

The role of observatories in the integrated transport safety systems

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Abstract

Accurate knowledge about the causes, circumstances and place of transport accidents is the prerequisite to take the correct action to improve transport safety. Developing appropriate organizational structures, forms and methods of management and implementation of safety measures in the sectoral approach condition the success. Therefore, the Safety Information System is one of the integral areas of the Integrated Transport Safety System ZEUS.

Transport safety systems

The functions of every system, including the transport safety system, result from the goals that the existing or planned system is to achieve. The functions determine the activities and the properties of the system, including the pattern of activities. If we assume that the development of an integrated transport safety system is primarily caused by the need to efficiently curtail the transport-related hazards to human health and the natural environment, we must seek such properties of the system that will make the preventive measures universally applied, long-term, durable and effective. In view of the complexity of individual transport systems, it is desirable that the safety system be: multimodal and many-faceted, integrated and coordinated, standardised and harmonised, innovative and securing independence of research. Crucial feature of such a system should be access to reliable information about the state of the system.

The complexity of the phenomena of transport accidents causes that the effective preventive measures should be conducted in a systematic way – a comprehensive, coordinated and orderly manner with the involvement of a consistent set of approaches and appropriate technical and organizational tools. This means that it is essential to have

a functioning of transport safety system, which is capable of continuous improvement and reassurance that all deals for improving safety are identified and implemented. It is especially important when it comes to road transport which generates over 95% of all transport accidents.

The start of the 21st century is a time of rationalisation and integration of fragmented activities. Many areas are trying to integrate systems which so far have been operated independently. System integration is mainly designed to combine the management of functions which have previously been operated on their own. As with other transport systems road safety is an issue which is affected by many factors, and the final effect of limiting the number of accidents depends primarily on the most effective action. The current state of knowledge can clearly specify that the main condition, in principle, which forms the basis for a systematic, continuous process of improving road safety, is to create an appropriate basis for long-term programming. Developing appropriate organizational structures, forms and methods of management and implementation of road safety activities in the sectoral approach condition the establishment of such bases. One of the key areas in this sense is the Safety Information System – a crucial element of Integrated Transport Safety System ZEUS [1] (Fig. 1).

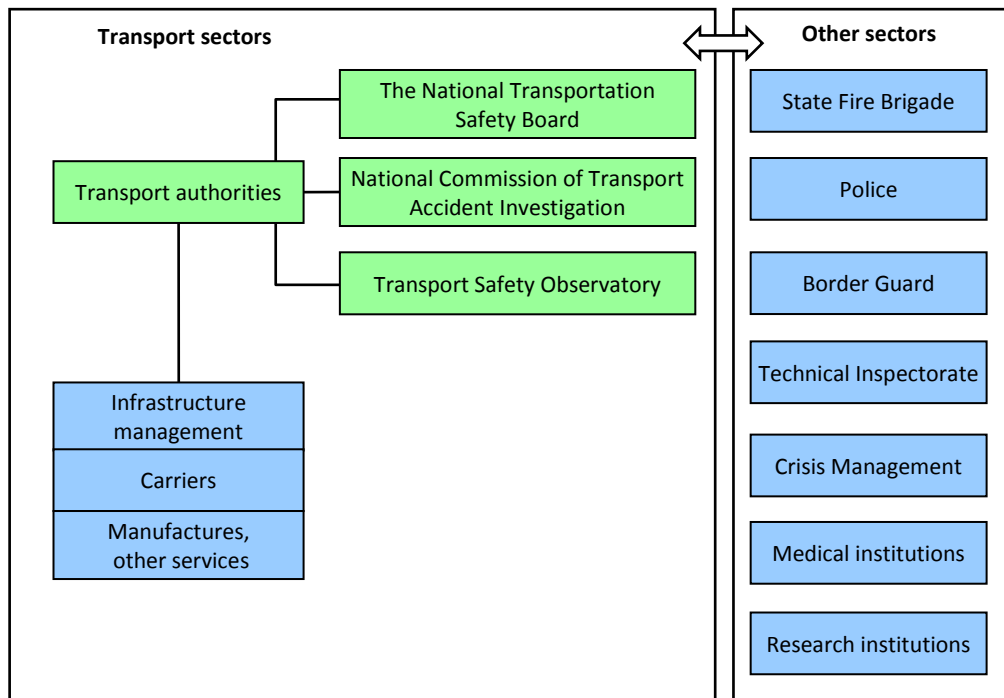


Fig. 1. Institutional structure of Integrated Transport Safety System ZEUS [1]

The need of information on safety

The EU countries experience has clearly indicated the need to inform the public and incite their motivation for specific preventive measures [2]. In this way the road users feel responsible for the safety situation in the place where they live, and having regard to their health and lives, want this situation to improve gradually. The key to the development of such behavior is the quality of procedures for informing the public about the situation, problems, planned activities, and to enable feedback from the public about what they expect. The communication with the public should be a dialogue, not merely a system of informing a party about the tasks for the other. Therefore, an information system on traffic safety in the region should benefit not only from the databases of traffic incidents, but also with other databases containing data about the behavior of traffic participants or used measures of prevention. Accurate knowledge about the causes, circumstances and place of road accidents and collisions is the prerequisite to take the correct action to improve road safety. It is necessary to periodically collect data on the behavior of traffic participants, such as the degree of use of safety belts, involving drivers of the vehicle under the influence of alcohol or other drugs, or involvement of drivers exceeding the speed limit. Moreover, it would be wise to collect data about the prevention measures. All these data should be included in a single and mainstream provincial

database on road accidents and prevention measures, and used by an information system on road safety in the region. Similar databases should be created in counties and municipalities. Local authorities want help in gaining knowledge of road safety. Therefore, the existing interest should be used to raise awareness and promote proven solutions. This information should reach out to interested not only in training but also in the form of manuals of good practice, the publication of material on websites and through all kinds of brochures, reports on road safety.

Data sources in the creation of an information system should be the institutions dealing with road safety issues at national and regional level. With a choice of information gathered from the institutions cooperating in the field of road safety, an integrated database of traffic accidents, a database of demographic and database of network and road traffic, one can get enough information to perform any kind of analysis, studies or reports. Already on the website you can learn about the current state of road safety in some provinces, the activities of the councils and implementation of regional road safety program.

Idea of the European Road Safety Observatory

According to EU information systems and common tools for monitoring and evaluating the efficiency of road safety policies are of a great

importance. Under a Council Decision of 1993 Member States have the obligation to communicate to the Commission data on road accidents resulting in death or injury that occur within their territories with a view to setting up a Community data bank, the CARE database. This date coincides with another, very valuable European initiative. In 1993 European Transport Safety Council was created as an international non-governmental organization, in response to the persistent and unacceptably high European road casualty toll and public concern about individual transport tragedies. It brings together experts of international reputation and representatives of 45 national and international organizations concerned with transport safety from across Europe to exchange experience and knowledge and to identify and promote research-based contributions to transport safety [3].

EU Transport Policy, established by the European Commission in September 2001, in the document called "White Paper Time to decide", not only indicated the goal to be pursued by the programs to improve road safety – both national and regional – but also showed the solutions that the implementation after the adaptation to local conditions, and accordingly a smaller scale, would improve the structure of the system of road safety management. One of them is the idea made by the EU project SafetyNET and its final product, which is the European Road Safety Observatory (ERSO – European Road Safety Observatory, www.erso.eu) [4]. Thanks to this initiative the available European road safety data and knowledge have been integrated and made publicly available on the Internet. Such an integrated tool is essential for monitoring the application of road safety policies, evaluating their impact and devising new initiatives. The

Commission will therefore pursue the further development of ERSO, including actions on communication and on information of citizens on road safety issues.

SafetyNET project involves building a network of road safety observatories throughout Europe. According to their recommendations in each EU Member State should be created, associated with ERSO, a National Road Safety Observatory, working with a network of regional observatories. In Poland, the realization of this idea began the Motor Transport Institute, which commissioned by the National Road Safety Council has been developing the concept of operation of the observatory at the national level [5]. There are also advanced works for the construction of the regional observatories. One of them – the Warmia-Mazury Road Safety Observatory is almost completed. Eventually in Poland, there should arise 16 of them. From the idea of integration of transport safety point of view, these observatories, initially an intermodal could in future become an embryonic network of observatories of safety of the entire transport system, from regional to European level [1].

Road Safety Observatories – the examples

By definition Road Safety Information System is an organized set of people, procedures of data processing, databases, and devices used for collecting information on road safety. The role of the system is to ensure constant and direct access to collected data from different sources, possibility of using these data and access to bases of knowledge on efficient methods of road safety improvement, and also ensure constant information exchange between its users. Also it includes data on key preventive measures like rate of safety belt use, over speed, etc [6].

Taking into account the key role of possessing information it should be pointed out that the information system constitutes the base in effective improvement of road safety and concerns all the areas related to the issue. The lack of sufficient number of specialists who may assess the undertaken actions from the road safety point of view causes that it is worth considering how provide specialist knowledge to create objective and full picture of road safety and social and economic costs connected to it.

Tasks and objectives of the currently operating observatories of road safety in the world depend on the level of their activities: European, national or regional, however the common features between these institutions can be distinguished. Road safety



Fig. 2. Homepage of European Road Safety Observatory [4]

observatory is a scientific establishment, where systematic observation and research in the field of road safety are carried out and the draft guidelines and recommendations for establishing laws and institutions responsible for implementing the program to improve road safety: national, regional or local are formulated. It depends on the safety management structure, adopted in the country. Particular emphasis is placed on the formulation and dissemination of knowledge, so that it is easily accessible and understandable not only for scientists and experts, but also to politicians and decision makers. One of the oldest and most experienced units of this type is the French Road Safety Observatory, working mainly for the Interministerial Road Safety Committee equivalent to the Polish National Road Safety Council. Very well known is also a broader Dutch system SIS “Safety Information System”.

It may be presented in a form of pyramid with four levels. The bottom of pyramid defines interventions, the policy of actions (policy, programmes, and measures, etc.). The changes caused by implementation of a new policy constitute the second level. The next one consists of description of road events and participants of those events on the basis of police registration. The top level of the pyramid contains data that express the social cost of accidents. There are reason relations between all four levels (Fig. 3).

The aim of this system is to help to create available information, which will be easily processed during developing sets and documents. Dutch system has a computerised and written form (web page access and printed reports). This system may play an important role during designing, implementing and monitoring the policy in road safety, as well as creating concrete base for cooperation.

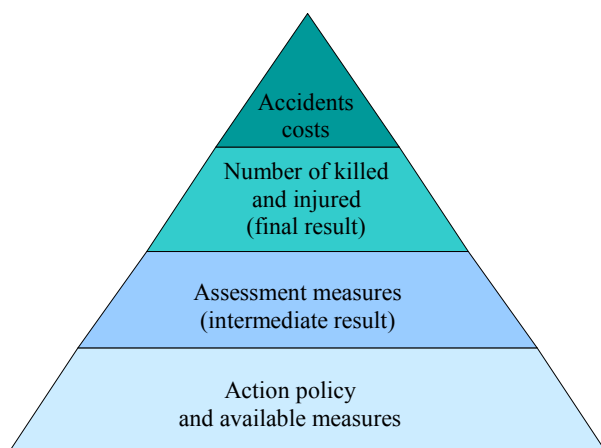


Fig. 3. Elements of SIS – the Dutch road safety information system [6]

Warmia-Mazury Road Safety Observatory (W-MRSO) is an example of the regional road safety observatory [7]. The main objective of it was to establish a platform of knowledge about road safety with particular emphasis on aspects typical for the region. This objective will be achieved through the preparation, launch and continued operation of the website developed and managed by designated specialists for this purpose.

This project represents the first phase of Information System for the Safety of Road Traffic in Polish Warmia-Mazury region, planned in the framework of the 3rd Operational Programme for the years 2010–2012 [8]. This action is consistent with the provisions of the National Road Safety Programme GAMBIT 2005 and the Regional Road Safety Programme Warmia-Mazury GAMBIT. Also fits into the objectives of the Integrated Transport Safety System Project – ZEUS. In this perspective, the W-MRSO may be regarded as the first of the effects of implementing a new concept of integrated transport safety system in Poland.

Conclusions and recommendations

EU experience clearly indicates that it is necessary to inform and motivate the public on road unsafety to undertake specific preventive efforts, as well as making road users feel responsible for the state of road safety and seek to improve this state gradually to protect their health and life. The most important tool for achieving this goal is a database of accidents and their victims, as well as trustful source of knowledge, by which it can objectively evaluate preventative measures used and their effectiveness. This is because only this way can motivate people to change their behavior in traffic and to take appropriate preventive measures.

Therefore, in the concept of Integrated Transport Safety System the area of safety information is one of the crucial elements. In Poland first steps toward creation of such system were made by Motor Transport Institute in Warsaw on national level and by Road Traffic Centre – Regional Road Safety Centre in Olsztyn – on the regional level. Also Gdańsk University of Technology is currently developing the regional road safety observatory.

Implementation of the projects will give the access to widely accessible sources of current and reliable knowledge about the dangers of road transport in the region. It will also enter in the long-term process, adopted, implemented and perceived by the EU as a priority, which aims to reduce the external costs of transport, in particular the costs associated with accidents in road transport.

It should be a starting point for the implementation of regional road safety observatories in each of Polish regions and afterwards to create multi-transport safety observatories.

References

1. KRYSZEK R. et al.: Integrated Transport Safety System ZEUS. Collective work edited by R. Krystek. Vol. II. WKiŁ, Warszawa 2010.
2. ERSO: SafetyNET Final Conference Proceedings. University of Loughborough, Roma 2008.
3. PIN: 2010 Road Safety Target Outcome: 100.000 fewer deaths since 2001. 5th Road Safety Report. European Transport Safety Council. Brussels 2010.
4. VIS M.: SafetyNET – building the International Road Safety Observatory. International Road Safety Seminar GAMBIT 2008, Gdańsk University of Technology, Gdańsk 2008.
5. ZIELIŃSKA A.: The concept of data basis on road safety as an element of Polish National Road Safety Observatory. Motor Transport Institute, Warsaw 2006.
6. Training Materials. National Road Safety Council. Ministry of Infrastructure, 2005.
7. ŻUKOWSKA J.: Regional Road Safety Observatory as a part of road safety system. Transport Systems Telematics, Katowice 2011.
8. Regional Road Safety Programme “Warmia-Mazury GAMBIT”. Regional Road Safety Council, Olsztyn 2003.

Other

9. WEGMAN F.: A road safety information system: from concept to implementation. Contribution to the Road Safety Training Course of the World Bank, Washington D.C.; SWOV, Leidsendam, The Netherlands 2001.