



MINISTRY OF NATIONAL DEVELOPMENT

HUNGARIAN REPORT

**ON THE NATIONAL ITS ACTIONS IN THE FOLLOWING FIVE YEAR PERIOD
IN ACCORDANCE WITH THE SPECIFICATION OF ARTICLE 17 PARAGRAPH (2)
OF "ITS DIRECTIVE" (2010/40/EU) AS REGARDS PRIORITY DEPLOYMENT AREAS
OF INTELLIGENT TRANSPORT SYSTEMS AND SERVICES**

**Budapest
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1. INTRODUCTION

1.1. Obligation of reporting

The Article 17 of the "ITS Directive" 2010/40/EU of 7 July 2010 of the European Commission and of the Council "on the framework of the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport" provides the obligations for Member States as follows:

- *paragraph (1)*: Member States shall submit to the Commission by 27 August 2011 a report on their national activities and projects regarding the priority areas.
- *paragraph (2)*: Member States shall provide the Commission by 27 August 2012 with information on national ITS actions envisaged over the following *five year* period.
- *paragraph (3)*: Following the initial report, Member States shall report every three years on the progress made in the deployment of the actions referred to in paragraph (1).

This report relates to article 17 paragraph (2) of "ITS Directive" 2010/40/EU.

The following chapters introduce the *planned activities/projects with priority importance* in Hungary.

The planned period – in accordance with the obligation of reporting – is five years (time horizon 2017) but in some cases the projects are continued after 2017. The planned next seven year budget period of the European Commission – which ensures the continuity – has priority importance.

It is crucial for Hungary to continue the current European co-operation in the field of intelligent transport systems/services in the framework of the next phase of the EasyWay project therefore the launch of the projects is subject to the launch of the expected "ITS call" in autumn 2012.

1.2. The priority deployment areas and actions of the "ITS Directive" (2010/40/EU)

In the articles 2 and 3 of the Directive 2010/40/EU the European Parliament and the Council introduced the priority areas and actions related to the deployment of intelligent transport systems. The detailed deployment scope of the priority areas is specified in Annex I of the Directive 2010/40/EU. The four priority areas and the six priority actions as set out in article 2 and article 3 of the Directive 2010/40/EU are shown as follows:

- I. Optimal use of road, traffic and travel data
 - a. EU-wide multimodal travel information services;
 - b. EU-wide real-time traffic information services;
 - c. provision of road safety related "universal traffic information" free of charge to all users;
- II. Continuity of traffic and freight management ITS services
- III. ITS applications regarding road safety and security
 - d. harmonised provision of an interoperable EU-wide eCall;
 - e. information services for safe and secure parking places for trucks and commercial vehicles;
 - f. reservation services for safe and secure parking places for trucks and commercial vehicles;
- IV. Linking the vehicle with the transport infrastructure

2. THE CURRENT SITUATION OF THE NATIONAL STRATEGY AS REGARDS INTELLIGENT TRANSPORT SYSTEMS/SERVICES

2.1 Introduction

The actions of intelligent transport systems/services have positive effect on traffic flow, road safety and environment. With the help of intelligent transport systems the traffic flow becomes smoother, the capacity increases, congestions are reduced, the situation of road safety can be influenced with positive impact and environmental load caused by transport can be reduced significantly.

In the last years development has gathered pace in Hungary in the field of *intelligent transport systems and services* – an overview was given about it in the document *“Report of Hungary in accordance with the specifications of the ITS Directive 2010/40 as regards priority deployment areas of intelligent transport systems and services”* published in August 2011.

The range of users of *intelligent transport systems* tend to extend in Hungary as well, traffic/travel information is available not only for road users/drivers but also for users of public transport, pedestrians, cyclists.

2.2 Vision in the interest of harmonised European ITS deployments

The desired future state of the road transport system and the harmonised ITS applications of the future are introduced in the comprehensive *“EasyWay-vision”* as follows:

“The sustainable transport system allows European travellers and hauliers to travel safely (no accidents), efficiently (no delays) and cleanly (no damage to the environment). The users are supported anywhere and anytime by harmonised and seamless ITS services in all aspects of their travel (pre-trip, on-trip and after-trip).”

The parts of the comprehensive EasyWay-vision are the *“vision of the well-informed traveller (travel information services)”*, the *“vision of the well-managed road network (traffic management systems)”*, the *“vision of the efficient and secure goods transport”*, and the vision of the *“connected ICT infrastructure of high quality”*.

The latter has significant importance as the *ICT infrastructure* of high quality ensures continuous collection and process of high quality, real-time road and traffic data/information, establishing comprehensive databases and transmission and exchange of data/information for European road operators/traffic controllers and system providers.

The *“ITS vision”* of Hungary, which contributes in projects/consortiums giving framework for European ITS developments, is fully covered by the formulation of the EasyWay consortium.

2.3 Objectives – operative goals

The *main target areas* of national strategic documents relating to the field of intelligent transport systems/services relevant of ITS are summarized as follows:

- *Efficiency of transport*: establish and maintain high quality, (national) economically cost-efficient service system of transport, optimal use of capacity;
- *Safety*: minimise social loss resulting from road accidents;
- *Sustainability*: environmental and quality of life aspects taken into account during system development and operation;
- *Competitiveness/economy*: the nation faces the global competition by provision of appropriate transport services.

The following *operative goals* are attached to certain strategic main objectives:

- Operative goals attached to *efficiency of transport* (strategic main objective): efficiency of inter-urban transport/reduce congestions; ensure urban mobility, freight management (including cross-border traffic), and availability.
- Operative goals attached to *safety* (strategic main objective): road safety, transport of dangerous goods and freight safety, safety and security of public transport.
- Operative goals attached to *sustainability* (strategic main objective): environmental effects, energy efficiency.
- Operative goals attached to *competitiveness/economy* (strategic main objective): internalise external costs, development of telecommunication and ITS industry.

It is highlighted that the use and exploitation of ITS devices effectively and, compared to alternative solutions (extensive expansion of capacity), in general contribute with lower costs to the quick and tangible achievement in the identified strategic target areas.

The objectives of national implementations obviously relate to the objectives listed in the "White Paper" (COM 2011/144) of which the implementation of the following objectives is related by the role of intelligent transport systems/services or the beneficial effects of the EasyWay project phase beyond 2012 can be expected:

- (3) *30% of road freight over 300 km should shift to other modes by 3020:*

Traffic- and infrastructure information will be provided about roads and interfaces agreed for exchange with other modes. This will allow the market to better plan and execute multi-modality.

- (5) *a fully functional and EU-wide multimodal network with a corresponding set of information services:*

Information services will be facilitated and provided for roads, but also the information and interfaces to facilitate multimodal use.

- (7) *deployment of traffic management systems (with regard to roads, in accordance with the EasyWay II Implementation Plan, Commission Decision C(2010) 9675):*

Traffic management systems for the TEN-T will be provided and additionally also for other roads plus interfaces with urban traffic management in cooperation with other stakeholders.

- (8) *by 2020, establish the framework for a European multimodal traffic information, management and payment system:*

The traffic management systems and traffic information services for TEN-T will be in place; interfaces and cooperation with other roads and urban traffic management and information will provide seamless services for users; interfaces and cooperation with other modes provide major parts of the European multi-modal systems.

- (9) *halving road fatalities by 2020 and aim at moving close to zero fatalities by 2050:*

The deployment plan has a target of ITS massively contributing to this goal by reducing fatalities with the help of ITS by 25% until 2020.

2.4 Overview on the strategic background of intelligent transport systems in Hungary

The most characteristic examples of ITS applications in Hungary today are the traffic management of motorways, traffic control systems of motorways, electronic fee collection (road toll), route guidance/navigation, but urban traffic management is also a relevant area.

Intelligent transport systems and services in the road sub-sector are diverse and generally there are a lot of stakeholders, such as network operators, network providers, content providers and of course road users (drivers, public transport users, pedestrians etc.).

It will be extremely important in the future that local authorities – mainly in larger cities – address the field of intelligent transport systems and services, defining deployments that support the implementation of their objectives in order to ensure local mobility.

In 2007 the “*Coherent Strategy for Transport Development (EKFS)*” was published and dealt with the field of *intelligent transport systems and services* as a *horizontal* matter beside improvement of road safety reduce of environmental impacts and improvement of energy efficiency of transport.

In 2009 the “Strategy for national development of intelligent transport systems and services” was completed as a draft paper and it mainly focused on systems and services related to road transport.

On the national road network, taking the current situation into account, analysing European and national trends in accordance with strategic EU and national documents in the field of intelligent transport systems and services the following most important deployment areas and priorities can be set out:

- deployment of ITS in modern road operation – traffic management;
- traffic control and information systems of the motorway network;
- traffic control centres;
- multimodal traffic information: real-time information systems;
- electronic fee collection;
- coherent electronic payment system of passenger transport (e-ticketing);
- ITS deployment of freight/logistics;
- eSafety systems supporting road safety;
- integrated EU-wide eCall service.

The wording of the document was formed after comprehensive debate and consultation with full consensus of the stakeholders. It is highlighted that this strategy was the first to reflect on ITS applications of the road sub-sector with a comprehensive and coherent framework.

It is urgently needed to develop the national “ITS strategy” as soon as possible (not only for the road sub-sector but also for other sub-sectors). The “*Action Plan*” should relate to the recorded priorities of the strategy in accordance with the *strategic main objectives* and *operative goals*, indicating the priorities.

A number of *other tasks* are linked to the intelligent transport systems that have important roles at planning, implementing and operating any kind of intelligent transport systems and services. These are *horizontal matters* which are summarized as follows:

- *establishing of a system architecture*: coherent framework to link and identify the way of cooperation of certain independent systems/services;
- *evaluation* of intelligent transport systems/services;
- *standardisation* issues of intelligent transport systems and services.

Relating to intelligent transport systems and services not only *technical tasks* but also *non-technical tasks* arise as follows:

- cooperation in the framework of PPP in the field of planning, financing and operation;
- establish legal/legislative conditions, ensure institutional background;
- coordinating research and development related to developments and deployments;

- ensure financing, set up financing models;
- education, awareness related to the implementation of intelligent transport systems/services.

The ITS strategy should be fit in the comprehensive “*National Transport Strategy*” (NKS), which is currently under development, constituting an essential part of that.

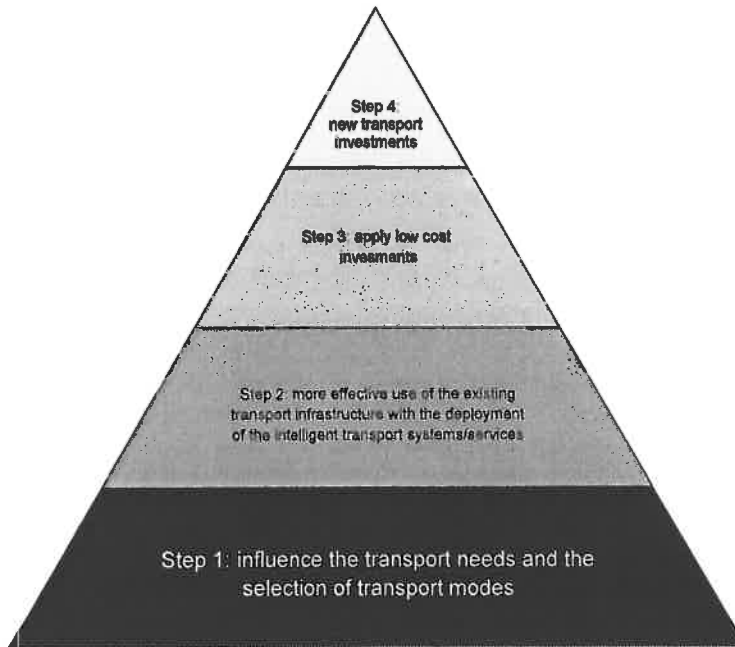
The following reasons make it necessary to develop a new “*National Transport Strategy*”:

- Due to the changes have occurred since 2008 the earlier “*Comprehensive Transport Development Strategy*” (EKFS) does not represent appropriately the strategic aims and actions to be achieved by 2020.
- The EKFS mainly focused on road and railway, and urban-suburban transport sub-sectors marginally including waterborne transport and aviation therefore the complete transport approach was not ensured.
- The objectives, instruments and elements of the seventh chapter of the governmental economy development programme “*New Széchenyi Plan*” launched 14 January 2011 on “*Development of transport*” sector sub-programme significantly extended the social and political expectations towards the strategy and objectives of transport policy.
- Regarding the mid- and long-term strategy and transport policy of the European Union (“*White Paper 2020*”) it is noted that there is a strong shift towards environmental friendly transport modes, in particular towards railway developments; and changes are expected in the TEN-T network policy which can result significant modifications of objectives in the following seven year budget period of the community.
- The EKFS does not contain a long-term vision – towards 2030 or 2050. There are increasing needs to develop a large and long-term harmonised strategy in the sector.

The new “*National Transport Strategy*” (NKS) to be prepared analyses the effects of the updated independent strategies of the different sub-sectors of transport in an integrated approach.

In the whole-transport system it is a priority objective to cooperate between the sub-sectors to coordinate the whole travel and supply chain and to improve their continuity and reliability. The integration within the sector promoting general transport planning identifies economical and social demands against the whole transport sector which are the basis to define the tasks (work sharing) of passenger and freight transport sub-sectors taking into account which sub-sectors or sub-sector cooperation are capable to fulfil the expectations with maximum benefit.

While preparing the ITS strategy the *four-step pyramid principle* shall be noted which classifies the problems to be solved through four filters, allocates sources in an effective way focusing on the *operation and sustainability* of the road user oriented road network (see figure).



(Source: Ministry of Transport and Telecommunication: *The strategy of Finland in the field of intelligent transport 2009*)

The first step is to examine if transport problems can be solved through the influence of transport needs. The second step is to analyse if problems can be solved through the increase of efficiency and capacity of the existing network and the deployment of the devices of intelligent transport systems/services. The third step is to seek the possibility of low cost investments while arriving at the last, fourth step means that only new infrastructure developments/investments are capable to solve the problem significantly increasing maintenance costs.

2.5 Summary – future tasks in the area of intelligent transport systems and services

In the area of deployment of intelligent transport systems/services in the national road transport, connecting to other transport sub-sectors or transport modes, there is a possibility to “break out” which can be seen in the comprehensive Euro-regional and European developments launched in the recent years (within the framework of CONNECT and EasyWay projects) which are hopefully continued in the following years (the current budget period of the Commission and also the next budget period from 2014) using the sources available at the European Commission.

The possibility to break out is clearly supported by the followings:

- current European trends, the European transport policy and the “Action Plan” and “ITS Directive” of the EU Commission to spread ITS systems faster, helping to achieve general objectives of the transport policy;
- EU financial grants available until 2013 and also expected to be available from 2014 in the area of intelligent transport systems and services, mainly by contributing in the EasyWay project;
- the growing governmental/ authority intention, the growing interest of private service providers and the needs of network operators and road users.

The national “ITS strategy” currently under preparation, as essential part of the comprehensive “National Transport Strategy”, is going to support that possibility to break out.

The completed national developments during CONNECT and EasyWay project Phase I are outstanding because in the previous years there had not been any comprehensive, strategy-implemented, developments (apart from those isolated, non-compatible solutions that were implemented in different times).

There is high priority for Hungary to continue the work launched in international context because the *EasyWay project clearly provides the framework* for future European ITS developments. Contributing in the project helps implement national developments which ensure interoperable services/systems for road users on the national road network.

In the following years it would be of crucial importance for Hungary that ITS projects attain *higher rate of subsidies*.

In the future other European cost sources shall be identified beside TEN-T sources therefore it is the task of the following years to use the available EU sources (TEN-T grants, cohesion, and structural funds and other sources) in an optimal way to the national implementation of the *"ITS Action Plan"* and *"ITS Directive"* taking national transport policy objectives into account.

3. PRIORITY DEPLOYMENT AREAS AND ACTIONS OF THE "ITS DIRECTIVE" (2010/40/EU): PRIORITY AREA I: OPTIMAL USE OF ROAD, TRAFFIC AND TRAVEL DATA – TRAVEL INFORMATION SERVICES (TIS)

3.1 The vision of travel information services

Alongside local and national services several competing pan-European services provide traffic and co-modal information, multimodal, multilingual, seamless, door-to-door route/travel recommendations to be used pre-trip and on-trip in combination with multimodal navigation systems.

Actual, detailed and predictive information (including travel times) will be available on the road network.

TIS services will be based on a strong cooperation between road operators and private organisations. Traffic and other data will come from both road operators and private organisations therefore new type of relationship is required.

In the field of road traffic data the role of private/non-governmental providers grows rapidly – at the same time the role of public authorities as regulator increases.

Road operators provide actual data/information about the road network and this information are provided on data portals/databases (according to a relevant business model).

Relevant access to harmonised data/information means setting up deployments and services that cover travellers/road users' needs, independent from transport modes and cross-border (technical).

3.2 Travel information services – core services

Travel information services based on prediction and real-time information provide information *pre-trip and on-trip* for drivers/road users on situations and events occurring on the road network (road construction works, incidents etc.), real time events of the road network (accidents, road blocks, timetables of linking transport means etc.) and provide information to select the appropriate behaviour, transport mode, route and travel time.

The *"Deployment Guidelines"* developed within the framework of EasyWay project defines "incident information services (both predictive and real time)"; "traffic information services"; "speed management information services"; "expected travel time information services"; "weather information services"; "co-modal travel information services" as *core services within travel information services*.

The requirements recorded in *"Deployment Guidelines"* and the harmonised quality of services according to the operating environment clearly supports the future interoperable, compatible and continuous/seamless *travel information services* on the Hungarian road network forming the part of TEN-T road network.

3.3 Projects/tasks in Hungary

3.3.1 National projects currently under implementation

The implementation of the projects taking place in the framework of EasyWay phase II as follows:

- Implementation of data portal and ensure access to a professional data portal for service providers – according to a business model developed in the framework of the project (EW project: A4.2.1a; lead stakeholder: Hungarian Public Roads Company);
- Further development of central traffic database (EW project: A4.1.5.; lead stakeholder: Hungarian Public Roads Company);
- Development of a data visualization portal (serving the whole transport sector, the national administration and travellers through a data display portal, topology server) (EW project: A1.2.3.; lead stakeholder: Coordination Centre for Transport Development);
- Development of a coherent data management system for transportation networks (EW project: A4.2.4.; lead stakeholder: Coordination Centre for Transport Development);
- Create an interface for publications of expert systems (EW project: A1.1.5.; lead stakeholder: Public Road Private Limited Co.);
- Website development for the State Motorway Management Company (ÁAK) regarding to information services and develop a dynamic data transfer channel for road users (EW project: A1.1.2.; lead stakeholder: State Motorway Management Company);
- Further development of “Műszinfo”, create external links to the website of FIR and ÁAK and other external hosts (EW project: A1.1.6.; lead stakeholder: State Motorway Management Company).

3.3.2 Planned projects in the area of travel information services

Project: Establishing a transport database with data portal to set up travel/transport information services

Project objective/description: the “transport database” is a common solution/service of state organisations/authorities and the business sector that provides the static, real-time transport information produced by the state (not only traffic and weather information but also multimodal, co-modal information) for the business sector. Relevant regulations and feeding data providers with the appropriate data ensure the valuable operating environment for the establishment of intelligent transport services.

“Opening” the comprehensive transport/traffic database requires the record of responsibilities/competences, the clear regulation (both from state and private organisations) of possibilities of access – either by legislative regulation or specified business models.

Business models allow creating wide range of travel information services and different business opportunities.

Partners involved/lead stakeholder: Coordination Centre for Transport Development (lead stakeholder), Hungarian Public Roads Company, Public Road Private Limited Co., State Motorway Management Company, other motorway-operators, private system providers.

Implementation period: 2013–2017

Evaluation aspects: number of travel/traffic information services provided on the basis of data/information collected in the database and the number of possible governmental use of the database.

Estimated costs: the total budget of the multi-step investment is 4 billion HUF in the following 5 years. The cost of maintenance is 200 million HUF per annum on average from 2013 to 2017.

Financing: the investment is implemented from budget source supported by EU (TEN-T source: in the framework of EasyWay Phase III, and the regional, cohesion funds available from 2014). The operation is ensured by the budget of the Coordination Centre for Transport Development (KKK).

Project: Installation of travel time determines and display systems – M0 motorway and the motorway sections leading to Budapest (continue earlier developments, develop a system based on cooperation of operators and data source users in the area of Budapest)

Project objective/description: determining the potential travel time travellers are informed on a higher quality level to plan their routes in and around Budapest road network. Creating this system congestions are expected to be reduced and travel times are expected to be shortened.

Partners involved/lead stakeholder: Hungarian Public Roads Company, Public Road Private Limited Co., State Motorway Management Company (*lead stakeholder*), other motorway-operators, private system providers.

Implementation period: 2013–2014

Evaluation aspects: better traffic flow on the road network (less congestion), better traffic safety situation (better accident figures), less fuel consumption, less pollution (less emission).

Estimated costs: the total investment costs of the display systems signing travel times is about 1 billion HUF in the following 5 years. The cost of maintenance is about 40 million HUF per annum *on average* from 2013 to 2017.

Financing: the investment is implemented from budget source supported by EU (TEN-T source: in the framework of EasyWay Phase III, and the regional, cohesion funds available until 2014).

4. PRIORITY DEPLOYMENT AREAS AND ACTIONS OF THE “ITS DIRECTIVE” (2010/40/EU): PRIORITY AREA II: CONTINUITY OF TRAFFIC AND FREIGHT MANAGEMENT SERVICES – TRAFFIC MANAGEMENT SERVICES (TMS)

4.1 The vision of traffic management services

Traffic management systems/services (such as Dynamic Lane Management, Ramp metering, Speed Control, Variable Message Signs etc) are local affecting systems (at certain sections, transport nodes – hubs). In the following years their behaviour and look-and-feel will be harmonised such that the European road users will encounter as much as possible the same service (harmonised systems are also more cost-effective). Where relevant those services will be multilingual or non-lingual.

The different traffic management systems/services or possible interventions/measures are coordinated in Traffic Management Plans (TMP) which provide possible scenario-management. In this work TEN-T road operators work together and with local and (public) transport operators.

For transport corridors, traffic management measures and their operation through Traffic Management Plans are first deployed where the need is biggest, i.e. at the main European transport corridors defined. These corridors include generally parts of several countries, they include important transport nodes (hubs) and they often include several transport modes for freight, e.g. road, rail and/or water (offering co-modality).

In the future all relevant parts of the TEN-T road network will be covered by international Traffic Management Plans in those countries where a good service level with comparable services towards the road users will be available. In order to achieve homogeneity the “service package” that is met by the road user in the corridor should be harmonised along the corridor as regards content, access options and availability.

In the field of traffic management services urban interfaces and multimodal approach will have an important role in the future.

4.2 Traffic management services – core services

The comprehensive traffic management includes several systems/services and interventions.

The “*Deployment Guidelines*” developed within the framework of EasyWay project defines “traffic regulation systems allowing dynamic lane management”; “speed control systems”; “ramp metering”; “emergency lane management”; “alert systems”; “management of overtaking ban of heavy goods vehicles”; “strategic management of transport corridors and networks”; and “emergency management” as *core services within traffic management systems*.

The requirements recorded in “*Deployment Guidelines*” and the harmonised quality of services according to the operating environment clearly supports the future interoperable, compatible and continuous/seamless *traffic management services* on the Hungarian road network forming the part of TEN-T road network.

4.3 Projects/tasks In Hungary

4.3.1 National projects currently under implementation

The implementation of the projects taking place in the framework of EasyWay Phase II as follows:

- Management of sensitive road segments, automatic incident detection and data provision in selected road sections of the motorway network (EW project: A2.1.1.; lead stakeholder: State Motorway Management Company);
- Cross-border traffic management plan (TMP) involving neighbouring CONNECT partners (AT, SLO, SI) with data exchange based on DATEX II (EW project: A2.2.1.; lead stakeholder: State Motorway Management Company);
- Installation of a pilot system at the border section of Hungary and Ukraine displaying queue (waiting) time (EW project: A2.2.5.; lead stakeholder: State Motorway Management Company);
- Development of the traffic control centre in Budapest, extension of the area monitored with adaptive traffic management, installation of new VMSs giving information with special content to foster modal shift and re-routing (EW project: A2.2.2.; lead stakeholder: Public Road Private Limited Co.);
- ITS conception for integrated road and public transport until 2020 in Budapest (EW project: A2.2.4.; lead stakeholder: Public Road Private Limited Co.).

Among these projects the cooperation with urban traffic management and cross-border traffic management has significant importance and special relevance for the future.

4.3.2 Planned projects in the area of traffic management

Project: Implementation of comprehensive traffic management/preparation of traffic management plan as regards to the whole motorway network (including cross-border traffic management solutions linked to urban traffic management) in order to operate motorways safely and efficiently

In order to operate the whole motorway network in an efficient, safe and high quality way prepare traffic management plans for every possible traffic situation (cooperate with linking/local and urban road network operators), taking needs of cross-border traffic management into account with neighbouring countries and also the traffic management at certain border crossing areas (particularly in non-Schengen-zones). The plans draft in details and in a timeline for the personnel of traffic control centre and for the external partners what to do in particular traffic situations.

Cooperation with the Budapest traffic control centre has high priority in order to manage the traffic of conurbation effectively.

The traffic management will include several actions/core services.

The whole work includes the current monitoring and the development of data-connection between traffic control centres and the installation of communication devices (VMS).

Sub-project I: Traffic management of the motorway network, cross-border traffic management on the motorway corridors including traffic management of border crossing areas (in the case of non Schengen-zone border crossings)

Proposed motorway corridors:

M7–M70 (Budapest – Ljubljana);

M3 (Budapest – border of Ukraine).

Project objective/description: preparation and operation of joint traffic management plans with the road network operators (both national and foreign) involved. The implementation of the tasks of a comprehensive traffic management is essential to implement the same *service level and technical quality, interoperable* traffic regulation and information system as on the TERN-network on the future motorway network.

Implementation period: 2013–2017

Partners involved/lead stakeholder: State Motorway Management Company (lead stakeholder), Hungarian Public Roads Company, foreign operators of the linking sections of the motorway-corridor.

Evaluation aspects: better traffic flow on the network (less congestion), better traffic safety situation (better accident figures), less fuel consumption, less pollution (less emission), reduced costs of road operation.

Estimated costs: the total investment cost of the traffic regulation systems is about 2 billion HUF in the following 5 years. The cost of maintenance is 80 million HUF per annum *on average* from 2013 to 2017.

Financing: the investment is implemented from budget source supported by EU (before 2014 as part of KőzOP "Targeted developments for improvement of road safety", after 2014 in the framework of EasyWay Phase III and the cohesion and regional funds available after 2014). Maintenance is ensured by an O&M contract between the company and KKK.

Sub-project II: Cross-operation border traffic management with urban interfaces – joint traffic management plans on the urban sections of motorways in the conurbation areas

Project objective/description: common management of the traffic problems of the conurbation area of Budapest (urban motorway sections) by the operators of motorway and urban network with the cooperation of motorway and urban traffic control centres by operating joint traffic management plans.

Implementation period: 2013–2017

Partners involved: State Motorway Management Company, Public Road Private Limited Co. (common responsibility).

Evaluation aspects: better traffic flow on the road network (less congestion), better traffic safety situation (better accident figures), less fuel consumption, less pollution (less emission), reduced costs of road operation.

Estimated costs: the total investment cost of the traffic control systems is about 25 billion HUF in the following 5 years. The cost of maintenance is about 2 billion HUF per annum *on average* from 2013 to 2017. It is shared between the State Motorway Management Company and the Public Road Private Limited Co. according to their operating and proprietary rate.

Financing: the investment is implemented from budget source supported by EU (TEN-T source: in the framework of EasyWay Phase III, and the regional, cohesion funds available after 2014). Maintenance is ensured by an O&M (Operation & Management) contract between ÁAK and KKK and also a contract between the Centre of Budapest Transport and the Public Road Private Limited Co.

Sub-project III: Development of motorway traffic management systems

Project objective/description: development of the toolkit of the motorway traffic management, physical establishment of the motorway traffic control centre (TCC):

- installation/change of information displays;
- installation/change of monitoring devices, cover of sensitive sections (M70, M19, M4);
- implementation of M0 traffic management systems (use of emergency lane – pilot, comprehensive speed control system and a regulation system for the overtaking ban of heavy goods vehicles);
- upgrading the motorway traffic control centre (with necessary bandwidth transmission systems).

Implementation period: 2013–2017

Partners involved/lead stakeholder: State Motorway Management Company (lead stakeholder), Public Road Private Limited Co., Hungarian Public Roads Company.

Evaluation aspects: better traffic flow on the network (less congestion), better traffic safety situation (better accident figures), less fuel consumption, less pollution (less emission), reduced costs of road operation.

Estimated costs: the total investment cost is about 7 billion HUF in the following 5 years. The cost of maintenance is about 400 million HUF per annum on average from 2013 to 2017.

Financing: the investment is planned to be implemented from budget source supported by EU (before 2014 as part of KözOP "Targeted developments for improvement of road safety" and the project called "Road traffic influence with ITS devices in and around the high-speed road sections of Budapest" which is to be submitted for request of support. After 2014 in the framework of EasyWay Phase III and the cohesion and regional funds available after 2014). Maintenance is ensured by an O&M contract between the State Motorway Management Company and KKK.

Project: Establishing an open and harmonised database of public transport (urban areas, alongside main routes of the public network) in order to establish high quality passenger information services

Project objective/description: provide a reliable, easy-to-use and real-time information service based on a common database in the travel chain for travellers on public transport. Passengers at least at urban areas and alongside the main routes of public transport network will be supported by timetable and real-time public transport information provided by (commercial) travel information services with the help of their mobile phones or other existing devices.

Implementation period: 2013–2017

Partners involved/lead stakeholder: Public Road Private Limited Co. (lead stakeholder), Municipality of Budapest etc.

Evaluation aspects: number of travel/traffic information services provided on the basis of data/information collected in the database and the number of possible governmental use of the database.

Estimated costs: the total investment cost of the establishment of an integrated database linked to public transport is 5 billion HUF in the following 5 years. The cost of maintenance is about 200 million HUF per annum on average from 2013 to 2017.

Financing: the investment is implemented from budget source supported by EU (TEN-T source: in the framework of EasyWay Phase III, and the regional, cohesion funds available after 2014). The operational costs of the investment are paid by Public Road Private Limited Co. for their operational liability sources.

5. PRIORITY DEPLOYMENT AREAS AND ACTIONS OF THE "ITS DIRECTIVE" (2010/40/EU): PRIORITY AREA III: ITS ROAD SAFETY AND SECURITY APPLICATIONS – PRIORITY ACTION (D): HARMONISED PROVISION OF AN INTEROPERABLE EU-WIDE eCALL SERVICE

5.1 The vision of eCall

eCall is based on a single EU-wide emergency phone number, 112. The service allows seamless and continuous service both within and outside of EU boundaries. The in-vehicle eCall system makes it possible that in case of emergency, either *automatically* via activation of in-vehicle sensors or *manually by the driver or the passenger*, an *emergency call* can be initiated. The system is based on accurate positioning via satellite systems and other information related to the vehicles involved in the incident (accurate location, time, identifying the vehicle) which is included in the transmission as a *minimum set of data*. In case of activation of eCall the system initiates a voice/audio call to the Public Safety Answering Point (PSAP). PSAP can be a state owned centre or a private centre under the supervision of the state.

The objective of eCall is to become a *harmonised EU-wide service*. *eCall service*, as an interoperable service, shall work across Europe in the future. According to the intention of the European Commission each new passenger vehicle and light commercial vehicle has to be installed with life-saving eCall emergency call system from 2015.

It leads to the enhancement of road safety as the eCall emergency call system is one of the most promising systems among eSafety actions, such as seat belt, ABS (Antilock-Braking System) and ESC (Electronic Stability Control) used to be.

5.2 Related preparation/projects in Hungary

5.2.1 Project under preparation related to eCall service – HeERO

The ongoing HeERO project supported by the European Commission was launched in June 2011. Its objective is to prepare the necessary infrastructure for the deployment of a pan-European, on-board emergency call service "eCall".

Due to the HeERO project several recommendations for implementation and guidelines will be available for the Member States to deploy national eCall services. These documents will be available for all countries involved in eCall deployment.

Currently there are negotiations about the enlargement of the project, involving new countries – launch HeERO2 project – with the European Commission. In that project Hungary will participate as an associate member. Associate membership means contribution in the project without EU funds.

Planned topics in the project are nomadic devices, eCall for dangerous/heavy goods vehicles, eCall for vehicles on two wheels, approval of the whole 112/eCall chain, taking new type equipments into account.

According to the proposed Hungarian work-programme a national organization is testing and validating eCall technology at the moment. The Hungarian part is planning some work packages related to the project which are as follows: management, implementation (Finnish companies and a potential Hungarian partner), evaluation.

5.2.2 Scheduled national implementation of harmonized EU-wide eCall system

The eCall integrated emergency call service shall be handled in a complex way and with special importance in the future. Studies have been made focusing on national implementation.

The *eCall Memorandum of Understanding* was signed in June 2011 by Mr Zoltán Schváb, Deputy State Secretary for Transport (Ministry of National Development).

As eCall system is based on a single EU-wide emergency phone number, 112 the primary task in Hungary is to ensure the operation of the emergency phone number.

Project: National implementation of eCall

Project objective/description: two Public Safety Answering Points are implemented during the ESR-112 project. The PSAPs are currently available on the emergency number 112 and they will be available from all national numbers and all telecommunications networks. The PSAPs will be built in Szombathely and Miskolc giving work for 850 operators at 250 modern, well-equipped, high quality working stations. The geo-redundant establishment of the telemetric system ensures that incoming emergency calls in different channels (phone, eCall, SMS, MMS, e-mail etc) in each case generate rapid and relevant interventions from the side of contingency bodies through their activity management system (Computer Aided Dispatch – CAD) updated at the same time.

As a result of the development a state-of-the-art info-communication background is created at the contingency bodies which ensures that emergency calls receive professional attendance while wrong, malicious calls are filtered. Separated reception and activity management makes it possible that dispatchers of contingency bodies only deal with real emergency calls require substantive intervention.

Partners involved: Ministry of National Development (lead stakeholder), Governmental Information-Technology Development Agency as host of the project, National Info-communication Service Company, Ministry of Interior, National Police, National Disaster Management Organization, Ministry of Human Resources, and National Ambulance.

Implementation period: 2012–2013

Evaluation aspects: reduce the number of fatalities, reduce observation time, reduce intervention time of contingency services, and reduce time of congestions. Other aspects are the on-board eCall device installation rate within the vehicle fleet, the hosting rate of eCall and accurate positioning.

Estimated costs: the total investment cost of the PSAPs (2) is 2 billion HUF in the following 5 years. The cost of maintenance is about 1 billion HUF per annum on average from 2013 to 2017. The investment is financed by EKOP (Operational Programme for Electronic Administration) based on the cohesion fund of the EU and the Ministry of Interior as bearer of operational costs.

Financing: the investment is implemented from about 10 billion HUF source (including national and EU sources of ESR-112 project and OMSZ MIR project).

6. PRIORITY DEPLOYMENT AREAS AND ACTIONS OF THE “ITS DIRECTIVE” (2010/40/EU): PRIORITY AREA III: ITS ROAD SAFETY AND SECURITY APPLICATIONS – PRIORITY ACTION (E): INFORMATION SERVICES FOR SAFE AND SECURE PARKING PLACES FOR TRUCKS AND COMMERCIAL VEHICLES

6.1 National projects currently under implementation

The implementation of the projects taking place in the framework of EasyWay phase II as follows:

- Collect and disseminate static information for freight transport about parking systems and possibilities of the main transport corridors (TEN-T corridors) (EW project: A3.1.1.; lead stakeholder: Hungarian Public Roads Company);
- Extension of parking control system of M1 (including Arrabona left and Moson right lay-bys) (EW project: A3.1.2.; lead stakeholder: State Motorway Management Company).

6.2 Planned projects in the area of freight and logistics services

Project: Full establishment of the parking management system of M1 motorway, creating pilot reservation systems

Project objective/description: the primary objective is the optimal use of limited parking places for trucks along motorways.

Partners involved/lead stakeholder: State Motorway Management Company (lead stakeholder), Hungarian Public Roads Company.

Implementation period: 2013–2017

Evaluation aspects: with the implementation of parking management systems and the help of reservation systems, drivers will be prevented to spend their rest period improperly and endangered. The rest period will be better planned. Predictability will have positive effects on humans: overdriving can be avoided, stress is reduced. There will be less damage in the infrastructures of lay-bys (curb, kerbside, bars) due to the decrease in the number of improper parking.

Estimated costs: setting up the monitoring systems at lay-bys and preparing the reservation pilot cost about 1 billion HUF in the following 5 years. The cost of maintenance is about 40 million HUF per annum on average from 2013 to 2017.

Financing: the investment is implemented from budget source supported by EU (TEN-T source: in the framework of EasyWay phase III, and the regional, cohesion funds available from 2014). Maintenance is ensured by an O&M contract between the State Motorway Management Company and KKK.

7. OTHER PLANNED ACTIONS

7.1 Intelligent/Integrated payment solutions in passenger transport (e-ticketing)

7.1.1 The vision of e-ticketing solutions

There is an increasing demand from travellers' side towards comfortable and safe solutions of electronic payment in passenger transport. Development of technology and system creation provides better and safer solutions to replace ticket purchase based on paper or cash.

Establishing an intelligent card-based electronic ticket and pass system and their implementation in public transport can be the basis of further integrated services. The possibility of further development of the electronic ticket system is to make transport systems/services available through an integrated electronic payment solution (use of parking systems, electronic fee collection), but also there is a need to ensure further integration – exceed transport services towards other services.

7.1.2 Planned project for intelligent/Integrated payment solutions both in passenger and public purpose transport

Project: A "single national card system" for intelligent/Integrated payment solutions

Project objective/description: with the help of ITS solutions related to passenger transport there is a possibility to assess plant and economic process and activities in details and to mutually assign them to one another to create a basis for the finance and account public transport in the framework of a public service contract.

The conception of a "single national card system" has been elaborated in Hungary. The technical solution makes it possible to use other integrated services (healthcare, banking services etc) apart from transport services.

Partners involved/lead stakeholder: Ministry of National Development (lead stakeholder), Centre for Budapest Transport, public transport companies etc.

Implementation period: 2013–2017

Evaluation aspects: the number of integrated card users and the number of services linked to the structure.

Estimated costs: the total investment cost of a single national intelligent card system implementing transport ticket and pass functions – *in the case of Budapest and public transport companies with national competence* – is about 15 billion HUF in the following 5 years. The cost of maintenance of the invested system is about 1.2 billion HUF per annum on average from 2013 to 2017. The financing partner of the investment is the Public Road Private Limited Co., the Hungarian Railway Company (MÁV) and the Coach Companies (VOLÁN) and the bearers of operational costs are the companies themselves.

Financing: the investment is implemented with the use of EU funds from corporate sources. Maintenance is ensured by the operator companies.

7.2 Electronic fee collection on the expressway network

7.2.1 The vision of electronic fee collection

To finance road infrastructure other financial tools can be required apart from budget sources. In practice the finance and compensation of *building and operation costs of roads* is the main feature in the introduction of road toll but road toll can also be an efficient regulator to *influence transport needs*.

In the future in accordance with the European “convergence criteria” *distance-based and proportionate to damage to the environment road toll-ascertainment based, interoperable* systems will operate on the European road network to partly cover the constructional, operational, maintenance, development and external costs of road infrastructure.

7.2.2 Planned project in the area of electronic fee collection in Hungary

Project: Introduction of electronic fee collection for heavy goods vehicles on the high-speed road network in Hungary

Project objective/description: Basic objective is the total enforcement of the principle of “user” and “polluter” in case of heavy goods vehicles (above 3.5 tons) by (electronic) fee collection related to the distance covered by them as regards the whole motorway and main road network (except crossing sections). When establishing the system efforts shall be made, beside vehicle categories, in order to introduce it gradually in case of *different road categories*. Regarding the whole planned road network and the vehicle categories given the time of implementation/deployment is *1 July 2013*.

One of the key elements of effective provision of control tasks is the deployment of information technologies; through the integration of authority systems single ITS solutions can be made suitable to fulfil parts of control tasks (speed control, total weight control, axle loads control, document validation control). Information technologies open the possibilities to provide several real-time or near real-time services with added value apart from control tasks.

Partners involved/lead stakeholder: Ministry of National Development (legislative background, toll policy), State Motorway Management Company (implementation of the project, road toll collecting and controlling functions), and Coordination Centre for Transport Development (governmental supervision, ensure EETS compliance).

Implementation (operational) period: 2013-2023 (According to the EU regulation related to this issue the contract can be signed for up to 10 years. We would like to take advantage of that.)

Estimated costs: the total investment cost of the system is between 60 and 80 billion HUF in the following 2 years. The cost of maintenance on annual level will appear from 2014 and they cost 30 billion HUF on average from 2013 to 2017. The bearer of cost is indirectly the Hungarian state (from the incomes of the system the investment cost is reimbursed to the company). The bearer of operational costs is also the company their costs will be covered by a service contract signed with KKK.

Financing: Corporate borrowing financed from state budget through the toll collected.

7.3 European co-operation in the area of Intelligent transport systems/services

7.3.1 The vision/possibilities of European co-operation

EasyWay is a unique platform gathering around 150 partners such as road authorities, public and private road operators across Europe. EasyWay partners *focus on harmonised and continuous European deployment to optimise traveller comfort and safety.*

The long-term "vision" of EasyWay related to ITS services in Europe is to strive to zero congestion, zero fatalities and zero damage to the environment.

For 2020 measurable key objectives have been defined within EasyWay project:

- 25% less congestion to increase efficiency and level of service;
- 25% reduction in road fatalities by safer roads;
- 10% reduction in carbon-dioxide emission.

Projects performed during the first phase of EasyWay have already demonstrated important results such as:

- 11% reduction in injury accidents during adverse weather conditions;
- up to 20% reduction in travel times with roadside VMS;
- up to 10% reduction in energy consumption, with commensurate impacts on carbon-dioxide emissions;
- moreover the use of pre-defined TMPs has been seen to save up to 70% in traveller journey times through rerouting;
- dynamic traffic management increases safety – up to 63% reduction in accidents – and up to 9% increased network capacity;
- speed control on critical sections has reduced accidents up to 54%, with up to a 20% improvement in traffic flows.

Despite the ongoing financial crisis in Europe EasyWay Member States and partners have invested in ITS and committed to invest in further projects within the framework of EasyWay. All partners are intended to implement the most cost-effective solution in a *coordinated and harmonised* way, and this approach would ensure the continuity of services across Europe.

The future is therefore an increased cooperation *in the scope of harmonised, cross-border traffic management and information services* by further international/European cooperation in the framework of EasyWay project.

7.3.2 Plans in Hungary for European co-operation in the area of ITS systems/services

Hungary is committed to continue the European cooperation/work in the future in order to implement European ITS deployment within the framework of EasyWay project due to the following reasons:

- During the first two phases of EasyWay (2007-2012) total of 1 billion EUR investments were implemented. Taking the results achieved in the field of safety, mobility and sustainability into account

EasyWay is seen as a *cost-effective* investment looking at the objectives of the Member States and the EU.

- Harmonised services and priorities related to future deployment shall be discussed, mutual agreement is needed and they shall be suited to the *existing directives/strategies*.
- The EasyWay programme is *suited* to the European "ITS Action Plan" and "ITS Directive" while it is based on Member States' strategies. EasyWay is seen from Member States' side as a *deployment tool of discussed and commonly approved ITS services* which provides future harmonisation and interoperability.
- EasyWay shall contribute to the dialogue/work with the European Commission as regards to its *efforts towards specification and standardisation* by providing information based on harmonised EasyWay "Deployment Guidelines" in accordance with the objectives of the "ITS Directive".
- With the harmonisation of European ITS services EasyWay provides access to Member States for a *European "toolkit" of services* that makes establishment of service specifications easier.

Hungary will complete its projects launched during EasyWay phase II by the end of 2013 as latest and planning its *EasyWayPhase III working plan* until the beginning of the next seven year budget programme of the EasyWay Committee hoping that it will be launched.

The priority areas of the currently prepared working plan will be the following:

- establish the database/data portal background for further (multimodal/co-modal) travel information systems;
- operation of comprehensive traffic management systems (related to transport corridors, in a cross-border way and with urban interfaces);
- preparation of the national implementation of a single European emergency call system (eCall) in a European context.

7.4 ITS projects In the area of urban transport

Although urban transport is not a priority area of this Directive projects of some larger cities, indirectly linking to intelligent transport systems, can be mentioned as follows:

- ITS developments related to underground line 4 in Budapest (beneficiary: Public Road Private Limited Co.);
- "Development of electronic public transport in Szeged" (beneficiary: consortium of the Municipality of Szeged and Szeged Transport Ltd.);
- "Development of tramline network in Debrecen" (line 2) (beneficiary: consortium of the Municipality of Debrecen and Debrecen Transport Company);
- "Development of tramway in Miskolc" (beneficiary: consortium of the Municipality of Miskolc and Miskolc Transport Company).

Projects are financed in the framework of KözOP.

8. HORIZONTAL MATTERS

"EasyWay" project "Deployment Guidelines"

Road operators involved in EasyWay project developed EasyWay "Deployment Guidelines" for the implementation of the following objectives:

- seamless ITS services on the TEN-T road network;

- deployment of harmonised IT services on the TEN-T road network;
- road user oriented approach;
- to assure that EasyWay deployments provide the best solutions to achieve the following priorities:
 - improve road safety;
 - improve efficiency of road network;
 - reduce harmful effects on the environment.

The main objective of the first iteration of EasyWay "*Deployment Guidelines*" was to capture and to make available the huge amount of best practice that has subsequently been utilised in projects across Europe. This step was finished in the year 2010 with the publication of the 2010 version of EasyWay "*Deployment Guidelines*".

EasyWay II partners have subsequently launched a substantial enhancement process for the 2010 version of the EasyWay "*Deployment Guidelines*". These guidelines rank among the main achievements of the EasyWay II programme and provide the basis for harmonised deployment of ITS core services on Europe's major road network towards EasyWay's vision of seamless and *harmonised pan-European ITS services*.

The "*Deployment Guidelines*" complement the European Commission's efforts to in the scope of the ITS Directive (2010/40/EU) process to define a legal framework for ITS deployment in Europe.

The EasyWay "*Deployment Guidelines*" – during their tests at deployment/test period and functional implementation and the EW Member States approval process – *provide valuable information for the European Commission to prepare specifications ascertained in the ITS Directive*.

After their official approval (November 2012) "*Deployment Guidelines*" will be integrated into the Hungarian regulation as (scheduled and in accordance with predefined priority order) they will be published as "*Technical Road Guidelines*".

In the area of intelligent transport systems and services two important UMEs (Technical Guidelines in the road sector) have been elaborated in the last three years as follows:

- "Deployment of intelligent traffic regulation and information systems",
- "Recommendation regarding use of national ITS framework - HITS".

Specifications

In accordance with the "*ITS Directive*" the Commission first approve (according to a road map) the necessary regulations to provide compatibility, mutual interoperability and continuity in the field of establishment and implementation of ITS *regarding priority actions*. Then approve the necessary regulations to provide compatibility, mutual interoperability and continuity in the field of establishment and implementation of ITS *regarding other actions* in priority areas.

After publishing *specifications* currently under elaboration their deployment will be mandatory in Hungary during further deployment as regards intelligent transport systems and services on the national road network.

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