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ANALYSIS ON THE APPLICATION OF INTELLECTUAL TECHNOLOGIES (IT) IN LITHUANIAN INTERMODAL TRANSPORT

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Information and e-communication technologies should serve in managing incompatible elements, e.g., transport means, load and routes, and in this way improve traffic safety, reduce traffic congestion, transportation time and fuel consumption.

Lithuania must properly prepare both technologically and legally, for the implementation of modern smart technologies, especially for their application in intermodal transport. IT inevitably becomes a tool for future transport progress. Intellectual (‘smart’) infrastructure, intellectual (smart) transport means are already being developed as well as interactive intellectual services and technologies being used.

Keywords: intellectual technologies, application of intellectual technologies in transport, intermodal transport

1. Introduction

Intellectual technologies (IT) are perceived as the application of information and communication technologies in transport sphere.

It is very important to ensure openness to innovations in IT and service sphere, especially paying attention to the efficiency of energy consumption using the aforementioned technologies in intermodal transport. IT purpose is to improve the efficiency of intermodal transport, its productivity, and service quality, enhance mobility, and reduce energy consumption and environmental damage.

2. Main Legal Acts Regulating and Initiating IT

Main Legal Acts Regulating and Initiating IT:

- European Parliament and Council Directive ‘On the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport’ (2010/40/ES);
- Committee Communication ‘Action Plan of Smart Transport System Deployment in EuropeKOM (2008)886 final; ‘Long-term Strategy (up to 2025)of Lithuanian Transport System Development’ (23/06/2005, No.692;
- European Commission ‘GREEN PAPER – Towards a New Culture for Urban Mobility’ KOM (2007) 551.

Directive 2010/40/ES determines obligatory continuity requirements for intellectual transport system (ITS) services, aimed at freight management in transport corridors and their shipment by various transport modes, on the bases of:

Improved electronic data and information exchange between related traffic information and (or) management centres and various interested parties, residing in different countries, different city and intercity zones;

Use of standard information flows or traffic interface, linking proper traffic information and (or) management centres and various interested parties.

3. Analysis on the Application of Intellectual Technologies in Lithuanian Intermodal Shipments

Lithuania must properly prepare both technologically and legally, for the implementation of modern smart technologies (see Figure 1).

IT inevitably becomes a tool for future transport progress. Intellectual (‘smart’) infrastructure, intellectual (smart) transport means are already being developed as well as interactive intellectual services and technologies being used.

International IT solutions are used. Most logistics companies use them; and Lithuanian departments of various companies are integrated into unified international systems of intermodal carriers.

The development of intermodal transport is one of the most important priorities of Long-term (up to 2025) Strategy of Lithuanian Transport System Development.

IT Application in Railway Transport. The efficiency of Lithuanian railway activities mostly depends on the use of IT in management, accounting and technological processes of transport services. The most important of such systems would be business management and accounting system mySAP, computerized operational transportation system OPKIS, information systems KROVINYS and RIEDMENYS, geographic system GIS, etc.

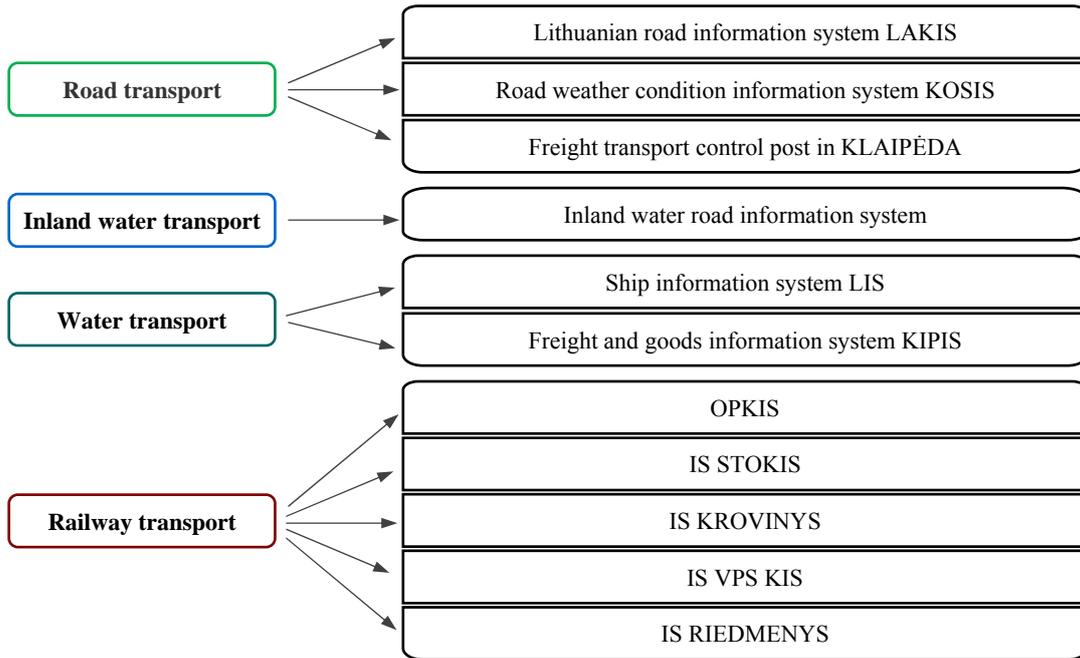


Figure 1. IT application projects in Lithuania

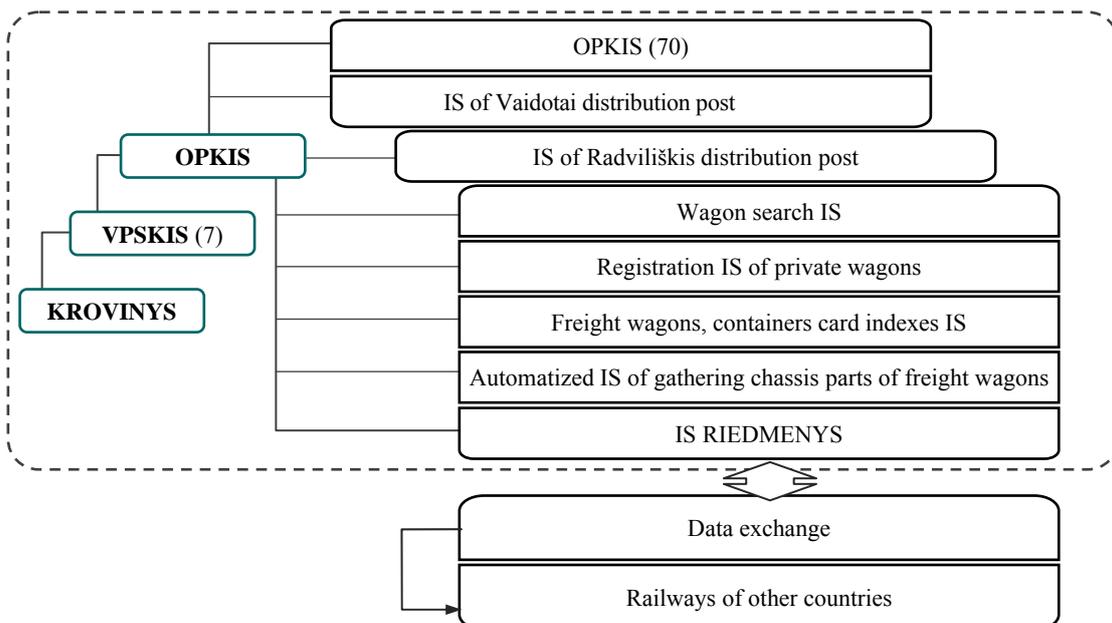


Figure 2. Freight shipment IT

The main task of computerized operational transportation IS OPKIS is to carry out direct information exchange between the main country's trade item posts, neighbouring railways and railway authorities. The purpose of the system is to accumulate and provide relevant information for users about freight trains' composition, their traffic (including preliminary information about train movement), wagon location in the territory of Lithuanian railways, Latvia's, Estonia's and ICS railways, wagon loading/discharge, wagon data from MOT and wagon mileage etc. OPKIS development is aimed at better integration with other IS used by Lithuanian railways, i.e., KROVINYS, VPS, KIS, computerized post information system (STOKIS), and at the implementation of EC directive 2001/16/EC 'On the Interoperability of the Trans-European Conventional Rail System' (TSS) in creating a link between freight transportation systems used in EU and by Lithuanian railways (OPKIS, VPS, KIS, IS KROVINYS).

Information system of Lithuanian railways' rolling stock and container park RIEDMENYS is used for the accumulation of information about rolling stock and containers of Lithuanian railways, management, storage and provision of information for users.

IS KROVINYS is a base IT system, integrating information processes related to freight shipment services. The development of this system embraces the improvement of internal modules and interfaces with Port of Klaipėda's information system KIPIS, IS of Customs Department of the Republic of Lithuania, IS of other countries railway companies as well as the development of management and accounting system SAP.

Development of Integrated Information Platform for Freight Shipment by Maritime and Rail Transport (e. freight)

E. freight is aimed at creating 5 electronic services for the users and clients of rail freight shipment services:

1. Reservation of rail freight shipment services (maturity level – cooperation),
2. Monitoring of rail consignment movement process (cooperation),
3. Automatized preparation of freight shipping documents and their presentation to Service Recipient (personalized),
4. Automatized preparation of freight loading documents and their presentation to Service Recipient (personalized),
5. Automatized preparation of declaration and presentation to Customs (personalized). The project is aimed at optimizing the process of freight shipment by rail and maritime transport by developing integrated freight shipment e-services.

Target groups: freight service companies (freight terminals, public logistics centres, other private terminals) and customers of freight shipment services (shippers/freighters, forwarding companies).

Project objectives:

1. To create and deploy an integrated information platform for freight shipment by rail and sea transport;
2. To purchase and deploy hardware and system software, necessary for the provision of e-services.

Project implementation will provide benefit to:

1. Country: e-services will allow Service Recipients transporting their freight more effectively, to increase their competitiveness, to make supply chain more efficient. All this provide conditions for the increase in freight flow. This, in turn, would increase the profit of transport companies, while national and municipal budgets would collect more taxes.
2. Service recipients: optimization and increase in shipment volumes, saving time and human resources while presenting freight shipment documents to various institutions.
3. Lithuanian railways/ Port of Klaipėda: promotion of services and encouragement to use e-services.

EU Structural Funds give 6308,3 thousand litas for the project implementation, while National Budget – 1113, 23 thousand litas, all in all – 7421,53 thousand litas.

Water transport. KIPIS – freight and goods information system is aimed at electronic data exchange between the companies, operating in the port, and national authorities regulating freight and ships there.

KIPIS aim:

- To simplify port's business processes by using modern information technologies and to speedup freight movement through the port as well as ships' service;
- To increase port's throughput, attractiveness and competitiveness.

The main functions of KIPIS: a) presentation of relevant information to Customs and other authorities by web link; b) data exchange between system’s users in carrying out temporary storage of goods, import, export and transit procedures and other Customs’ formalities; c) electronic data exchange with loading companies. The use of information and communication technologies allows simplifying and advancing port’s business and freight shipment processes.

The benefit of system for port’s companies will be the simplification of freight shipment process in the port due to electronic data exchange.

KIPIS allows Customs and other controlling authorities to receive preliminary information and documents for risk evaluation and statistical information about freight in the port. The application of system helps in controlling port’s operations and in providing higher quality public services (Fig.3.).

KIPIS integration with other IS:

NCTS (Customs transit declaration clearance system);

LIS (Port Authority’s Ship information system);

APVTKS (Port Authority’s car and pedestrian gate hardware control system);

KROVINYS (LLC „Lietuvos geležinkeliai“ information system).

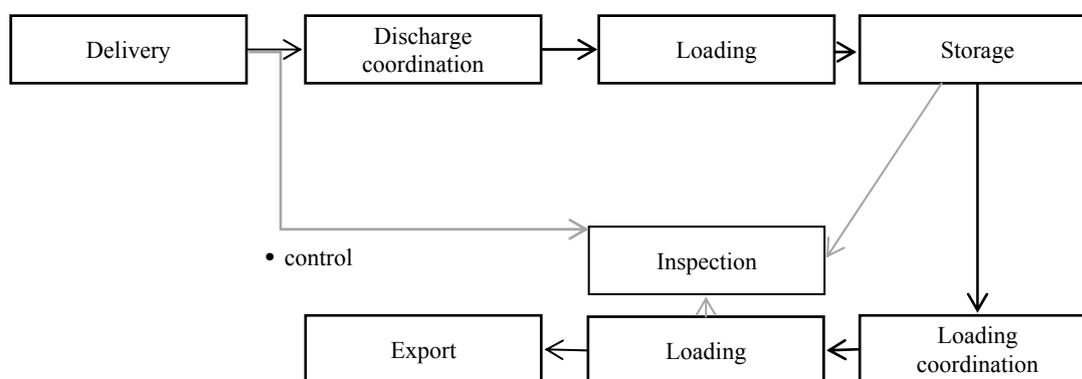


Figure 3. KIPIS business scheme

Business process simplification:

- ‘One-stop shop’ principle;
- ‘Green corridor’ principle for association’s goods;
- ‘Permission by default’ principle;
- Electronic data exchange.

One-stop shop principle:

- Preliminary data presentation to controlling institutions in a single system:
 - Ship agents: 8 types of ship documents according to FAL convention (Convention on Facilitation of International Maritime Traffic);
 - Freight forwarders: shipment documents, applications for loading.
- Preliminary data filtering according to institutional control principles (controlled filters).
- A joint solution of controlling authorities, presented in a single system:
 - As to the appointment of ship commission provide;
 - As to physical freight inspection.

4. Conclusions

It has been found that IT potential is not fully used, e.g., freight and goods information system (KIPIS) is used only by a small amount of port’s companies. Thus, this hinders the utilization of IT potential.

The analysis carried out shows a low integration of IT projects created in different transport sectors.

It is advisable to create more favourable conditions for business to use IT products, to simplify KIPIS and make it more attractive for users. This would increase the usage of ITS means not only on micro level, but also on macro level (in Lithuania).

It is very important to increase the integration of systems of different transport modes that would quicken information exchange and create conditions for better business planning.

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