Features of road transport relative to other modes of transport:

❑ almost **any transportation** by all modes of transport **begins and ends with** the use of **road transport**;

❑ **for most localities, road transport is the only transport** for the delivery of goods, which makes it indispensable;

❑ road transport in relation to other types of transport is the **most accessible and attractive for the organization of commercial activities and employment** of the population;

❑ **the need for the** economic development of countries is to maximize the acceleration of the circulation of goods, **reduce** public transport costs, as well as the **transport component in the cost of delivered goods**.

Features of international road transport:

❑meet the **needs of the countries' foreign trade** in the transportation of goods across state borders;

❑particularly **relevant for landlocked countries**;

❑the conditions for the admission and implementation of transport, the organization of control are **regulated by bilateral and multilateral international agreements**.

The reasons for the emergence of barriers in the organization of international road transport:

❑**the lack of up-to-date information support** in the carrier's language excludes the possibility of planning and organizing transportation without violations and additional costs on an unfamiliar international route;

❑**insufficient harmonization of transport conditions and transport documentation** is the cause of violations of carriers and disruption of transport or delays of vehicles for control procedures.

The applied technologies of control and information interaction increase the costs of road transport:

❑ **manually checking and registering** a large number of transport documents on paper takes a lot of time, creates queues, disrupts the delivery schedule, and allows negative human factors to affect the delivery process;

❑ **the lack of a system of interdepartmental information interaction and remote automated control** is the reason for the increase in the number of inspections and the duration of transport delays, reaching up to 40 % of the standard working time of the driver;

❑ positive results of checks do not exempt carriers from **repeated similar checks and delays** on the route.

Additional international transport restrictions due to the COVID-19 pandemic:

❑ conducting **medical checks on drivers at the border**, while vehicles and drivers must remain in special Parking lots at the border until the test results are announced;

❑ admission to the territory of the country of drivers who have visited certain countries only after being **quarantined for 14 days;**

❑ requirements for foreign drivers to issue **medical certificates in paper format with a limited validity period** (no more than 3 days from the date of issue) that they do not have COVID-19 disease, which must be issued in a limited list of medical institutions;

❑**tightening** requirements for registration **issuance of visas** and increase in terms of their registration;

❑**restrictions on the route and mode of movement, the period of stay** on the territory of foreign drivers, vehicles;

❑**reducing the number of vehicles** allowed through at border checkpoints;

❑**reducing the number of checkpoints** on the border;

❑ forced **reloading of goods at the border** from foreign vehicles to national ones;

❑ a **complete ban** on all vehicles, drivers, and cargo crossing the country's border.

Preliminary electronic declaration to the control and supervisory authorities will allow:

❑ **automate control** procedures;

❑ **reduce** the **burden** on the personnel of the control point;

❑ **increase** the **speed, quality** and **transparency** of **control**;

❑ **notify** the **carriers of the results** of checking the pre-declared documents **before the drivers arrive at the border**.

"Electronic queues" and "fast lanes" for freight at border-crossing points will reduce the risks of carriers from delays in transportation by:

- ❑ **timely receipt** by carriers **through mobile applications** of up-to-date **information** about the conditions of passage of a particular checkpoint, including information about the schedule of its operation, capacity, congestion, etc. and the possibility of choosing the optimal checkpoints and routes;
- ❑ the ability to **book through mobile applications a place in the "electronic queue"** and the time of passing the checkpoint to optimize traffic schedules and reduce downtime at the border;
- ❑ **remote and automated control of the flow of incoming transport**, eliminating peak loads that lead to queues and congestion, increasing the risks of the spread of the COVID-19 pandemic and environmental stress at checkpoints;
- ❑ ensuring the rhythm of functioning and **optimizing the workload of employees, increasing the capacity of the checkpoint**;
- ❑ **reducing the number of vehicles blocked** at the checkpoint due to the lack of or incorrectly issued transport documents, and other reasons;
- ❑ the possibility of **accelerated passage of pre-declared and verified vehicles** on specially designated **"accelerated lanes"**.

"Green corridors" to facilitate uninterrupted freight movement through border-crossing points:

❑ to create the most **favorable conditions for law-abiding carriers**, the maximum possible exclusion of interruption of transportation for inspections of vehicles, drivers and cargo;

❑ each transport participant is assigned and promptly adjusted **ratings that reflect the degree of law-abiding and the risk of violations** based on the **database** of objective control and the use of technical **remote control tools**;

❑ required the **organization of international cooperation**, including **information exchange** between the state regulatory authorities of the States through which pass the international transport corridors.

Applications for real-time updates on the route operational conditions:

❑ the **network of public roads**, are part of international transport corridors, including **digitalgraphs of roads**, the **current restrictions**;

❑ introduced and planned **changes in traffic patterns** due to maintenance or other works, events, etc.;

❑ **current workload** of sections of the road network, presence of **road accidents**, the probability of **formation of traffic jams**, etc.;

❑ temporary **restrictions for movement** of certain categories of **vehicles** or shipping certain kinds of **goods**;

❑ **permissible weight and axle load** for road transportation route;

❑ **restrictions** on the **dimensional parameters**;

❑ the **network location** of the **objects** of transport and road **infrastructure**, including contacts, mode of operation and the current situation on the object, and so on.

"Telemedicine " - remote medical monitoring of drivers:

❑**remote monitoring** of medical **examinations** of drivers in online mode;

❑**creating a network** of specialized software and hardware **complexes** along Asian roads in **optimal locations**, operating around the clock;

❑**legalizing** the mechanism for **recognizing** the legal significance of the fact of medical examination and its results;

❑**prompt transmission of** data on the **results** of medical examinations to transport companies and state regulatory authorities;

❑**storage of history** and prompt transmission **of data** on the results of medical examinations for monitoring, analysis and taking necessary measures;

❑the possibility of **forming electronic medical records** (certificates) of drivers (**EDMC**), **harmonized** among the states along the Asian road network and posted on **an agreed information portal**;

❑**reduction** of driver delays and **queues** at state borders, the number of **paper documents** and **physical contacts** of employees.

Remote approval and registration of permits for large, heavy and dangerous goods:

❑ preparation and submission of **applications in the language of the carrier via mobile applications** for obtaining access to the registration of permits for the transportation of bulky, heavy and dangerous goods;

❑ **planning and coordination** of the schedule and route of transportation, taking into account the overall, weight and other restrictions;

❑ registration and issuance of **permits in digital format**;

❑ **providing carriers via mobile applications with information** about the requirements in terms of:
  ❑ methods of securing cargo;
  ❑ completing vehicles with additional equipment;
  ❑ application of special marking;

❑ **information exchange with the state control and supervisory authorities** of legally significant data in electronic form about the issued permits, the agreed conditions of carriage and the results of the checks carried out during the carriage.

Automated real-time en-route remote monitoring and control of parameters of vehicles without stopping them:

❑ measuring **weight using load cells** embedded in the roadway;

❑ systems of **photo** and **video**, providing **recognition** of state license plates, as well as their identification by categories and types, number of axles, etc.;

❑ **opto-electronic sensors** for measuring of dimensions of vehicles;

❑ display for **informing the driver in case of violation**;

❑ **telecommunication modules** forming protocols in case of violations and interacting with information systems of state control and Supervisory bodies and transport operators.

Electronic permit system for international freight road transport:

❑ **conduct synchronized** national or single international **database of issued permits** for international road transport, taking into account the parameters (type of transportation, rolling stock requirements prescribed route, etc.);

❑ translation of **procedures for allocating and issuing permits to national carriers in online format**, with the conduct of a Personal account user permissions a dedicated WEB application and mobile application for transport companies;

❑ application of **digital control methods of use of issued permits** for international road transport, including **technologies of satellite navigation**.

Remote electronic customs control with navigation seals and smart containers:

An electronic navigation seal is a technical means of **ensuring remote control of access to the cargo compartments** of vehicles, as well as compliance with the conditions of carriage. Practical implementation of measures for the use of electronic navigation seals may include:

❑ **ensuring the legal significance of data** from the applied electronic navigation seals, as well as other equipment installed in the cargo compartments of vehicles;

❑ use of the received **data in the risk management system** (RMS) of customs authorities in determining the degree of risk and in order to improve the effectiveness of remote control activities;

❑ formation of alternative **mechanisms for covering risks** in international transport along with transportation insurance, Deposit, customs carrier Institute, Carnet TIR and Carnet A.T.A., and other existing mechanisms;

❑ electronic **navigational seals promotes the use of** the so-called **"smart containers"**. In one case integrated locking and sealing devices with integrated satellite navigation and telematics, the impact sensors and rollover, and insulated containers – thermal sensors.

Smart tachographs

The smart tachograph **automatically transmits data independently of the driver in online mode**:

❑ about the **driver** and **his personal card**;
❑ about the **vehicle** and its **condition**;
❑ about the **driver's work** and rest modes;
❑ the **coordinates** of the vehicle during the transportation process **in real time**;
❑ **information** about sensors received from various **on-Board vehicle systems** connected to the tachograph, including sensors for weight loads on each axle and monitoring unauthorized access to the cargo compartment, compliance with temperature conditions, etc.

Information systems for the interactions at transport terminals:

The **digitalization of business processes**, as a rule, is carried out in two directions :

❑automation of **interaction of participants** of transportation for operational purposes of the current driving situation, the coordination of transport and commodity flows in transport area;

❑automation of **interaction between the participants** of transportation **and state regulatory bodies** for the purposes of information exchange of information about transported goods, including in the framework of customs and other procedures.

Use of unmanned transport technology:

❑ the use of highly automated or fully Autonomous vehicles **minimizes human contact** during cargo delivery, the **spread of infectious** diseases, and the negative impact of the human factor;

❑ **standards** for driverless transport **are being developed** in many countries;

❑ the **legal and ethical aspects** of responsibility in the event of a traffic accident and the moral and ethical choice of acceptable consequences of unmanned driving **remain complex**;

❑ the most **developed option** is currently the **convoy movement** of highly automated trucks (platooning);

❑ the choice of a specific application of unmanned and highly automated transport for real cargo transportation on international routes of Asian roads can be **justified by the results of special studies**, including in the framework of international **test zones**.

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Thank you for your continued support in regional transport connectivity