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UNIFIED MULTIMODAL TRANSPORT CENTER – A TOOL FOR THE DEVELOPMENT OF THE ENVIRONMENTAL GEOLOGY OF TRANSPORT

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Abstract

The article covers the problem of oversaturation of the road space by traffic flows which are inappropriate all too often. Organization of effective transportation is a challenge for small discrete companies with a limited vehicle stock, and the incoming customer flow is chaotic to some extent. No centralized and economically viable distribution of demands by contractors' resources is performed for the time being. For the purpose of the development of the environmental geology of transport it is proposed to organize a unified multimodal transport center which would receive information on requests for transportation of goods. The objective of such a center includes generation of a data base of carriers' resources represented in real time, evaluation of a carrier's rating against a number of criteria, organization of transportation according to the most efficient scheme with application of multi-objective problem algorithms. The article contains algorithms built in the center functioning system which provide an opportunity to take decisions automatically, which would minimize the probability of human factor errors. Establishment of such a center will make it possible to distribute orders taking into account the geographical location of cargo-generating points and the positioning of vehicles, enhance the efficiency of vehicle stock operation, optimize traffic flows, reduce congestion of major roads by way of withdrawal of ineffectively used vehicle stock from the roads, redirect traffic flows bypassing major towns.

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Introduction.

There are many cargo transportation companies on the market of transportation at present because arranging the business of carriage of goods by road is possible with minor capital investments.

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Centralized management of road transport of goods does not exist at the moment. Shippers carry out a choice of transport. This choice is made in the conditions of insufficient amount of information on alternative delivery schemes, alternative carriers and their conditions, history of activities of transportation companies, etc.

Motor carries, working in conditions of tough competition, try to fulfill all possible requirements for transportation of their own. The structure of the park of a particular carrier, the availability of rolling stock at a particular point in time, the location of the car relative to the loading and unloading points, etc. often do not match the incoming request with the point of view of transportation performance with maximum efficiency throughout the market.

The connections between consumers and producers of transport services are established in part randomly, that increase the capacity of the transport flows, and this in turn leads to pollution of the environment, completing transport infrastructure, waste of resources etc. [1]. In order to reduce the impact of transport on the ecology it is proposed to organize a single center multimodal transportation [2] that will partially coordinate traffic flows. Despite the fact that the primary task is optimization of road transport, the center will include the organization of multimodal transport, since only in this way, it is possible to achieve the maximum effect. The connection between consumers and producers of transport services are established in part randomly, which increases the capacity of the transport flows, and this in turn leads to pollution of the environment, completing transport infrastructure, waste of resources etc. In order to reduce the impact of transport on the ecology it is proposed to organize a unified multimodal transportation center that will partially coordinate traffic flows. Despite the fact that the primary task is the optimization of road transport, the center will include the organization of multimodal transport, since only in this way, it is possible to achieve the maximum effect.

The organization of the unified center of multimodal transportation in order to develop geo-ecology of transport.

The multimodal transportation center (hereinafter MTC) is designed to provide a centralized and economical distribution of the resource requirements of the performers, to organize transportation of cargo on the optimal scheme taking into account the priorities of shippers to carry to the shippers responsibility for all involved in the transport of persons.

Let us consider the tools used in MTC.

All vehicles are equipped with a navigation system.

MTC contains database resource of carriers. In MTC you can join any company-haulers. They will be responsible for any obligations for MTC. MTC for business will receive an Agency fee from the carrier, i.e., the sum will be withheld in favor of MTC after the conclusion of the contract of carriage. Haulers provide complete information on the rolling stock (technical characteristics) and on drivers in MTC for automatic calculation of transportation costs. Carriers, like MTC are equipped with software to monitor the employment of the car at any point of time [3, 4]. For each carrier there is a history to evaluate its rating (reliability).

MTC uses a program for automatic distribution of resource requirements of the performers. This is the most important and hardest element to implement part of the system transportation organization, that is why we will consider it in a more detailed way.

The shipper fills in an electronic application in MTC software for shipping with information about the shipment (weight and dimensional characteristics, properties of the goods, requirements for carriage), the points of departure and destination (address, operation), sending time and delivery time. Also the shipper sets the priorities [5] in the program for the criteria, which will continue to be the choice of the optimum scheme of cargo delivery.

The program, having information on the whereabouts and employment of cars consisting on the account in MTC, the schedule of movement of vehicles belonging to carriers in other means of transport, and free places, as well as the location of ports, airports, railway stations, scan the possible combinations of schemes of cargo delivery.

For clarity, we present an alternative scheme of delivery on fig.1.

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