

FREIGHT TRANSPORT LOGISTICS. CASE STUDY IN LATVIA

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In 2001 the European Platform for Transport Research (EPTR) was established to improve co-operation and co-ordination between national transport research programmes. Of course several organisations and networks of co-operation already existed before. The aim of EPTR is not to compete with these, but to identify what measures are needed in order to further improve the research co-operation and hopefully create the options for these actions in the future.

The origin for EPTR was laid by the committee of national representatives to Key Action 2 “Sustainable Mobility and Intermodality” (part of the EC’s 5th Framework Programme). The group however found that although EU research co-operation is important it should be extended by increased multilateral co-operation of national research. The motivation for this is that:

- 85% of transport research in Europe is still funded by national bodies,
- As transport problems are more or less the same all over Europe there is overlapping and/or complementary research going on.

The aim is to improve research by creating enhanced co-operation for different levels and modes of research. It is however regarded important to maintain national control over the national funds.

The work of EPTR is carry out in four clusters:

- Traffic safety,
- Freight transport logistics,
- Monitoring Transport policy in Europe,
- Intelligent transport systems.

EPTR wishes to start the process by initiating concrete activities to facilitate and stimulate co-operation. As regards instruments of co-operation the following could be relevant: exchange of information, synthesis of project results, joint analysis of results, joint project definition, joint projects, joint programme implementations and joint programming.

This list indicates that different instruments could be used at different stages of co-operation. The EPTR group is open to discuss the options in all these kinds of instruments.

In order to get an overview of the research activities in the European countries and to provide the participants with ideas on how to generate co-operations actions, the organisers elaborated a questionnaire covering five topics:

1. How has the logistics developed in the last decade?
2. What have been the most important national research findings in the last decade?
3. Have these research results been implemented?
4. What are the most important ongoing and future research areas?
5. What will be the most relevant areas and types of research co-operation in Europe?

Author of this paper was one of the participants of workshop on freight transport logistics. His contribution for this workshop is core material of this manuscript.

1) How has logistics developed in the last decade?

In the recognition that a modern transport system is of exceptional national and economic importance, the Latvian government has elaborated the National Transport Development Programme (1996-2010).

The National Transport Development Programme (NTDP) is a document of plan character that constitutes the activities (actions, tasks, types of activities) of economic, organizational, institutional nature and other-type of programmes falling within one system. It is worked out for 15 years period.

The National Transport Development Programme consists of nine sub-programmes:

- Maintenance and development of transport infrastructure
- Improvement of transport services
- International (export, import, transit) transport operations. Transport corridors, cooperation with neighbouring countries and integration into the European transport network
- Integration of transport systems
- Traffic safety
- Establishment of the environmentally friendly transport system
- Transport statistics and information infrastructure
- Transport legislation and institutional regulations
- Education and science

The Ministry of Transport and Communications has not carried out a special logistics study.

For co-ordination of research and education in transport area the Latvian Transport Development and Education Association (LaTDEA) was established. It is non-governmental, non-profit organisation. LaTDEA operates as Thematic Network and co-ordinates research and educational programs in Latvian transport area in accordance with the agreement between Association, Latvian Ministry of Transport and Latvian Ministry of Science and Education.

The goals of Thematic Network are:

- to define results and recommendations from research projects as well as demonstration and pilot activities which will further the process of revitalising transport business;
- to recommend activities, including new proposals for implementation.

The R&D under Association is sponsored by special grant of Latvian Council of Science named "Optimisation of Latvian Transport System"(1997-2001). The work within the framework of this research was carried out in clusters. Three of these had been established:

- *Transport Telematics and Logistics*
this direction encloses the Latvian transport, including the elaboration of the multimodal, telecommunication and information supply by the methodological base for the creation of the transport information and telecommunication supply integrated system on its base, for the development of transport multimodal system integrated

model and its utilization to analyse the sources of data obtaining with the aim to update the information to develop data reception and constant actualisation methodology.

- *Transport Quality Management Systems*
this direction contains process of management, reliability, safety and environment harmonization supply united methodological elaborations, agreed and optimised separate transport areas full value systems, efficient methods and rational principles, realizing the performance of the research in the direction of the education and qualification training integration and implementation of the multimodal and interregional transport corridor highly efficient harmonized management and quality system.
- *Transport Research and Education Harmonization*
it is foreseen to elaborate transport profession, speciality and professional qualification harmonized scheme and qualification descriptions, as well as education establishment quality system methods and pilot-projects. The conformity of students of the Latvian higher school learning various specialities of the transport directions to the forecasted needs of the Latvian national economy will be modelled, and the model of the forecast of the demand of transport specialists will be elaborated.

2) What have been the most important national research findings in the last decade?

There was some important research in transport area in Latvia in the last period.

a) *"Optimisation of Latvian Transport System"*(1997-2001), sponsored by the Latvian Council of Science.

Programme aim is to create the bases of system approach for the analysis, modelling and development of the national transport system, as well as for the implementation of the scientific research to assist the competitiveness of branches on the regional and global level and to perform the forming of the efficient and ecologically friendly multimodal transport systems.

The work within the frame of this programme was carried out in three clusters (Transport Telematics and Logistics, Transport Quality Management Systems, Harmonisation of Transport Science and Education), which were discussed in the previous part of the questionnaire.

b) *"Transport Intelligent System Development in Latvia"* (2002-2004).

The Intelligent Transport Systems (ITS) are analysed in a theoretical framework to determine their deployment application potential and what standards must be maintained to maximize the efficiency of the various deployments. This study is only a start. The project will present the key challenges for research on the Information Society Systems and applications for transport and related services:

- To set out the political, economic, social and technical context for the future research,
- To describe the current developments in telematics systems for transport,
- To discuss the objectives towards which the research is directed,
- To discuss the overall approach to the management of information society applications for intelligent transport management and related services research activities within the European Framework programme and the factors critical to the successful development and implementation of the result at the national level.

The purpose of the study is to identify the ITS user services appropriate for Latvia and Riga metropolitan area and develop a Strategic Deployment Plan and National ITS Architecture based on user services. The key research priorities in each area of Intelligent Transport Systems will be defined.

c) *EDITRANS project "Integrated Transport Information System"* (1999-2000).

The development potential of Latvian transit transports from information technology perspective has been studied earlier in multiple related studies including *Development concept for Latvian Integrated Transport Information System (ITIS) (1998)* and *Latvian Online Transport Information Exchange (1999)*.

This study is one logical step in specifying the new ITIS concept and making the implementation plan for the new system to act as a "virtual logistics service centre" in Latvia and providing state-of-the art products and services to the transportation industry and its clients.

ITIS was a project aimed at providing all transport logistics companies and their clients a new technical architecture and service solution including EDI (Electronic Data Interchange) services with current and emerging new standards.

The outcome from the project was:

- description of the mission and business concept of ITIS, the goals and expected costs and benefits for the parties
- description of the technical architecture and service components of the new ITIS
- concrete implementation plan to achieve the goals.

3) Have these research results been implemented?

Unfortunately the transport research from one side and business and transport policy from other side has not very close links in Latvia. There is a large internal competition between different transport enterprises (for example, sea ports) and between different modes of transport (for example, road and rail transport) in Latvia. Transit is the main part in transport sector. The profit of transport companies, involved in transit business, is mainly depending upon political decisions of neighbouring countries but not upon optimisation and logistics decisions. In such situation investments in research and correlation between research results and business are very small.

4) What are the most important ongoing and future research areas?

The Latvian Transport Development and Education Association has started a three-year R&D programme "Transport Intelligent System Development in Latvia" (2002-2004). Intelligent Transportation Systems (ITS) are a new class of transport system that is comprised of advanced information and telecommunications network for users, infrastructure and transport means.

ITS implementation, unlike traditional transport investment, demands new partnerships: between those with an interest in different transport modes, between administrative levels and between the business world and the public sector. ITS market development depends strongly on such partnerships.

The overall goals of research into telematics applications for transport remain unchanged. They are to improve the efficiency and quality of transport services with greater safety and reduced environmental impact. But the pace of Information Society developments is now starting to re-

shape society in fundamentally new ways. The mass market for communications and information services is just starting to take-off driven by digital mobile communications, digital broadcasting, de-regulation and competition in fixed networks, the Internet phenomenon and many other explosive developments.

Intelligent Transportation Systems is not one single system in Latvia, but a process in implementing new logistics and telematics applications in a phased and managed way.

The vision and business concept of ITS is that it will provide in time a portfolio of different, joint applications and services that will have a positive impact to the business activities of users. At the same time the services of ITS will be developed at the best price per quality ratio.

During the project there has been growing pressures for quick and concrete actions to start the development. This has led to the thinking that instead of defining a complete logistics and telematics solution, the progress should be learning by doing concrete pilot projects.

5) What will be most relevant areas and types of research co-operation in Europe?

a) Traditionally the main goal for research in logistics is models development and search of the optimal results.

Often suggested mathematical models do not meet their main purpose – the means for investigation of transport system and decision making in management. Regardless of a great number and variety of proposed models, they are of different character because they are designated for solving of separate local problems. One of the main reason of above mentioned, that the essential feature of the transportation process is its duality. The duality is included in the cycle of the transportation process: the turnover of transport means and the freight delivery time.

In the first case the transport process undergoes estimation from the positions of a transport enterprise – a more efficient use of transport possibilities, operational work.

In the second case the transport process is estimated from the positions of freight owner, and here first of all it is focused on the commercial operation, economic and legal problems.

The decision of this dual task may be made by externalisation and networking of logistics with assistance of real and virtual logistics centres. The theoretical and practical questions of establishment and operation of such kind local, regional and global logistics centres may be one of the key questions.

b) One of the needs most often identified by transport companies and transport policy makers is a tool to rapidly design and analyze different logistics network configurations. Such tools must be comprehensive (i.e., include all relevant costs and constraints, transport modes etc.), integrated (i.e., model the logistics network from supplier to final customer), systematic, and support easy manipulation and sensitivity analysis.

The functions, services, information, set of models and other necessary elements for such tools may be the important research area for the development of Computer Integrated Modeling and Planning Environment for Logistics.

c) Transport telematics is one of the main driving forces in modern transport logistics. Among different telematics projects the European Global Navigation Satellite System (Galileo project) will play the most significant role. Galileo will be used in all modes of transportation for navigation, traffic and fleet management, tracking, surveillance and emergency systems. As such, Galileo will be a key element of the future inter-mode traffic management system. The implementation of Galileo will open a new large market for telematics applications. It may be a new large area for research, investigation and business applications in transport logistics.