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"Freight Village" as an Element of the Network of Modern Transport and Logistics Infrastructure

Tatyana Tretyachenko [a], Denis Pozdnukhov [b] Svetlana Titova [c] and Elena Kulkova [d]
Rostov State University of Economics (RINH), Rostov-on-Don, Russia
tat050161@yandex.ru, dan.16pozd@gmail.com, svetlana.shulgin@mail.ru, kylkova_elena@mail.ru

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Abstract : Sustainable growth of the socio-economic system at both the meso- and macro-levels depends on many factors, the key one of which is its internal environment, determined by the level of development of institutions and objects of transport and logistics infrastructure. The formation of a network of hub and auxiliary transport and logistics centers is one of the key areas of development of the transport and logistics infrastructure of Russia, ensuring the reconfiguration of supply chains in connection with the ongoing sanctions pressure from Western countries. One of the types of transport and logistics centers widely used in developed countries is the "Freight Village" format, which allows providing clients with not only logistics, but also customs, social, consulting and development services that meet the principles of the 4th level of logistics outsourcing (4pl-logistics). Warehouses and transport are the main elements of such centers, and their effective planning and operation, from the authors' point of view, is the key to the viability of the region's transport and logistics system. Despite the fact that sufficient positive experience of the functioning of "Freight Villages" has been accumulated in the scientific and practical activities of Western countries, such a format of transport and logistics infrastructure as "Freight Villages" has not received the necessary development in domestic scientific literature and practical activities. Exploring the "academic" and "pragmatic" points of view on the problem of planning and development of "Freight Villages" in international practice, this paper attempts to present a general view on the need to form a network of "Freight Villages" in the regions of the country and their digital format as a key element of their infrastructural arrangement.

1 INTRODUCTION

In the context of the new reality associated with a large-scale transition to the eastern vector of Russia's foreign economic policy and the formation of a new scheme of transport and logistics channels, regions that provide, taking into account their geographical location and the availability of a modern infrastructure component, the processing and transit of goods are of particular importance. Granting such regions the status of an interregional transport and logistics center and modeling on their basis a new matrix of Russia's trade and economic ties, subject to the creation of a modern transport and logistics infrastructure, the introduction of innovative services, will not only ensure the development of trade, economic, foreign policy and cultural ties with the countries of the Asian region, but also achieve significant economic results. The creation of transport and logistics centers as key elements of the infrastructure environment of regions and the formation of their infrastructure network on this basis are key conditions for building effective supply chains with the appropriate quality of transport and warehousing services. Research shows that infrastructure, being an integral part of the regional socio-economic system, has a significant impact on the rate of intensity of economic growth of each region separately and the country as a whole (Makhneeva , 2013). Based on this, it can be argued

[a] https://orcid.org/ 0000-0002-3051-6644
[b] https://orcid.org/0009-0000-4494-6437
[c] https://orcid.org/0009-0006-7130-7968
[d] https://orcid.org/0000-0002-5813-2167

that the creation of transport and logistics centers in the regions of the country as elements of the country's infrastructure network will ensure not only the efficiency of the transformed supply chains, but also the ongoing economic transformations.

The modern format of the transport and logistics center is the "Freight Village", which has significant advantages, including increased efficiency of supply chain management, a variety of logistics services provided, the ability to use all types of transport for cargo transportation, economic growth and employment in the region, reduced energy consumption and environmental impacts, transport and trade costs (Ciccone , Antonio & Hall , Robert , 1996; Baldwin , Forslid , 2000; Banister , Berechman , 2000). The role of "Freight Villages" around the world has increased due to changes in cargo transportation and logistics processes, characterized by containerization, outsourcing of cargo storage and transportation services, intermodal and multimodal transportation. "Freight villages" have emerged around the world as a response to the challenges of increasing populations and freight volumes (Higgins , Ferguson , 2011), which required changes in the organization of warehouse and transport processes and optimization of logistics costs. A "freight village" is essentially a cluster of transport and logistics infrastructure facilities serving industrial enterprises, where each cluster member is provided with a high degree of accessibility to a wide range of transport and logistics services. At the same time, warehousing, transshipment and transportation of goods is carried out with less negative impact on the environment (McCalla , Slack , Comtois , 2001; Weisbrod . Swier , Muller , Rugg , Murphy , 2002). It is believed that the conditions of the "Freight Village" ensure maximum efficiency of logistics services and minimize the risks associated with the formation of traffic jams on the roads and the negative impact on air quality (Bentzen , Hoffmann , Bentzen , 2003; ESCAP, 2005). The modern concept of the "Freight Village" is focused on providing basic services to various transport and logistics companies located within its territory, as well as other users, which allows them to reduce transportation time and reduce costs associated with warehousing goods, and receive higher quality services (FV-2000-Quality of Freight Villages Structure and Operations , 2000). Being a key element in the regional transport and logistics infrastructure, "Freight Villages" are able to help achieve the goals of socio-economic development of the region. In general, such features of the "Freight Village" allow it to be positioned as an integrator of all subsystems and elements of the transport and logistics infrastructure involved in creating conditions for the sustainable functioning of transformable supply chains and logistics channels. The functions performed by the "Freight Village", being indicators of the sustainable development of the transport and logistics system, are gradually becoming an important criterion for assessing the effectiveness of their activities. The formation of transport and logistics centers in the format of the "Freight Village" currently requires both conceptual and practical research, since the choice of one of the types of transport and logistics centers is a complex task due to the fact that various criteria or goals must be taken into account in the decision-making process. In addition, serious obstacles may arise between the intentions and actual results of achieving sustainable functioning of the formed "Freight Village". In this study, we analyze international and domestic experience in developing new technical and technological solutions for cargo terminals in the "Cargo Village" format. It is obvious that choosing a transport and logistics center format is a multi-criteria task that includes both quantitative and qualitative factors, among which the choice of location requires finding a compromise between these tangible and intangible factors. Accessibility, transport and logistics infrastructure, multimodal transportation (sea, river, rail and road communications, as well as air communications), a common territory for all participants of the "Cargo Village" - these are some of the key success factors for this format of transport and logistics center.

2 MATERIALS AND METHODS

The methodological basis of this study is formed by the works of domestic and foreign scientists, whose area of interest is the development of transport and logistics infrastructure and one of its main elements - the transport and logistics center. As the center of this study, the authors chose the modern format of such a center - "Freight Village". The issues of development of transport and logistics centers, the content and essence of its modern format - "Freight Village" were studied by such foreign scientists as A. Ballis , G. Mavrotas (2007), V. Roso (2008), T. Nobel , F. Mackenthun (2014), BF Yıldırım , E. Önder (2014), Okan Aksoy , Bahar Özyörük (2015), Eren Özceylan et al. (2016), MA Rahman et al. (2025), etc. The most progressive format for the development of transport and logistics infrastructure is studied in the works of Vakulenko S.P., Kurenkov P.V., Romensky D.Yu., Kalinin K.A., Romenskaya M.V. (2022, 4), Magamadov M.I., Lisyukov E.V. (2023), Nikiforov A.N. (2023), etc. The concept of a logistics center in the format of a "Freight Village" and its advantages for users are disclosed in the work of Jaržemskis A. (2007). Most of the cited authors define a "Freight Village" as an integrated cluster of logistics and service activities with various transport and logistics infrastructure, on the territory of which or near which an intermodal terminal is located. The main requirement for the construction of a "Freight Village" is the location of a significant part of its facilities near a transport hub and urban agglomeration. In this article, the authors focused their attention on the analysis of domestic and international experience in the creation of "Freight Villages" and the synthesis of new technical and technological solutions for transport and logistics infrastructure. The work examines the concept of the "Freight Village", the possibility of planning and creating a transport and logistics center in this format in the Rostov Region.

3 RESULTS AND DISCUSSION

3.1 Evolution of the theory and practice of developing a new format of transport and logistics centers

The country's transition to a new stage of development, the main content of which is the formation of a sovereign economic system based on advanced technologies, a capacious domestic market and a foreign economic turn towards the regions of the Global South, requires the formation of a new, even more complex transport and logistics infrastructure that allows providing clients with services that meet the principles of the 4th level of logistics outsourcing (4pl logistics). The more effective the infrastructure is, ensuring connectivity, the integrity of its territory and the optimization of transport and logistics processes - the more productive will be the development of the socio-economic system of the region.

As experts note (Bulatova, Babkin, 2019; Alyapkina , Vlasov, Glazunova, Dmitriev et al., 2019; Arkhipov, Ryapisov , 2020; Zakolyukina , Pyankova, 2022), the current level of organization of transport and logistics infrastructure in the regions of the country is characterized by the lack of conditions for a full-fledged structural transformation that would provide all the necessary conditions for the dynamic, stable and long-term development of the regions individually and the country as a whole.

The key element of the transport and logistics infrastructure in these conditions are progressive projects for Russia of transport and logistics centers in the format of the "Freight Village", the development of which in a number of regions is supported at the federal and regional levels of government. "Freight villages", as follows from world practice, make it possible to form a logistics framework around large agglomerations, ensuring sustainable development of the region (Vakulenko , Kurenkov , Romenskiy , Kalinin , Romenskaya , 2022).

“Freight village”, from the point of view of foreign authors, is a cluster, on the territory of which there are objects integrated in a single information space, related to transport, logistics and warehouse services of material flows, flowing both within the region and beyond its borders on a commercial basis by various operators (Ballis , Mavrotas , 2007; Roso , 2008; Nobel , Mackenthun , 2014; Yıldırım , Önder , 2014; Aksoy , Özyörük , 2015; Özceylan , 2016).

In international sources, the term “Freight Village” is used to designate transport and logistics centers - “ Freight Village » use terms such as « Multimodal / Logistics Platforms » - « Platformes Multimodalities / Logistics » (France), «Interport communications» - « Interporti » (Italy), «Public transport centers» - « Gueterverkehrszentren » (Germany), «Inland port» - « Inland Ports » (USA), «Logistics Park/Logistics Center» - « Logistics Park / Logistics Center » (China).

As Roso (2008) points out, the term used to designate a transport and logistics centre depends on the range of services offered by the centre: “Inland customs warehouse” - “ Inland Clearance Depot ", "Dry depot" - " Dry Depot », «Inland container depot» - « Inland Container Depot », « Logistics center» - « Logistics Center » and «Inland Port» - « Inland Port ».

In domestic practice, the new format of transport and logistics centers has been given the name “Freight Village” - “ Freight Village ". Despite the fact that the legal status of this format has not yet been determined, the "Freight Village" is commonly understood as a format for organizing a nodal multimodal
a transport and logistics center with a high degree of integration of transport and non-transport services, formed in a certain territory, within which all activities related to the transportation and processing of logistics flows are carried out (including those related to certain stages of production) (Vakulenko ,

Kurenkov , Romenskiy , Kalinin , Romenskaya , 2022,11).

Historically, the first two freight villages were created in France in the early 1960s: one as a private enterprise, " Garonor ", and the second, " Sogaris ", in the form of a state-owned company, whose shareholders were the majority of municipalities and local authorities.

Initially, the decision of the French government to create two automobile freight stations in the north and south of Paris was due to the need to improve conditions for the transportation of goods, the organization of transshipment of goods from heavy trucks heading to the city, as well as the accumulation and distribution of goods for Paris and its suburbs.

In Italy and Germany, the first Freight Villages appeared in the late 1960s and early 1970s, and their number increased significantly over the next two decades. By the early 1980s, Freight Villages had begun to be created in the Netherlands, Belgium, and the United Kingdom. Currently, there are 240 new-format transport and logistics centers operating in Europe, covering an area of 25,891 hectares. These areas have been designed, built up, and equipped to meet the needs of transport and logistics activities. Freight Villages in Germany, Spain, France, and Italy account for 47% of the total number in Europe, and they occupy 62.1% of the total area occupied by European transport and logistics centers.

In the USA, “Freight Villages” have also been developed and are operating: the “Inland Port” was created in the city of Laredo , Texas, the International Intermodal Center in the Global Logistics Park in the Port of Huntsville , and others (Fig. 1).

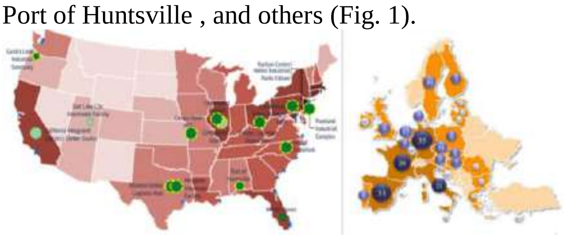

Figure 1: Location of Freight Villages in the United States and the European Union.

In Russia, the first project of a transport and logistics center in the format of "Freight Village" was created in 2012 in the Kaluga region. It was a joint project of the Freight group of companies Village RU in Vorsino , developed with the assistance of the Association of Freight Villages (Freight Village) Germany (DGG − Deutschen GVZ - Gesellschaft , Bremen, Germany).

According to the provisions of the Transport Strategy of the Russian Federation, for the period up to 2030 with a forecast for the period up to 2035, a network of "Freight Villages" should be created in Russia within 10-15 years - nodal multimodal transport and logistics centers with a high degree of integration of transport and commercial services that will have access to several types of trunk routes at once - automobile, railway, air or waterways, located on an area of 500-1000 hectares. Among the largest Russian agglomerations, at least five zones can be distinguished that combine the key characteristics necessary for the successful development of modern transport and logistics activities and could provide servicing of domestic and international freight flows through the East-West and North-South ITCs. These are Moscow, St. Petersburg, Kazan, Rostov-on-Don, Novosibirsk, the Far East (Khabarovsk or Vladivostok) (Fig. 2).

Figure 2: The project of the location of Freight Villages in Russia.

A developed network of "Freight Villages" with integrated transport and logistics infrastructure facilities in its space should in the future lead to growth in the e-commerce and courier delivery segments, and increase the speed of door-to-door freight transportation in a "just-in-time" format.

Foreign and domestic practice of forming "Freight Villages" shows that they can differ in types and kinds depending on their functionality, location and specifics of work. Thus, the following types of "Freight Villages" can be distinguished:

1. By functional purpose:

- Warehouse logistics centers: The main purpose is to store goods. They can include both temporary and long-term warehouses.

- Transport and logistics centers: Combine storage and transportation functions, ensuring cargo processing and distribution.

- Integrated logistics centers: Combine all functions - from storage to processing and distribution of goods.

2. By level of automation:

- Traditional logistics centers: Use manual processes to handle cargo.

- Automated logistics centers: Equipped with modern technologies such as automated storage systems (AS/RS), conveyors and robotic systems.

3. By geographical location:

- Freight villages in cities: Located within the city limits, providing quick access to consumers.

- Freight villages on the outskirts of cities or in suburbs: Usually have a large area for storing and handling freight.

- Freight villages at transport hubs: Located near airports, ports or railway stations to optimize transportation.

In foreign practice, the following types of “Cargo Villages” are distinguished:

1. International logistics centers:

- Examples include large container terminals such as the Port of Rotterdam in the Netherlands or the Port of Los Angeles in the USA. They provide international trade and handling of container cargo.

2. National logistics hubs :

- In Russia, we can highlight such hubs as " Logopark " near Moscow or "Kaluga-1", which serve to distribute goods throughout the country.

3. Specialized logistics centers:

- Food storage and distribution centers (e.g. X5 Retail Group " in Russia) or pharmaceutical products (for example, "R- Pharm ").

4. Eco-friendly logistics villages:

- In some countries, projects are being developed to create environmentally friendly logistics centers using renewable energy sources and minimizing the carbon footprint.

5. Innovative logistics hubs that include the use of blockchain technology to track cargo or the use of drones to deliver goods:

- DHL Supply Chain (USA): One of the largest logistics operators with multiple distribution centers around the world.

- Amazon Fulfilment Centers (USA): Automated Amazon warehouses that ensure fast delivery of goods.

- Logistics City (Germany): Large logistics complex with integrated solutions for various types of transport.

Freight villages play an important role in modern supply chains both in Russia and abroad. Their diversity allows them to adapt to different market requirements and improve the efficiency of logistics processes.

3.2. Digital format of the "Cargo Village"

One of the most noticeable global trends is the digital transformation of all levels and subsystems of the modern economy taking place throughout the world.

Digital transformation largely determines the agenda of various industries, including the infrastructure industry. From the authors' point of view, the "Freight Village" considered in this study should also be subject to digital transformation/ platformization , especially since most of its objects have already reached a certain level of digital maturity.

In our opinion, Freight Village management System (FVMS - system) or Digital Village Management The System is a digital platform developed for the purpose of managing all flows and processes occurring between objects located on the territory of the "Cargo Village", based on uniform standards of digital interaction for all its participants, including government agencies. The digital platform is designed to unite digital transport and logistics services on one platform, to become a kind of "one-stop shop" service for interaction between all participants of the "Cargo Village".

The creation of a digital format of the "Freight Village" involves the formation of a model, including a description of the project in the form of a block diagram and a basic set of algorithms for its launch and operation, and pilot sites, which will be specific regions with their large urban agglomerations (for example, the Rostov Region, as a subject included in the North-South ITC); development and testing of an experimental sample - a prototype of the platform being created, as well as carrying out a full-fledged pilot implementation and ensuring test operation for at least a full business year.

The digital format of the "Freight Village" will allow setting tasks for the FVMS system and will help simplify its participants with information (reducing time, labor, financial costs), ensuring the adoption of a well-founded management decision, as well as increasing the sustainability and competitiveness of each of the system participants. Since the creation of the Digital Format project of the "Freight Village", as well as the "Freight Village" itself, is based on long-term cooperation between the state and business, it is assumed that a subscription payment system will be formed for the services rendered and an economic mechanism will be developed that will allow distributing the costs of maintaining the system between all its participants, which will not only significantly reduce the cost of services provided by each individual participant, but also ensure their competitiveness. In addition, this will reduce the cost of products for the end consumer and ensure the proper level of public consumption at the regional level.

The digital format of the "Freight Village" assumes maximum automation of all processes for each of the participants of the "Freight Village", as well as its integration with the National Digital Transport and Logistics Platform (NDTLP) created in Russia . The processes occurring both outside and inside will be automated as much as possible.

logistics process management system is the North Caucasus Logistics Enterprise LLC (SKLP LLC), one of the largest logistics complexes in the South of Russia, providing a wide range of logistics services for the responsible storage of goods to international and domestic companies. The enterprise uses an information system that provides automation of warehouse business process management 1C TopLog WMS "Intellect 2017" . developed on the open platform 1C: Enterprise 8.3 (Fig. 3) (Tretyachenko , Pozdnukhov , 2025).

As for transport, the elements of the Intelligent Transport System created in the Rostov urban agglomeration are isolated and concern only the organization of passenger transportation . Unforeseen changes in information subsystems and software modules threaten the loss of control and the growth of budget expenditures.

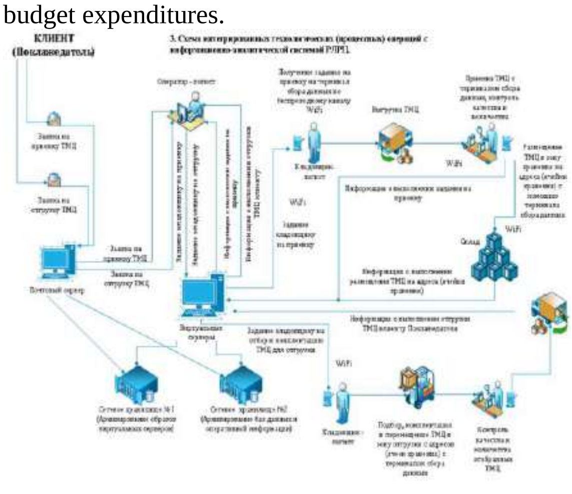

Figure 3: Intelligent logistics process management system at SKLP LLC.

The prototype of the digital format of the "Cargo Village" being created can be the "Digital Village" project, developed for the management of agricultural enterprises by scientists from the "State University of Management", "Omsk Agricultural Research Center" and "Udmurt State University". The project provides for three levels:

the first level is a unified information and telecommunications environment that provides infrastructure functions and that, as a whole, forms the technical appearance of the “Digital Village”;

the second level is a digital platform that unites management systems for various businesses that form technological chains based on the principles of multimodality and UBERization , including monitoring processes, processing generated factual data, analytics, managing business processes, creating “smart contracts”, and managing material and financial flows;

the third level is higher-level cooperation, including inter-industry, as well as interregional and interstate cooperation. Modification of the already developed "Digital Village" project will reduce the time and costs of its development.

3.3. Rostov Region as a pilot site for the development and implementation of the Cargo Village project and its digital format

The possibility and necessity of forming the "Cargo Village" and its digital format in the Rostov Region are determined by the current geopolitical and macroeconomic situation related to the orientation of Russian foreign policy towards close cooperation with the countries of Southeast Asia, which has led to the need to form a new system of transport and logistics corridors that will not be able to function in the future without the southern territory of Russia, where the Rostov Region, which occupies a special geostrategic position, is an important interregional transport and logistics hub connecting the countries of Southeast Asia and Europe (Polubotko , Titova , 2025). The Rostov Region, which has the status of an interregional transport and logistics center, ensuring the formation and development of trade, economic, foreign policy and cultural ties with the countries of Asia, will ensure a significant effect provided that an innovative transport and logistics infrastructure is created and innovative related services are provided.

As proven in some studies, infrastructure is the internal environment of the regional economic system, it largely determines the rate of its economic growth. Based on this statement, taking into account that the transport and logistics center of the new format is one of the main elements of the transport and logistics infrastructure, it can be concluded that the formation of the "Freight Village" and its digital format will ensure a high level of efficiency of the economic transformations implemented in the Rostov Region.

The creation of a “Freight Village” located along international transport corridors will increase the competitiveness and transit potential of Russian inland waterways, increase the volume of containerization of goods flows in domestic and foreign trade, and ensure the provision of a range of transport, logistics, and service services.

The choice of a central location and the density structure of the logistics network are among the main factors determining the location of the "Freight Village". Factors influencing the choice of location of a new format transport and logistics center are also:

- existing and planned terminal infrastructure of various types of transport (intermodal terminal, airfield complex, port infrastructure and berths); office and warehouse facilities; highways, railways; associated logistics facilities (customs post, depot facilities, washing facilities for rolling stock, etc.);
- current available land area (size, density and expansion potential),
- relief;
- potential location of local transport links and transport networks;
- natural environment and proximity to a large urban agglomeration (population density),
- potential/existing environmental pollution;
- labor market and telecommunications infrastructure (Özceylan , 2016).

While most of the conditions for the formation of a Freight Village are related to the shape and size of the territory, location, relief and soil, transport accessibility and transport and logistics infrastructure, additional critical factors include the possibility of future expansion, current regional policies, the possibility of using adjacent lands and other factors.

The issue of choosing the location of the "Cargo Village" in the Rostov Region can be considered resolved, since in 2008, in accordance with the Decree of the Government of the Russian Federation, the investment project "Creation of a multimodal universal transport and logistics hub "Rostov Universal Port"" was included in the approved Federal Target Program "Development of the Transport System of Russia (2010-2015)". This project was included in the List No. 4447 p-P16 of priority investment projects of the Southern Federal District, approved by the Chairman of the Government of the Russian Federation V.V. Putin on 30.08.2011 and the regional Program "100 Governor's Investment Projects".

The design documentation for the creation of the said multimodal center was developed by JSC Institute Pyatigorskenergoproekt . In 2012, a positive conclusion was received from the state examination (Federal Autonomous Institution Main State Expertise of Russia) on the developed documentation for the said facility.

The project envisaged the creation of a complex of port and logistics facilities and infrastructure of railways and roads and approaches on the left bank of the Don River - in the area of the Zarechnaya industrial zone in Rostov-on-Don (on land plots with a total area of 405 hectares). The design capacity of the port is 16 million tons of cargo per year, including the volume of container handling - at least 550 thousand TEU per year (container terminal, coal terminal, grain terminal, terminal for handling mineral fertilizers, industrial and logistics parks).

The project was supposed to be implemented in several stages and implemented on the terms of public-private partnership. The total cost of the project was planned at 19,900 million rubles, including funds from the federal budget - 5,000 million rubles; budgets of the constituent entities of the Russian Federation - 1,000 million rubles; extra-budgetary sources - 13,900 million rubles.

All project participants invested about RUB 2.7 billion in the implementation of the first stage of the investment project, which made it possible to commission 10 berthing complexes with a total length of 1,600 running meters; 120,000 sq. m. of open storage areas; the first stage of a coal terminal with a capacity of 1.5 million tons; the first stage of a container terminal with a capacity of 50 thousand TEU; a cement transshipment terminal with a capacity of 300.0 thousand tons; 14.3 km of railway and motorways inside the port; a motor customs post and a temporary storage warehouse (TSW) of S-10,000 sq. m.

The second stage included the creation of the internal water area of the port, berthing facilities and coastal buildings of federal property, and the creation of engineering and technical support facilities for federal facilities.

Thus, the concept of a multimodal center that meets the requirements and objectives of the middle of the second decade of the 2000s was formed by 2015. A transport chain combining water, rail and road transport was modeled. The issues of forming a transport, warehouse and engineering infrastructure in the Zarechnaya industrial zone of Rostov-on-Don that meets the requirements of the time remained unresolved, since the project was “frozen” in 2017 (excluded from the list of priority investment projects).

The concept of the modern format of the transport and logistics center - the "Freight Village" is practically no different from the concept of the Multimodal Center, except that the "Freight Village" project is essentially a development project, the implementation of which is designed for a long time horizon, in connection with which its significant transformation is possible. In real conditions, the "Freight Village" can change both the specialization and the project participants, the transport and logistics infrastructure can be redesigned, and a digital twin can be created. That is why the projects must be flexible and adaptive, while the general concept of the " Freight Village" must remain unchanged.

Taking into account the approaches outlined, the authors of the study believe it is possible to use the concept and design documentation for the creation of the universal transport and logistics hub "Rostov Universal Port" as a basis for the formation of the "Freight Village", adapting it to modern conditions and regulatory requirements. At the first stage of the formation of the "Freight Village", from the point of view of the authors, it is necessary to create a digital platform - a kind of "System Integrator". Initially, an information system, digital standards of information interaction should be formed, the means and methods that will be used primarily for the implementation of digital solutions in the work of all subsystems of the transport and logistics infrastructure of the Rostov Region should be determined.

Then a digital asset is formed, the uniqueness of its identifier is checked, which confirms the authenticity of the asset, the “name” and location of the asset in the information system are indicated.

Thus, at first, data is generated on the scale, volumes, and areas of activity of all supervised entities of the transport and logistics service system, and at the same time, the tools for digital interaction in each of the subsystems of the transport and logistics infrastructure are selected.

Subsequently, the architecture of the digital integrated platform is built, on which the System Integrator is based. The architecture of its platform is formed taking into account the need for systemic interaction of the basic, technological and applied digital platforms, which will allow not only to develop scenarios for freight transportation, but also to monitor and analyze data on the state of the transport and logistics infrastructure as the internal environment of the "Freight Village". Analysis of the obtained data will form the basis for ranking the digitalization periods of each of the subsystems of the transport and logistics infrastructure, based on the tasks of the current, tactical and strategic periods.

4 CONCLUSIONS

In the current situation, when Russia is actively reorienting its foreign economic policy to the East and forming alternative transport corridors, the key role is played by regions capable, due to their location and developed infrastructure, of processing and redirecting cargo flows. Granting such regions the status of interregional transport and logistics hubs and building on their basis a new structure of trade and economic relations of Russia, subject to the development of modern transport and logistics infrastructure and the introduction of advanced technologies, will strengthen economic, political and cultural ties with Asian countries and achieve tangible economic benefits.

In this study, the authors consider the possibility of creating in the Rostov region, as one of such nodes (elements) of the network of the transport and logistics infrastructure being formed in the country, the most progressive format of the transport and logistics center - "Freight Village". When forming the "Freight Village", the authors consider it necessary to use as a basis the investment project "Creation of a multimodal universal transport and logistics hub "Rostov Universal Port" developed and partially implemented in the early 2010s.

"Freight villages" are a modern way of organizing logistics, transportation and distribution of goods. According to international and domestic practice, they are a key element of the transport and logistics infrastructure, forming a logistics framework around large agglomerations that ensures sustainable development of regions.

Considering that the current stage of economic development is characterized by the rapid introduction of digital technologies, which, based on big data analysis and machine learning, allow optimizing and improving operational processes, quickly responding to changes in the external environment and its challenges, the work proposes the creation of not only the physical format of the “Freight Village”, but also its digital twin.

The digital format of the "Freight Village" is a platform that accumulates in its information and communication environment digital resources, software, digital services, information technologies, interfaces that manage data flows, defines uniform access rights and mechanisms for the joint work of all subjects of the digital platform. Provides rational management of logistics flows that connect subjects involved in the freight transportation system.

The results of this study will help decision makers to better understand the role of transport and logistics infrastructure in the socio-economic development of the region, and to use the infrastructure facilities already built during the implementation of the investment project to create a “Freight Village” in the Rostov urban agglomeration.

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