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Information Flow in the Security Management System

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Implementation of security objectives is conditioned by fast access to reliable and up-to-date information about processes occurring within the Safety Management Systems. The amount of information and the speed of changes taking place in the environment makes it necessary to introduce a system of information management and channels of their flow not only within the organization, but also in communication with third parties. Proper management of information resources increases the efficiency and effectiveness of SMS functioning. The article presents the possibility of a formalized description of the flow of external and internal information in a well-functioning Railway Operator Safety Management System. Analogous maps can be identified for infrastructure managers, defining key elements of its functioning..

Keywords: railway transport, safety management system, information flow, supervision.

1. INTRODUCTION

The priority for the railway transport to function is a high level of security, which must be constantly monitored by the entities that provide this type of services. According to the Railway Transport Act of 28 March 2003, railway operators are obliged to have a security certificate in order to gain access to the infrastructure, and managers must have a safety authorization to manage the infrastructure. These documents are issued by the President of the Railway Transport Office based on the submitted application and system documentation. This documentation includes the developed Safety Management System adapted to the conditions of a given railway entity. The system must ensure compliance with national safety rules and with the requirements laid down in the TSI and ensure that the Common Safety Requirements (CST) are met. All elements of the safety management system must be documented and, most of all, responsibilities must be described in the organizational structures of the infrastructure manager or railway operator. The documentation must indicate how the management prevails over the operations at various levels of management, what is the participation of employees and individual management representatives at these levels, and how the Safety Management System is constantly improved.

2. SAFETY MANAGEMENT SYSTEM

As part of the Safety Management System in accordance with the Ordinance of the Minister of Transport of 19 March 2007, the following are required:

1. Security improvement programs defining their objectives in this area, quantitative and qualitative parameters of achieving a certain level of security, the method of conveying information contained in the program to employees of the enterprise.
2. A security policy approved by the management of the rail infrastructure manager or railway operator.
3. Plans enabling implementation of the objectives adopted in the safety improvement programs and meeting the conditions set out in the technical specifications for interoperability, European Union regulations on railway transport safety, national safety regulations and relevant decisions of the President of the Office of Rail Transport (UTK), hereinafter referred to as "President of UTK".

4. Procedures for the maintenance of railway infrastructure, devices for railway traffic and rail vehicles, at a level consistent with the relevant standards and conditions in the scope of current maintenance and throughout the entire multi-year use cycle.
5. Procedures and methods for assessing the risks arising in connection with the activities carried out by the railway infrastructure manager or railway operator.
6. The method of performing supervision over the risk assessment while conducting activities under the existing conditions, as well as in case of changes in the existing activities or when using a new type of equipment or material causing new risk that has not occurred before.
7. Systems and programs for the training of employees directly involved in the operation of rail traffic, the transport of dangerous goods, exceptional items, the use and maintenance of equipment involved in traffic and vehicles management and ensuring the qualifications of employees at a level that guarantees proper and safe conduct of operations.
8. Solutions applied by the railway infrastructure manager or railway operator ensuring proper access to information related to security within the enterprise and the exchange of information between participants of the transport process of a given infrastructure, as well as the method of documenting information and the mode of supervision of important safety information.
9. Procedures for reporting and documenting all accidents and incidents that have occurred, ensuring that all are reported and investigated to identify and implement preventive actions.
10. A decision on the frequency and mode of internal audits and security system audits at various management levels, in the area of security related issues, applied at the railway infrastructure manager or railway operator.
11. Other provisions resulting from the action plans of the railway infrastructure manager or railway operator, the alarm system and information on hazards, including any arrangements with the relevant public authorities.

The executive acts applicable to the implementation and functioning of Safety Management Systems are also:

1. Commission Regulation (EU) No 1158/2010 of 9 December 2010 on a common safety method for assessing conformity with the requirements for obtaining railway safety certificates.
2. Commission Regulation (EU) No 1169/2010 of 10 December 2010 on a common safety method for assessing conformity with the requirements for obtaining a railway safety authorisation.
3. Commission Implementing Regulation (EU) No 402/2013 of 30 April 2013 on the common safety method for risk evaluation and assessment and repealing Regulation (EC) No 352/2009.
4. Commission Regulation (EU) No 1078/2012 of 16 November 2012 on a common safety method for monitoring to be applied by railway undertakings, infrastructure managers after receiving a safety certificate or safety authorisation and by entities in charge of maintenance.

3. INFORMATION FLOW

According to the regulations of the European Commission 1158/2010 and 1169/2010, point O of Annex II, it is necessary to specify mechanisms to ensure sufficient access to information within the organization and, where appropriate, exchange of information between organizations using the same infrastructure.

To this end, procedures shall be used to ensure that:

a) employees had knowledge of the safety management system and understood it and the information was readily available;
b) relevant safety personnel have received appropriate documentation of the safety management system and mechanisms for exchanging information between railway organizations are used.

In addition, the entity should have procedures to ensure that:

a) key operational information is relevant and important;
b) employees are aware of their existence before they are applied;
c) such information is available to employees and, if necessary, formal transmission of information is performed.

Commission Regulation (EU) 1078/2012 in Article 4 "Information exchange between stakeholders" says: Railway undertakings, infrastructure managers and entities in charge of maintenance, including their contractors, by mutual arrangement ensure mutual exchange of all relevant security information resulting from using the monitoring process set out in the Annex to enable another party to take all necessary corrective action to ensure that the safety of the railway system is continuously maintained.

Fig. 1 presents proposals for internal and external information flow maps for the railway operator. Important information provided in the legal requirements is included.

As part of the external information flow map (Fig. 1), third parties cooperating with the railway operator were identified, i.e.:

- The Office of Railway Transport;
- The National Railway Accident Investigation Committee (PKBWK);
- emergency services and public authorities;
- suppliers;
- entities in charge of maintenance - ECM;
- railway operators;
- infrastructure managers;
- users of railway sidings.

The map describes key security information passed between identified parties along with an indication of who is the sender and who is the recipient. This information includes:

- safety improvement program;
- changes requiring notification to the President of UTK;
- an annual safety report;
- annual activity report on the transport of dangerous goods;
- monthly, quarterly and annual reporting (forms P, E, TT, PT, PTI, PTM, PTN, TTE);
- information on the implementation of the PKBWK recommendations;
- notification of the occurrence of a railway accident;
- information on the implementation of recommendations;
- protocol of the railway commission's findings;
- train driver's statement about providing services for another entity;
- inspection report;
- post-inspection statement;
- train driver's license issue;
- information on the existence of a risk;
- information on risk;
- common operational risks;
- schedule of drivers' work plans;
- indications and recommendations after the occurrence of an accident;
- information on the existence of a risk;
- agreement on providing the railway line;
- faults (exclusion) of rolling stock;
- information on maintenance and operation;
- agreement on performing the ECM function;
- classification of suppliers;
- contracts with suppliers

Fig.1. The flow of external information for the railway operator.

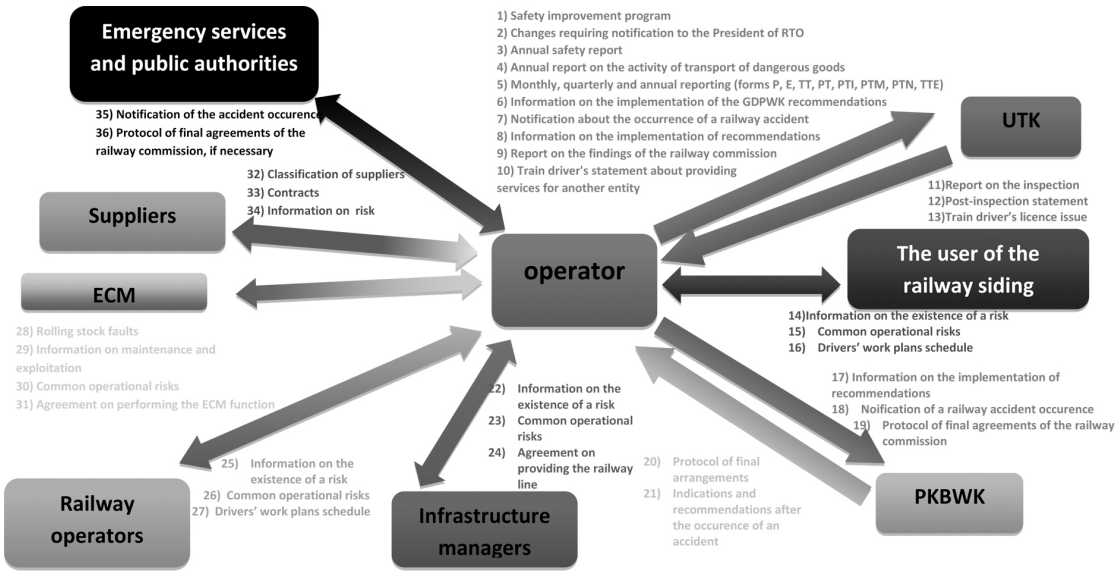
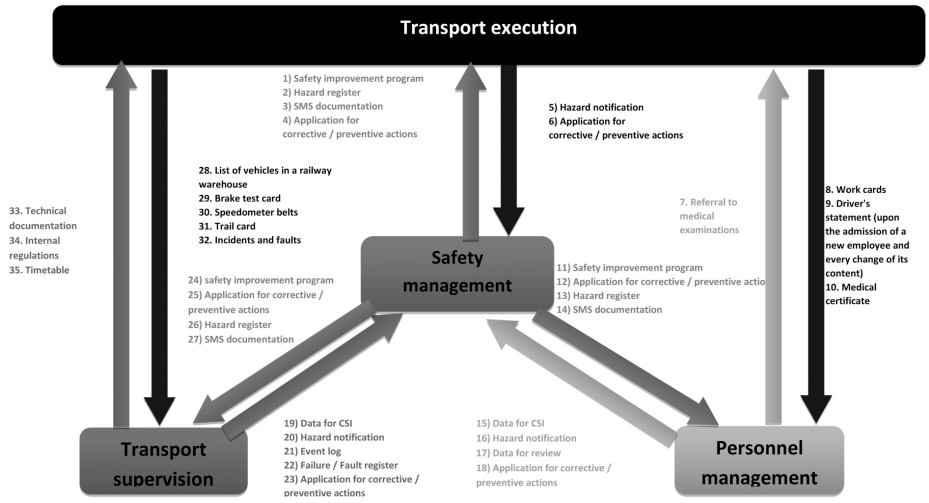


Fig. 2. The flow of internal information for the railway operator.



For the flow of internal information (Fig. 2) within the functioning of the SMS, four basic areas have been identified:

- implementation of transport;
- security management;
- personnel management;
- supervision of transport.

These areas describe key information related to security, generated, transmitted and used within the system:

- data for CSI;
- data for the management review;
- SMS documentation;
- technical documentation;
- brake test card;
- route card;
- work cards;
- train driver's statement (upon the admission of a new employee and every change of its content);
- Security improvement program;
- internal regulations;
- register of failures / faults;
- hazard register;
- event log;
- timetable;
- referral for medical examinations;
- speedometer tapes;
- application for corrective / preventive actions;
- list of vehicles in the composition;
- incidents and faults;
- certificate / medical certificate;
- hazard notification.

4. SUMMARY

The article presents a formalized description of the flow of external and internal information in the safety management systems implemented in Poland. The maps identify the main elements that have a significant impact on the level of safety. Due to the characteristics of the company, it is possible to modify the maps depending on the information identified within the organization, but also in communication with third parties. Analogous maps can be presented in the flow of external and internal information for infrastructure managers, specifying key information for the safety of the railway company. Proper management, including the identification of appropriate information flow channels and their content, increases the efficiency and effectiveness of the system.

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