Urban and regional transportation systems and the application of digital technologies
NIIIAT is a center of unique experience and competencies in the development of transport planning documents. Scientific staff of OJSC NIIT are involved in expert support of the implementation of projects of the Ministry of Transport of the Russian Federation on issues related to its area of competence.
The main sections of the strategic documents of the digital transformation of transport

1. Assessment of the current situation of digital transformation in the transport sector.
2. Analysis of the digital maturity of the transport industry.
3. Technological trends of digitalization in the transport industry.
   - Large data processing systems and artificial intelligence.
   - The main directions of digitalization of the transport complex.
   - Creation and development of integrated transport services.
   - Digitalization of vehicles.
   - Digitalization of transport infrastructure.
   - Digitalization of government activities in the field of transport industry.
5. The main stages of the digital transformation of transport.
6. Development of sectoral science and education in the field of transport.
7. Introduction of new technologies aimed at reducing the negative impact of the transport complex on the environment, as well as technologies for zero-emission vehicles (EV, hydrogen) and the necessary infrastructure.
8. Popularization of digital solutions used and implemented in the field of transport for citizens and businesses, as well as the development of digital culture of the population and civil servants in the field of transport.
9. Managing the expectations of consumers of transport services in order to improve the quality of their provision.

Decree of the Government of the Russian Federation dated 11/03/2023 No. 3097-r
“STRATEGIC DIRECTION in the field of digital transformation of the transport industry of the Russian Federation for the period up to 2030”

1. General provisions.
2. Priority, goals and objectives of the strategic direction.
   The objectives of the strategic direction are:
   - digitalization of passenger transportation;
   - digitalization of freight transportation
   - digitalization of the life cycle of infrastructure and vehicles;
   - digitalization of transport complex management;
   - ensuring security at critical information infrastructure facilities in the transport industry;
   - increasing the level of technological development and decarbonization of the transport complex.
3. Assessment of the state, participants, problems of the strategic direction.
4. The boundaries of the strategic direction.
5. Risks of the strategic direction.
6. Projects:
   - unmanned logistics corridors – 2 indicators;
   - autonomous navigation – 2 indicators;
   - unmanned aircraft systems – 6 indicators;
   - green digital passenger corridor – 4 indicators;
   - seamless cargo logistics – 5 indicators;
   - digital management of the transport system of the Russian Federation – 1 indicator;
   - ensuring security at the facilities of the critical information infrastructure of the transport complex – 2 indicators;
   - measures for the development of suppliers of Russian software and electronic products – 1 indicator.
7. Monitoring the implementation of the strategic direction.
OJSC "NIAT" provides development, independent expertise, expert support and training on the development of transport planning documents in order to ensure their high quality and compliance with regulatory legal acts and methodological documents.
## Global trends in the digital transformation of transport and logistics in 2022-2023

<table>
<thead>
<tr>
<th>Digital infrastructure</th>
<th>Passenger</th>
<th>Cargo</th>
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<tbody>
<tr>
<td>Auto</td>
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<tr>
<td>Railway</td>
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<td>6</td>
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<tr>
<td>Marine and river transport</td>
<td>15</td>
<td>6</td>
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<tr>
<td>Airline</td>
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<td>Urban and passenger</td>
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<td>7</td>
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<tr>
<td>Mail</td>
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<td>7</td>
</tr>
</tbody>
</table>

1. Import substitution
2. Cybersecurity and data protection
3. Development of digital competencies
4. EDI in freight transportation
5. Digitalization of international transportation solutions
6. Trading platforms (cargo transportation)
7. Marketplaces and mail
8. Cargo UAS
9. Unmanned navigation
10. Digitalization of cargo terminals
11. Urban MaaS
12. Taxi Aggregators
13. Carsharing
14. Kicksharing
15. Digitalization of passenger—carrier interaction in intercity transportation
16. Biometrics
17. Digitalization of benefits for passengers
18. Inclusivity
19. Self-driving cars
20. IUA transport system
21. IUA of intercity roads
22. Digitalization of railway infrastructure and rolling stock
23. Digitalization of maritime and river transportation infrastructure
24. Digitalization of the operation of capital construction facilities-OTI
25. Public transport management based on data
26. Digitalization for transport security
27. International digital integration into cargo. Transportation
28. Intercity bus
29. Hyperautomation of supply chains
30. Globalization of data exchange
31. Transportation on request and flexible schedule
32. Ride-share
33. Digitalization of cars
34. Switching to 5G
35. Flexibility and adaptability of the transport system
36. Public transport management based on data
37. Ecology and environmental protection

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*Effective domestic practices in the application of artificial intelligence technologies in the field of transport and logistics
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Metro, tram</td>
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<td>2</td>
<td>Central transport hub, Moscow Central Diameters, high-speed railway</td>
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<td>Rolling-stock</td>
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<td>Surface urban passenger transport</td>
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<td>Electric vehicles</td>
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<td>New types of mobility and walking accessibility</td>
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<td>Parking lots and cargo frame</td>
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<td>10</td>
<td>A single transport space with the Moscow region</td>
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<td>Traffic capacity of the road network: intelligent transport system, road safety</td>
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<td>Artificial intelligence, information technology</td>
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<td>14</td>
<td>Demand management</td>
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<td>15</td>
<td>Services</td>
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</tbody>
</table>
## Projects based on Artificial Intelligence (AI)

### 2023 year

- **"Sphere" biometric data recognition system for transport infrastructure facilities**
- **Video analytics of the RN and monitoring of traffic flows**
  - Video analytics of the RN and monitoring of traffic flows
  - Fixing incidents on the city's expressways based on AI
- **Payment for travel by biometrics**
  - Payment for travel by biometrics
  - Nowhere in the world does the facial recognition fare service work on such a scale and with such convenience for passengers
- **Virtual Assistant**
  - Virtual Assistant
  - Personalized work with passengers by switching to the world's smartest neural networks
- **Video surveillance system**
  - Automatic detection of illegal actions and fixation of violators
  - More than 350 thousand requests per month
- **Comprehensive traffic management system**
  - Comprehensive traffic management system
  - Unified storage system and design of traffic management schemes
  - 100% electronic design
  - 100% of the network is updated automatically
  - 100% of the MRAR is covered by the operation of the system
  - 100% of metro stations, the MCR, "Aeroexpress" and regular river transport are available for payment using biometrics

### 2024-2030 years

- **Smart route land network**
  - Smart route land network
  - Updating the route network using predictive analytics based on AI
  - 100% of the network is updated automatically
  - 100% of metro stations, the MCR, "Aeroexpress" and regular river transport are available for payment using biometrics
- **Development of ITS**
  - Development of ITS smart intersections with AI-controlled video detectors
  - >85% share of ITS with AI
  - A significant part of the park is unmanned trams
- **Unmanned tram**
  - Unmanned tram passenger safety and operational efficiency
  - >85% share of ITS with AI
  - A significant part of the park is unmanned trams
- **Online selection of an AI-based charging station**
  - Online selection of an AI-based charging station
  - For example, the selection of the optimal path and time for a charging session, effective energy consumption
  - Optimization of operational processes, acceleration of work

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> 9.8 thousand have been found since launch, including 1.3 thousand missing, 0.3 thousand of them children.
Complex scientific-methodical, expert and educational provision of the function on legal regulation and management in the field of transport and road economy

EDUCATION

Training under postgraduate, advanced training and professional retraining programs with the subsequent issuance of a document of the established sample.

The purpose of education is to improve theoretical knowledge and acquire practical skills in the chosen field. As part of the training, students carry out their own projects under the guidance of an industry expert with further defense with the involvement of the management.

The schedule, form of training and place of classes are agreed individually. Training is possible with the use of distance learning technologies, without taking time off work, with the possibility of online interaction with teachers.

CONSULTING AND EXPERTISE

The expert review involves assessment of transportation planning documents for compliance with the methodological recommendations for the development of the relevant document and, if necessary, their revision.

- Transport safety
- Road transport economy
- Resource conservation
- Transport planning and modeling

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