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DIGITALIZATION OF PROCESSES IN OPERATIONAL MANAGEMENT TECHNOLOGY OF RAILWAY LOCAL WORK

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To achieve a new level of digitalization for transportation processes and to ensure an implementation of intelligent transportation management system, it is necessary to develop special information models of the railway local work that will

provide a unified process-object method for displaying conditions of transportation processes, an information displaying for performing transport operations in real time, uniform sources of information for each type of source data. An internal consistency and an unambiguous interpretation of output information. In such conditions, improving a controllability of transportation processes can be carried out by development of forecasting algorithms for a time of freight trains arrival to technical stations, development of forecasting algorithms for a completion time of freight operations with carriages, accurate dynamic positioning of rolling stock on the railway infrastructure in real time.

These tasks are proposed to be combined in a dynamic model of the railway local work. It is developed as a result of research, and it makes it possible to apply a new method to manage railway local work. Basic objects of the dynamic model are infrastructure and dynamic units. The dynamic model includes modules. Each of them is a system of parallel processes for technological operations and operational control functions. As well in the proposed dynamic model main processes have probabilistic characteristics. It allows to take into account an influence of random factors and calculate risks to account for them in transportation activities.

To successfully solve the research problem, it is necessary to use advantages of geopositioning and digital infrastructure. This will allow to perform automatic registration of technological process events, and:

1) to transfer information to the dynamic model with reference to infrastructure facilities in real time;

2) to ensure a maintenance of detailed carriage and locomotive models of the railway local work in real time. To successfully solve the research problem, it is necessary to use advantages of GPS and digital infrastructure. This will allow:

3) to perform automatic registration of technological process events;

4) to transfer information to the dynamic model with reference to infrastructure facilities in real time;

5) to ensure a maintenance of detailed carriage and locomotive models of the railway local work in real time.

In the context of scientific research geolocation is proposed to be carried out only for traction rolling stock. Positioning results must be compared with data from analytical information systems and microprocessor-based centralization complexes. This will allow determining the location of carriages without equipping them with location trackers. As a result, the introduction of the developed technology will make it possible to organize more effective management of the railway local work.

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