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ACTUAL PROBLEMS OF INTERNATIONAL TRANSPORTATION

Ph.D. N. Berezhnaja, O. Kutiya, Kharkov National Technical University of Agriculture named after Petro Vasylenko, Ukraine

Introduction. In today's society there is a constant development and improvement of the transport industry, in particular the role and influence of the logistics component, which is responsible for providing quality transport services to customers, is growing. Expanding the scope of logistics is one of the characteristic trends of the modern economy. Transportation is involved in all stages of logistics - supply, production, distribution.

Presentation of the material. In the logistics process of movement of goods transport provides the movement of material flow, starting from suppliers of raw materials, taking into account all sorts of intermediaries and ending with buyers of finished goods, that is considered a necessary component of the overall transport and production process. The main tasks of logistics for transport are to reduce cost and time costs.

An important problem of international transport logistics in the delivery of goods, and especially in multimodal transportation - is the need to fill a large number of international transport and logistics documents. Also the difference between international transport is the highest requirements for information support and cargo escort.

However, despite the difficulties encountered in international transport logistics, it is gaining momentum. This is due to the positive tendency of increasing the volume of international trade, the transfer of a number of logistics activities to specialized companies, the formation of international, regional unions, which leads to a reduction or even abolition of export-import duties and reduction of customs formalities.

All flows in the logistics system are interconnected and equally affect the efficiency of the international route. This necessitates a comprehensive approach to routing.

Routing international traffic flows is not only the use of different modes of transport, but also the use of tools such as international transport corridors. Most authors agree that the transport corridor is a complex transport system that directs traffic flows in the right direction and provides mass transportation of goods between economic regions of the world.

International transport corridors operate most effectively in a single customs and economic space, as a rule, have a developed transport network and are provided with ancillary infrastructure.

Management of traffic flows together with financial and information flows allows making qualitative decisions on rational choice of the route of international transportation.

As practice shows, the lack of coordinated action by all participants in the international transportation process reduces the efficiency of the route. This has a negative impact on both carriers and businesses interested in timely deliveries.

Very often, shipping costs and delivery times are greatly increased during the transportation process. This is due to the fact that logisticians choose the shortest route with the least amount of time, but in practice more efficient routes are those that have the least number of border crossings, since simple ones at full-control borders significantly slow down the flow of traffic on the route.

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OPPORTUNITIES OF «SMART» CARGO IN LAST-MILE LOGISTICS*Ph.D. Shulika O., Prykhodko A., Kharkiv National Automobile and Highway University, Kharkiv, Ukraine*

Introduction. In the last few decades, the issues of improving the efficiency of the supply chain, the management of logistics of enterprises have been the focus of many scientists around the world, as well as leading enterprises associated with the supply of goods. Smart Cargo or Smart transportation is a holistic concept for smart integration of information and communication technologies to monitor and manage the cargo transportation system in the logistics delivery infrastructure. The purpose of such activities is to improve people's lives by improving the level of comfort and safety, quality and efficiency of service in the field of transport, optimizing the costs of a number of highly exploited resources [1]. Last-mile or last-line logistics is the least efficient step in the supply chain and accounts for up to 50% of the total cost of delivery [2, 3]. Thus, realizing the opportunities of Smart Cargo at the last stage of the supply chain will allow the companies operating in the transport market to improve their efficiency significantly.

Outline of the material. New innovative Industry 4.0 technologies and organizational strategies make it possible to create a real-time planning optimization model, focusing on energy efficiency of operations, developing cargo information management systems, etc. [4]. Industry 4.0 implies a set of innovations, received and implemented in the value chain, aimed at the trends of digitalization, automation, transparency, mobility, modularization, network-collaboration and socializing [5].

The latest technologies, concepts, innovations directly or indirectly influence the development of logistics. Smart transportation systems will automate roadways, reshape the way cargo and merchandise are tracked and delivered, creating substantial business opportunities for system integrators, independent software vendors, service providers, and other solution providers [6]. Intelligent transportation system opportunities abound across a wide range of industries and market segments. Opportunities include:

1. Fleet telematics and management solutions provides routes optimization, fuel economy, and driver productivity.
2. Transport logistics applications help to avoid product spoilage, damage, delays, and theft, optimize routing and logistics.
3. Guidance and control systems allow avoiding collisions and derailments, improve public safety, and optimize traffic flows.
4. Inventory and supply chain management solutions provide optimization of inventories, order processing, shipping, and receiving.
5. Smart vehicle applications let optimize traffic flows and fuel economy; avoid collisions; improve public safety and mobility.
6. Peer-to-peer services optimize traffic flows and fuel economy; avoid collisions; improve public safety and mobility.
7. Security and surveillance systems protect against safety hazards, terrorist threats, and other security concerns.

Thus, intelligent transport logistics solutions help long-haul cargo operators and last-mile delivery providers efficiently manage the transportation and distribution of freight and merchandise. Smart applications gather and analyze data from on-board sensors to track containers and packages, and to monitor environmental conditions, ensuring cargo arrive on time, at the right place, intact.

Conclusion. A wide range of end-customers is looking to the Internet of Things to contain transportation costs, increase fleet productivity, and improve customer satisfaction. Intelligent transport logistics solutions (smart cargo) at the last stage of delivery summarizes common smart transportation applications and end-customer benefits.

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INTELLECTUAL SYSTEM OF TRACTION POWER SUPPLY OF ELECTRIC ROLLING STOCK

Ph.D. Nerubatskyi V.P., Hordiienko D.A., Ukrainian State University of Railway Transport, Kharkiv, Ukraine

Introduction. One of the main areas of electricity development is the use of Smart Grid methodology. The Smart Grid concept is a fully integrated, self-regulating and self-renewing power system that has a network topology and includes generating, backbone, distribution networks and electricity consumers that are managed by a single, real-time information system [1].

The implementation of the Smart Grid concept is aimed at ensuring the reliability and energy efficiency of electricity supply, improving the quality of electricity, bandwidth of electrical networks and their controllability, alignment of variable load schedules, organization of monitoring of parameters and control of the state of the grid, integration of renewable energy sources, reduction of grid systems creation of a client-oriented model of functioning of the energy market.

With the development of the Smart Grid concept, there is a need to implement intelligent power supply systems on electric rolling stock and traction substations for rail transport.

Managed power transmissions, thanks to high speed power electronics, are able to quickly affect the processes occurring in power systems, thereby transmitting power from passive means of electricity transportation to active operating modes.

The basis of smart grids is the methodology of distributed power management. In most countries of the world a single vertically integrated dispatching system is used: automated substation control system – regional dispatcher – power system dispatcher – central dispatcher [2].

Presentation of the material. Traction power supply for the application of the methodology of smart grids can be considered as one of the types of distribution networks, and the depth of control of the power supply mode can be considered to end consumers – electric rolling stock. In this case, it is advisable to place the data center on the traction substation and arrange the rolling stock links via the contact network or using radio communication (Fig. 1). The function of the settlement center is the processing of information about the power supply mode (voltages on all switchgear, currents and power factors of all components, information on the state of the equipment). These functions are performed in real time, so all equipment must be securely connected.

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