[0110] And each process of step S1504 and step S1505 is repeatedly performed until the driver becomes OK, and when the driver becomes OK (step S1505: Yes), it is selected next and the driver becomes OK. It is confirmed whether or not the user is good with the taxi vehicle (including the driver) that has become defective (step S1506). Here, when the user is not OK (step S1506: No), the process returns to step S1504 and the selection is performed again (step S1506). When both the driver and the user are OK in this way (step S1504: Yes), the process proceeds to step S1407 shown in FIG.

[0111] On the other hand, if priority is given to time in step S1502, that is, if it is desired to come as soon as possible (step S1502: "time"), then the nearest taxi is selected (recognized) from the location of the user (step S1507). After that, the driver communicates with the driver of the selected taxi vehicle and confirms whether or not the driver is able to intercept the vehicle (step S1508). Here, if the driver is not OK (step S1508: No), the process returns to step S1507 to reselect a taxi other than the taxi vehicle of the driver that meets the conditions (step S1507).

[0112] Then, the steps S1507 and S1508 are repeatedly performed until the driver becomes OK, and when the driver becomes OK (step S1508: Yes), the process proceeds to step S1407 shown in FIG.

[0113] In this way, it is possible to respond more flexibly according to the situation of the user at that time.

[0114] System configuration of taxi arrangement system: An example of the system configuration of the taxi arrangement system according to the embodiment of the present invention will be described. FIG. 20 is an explanatory diagram showing an example of the system configuration of the taxi arrangement system according to the embodiment of the present invention. In FIG. 20, reference numeral 104a denotes a mobile terminal carried by a taxi user, typically the mobile phone 104a, but it may be a PDA 104b, a notebook PC 104c, or the

like. Further, 100a is a host computer installed in the above service center 100, and 102a and 102b are taxis of each taxi company that has a contract with the service center 100.

[0115] Each of the taxis 102a and 102b notifies the host computer 100a of the current position grasped by the GPS-equipped car navigation systems 121a and 121b and the current state (whether or not the vehicle is empty). When the host computer 100a receives a taxi arrangement request from the user's mobile terminal 104, the host computer 100a selects an optimal taxi based on the relative position of the user and each taxi, and determines characteristics such as the estimated arrival time and the color of the vehicle body. The mobile terminal 104 can be contacted.

[0116] According to the embodiment described above, since the current position of the user measured by GPS is automatically transmitted to the service center, the user does not need to explain the place because he or she is out of the office. The service center can also avoid wasteful dispatch to the wrong place.

[0117] In addition, since the user is notified in advance of the characteristics of the taxi arriving and the estimated time of arrival, and the driver's landmarks etc. entered by the user, both parties can easily communicate with each other locally. Can be specified. It should be noted that the user may be notified of the approximate value of the usage charge (this can be calculated from the position of the user requesting the arrangement and the destination) during the arrangement contact. This allows the user to take a taxi without worrying about whether the money is sufficient.

[0118] In addition, since users can specify taxi conditions in detail, in addition to providing services that better meet the needs of customers, there is a business opportunity to collect an additional fee for specification, and taxi companies can You can increase the rate.

[0119] In addition, you can choose to take a taxi of your choice and receive a taxi discount. For example, a taxi of a light car may be used because one person rides alone, so a system may be provided in which the fare is discounted accordingly.

[0120] Note that the conditions that can be specified are not limited to those related to the vehicle and the driver as shown in FIG. 17, and for example, a "payment" item may be provided so that payment with a credit card can be specified. In this way, by inputting the card number in advance when making an arrangement request, the service center can finish the confirmation with the card company while using the taxi, so that it is possible to shorten the time required for payment when getting off.

[0121] Moreover, in the above-described embodiment, the service center has a problem because it is clear in the user impression information (card) that the opinions and requests sent from the user relate to when and when to use. You can easily and quickly identify a taxi. Also, instead of an opinion or request, if you write "I left my bag in the trunk of a taxi that I took 30 minutes ago", even if the user did not remember the driver's name or vehicle ID, the service center You can instantly identify which taxi the taxi is, so that you can smoothly collect lost items.

[0122] In addition, even if not only the user but also the taxi driver can send information to the service center, such as "I had something left behind with an umbrella", "I will be careful about driving from the next time because this customer is likely to get car sickness" Good. At this time, the document or the like transmitted at the time of confirmation (step S1406) or contact (step S1412) to the driver is quoted so that it is possible to easily correlate the use and the use. ..

[0123] Furthermore, since the voice of the user after use can be easily reflected, it is expected that the morale and service of the driver can be improved, and the trouble with the user can be reduced as much as possible.

[0124] Further, the taxi arrangement method in the present embodiment may be a computer-readable program prepared in advance, and is realized by executing the program on a computer such as a personal computer or a workstation. This program is recorded on a computer-readable recording medium such as HD (hard disk), FD (floppy disk), CD-ROM, MO, or DVD, and is executed by being read from the recording medium by the computer. Further, this program may be a transmission medium that can be distributed via a network such as the Internet.

[0125] As described above, the invention according to claim 1 is a taxi arrangement system in which a host computer receives an arrangement request from a mobile terminal and arranges a taxi. Position measuring

means for measuring a position, condition specifying means for specifying a condition to be met by a taxi, arrangement request transmitting means for transmitting the position measured by the position measuring means and the condition specified by the condition specifying means, And an arrangement request receiving means for receiving the position and condition transmitted by the arrangement request transmitting means, and a feature of the taxi selected according to the condition received by the arrangement request receiving means, and/or Or, the arrangement contact transmission means for transmitting the estimated arrival time is provided, so that a taxi according to the conditions specified by the user can be accurately directed to the place where the user is, and the feature is given to the user in advance. The scheduled arrival time is notified, and thus, a taxi arrangement system that allows the user to arrange a favorite taxi and smoothly identify and arrange the arranged taxi can be obtained.

[0126] In the invention according to claim 2, in the invention according to claim 1, the conditions designated by the condition designating means are taxi type, vehicle type, color, company, smoking enabled/disabled, or driving. Since it is the gender of the hand, the user can specify the taxi type, vehicle type, color, company, smoking allowed, or the gender of the driver, which allows the user to arrange the taxi of their choice. The effect of being able to obtain a taxi arrangement system is possible.

[0127] The invention according to claim 3 is characterized in that, in the invention according to claim 1 or 2, the portable terminal is further characterized by a taxi and/or an arrival schedule that has been transmitted by the arrangement contact transmitting means. Since we have a user sentiment information transmission means that sends user opinions and requests in association with time, which taxi is used when and where the opinions and requests sent from users are Can be easily identified, and thus a taxi arrangement system that can efficiently collect the voices of users can be obtained.

[0128] Further, the invention according to claim 4 is a taxi arrangement method in which a host computer receives an arrangement request from a mobile terminal to arrange a taxi, and a position measuring step of measuring the position of the terminal with the mobile terminal. A condition specifying step of specifying conditions to be satisfied by the taxi, an arrangement request transmitting step of transmitting the position measured in the position measuring step and the condition specified in the condition specifying step, and the arrangement request by the host computer An arrangement request receiving step of receiving the position and the condition transmitted in the transmitting step, and an arrangement contact transmitting step of transmitting the characteristics and/or estimated arrival time of the taxi selected according to the condition received in the arrangement request receiving step. , Is included, the taxi according to the conditions specified by the user will be accurately sent to the place where the user is, and the user will be notified in advance of its characteristics and estimated arrival time. There is an effect that a person can arrange a taxi of his or her preference and a taxi arrangement method can be obtained in which the arranged taxi can be smoothly identified and boarded.

[0129] In the invention according to claim 5, in the invention according to claim 4, the conditions specified in the condition specifying step are taxi type, vehicle type, color, company, smoking enabled/disabled, or driving. Since it is the gender of the hand, the user can specify the taxi type, vehicle type, color, company, smoking allowed, or the gender of the driver, which allows the user to arrange the taxi of their choice. The effect of being able to obtain a taxi arrangement method is possible.

[0130] In the invention according to claim 6, in the invention according to claim 4 or 5, the characteristics of the taxi and/or the estimated arrival time which are transmitted by the mobile terminal in the arrangement contact transmission step are further included. Since we included a user sentiment information transmission process that sends the user's opinions and requests in association with the above, which taxi is used when and when the opinions and requests sent from the user are This has the effect of providing a taxi arrangement method that can be easily specified and that can efficiently collect the voices of users.

[0131] Further, according to the invention described in claim 7, there is an effect that a program capable of causing a computer to execute the method described in any one of claims 4 to 6 is obtained.



UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/236,491	04/21/2021	Sean O'SULLIVAN	00199-0001-25000	7940
108449	7590	07/16/2021		
Bookoff McAndrews, PLLC 2020 K Street NW Suite 400 Washington, DC 20006			EXAMINER WENDELL, ANDREW	
			ART UNIT	PAPER NUMBER
			2648	
			NOTIFICATION DATE	DELIVERY MODE
			07/16/2021	ELECTRONIC

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

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

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

KRoss@bomcip.com
eofficeaction@apcoll.com
usptomail@bomcip.com

Corrected Notice of Allowability	Application No. 17/236,491	Applicant(s) O'SULLIVAN, Sean	
	Examiner ANDREW WENDELL	Art Unit 2648	AIA (FITF) Status No

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

1. ☒ This communication is responsive to 7/12/2021.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are 2-21. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some *c) ☐ None of the:

 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

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

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

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

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

Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)

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

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

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

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

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

U.S.PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
/A.W/	1	4360875		1982-11-23	BEHNKE; Robert W.	
/A.W/	2	5799263		1998-08-25	CULBERTSON; Russell D.	
/A.W/	3	6085976		2000-07-11	SEHR; Richard P.	
/A.W/	4	6363323		2002-03-26	JONES; Martin Kelly	
/A.W/	5	6434510		2002-08-13	CALLAGHAN; Terry S.	
/A.W/	6	6675150		2004-01-06	CAMER; Dorothy	
/A.W/	7	6919804		2005-07-19	COOK; Kenneth J. et al.	
/A.W/	8	6975997		2005-12-13	MURAKAMI; Hiroshi et al.	

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

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

/A.W/	9	7062376		2006-06-13	OESTERLING; Christopher L.	
/A.W/	10	7080019		2006-07-18	HURZELER; Philip	
/A.W/	11	7119716		2006-10-10	HORSTEMEYER; Scott A.	
/A.W/	12	7363319		2008-04-22	CAPPELLINI; Pablo Dario	
/A.W/	13	7449998		2008-11-11	AU; Daniel W. et al.	
/A.W/	14	7870025		2011-01-11	ENGLISH; Paul	
/A.W/	15	7877204		2011-01-25	SPRIGG; Stephen A.	
/A.W/	16	8682804		2014-03-25	YOON; Hyoungsoo	
/A.W/	17	9026454		2015-05-05	HINRICHS; Andreas et al.	
/A.W/	18	9911169		2018-03-06	GEIST; Wyatt Drake et al.	
/A.W/	19	9978282		2018-05-22	LAMBERT; Chris et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		17236491
	Filing Date		2021-04-21
	First Named Inventor	Seam O'SULLIVAN	
	Art Unit	2648	
	Examiner Name	Not Yet Assigned Andrew Wendell	
	Attorney Docket Number	00199-0001-25000	

/A.W/	20	9991169		2018-06-05	VAN DAL; Mark et al.	
/A.W/	21	10121289		2018-11-06	GRAVELLE; Kelly	
/A.W/	22	10748420		2020-08-18	O'SULLIVAN; Sean	
/A.W/	23	10803749		2020-10-13	O'SULLIVAN; Sean	

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

Add

U.S.PATENT APPLICATION PUBLICATIONS

Remove

Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
/A.W/	1	20010037174		2001-11-01	DICKERSON; Stephen L.	
/A.W/	2	20010056363		2001-12-27	GANTZ; Donald T. et al.	
/A.W/	3	20020011940		2002-01-31	CAPPEL; Joachim	
/A.W/	4	20020034292		2002-03-21	TUORINIEMI; Veijo M. et al.	
/A.W/	5	20020040944		2002-04-11	TAKAHA; Satoru et al.	

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

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

/A.W/	6	20020046076		2002-04-18	BAILLARGEON; Daniel G. et al.	
/A.W/	7	20020052751		2002-05-02	EBATA; Shinji	
/A.W/	8	20020069017		2002-06-06	SCHMIER; Kenneth J. et al.	
/A.W/	9	20020121962		2002-09-05	WOLFE; Chris	
/A.W/	10	20020127997		2002-09-12	KARLSTEDT; Paul et al.	
/A.W/	11	20020135515		2002-09-26	RANKIN; Paul J. et al.	
/A.W/	12	20020156572		2002-10-24	BULLOCK; James Blake et al.	
/A.W/	13	20020173978		2002-11-21	BOIES; Stephen J. et al.	
/A.W/	14	20030040944		2003-02-27	HILEMAN; Ryan M.	
/A.W/	15	20030100993		2003-05-29	KIRSHENBAUM; Evan R. et al.	
/A.W/	16	20030139941		2003-07-24	MATSUMOTO; Manabu	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		17236491
	Filing Date		2021-04-21
	First Named Inventor	Seam O'SULLIVAN	
	Art Unit	2648	
	Examiner Name	Not Yet Assigned Andrew Wendell	
	Attorney Docket Number	00199-0001-25000	

/A.W/	17	20030179113		2003-09-25	APOSTOLOPOULOS; John G. et al.	
/A.W/	18	20030195694		2003-10-16	KOZAK; Frank et al.	
/A.W/	19	20040015475		2004-01-22	SCHEEPSMA; Leonard	
/A.W/	20	20040049424		2004-03-11	MURRAY; Thomas A. et al.	
/A.W/	21	20040076280		2004-04-22	ANDO; Tanichi et al.	
/A.W/	22	20040106399		2004-06-03	KI; Joon- Seong	
/A.W/	23	20040119589		2004-06-24	FRENCH; Kevin et al.	
/A.W/	24	20040124977		2004-07-01	BIFFAR; Peter	
/A.W/	25	20040158483		2004-08-12	LECOUTURIER; Jacques M.	
/A.W/	26	20040181495		2004-09-16	GRUSH; Bernard	
/A.W/	27	20040243430		2004-12-02	HORSTEMEYER; Scott A.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		17236491
	Filing Date		2021-04-21
	First Named Inventor	Seam O'SULLIVAN	
	Art Unit	2648	
	Examiner Name	Not Yet Assigned Andrew Wendell	
	Attorney Docket Number	00199-0001-25000	

/A.W/	28	20040249818		2004-12-09	SAAC; Stephen John	
/A.W/	29	20040260470		2004-12-23	RAST; Rodger H.	
/A.W/	30	20040267449		2004-12-30	ADAMCZYK; Maria	
/A.W/	31	20050021227		2005-01-27	MATSUMOTO; Shuichi et al.	
/A.W/	32	20050049781		2005-03-03	OESTERLING; Christopher L.	
/A.W/	33	20050165762		2005-07-28	BISHOP; Joseph	
/A.W/	34	20050172148		2005-08-04	YING; Jeffrey	
/A.W/	35	20050197767		2005-09-08	NORTRUP; Edward H.	
/A.W/	36	20060010037		2006-01-12	ANGERT; Charles D. et al.	
/A.W/	37	20060015394		2006-01-19	SORENSEN; Roger G.	
/A.W/	38	20060039577		2006-02-23	SANGUINO; Jorge et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	17236491
	Filing Date	2021-04-21
	First Named Inventor	Seam O'SULLIVAN
	Art Unit	2648
	Examiner Name	Not Yet Assigned Andrew Wendell
	Attorney Docket Number	00199-0001-25000

/A.W/	39	20060059023		2006-03-16	MASHINSKY; Alex	
/A.W/	40	20060091206		2006-05-04	OLSEN; John A. et al.	
/A.W/	41	20060153099		2006-07-13	FELDMAN; Sharoni et al.	
/A.W/	42	20060178949		2006-08-10	McGRATH; Paul Thomas	
/A.W/	43	20060234631		2006-10-19	DIEGUEZ; Jorge	
/A.W/	44	20060259353		2006-11-16	GUTMANN; Steven Patrick	
/A.W/	45	20060276960		2006-12-07	ADAMCZYK; Maria et al.	
/A.W/	46	20070013209		2007-01-18	NEUBURGER; Doron et al.	
/A.W/	47	20070027825		2007-02-01	PEARCE; John H. et al.	
/A.W/	48	20070030824		2007-02-08	RIBAUDO; Charles S. et al.	
/A.W/	49	20070052586		2007-03-08	HORSTEMEYER; Scott A.	

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

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

/A.W/	50	20070135078		2007-06-14	LJUNG; Peter	
/A.W/	51	20070143012		2007-06-21	KEAVENY; Ian et al.	
/A.W/	52	20070150369		2007-06-28	ZIVIN; Michael A.	
/A.W/	53	20070179792		2007-08-02	KRAMER; James Frederick	
/A.W/	54	20070243880		2007-10-18	GITS; Peter Michael et al.	
/A.W/	55	20070276595		2007-11-29	LEWINSON; Tom et al.	
/A.W/	56	20080004802		2008-01-03	HORVITZ; Eric J.	
/A.W/	57	20080041936		2008-02-21	MAWTER; Jamison	
/A.W/	58	20080091342		2008-04-17	ASSAEL; Jeffrey	
/A.W/	59	20080109852		2008-05-08	KRETZ; Martin H. et al.	
/A.W/	60	20080114629		2008-05-15	PAVLOV; Dmitry Yurievich	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		17236491
	Filing Date		2021-04-21
	First Named Inventor	Seam O'SULLIVAN	
	Art Unit	2648	
	Examiner Name	Not Yet Assigned Andrew Wendell	
	Attorney Docket Number	00199-0001-25000	

/A.W/	61	20080114829		2008-05-15	BUTTON; Thomas L. et al.	
/A.W/	62	20080125967		2008-05-29	SPRIGG; Stephen A.	
/A.W/	63	20080140479		2008-06-12	MELLO; Brian Scott et al.	
/A.W/	64	20080167892		2008-07-10	CLARK; Neil et al.	
/A.W/	65	20080172173		2008-07-17	CHANG; Eric et al.	
/A.W/	66	20080270010		2008-10-30	HARUMOTO; Satoshi et al.	
/A.W/	67	20080270019		2008-10-30	ANDERSON; Jeffrey Paul et al.	
/A.W/	68	20080277183		2008-11-13	HUANG; Qingfeng et al.	
/A.W/	69	20090089105		2009-04-02	WU; Jen-Chang	
/A.W/	70	20090119006		2009-05-07	SILVER; Edward M. et al.	
/A.W/	71	20090326991		2009-12-31	WEI; Hongfeng et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		17236491
	Filing Date		2021-04-21
	First Named Inventor	Seam O'SULLIVAN	
	Art Unit	2648	
	Examiner Name	Not Yet Assigned Andrew Wendell	
	Attorney Docket Number	00199-0001-25000	

/A.W/	72	20100161392		2010-06-24	ASHBY; Duncan et al.	
/A.W/	73	20110102165		2011-05-05	RAHAMIM; Avner	
/A.W/	74	20110145089		2011-06-16	KHUNGER; Sanjay et al.	
/A.W/	75	20110153629		2011-06-23	LEHMANN; Jens et al.	
/A.W/	76	20110196708		2011-08-11	HUANG; Qingfeng et al.	
/A.W/	77	20120130872		2012-05-24	BAUGHMAN; Aaron K. et al.	
/A.W/	78	20130185109		2013-07-18	LOABNEH; Nohad et al.	
/A.W/	79	20140032282		2014-01-30	FU; Lina	
/A.W/	80	20150206166		2015-07-23	FLETCHER; Paul et al.	
/A.W/	81	20160069694		2016-03-10	TAO; Christine et al.	
/A.W/	82	20170011324		2017-01-12	TRUONG; Michael et al.	

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

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

/A.W/	83	20170178416		2017-06-22	BARREIRA AVEGLIANO; Priscilla et al.	
/A.W/	84	20180211541		2018-07-26	RAKAH; Yaron et al.	
/A.W/	85	20180338225		2018-11-22	SHIMIZU; Sho	
/A.W/	86	20190050880		2019-02-14	PAUL; Sunil et al.	
/A.W/	87	20190051174		2019-02-14	HAQUE; Asif et al.	
/A.W/	88	20190073737		2019-03-07	MARCHIO; Michael Joseph	
/A.W/	89	20190095965		2019-03-28	STAYNER; Donald et al.	
/A.W/	90	20190137288		2019-05-09	RAHEMATPURA; Miraj et al.	
/A.W/	91	20190205812		2019-07-04	AFZAL; Danial et al.	
/A.W/	92	20200410857		2020-12-31	O'SULLIVAN; Sean	

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

Add

FOREIGN PATENT DOCUMENTS

Remove

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		17236491
	Filing Date		2021-04-21
	First Named Inventor	Seam O'SULLIVAN	
	Art Unit	2648	
	Examiner Name	Not Yet Assigned Andrew Wendell	
	Attorney Docket Number	00199-0001-25000	

Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ²	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵
/A.W/	1	2003036498	JP	A	2003-02-07	YAZAKI CORP.		×
/A.W/	2	02073546	WO	A2	2002-09-19	ERICSSON TELEFON AB L M [SE], et al.		☐
/A.W/	3	2005045549	WO	A2	2005-05-19	MOVIT SYSTEMS LTD [GB], et al.		☐
/A.W/	4	2006011158	WO	A2	2006-02-02	VIKASH CHANDRA [IN]		☐
/A.W/	5	2006088703	WO	A2	2006-08-24	MITCHELL CLYDE [US]		☐

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

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
/A.W/	1	DAILEY D.J., et al., "Seattle Smart Traveler: Dynamic Ridematching on the World Wide Web," Transportation Research Part C 7, March 05 1999, pp. 1-17.	
/A.W/	2	DILLENBURG J.F., et al., "The Intelligent Travel Assistant," September 2-6, 2002 , 7 pages.	
/A.W/	3	HALL R.W. and QURESHI A., "DYNAMIC RIDE-SHARING: THEORY AND PRACTICE," Journal of Transportation Engineering, July/August 1997, Vol. 123, pp. 308-315.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		17236491
	Filing Date		2021-04-21
	First Named Inventor	Seam O'SULLIVAN	
	Art Unit	2648	
	Examiner Name	Not Yet Assigned Andrew Wendell	
	Attorney Docket Number	00199-0001-25000	

/A.W/	4	HU P.S., "Summary of Travel Trends 1995 National Personal Transportation Survey", prepared for U.S. Department of Transportation, Federal Highway Administration, December 1999, 142 pages.
/A.W/	5	HWANG M., et al., "Advanced Public Transportation Systems: State of the Art Update 2006," Federal Transit Administration, Final report, Report Number FTA-NJ-26-7062-06.1, March 30, 2006, pp. 1-264.
/A.W/	6	HyreCar, "The 14 Best Apps to track your Uber and Lyft Mileage", Dec. 30, 2017, (https://web.archive.org/web/20171230231230/http://hyrecar.com/blog/best-apps-to-track-uber-and-lyft-mileage/), 22 pages, (Year: 2017).
/A.W/	7	MIYAMOTO T., et al., "Agent-Based Planning Method for an On-Demand Transportation System," Proceedings of the 2003 IEEE International Symposium on Intelligent Control, October 5-8, 2003, pp. 620.625.
/A.W/	8	ROORDA M.J., et al., "Past Presidents' Award for Merit in Transportation Engineering: Assessing Transportation Policy Using an Activity-Based Microsimulation Model of Travel Demand", Institute of Transportation Engineers, November 2006, Vol. 76 (11), pp. 16-21.
/A.W/	9	SAVELSBERGH M.W.P. and SOL M., "The General Pickup and Delivery Problem," Transportation Science, 1995, Vol. 29 (1), pp. 17-29.
/A.W/	10	STEGE-VONMETZ D.C., "Improving Modal Choice and Transport Efficiency with the Virtual Ridesharing Agency," Proceedings of the 8th International IEEE Conference on Intelligent Transportation Systems, September 13-16, 2005, pp. 994-999.
/A.W/	11	TAO C.C., "Dynamic Taxi-sharing Service Using Intelligent Transportation System Technologies," 2007, IEEE, 007 International Conference on Wireless Communications, Networking and Mobile Computing Wireless Communications, Networking and Mobile Computing, pp. 3209-3212.
/A.W/	12	WINTER S. and RAUBAL M., "Time Geography for Ad-Hoc Shared-Ride Trip Planning," 2006, 8 pages.

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature	/ANDREW WENDELL/	Date Considered	07/13/2021
--------------------	------------------	-----------------	------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		17236491
	Filing Date		2021-04-21
	First Named Inventor	Seam O'SULLIVAN	
	Art Unit	2648	
	Examiner Name	Not Yet Assigned Andrew Wendell	
	Attorney Docket Number	00199-0001-25000	

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		17236491
	Filing Date		2021-04-21
	First Named Inventor	Seam O'SULLIVAN	
	Art Unit	2648	
	Examiner Name	Not Yet Assigned Andrew Wendell	
	Attorney Docket Number	00199-0001-25000	

CERTIFICATION STATEMENT

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

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

OR

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

See attached certification statement.

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

☒ A certification statement is not submitted herewith.

SIGNATURE

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

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

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

Privacy Act Statement

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

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

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

Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)

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

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

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	17236491
	Filing Date	2021-04-21
	First Named Inventor	Sean O'SULLIVAN
	Art Unit	2648
	Examiner Name	WENDELL, ANDREW
	Attorney Docket Number	00199-0001-25000

U.S.PATENTS							Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	
/A.W/	1	9892637		2018-02-13	DEMISSE; Dereje M.		
/A.W/	2	10169987		2019-01-01	DEMISSE; Dereje M.		
/A.W/	3	10395525		2019-08-27	DEMISSE; Dereje M.		
/A.W/	4	10559199		2020-02-11	DEMISSE; Dereje M.		
/A.W/	5	10748417		2020-08-18	DEMISSE; Dereje M.		
If you wish to add additional U.S. Patent citation information please click the Add button.							Add
U.S.PATENT APPLICATION PUBLICATIONS							Remove
Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	
	1	None					
If you wish to add additional U.S. Published Application citation information please click the Add button.							Add
FOREIGN PATENT DOCUMENTS							Remove

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number		17236491
Filing Date		2021-04-21
First Named Inventor	Sean O'SULLIVAN	
Art Unit	2648	
Examiner Name	WENDELL, ANDREW	
Attorney Docket Number	00199-0001-25000	

Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ² i	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵
/A.W/	1	1186056	CA	A	1985-04-23	BEHNKE RICHARD F.		
/A.W/	2	10113803	DE	A1	2002-09-26	SIEMENS BUSINESS SERVICES GMBH [DE]		×
/A.W/	3	10237831	DE	A1	2004-02-26	HARTUNG MICHAEL [DE]		☒
/A.W/	4	1710768	EP	A2	2006-10-11	NISSAN MOTOR [JP]		☐
/A.W/	5	2001291192	JP	A	2001-10-19	OMRON TATEISI ELECTRONICS CO.		☒
/A.W/	6	2002140399	JP	A	2002-05-17	NIPPON TELEGRAPH & TELEPHONE.		☒
/A.W/	7	2002367086	JP	A	2002-12-20	FFC KK.		☒
/A.W/	8	2003168195	JP	A	2003-06-13	DENSO CORP.		☒
/A.W/	9	2003256982	JP	A	2003-09-12	SEIKO EPSON CORP.		☒
/A.W/	10	2003331013	JP	A	2003-11-21	NEC CORP.		☒

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		17236491	
	Filing Date		2021-04-21	
	First Named Inventor	Sean O'SULLIVAN		
	Art Unit	2648		
	Examiner Name	WENDELL, ANDREW		
	Attorney Docket Number	00199-0001-25000		

/A.W/	11	2005182146	JP	A	2005-07-07	FUJITSU LTD.	☒
/A.W/	12	0161604	WO	A1	2001-08-23	ZIPCAR INC [US]	☐
/A.W/	13	0206994	WO	A2	2002-01-24	PAUL SUNIL [US]	☐
/A.W/	14	03023641	WO	A1	2003-03-20	P2P COMMUNITY PTY LTD [AU], et al.	☐
/A.W/	15	03040971	WO	A1	2003-05-15	SITRA LTD [GB], et al.	☐
/A.W/	16	2004081833	WO	A1	2004-09-23	ECOLANE FINLAND OY [FI], et al.	☐
/A.W/	17	9952084	WO	A1	1999-10-14	GIACOPINELLI VALERIO [IT], et al.	☐

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

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
	1	None	

If you wish to add additional non-patent literature document citation information please click the Add button

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	17236491
	Filing Date	2021-04-21
	First Named Inventor	Sean O'SULLIVAN
	Art Unit	2648
	Examiner Name	WENDELL, ANDREW
	Attorney Docket Number	00199-0001-25000

EXAMINER SIGNATURE			
Examiner Signature	/ANDREW WENDELL/	Date Considered	07/13/2021
*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.			
¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.			

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		17236491
	Filing Date		2021-04-21
	First Named Inventor	Sean O'SULLIVAN	
	Art Unit	2648	
	Examiner Name	WENDELL, ANDREW	
	Attorney Docket Number	00199-0001-25000	

CERTIFICATION STATEMENT

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

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

OR

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

See attached certification statement.

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

A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Joel S. Simon/	Date (YYYY-MM-DD)	2021-07-12
Name/Print	Joel S. Simon	Registration Number	70271

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

Privacy Act Statement

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

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

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



UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/236,491	04/21/2021	Sean O'SULLIVAN	00199-0001-25000

CONFIRMATION NO. 7940

PUBLICATION NOTICE



OC000000127495212

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

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

Publication No.US-2021-0241619-A1

Publication Date:08/05/2021

NOTICE OF PUBLICATION OF APPLICATION

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

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

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

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

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

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

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
)
Sean O'SULLIVAN) Group Art Unit: 2648
)
Application No.: 17/236,491) Examiner: Andrew Wendell
)
Filed: April 21, 2021) Confirmation No.: 7940
)
For: SYSTEMS AND METHODS FOR) **VIA EFS WEB**
MATCHING PICK-UP REQUESTS)
WITH TRANSPORT PROVIDERS,)
TRACKING TRIP PROGRESS, AND)
ENABLING PROVIDER RATINGS)

MAIL STOP ISSUE FEE

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

Commissioner:

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

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

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

Respectfully submitted,

BOOKOFF McANDREWS, PLLC

Dated: September 28, 2021

By: /Joel S. Simon/
Joel S. Simon
Reg. No. 70271

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
)
Sean O'SULLIVAN) Group Art Unit: 2648
)
Application No.: 17/236,491) Examiner: Andrew Wendell
)
Filed: April 21, 2021) Confirmation No.: 7940
)
For: SYSTEMS AND METHODS FOR) **VIA EFS WEB**
MATCHING PICK-UP REQUESTS)
WITH TRANSPORT PROVIDERS,)
TRACKING TRIP PROGRESS, AND)
ENABLING PROVIDER RATINGS)

MAIL STOP ISSUE FEE

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

Commissioner:

COMMENTS ON STATEMENT OF REASONS FOR ALLOWANCE

Applicant thanks the Examiner for the Notice of Allowance and statement of Reasons for Allowance mailed on July 1, 2021, and the corrected Notice of Allowance mailed on July 16, 2021, indicating that claims 2-21 are allowed. Without withdrawing any of the allowed claims from issue, Applicant submits these comments.

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

Furthermore, it is understood that the Examiner's characterizations were for purposes of referring to the prior art, and do not in any way imply that the claims are limited by words not actually present in the claims. Therefore, unless expressly noted otherwise, Applicant declines to subscribe to any statement or characterization contained in the Notice of Allowance and its accompanying Reasons for Allowance.

Should the Examiner disagree with the Applicant's comments on the Reasons for Allowance, the Examiner is invited to contact the undersigned at (202) 808-3560, in order to resolve such disagreement.

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

Respectfully submitted,

BOOKOFF McANDREWS, PLLC

Dated: September 28, 2021

By: /Joel S. Simon/
Joel S. Simon
Reg. No. 70271

PART B - FEE(S) TRANSMITTAL

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

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

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

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

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

108449 7590 07/01/2021
Bookoff McAndrews, PLLC
2020 K Street NW
Suite 400
Washington, DC 20006

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

Certificate of Mailing or Transmission

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

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

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

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

APPL. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$600	\$0.00	\$0.00	\$600	10/01/2021

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

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

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

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

2. For printing on the patent front page, list

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

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

1 Bookoff McAndrews, PLLC

2 _____

3 _____

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

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

(A) NAME OF ASSIGNEE

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

Carma Technology Limited

Cork City, Ireland

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

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

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

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

☒ The Director is hereby authorized to charge ~~any deficiency~~ any deficiency, or credit any overpayment to Deposit Account No. 50-5906

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

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

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

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

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

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

Authorized Signature _____/Joel S. Simon/_____
Date _____2021-09-28_____
Typed or printed name _____Joel S. Simon_____
Registration No. _____70,271_____



UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC PAYMENT RECEIPT

APPLICATION #
17/236,491

RECEIPT DATE / TIME
09/28/2021 09:04:19 PM ET

ATTORNEY DOCKET #
00199-0001-25000

Title of Invention

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

Application Information

APPLICATION TYPE Utility - Nonprovisional Application
under 35 USC 111(a)

PATENT # -

CONFIRMATION # 7940

FILED BY Joel Simon

PATENT CENTER # 60332603

AUTHORIZED BY -

CUSTOMER # 108449

FILING DATE 04/21/2021

CORRESPONDENCE ADDRESS -

FIRST NAMED INVENTOR Sean O'SULLIVAN

Payment Information

PAYMENT METHOD
CARD / 1006

PAYMENT TRANSACTION ID
E20219RL05002011

PAYMENT AUTHORIZED BY
Joel Simon

FEE CODE	DESCRIPTION	ITEM PRICE(\$)	QUANTITY	ITEM TOTAL(\$)
2501	UTILITY ISSUE FEE	600.00	1	600.00
TOTAL AMOUNT:				\$600.00

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

New Applications Under 35 U.S.C. 111

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

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

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C.

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

New International Application Filed with the USPTO as a Receiving Office

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



ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #
17/236,491

RECEIPT DATE / TIME
09/28/2021 09:04:19 PM ET

ATTORNEY DOCKET #
00199-0001-25000

Title of Invention

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

Application Information

APPLICATION TYPE Utility - Nonprovisional Application
under 35 USC 111(a)

PATENT # -

CONFIRMATION # 7940

FILED BY Joel Simon

PATENT CENTER # 60332603

FILING DATE 04/21/2021

CUSTOMER # 108449

FIRST NAMED INVENTOR Sean O'SULLIVAN

CORRESPONDENCE ADDRESS -

AUTHORIZED BY -

Documents

TOTAL DOCUMENTS: 3

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
00721448.PDF	1	Issue Fee Payment (PTO-85B)	1698 KB
00752289.PDF	1	Maintenance Fee Address Change	77 KB
00752292.PDF	2	Post Allowance Communication - Incoming	101 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
----------	-------------------------

00721448.PDF	2785AA9B1FA3F273C4545C640A3293D8C0B48427073017E528 229030DB3082AA4E4198DF6E548B41F23BE661DEB67B140705 7C2B89A63491C8CBC16C463F3C2D
--------------	--

00752289.PDF	FD4626B24BB26871A992A192A2147D4414232A2397DC06E4AC 1C6E0F52A9C11F2019ACA76B30368332B3B6B60F6EBB5C6A3 9B71C071AF3433D3CA5FA512658EB
--------------	--

00752292.PDF	6E9057803D55F0BF0719292E6072015E28258E086A8F3874B2A B40BF873E504432A5FB908C4C91533AA2631C18C8691E0A125 A30A137E3864A543F2EB52D3AC0
--------------	--

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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



UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/236,491	11/02/2021	11164456	00199-0001-25000	7940

108449 7590 10/13/2021
Bookoff McAndrews, PLLC
2020 K Street NW
Suite 400
Washington, DC 20006

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(application filed on or after May 29, 2000)

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

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

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

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

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

CARMA TECHNOLOGY LIMITED, Cork City, IRELAND;

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