INTELLIGENT TRANSPORT SYSTEMS IN SOUTH EAST EUROPE: TOWARDS A COMMON STRATEGIC FRAMEWORK FOR IMPLEMENTATION

Nedim Begović[1], Marios Domoxoudis[2], Efthimios Liberopoulos[2], Uroš Marjanović[2], Marios Miltiadou[2], Dušan Mladenović[2], Žaneta Ostojić Barjaktarević[2], Aleš Pavšek[2], Miroslav Petrović[2], Božica Radoš[2]
[1] *South East Europe Transport Observatory (SEETO), Serbia*
[2] *Mott MacDonald consortium "ConnecTA", Serbia*

Abstract

Intelligent Transport Systems can significantly contribute to a cleaner, safer, more efficient and more sustainable transport system, both for passengers and freight. In the region of the Western Balkans, the development of the Comprehensive and Core Network according to the Trans-European Networks standards, aims at the integration of this Regional Network in the European, the attraction of more international traffic flows and the increase of regional mobility. This development is the target of the regional cooperation that is coordinated by the South-East Europe Transport Observatory and the European Commission, as part of the Connectivity Agenda agreed within the Berlin Process and the relevant summits that followed for Vienna Summit. Deployment of ITS is one of the soft measures identified. In this aspect, the aim of a currently on-going ITS project, elaborated in the framework of Technical Assistance Connectivity financed by the European Commission, is to provide a strategic framework for the ITS (Road ITS, European Railway Traffic Monitoring System, River Information Systems, Vessel Traffic Monitoring Information System, e-freight) and Information Technology system (e–documents, interfaces etc) deployment in the SEE, through targeted action plans for each mode and their interfaces at regional level, but also to provide tailored-made recommendations for each beneficiary within the region, based on the European Union's relevant legislative framework and international best practices. This paper presents the overall context and content of the ITS project, the methodology used and the current progress, in relation with the foreseen activities, which comprise the users' needs assessment, the evaluation of legal framework and technical specifications and standards and the impacts assessment for ITS deployment, towards the definition and adoption of a common Regional Strategic Framework as a basis for further concrete actions that should tackle all related aspects (institutional, organizational, legal, technical and financial).

Keywords: Intelligent Transport Systems; South East Europe; Western Balkans

1 Introduction

The extension of the European Transport Policy and the Trans-European Transport Networks (TEN-T) to the Western Balkans (WB) is directly linked to their accession perspective and more intensified after the EU latest enlargements and the renewed TEN-T policy of the European Union (EU) in 2013. Specifically, the South East Europe Core Network defined in 2004, has been indicatively included as an extension of the TEN-T in the WB region and covers all the South East Europe Transport Observatory's (SEETO) Regional Participants (Albania, Bosnia and Herzegovina, the former Yugoslav Republic of Macedonia, Montenegro, Serbia, Kosovo [This

designation is without prejudice to positions on status and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.]) that have been cooperating for the Regional Network's development on the base of a Memorandum of Understanding signed in 2004 between the European Commission (EC) and these Regional Participants (RPs). Most recently, the same RPs and EU have signed a Treaty establishing a Transport Community in the region [1]. This Treaty provides a solid framework and establishes sound commitment and realises the efforts of several years in the field of Transport, which were reinforced by the Berlin Process initiated in 2014. Technical Assistance for Connectivity (ConnecTA) [2] provides support to RPs for achieving the goals set in 2015 by the Vienna Summit through different sub-projects, which – for the Transport component – are supported, monitored and supervised by SEETO. One of the three priority transport reform measures that ConnecTA aims to contribute to is the establishment of competitive, reliable and safe transport system, also through Intelligent Transport Systems (ITS) deployment, especially in line with ITS Directive 2010/40/EC [3] and the TEN-T Regulation 1315/2013/EU [4]. For the exploitation of Information and Communication Technology (ICT) in Transport and the deployment of ITS for the different modes of transport and their interfaces to promote co-modality, the ongoing ConnecTA subproject is ongoing and briefly presented in this paper.

2 Methodology

The project aims to the establishment of a commonly agreed Strategic Framework for ITS development on the Core TEN-T extension in the WB region (Figure 1). The activities foreseen include: a) the identification of users' needs and definition of specific objectives at RP level for all transport modes; b) the assessment of ITS and ICT system needs, requirements and priority ITS services; c) assessment of legal approximation requirements and needs for harmonisation with the EU standards and specifications and d) elaboration of an impacts' assessment study and Cost-Benefits estimation. Moreover, a regional ITS vision should be defined and key strategic directions that would ensure harmonized regional ITS development should be provided. This process would lead to the development of a regional strategic framework and the elaboration of Roadmaps and deployment plans for each RP per each transport mode. Finally, provision of guidance and assistance to RPs in activities related to ITS would be provided.
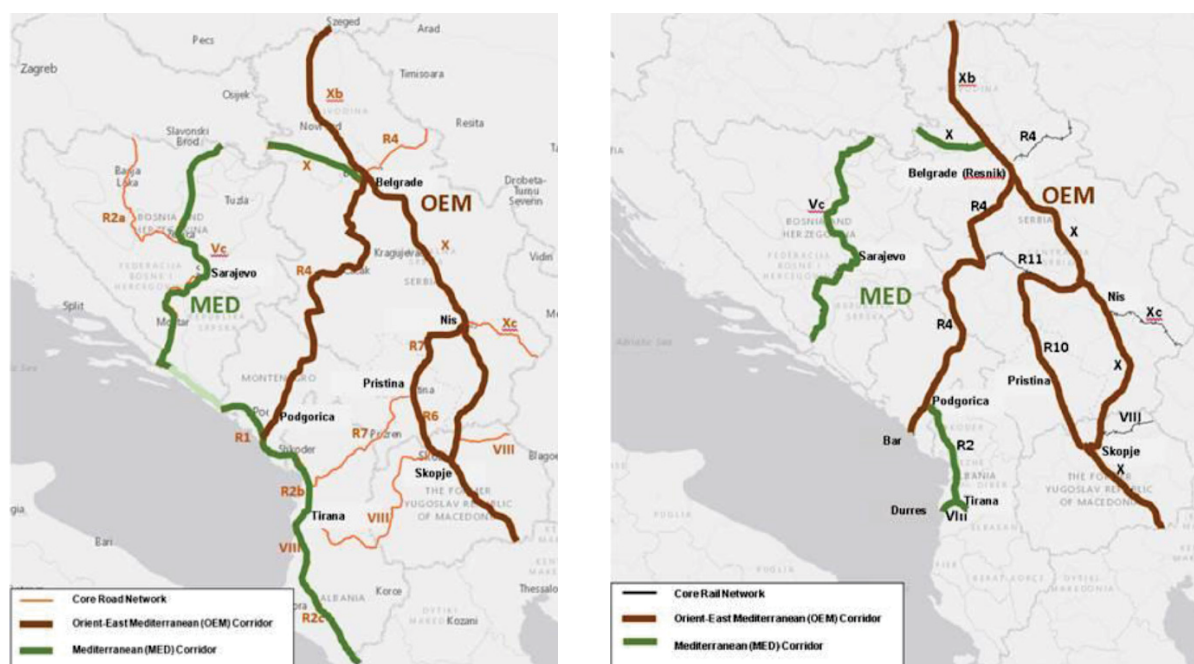

Figure 1   TEN-T Core indicative extensions in the Western Balkans (Left: Road – Right: Rail) [5]

The Regional ITS vision and strategy should be a commonly accepted basis of a mutually recognised framework for further actions, and thus it is a prerequisite for the formulation of fully aligned Roadmap and Action Plans (Figure 2), that should be drafted taking into account the RPs current status regarding ITS and their capacities and potentials, ensuring that proposals would be feasible and realistic.
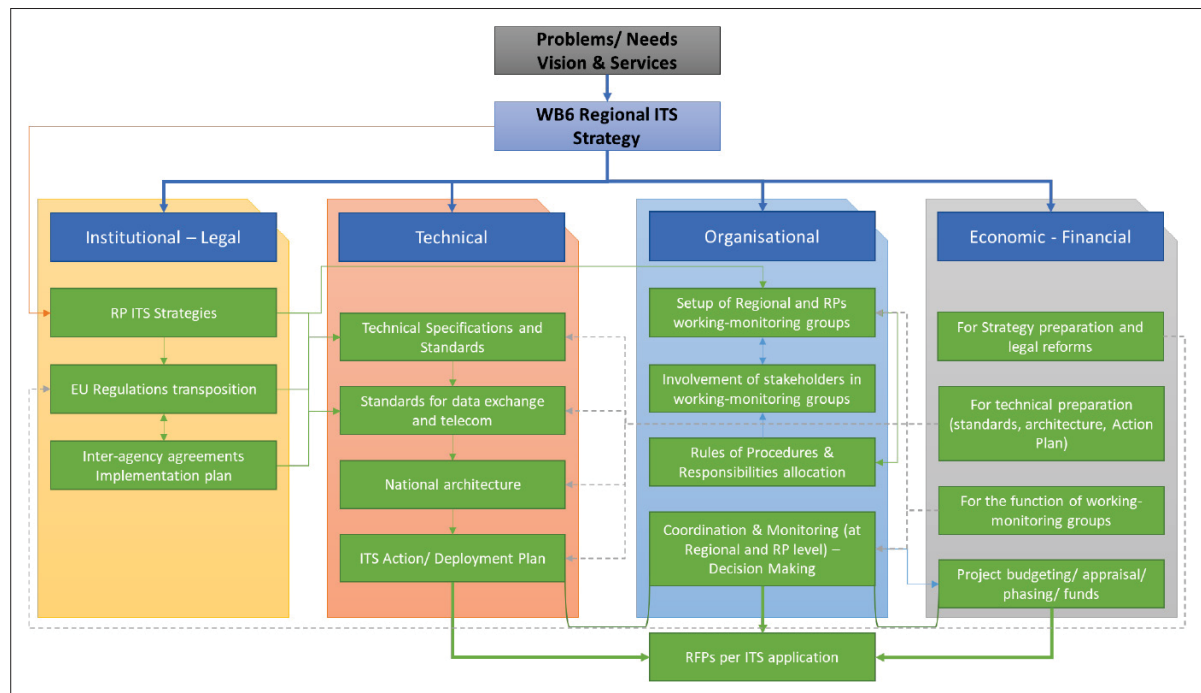

Figure 2 Methodology for the definition of the Roadmaps for ITS deployment

For the achievement of the definition of the common vision, the Roadmaps and Action Plans, the methodology comprises an extensive inventory and a participatory process for acquiring data, information and documents. This inventory consists of data collection through questionnaires and desktop research, missions to all RPs, meetings with stakeholders and direct involvement of users for the registration of their needs. In the following chapters, the most important elements per transport mode are discussed, on the base of the progress achieved and relevant findings [6].

3   Road ITS

As a significant part of the Global Supply Chain, Road transport playing one of the most important roles in terms of Sustainable development strongly influencing to all of it three aspects (environmental, social and economic). Increased volume of road transport associated with the growth of the European economy and mobility requirements resulting in increasing of congestion of road infrastructure and raised energy consumption, as well as a source of environmental and social problems. Unlike rail transport system, road transport is not fully dependent on technical compatibility between the infrastructure and vehicles using it, but encounters problems of congestions, lack of efficiency, road safety and environmental issues, thus creating the need for safer and more efficient operation of road transport and higher level of standardisation of infrastructure, vehicle safety systems, signalling systems and communication systems. Recognizing that infrastructure development is not the only way to build more efficient and safer road transport system, EU (and especially some Member States) recognized ITS as a tool for more efficient transport demand management, better utilization of transport capacities, improvement of traffic safety resulting in lower CO_2 emission, safer and more efficient and cost saving road transport system. One of the most important tran-

sport strategic documents of EU is the most recent White Paper [7]. The Action Plan for the Deployment of Intelligent Transport Systems in Europe [8] is the document initiating stronger and focused ITS development in Road Transport across the EU. Although there was relatively high compatibility within Strategic researches supported by technological platforms ERTRAC and ERTICO-ITS, there was a lack of a single framework structure that would allow harmonized ITS development in EU road traffic. Innovation for more efficiency and sustainability is a main objective of the Transport White Paper and the use of ITS is a mean to achieve this. WB6 RPs are at a low level when it comes to the existence and/ or functioning of strategic and legal framework for the implementation of the ITS Directive. WB6 beneficiaries should also harmonize their ITS standards with CEN/TC 278, making their adoption and implementation mandatory. Also, RPs should grasp the momentum, setting the goal to Cooperative, connected and automated mobility (C-ITS) compliance, since immediate deployment may lead to earlier initial investments, but also to faster achievement of overall benefits.

4 European Railway Traffic Monitoring System (ERTMS)

The WB6 rail network is currently quite fragmented (as is the EU rail network). The RPs use different safety standards and technical systems. Those standards are in a very different level of implementation, and overall strategies. Cross-border train services, for example, must get safety authorisation from several different authorities and deal with several different signalling systems. This makes it complicated and expensive for new rail operators and new technical equipment to enter the rail market.

In the area of interoperability, there is often insufficient legal basis for establishing rules and relations between railway undertakings and all stakeholders [9]. RPs railway legislation determines the liability of railways, but there is a lack of international components in terms of this liability. By removing the barriers to the WB6 rail area, the harmonisation with the 4th Railway Package will help creating a more competitive rail sector [10], with better connections to neighbouring RPs and the EU. Its technical pillar introduces important changes concerning ERTMS (ETCS and GSM-R components) and RPs may decide which ERTMS level is more suitable. It is of great significance that during the decision process to be aware of the Goals, which can be achieved by implementing ERTMS, as presented in Figure 3.
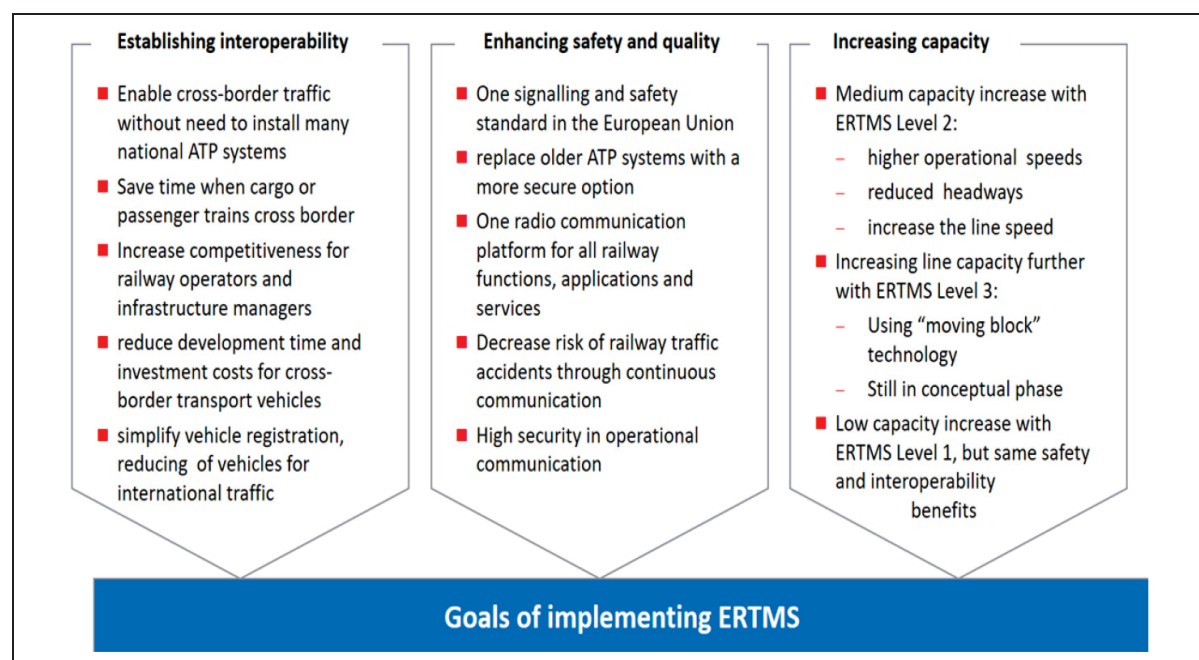

Figure 3   ERTMS implementation Goals [11]

However, the prerequisite for its implementation is to achieve a clear situation regarding legislative part. Regarding decision making, some important things must be taken into the consideration: the situation of neighbouring countries regarding consecutiveness of connections, sources of financing (EU funds prioritised for the Core/ Comprehensive TEN-T), development plans, currently ongoing projects, connection with important nodes (sea- and river- ports), etc.

5   Vessel Traffic Monitoring Information Systems and River Inf. Systems

Vessel Traffic Monitoring Information Systems (VTMIS) in the WB concerns only two RPs (Albania and Montenegro). The ITS Directive does not have specific provisions for the maritime sector. EU has issued several relevant directives for multiple relevant systems (AIS, ECDIS, VDR, sVDR, VTMIS, LRIT, ISPS, etc.), which are focussed on providing information for safety, security, protection of the environment and human element related [12, 13]. The situation of harmonisation with international legal and regulatory framework, as well as implementation of VTMIS differs among the RPs. Dedicated studies are needed to specify the initial needs for VTMIS functions and to add also the additional functions of SafeSeaNet and CleanSeaNet, if considered necessary. At a second stage Blue Mass Med, Perseus and ImDate functions could be considered.

Regarding River Information Systems (RIS), related legislative framework on EU level defines and supports RIS development on European waterways from Class IV onwards. It supports RIS not only with regards to safety and environmental protection, but also with regards to efficiency of inland navigation. The current White Paper highlights the importance of having integrated multimodal services across the EU. Directive 2005/44/EC [13], provides minimum requirements to enable cross-border compatibility of national systems. Comprehensive and international guidelines for RIS are continuously developed to harmonise the existing standards for particular RIS within a common framework. Thus, updating the legal framework for Inland Waterways for RPs and fully compliant with international conventions and harmonised with EU Acquis are obligatory.

6   Information Technology and telecommunications

Since ICT technologies present the main tool for implementation of ITS, there are a number of elements from ICT EU strategy, legislations and standards which must be, directly or indirectly, taken into account throughout the processes of preparation of legal environment, introduction of ITS, regulatory harmonization and strategic alignment with EU approach in all modes of transport, for each of the RPs and across the whole WB6 region.

Digital Agenda presents 2nd of the 7 pillars of the Europe 2020 Strategy which sets the key goals for the growth of the EU by 2020 [15]. Main target of the European Commission's Digital Agenda is to develop digital single market, which will result in generation of smart, sustainable and inclusive growth in Europe. By creating a connected digital single market, we can generate up to EUR 250 billion of additional growth in Europe in the course of the mandate of the next Commission. Apart from this goal, there are six additional elements which should be taken care, forming again 7 pillars, but this time for the Digital Agenda:
• Achieving the digital single market
• ICT-enabled benefits for EU society.
• Strengthening online trust and security
• Enhancing interoperability and standards
• Promoting fast and ultra-fast Internet access for all
• Investing in research and innovation
• Promoting digital literacy, skills and inclusion

Moreover, the most recent (February 2018) Strategy for the Western Balkans contains Initiative for a Digital Agenda for the Western Balkans as the one of the 6 flagship initiatives of the EU [16]. Those initiatives are targeting specific areas of interest for both the RPs and the EU to support the transformation of the Western Balkans towards their accession to the EU.

7 Conclusions

The main goal of this paper was to briefly present the approach that includes the most important aspects that would be examined for the definition of the common vision and the formulation of the WB Regional ITS Strategy and the aspects relevant to the formulation of the Roadmap and Action Plans that would be developed per transport mode and RP, anticipating that these Action Plans would reflect a realistic tool in the service of RPs and the respective – per mode – stakeholders.

At present, the project has concluded the identification of the user needs and the priority needs definition and the assessment of the existing legal framework and specifications and standards used in each of the RPs in the region, in comparison to those of EU. Currently, an impact assessment and Costs-Benefits estimation exercise is under elaboration, which would be the final step before setting out a proposal for the RPs to agree upon, for a common vision for ITS in the region, as the basis for the integrated Regional Framework for coordinated and effective ITS development.

Acknowledgements – Disclaimer

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