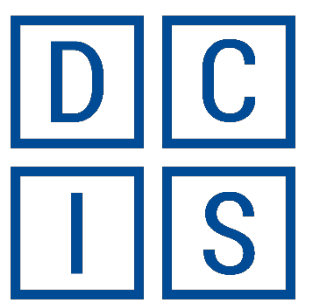


# THE QUESTION OF THE USE OF INTELLIGENT TRANSPORT ROAD TRANSPORT IN KAZAKHSTAN



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## ABSTRACT

The report reviewed the road transport sector of the Republic of Kazakhstan and found a significant role in ensuring road transport of freight and passengers. Shown needs to improve the work of transport-communication complex of the Republic of Kazakhstan on the basis of using of the newest informational and communicational technologies.

Described advantages of realization of several intellectual transport technologies. Presented modern level of using satellite navigational systems on the automobiles, in addition written some automation and informational aspects of controlling transport processes.

Also presented measures to solve technological rearmament problem of Republic of Kazakhstan.

## INTRODUCTION

Creation of Smart Transport Systems - is an extremely difficult innovation task of the main directions of industrial-innovative development of the country, created by the first President, N.A. Nazarbayev.

Technological improvement of the transport industry is especially important for Kazakhstan - a country with a big territory and, accordingly, to the territorial fragmentation of industrial and administrative centers.

## 1. THE ROAD TRANSPORT ROLE IN THE COMMON TRANSPORT COMPLEX OF THE REPUBLIC OF KAZAKHSTAN

Transport have the most important role in the Republic of Kazakhstan life. On the one hand, is a very big territory of country (2725 thousand. Km<sup>2</sup>), low density of its population (an average of about 6 people / km<sup>2</sup>), very big distances between sources of raw materials and production resources. In this situation, transport and communication complex provides not only the economic but also the political integrity of the country.

On the other hand, the geographical location in the heart of the Eurasian continent, far from the main labor and capital markets resulting in the inevitable growth of the transport component in the export-import operations, and as a consequence of a weak integration into the global economic system. The geopolitical location of Kazakhstan between the capacious and dynamically developing markets of Europe, East and South-East Asia provides a chance to compensate this, by bringing transcontinental transit on the territory of the country.

As we can see the world and now the domestic experience, road transport is maximally adapted to function in today's realities. [1]

Automobile transport is an inseparable and a very important component of transport significant role in transport and communication complex of the Republic of Kazakhstan. Among its most important, the following characteristics can be outlined:

- A. Popularity and wide availability
- B. High maneuverability and speed of passenger transportation and goods delivery
- C. Possibility of door-to-door delivery without the necessity of any additional interim operations with goods
- D. Providing of near to zero-option short-distance service (delivery within the city and to the suburbs, and those in rural area)
- E. High degree of adaptation to different technological processes – both in industry and service sector
- F. Relatively low capital capacity.

Given the conditions mentioned above, the automobile transport is considered an inseparable component of all modern transport technologies including the integrated and multimodal transportation.

The transportation delivery activity in the Republic of Kazakhstan trends to be increasing in terms of capacity of delivered goods. According to RoK statistics Agency, 3 627,9 million tons of goods have been transported of transport networks of the Republic of Kazakhstan within the period from January to December in 2014, which is 3.7% more than within the same period in 2013. The cargo turnover for the given period was evaluated as equal to 487.4 billion t/km, 21293,00 billion pf passengers have been transported (which is 6.5% more than during January-December 2013), passenger turnover was 249,6 billion t/km (increase per 6.8% compared to 2013).

According to the Agency data, the proportion of automobile transport in relation to both transportation volumes and goods turnover has been increasing each year. Currently automobile segment occupies 86,23% from total amount of delivered goods, 7,54% belong

to railway transport and 6.09% – to pipelines, and 0.14% – to the other means of transport (air, internal water transport) – see Figure1.

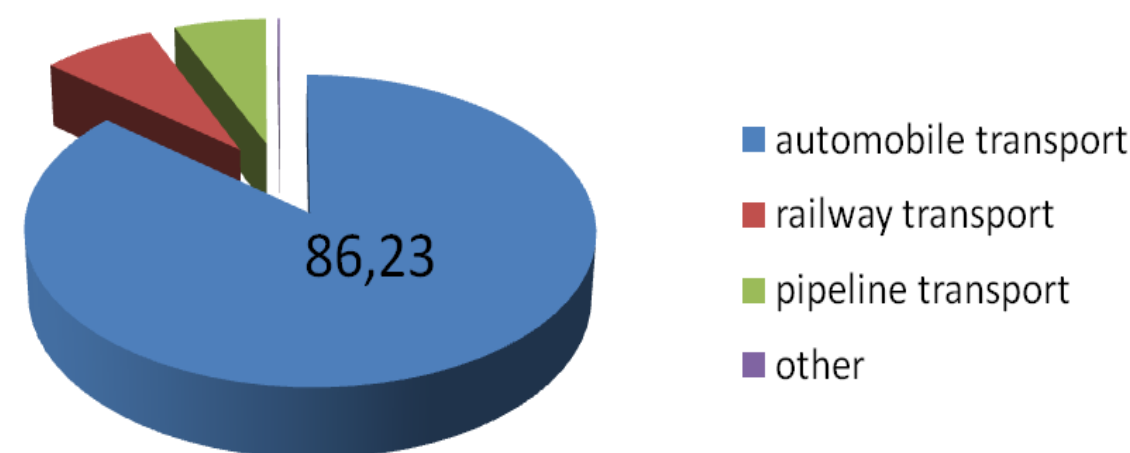


Figure 1: Distribution of total transportation volumes among the means of transportation

As shown by world and homeland experience, automobile transport is ultimately adapted to be functioning in the conditions of market demand and supply. It can be proved by the fact that transport and communication complex was the primary choice for realization of privatization [2].

## 2. IMPROVEMENT NEEDS OF THE TRANSPORT AND COMMUNICATION COMPLEX OF REPUBLIC OF KAZAKHSTAN

At this level of social development a need for technological improvement of the transport process caused by a number of additional factors. First of all, the increased density of vehicular traffic as a result of development of economic and cultural ties and the accompanying increase in the process of trade flows and mobility.

In these conditions, for this time the intensification of all areas of human activity is becoming increasingly important factor of time and therefore introduces the task of improving traffic speeds. **Meanwhile, the transport infrastructure capabilities tend to lag behind the need for providing quality transportation in the face of increased intensity and speed. This often leads to the occurrence of accidents involving property damage, injuries and deaths.**

The traffic growth creates many problems for instance, traffic control, **associated with the need to make responsible decisions in conditions of high traffic density of vehicles that often becomes one of the causes of accidents caused by human error.** From this perspective, the technological improvement of the transport process is essential and urgent in order to achieve goals for the society - improving the safety of vehicles. Thus, the introduction of modern information and communication technologies in transport significantly reduces the influence of the human factor [3].

## 3. SMART TRANSPORT SYSTEMS IN THE REPUBLIC OF KAZAKHSTAN

Smart transport systems - this is the system integration of modern information and communication technology and automation with transport infrastructure, vehicles and users, focused on improving the safety and efficiency of the transport process, comfort for operators, drivers and transport users.

The introduction of smart technologies in the transport sector of Kazakhstan made in the individual modes of transport and aimed at solving corporate problems. The problem of integration with other modes of transport is not considered.

Realization of certain smart transport technologies, and finally the formation of smart transport systems have both social and economic objectives, they are:

- Improving traffic safety and, as a consequence, the reduction of social wastes in the transport sector;
- Reduction in transport costs in the economy and other spheres of transport services;
- Improvement of the environment and saving human and material (f.e. energy) resources.

The strategic aim of the creation of smart system of road transport is the creation in the city:

Republics of interconnected smart systems that control traffic of transport vehicles and special emergency services, housing management

The strategic goal can also determine the formation of the republic competitive "road corridors", equipped with priority ITS technologies:

movement controlling systems, traffic management systems that provide driver information about road surface, traffic conditions, the recommended routes of driving in the real situations on the roads, the availability and location road service areas, roadside services and other [3].

The using of ITS in passenger transports of the Republic of Kazakhstan is aimed to create the centralized management of passenger transportation.

One of the main directions of development of transport technologies in the passenger transport sector is the introduction of computer-based navigation systems of dispatching management. These systems use the location of vehicles with the signals of global navigation systems GPS and GLONASS.

Dispatching system based on satellite navigation systems allow operational management of transportation, fixing transport work by the transmission and processing of information about the location of vehicles, access to that information for all interested participants of the transport process. Schematic diagram of the operation of the automated dispatch control navigation systems based on satellite navigation is shown in Figure 2.

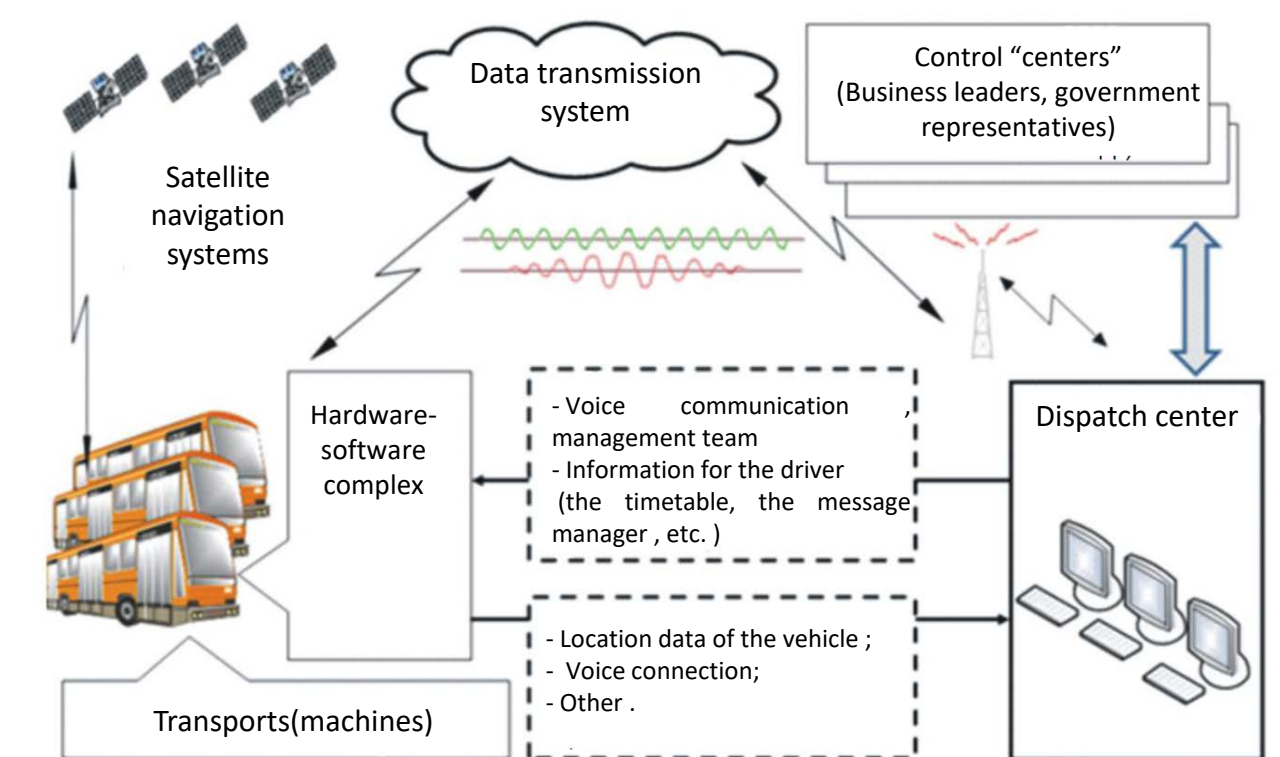


Figure 2: ANSDU work scheme, based on the satellite navigation

Installation of navigation systems on public passenger transport are focused not so much on the movement of the vehicle itself, but rather on comfort and safety of passengers. [4]

## CONCLUSION

The need of the introduction of modern innovative technologies in all parts of the economy is one of the circumstances for improving its efficiency in the Republic of Kazakhstan is fully recognized by the government at the highest level and has repeatedly emphasized in public statements of the President of Republic of Kazakhstan. It is very important to solve this problem and improve the use of transport resources.

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