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(54) Method for controlling traffic flows

(57) Method and system for managing traffic flows, formed by vehicles (1). A traffic regulation system (2) is arranged in order to register, prior to a trip, travel data, as point of departure and terminus and the departure time and arrival hour, to be registered in a travel data system (2a) and in order to process those travel data into control signals for optimal management of the traffic flows. The control signals can control for example remote controllable traffic signs, remote controllable traffic lanes, traffic lane and speed signs etc. (3) and/or vehicle navi-

gation systems (9), personal navigation and information systems etc. Registration can whether or not be obligatory, be rewarded, be free or must have to be paid. If registration is obligatory or rewarded or charged, then the travel data to be registered need to comprise also identity data of the vehicle by which the intended trip is going to be made. Furthermore the system needs then to comprise also means (2d) for the monitoring of the identity of the vehicles and for the comparison of the identity of those vehicles with the travel data stored in the travel data system.

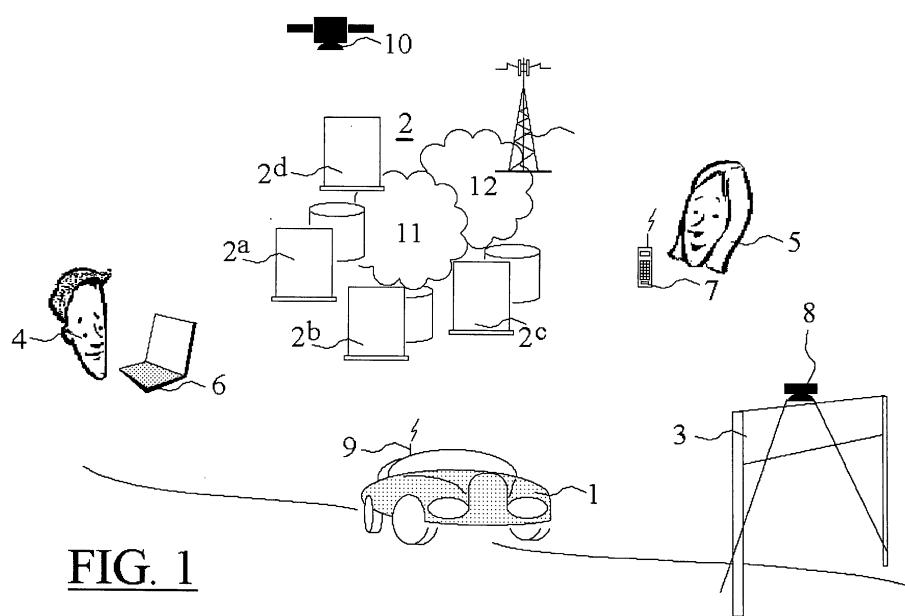


FIG. 1

DescriptionField

[0001] The invention concerns a method respectively system for managing traffic flows, caused by vehicles, in particular cars, which make an individual trip each.

Background

[0002] There has already been much talk and writing about the flows or car traffic, in particular the combating of traffic jams, the settlement of the costs, its environmental aspects, etc. The current invention intends to provide with an improvement in this field by the method to be described hereinafter and a system appropriate for the implementation of that method.

Summary

[0003] The said suggested method for managing traffic flows, caused by vehicles, in particular cars, which make an individual trip each, is characterized by the following steps:

- of at least a part of the traffic flows respectively a part of the vehicles, prior to a trip actively to be made by a vehicle, in other words prior to an intended trip, travel data are registered in a travel data system arranged for that purpose, which travel data relate to the concerned intended trip.
- the so in the travel data system stored travel data are processed into control data that are appropriate for the management of the said, comprising both the registered and the not-registered trips, traffic flows .

[0004] For at least a part of the vehicles the concerned travel data parameter (travel data) are thus entered into a travel data system prior to a trip, for example because those parameters are entered, by or on behalf of the concerned driver or vehicle manager, for example via the Internet or via a whether or not mobile telecommunication system for example with the help of a voice response system (VRS), into the travel data system via a data terminal respectively a voice terminal.

[0005] The thought behind the invention is that if it is known how the (sub-)traffic flows will behave in the (near or far away) future on the basis of these timely proper measures can be taken.

[0006] It is not necessary that all traffic participants (cars) will need to have registered their trips beforehand. Since it will be in principle sufficient if for example a representative group (for example representative for all traffic) or a group important for the traffic situation (for example the lorry traffic or traffic with a specific destination, for example a holiday destination) of traffic participants registers their intended trip beforehand into the travel data system.

ta system.

[0007] Furthermore, it is not necessary that the registration of an intended trip (the "booking" of a trip) should necessarily be accompanied by any form of payment. It is even possible that, exactly because of that the acquisition of the information about the intended trips of a representative group or otherwise important group traffic participants is or at least can be of great importance for the improved management of the infrastructure, a better circulation of the traffic, reduction of number and length of the traffic jams, lower pressure on the environment etc., for example by means of traffic lane, traffic direction and/or speed management, etc., is preferred, and the provision of that information by the individual traffic participants by means of registration of intended trips at the travel data system is just encouraged by means of a reward to it.

[0008] The method introduced here is therefore primarily intended the provision with and the use of parameters unknown so far which lead to an improved output of the traffic management system.

[0009] The registered travel data will comprise route information, like the geographical point of departure and terminus of the intended trip, as well as the intended departure time and/or desired arrival hour.

[0010] The registered travel data can be discharged by means of handing out by or on behalf of the travel data system of a travel certificate corresponding to the said registration. Such a travel certificate can serve as proof of the registration of the concerned trip in the travel data system. If the registration of the trip is rewarded with an incentive (see hereinabove) then the travel certificate can serve as basis for the receipt of that reward. If the registration of the trip however becomes obligatory at a certain moment the travel certificate can serve - for example during checking on the way - to prove that the registration obligation has been satisfied. If for registration of a trip furthermore payment is obligatory, then the travel certificate can furthermore serve as receipt of that payment.

[0011] As notified in the foregoing the registered travel data are preferably being processed into control signals for the (automatic) traffic regulation system, for the optimization of the traffic flows, in particular with regard to a good and regulated circulation of the traffic.

[0012] With regard to the traffic management system resulting control signals that result from the processing of (among others) the data from the travel data system, those (output) control signals can for example be supplied as input to vehicle external traffic information and control means as for example remote controllable traffic signs, remote controllable traffic lanes, traffic lane and speed signs etc.

[0013] Besides vehicle external traffic information or control means, the control signals can also be supplied to vehicle internal or personal traffic information means as vehicle navigation systems, personal navigation and/or information systems etc.

[0014] As already notified in the foregoing the registered travel data can be processed into billing information for the intended trip, by which the travel data can thus be used also for, besides for the primary purpose, i.e. the provision of control information of the traffic regulation system, the paying for the use made of "the road" during the concerned trip.

[0015] The invention presented here is described below in more detail by means of an exemplary embodiment.

Exemplary embodiment

[0016] Figure 1 schematically shows an exemplary embodiment of the system by which the in the foregoing presented method can be implemented.

[0017] The system shown in figure 1 for the control of traffic flows, formed by vehicles, in particular cars (1), which make an individual trip each. A traffic regulation system is presented by a computer system 2 that together with remote controllable traffic lane, traffic direction and speed signs etc., presented by a portal 3 can influence the traffic flows. So far the input of such a traffic regulation system was formed by means that were capable of measuring variables related to actual ("real time") traffic flows, with the help of for example electromagnetic loops, photo camera's, etc. Obviously additional measures can furthermore be taken in the current systems, for example extra traffic lanes could be opened if desired and/or the maximum recommended speed could be increased or reduced via the means serving for that purpose if this was deemed necessary in view of the circumstances to be foreseen as the start of the construction industry holiday (with much traffic to be expected to France and Italy). Such additional measures however need to be entered manually in the current traffic regulation systems, i.e. by a road maintenance authority.

[0018] The traffic regulation system according to the invention comprises however a travel data system 2a that - as part of the entire traffic regulation system 2 - is arranged in order to register of at least a part of the vehicles 1, prior to the actively making of a trip by a vehicle, thus prior to an intended trip, travel data or let register those relating to the concerned intended trip. Those travel data can for example be transmitted by a vehicle manager 4 (for example fleet manager) or driver 5, via a PC 6 or (mobile) terminal 7 to the travel data system 2a. The travel data can for example also - without human intervention - being derived from a trip or vehicle planning system, for example in or accessible via the PC 6. That planning system can also have a direct connection to or even be part of the traffic regulation system 2.

[0019] The vehicle manager 4 or driver 5 can via their PC 6 or terminal 7 enter into the travel data system 2a as travel data route information, like the geographical point of departure and terminus of the intended trip and the intended departure time and/or desired arrival hour. The entered travel data can then be discharged by

means of a - for example printed - travel certificate.

[0020] As notified hereinabove, the traffic regulation system comprises thus means - the computer system 2 - for the processing of the so in the travel data system 2a stored travel data into control data that are appropriate for the control of the said, both the registered and the non-registered trips comprising, traffic flows. The registered travel data are, wherein processes by the computer system 2, for example a subsystem 2b, into control signals for optimization of the traffic flows. Those control signals, derived from the planned vehicle movements, are supplied constantly at the correct time, since derived from the planned travelling times, to vehicle external traffic information or control means as for example remote controllable traffic signs, remote controllable traffic lanes, traffic lane and speed signs etc., in the figure for reasons of simplicity presented by a traffic regulation/monitor portal 3. The control signals can also be offered to vehicle internal or personal traffic information means as vehicle navigation systems (for reasons of simplicity by an external aerial 9 on the vehicle 1), personal navigation and information systems etc., by which the driver can let provide himself with route information.

[0021] The system can if desired also be used for billing the vehicle movements. For that purpose the computer system 2 can comprise a subsystem 2c for the processing of the registered travel data into billing information for the intended trips. The fee of a registered trip can then automatically be determined on the basis of for example the geographical point of departure and terminus of the intended trip, the intended departure time respectively desired arrival hour and/or the time between the hour of registration and the departure time of the intended trip. It is possible to also include in the determination of the fee the amount of traffic to be expected in the concerned time span on the basis of all planned trips in the same time span on the same (part of the) route.

[0022] Particularly if for all travelers or a special category (for example lorries) an obligation of registration in advance exists (whether or not on payment) or when - as an incentive - registration is rewarded, then the travel data, relating to an intended trip, need to comprise also identity data of the vehicle by which the intended trip is going to be made, namely in order to discover vehicles that undertake non-registered trips and thus shirk the registration obligation. The system will in this case comprise means for the monitoring of the identity of the vehicles that are part of the traffic flows and for the comparison of the identity of those vehicles with the travel data stored in the travel data system.

[0023] Such monitoring means can comprise number plate identification camera's 8 etc. that are put for example in the portals 3 etc. along or above the road and that can cooperate with a subsystem 2d of the computer network 2, in which the identity data (in this case the registration number) of the monitored, passing vehicles is, wherein compared with the identity data of the vehicles of which the trip are been registered timely into the travel

data system 2a.

[0024] For the monitoring of the vehicles use can also be made of for example GPS bases localization/navigation systems, in the figure very schematically presented by a vehicle localization/navigation system aerial on the vehicle 1 and a GPS satellite 10.

[0025] Finally for example the travel data system 2a can optionally provide for a subsystem that is arranged in order to make it possible for the users (drivers, vehicle (fleet) managers) - via for example their PC 6 - to change and/or exchange travel certificates and to be able to settle the fees relating to those travel certificates.

[0026] For reasons of completeness it should still be noticed that in figure 1 the traffic regulation system 2 and the optional subsystems are schematically presented as a computer network of which the various components are connected to one another by for example an IP network 11, and that where necessary can also be accessed by other networks, for example a (fixed and/or mobile) telecommunication network 12.

Claims

1. Method for managing traffic flows, formed by vehicles (1), in particular cars, which make an individual trip, **characterized by** the following steps:
 - of at least a part of the traffic flows respectively a part of the vehicles, prior to a trip actively to be made by a vehicle, in other words prior to an intended trip, travel data are registered in a travel data system arranged for that purpose, which travel data relate to the concerned intended trip.
 - the so in the travel data system stored travel data are processed into control data that are appropriate for the management of the said, comprising both the registered and the not-registered trips, traffic flows .
2. Method according to claim 1, wherein the registered travel data comprise route information, like the geographical point of departure and terminus of the intended trip, as well as the intended departure time and/or desired arrival hour.
3. Method according to claim 1 or 2, wherein the registered travel data are, wherein discharged by means of handing out by or on behalf of the travel data system of a travel certificate corresponding to the said registration.
4. Method according to claim 1 or 2, wherein the registered travel data are, wherein processed into control signals for optimization of the traffic flows.
5. Method according to claim 4, wherein the control signals are being supplied to vehicle external traffic in-

formation or control means as for example remote controllable traffic signs, remote controllable traffic lanes, traffic lane and speed signs etc.

- 5 6. Method according to claim 4, wherein the control signals are, wherein supplied to vehicle internal or personal traffic information means as vehicle navigation systems, personal navigation and information systems etc.
- 10 7. Claim according to claim 1 or 2, wherein the registered travel data are, wherein processed into billing information for the intended trip.
- 15 8. System for managing traffic flows, formed by vehicles (1), in particular cars, which make an individual trip each, **characterized by** means (2) that are arranged in order to register of at least a part of the traffic flows respectively a part of the vehicles, prior to a trip actively to be made by a vehicle, in other words prior to an intended trip, travel data in a travel data system (2a) arranged for that purpose, which travel data relate to the concerned intended trip, as well as means (2b) for the processing of the so in the travel data system stored travel data into control data that are appropriate for the management of the said, comprising both the registered and the not-registered trips, traffic flows .
- 20 9. System according to claim 8, wherein as registered travel data route information is, wherein registered, like the geographical point of departure and terminus of the intended trip, as well as the intended departure time and/or desired arrival hour.
- 25 10. System according to claim 8 or 9, comprising means for the discharging of the registered travel data by means of a travel certificate corresponding to the said registration.
- 30 11. System according to claim 8 or 9, comprising means (2b) for the processing of the registered travel data into control signals for optimization of the traffic flows .
- 35 12. System according to claim 11, wherein the concerned means (2b) supply the control signals to vehicle external traffic information or control means (3) as for example remote controllable traffic signs, remote controllable traffic lanes, traffic lane and speed signs etc.
- 40 13. System according to claim 11, wherein the concerned means supply the control signals to vehicle internal or personal traffic information means (9) as vehicle navigation systems, personal navigation and/or information systems etc.
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14. System according to claim 8 or 9, comprising means (2c) for the processing of the registered travel data into billing information for the intended trip.

15. System according to claim 14, wherein the said means (2c), for the processing of the registered travel data into billing information for the intended trip, are arranged in order to calculate automatically the fee of each registered trip on the basis of for example the geographical point of departure and terminus of the intended trip, the intended departure time respectively desired arrival hour and/or the time between the hour of registration and the departure time of the intended trip and/or on the basis of the other registrations of the amount of traffic to be expected. 5 10 15

16. System according to claim 10 and 15, comprising means for change and/or exchange of travel certificates and/or settling the fees relating to those travel certificates. 20

17. System according to claim 8, wherein the said travel data, relating to an intended trip, also comprise identity data of the vehicle by which the intended trip is going to be made, the system comprising means (2d, 25 3) for the monitoring of the identity of the vehicles that are part of the traffic flows and for the comparison of the identity of the vehicles with the travel data stored in the travel data system.

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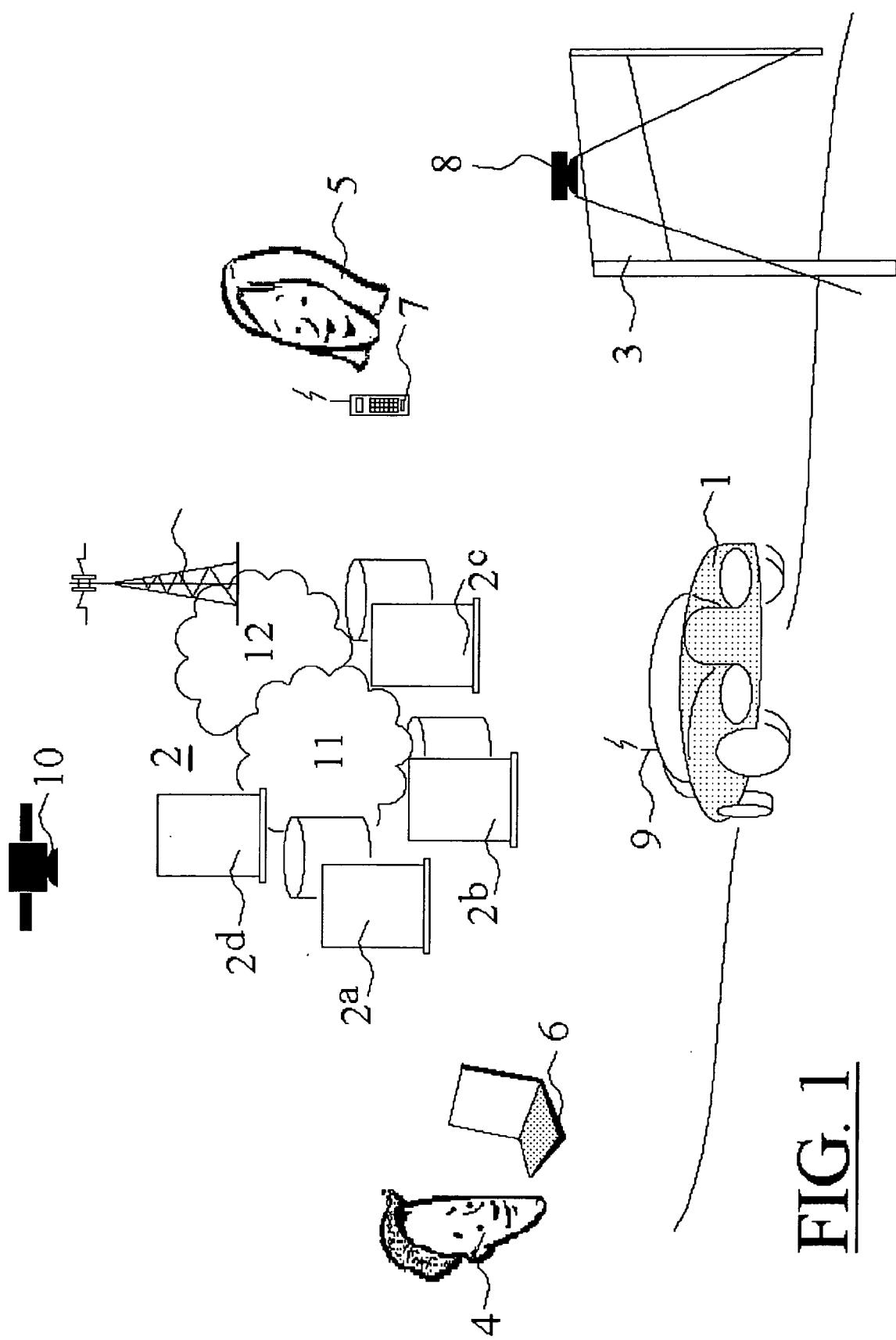
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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