https://doi.org/10.30932/1992-3252-2019-17-4-112-135

Digitalization, Informatization, Identification and Labeling of Logistics Facilities for the Purposes of Enhanced Customer Focusing

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ABSTRACT

Following the digitalization and informatization trends in transport sector the logistics segment of the activities of railway holding companies has entered a period of dynamic development, requiring considerable improvement of technology, processes and proceedings.

The objective of the research is to search for optimal decisions in the field of automation and informatization of the procedures of identification, labelling, and designing of railway logistics facilities. The research used tools of statistics, system and economic analysis, computer simulation.

The results present development of proposals for automation, identification, labeling and designing of railway logistics facilities to unify and simplify decision-making in technical, operational and economic fields. Their implementation will allow to solve a whole range of tasks for managing terminal-warehouse infrastructure facilities and will also help to expand the customer base of railway companies, e.g. of JSC Russian Railways, by increasing availability, simplicity and customer focus of information on logistics facilities.

The developed concept of an automated control system for the railway terminal network suggests that respective software products will provide an opportunity to calculate key evaluation, inventory, control and advertising parameters of logistics facilities. It can be used as a basis for developing flexible commercial offers. The introduction of the concept and accompanying information solutions will allow to create a single customer-oriented information environment and to achieve 4^{th}–5^{th} levels of providing of logistics services (4PL; 5PL).

Keywords: railways, railway business, digital railway, transport and logistics activities, customer focus, identification, labeling, logistics facility, terminal network.

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Article received 17.01.2019, accepted 26.04.2019.

For the original Russian text please see p. 112.

This research was carried out as part of a grant from JSC Russian Railways for development of scientific and pedagogical schools in the field of railway transport (protocol dated 07.09.2017 No. 36 pr, approved by the President of JSC Russian Railways O. V. Belozerov on 11.10.2017).

Introduction. The largest transport companies in the world are transformed into transport and logistics holding companies. The logistics segment is becoming an important resource for improving efficiency of their activities. A successful example of organization of transport and logistics activities is shown through the practices of the railway holding companies – Deutsche Bahn (DB), JSC Russian Railways.

At the same time, this area of activity under the conditions of informatization and digitalization of the economy and transport, introduction of new information processing technologies, transition of relationships between service providers and customers into the information space is subject to dynamic development, requiring an ongoing search for new methods to improve activities, technologies, processes and procedures that allow to achieve significant improvements.

The *objective* of this study is to automate identification, labeling and designing procedures for railway logistics facilities to unify and simplify process of making technical, operational and economic decisions when managing terminal-warehouse infrastructure facilities, as well as to expand the client base of railway companies (using the example of JSC Russian Railways) by increasing availability, customer focus and simplicity of presentation of information about terminal-warehouse infrastructure facilities.

When developing the proposals with respect to the activities of JSC Russian Railways, the priorities indicated in [1, 2], as well as in the comprehensive project «Digital railway» [3]) were taken into account.

The main tasks solved by the study were:

1) to formulate the concept and modular structure of an automated control system for the terminal network of railway transport;

2) in accordance with the customer focus policy implemented by the Russian Railways holding company, to develop a system for labeling and identification of logistics facilities for railway transport, understandable to each participant in the transportation process;

3) to develop software in which the stated methods of identification, labeling and decision-making are automated.

The implementation of the proposals would allow the railway company, in our case, JSC Russian Railways, to achieve the desired state that will comprise a set of possibilities:

• presentation to customers in the most concentrated and capacious form of the parameters of logistics facilities that are significant when ordering a logistics service;

• immediate application of the proposal as a marketing recommendation in advertising campaigns, as well as by the railway company structures in development of flexible commercial offers;

• development of a «digital platform» [3] and, in the case of JSC Russian Railways, of «conditions of achieving... of the status of a logistics provider of level 4» [1];

• increasing the length and depth of the logistics chains controlled by JSC Russian Railways (not only «from station to station», but «from client to client»);

• full automation of payment, clearing and methodological procedures;

• growth of «total controllability of terminal-warehouse infrastructure facilities» [2], of the ability to evaluate their activities, to monitor and track current parameters in real time;

• simplicity and ease of use in modern conditions of the transport and logistics business; and as a consequence:

• high-quality total control over the logistics facilities, and, as a consequence, over all the logistics chains built by the holding company for transportation of goods,

• expanding the customer base due to the informativity and simplicity of information about logistics facilities,

• «growth of investment attractiveness of both logistics facilities operating on a supporting railway network, and of construction projects and the phased development of high-quality terminal-warehouse infrastructure» gravitating «to cargo railway stations» (according to the priorities indicated in [1, 2]);

• implementation of «digital transformation» of the terminal and logistics activities of the company by «creating a unified information environment» [3] for interaction of railway transport with customers and maintaining a unified database of logistics facilities, simplifying procedures for monitoring, recording and evaluating the activities of railways [4, p. 25];

• increasing the competitiveness of the terminal-logistics services provided by JSC Russian Railways on the whole [5, p. 159];

The study used general scientific *methods*, tools of statistical, systemic, economic analysis, computer modeling, as well as the developed software.

Terminology

We introduce a number of definitions that we will further use.

We consider *a terminal network* as «...a set of logistics facilities of various functional types and the transport sections connecting them, which are served unimodally or multimodally, for rational organization of the processes of cargo handling, transportation and increasing the added value of goods during delivery from a consignor to a consignee».

Logistics facilities are «...objects of transport and storage infrastructure that are concentrated in a spatially defined geographical area and physically render a wide range of integrated terminal and logistics services for various customers and their cargoes in delivery systems from an initial shipper to a final consignee» [6, p. 70].

The object of the terminal-warehouse infrastructure of railway transport, which implements the functions of a nodal element of the terminal network as a logistics system and provides technical and infrastructural support for physical implementation of various services (loading, unloading, storage, distribution of goods, bringing goods to final consumer) when interacting with other participants in the transportation process is considered as *a railway logistics facility* [7, p. 18].

Customer-focused solutions for terminal and logistics activities of a railway company: identification and labeling of logistics facilities

The proposed proposals, which are in many respects universal in relation to railway holding companies, due to the need to demonstrate their integrated, systemic nature, taking into account the specifics of activities in particular market conditions, are considered in relation to JSC Russian Railways.

First of all, it is proposed to apply the principles of customer focus in information about terminal-warehouse facilities of the holding company, the demand for services of which is now steadily increasing. Unfortunately, JSC Russian Railways is losing potential customers who «leave» towards private logistics facilities. In many ways, this situation of «outflow» of highly profitable cargo from public logisitcs facilities due to the low customer orientation of the information about the logistics facilities of railways and their functionality. This does not allow customers to have complete information for making decisions and significantly reduces availability of information about logistics facilities and of comprehensive transportation and logistics services provided by the holding company on the whole.

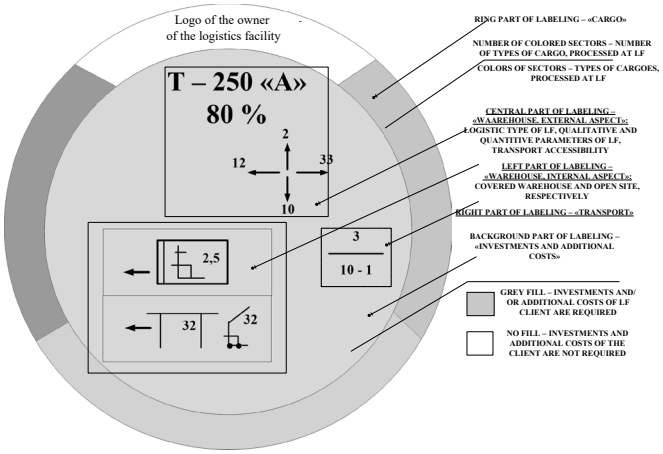
At the same time, it is well known that the basis of a customer-oriented service is its accessibility, flexibility, information content and convenience, as well as a sufficient level of «awareness» of customers about the services provided. The simplification and «digitalization» of relations with customers should be considered from the point of view of socio-economic and technological process of creating value for JSC Russian Railways as of a supplier of high-quality logistics services.

Maximum updating and visualization of information about logistics facilities is required. This can be done with the help of labeling, numbering (code), assigning of a «class» for each logistics facility, with full information coverage. In modern conditions of the transport and logistics market, it becomes necessary to switch «to a common language» with customers, following the example of the pharmaceutical industry: «acetylsalicylic acid» has a simpler, consumer name – «aspirin».

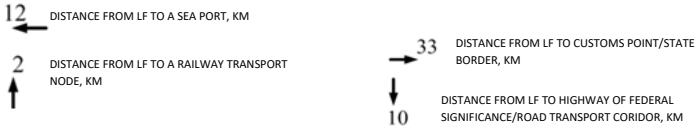
In particular, it was proposed to assign *a logistic class, an individual identification number and a mark* to each railway which is open for cargo operations. Such a naming system will give customers key information about the logistics service provided by each logistics facility: a warehouse, terminal-warehouse complex and other structures available at the station.

A logistic class of a logistic facility of railways is an Arabic numeral from 1 to 9, determined by a point method by experts for all logistic functions and operations performed at the station, taking into account their complexity. The logistic class of a station should be assigned by experts (commercial-audit service, independent experts, customers) according to the point method and placed in the public domain.

The proposed «*logistic class*», in contrast to the generally accepted classification and coding system for station facilities [8–11], reflects functional, technical and technological features of the terminal-warehouse infrastructure located



Pic. 1. The composition of a mark of a logistics facility.



Pic. 2. Designations in the central part of labeling.

at the station, as well as the range of transport, warehouse and integrated logistics services. In other words, the logistic class is directly related to the parameters that are most significant for a client when he is making a decision on the use of the services of a particular logistics facility [12, p. 117].

A mark of a logistic facility is a short, but meaningful inscription that can easily determine a class of a facility (this is useful for tenants who are not familiar with the classes of the logistics infrastructure). To compose a mark in real business conditions, the author has developed an automated program.

It can be assumed that it is convenient to make inscriptions against a color background directly on the facades of the warehouse, and also use it together with the identification number, including for advertising purposes. Labeling will allow the owner of the terminal-warehouse infrastructure (Russian Railways holding company) to save on advertising: having seen and read it, the client will «find» it on his own.

Pic. 1 shows a typical composition of such a mark.

Labeling of a logistics facility in the general case consists of 5 zones (labels):

Part 1. «Cargo». The number of colored sectors indicates the number of different cargoes that this logistics facility can process. The color of each sector indicates the type of cargo.

Part 2. «Warehouse». T – transport terminal; 250 – total usable area of cargo storage at the logistics facility, sq. m; A – classes of warehouse buildings at LF, class «A»; 80 % – «coverage» of standard transport and storage services with additional logistics services, %. Pic. 2 describes other designations of part 2 of labeling.

Part 3. «Warehouse (Technical and Layout Solution)»: a pointer to the type of railway track adjoining to the indoor warehouse complex at the logistics facility; indicator of the type of logistic facility used in covered warehouses (above) of shelving equipment; a pointer to the type of intra-warehouse handling equipment used at the logistics facility. The labeling shows the layout of indoor warehouses and outdoor areas. In case that several types of equipment are used inside covered warehouses for the same goods, only one, preferred type is indicated. There are also: indication of the type of open area (bottom); an indicator of payload capacity of the used loading and unloading equipment of a logistics facility in open areas.

Part 4. «Transport». 3 – average duration of car turnover at the logistics facility, hours; 10 – number of cars in one characteristic delivery, cars; 1 – delivery interval, hour.

Part 5. «Investment». If it is color filled, then additional investments are required (customer expenses), if it is not color filled then investments are not required. The «logo» of the company, owner of the logistics facility is an additional inscription and may be absent. Conventionally, the mark can be divided into 5 parts: «background» (part 5), «ring» (part 1), «central» (part 2), «left» (part 3) and «right» (part 4) parts.

The natural indicators that are most convenient for the client are mainly used (based on the materials of the «Logistic Guide» [13, p. 98]).

Identification number is a flexible, up-to-date commercial offer for the client, which can be implemented in several versions. Two options for presenting identification numbers are given in expanded form for the owner (option 1, «expanded») and in a brief client form (option 2, «client»). When compiling the identification numbering system, we used the results obtained in studies by professors O. B. Malikov [14], P. V. Kurenkov and other researchers [15–19], as well as in previously published works of the author [20–27].

Option 1

1	2	4	5	6	7	8	8	9	10	11	12	13	14
№ of the network district		Serial number № LF				Divider	LF TYPE	WAREHOUSE RENT RATE	TYPE OF ADDITIONAL SERVICE	reserve for 10	CUSTOMER COSTS	TYPE OF RAILWAY FACILITY AT LF	reserve for 13
8	5	8	0	0	1	-	T	H	F	L	0	C	Tr

where – for «expanded» option:

Part 1. « Network District» (two positions). 85 – number of the network district, in accordance with a single network markup.

Part 2. «Facility Number» (4 positions). 8001 – serial number of the facility in the network area. «Divider» (1 position).

Part 3. «LF Type» (one position). T – transport terminal (type of logistic facility according to the author's classification: D – cargo area, cargo area, W – warehouse, terminal-warehouse complex, C – distribution center, L – logistics center, N – transport and logistics node, M – multimodal transport and logistics center; H – letter of the Latin alphabet, according to the cost interval).

Part 4. «Rent Rate» (one position). Storage rate on LF, euro/1 storage unit per day (1 pallet, 1 container, 1 ton of cargo) – 31–50 euro/sq. meter.

Part 5. «Additional Service» (one position). F, L – an indication of the services performed at the logistics facility: F – forwarding, L – leasing, etc., and «Reserve» (for part 5, one position).

Part 6. «Customer Costs» (one position). Indication of the need for additional costs (for the rental of trucks, paperwork, personnel, repair of equipment and buildings, equipment ...): 0 – NO (1 – YES).

Part 7. «Type of Railway LF» (one position): K, P – in accordance with the Instructions for coding of station and cargo objects on railways, expanded by three more types of facilities; taking into account: type of storage, logistic role of a facility, type of cargo (C – container point, Tr – transshipment point) (according to the draft «Logistic Guide for Railway Transport» developed by the author, [13, pp. 88–98]).

Option 2

1	2	3	4	5	6	7	8	9	10	11	12
WAREHOUSE			SERVICE	OPERATION				COST			
Warehouse type	Useful area of storage	Type of LUW scheme	Level of service	Tcargo., h/car		Lmax, con.car		Cost of LUW, euro/cargo unit		Cost of use of infrastructure, euro/car	
A	M	1	S	0	5	7	1	2	2	1	0

where – for option «client»:

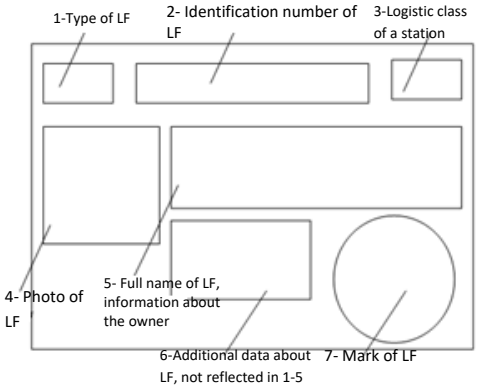
Part 1. «Warehouse». 1 – conditional index, typology of warehouses at LF (prevailing type) according to the international classification of warehouse buildings and premises, the letter of the Latin alphabet A, B, C, D (according to Knight Frank's well-known international classification), 2 – conditional index, total usable storage area at LF: M– medium (1400–1799 sq. m), 3 – conditional index, layout of the loading and unloading scheme (railway/track approach, type of used/used LUM), 1 – using a gantry crane.

Part 2. «Service». 4 – S – service package (Small): standard services (loading-unloading, reception-delivery, documentation, storage, door-to-door services, «last mile»).

Part 3. «Operation». 5, 6 (two positions): natural index, average duration of loading (unloading) of one car at LF, h; 7, 8 (two positions): natural index, maximum length of the train supplied for loading and unloading, conventional cars.

Part 4. «Cost». 9, 10 (two positions): payment for loading and unloading with 1 unit of cargo (pallet, ton, container), euro/unit; 11, 12 (two positions): payment for the use of infrastructure (renting a place), euro/car (according to the project «Logistic Guide for Railway Transport» developed by the author, [13, pp. 79–88]).

A warehouse type is given in accordance with the requirements of international classifications, for example, [28–29]. Obviously, subsequently, for network-wide application, a database of identification numbers and marks will be required. The



Pic. 3. The structure of the electronic passport of LF in a single information environment of JSC Russian Railways.

author obtained certificates of Rospatent [Russian Federal Service for Intellectual Property] for *software* for labeling, identification and design of logistics facilities. It is also possible to create a digital passport of a logistics facility, the view of which is shown in Pic. 3.

Implementation of priorities of «Digital Railway» in management of logistics facilities

Following the growing needs of customers and development of IT technologies, the policy of JSC Russian Railways needs to reform its activities in view of digitalization and innovative development. In 2017, Russian Railways holding company, as part of «Digital Economy program», launched «Digital Railway» project to develop and implement digital technologies in key business processes and services of the company. The project is a combination of «...information technology, processes and standards of interaction, consistent with the digital business model» [3].

The concept of innovative development of railway transport involves the transition «from a platform-centric management approach to a network-centric» – that is, from development of information platforms and systems to their integration into a single information environment [30, 31]. This will allow carriers, consignors, consignees, owners of rolling stock and infrastructure to coordinate actions and make operational decisions based on complete and reliable information about the process.

Today, Russian Railways holding company provide comprehensive logistics services to customers, including provision of warehouse services, consulting, logistics, multimodal transportation services, etc.

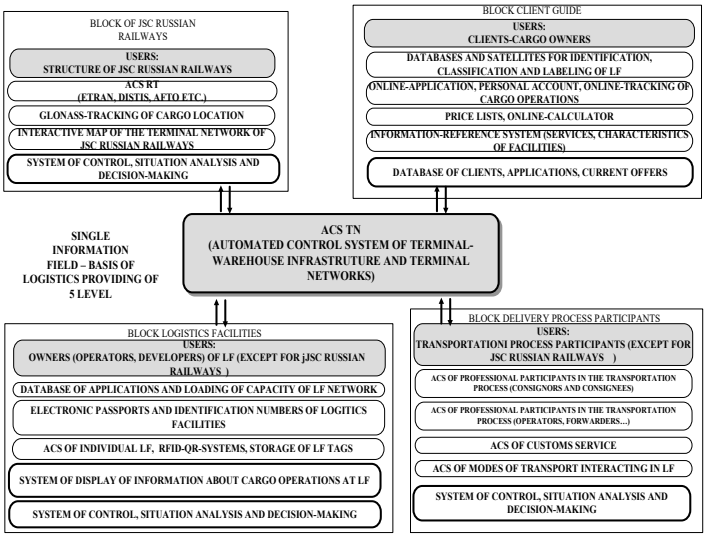
For modern science and practice, it is obvious that digital services are the drivers of global economic growth. According to the McKinsey Global Institute, by 2025, up to 22 % of China's GDP growth will be generated by Internet technologies, and in the United States this figure will be of up to 19 %. At the same time, according to Rosbusinessconsulting experts, the effect of digitalization of transport of the Russian Federation will increase GDP by 4,1–8,9 trillion rubles by 2025, to ensure up to 34 % of expected GDP growth [33, p. 10].

According to [3], digital services are «...a set of organizational, technical and methodological measures in the field of information technology to provide customers with automated service functionality». The concept is aimed at creating an automated service for customers, with which it will be easier to order and arrange transportation. This will increase the volume of transportation, and, consequently, income from implementation of digital transport related services.

Key areas will comprise: creating a unified infrastructure map on Russian Railways network, the «Internet of things», big data technology, smart systems, and mobile applications. It is known that achieving profitability through pricing is not always possible. Therefore, in addition to the basic transportation service, JSC Russian Railways is developing an additional service as a way to attract and retain customers.

The program of enhancing focus on customers contains some elements of Digital Railway concept. We can quote «customer feedback»; «cataloging of services», «a single database – «Internet of things» for exchange of information between the carrier and the client»; «expansion of the geography of transportation»; «accessibility of information services and portals»; «improving tracking and control systems»; «comprehensive services» (compiled based on materials [1–3]).

In order to implement the main guidelines for creation of «Digital Railway» and to implement the principles of customer focus, Russian Railways holding company established LLC Digital Logistics in 2018 to develop and implement digital services of Russian Railways holding company using «Cargo Transportation» electronic trading platform.



Pic. 4. General architecture of the Automated control system Terminal Network.

Let's consider from the point of view of the implemented policy of «digitalization» of business, a project of automated control system «Terminal Network», which can become a «digital platform» for implementation of terminal-logistic business activity of JSC Russian Railways.

Automated control system «Terminal Network»

ACS «Terminal Network» is a «digital platform» for conducting terminal and logistics business by Russian Railways holding company «at a click speed», which is an all-Russian network database (a «cloud» or «satellite» format is possible for well-known systems, for example, for common network marking and assigning stations with classes) as a customer-oriented online service for customers and logistics service providers.

The author has developed the basic structure of such a unified system of management of logistics facilities – «Automated control system «Terminal Network», Pic. 4.

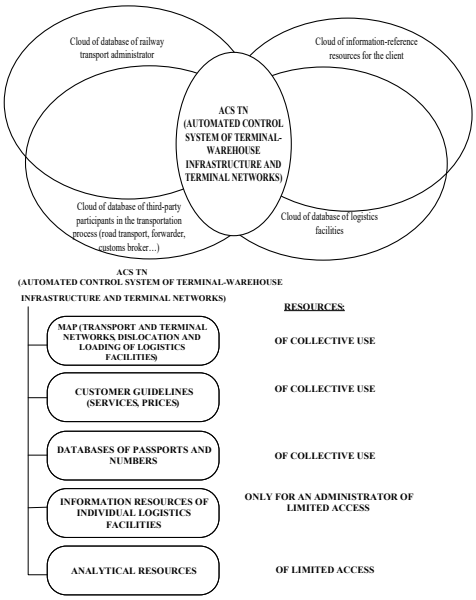
A possible modular composition of the automated control system «Terminal Network» is shown in Pic. 5 (at the next page).

To develop proposals for identification and labeling of logistics facilities, it is possible to draw up an *«interactive map»* of logistics facilities operating on a supporting railway network to take into account their current status, key parameters, as well as their effective load, capacity and visualization of their number and location in the network regions. Such a map with «feedback» can be useful in resolving «issues of staged development and/or design of the terminal network of JSC Russian Railways» (according to the priorities specified in [1–3]), as well as in decisions on investing in facilities.

The proposed automated control system for the terminal-warehouse infrastructure and the terminal network of JSC Russian Railways, integrated with the objects of interaction, will allow to analyze operation of logistics facilities and the entire network, conduct visual monitoring of the operational environment for loading terminal capacities, and process requests for a logistics services through a «single window».

The prerequisite of its creation should be considered as the imperative of time: today Russian Railways holding company objectively needs a single interface acceptable to all participants in the transportation process. All this can and should become a functional tool in solving the problems of interaction between participants in the transportation process and create information support for JSC Russian Railways to reach a new level of logistics provider (4th or/and 5th level of logistics), which assumes the existence of a single electronic environment for the logistics operator, reduction of data visibility and of the load on the electronic bill of lading system (ETRAN).

It can be assumed that introduction of «Terminal Network» automated control system will increase the effectiveness of management decisions and online monitoring of the terminal-warehouse business activity of Russian Railways holding company as a whole. In turn, this will ensure making adequate decisions on organization of transport and



Pic. 5. Composition of reference and analytical resources of the Automated control system «Terminal Network» (abbreviation: ACS TN – Automated control system «Terminal Network»).

logistics systems for delivery of goods through the railway terminal network.

The layout of the interactive map is shown in Pic. 6.

The system should include the following *block elements*: «*Information and reference resources*» for the client; «*Control systems*» with direct access to automated control systems for railway transport actors and other participants in the transportation process; «*Database of logistic facilities*» (marks, identification numbers and electronic passports of logistics facilities); «*Interactive map of the terminal network*» of JSC Russian Railways, reflecting the current state and location of logistics facilities (including those gravitating to the railway network), visualizing its capabilities (technical equipment, key parameters, assortment of logistics services), its loading (completeness of use), as well as long-term development projects taking into account capital intensity and priority of implementation; «*Other information*» – for administrators – representatives of the railway carrier who can edit information about logistics facilities in real time, implementing the principles of customer focus and «a single window» operations.

Automated control system «Terminal network» should have such features as:

• network character;

• unity of management and vertically integrated structure;

• ability to view and edit the database in real time.

At the same time, its application should be focused on the client, operating in «a single window» mode, as well as on the use for operational purposes by JSC Russian Railways to analyze the situation and adjust information about objects.

The automated control system «Terminal Network» will allow clients to choose a terminal and storage facility that is suitable by parameters and services and a cargo station at which it is located. After that, it is possible not only to obtain exhaustive information about LF and place an order, but also to select a package of additional services for integrated logistics «support» of cargo movement.

For JSC Russian Railways, the automated control system «Terminal Network» will make it possible to evaluate the level of logistics services both for the entire length of a railway network and for its individual sectors, as well as to plan development of its own terminal network based on the automated calculation of logistics indicators.

The foregoing suggests that the proposals formulated in the study correspond to the main criteria governing the properties of the information provided to the client, which are reflected in [30; 31, p. 11].

Applicability of results and potential effectiveness

The main results of the study include:

1) automated solutions for identification, labeling and design of railway logistics facilities to unify and simplify making technical, operational and economic decisions;

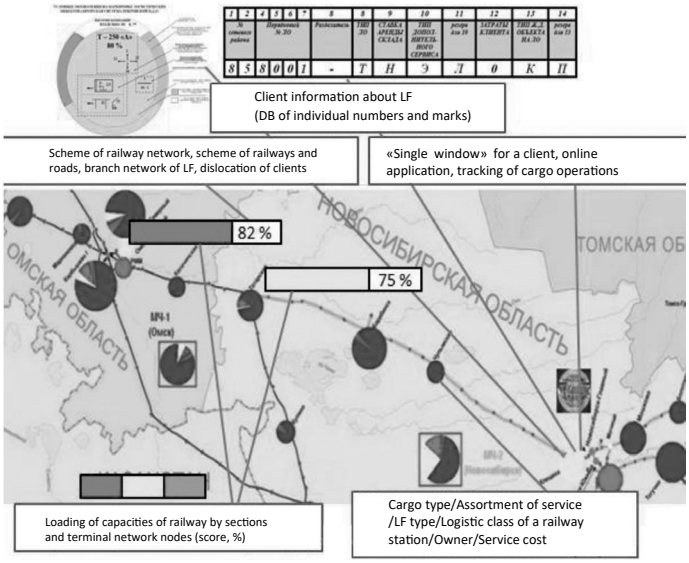
2) concept of development and structure of an automated control system of the terminal network of railway transport.

Based on the results of this work, a draft «*Logistic Guide*» for railway transport was developed in the form of a monograph [13]. The draft:

1) includes a methodology for calculating and evaluating the logistics performance of the terminal and warehouse infrastructure of railway transport;

2) contains a typology and parametric series of logistics facilities;

3) can be used as the basis for the state standard in the field of terminal and logistics



Pic. 6. General view of a possible interactive map of the Automated control system «Terminal Network» (abbreviations: LF – logistics facility, DB – database).

activities and logistic regulation in railway transport.

Thus, implementation of the proposals will make it possible for the JSC Russian Railways to turn the «*lost*» profit into *real*, equal to at least 133 billion rubles a year. In [32, p. 450] it was established that the «*lost*» profit of JSC Russian Railways from the loss of potential customers who use the services of private logistics facilities that are not part of the holding's terminal-warehouse infrastructure is equal to at least 133 billion rubles/year.

In Russia, about 5 thousand logistics facilities with different functionalities, types and formats of business operate on the railway network, on the infrastructure base of which JSC Russian Railways provides a wide range of terminal and logistics services [1]. It should be noted that in 2017 the share of such services in the portfolio of Russian Railways holding was approximately of 20 % [2].

On the one hand, Russian Railways holding company delimits areas of activity and has two separate divisions in its structure: transportation management and terminal and warehouse complex management. On the other hand, it seeks to provide comprehensive services for goods and cargo owners.

When Russian Railways holding company is transformed from a transportation and infrastructure company to a transport and logistics one, solution to this contradiction becomes especially relevant for science and practices. The situation is complicated by the need to solve a number of diverse problems in improving the technology of integrated customer service at the terminal and logistics infrastructure and in attracting new highly profitable cargo flows to the terminal network in total.

The results of the study can be used by transport and logistics companies to solve a wide range of applied problems:

1) identification of LF taking into account design, type of storage, size, technical equipment, etc.;

2) LF choice by a client taking into account its functionality, etc.;

3) assessment of construction and renewal projects of terminal and warehouse infrastructure of railways;

4) assessment of the logistics activities of the terminal network of the company as a whole;

5) control and audit of the terminal network;

6) design of LF with optimal parameters;

7) planning of work of railway transport, which will ensure the growth of income from logistics activities in general.

Key conclusions

1. The effectiveness of the proposals presented is explained through attracting new customers to the railway transport, «switching» from road to railway transport of potential cargo flows of highly profitable goods due to flexible commercial offers in the most convenient, simplified form, increasing their informativity.

Table 1

Result	Possible sphere of application
1. The software package «Classification of logistics facilities»	unification of the terminology and requirements for logistics facilities, applicable in the practice of transactions in warehouse real estate; simplicity and ease of use for the transport and logistics company and the client; warehouse logistics, supply chain management, transportation process management through the terminal network, development of terminal-warehouse infrastructure.
2. The software package «Identification and labeling of logistics facilities»	flexible commercial offers to customers in a concentrated and simple form about the facilities; new format of an advertising campaign for transport and logistics holding services; simplification of interaction of participants in the transportation process, automation of assignment of universal numbering and access to the database of terminal-warehouse infrastructure.
3. The general concept and architecture of the automated control system «Terminal Network»	creation of an IT platform for preparing the transport and logistics company to reach the level of the logistics provider 4–5 PL; creation of a unified network-wide database of systematized data on terminal-warehouse infrastructure facilities operating on the railway network (passports, numbers, signs); improvement of the «in one window» operation based on the principle of customer focus.
4, 5. Drafts of the standard and logistics guidelines	standardization and unification of parameters of terminal-warehouse facilities, classification approach and terminology apparatus in the cargo business segment of the transport and logistics company, methodological support for design of logistics facilities; in the future – development of effective programs for strategic development of the industry.

Application of suggestions can be implemented through development of promotional offers and distribution of offers to customers. This fully «*...will increase the competitiveness of a railway carrier in the transport and logistics market*» [1], and will also allow creation of a «*single customer-oriented information environment as the main condition for level 4 and 5 logistics providers*» [2, 3], the objective many railway companies are seeking today to achieve.

2. The results obtained are aimed at developing a digital platform and automating decision-making on end-to-end, integrated management of terminal network facilities. In turn, this will expand the customer base and increase the efficiency of the logistics block of railway companies. This is achieved thanks to: simplification of interaction with customers, provision of information about logistics facilities and services in a concentrated and adapted format for the interests of the client. Such new, customer-oriented formats of information delivery can be: the «*logistic class*» of the station, the «*mark*» and «*identification number*» of the logistic facility, as well as the «*interactive digital platform*», which provides partial disclosure of information and active participation of clients.

3. Range of potential areas of application of the results is shown in Table 1.

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