

International Transport Forum 2010 Transport and Innovation: Unleashing the Potential

CASE STUDY - CROATIA

The following information is based on a response to a survey carried out by the International Transport Forum on innovative policy initiatives within member countries, and countries' efforts to promote innovation.

Briefly describe innovative policy initiatives that your government has succeeded in implementing in the transport sector in recent years. Please take the widest possible definition of innovation, including innovative technologies (e.g. ITS), policies, practices (e.g. new pricing mechanisms), etc.

A group of technologies commonly known as the Intelligent Transport System (ITS) is being increasingly developed to be able to improve traffic efficiency. ITS makes use of many technologies, such as control mechanisms, communications, as well as the collection, processing, storing and distribution of data. All these technologies are used to improve road safety, to decrease pollution, save time and to increase productivity and mobility and thus to reduce budget and private spending.

In line with the intensive construction of motorways in the entire area of the Republic of Croatia the Communication-Information System for the control and management of traffic on motorways in the entire Croatian territory is also being developed.

In addition to the usual reasons for introduction of a traffic surveillance and management system (harmonization of traffic flows, monitoring of safety conditions etc.), there are some other reasons for its introduction specific to the motorway network in Croatia such as inclement weather conditions (the bora wind, fast changes of micro-climate, foggy areas, etc.). It is therefore necessary for normal functioning of traffic to establish the traffic information exchange systems which may be based on data, speech or some other information source. The idea of an Information Communication System implies all structural, software, civil engineering and other installations that are aimed at improving the functioning of the information-communication system of motorways. For this reason, information-communication systems have been established. They are divided as follows:

- a) Motorway Information Systems: Transport-Information System (TIS); Remote Operation and Surveillance - used only in tunnels; Video surveillance on motorways; Video detection system; Toll collection system
- b) Communication Systems: Emergency telephones (SOS); Public address system in tunnels; Radio broadcast system in tunnels.

The main integration of all motorway systems is conducted in Motorway Maintenance and Traffic Control Centres where central units are placed, i.e. the operators for all systems implemented along the motorway sections.

ITS solutions are being developed in other modes of transport as well, out of which implementation of the CroRIS project is especially worth mentioning. The CroRIS project represents the implementation of River Information Services (RIS) across the Croatian part of the Danube and Drava rivers. The leading coordinator for CroRIS is a state owned company, Inland Navigation Development Centre Ltd. (CRUP). Croatia is one of the leading countries in the RIS environment that has developed a full scope of RIS services in accordance with the EU RIS Directive and EU standards. CRUP company has developed its own software for managing RIS that is a genuine Croatian product and exported it to other European countries. So far, the Croatian RIS system has been implemented in Slovakia, Serbia and in France on the rivers Seine and Rhone.

What initiative(s) does your country have to promote innovation in the transport sector? Are these initiatives part of a larger effort to promote innovation across the economy? Please provide any additional material you have regarding these initiatives, including web sites, reports, etc.

Currently there is no larger effort to promote innovation across the economy; instead initiatives to promote innovation in the transport sector are mainly carried out through individual and synergic action of various institutions. Apart from the promotion that is being carried out by the Ministry of the Sea, Transport and Infrastructure of the Republic of Croatia, innovation is being promoted in cooperation with various other institutions:

The Institute of Transport and Communications is the leading scientific, research and professional organisation in the field of transport in Croatia. It co-operates with similar organisations in other countries. It is active in scientific and research work, and professional services, i.e. forecasting, planning and consulting services regarding transportation including railway, road, maritime, river, air and combined transport. Since having been founded in the current form, the Institute has realised more than 120 projects, some of which in co-operation with similar institutions of other countries. www.ipv-zg.hr/en/

University of Zagreb, Faculty of Transport and Traffic Sciences, which actively participates in different programmes and activities independently or in cooperation with other institutions in order to create conditions for creative actions in traffic and transport and logistics solutions, both in Croatia and in the neighbouring countries. Besides study programmes in all transport and traffic branches the Faculty also offers an ITS study programme, which has been introduced in 2006 as the first university undergraduate ITS study programme in Europe. In this way an additional contribution to the promotion and development of ITS in Croatia is achieved. www.fpz.hr/index.asp?izbID=1

The association Intelligent Transport Systems of Croatia (ITS Croatia) was founded in 2005 with the mission to promote and practically apply the intelligent transport and traffic systems in Croatia. Members of ITS Croatia - individuals, companies and others are invited to take part in the development of priority ITS applications in traffic management, emergency management, fleet and freight management, pre-trip and traveler information in the road and other co-modal systems. ITS Croatia is a member of the European network of ITS associations. www.its-croatia.hr/index.php?lang=en

Inland Navigation Development Centre Ltd. (CRUP) is a young, dynamic and fast-growing company specialised in:

- project management
- research and development
- software and hardware development
- technical solutions and customer support
- consulting
- public relations
- lobbying in the field of inland waterway transport and co-modal development solutions.

With its partners CRUP Ltd. participated in diverse projects on the European level including projects co-financed from the European Union funds.

CRUP Ltd. is one of the leading European companies in the field of development and integration of River information services (RIS) in compliance with the European directives and standards. www.crup.hr/index.php?lang=en

Faculty of Maritime Studies at the University of Rijeka (www.pfri.hr/) and Faculty of Maritime Studies at the University of Split (www.pfst.hr/index.php), including various other institutions in the field of maritime transport, etc.

What are the specific objectives of these initiatives? (e.g. Do they focus on certain challenges, such as climate change or safety, or on certain modes? Do they take a wider approach focusing on all of the challenges faced by transport?)

Growing demands for mobility of people and goods cannot be satisfied using classical transportation facilities and technologies today. All innovations in the transport sector primarily have the goal of increasing transport safety. Other main benefits that are not less important than safety are environmental benefits (reducing of traffic jams, pollution and noise), flow efficiency, productivity and cost reduction.

Please describe the funding arrangements associated with your efforts to promote innovation in transport:

Funding arrangements associated with efforts to promote innovation in transport mainly include state budget funds and co-financing from EU pre-accession funds.

What is the lead ministry or agency for your efforts to promote innovation in transport?

Ministry of the Sea, Transport and Infrastructure of the Republic of Croatia is the lead ministry.

What international partnerships are involved in this?

International partnerships in the framework of promotion of innovation in transport include inter-institutional cooperation, cooperation in the realisation of specific projects, membership in different international associations and organisations, participation in professional and scientific symposiums, consultations, etc.

Please provide a summary of any results or outcomes already achieved as a result of your efforts to promote innovation in transport?

As an example of advanced technological solutions in Croatia which are compatible with the ITS, it is worth mentioning the Brinje Tunnel. Brinje Tunnel was pronounced in 2007 the safest tunnel in Europe according to the EuroTAP testing (European Tunnel Assessment Programme testing) among 51 tunnels that were tested in countries all over Europe.

Brinje tunnel is a twin-tube 1,540 m long tunnel located on Zagreb - Split - Dubrovnik A1 motorway and was opened to traffic in 2004. Tunnel is equipped with state-of-the-art traffic surveillance and management system. The surveillance is conducted 24 hours every day from the Maintenance and Traffic Control Centre (MTCC). It is equipped with video cameras that display the situation on monitors in MTCC and provide the possibility of automatic detection of congestion, driving in opposite direction, recording the number of vehicle and their movement. They also supply accurate data to the traffic operator in order to obviate congestions. The system of variable traffic signals (warnings, restrictions) is introduced to provide information to the drivers. In the event of accidents or broken down vehicles the drivers may also use the communication system to contact the MTCC team. The complete ITS project, as well as the construction of the safest tunnel in Europe was carried out by Croatian companies.

At the Faculty of transport and traffic sciences and Institute of Transport and Communications in Zagreb a method of determining and visualizing dangerous locations on roads was developed, with an aim of sanitation, and as a supporting feature of the ITS system. The system of recording and reproducing the georeferenced video is a very useful tool for exploring the traffic situation from the driver's perspective and with the

speed that is identical to speeds achieved in practice. That kind of method of exploring the driver's surrounding is useful in terms of present state analysis. The experience of the Institute of Transport and Communications in the sanitation of dangerous locations shows that this approach can achieve considerable results in reducing the number of accidents and injuries.

Please describe the performance indicators or measurements that you use to evaluate the outcomes of your efforts to promote innovation. Please attach more detailed documents on this issue, if they are available.

One example of performance indicators would be statistical data on road accidents. Namely, as already mentioned, in line with the intensive construction of motorways in the entire area of the Republic of Croatia the Communication-Information System is also being developed for the control and management of traffic on motorways in the entire Croatian territory, which has among others an important impact on road safety. For instance, in comparison to 2006 figures, the number of accidents on motorways was reduced by 4.5% in 2007. The positive trend continues in 2008, thus in comparison to 2007 figures, the number of accidents on motorways was reduced by 2.9% in 2008 and number of fatalities was reduced by 13%. These figures confirm the increased road safety which the highly developed and modern motorway network provides.

In terms of safety of tunnels for instance (their advanced technological solutions included), the European Tunnel Assessment Programme (EuroTAP) provides an excellent evaluation of performance. Namely, 16 automobile clubs from 15 European countries participate in the EuroTAP project, including Croatian Automobile Club.

In recent years many Croatian tunnels have been tested through EuroTAP, and very good results have been achieved accordingly. After Učka and Tuhobić Tunnels were evaluated as quite bad in 2004, the state of Croatian tunnels improved rapidly in the next few years. Thus the tunnel Plasina has been rated as very good and won the 3rd place in 2005, also Grič Tunnel has been rated as very good and won the 2nd place in the overall order of 52 tested European tunnels in 2006. Brinje Tunnel was pronounced in 2007 as the safest tunnel in Europe among 51 tunnels that were tested. Veliki Gložac Tunnel has been one of the four best rated tunnels among 11 tested in 2008, and finally tunnel Tuhobić has been retested in 2009 and rated as very good.

What are the principal means by which your agency keeps track of new innovations and trends in transport?

The Ministry of the Sea, Transport and Infrastructure of the Republic of Croatia continuously keeps track of innovative advances and novelties in the field of transport through participation in professional and scientific symposiums, conferences, seminars, consultations and similar events.

That way the level of understanding of transport innovations as new paradigms is being raised, which can significantly improve the performances of the traffic system and quality of service for end users. Moreover, the Ministry actively cooperates in that field with various institutions, some of which are described in more detail above.