CENTRE OF INFORMATIZATION IN RAIL TRANSPORT, PROJECT OF THREE ORGANIZATIONS

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ABSTRACT
The paper is focused on the description of the project, which is oriented to the application of information logistics in a particular environment of a company engaged in the rail freight. The aim and the main benefit of the project is to increase the information support for an entity that implements a service information for the target group of customers who need to keep track of where desired material is found. The research is based on a model application of automatic identification systems to precisely defined physical models created for this purpose. Model represents a particular scale railway junction in which there is a redeployment of wagons. The model will be validated behavioural assumptions RFID chips select and define the appropriate chips for specific environment and technical solutions to their location and anchoring. Subsequently, the knowledge and the information verified in the real environment of rail freight. The project involved three research institutions: Transport Research Institute, JSC., Technical University of Košice and University of Žilina.

KEYWORDS
Project, RFID, information logistics, transport

INTRODUCTION
The objective of project is a research followed by application of RFID chips as an element information system in the rail transport system. The objective is preservation, transfer, collection and registry data as also minimization reduction accompanying documentation in the process of transport of goods. The result is increase of quality all system transport as from terms monitoring and identification transportation of commodities, as well as from terms optimization costs and future profits of railways. [1] [4]
Implementation of the project consists of four activities:

1. The creation of the railway system, including the modular RF technologies applied research.
2. Ensure the compatibility of information systems and implementation in rail infrastructure.
3. Creation of reference models area.
4. Dissemination of emissions in the area in the meaning of links to primary and secondary dependences.

The application of RFID chips will increase the level of quality in rail work in rail freight transport operations relating to the preparation and implementation of degradation as manual transport and subsequent registration of accompanying documentation, as well as with the transport of goods. [2] [3]

The introduction of RFID system into practice entails the consequential synergies:

- increased interest in rail services in the transport of goods,
- improve the quality of the information system and management work,
- The introduction of monitoring the implementation of the transport of goods in real time,
- increase the efficiency of work on the railways and the subsequent reduction in labour intensity,
- increasing the level of the planning process as the railways, as well as the customer-supplier relationship in total,
- Reduction of costs in the process of transportation of goods (material, energy, human work, ecology,).

1. The creation of the railway system, including the modular RF technologies applied research.

The aim of the activities of "The creation of the railway system, including the modular RF technologies applied research" is the creation and launching of the modular management and operating system. Modular device for RF (radio frequency) research activities associated with the use of intelligent technologies in the freight and at the same time in the educational process as a tool for obtaining practical habits of future workers. The research activity consists of advanced information technology in the context of exploring radio frequency of rail freight transport, with a view to their selection, usability, functionality and combining.
Created technological background is used for the purposes of participating in the activity and person fully encourages real outputs, which are in the form of a comprehensive analysis, based on the number of tests and measurements.

Measurements are focused on the creation and functional optimization of RF tools to meet the needs of rail transport.

The resulting product is to create a unique system in the field of radio technology for rail transport with quality parameters comparable with European standards. The outputs of the instrument improve the research background in the areas of process operation of trains, cars and units of combined transport. Implemented activities will contribute to the creation, improvement of the transport in terms of gathering information, identifying and protecting the shipment. [5]
2. **Ensure the compatibility of information systems and implementation in rail infrastructure**

Ensuring the compatibility of information systems and the implementation of a rail route and a detailed analysis of data arising out of the collection lies in the real environment necessary for the identification of active and passive elements of rail. The activity is for the purpose of monitoring the implementation of RF tools into the real environment, optimization of the system. The result is an increase in safety for the operator, to increase user friendliness and services for rail vehicles, rail customers and increase information support in rail transport. The activity is also dedicated to the issues of rating system and evaluation of externalities resulting from the outputs of the selected solutions project.

Method of data collection for the purposes of identification and management of active and passive elements responsible for the compatibility of information systems is based on the proven computing operations and procedures of the partners. In this regard, the activities of the information systems and the identification of appropriate verification is also their compatibility for the outputs of the activity. In the framework of the activities, activities associated with the implementation of the instrument into the real environment, rail transport for the purpose of RF optimization of the entire system, are carried out.

The output of the activity is a complex system based on RF technology for the management and optimization of transport process in the rail freight transport, defining and developing an appropriate flow of information and systems. [5]

3. **Creation of reference area models**

The objective of the activity "Creation of reference area models" is the definition and analysis of the relevant boundary conditions for the creation of 3D terrain models which will be used to model the real spread of emissions from transport. The acquisition of input data in the form of real emission load in selected areas is a part of the activity.

The activity is carried out because of the need to create new instruments for the reduction of the effects of emission load caused by the transport. The activity is organized by a group of activities related to the definition and analysis of the relevant terms and conditions necessary for the creation of 3D models of peripheral territories.

The choice and analysis of the relevant boundary conditions will, in particular, define the characteristics required for the reliable design and the creation of 3D models depicting the spread of emissions. Individual activities are carried out to ensure the highest levels of quality, outcomes, and assuming a wide use of the existing knowledge of the area on the part of the applicant as well as partners. The selected task activities are dedicated to generate real-world data to determine the degree of load emissions also from the traffic in the vicinity of selected transport infrastructure. Subsequently, this information serves as a database for other activities carried out within the framework of a specific objective.
The result of the tasks and actions implemented within the activity body of knowledge based on analysis of relevant boundary conditions for creation of 3D terrain models for modeling the real needs of the spread emissions from transport near of road infrastructure, conceptual design feasibility of system 3D models of area and a data base necessary for the systematic progress of research activities within the project. [5]

4. **The spread of emissions in regard to the links to the primary and secondary dependencies**

The objective of the activity "The spread of emissions in regard to the links to the primary and secondary dependencies" is the design and processing of a conceptual mathematical model of the spread of emissions in the vicinity of road infrastructure. This model enables a more effective management resulting in the reduction of emission load from traffic. The activity includes tasks connected with the definition and assessment of the links which are based on the rate of emission load, its spread and selected transport conditions for the purpose of their efficient management.

The conceptual mathematical model reflecting the spread of emissions caused by traffic represents a unique tool documenting and modeling the environmental situation in the concerned area. The examination of primary and secondary links between influencing characteristics such as the emission load and current traffic conditions is needed to create the model.

The experience of the project applicant and partners in this field will be fully utilized during the creation of the mathematical model of the emission spread. The acquired technological equipment and instruments will be also utilized to a large extent for the individual project tasks. Tasks related to naming and managing of the links between the characteristic factors and the emission spread are based on both physical and modeling principles as well as on a real verification, so that the outputs achieve the desired quality level that is acceptable at the national and international level.

The summary output of the activity is the conceptual mathematical model of the emission spread in the vicinity of road infrastructure. This model represents an efficient tool for management of environmental impact from transport emissions. Links between boundary conditions located in a set factors which affect the impact from transport emissions are an integral part of the proposed mathematical model [5]

**CONCLUSION**

The conclusions of the project are the outputs of various activities. The main result of the creation of the railway system, including the modular RF technology is the realization of a modular system for applied research environment in rail freight transport. The objective of the activity is to be defined by complex targets, i.e. the implementation of technological tools as a research background, which opens new opportunities for research as well as new opportunities for research in models and thus RF fields to increase information support in rail transport.
The main result of phase "ensuring compatibility and implementation of information systems in rail infrastructure" is a unique functional system for the identification of material flows and supporting information for rail freight. The implementation of this solution in a real environment is largely contributed to the increasing interest in the use of railway infrastructure with a clear benefit in the economic sphere, as well as to reduce environmental loads by road.

Conceptual proposals for the feasibility of a system will give us opportunity to create 3D models of tools for validation and prediction of environmental load from transport emissions. The data is the basis for finding the true extent of the database created to load the environment effects of transport (emissions, noise) and will serve to define the areas most affected by these negative effects. The proposed mathematical model is a unique tool in the field of environmental protection and the support tools, which you can manage the side effects caused by transport.

LITERATURE

[5] Podpora a rozšírenie centra výskumu CVD PLUS; ITMS kód Projektu: 26220220160; Prehľad aktivít a ukazovateľov

This contribution is the result of the project implementation: "Promotion & Enhancement of Center for Research on Transportation" (ITMS: 26220220160) supported by the Research & Development Operational Programme funded by the ERDF.