

# National ITS Progress Report 2014

Member state **HUNGARY**

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**Budapest, 20.09.2014.<sup>1</sup>**

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<sup>1</sup> last review on 20.04.2015

# Content

INTRODUCTION.....	5
OVERVIEW OF NATIONAL TRANSPORT DEVELOPMENT .....	5
EXECUTIVE SUMMARY .....	8
PRIORITY AREA I: Optimal use of road, traffic and travel data .....	12
MULTIMODAL TRAVEL INFORMATION SERVICES .....	13
EWII. A1.2.2. (2012.12.31.) – 277 197 500 HUF.....	13
EDITS - 4CE433P2 (2012.07.01.-2014.12.31.) – 237 844 EUR .....	14
SEE-ITS - SEE/D/0099/3.2/X. (2012.10. - 2014) – 200 140 EUR .....	15
REAL-TIME TRAFFIC INFORMATION SERVICES .....	16
EWII. A4.2.1. (2012.12.31.) – 412 650 000 HUF.....	16
EWII. A1.2.3. (2012.12.31.) – 25 674 420 HUF.....	19
EWII. A4.2.4. (2012.12.31.) –71 665 608 HUF.....	20
EWII A1.1.2. (2012.12.31.) – 9 540 000 HUF.....	21
EWII. A1.1.5. (2012.12.28.) – 11 500 000 HUF.....	22
EWII A1.1.6. (2012.12.18.) – 16 491 500 HUF.....	23
KÖZOP-1.5.0-09-11 (2011-2015) – 200.000.000 HUF.....	24
CROCODILE A5/3 (2014-2015) – 100 000 EUR .....	25
RURAL AND MUNICIPAL ITS DEVELOPMENT .....	26
Operative Programme of Dél-Alföld region (DAOP).....	26
DAOP-3.2.1/A-09-2009-0010 (2009-2013) – 466 759 000 HUF .....	26
DAOP-3.2.1/A-09-2009-0003 (2009-2013) – 298 918 000 HUF .....	27
Operative Programme of Dél-Dunántúl region (DDOP).....	28
DDOP-5.1.2/B-09-2009-0001 (2009-2013) – 744 610 000 HUF .....	28
Operative Programme of Észak-Magyarország region (ÉMOP).....	29
ÉMOP-5.1.2-09-2009-0008 (2009-2013) – 349 938 566 HUF.....	29
Urban ITS developments of Transport Operative Programme (KözOP) .....	30
Main areas of urban transport developments:.....	30
Developing tram transport network of Szeged city .....	30
Developing tram transport network of Miskolc city .....	30
Developing tram transport network of Debrecen city (tramline 2) .....	30
ITS DEVELOPMENTS OF THE CAPITAL CITY .....	31
Further development of the Budapest TCC (2014) – 13 200 000 HUF .....	31
KARESZ (2013-2014) – 360 000 000 HUF.....	32
E-TICKET (2011.09.01.-2016.12.31.) – 5 306 697 000 HUF .....	33

CONGESTION CHARGE (2012.06.28 – 2013.06.19.) - 37 945 000 HUF .....	34
FUTÁR - KMOP-2.3.1/A-2009-0001 (2009-2014) – 6 648 583 280 HUF .....	35
MANAGEMENT SYSTEMS (2014-2015) - 309 050 340 HUF .....	36
P+R (2014-2015) – 1 747 160 000 HUF .....	37
FREIGHT TRAFFIC (2012.12.01.-2015.12.31.) – 119 723 000 HUF .....	38
TVM (2013.06.19.-2019.12.31.) – 3 450 000 000 HUF .....	39
<b>PRIORITY AREA II: Continuity of traffic and freight management ITS services .....</b>	<b>40</b>
<b>DEVELOPING TRAFFIC MANAGEMENT SYSTEMS ON TRANSPORT CORRIDORS .....</b>	<b>41</b>
EWII. A2.2.1. (2012.12.31.) – 3 970 000 HUF.....	41
EWII A2.1.1. (2012.11.16.) – 345 654 000 HUF.....	42
EWII. A4.1.1. (2012.12.31.) – 180 037 586 HUF.....	44
Mobile payments (2012.10.15 – not defined) – 800 000 000 HUF.....	45
CROCODILE A2/1 (2014-2015) – 100 000 EUR .....	46
CROCODILE A3/1 (2014-2015) – 785 000 EUR .....	47
CROCODILE A3/2 (2014-2015) – 600 000 EUR .....	48
CROCODILE A4/4 (2014-2015) – 240 000 EUR .....	49
<b>DEVELOPING TRAFFIC MANAGEMENT AND INFORMATION SYSTEMS .....</b>	<b>50</b>
EWII A2.2.2. (2012.12.22.) – 320 876 600 HUF.....	50
EWII. A4.1.2. (2012.12.31.) – 164 347 580 HUF.....	51
EWII. A4.1.6. (2012.12.31.) – 44 315 832 HUF.....	52
EWII. A4.1.5. (2012.12.31.) – 19 400 000 HUF.....	53
Development traffic information management systems (2009-2014) – 4 312 033 933 HUF .....	54
Traffic management projects of the capital city (2014 – ongoing) – 365 000 000 HUF.....	58
CROCODILE A4/1 (2014-2015) – 200 000 EUR .....	59
CROCODILE A4/3 (2014-2015) – 150 000 EUR .....	60
CROCODILE A5/1 (2014-2015) – 200 000 EUR .....	61
<b>FREIGHT TRAFFIC MANAGEMENT OF TRANSPORT CORRIDORS.....</b>	<b>62</b>
EWII. A3.2.1. (2012.04.30.) – 3 950 000 HUF.....	62
Expansion of traffic monitoring camera network (2014) – 35 000 000 HUF .....	63
HU-GO (2013.07.01.) – 28 042 520 000 HUF.....	64
PMS (2014. Ongoing) – 5 000 000 HUF .....	65
<b>PRIORITY AREA III: ITS road safety and security applications .....</b>	<b>66</b>
<b>GENERAL TRANSPORT SAFETY DEVELOPMENT.....</b>	<b>67</b>
KÖZOP-1.5.0-09-11-2011-0010 (2011-2015) – 1 171 650 327 HUF.....	67
KÖZOP-3.5.0-09-11-2011-016 (2011-2015) ITS részprojekt– 1 320 000 000 HUF.....	68

INFORMATION SERVICES FOR SAFE AND SECURE PARKING PLACES FOR TRUCKS AND COMMERCIAL VEHICLES .....	69
EWII. A3.1.1. (2012.12.31.) – 12 670 000 HUF.....	69
EWII. A3.1.2. (2012.12.26.) – 59 920 000 HUF.....	70
CROCODILE A5/2 (2014-2015) – 700 000 EUR .....	71
THE HARMONIZED PROVISION FOR AN INTEROPERABLE EU-WIDE E-CALL SERVICE .....	72
Implementation of the unified emergency call number (112) and building up the e-Call base infrastructure (2010-2014.05.19.) – 2 588 000 000 HUF.....	72
Automatic emergency call system (e-Call) (2013-2017) – 80 000 000 HUF (2013 and 2014) - ONGOING .....	73
PRIORITY AREA IV: Linking the vehicle with the transport infrastructure.....	74
CROCODILE A4/2 (2014-2015) – 500 000 EUR .....	75
SUMMARY .....	76

# INTRODUCTION

## OVERVIEW OF NATIONAL TRANSPORT DEVELOPMENT

Fostering the ITS researches and development is a highlighted activity of the Hungarian government. Significant investments had been implemented in order to raise the efficiency, sustainability and organization of local and regional areas. In accordance with the (transport related) White Paper<sup>2</sup> of 2011 EasyWay II project had been successfully finished, and Hungary will also participate in the newly started CROCODILE consortium.

The Ministry of National Development regularly supports the different researcher teams and consortiums in participation in the R & I calls of Horizon. The Cross-Border Cooperation with the neighboring countries are also highlighting the importance of raising the accessibility, efficiency and connectivity in transportation, and services (inter alia Hungary is supporting the European ITS Platform (EIP and EIP+), participating in the HeERO project, and promoting transport development through the ETC projects, etc.).

ITS development in Hungary is a high priority action of the strategic planning of transport development. Several transport (and intelligent transport service supporting) investments had been implemented by the national Operational Programme. The 1486/2014 (VIII.28) Government Decision had accepted the National Transport and Infrastructure Development Strategy (Strategy) which is the new transport policy of Hungary for the 2050 period. The Hungarian version can be found here:

[http://www.3k.gov.hu/remos\\_downloads/Strategiai\\_dokumentum\\_jovahagyott.424.pdf](http://www.3k.gov.hu/remos_downloads/Strategiai_dokumentum_jovahagyott.424.pdf)

The Strategy is considering ITS

- in broad view, including the rail- (e.g.: GSM-R, ETCS), water- (e.g.: RIS) and air transport systems (e.g.: SESAR) too;
- as horizontal applications, which are integral parts of the different transport development investments;
- as a primary aim of implementation, which has outstanding socio-economic and cost-benefit ratio with low risk on implementation.
- with the following targets for 2020, 2030 and 2050:

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<sup>2</sup> COM/2011/0144 final - WHITE PAPER Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system

Strategy's output indicators	2020 with resource constraints	2020 without resource constraints	2030	2050
Length change in road infrastructure with ITS services	118 km	234 km	306 km	480 km
Length change in rail infrastructure with ITS services	3 655 km	4 046 km	4 508 km	5 133 km
Length change in urban public transport infrastructure with ITS services	5 000 km	5 000 km	7 000 km	7 000 km
Length change in water infrastructure with ITS services	378 km	378 km	378 km	378 km

The background study investigating the management instruments of the Strategy has examined separately the e-ticketing and institutional / regulatory background. The following recommendations have been formulated as results:

- a) Separated allocation for ITS developments is suggested. Raising the number of road side units, modernized and standardized tools (e.g.: VMS) by the motorways and expressways.
- b) Regarding rail transport the GSM-R communication and the ETCS2 signal- and interlocking systems' further development is required on the TEN-T network. The spread of remote control systems in the different railway interlocks are also required.
- c) From a general transport perspective:
  1. Implementation of a national e-ticketing system and establishing a national transport database with intermodal data content are required.
  2. Applying the international standards in the areas of ITS services is expedient (e.g. DATEX, SIRI, TRANSMODEL, TRANSEXCHANGE etc.).

Based on the Strategy, the Integrated Transport-development Operational Programme (ITOP or IKOP according to the Hungarian abbreviation) has been set up for the 2014-2020 period with 3,92 billion € (EU support rate is ca. ~85%). ITOP has been approved by the European Committee on the 12<sup>th</sup> of February 2015. The Operational Programme (similarly to the National Transport and Infrastructure Development Strategy) deems ITS as a horizontal element of transport development, and emerging in all priority axis (PA).

PA1.: *International accessibility on road.* Developing the TERN and the connected transport safety related ITS applications. Fully implementing the Transport Information System and Database called KIRA.

PA2.: *International railroad and waterway accessibility.* Improving the interoperability by developing the GSM-R, ETCS and RIS systems on the TEN-T network. The modernization of Traveler Information Systems and ticketing systems are also included in this PA.

PA3.: *Promoting urban and suburban transport development.* ITS applications and interventions for linking the travel chains and promoting the metropolitan transport safety.

ITS development is connected to the energy efficiency priorities, as it contributes for awareness-raising and also for transport safety (e.g. e-Call).

The development processes, projects and plans are detailed in the following pages.

## EXECUTIVE SUMMARY

The Ministry of National Development (Ministry) in Hungary is responsible for transport development, thus for the development of Intelligent Transport Systems according to the specifications and regulations. The complexity of this area is requiring a strong and close cooperation between the departments of the Ministry responsible for different areas of expertise (such as Infrastructure, Information and Communication, Energy etc.). Cooperation between the Ministries (Ministry of Interior, Ministry of National Economics etc.) is also essential for efficient collaboration and operation.

The main responsibilities regarding the ITS Directive (2010/40/EU):

- Initial report on national ITS activities until 27<sup>th</sup> of August, 2011.
- 5 year plan on ITS activities until 27<sup>th</sup> of August, 2012.
- Progress report on the Initial report in every 3rd year from the 27<sup>th</sup> of August, 2011.

ITS Directive entitles the European Commission to adopt delegated acts (specifications) for the priority actions (separately for all actions) in accordance with the relevant provisions. These specifications are elaborated in cooperation with the Member States' delegated experts.

The priority areas of the directive are as follows:

- I. Optimal use of road, traffic and travel data,
- II. Continuity of traffic and freight management ITS services,
- III. ITS road safety and security applications,
- IV. Linking the vehicle with the transport infrastructure.

The priority actions are strictly connected to the I. and III. priority areas above, which are the following:

- (a) the provision of EU-wide multimodal travel information services; (PA I.)
- (b) the provision of EU-wide real-time traffic information services; (PA I.)
- (c) data and procedures for the provision, where possible, of road safety related minimum universal traffic information free of charge to users; (PA I.)
- (d) the harmonized provision for an interoperable EU-wide eCall; (PA III.)
- (e) the provision of information services for safe and secure parking places for trucks and commercial vehicles; (PA III.)
- (f) the provision of reservation services for safe and secure parking places for trucks and commercial vehicles. (PA III.)



Regarding the (c), (d) and (e) areas different specifications are entered into force, with further reporting and implantation obligations:

- (c) 886/2013/EU (minimum transport safety and traffic information services)
  - till October 2014 reporting (overview) on the National Access Points and responsible bodies regarding the conformity assessments.
  - yearly progress report.
- (d) 305/2013/EU (e-Call Public Safety Answering Points)
  - till 23<sup>rd</sup> October, 2013. reporting on the Public Safety Answering Points (PSAPs) and the status of those implementations, and also on the responsible bodies regarding the conformity assessments.
- (d) 585/2014/EU (e-Call implementation)
  - till 24<sup>th</sup> December, 2014. reporting on the status of implementing and PSAPs.
  - till 1<sup>st</sup> of October, 2017. fully operating e-Call system should be implemented
- (e) 885/2013/EU (safe and secure truck parking services)
  - till October 2014 reporting (overview) on the National Access Points and responsible bodies regarding the conformity assessments.
  - yearly progress report, yearly report on the number of parking places and the share of dynamic / static information service parking places.

Specifications of area (b) (real-time traffic information services) is planned to be finished in 2014, Q4.

Specifications of area (a) and (f) are in planning phase.

Ministry of National Development devotes special attention and supports the work of the European ITS Committee (EIC) and keeps close contact with the different ITS organizations (such as ERTICO – ITS Europa, ITS Hungary etc.). Hungary is also a supporting observer member of the European ITS Platform (EIP and EIP+).

As the members of the CONNECT, EASYWAY and the newly approved CROCODILE projects, Hungary is aspired to reach the “ITS vision” drawn up in the EASYWAY project:

”The sustainable transport system allows European travelers and haulers to travel safely (no accidents), efficiently (no delays) and cleanly (no damage to the environment). The users are supported anywhere and anytime by harmonized 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 traveler (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”.

In the frame of EASYWAY II project, more than 10 million € had been spent on transport development (on traffic management, monitoring, parking, safety, data and information management systems and related developments) co-financed by the TEN-T fund (nearly 20%

of the costs had been financed by the EU). As the continuation of these projects CROCODILE consortium just has been approved where Hungary plans to spend another 3,67 million € on transport development in the fields of ITS.

Near the highway development the urban mobility, e-Call, public and intermodal transport systems are also prioritized, while National Electronic Card and Payment Systems are currently under development.

***Responsible for the area of Intelligent Transport Systems:***

**Ministry of National Development,**

Minister of State for Transport Policy

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Officer, contact person  
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## **PRIORITY AREA I:**

**Optimal use of road, traffic and travel data**

## MULTIMODAL TRAVEL INFORMATION SERVICES

**EWII. A1.2.2. (2012.12.31.) – 277 197 500 HUF**

**Development of the traffic management system (TMS) of Budapest, expansion its monitored area with adaptive traffic management, installation of new VMSs with special information content in favor of fostering modal shift, component I.**

**EWII. A1.2.2.:** The objective of this project is to enhance communication functions of Budapest TCC, and to ensure availability and accessibility of traffic information (which are produced during the function of the Traffic Control Center (TCC)) in order to realize digital data exchange and cooperation between operators and other organizations (like public authorities, ITS service providers, other stakeholders).

**Main parts of the project:**

- TMS modernization and extension with new functions, improving communication, traffic data and information availability and accessibility
- VMSs' setup and integration into TMS. Dynamic traffic data for road users. Support for rout planning and modal shift.
- Mobile VMS procurement. Movable data source and service providing. Availability to operate with ITS background system and display relevant information.

**Result:**

Budapest TCC became available for better and more reliable data access and service providing by the improved data systems. Monitoring the traffic demands and the supplying dynamic traffic control became more effective (e.g. controlled traffic lights etc.). The optimization by the traffic load also has done on the adaptive traffic control area. The new TCC provides an excellent ground for further ITS development in the capital area.

**Project list:**

/1 TMS modernization and extension with new functions	91 375 000 HUF
/3 VMSs' setup	161 200 000 HUF
/5 Technical supervision and system integration	3 742 500 HUF
/6 Mobile VMSs procurement	20 880 000 HUF

**Responsible:**

BKK Public Roads Private Limited Co.

- Dénes KOVÁCS, director [denes.kovacs@bkk-kozut.hu](mailto:denes.kovacs@bkk-kozut.hu)
- Gergely RÓNAI, chief engineer [gergely.ronai@bkk-kozut.hu](mailto:gergely.ronai@bkk-kozut.hu)

**EDITS - 4CE433P2 (2012.07.01.-2014.12.31.) – 237 844 EUR**

**EDITS project (European Digital Traffic Infrastructure Network for Intelligent Transport System) – ONGOING**

**EDITS** project has started with the leadership of AUSTRIATECH GMBH. Hungarian partners are the Hungarian Transport Administration (KKK) and the Győr-Sopron-Ebenfurt Railway Corp. Ltd. (GYSEV).

The project is focusing on the improvement of the accessibility of interoperable and multimodal Real Time Traffic and Travel Information (RTTI) services based on a harmonized and integrated transport database for Central Europe.

The joining Member States have to build up a database and information system covering all transport modes. The leading partner is presented and made available his integrated national transport database called Geographic Integration Platform (GIP). GIP database consists of the reliable qualified data from different authorities and modal operators. GIP end-users are also authorities and relevant bodies.

The common work with GYSEV is meant to elaborate an intermodal transport and route planning portal (web based), and traveler information system, which covers the full service area of GYSEV through the Transport Information System and Database of KKK so called KIRA.

As a result GIP and KIRA would be connected to each other.

**Project leader:**

AustriaTech, Austria

**Hungarian project partners:**

Győr-Sopron-Ebenfurt Railway Corp. Ltd. (GYSEV)

- Béla NÉMETH, project manager, [bnemeth@gysev.hu](mailto:bnemeth@gysev.hu)

Hungarian Transport Administration (KKK)

- Zsolt STEGENA, GIS engineer, [stegenazsolt@kkk.gov.hu](mailto:stegenazsolt@kkk.gov.hu)

**SEE-ITS - SEE/D/0099/3.2/X. (2012.10. - 2014) – 200 140 EUR**

**SEE-ITS project (Intelligent Transport Systems in South East Europe) – ONGOING**

A **SEE-ITS** project has started under the South East Europe Transnational Cooperation Programs (SEETCP) (with a total budget of 1 581 669,90 €).

The main aim is to develop an institutional and technical frame for the SEE organizations and countries in order to harmonize the ITS specifications and to define the general cooperation models. The bases of the activities are the EU Directives (e.g. 2010/40/EU) which determine the procedures and the expectations regarding the ITS implementation.

Hungary (KKK) is developing an intermodal trip planner application for cyclists on the Hungarian section of EuroVelo 6. The trip planning app pays special attention to the cyclist tourists' desires, shows the time schedule of public transport eligible for bike-transport. The service is planned for smart phone and also for web use.

The first level controlling body in Hungary is the VÁTI Hungarian Regional, Urban and Architectural Development Corporation (from 30<sup>th</sup> June, 2014. the successor is the Széchenyi Programme Office Non-profit Ltd.)

The following demonstrational activities planned to be implemented in the project:

- Wien, Austria: portable TIS.
- Patras, Greece: TIS with the optimal use of trip planning and traffic data
- Timisoara and Danube area, Romania: ITS for roads and multimodal transport nodes.
- Hungary: TIS and intermodal trip planning service development on the Hungarian section of EuroVelo 6 (mobile and web apps). Demonstration area is the northern part of Eurovelo 6 (Danube bend).
- Thessaloniki, Greece: up-to-date TIS and RTTI service on roads.
- Sofia area, Bulgaria: optimal use of travel and traffic information. Continuous TMS and transport safety related information.
- Emilia Romagna area, Italy: Network based multimodal TIS (especially for freight).

**Project leader:**

Hellenic Institute of Transport (Greece)

**Hungarian project partners:**

- Hungarian Transport Administration (KKK)
- Levente ZUBRICZKY, project engineer, [zubriczky.levente@kkk.gov.hu](mailto:zubriczky.levente@kkk.gov.hu)

## **REAL-TIME TRAFFIC INFORMATION SERVICES**

**EWII. A4.2.1. (2012.12.31.) – 412 650 000 HUF**

**(Continuation of EWII S1.1.1. and EWII A1.1.1.)**

**Development and upgrade of traffic information and traffic management centers, data portal development**

**EWII. A1.1.1.:** Finally the project has been done under the **EWII. A4.2.1.** project number with the following sub processes:

**EWII. A4.2.1.a (2012.12.31.) – 244 900 000 HUF**

**Establishment of a data portal and insurance of professional data portal access for services according to the business model that has been created in the project**

**EWII. A4.2.1.a:** The main aim was a web-based IT development that meant to provide an on-line road transport IT system and create a 'data portal' to operate traffic control and traffic information systems and traveler information services (TISs). The system is suitable to provide and collect online national traffic information according to DATEX II standards. Main task was to make Hungarian travel and traffic information accessible for services, thus supporting the TISs.

The incoming information is provided by the operator organizations of the Hungarian transport network (Hungarian Public Road Nonprofit Ltd., motorway operators, and operators of municipality roads), and also provided by external partners (police, disaster-management, ambulance, passenger and freight transport etc.) on an appropriate safety level (via protected information channels, protected data content, protected access) and it is stored and handled as historic data.

The services of the system provide availability in both national and international relations by Web Services technology for the on-line traffic information stored in the system. These services have to be created to be available for the similar IT systems of the neighboring countries with special regard to the cross-border data exchange and compatibility. Geographical identification of the services are made by a complex site identification method, based on the topology of National Road Database (OKA), and the connected ALERT C location table (ISO 14819-3:2004), considering the KIRA topology.

There is no separate visualization interface belonging to the system development, there is only online data exchange between different relevant IT systems via the Web Service tool.

**As a result** a road transport data portal have been established with an online road transport IT system. Base data – contributing to the continuous, smooth and safe traffic / travelling – are free for access. Further information and services are available for the ITS service providers according to the defined business model. The system is able to collect and distribute national transport information in DATEX II, and also to be the fund of further informational services on national and international levels.



**EWII. A4.2.1.b (2012.12.31.) – 128 400 000 HUF**

**Improving the National Traffic Information Center (TIC) – implementing isolated traffic management and controlling tools on the road network – improving the “real-time” datacenter called Útinform**

**EWII. A4.2.1.b:** Improving real-time datacenters are justified by the national TMS development, by the cooperation with the surrounding Member States and required for the compliance with EU law. Fulfilling the related data exchange processes on a harmonized way, in DATEX II. (or equivalent) communication protocol is also justified (and required).

A real-time Traffic Information (and data) Center (TIC) had been developed in order to process and publish the “pre-trip” and “on-trip” information. The TIC system is in close cooperation with the data portal to collect, edit and forward the traffic information (in line with the EasyWay expectations). TIC also works as the “Útinform” system (national road information portal) regulated by the Ministry of National Development. Raising service quality and building up the cooperation between the previously separately working transport and traffic information systems are growing demands, while information should be available on different media and ICT devices. In line with these demands the aim of the development also focused to

- renew and extend the services,
- harmonize the data handling and
- provide real-time data for road-users on national and international bases.

Main implementations of the project were the

- building up a new dispatcher module for data handling,
- developing a new automatic call-center,
- renewal of the Útinform webpage,
- building a studio capable of TV broadcast for traffic news,
- developing of smartphone app and routing module,
- grounding TMC service and making location tables,
- traffic lights’ status indicator module,
- webcam interface and display module and
- displaying fleet management system information.

**As a result** a reliable data collection, processing and transmission of road transport data and real-time traffic information has been grounded, which is the base of the effective end-user services. Service quality, transport safety and security, and sustainability, etc. had been raised.

**EWII. A4.2.1.c (2012.12.31.) – 7 400 000 HUF**

**DSM-10 procurement**

**EWII. A4.2.1.c:** Procurement of DSM-10 vector road-map and database (with house numbers) for Hungary with the associated DSMRoute navigations database in order to develop a routing application.

**As a result** of the further development of the TIC with a routing application a base-map for the country is operating with the full network of the national and the municipal public roads.

**EWII. A4.2.1.d (2012.12.31.) – 7 600 000 HUF**

**Purchasing the net-release rights of GeoXRaszter**

**EWII. A4.2.1.d:** As the rights for internal use of the GeoXRaszter map and address database are already purchased further rights were reasonable inter alia to show the EasyWay projects on a web map.

**EWII. A4.2.1.e (2012.12.31.) – 24 350 000 HUF**

**Real-Time data portal project implementation and management**

**EWII. A4.2.1.e:** Technical implementation and management of the data portal development and associated IT and EasyWay projects.

**As a result** the data portal development, the associated activities, project documentations and implementations had been organized.

The items of the activity:

1 Preparing technical documentations	2 300 000 HUF
2 Expert support for the implementation	7 150 000 HUF
3 Quality assurance	7 300 000 HUF
4 Project management	7 600 000 HUF

**Responsible:**

Hungarian Public Road Non-profit Pte Ltd Co. (MK)

- Ibolya BALI, head of department [bali.ibolya@kozut.hu](mailto:bali.ibolya@kozut.hu)
- Dr. András GULYÁS, technical advisor, [gulyas.andras@kozut.hu](mailto:gulyas.andras@kozut.hu)

Hungarian Transport Administration (KKK)

- Zsolt STEGENA, GIS engineer, [stegenazsolt@kkk.gov.hu](mailto:stegenazsolt@kkk.gov.hu)

## **EWII. A1.2.3. (2012.12.31.) – 25 674 420 HUF**

### **Data visualization portal development**

**EWII. A1.2.3.:** The main aim is the development of a unified data management and map visualization portal which integrates all the transport modes with the integration of the mode- and sector specific online and offline systems in a query-able system (with online interfaces). The portal will be able to handle the technical data and information directly (regardless the operator).

EasyWay projects' developments make it necessary to build up a display and monitoring system which can provide comprehensive and mode specific information about the transport infrastructures' current and previous states. The monitoring server provides displaying possibilities which could integrate the different transport information systems' geographical and descriptive data in a unified way. The system is cooperating with the topological servers and makes the data online accessible. The portal is integral part of the unified transport information system (KIRA) operated by the Hungarian Transport Administration (KKK).

The portal can display data in the following formats:

- data tables, matrixes;
- cross-tables;
- vector maps (thematic maps or network parts);
- linear information attached to geographical position;
- objects (visualized as pictograms).

#### **Implemented sub projects:**

/1 Quality assurance (KIRA QA. 2012. September-December)	1 219 920 HUF
/2 Software development	24 454 500 HUF
/5 System security check (ethical hacking)	N/A – implemented from private source
/6 Flyers and promos	N/A – implemented from private source

#### **Responsible:**

Hungarian Transport Administration (KKK)

- Zsolt STEGENA, GIS engineer, [stegenazsolt@kkk.gov.hu](mailto:stegenazsolt@kkk.gov.hu)

## **EWII. A4.2.4. (2012.12.31.) –71 665 608 HUF**

### **Development of the unified data management system for transportation networks (Topology and communication server)**

**EWII. A4.2.4.:** Developing a Location Identification System which can provide the interoperability between the different modes is essential in order to link their transport information systems. For this data transmission there need a topology server and also a communication server.

Topology server provides the conversion of the sector specific data into the integrated database, and makes it able to handle in a chronological base. Standard GIS protocols make the accessibility of the geographical data for the connecting systems. The topology server is able to:

- handle the modal data and linkages,
- implementing a web-based maintenance without further client applications,
- record the ongoing and planned network developments,
- smoothly register the occasional changes in the managing bodies,
- operate with a centralized and standardized GIS database,
- provide standard GIS web-service (WFS) to make 'geodata' accessible.
- handle map and historical data on a timeline base, thus historic data are query-able.

Communication server provides the unified working of the system and the conformity with the INSPIRE directive. Standard protocols (OGC, ISO, DATEX II, INSPIRE) are also important for the inter-system communication.

**As a result** KIRA made the interconnection between different transport information systems in a unified location identifier system, which provides the modal interoperability and compatibility in these systems.

#### **Implemented sub-projects:**

##### ***/1 Topology server and associated software development***

/1.1 Quality assurance (KIRA QA I. phase till 2011. December)	3 753 600 HUF
/1.2 Software development	24 454 500 HUF
/1.3 Data processing and uploading (subcontracted)	2 652 090 HUF
/1.4 IT procurement ( 3 notebooks - monitors - docking stations)	1 976 700 HUF
/1.5 Hardware development (server)	7 146 008 HUF

##### ***/2 Communication server and associated software development***

/2.1 Quality assurance (KIRA QA I. phase 2012. January-August)	6 568 800 HUF
/2.2 Software development	20 961 000 HUF
/2.3 Data processing and uploading (subcontracted)	2 822 910 HUF
/2.4 Image, web-page and appearance development	1 330 000 HUF
/2.5 Hardware development (testing tools)	N/A

#### **Responsible:**

Hungarian Transport Administration (KKK)

- Zsolt STEGENA, GIS engineer, [stegenazsolt@kkk.gov.hu](mailto:stegenazsolt@kkk.gov.hu)

**EWII A1.1.2. (2012.12.31.) – 9 540 000 HUF**

**ÁAK's website development regarding to information services and develop a dynamic data transfer channel that can be used by road users**

**EWII. A1.1.2.:** The aim of this project is to integrate more on-line sensors to the State Highway Manager (ÁAK) website, and to improve the visualization of webcams. Improvement of the ÁAK website related the information services, via visualization of additional data (traffic date with different colors, information related the travel times, data from the weather-stations, occupation data of the parking information system), as well as visualization of the actual status of the VMS's on the motorway network.

By the time organizational changes had been made (ÁAK's activity had been split and assimilated to the National Toll-Payment Services Pte. Co. Ltd. (NÚSZ) and Hungarian Public Road Non-profit Pte. Ltd. Co. (MK))

**As a result of the project** a more comprehensive and detailed information service had been developed for the users, for travel planning (e.g. rationalized webcam access, interactive map visualization with different information layers, online sensors and VMSs had been implemented).

**Implemented sub-projects:**

/1 www.autopalya.hu portal information and appearance development, and optimization for mobile browser 5 000 000 HUF

/2 www.autopalya.hu portal map function development, and optimization for mobile browser 4 540 000 HUF

**Responsible:**

National Toll-Payment Services Pte. Co. Ltd. (NÚSZ) (previously: ÁAK)

- Zsolt SZOVA, [szova.zsolt@nemzetiutdij.hu](mailto:szova.zsolt@nemzetiutdij.hu)

Hungarian Public Road Non-profit Pte. Ltd. Co. (MK)

- Tamás TOMASCHEK, traffic engineering team-leader [tomaschek.tamas@kozut.hu](mailto:tomaschek.tamas@kozut.hu)

**EWII. A1.1.5. (2012.12.28.) – 11 500 000 HUF**

**Creation of a traffic portal of the metropolitan Traffic Management Center and give free run of data for develop further information services (Improvement of the technical background of TMC service)**

**EWII. A1.1.5.:** Realization of traffic portal of the Budapest Traffic Control Center and making data available for different information services in order to provide reliable, real-time data and therefore real-time traffic information service to the road users and operating bodies in an effective and widely available way. The portal development makes the collected or detected public transport data available on a web interface. It also makes possible to develop further real-time services, and facilitate the smooth “pre-trip” and “on-trip” routing and model decision making. The portal is also appropriate to collect and filter private data or fulfill management functions.

The portal development is planned in multiple phases.

This 1<sup>st</sup> phase is the pilot implementation with the system structure following the functional demands (as below). As a result of the pilot implementation data availability and accessibility should be representable in the Traffic Control Center (TCC) of Budapest.

Main functions are:

- displaying the reliable and up-to-date public traffic information from the TCC and the connected sub-systems or engendered by the activities of the private companies.
- producing data, information and/or services for professional organizations.
- technical and workflow management of the web interface (to support the work of the operators)

**As a result** by the design of the transport portal of the Capital Traffic Management Center an online real-time information service and for the operators an access restricted on-line operating interface have been developed. By the way a unified data and information access have been implemented, where previous, actual and the newly developed data will be also accessible in a standardized format.

**Responsible:**

BKK Public Roads Private Limited Co.

- Dénes KOVÁCS, director [denes.kovacs@bkk-kozut.hu](mailto:denes.kovacs@bkk-kozut.hu)
- Gergely RÓNAI, chief engineer [gergely.ronai@bkk-kozut.hu](mailto:gergely.ronai@bkk-kozut.hu)

**EWII A1.1.6. (2012.12.18.) – 16 491 500 HUF**

**Further development of "Műszinfo", create external links to FIR and website of ÁAK and develop other links to external host**

**EWII. A1.1.6.:** TISs are essential parts of ITS applications. Wide-range real-time traffic information let the road users to get reliable and good quality data on the road network. Forecasting and real-time information also warn the drivers about accidents, critical events or any other possible threats which can lead to an optimized travel planning.

The project aims to develop and partially automatize the recording and the transfer of relevant data and information to reduce manual data input and administrative burdens. Integrating the systems can also filter out the parallel and unnecessary duplications in processes.

Műszinfo is the event recorder and register system of the ÁAK, what meant to replace the outdated paper-based methodologies. Integrating the Műszinfo, the Traffic Management System called FIR and the ÁAK webpage made serious relief in the administrative tasks. An interface for the output information services has also been made, which solves the inter-system communication and data exchange too.

**As a result** the inner data exchange between operational systems had to be solved while the output information services are also requested to users. Faster and automatic data exchange lead to faster counter activities on accident and helps to prevent more serious consequences.

**Responsible:**

National Toll-Payment Services Pte. Co. Ltd. (NÚSZ) (previously: ÁAK)

- Zsolt SZOVA, [szova.zsolt@nemzetiutdij.hu](mailto:szova.zsolt@nemzetiutdij.hu)

Hungarian Public Road Non-profit Pte. Ltd. Co. (MK)

- Tamás TOMASCHEK, traffic engineering team-leader [tomaschek.tamas@kozut.hu](mailto:tomaschek.tamas@kozut.hu)

**KÖZOP-1.5.0-09-11 (2011-2015) – 200.000.000 HUF**

**Implementing TMS at the Ukrainian-Hungarian border region (monitoring the waiting times) - PLANNED**

The planned pilot system is meant to distribute the passing traffic volume of passenger cars and small trucks (till 7,5 tons of gross weight) between the possible cross-borders of the Ukrainian-Hungarian border section. The project has 3 distinct parts:

1. Installation of vehicle identification units.
2. Application developing for calculating the waiting times.
3. Installation of VMSs to display the measured and calculated information (static and dynamic).

Static information such as cross-border name, paths, distances, Highway Codes and restrictions would be displayed with common road signs, while dynamic information like waiting times would be displayed by integrated VMS plugins on the static road signs. Waiting times on the cross-borders would be calculated/displayed on 0,5 hour base. Informational VMSs would be installed before the Nyíregyháza and Kántorjánosi resting and parking area and near the 229<sup>th</sup> and 263<sup>rd</sup> kilometer section of M3 motorway. Calculation would be made simply by measuring the travelling time between two fix designated points with individual identification of passing vehicles. Measured times can be displayed in spreadsheets by the evaluation system. Internal and external interfaces development will be also necessary (e.g.: for reporting to the Police Headquarters (ORFK) or the National Tax and Customs Administration (NAV)).

Expected result is the performance improvement at the cross-border sections and surrounding cities and areas (also in accessibility), in transport safety and in travelling times.

**Responsible:**

Hungarian Public Road Non-profit Pte. Ltd. Co. (MK)

- Ádám NAGY, traffic engineer [nagy.adam@kozut.hu](mailto:nagy.adam@kozut.hu)



## **CROCODILE A5/3 (2014-2015) – 100 000 EUR**

### **Implementation of internet based traffic information service - PLANNED**

**CROCODILE A5/3.:** Beside the (fix) information provision on the road there is a growing need for the pre-trip and on-trip information provision available via internet or mobile devices - even information regarding international transit traffic affecting the Capital. Further development of pilot project realized within EasyWay2 is also planned – by publishing real-time data and by quantitative and qualitative expansion of data available. Further objective is to make the information portal suitable for the conditions of the standard international traffic information services.

#### **Responsible:**

BKK Public Roads Private Limited Co.

- Dénes KOVÁCS, director [denes.kovacs@bkk-kozut.hu](mailto:denes.kovacs@bkk-kozut.hu)
- Gergely RÓNAI, chief engineer [gergely.ronai@bkk-kozut.hu](mailto:gergely.ronai@bkk-kozut.hu)

## **RURAL AND MUNICIPAL ITS DEVELOPMENT**

### **Regional Operational Programme of Dél-Alföld (DAOP)**

**DAOP-3.2.1/A-09-2009-0010 (2009-2013) – 466 759 000 HUF**

**Integrated TIS, TMS and e-ticketing system at Körös Volán Bus Transport Limited Co.**

**DAOP-3.2.1/A-09-2009-0010.:** The project is aimed at installing TIS, TMS and e-ticketing systems at Körös Volán Bus Transport Limited Co. in order to raise the transport service level and satisfy the transport demand more professionally. A central server had been built up what is connected to the IT background of the systems and also responsible for the data exchange with the GSM provider.

In the 5<sup>th</sup> modification of the grant contract the e-ticket implementation had been skipped regarding central order. Technical and financial parts of e-ticketing have been deleted, as Complex country-wide integrated e-ticket project is planned and preliminary works started.

As a result a TMS and TIS system has been built up which affects 25 557 passengers.

#### **Responsible**

Regional authorities

#### **Budget breakdown:**

Project gross cost:	466 759 000 HUF
Share of subsidy:	95%
Total subsidy:	443 421 050 HUF
- EU finance:	396 745 220 HUF
- National finance:	46 675 830 HUF

**DAOP-3.2.1/A-09-2009-0003 (2009-2013) – 298 918 000 HUF**

**TMS, TIS and sales development at the Volán Bus Transport Companies in the Dél-Alföld region (project leader: Tisza Volán Ltd. consortium partners: Kunság Volán Ltd., Bács Volán Ltd and Körös Volán Ltd)**

**A DAOP-3.2.1/A-09-2009-0003.:** As part of the project the bus transport companies of the region have developed GPS-based tracking system for the scheduled buses with management system and TIS. A central journey planning, reserving and ticket selling infrastructure has been built up for the region with real-time information service and the integration of the individual management systems of the different Volán Companies. The integration of the Enterprise Resource Planning (ERP) and management systems has been solved regarding the European public transport reference data model (Trans-model) standards. This standard format gives the chance of the easier further, global integration of the public transport services. Near the improved fitness to the transport needs and raising the service level, the strengthening of regional cooperation was also a priority.

4 Volán Bus transport companies are included in the project from the Dél-Alföld region as a consortium (as beneficiaries' activities, legal form, taxing obligations and funding criteria are similar):

- Bács Volán Ltd.,
- Körös Volán Ltd.,
- Kunság Volán Ltd.,
- Tisza Volán Ltd (project/consortium leader).

The implementation of e-ticketing systems are skipped regarding to the under design national ticketing systems.

As a result a TMS and TIS system has been built up which affects 55 696 passengers.

**Responsible**

Regional authorities

**Budget breakdown:**

Project gross cost:	298 918 000 HUF
Share of subsidy:	95%
Total subsidy:	283 972 100 HUF
- EU finance:	254 080 344 HUF
- National finance:	29 891 756 HUF

**Finance amount per companies:**

<i>Bács Volán Lrt.</i>	<i>48 151 002 HUF</i>
<i>Körös Volán Ltd.</i>	<i>10 022 409 HUF</i>
<i>Kunság Volán Ltd.</i>	<i>114 511 973 HUF</i>
<i>Tisza Volán Ltd.</i>	<i>111 286 715 HUF</i>

## **Regional Operational Programme of Dél-Dunántúl (DDOP)**

**DDOP-5.1.2/B-09-2009-0001 (2009-2013) – 744 610 000 HUF**

**Raising the service level and quality of Kapos Volán Ltd. and Gemenc Volán Ltd.**

**DDOP-5.1.2/B-09-2009-0001.:** Originally the project should have been implemented by transport consortium of Kapos Volán Ltd. és Gemenc Volán Ltd. (founded in 2009). By the time Gemenc Volán Ltd. withdrew from the consortium and the grant contract had been modified in 12.11.2012. (Kapos Volán Ltd became the only beneficiary).

The project has significantly raised the quality and the performance of public transport in Somogy county. A TMS, new management systems and traffic control systems have been developed in the project. The public transport became more smooth, comfortable and easy-for-planning. By the implementations the travelers' dynamic services and information services are also developed.

The project has been implemented in Somogy county (on regional level). As a result the existing TMS systems have been developed and new TMS systems have been implemented to promote and foster the public transport. Dynamic and traveler information services are also have been developed.

### **Responsible**

Regional authorities

### **Budget breakdown:**

Project gross cost:	744 610 000 HUF
Share of subsidy:	85%
Total subsidy:	632 918 500 HUF

## **Regional Operational Programme of Észak-Magyarország (ÉMOP)**

**ÉMOP-5.1.2-09-2009-0008 (2009-2013) – 349 938 566 HUF**

**Developing public transport in Gyöngyös and Heves sub-region (Mátra Volán Ltd.)**

**ÉMOP-5.1.2-09-2009-0008:** The main aim is the raising of service level to “European level” with the following investments:

- Developing of bus stations,
- building and renewal of bus stops,
- up-to-date TIS development in the bus stations, bus stops and public buses.

On-board computers are helping the passengers to get relevant information on the journey and also helping the communication with the dispatcher center. Feasibility study, tariff community, coordinated schedule and transport community have been made in the frame of the project. The e-ticketing system will be implemented globally, on national level. Developments are aiming at the promotion of public transport.

As a result 2 TMS, 6 dynamic TIS and 1 bus station had been developed, 6 schedules had been coordinated, and 3 tariff communities had been established.

The project implementations affect 11 000 passengers.

### **Responsible**

Regional authorities

### **Budget breakdown:**

Project gross cost:	349 938 566 HUF
Share of subsidy:	93,13%
Total subsidy:	328 914 041 HUF
- EU finance:	294 188 590 HUF
- National finance:	31 725 451 HUF

## Urban ITS developments of Transport Operational Programme (KözOP)

### Main areas of urban transport developments:

- ITS implementation,
- raising the travelers comfort and information level,
- ensure accessibility for disabled passengers.

### Developing tram transport network of Szeged city

#### Main elements of ITS development:

- TMS for the full network,
- in-vehicle TIS,
- stationary TIS,
- ticket vending machines (TVM),
- intelligent traveler information points,
- Traffic light management.

Project budget:	29,2 billion HUF
Subsidy:	25,3 billion HUF
<b>ITS development budget:</b>	<b>~390 million HUF</b>

### Developing tram transport network of Miskolc city

#### Main elements of ITS development:

- TIS and TMS on tram stations,
- renewal of information tables and monitoring and dispatching infrastructures on tram stops (cameras and TVMs also had been deployed),
- intelligent traveler information columns had been deployed to the frequently visited places,
- Software, management and dispatching office development,
- Data-exchange servers.

Project budget:	37,8 billion HUF
Subsidy:	33,7 billion HUF
<b>ITS development budget:</b>	<b>~150 million HUF</b>

### Developing tram transport network of Debrecen city (tramline 2)

#### Main elements of ITS development:

- TIS elements (central OBU, loudspeakers, monitors, data collectors etc.),
- building up the IT system connected to the whole infrastructure (TIS on stations and tram stops).

Project budget:	17,7 billion HUF
Subsidy:	15,8 billion HUF
<b>ITS development budget:</b>	<b>~100 million HUF</b>

## **ITS DEVELOPMENTS OF THE CAPITAL CITY**

### **Further development of the Budapest TCC (2014) – 13 200 000 HUF**

Based on the successful design and pilot implementation of TCC (in EasyWay II project) in the first quarter of 2014 the further development of TCC has begun. In the project real-time and automatized data connection has been set up between the TMS (and the connected ITS systems) of Budapest and the displaying interfaces. With the extension of functionality the relevant data and information generated or collected by the TMS's activity had become accessible for travelers.

The main aim is to implement a web based transport information service which can provide real-time and reliable information for the travelers in Budapest.

As a result an on-line travel information system is set up to help pre-trip or on-trip travel planning, modal decision making, or route planning.

#### **Responsible:**

BKK Public Roads Private Limited Co.

- Dénes KOVÁCS, director [denes.kovacs@bkk-kozut.hu](mailto:denes.kovacs@bkk-kozut.hu)
- Gergely RÓNAI, chief engineer [gergely.ronai@bkk-kozut.hu](mailto:gergely.ronai@bkk-kozut.hu)

## **KARESZ (2013-2014) – 360 000 000 HUF**

### **Implementation of Road Data Collecting System (KARESZ) – ONGOING**

Getting an up-to-date and comprehensive view (and database) of the capital road network and all the connected infrastructures is elementary for ensuring the appropriate level of preparing the development actions, or for performing the tasks regarding the road operations. Map visualization and the proper user interfaces are also base demands for efficiency in these kind of applications (online maps, with coordinated digital administration and applications, etc.).

The Road Data Collecting System (KARESZ) is started to fulfill these above mentioned needs, with professional up-to-date methods for the whole capital city. The system generates geographical data, and also making 3D “mold-model” (point set) of Budapest. This 3D model is capable of supporting the better maintenance and development works and also ensures the background for more punctuate assessments and quality control. The development also leads to faster and cheaper road maintenance works.

Continuous development of data register and processing system with the integration to the management system is going parallel the geo-data collection. The system framework will be implemented till the end of 2014, making possible the corporation’s employee to work on an online base supported by the digital map and the management system.

Maturity of the project had been raised by the study (with international outlook) born in 2012. As a result of this study an impact assessment and cost plan have been made for the 1<sup>st</sup> phase of KARESZ implementation (regarding the data collecting sub-system). With the support of the decision makers a state-of-art geo-data production system (collect and process) have been started the operation in 2014. Collecting and processing the data of the capital city is continuous with regards to the priority, and hierarchy of the road network elements.

#### **Responsible:**

BKK Public Roads Private Limited Co.

- Gyula FEKETE, head of department, [gyula.fekete@bkk-kozut.hu](mailto:gyula.fekete@bkk-kozut.hu)



**E-TICKET (2011.09.01.-2016.12.31.) – 5 306 697 000 HUF**

**IM02.01 – Preparatory works and implementation of electronic ticketing system**

The main aim of the project is to develop a server-based, open sourced e-ticketing system, with the connected delivering, operating and maintaining tasks for Budapest area. The proposed project contract show the necessity of the following investments:

- 2100 ticket validation machines for vehicles (buses, trams and trolleybuses),
- 64 ticket validation machines for suburban train stations,
- 55 entry gates for metro and suburban train stations,
- 9000 smart card reader (ISO 14443 standard),
- 3 million smart card (ISO 14443 standard),
- 700 mobile controlling device,
- procuring of management systems for ticket selling, customer service and information,
- procuring of back-office system for the above mentioned systems,
- integration with the existing infrastructure,
- deployed and ICT services,

Furthermore the project is also aiming at:

- the studies and assessments required for implementation,
- involvement of external experts (quality management, procurement, legal assistance),
- communication tasks occurring by the implementation and operation.

On 6th.September.2013. the loan agreement between BKK and EBRD has been signed (54,5 million EUR). At the same time Municipal Support Agreement has been also signed between BKK, EBRD and the Municipality of Budapest in order to coordinate the different funds of development.

**Responsible:**

Centre of Budapest Transport (BKK)

- Dr Zsolt DENKE, [zsolt.denke@bkk.hu](mailto:zsolt.denke@bkk.hu)

## **CONGESTION CHARGE (2012.06.28 – 2013.06.19.) - 37 945 000 HUF**

### **Making decision support study and measuring the traffic intensity and traffic trends to foster the determination and implementation of the congestion charging of Budapest**

Regarding the decision of the Municipal Assembly of Budapest (13/2011. (I.12.) Föv. Kgy.) the Centre of Budapest Transport has worked out a decision making support study to facilitate the implementation of the congestion charge of the capital city.

In this study the previous results of the preliminary feasibility study and actually executed traffic researches has been considered in order to determine the possible financial, technical-operational and controlling / management aspects of the implementation.

As a result the implementation has been justified, and the implementation study has been made.

Implementation study is including the exact parameters with the defining of the controlling and payment systems' operating model. In order to estimate the expected effects traffic measurements and modeling with the connected financial and economical cost-benefit analyses also had been made.

#### **Responsible:**

Centre of Budapest Transport

- Gergely KRIZSÓ, project leader, [gergely.krizso@bkk.hu](mailto:gergely.krizso@bkk.hu)

**FUTÁR - KMOP-2.3.1/A-2009-0001 (2009-2014) – 6 648 583 280 HUF**

**Developing the traffic management and traveler information system (FUTÁR) for the surface and underground public transport of Budapest**

**KMOP-2.3.1/A-2009-0001:** The development of the integrated public transport information system called Traffic Management and Traveler Information System (FUTÁR) has been implemented from EU fund. The system is operating in the BKK service area on the main bus, tram and trolley-bus lines. Supported by satellite vehicle track & trace system, traffic management and incident handling system, with real-time traveler informing systems on 2295 vehicles, 257 stations, stops and strategic nodes. Mobile devices and web applications and interfaces are also available. System design controls 30 nodes with traffic light management favoring public transport vehicles. Project also aimed at the development of ICT system too. As a result the outdated system used earlier had been substituted by a more reliable, more punctuate passenger centered service with real-time traveler informing system.

**Responsible:**

Centre of Budapest Transport (BKK)

- András BERGER, project leader, [andras.berger@bkk.hu](mailto:andras.berger@bkk.hu)

**MANAGEMENT SYSTEMS (2014-2015) - 309 050 340 HUF**

**IM02.06 – Management system investments of Centre of Budapest Transport - ONGOING**

The following system developments are going on currently at the Centre of Budapest Transport (BKK):

- traveler penalty management system,
- ticket controller and officer staff working hour schedule organizer system ,
- monitoring system,
- IT and ICT development of ticket offices (safety system, communication with the national tax authority, penalty systems (2. phase), CCTV system, cash desk IT systems)
- online ticket selling and marketing systems
- electronic billing systems
- renewal of strategic nodes Traveler Information Service systems.

**Responsible:**

Centre of Budapest Transport

- Levente NAGY, division leader, [levente.nagy@bkk.hu](mailto:levente.nagy@bkk.hu)

**P+R (2014-2015) – 1 747 160 000 HUF**

**Developing and implementing P+R parking places of the capital city,  
(3<sup>rd</sup> modification of the implementation agreement till the 31.12.2015.) - ONGOING**

Reducing the emission and fostering the environmental relief of cars in the inner districts of Budapest is emphasized priority of the municipal government. Investments in park and ride parking places are also fostering the better modal shift with promoting the public transport, while the environmental and financial risks will be reduced. Although P+R and B+R infrastructure aimed at developing the current state of intermodal transport in Hungary is still not satisfactory.

Pedestrian and bicyclist infrastructure development is also a priority under this project. These infrastructure elements are protected with traffic lights and integrated into the traffic management systems if reasonable.

These public P+R infrastructure's planned lifetime is more than 30 years, and there is no need for maintenance for at least 5 years. The expected lifetime of the pedestrian crossing facilities is around 3-10 years, depend on the traffic volume.

Planned locations of implementation:

- Akadémia Park P+R
- Cinkota P+R
- Csepel P+R
- Etele Square P+R
- Kaszásdűlő P+R
- Örs vezér Square P+R
- Pillangó street P+R

**Responsible:**

Centre of Budapest Transport (BKK)

- Balázs FEJES, [balazs.fejes@bkk.hu](mailto:balazs.fejes@bkk.hu)

**FREIGHT TRAFFIC (2012.12.01.-2015.12.31.) – 119 723 000 HUF**

**IM04.02 – Modernization of freight traffic access control of Budapest – ONGOING**

Aims of development:

- Controlling the freight traffic congestion charge incomes. Substituting the existing human control with automatized recognizing and identification ICT infrastructure and integrate it into the BKK management systems.
- Connecting the identification system with the access permission registry and database system called TOBI.
- Developing the vehicle restriction observing systems.

Main goals:

- Increasing the drivers' morals and the power of disciplines.
- Increasing the incomes from penalties thanks to the reliable data collected by the improved system.
- Improved data collection systems can be used for statistical report and forecast making.

**Responsible:**

Centre of Budapest Transport (BKK)

- Dr Zsolt DENKE, [zsolt.denke@bkk.hu](mailto:zsolt.denke@bkk.hu)

**TVM (2013.06.19.-2019.12.31.) – 3 450 000 000 HUF**

**IM02.02 Procurement, installation and operation of new Ticket Vending Machines (TVMs) - ONGOING**

The current network of TVMs are old and technologically outdated. BKK wishes to renew the ticketing systems and replace the obsolete ticket vending machines what could lead to the complete renewal of this ticket selling segment. The new type of TVMs gives the opportunity to purchase every kind of travelling passes. The payment method could be either cash or card. TVMs will be integrated into the IT system, thus it could provide reliable and real time data on the technical conditions and/or the sales characteristics etc.

By the implementation of the project 300 new TVMs will be deployed on the most important transport nodes of Budapest. The winner of the public procurement has to cover the full process of deployment (complete production process, software development, deployment, licensing and implementation processes). The 300 new TVMs have to be deployed in 5 phases. During the 1<sup>st</sup> phase the contractor also has to deploy the complete background system infrastructure.

The main tasks of the project:

- Procurement of the full infrastructure of TVMs, the software and hardware background, and spare parts,
- Deployment of TVMs and the services,
- Development of TVM functions (online purchase and TVM printing, penalty payments etc.),
- TVM customer card developments (purchasing and deployment),
- TVM related customer and informing services,
- Find funding possibilities (e.g. KözOP funds etc.)

**Responsible:**

Centre of Budapest Transport (BKK)

- Dr Zsolt DENKE, [zsolt.denke@bkk.hu](mailto:zsolt.denke@bkk.hu)

## **PRIORITY AREA II:**

**Continuity of traffic and freight management ITS services**



## **DEVELOPING TRAFFIC MANAGEMENT SYSTEMS ON TRANSPORT CORRIDORS**

**EWII. A2.2.1. (2012.12.31.) – 3 970 000 HUF**

**Cross-border traffic management plan (TMP) with DATEX II. based data exchange involving the neighboring CONNECT partners (AT, SI, HR)**

**EWII. A2.2.1:** The cross-border traffic management services are one of the base services of the EasyWay project. These services make the data exchange and the information of drivers on TERN feasible in all connected country. Cross-border traffic management requires common work from the member states overarching on their own area of operation (especially in the management of connected motorway sections and other roads). The main aim of the cooperation is the efficient treatment of bottlenecks.

Building up good relations with the neighboring countries' road operators is essential in these works. Incident handling has to be efficient in order to avoid the paralysis of transport network and pre-inform the drivers in case of any restricting event lasts for hours or days. Near the information giving alternative route suggestion service is also a demand (globally it could mean the use of other transport corridors etc.). In this regards cooperation possibilities between the Connect countries, plus the newly joined Croatia had been investigated.

In the frames of the project a TMP study had been made for the southwest border section of Hungary (for the M7 motorway and M70 expressway sections). The study also had been extended to the TERN elements of Austria and Slovenia and the Austrian-Slovenian-Croatian border section.

TMP plans had been developed for the traffic and congestion management of the Ukrainian-Hungarian border section. Near the TMP plans TMP scenarios have been also made.

**As a result** the implementation of the created TMPs and/or by developing new traffic management plans gives the bases of a more comprehensive European level collaboration for the managing of the EU corridors.

### **Responsible:**

National Toll-Payment Services Pte. Co. Ltd. (NÚSZ) (previously: ÁAK)

- Zsolt SZOVA, [szova.zsolt@nemzetiutdij.hu](mailto:szova.zsolt@nemzetiutdij.hu)

## **EWII A2.1.1. (2012.11.16.) – 345 654 000 HUF**

### **Management of sensitive road segments, automatic incident detection and data providing to the road-users in a selected road section of the motorway network**

**EWII. A2.1.1.:** The most critical part of the national highway and motorway network is the M2 motorway (corridor E77, section between Budapest and Vác). The sections of M3 motorway and (M)4 highway close to the capital city are also sensitive parts of the road network, with high volume of traffic. The main aim of the project is the development of incident detection system and deploying traffic management infrastructure connecting to the traffic management system of M0 in its region.

Implementation is concentrated on the M2, M3 motorways and (M)4 highway. On these sensitive road sections VMSs and incident detection systems has been deployed (supplemented by the EW A 4.1.1. project for monitoring systems). Regarding M2 and M4 only VMS has been deployed in the current project. VMS Matrix tables have been deployed and integrated into the M0 TM system to support the traffic management actions. The area of (M)4 and M0 motorway node (Vecsés-Üllő bypass) is a priority location of the traffic management. Both the M0 and (M)4 incidents can be displayed for drivers before the decision point. In most of the cross sections of Motorways and M0 motorway this kind is already resolved. This fact and the global network operability had also justified the development of the missing TM systems (in both direction). M2 is originated from the M0, thus primarily the drivers arriving from the Vác area could get relevant information about the traffic joining to the M0. Regarding this specific situation in case of M2-M0 node unique, display integrated traffic signs had been deployed, to show the information regarding the directions.

Regarding M3, the MAESTRO traffic management system operating from the 90s had become outdated, whit a high operating and maintenance cost. The MAESTRO system also couldn't fulfill all the expectations of the revised technical regulations and other parts are become unnecessary (parallel operating TM systems on some sections etc.).

The meteorological, camera systems, and few of the displays had been renewed till 2010, but VMSs and the total traffic counter sub-system is not. For the efficient and comprehensive management of the traffic flows on the highway and motorway network it was indispensable to include every system element in the renewed conception and system model, especially regarding the traffic counter subsystem which is also responsible for the incident detection and management.

**As a result** the above mentioned sensitive (regarding transport safety and traffic intensity) highway and motorway sections the incident detection and information management system has been deployed. With the implementation the accidents (e.g. caused by the congestions) had been reduced. With the development and connection with the M0 TM system the travel planning became more efficient, while the congestions and travel times also had been reduced. Furthermore the VMS system of M0 is also capable for supporting the TM of the connecting systems.

#### **Implemented subprojects:**

/1 M4: VMS	63 000 000 HUF
/2 M2: VMS	89 500 000 HUF
/3 M3: replacing of MAESTRO VMS	71 500 000 HUF
/4 M3: replacing of MAESTRO traffic counter system	121 654 000 HUF

#### **Responsible:**

National Toll-Payment Services Pte. Co. Ltd. (NÚSZ) (previously: ÁAK)

- Zsolt SZOVA, [szova.zsolt@nemzetiudj.hu](mailto:szova.zsolt@nemzetiudj.hu)

**EWII. A4.1.1. (2012.12.31.) – 180 037 586 HUF**

**Development of monitoring systems (traffic monitoring, automatic incident detection, CCTV, travel time and weather monitoring)**

**EWII. A4.1.1.:** Road operational IT systems and tools generally can be sorted by 2 main groups:

- monitoring and
- traffic management and controlling systems.

These 2 segments of system infrastructure are closely connected to each other in functionality (only together can work completely), and have serious benefits. That is why building up the monitoring system and eliminating the further insufficiency are necessary tasks.

Regarding this the traffic volume and network importance related classification of highway and motorway network has been made. The greatest priority motorway is the M0 and the connected cross-sections of the highway and motorway network. Primarily these sections are the aim of the monitoring infrastructure development.

The project had several sub-activities in order to implement the monitoring system:

- M4 : Development of traffic information management system (TIMS) (substructure and optical cable system development on Budapest-Szolnok area)
- M2 : Development of traffic information management system (surveillance and incident detection cameras, meteorological and traffic counter stations, ICT and energy supplement system.
- Technical supervision of the EasyWay II development projects.

**As a result** with the implementation of the above systems a better incident detection and management system is operating, which is able to reduce reaction times, forecast and manage congestions and indirectly reducing accidents. With the project the coverage of monitoring system is also raising in the capital area.

**Implemented subprojects:**

/1 M4 TIMS substructure and optical network + monitoring system	88 998 813 HUF
/2 M2 TIMS monitoring system	78 998 773 HUF
/5 Technical supervision of EasyWay II. projects	12 040 000 HUF

**Responsible:**

National Toll-Payment Services Pte. Co. Ltd. (NÚSZ) (previously: ÁAK)

- Zsolt SZOVA, [szova.zsolt@nemzetiutdij.hu](mailto:szova.zsolt@nemzetiutdij.hu)

## **Mobile payments (2012.10.15 – not defined) – 800 000 000 HUF**

### **National Mobile Payment Systems - ONGOING**

National Mobile Payment Ltd was funded on 15<sup>th</sup>, October 2012. The company is 100% State-owned, and funded by the governmental decree.

The tasks and operation of the National Mobile Payment Ltd. is regulated by the 356/2012. (XII.13.) Governmental decision. The company is a technology concerned public service organization which is responsible for the national coordination and implementation of mobile payment systems. The National Mobile Payment Ltd. is also providing a harmonized and innovative solution for integrating the priorities of the market and public strata.

Main aims and activities:

- Public services and mobile payment standardization.
- Improving accessibility of mobile payment in Hungary.
- Public awareness – making mobile payment socially accepted and preferred payment method; fostering and supporting the “good State” image.
- Developing national public transport’s mobile payment and e-payment services.
- Technical assistance and support of innovation in the public services.

#### **Implemented projects:**

- As part of the National Mobile Payment:
  - HU-GO e-toll system has been deployed.
  - e-vignette service has been deployed (road usage permission can be purchased by mobile payment)
  - National integrated mobile parking has been deployed (from 01.07.2014.).
  - Above systems has been supported by smartphone apps.

#### **Ongoing ITS related projects:**

- National Electronic Ticket Platform (NETP): standardized national public transport e-ticket purchasing platform development (2014-2017)  
planned budget: 4 000 000 000 HUF
- ITS Platform for National Passenger Transport (PNPT): developing the technical and technological regulations, the central database and services of a standardized and interoperable public transport related database, with the connected data exchange rules and IT infrastructure (2014-2017) (regarding the 123/2014. (IV.10.) Government decision)

#### **Responsible:**

National Mobile Payment Ltd.

- Gábor DÁVIDHÁZY, project director, [davidhazy.gabor@nemzetimobilfizetes.hu](mailto:davidhazy.gabor@nemzetimobilfizetes.hu)
- Mihály VERES, general director, [veres.mihaly@nemzetimobilfizetes.hu](mailto:veres.mihaly@nemzetimobilfizetes.hu)

**CROCODILE A2/1 (2014-2015) – 100 000 EUR**

**Update of existing and establishment of new cross-border traffic management plans including neighboring countries in order to manage traffic and traffic incidents on the shared road traffic corridors in the best possible way – PLANNED**

**CROCODILE A2/1:** TMPs and TMP feasibility studies were elaborated in CONNECT phase II and III, and in EasyWay phase II. In this project we plan to revise the TMP made for the Slovakian and Austrian border area, and to elaborate a TMP based on the feasibility Study done for the Croatian and Slovenian border area. Besides the western parts, we plan to elaborate a new TMP together with Romania, and we will integrate these regional TMPs to a common strategic document on Euro-regional level.

**Responsible:**

Hungarian Public Road Non-profit Pte. Ltd. Co. (MK)

- Tamás TOMASCHEK, traffic engineering team-leader [tomaschek.tamas@kozut.hu](mailto:tomaschek.tamas@kozut.hu)

### **CROCODILE A3/1 (2014-2015) – 785 000 EUR**

**Upgrade of existing traffic data collection and monitoring infrastructure, deployment of detectors and CCTV, deployment of real-time communication facilities. On-line traffic data from monitoring stations will be sent to and processed in the Central Traffic Database deployed by the EasyWay II Program in order to provide road safety-related minimum universal traffic information free of charge to users based on Commission Delegated Regulation (EU) No 886/2013. – PLANNED**

**CROCODILE A3/1:** In order to gain essential data, for delivering the services planned MK needs to improve its monitoring infrastructure, concentrating on the corridor sections involved in this project proposal. The activities will concentrate both on motorway sections, and parallel main roads. Motorway M1 has priority on the motorway network, where the monitoring devices (traffic counting stations) are planned to be upgraded. Furthermore we plan to deploy new CCTVs and loop detectors along the CROCODILE corridor sections. Real-time knowledge of the traffic situation on main roads related to corridor sections involved in this project proposal (main roads parallel to motorways M1, M5, M43 and major river bridges) is essential, too, in case of any incident on the motorway network, especially on its large river bridges. The main roads parallel to motorways include main road 5 parallel the M5 motorway operated by concession, forming an important element in connection to South-East-Europe.

On-line classified traffic data from inductive loops equipped stations will be sent to and processed in the Central Traffic Database deployed by the EasyWay II Programme in order to provide road safety-related minimum universal traffic information free of charge to users based on Commission Delegated Regulation (EU) No 886/2013.

#### **Responsible:**

Hungarian Public Road Non-profit Pte. Ltd. Co. (MK)

- Tamás TOMASCHEK, traffic engineering team-leader [tomaschek.tamas@kozut.hu](mailto:tomaschek.tamas@kozut.hu)

### **CROCODILE A3/2 (2014-2015) – 600 000 EUR**

**Upgrade of existing data collection and traffic monitoring infrastructure, in order to serve the provision of road safety related traffic information to users (deployment of detectors, and intelligent endpoint devices and the communication network on road sections of Budapest covered by TEN-T corridors) – PLANNED**

**CROCODILE A3/2:** In order to develop co-operation with the national and international expressway network and to establish information services working on harmonized way, sufficient quantity and quality of static and dynamic data is needed regarding areas and road sections of the Capital, which is covered by TEN-T corridors. Therefore development is necessary on those network elements, which are now not or just partially covered by data collection systems. Communication network must be also ensured for the transmission of field data (for central processing or using).

Taking into account the TEN-T corridors of the Capital, areas involved within the development are: road No 10, common section of motorways M1-M7, on the South and South-East areas road No. 6 and motorway M6, road No. 5 and motorway M5, and area of road No. 4.

Within the project on the strategically important cross sections and road sections, installation of data collection devices and traffic monitoring cameras as well as integration of them into traffic control center are planned - as part of the data collection and traffic monitoring system. In addition, extension and completion (by missing elements) of the substructure network and optic cable network needed for data communication are also necessary.

#### **Responsible:**

BKK Public Roads Private Limited Co.

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- Gergely RÓNAI, chief engineer [gergely.ronai@bkk-kozut.hu](mailto:gergely.ronai@bkk-kozut.hu)



**CROCODILE A4/4 (2014-2015) – 240 000 EUR**

**Enhancement of existing KIRA system to share traffic safety data related to the corridors – PLANNED**

Enhance the functionality of the KIRA (fundamental transport GIS system) developed in the EasyWay II project. The aim is to integrate data sources, set up database and data services for the freight and passenger traffic of the corridors on traffic safety situation.

**Responsible:**

Hungarian Transport Administration (KKK)

- Levente ZUBRICZKY, project engineer, [zubriczky.levente@kkk.gov.hu](mailto:zubriczky.levente@kkk.gov.hu)

## DEVELOPING TRAFFIC MANAGEMENT AND INFORMATION SYSTEMS

**EWII A2.2.2. (2012.12.22.) – 320 876 600 HUF**

**Development of the traffic management system of Budapest, extension the monitored area with adaptive traffic management, installation of new VMSs giving information with special information content in favor of fostering modal shift, II. component**

**EWII. A2.2.2.:** The aim is the development of hardware and software tools of Budapest traffic control and management center to produce, collect and make available the accurate, up-to-date traffic data and information. Qualitative and quantitative development of the management system, traveler information system and enhancing the cooperation between the co-organizations is a must.

Developing TMS was necessary in order to eliminate the defects of the mostly outdated central management systems. Near the system's software development, hardware development also had been made. TMS center should support the traffic operational and operative management activities. Uniform user and operator interface had been developed with the connected server infrastructure. New functions have been also developed such as.

- open access, and standardized data registry interface for the TMS of the capital city (with 2-way communication).
- VMSs management, driver and traveler information about the expected travelling times with alternative routing recommendations.
- The traffic control center had been extended by real-time system-control on the traffic nodes with traffic lights. In these sections adaptive TMS with statistic queries can also be realized.

As a result a traffic light management center development with the development of the connected systems has been realized. By the implementations the service quality of management activities has been raised. Interactions of the TCC became more easier to solve traffic difficulties and prevent critical events on the transport network. Open and standardized data communication makes the cooperation and harmonized common work easier and more efficient with the co-organizations.

### **Implemented sub-projects:**

/1 Developing and functional extension of the central TMS	218 625 000 HUF
/2 System integration and quality management	4 351 600 HUF
/3 Procurement of connected software modules of the central TMS	97 900 000 HUF

### **Responsible:**

BKK Public Roads Private Limited Co.

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## **EWII. A4.1.2. (2012.12.31.) – 164 347 580 HUF**

### **Modeling and incident detection on the black spots of urban road sections**

**EWII. A4.1.2.:** Incident detection on the critical sections of urban road network, modeling and ensuring the enforcement functions. The purpose of this project is the territorial extension of traffic monitoring and the preparation of new visual information as well as other traffic information. Further aims are making the currently produced data accessible and to improvement technical background of data-processing. In order to enhance the transport monitoring activities the connected ICT network also had to be developed. Raising the areas of adaptive traffic management services by the development of

- central TMS measurement and
- data collecting sub-systems.

Optical network of the data communication system has been extended by 25 kilometers. With the development of the optical network the communication between the main TMS and three further TMS centers became more efficient and operation-proof. With the raising of service coverage regarding the traffic monitoring activities, new areas could be integrated into the data collection and observation system.

In order to enhance the adaptive traffic management a geographical extension of the central measurement and data collecting system has been implemented to the areas of the TMS of northern Budapest and southern Buda (with the implementation of ca. 70 sensors on 45 measurement stations). The signs of the integrated sensors are going to the central TMS through the communication channel (e.g. the optical network) to help the efficient operation of the traffic related program-selection sub-systems.

As a result of the extension of the communication network the areas of the monitoring activities could also be extended. In order to decrease the delays on the whole system, by the development of the measurement and data collector sub-systems a local optimization could be done by adaptive transport management on the connected areas.

#### **Implemented sub-projects:**

/2 Development of traffic data collecting system	77 884 680 HUF
/3 System integration and quality management	6 875 900 HUF
/4 Development of Optical cable network	79 587 000 HUF

#### **Responsible:**

BKK Public Roads Private Limited Co.

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- Gergely RÓNAI, chief engineer [gergely.ronai@bkk-kozut.hu](mailto:gergely.ronai@bkk-kozut.hu)

**EWII. A4.1.6. (2012.12.31.) – 44 315 832 HUF**

**Development of freight traffic entrance monitoring and enforcement system  
(feasibility study, pilot project)**

**EWII. A4.1.6.:** Implementation of a pilot system for the control of the freight traffic (drive-in) on the road-network of the capital. For the detection of the unauthorized road users fix and mobile camera equipment should be implemented/installed on strategic points of the road-network. This system is also capable of supporting the enforcement process regarding unauthorized "drive in" by data collection/data process functions of the system. The system should be installed (as much as possible) by the utilization of the existing infrastructure elements.

The entrance control pilot system had been deployed on a relevant inner-node of the capital city (Könyves Kálmán boulevard – Üllői street). In the traffic node a mobile camera control system had been set up. The system is consisted of a number plate recognizing unit and traffic control camera. The recorded data are transferred to the central unit by the sub-network and the optical ICT infrastructure. Video streaming and data handling modules are also included in the monitoring system. The central unit has been deployed in the server room of the operational office built up in the 8<sup>th</sup> district of Budapest (Szabó Ervin square 2.). Making the server room eligible for the requested hardware configuration of the EasyWay projects was also the task of this work. For the proper work of the system the fluent data-exchange (receiving and forwarding to the relevant units of the data packages) had to be solved.

The pilot system shows the cooperation of the central information receiving and distributing system with mobile monitoring units with real-life measurements on a modularly working and expandable base system's operability. Thanks to the open and standardized implementation the system is eligible for the further integration or cooperation with the other transport related monitoring systems. Interoperability with similar systems is also feasible thanks to the standardized structure.

**As a result** the bases of a freight traffic drive-in management system had been set up. This system is capable of detecting the unauthorized users (thus the negative effect of the freight traffic could be decreased). By the expansion of the system the whole capital city can be monitored.

**Implemented sub-systems:**

/1 Preliminary feasibility-study	3 000 000 HUF
/2 Planning; Pilot project; connected technical assistance	38 103 300 HUF
/3 Server room construction	3 212 532 HUF

**Responsible:**

BKK Public Roads Private Limited Co.

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- Gergely RÓNAI, chief engineer [gergely.ronai@bkk-kozut.hu](mailto:gergely.ronai@bkk-kozut.hu)

## **EWII. A4.1.5. (2012.12.31.) – 19 400 000 HUF**

### **Further development of central traffic database**

**EWII. A4.1.5.:** The demand for up-to-date traffic data is continuously growing. By the modification of the traffic counting system and the application of a more efficient quality assurance provides an up-to-date database for the fulfillment of the information demands. Good quality data is also a must for the reliability of the system.

The suggested central traffic database is including the public road's (highway and motorways incl.) traffic counting results. The emerged data has to be entered in the database as soon as possible. The newly set up quality assurance system on both local and central levels makes it possible to store and collect even more reliable data. The efficient cooperation of the engineers and IT staff is a must for the successful implementation and operation of the central database. The system is storing the traffic data as regards 3 dimensions (location, time, vehicle category). The sampling-type traffic-counting specific trait is the absence in locations or time. By the raising of the reliability the practical use and usability for decision making became more preferential.

The central traffic database has more layers building on each other (measurement and data supervision, data processing, data analysis and visualization). Data control should be the most complete in every level. Only good quality and useable data should be forwarded to the upper levels. Investigating the traffic changes and determining future trends could be done only by a comprehensive database including the historic data of the last years. Processed data should be realistic (in volume and characteristics), and should be compared with other timely data and route specifications. Filtering the faults are the part of the processing method. Discrepancies have to be corrected or deleted. Supervisions should be made on local and central levels.

The integration of the traffic data generated or collected by different road operators into a common database had to be also solved. A pilot 3G communication system has been developed for real-time data-exchange of three different traffic counter unit. The pilot system operates the data forward and remote control too.

**As a result** an up-to-date traffic data-serving database had been established, which provides reliable data with improved accessibility, with the shortest time-frame of data-processing and forwarding.

#### **Responsible:**

Hungarian Public Road Non-profit Pte. Ltd. Co. (MK)

- Zoltán VÁLYI, deputy head of department, [valyi.zoltan@kozut.hu](mailto:valyi.zoltan@kozut.hu)

**Development of traffic information management systems (2009-2014) – 4 312 033 933 HUF**

**Traffic information management system development projects of M0, M3, M43, M85, M86 motorways**

**A000.31-A000.42: Development of uniform traffic information system on M0 motorway on the section between the 2+840 – 29+500 kilometers**

**finished (2014.02.11. – 2014.07.22) 3 003 268 037 HUF**

**ongoing (2014.05.23. - 2015.11.23.) 472 343 532 HUF**

The National Infrastructure Development Ltd. (NIF) has a grant agreement called the “The building of M0 ring road between the 0+000 – 29+500 kilometers” (KÖZOP-1.1.1-07-2008-0002). As part of the project the second track of the southern section has been built up and connected to the eastern sector of the motorway. As part of the construction works the supporting IT infrastructure had been deployed on the following sections:

- (A000.35) section between “M7-M6” (2+840 – 9+400 kilometers),  
Temporary opened (2009.04.29.–2012.08.09.) 931 888 641 HUF  
Project leader: Attila BAKSZA ([baksza.attila@nif.hu](mailto:baksza.attila@nif.hu))
- (A000.36) section between “M6-Main road no. 51” (12+140 – 23+200 kilometers),  
Temporary opened (2010.01.07. – 2013.09.09.) 1 549 022 396 HUF  
Project leader: András SZARVAS ([szarvas.andras@nif.hu](mailto:szarvas.andras@nif.hu))
- (A000.31) section between “Main road no. 51-M5” (23+200 – 29+500 kilometers),  
Temporary opened (2009.07.27. – 2013.08.12.) 323 400 000 HUF  
Project leader: László SZILASI ([szilasi.laszlo@nif.hu](mailto:szilasi.laszlo@nif.hu))
- Previously finished sections (with the M6 motorway node) between the 9+400 – 12+140 kilometers

Construction contracts for the above mentioned projects are containing the superstructure equipment and the substructure network. The integration of the different sections also had to be done for the proper operation of the system. Thus an IT center also had to be constructed. The traffic information management system’s control center has been deployed at the highway engineering of Szigetszentmiklós as a result of the discussions with the operator. The national Traffic Management and Information Center (FIR) has been established in 2009. A national-wide road-operation supporting IT system could be supervised by less resources by the FIR. As a result, the road-side devices and traffic management tasks had become accessible through the FIR.

The unified system structure and FIR integration has been implemented in a separated project:

- (A000.42) TIMS development on the M0 motorway on the section between the 2+840 – 29+500 kilometers  
delivered to MK NLtd  
finished, operating (2014.02.11. – 2014.07.22.) 198 957 000 HUF  
Project leader: Attila BAKSZA ([baksza.attila@nif.hu](mailto:baksza.attila@nif.hu))

Ongoing construction’s (M1-M7 section, A000.32) contract on implementation also contains the required infrastructure and technical deployment tasks in order to keep up the system integrity.

- (A000.32) section between “M1 – M7” (0+115 – 2+840 kilometers)  
Under construction, (2014.05.23. - 2015.11.23.) 472 343 532 HUF  
Project leader: Tamás PÁL ([pal.tamas@nif.hu](mailto:pal.tamas@nif.hu))

With the finish of the last section of M0 (end of 2015) the whole southern section will be uniformed and integrated into the FIR. The devices will be accessible and manageable both in the highway engineering of Szigetszentmiklós and in the management center of Hungarian Public Road Non-profit Pte. Ltd. Co. The optical cable network makes the system independent of the weather.

### Responsible:

National Infrastructure Development Ltd.

- Attila BAKSZA, [baksza.attila@nif.hu](mailto:baksza.attila@nif.hu)
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- László SZILASI, [szilasi.laszlo@nif.hu](mailto:szilasi.laszlo@nif.hu)

**A003.19-A003.21: Development of uniform traffic information system on M3 motorway on the Nyíregyháza-Vásárosnamény section between the 234+238 – 279+900 kilometers**  
**finished (2014.02.11. – 2014.08.11.) 828 765 896 HUF**  
**ongoing (2014.04.29. – 2014.10.30.) 278 361 432 HUF**  
**planned (2014.12.05. – 2015.02.05.) 10 000 000 HUF**

Implementation of M3 motorway on the Nyíregyháza-Vásárosnamény section has done by the following schedule:

- (A003.19) section between “Nyíregyháza – main road no. 49” (234+238 – 268+000 kms);  
operating (2011.06.29. –2013.04.30.) 800 334 896 HUF  
Project leader: Tamás TŰSKE ([tuske.tamas@nif.hu](mailto:tuske.tamas@nif.hu))

Around 34 kilometers of traffic information network substructure (10 pieces of HDPE50 protector tubes and optical cable network) have been implemented regarding this section. 17 emergency call stations, 3 traffic counting stations, 2 traffic management cameras and 5 meteorological stations also have been deployed. Signals and data from the above mentioned units are going to the highway engineering of Ófehértó (TIMS center have been deployed in project no. A003.21). Processing and evaluation of the data is made by the engineering office.

Sub-project of the implementation:

- (A003.19-1) Integrating the deployed devices of M3 motorway into the FIR (234+000 – 268+000 kilometers).  
delivered (2014.02.11. – 2014.08.11.) 28 431 000 HUF  
Project leader: Tamás TŰSKE ([tuske.tamas@nif.hu](mailto:tuske.tamas@nif.hu))

By the creation of FIR (2009) the integration of the IT systems of highway traffic management became more efficient and monitorable. All the devices on the highways and motorways became accessible not only in the separated highway engineering but also in the FIR management center. By the development Traffic Management activities could be organized also from the highways engineering and the FIR center. That is why the integration

of M3 motorway was necessary. Nowadays the management activities can also be organized from the center of Hungarian Public Road Non-profit Pte. Ltd. Co..

- (A003.20) section between “main road no. 49 – Vásárosnamény” (268+000 – 279+900 kms),  
under construction (2014.04.29. - 2014.10.30.) 278 361 432 HUF  
Project leader: Tamás TŰSKE ([tuske.tamas@nif.hu](mailto:tuske.tamas@nif.hu))

Around 12 kilometers of traffic information substructure network has been deployed for the above mentioned “main road no. 49 – Vásárosnamény” section (with 10 HDPE50 protecting tube and optical cable network). 7 emergency call stations, 1 traffic counting station and 2 meteorological stations also have been deployed. Signals and data from the above mentioned units are going to the highway engineering of Ófehértó (TIMS center deployment is planned in project no. A003.21). Processing and evaluation of the data is made by the engineering office. Integration into the FIR system also has been done.

Planned sub-project of the implementation:

- (A003.21) TIMS deployment on the section between ”main road no. 49 – Vásárosnamény”  
(268+000 – 279+900 kilometers),  
Planned project (2014.12.05. - 2015.02.05.) 10 000 000 HUF  
Project leader: Tamás TŰSKE ([tuske.tamas@nif.hu](mailto:tuske.tamas@nif.hu))

During the 2<sup>nd</sup> phase of M3 construction – regarding the demand of Hungarian Public Roads NLtd. – an extra traffic monitoring camera deployment has been requested for M3-41 node. For the deployment the National Infrastructure Development Ltd. started a public procurement procedure. With the deployment the transport safety and the incidental reaction times are improving.

**Responsible:**

National Infrastructure Development Ltd.

- Tamás TŰSKE, [tuske.tamas@nif.hu](mailto:tuske.tamas@nif.hu)

**A043.03: Development of uniform traffic information system with the connected structures on M43 expressway on the “Makó – Cross-border” section – ONGOING (2012.10.15. – 2015.06.01) 1 496 908 025 HUF**

Ongoing project, deadline extension is in progress. New planned deadline: 1<sup>st</sup> of June 2015

The completeness of TIMS is around 32% (ca. 500 million HUF invested)

During the Development process of the M43 motorway on the Makó-Cross-border section the substructure of the communication network, with the optical cable network will be totally constructed, with the integration into the highway engineering office in Makó and also into the harmonized common traffic information system (FIR). Currently the highway engineering is doing the management of the Szeged-Makó section of the M43 expressway. By the finish of the works the Szeged-Cross-border section will also be integrated into the system, thus the whole M43 expressway will be manageable from the highway engineering of Makó.

**Responsible:**

National Infrastructure Development Ltd.



- Gábor CSICSELY, [csicsely.gabor@nif.hu](mailto:csicsely.gabor@nif.hu)

**KO85.01-KO86.23: Development of uniform traffic information system with the connected structures on M85-M86 expressway on the “Győr-Csorna-Szombathely” section, ONGOING, (2013.06.10. – 2016.10.16) 3 560 906 560 HUF**

TIMS development in progress in the following projects:

- (K085.04) Development of M85 on the “Győr – Enese” section (0+000 – 6+800 kms) under construction, (2013.06.28. - 2015.05.29.) 483 030 325 HUF  
Project leader: Attila BÁTAY ([batay.attila@nif.hu](mailto:batay.attila@nif.hu))
- (K085.01) Development of main road no. 85. (future M85) on the “Enese bypass” has been finished (6+800 - 13+800 kms)  
protector tubes deployed, but optical cable network TIMS has to be implemented (will be deployed as part of the K085.04 project),
- (K085.04) Development of M85 on the “Győr – Enese” section and connected substructure (“Enese bypass” optical cable included, deadline: 2015.05.29.)
- (K085.05) Development of M85 on the “Enese – Csorna” section (13+800 – 20+800 kilometers)  
under construction, (2013.07.01. - 2015. 06.28.) 396 513 671 HUF  
Project leader: Attila BÁTAY ([batay.attila@nif.hu](mailto:batay.attila@nif.hu))
- (K085.02) 1<sup>st</sup> phase development of M85 “Csorna bypass”  
under construction, (2013.06.10. - 2015.06.30.) 788 724 514 HUF  
Project leader: Norbert VÍZI ([vizi.norbert@nif.hu](mailto:vizi.norbert@nif.hu))
- (K086.22) 2<sup>nd</sup> phase development of M86 on the “Szeleste-Csorna” section (“Szeleste – Hegyfalú” part between the 98+300 - 105+800 kilometers)  
under construction, (2013.10.01. - 2015.09.01.) 431 693 152 HUF  
Project leader: Balázs WAGNER ([wagner.balazs@nif.hu](mailto:wagner.balazs@nif.hu))
- (K086.23) 2<sup>nd</sup> phase development of M86 on the “Szeleste-Csorna” section (“Hegyfalú-Csorna” part between the 105+800-139+165 kilometers)  
under construction, (2013.10.16. - 2016.10.16.) 1 460 944 898 HUF  
Project leader: Balázs WAGNER ([wagner.balazs@nif.hu](mailto:wagner.balazs@nif.hu))

As part of the construction project of M85-M86 expressway section, the TIMS has been deployed with the optical cable connection to the highway engineering of Csorna. The reconstruction of Csorna office is made by the Hungarian Public Roads NLtd. The “Szeleste – Szombathely” section of M86 has been constructed as “main road no. 86”. On this 19 km long section no TIMS has been deployed. On demand it can be ordered by the Ministry.

**Responsible:**

National Infrastructure Development Ltd.

- Attila BÁTAY, [batay.attila@nif.hu](mailto:batay.attila@nif.hu)
- Norbert VÍZI, [vizi.norbert@nif.hu](mailto:vizi.norbert@nif.hu)
- Balázs WAGNER, [wagner.balazs@nif.hu](mailto:wagner.balazs@nif.hu)

**Traffic management projects of the capital city (2014 – ongoing) – 365 000 000 HUF**  
**Scheduled traffic management development program of the capital city - ONGOING**

**Tasks for 2014.:**

- Integrating 3 P+R parking places to the parking management system (Rákóczi square, Húvösvölgy, KÖKI terminal).
- Road traffic management system development with VMSs and roadside measurement units on 2 locations (areas of KÖKI Terminal P+R and Húvösvölgy P+ R).
- Integrating the traffic control devices of 74 nodes to the remote control system.
- Integrating the traffic control devices of 18 nodes to the central TMS.
- Modernization (replace) of the traffic control devices on 10 locations.
- Planning the traffic-related (adaptive) management method of 34 locations.
- Equip the pedestrian crossing with tone-signal devices on 11 locations (to meet the requirements of “equal opportunities” concept for disabled people)

**Responsible:**

Centre of Budapest Transport

- Gábor SZABÓ, division leader,
- Zoltán POTZNER, head of department

**CROCODILE A4/1 (2014-2015) – 200 000 EUR**

**Enhancement of DATEX based information exchange platform - Setting up and installation of National DATEX II node in order to establish automatic data exchange along the cross border corridors – PLANNED**

**CROCODILE A4/1:** Enhancement of DATEX based information exchange platform based on the road traffic data portal deployed within the frame of the EasyWay II program. The aim is to incorporate other national and foreign public and private road and motorway operators (i.e. ASFINAG) into the DATEX based information exchange network as well as other related organizations like Hungarian Police Headquarters, the National Directorate General for Disaster Management and regional public transport bus companies.

**Responsible:**

Hungarian Public Road Non-profit Pte. Ltd. Co. (MK)

- Ibolya BALI, head of department, [bali.ibolya@kozut.hu](mailto:bali.ibolya@kozut.hu)

**CROCODILE A4/3 (2014-2015) – 150 000 EUR**

**Creation of preconditions for an open standard data communication and ensuring the accessibility of data available. Connection of data bases, design and development of interfaces for data exchange following DATEX II standards – PLANNED**

**CROCODILE A4/3:** Access of traffic information derived from the road network of the Capital and available within ITS systems of Budapest and the relevant TEN-T corridors must be ensured in order to ensure data exchange with organizations involved within the road network operation, with national and international ITS suppliers and with other organizations concerned. Communication capability of the metropolitan systems must be created according to DATEX II standards for the foundation of the traffic information services serving end users and working on a standard base - by transforming the data bases and by designing and creating open standard interfaces. Access of data must be ensured for data, which is available within ITS systems of the capital, but actually used only for internal processes.

**Responsible:**

BKK Public Roads Private Limited Co.

- Dénes KOVÁCS, director [denes.kovacs@bkk-kozut.hu](mailto:denes.kovacs@bkk-kozut.hu)
- Gergely RÓNAI, chief engineer [gergely.ronai@bkk-kozut.hu](mailto:gergely.ronai@bkk-kozut.hu)

**CROCODILE A5/1 (2014-2015) – 200 000 EUR**

**Implementing a state operated TMC service providing real-time traffic information including multimodal advice in cooperation with the Union of Inter Urban Bus Services and Centre for Budapest Transport – PLANNED**

**CROCODILE A5/1:** Implementing a state operated TMC service providing real-time traffic information concerning road-related events like road work closures, accidents, traffic jams and adverse weather condition. The TMC service will be based on the road traffic data portal deployed within the frame of the EasyWay II. programme and will be enhanced providing timetables and multimodal advice in co-operation with Austrian, Croatian, Hungarian, Romanian and Slovenian public transport companies.

**Responsible:**

Hungarian Public Road Non-profit Pte. Ltd. Co. (MK)

- Ibolya BALI, head of department, [bali.ibolya@kozut.hu](mailto:bali.ibolya@kozut.hu)

## **FREIGHT TRAFFIC MANAGEMENT OF TRANSPORT CORRIDORS**

**EWII. A3.2.1. (2012.04.30.) – 3 950 000 HUF**

**Establishment of a supporting system, that filter overload vehicle because of the ceasing of inner EU country borders (data transfer with neighbouring CONNECT partners) – planning phase**

**EWII. A3.2.1.:** Freight devices with increasing capacity (and increasing axle load) and the year by year increasing transit and inland freight traffic, beside their economic advantage, are largely responsible for the current condition of our road network. One of the important tasks of the road operator is to remove overweight vehicles which are mainly responsible for the damage made on the road network and to build and run a complex system that is preventive and deters regulation violators. The amendment of the relevant regulation (410/2007 (XII. 29)) creates favorable environment for this. The regulation pays special attention to those who are responsible for the damage of roads, especially the removal of overweight vehicles.

The damage in the condition of roads caused by overweight vehicles exceeds 10 billion HUF per year. For the very small portion of that amount an automatic pre-selection system can be built up to provide basic function as well as additional services (traffic survey, road user authorization, road user statistics etc.).

As a result of joining the Schengen-zone the conditions of an efficient total weight and axle road measurements implemented at the border have been abolished therefore they have to be implemented in the area of the country and a network based on randomly implemented measures and meets the EU requirements has to be created. In 2008-2009 a system containing HSWIM set units serving 11 measuring points was deployed within the framework of the road protection programme to pre-select overweight vehicles and it has provided promising results. We initiate to build up a measuring point network in harmony with the objectives of EasyWay. The planned places of these two measuring points are at motorway M7 between 192+800 km which covers the transit freight traffic driving through Slovenia, Croatia and Hungary

**As a result** the plans and studies of the new weight filtering system has been done. Building permits are also obtained. Public procurements were unsuccessful because of the high bids. The following public procurement was planned in the continuation of EasyWay II (what is also failed). Alternative financial solutions have not been found yet..

### **Responsible:**

Hungarian Public Road Non-profit Pte. Ltd. Co. (MK)

- Albert BEREI, [berei.albert@kozut.hu](mailto:berei.albert@kozut.hu)

## **Expansion of traffic monitoring camera network (2014) – 35 000 000 HUF**

In line with the available sources traffic monitoring camera network is continuously developed and expanded as the part of the traffic monitoring system. Connected infrastructure of communication and data forwarding network are also part of this development project. Near the traffic monitoring cameras integrated intelligent devices are also deployed for other monitoring activities such as traffic counting, occupancy detection, vehicle categorization, number plate recognition, drive-in control etc. Thanks to the wide range of functionality these devices can serve multiple systems parallel.

As a result of the project 35 traffic monitoring devices has been deployed in the last period. The deployments have done mainly on the frequent locations where traffic monitoring devices weren't deployed before.

### **Responsible:**

BKK Public Roads Private Limited Co.

- Dénes KOVÁCS, director [denes.kovacs@bkk-kozut.hu](mailto:denes.kovacs@bkk-kozut.hu)
- Gergely RÓNAI, chief engineer [gergely.ronai@bkk-kozut.hu](mailto:gergely.ronai@bkk-kozut.hu)

## **HU-GO (2013.07.01.) – 28 042 520 000 HUF**

### **Implementing electronic, distance-based toll system (DTS)**

On 1st of July 2013, the electronic, distance-based toll system (DTS) has been introduced on a total of 6,500 km (from 1 December 2013) road network of the Hungarian public road network (motorways, highways, main roads).

The new system will comply with the European Union requirements and the directives of the European Electronic Toll Service (EETS) (Act LXVII of 2013 on distance-based toll payable for the use of motorways, highways and main roads). The rate of distance-based toll payment depends on the used road type, the category of the motor vehicle (J2, J3, J4), as well as its environmental classification.

The Hungarian Government has designated the National Toll Payment Services PLC (NÚSZ Zrt.) to conduct all of the tasks related to the collection of tolls and all of the bound toll services, and the Company will play a significant role in the control support tasks as well.

Trucks and tractors (including tractor trucks) with a maximum total permissible weight over 3.5 tons, as well as vehicle trains composed of such vehicles and the towed trailer or semi-trailer.

Implementation of the system was made in 3 months by the use of Hungarian innovation and professionalism with the participation of national organizations and SMEs). The toll road network covers 6,500 kms (6513 kms at the introduction) with average yearly incomes around 150 million HUF. 49% of the incomes is coming from inland and 51% is paid by foreign trucks.

#### **System operator and intermediate bodies:**

- National Toll-Payment Services Pte. Co. Ltd. (NÚSZ) as operator,
- National Police Headquarters as toll collection controlling authority,
- National Transport Administration as accounting body,
- National Transport Authority as supervising authority,
- National Information and Communications Services Ltd. as IT infrastructure operator,
- Hungarian Power Companies Ltd. provides the information communication network.

**International relationships:** The operator is in close contact with several interested partners from different countries and organizations, such as ITS Finland ry., and the Finnish Ministry of Transport and Communications; the southern Chinese business delegation, the Baltic Road Association, the ASFINAG (Austrian motorway and toll system operator company), the DARS (Slovenian motorway company), the GDDKiA (Polish motorway company), the NDS (Slovak motorway company), the SkyToll (Slovak toll system operator), the “Toll Collect” German toll system operator.

#### **Responsible:**

National Toll-Payment Services Pte. Co. Ltd. (NÚSZ)

- Zoltán VARGA, general director, [varga.zoltan@nemzetiutdij.hu](mailto:varga.zoltan@nemzetiutdij.hu)



**PMS (2014. Ongoing) – 5 000 000 HUF**

**Preliminary works of Parking Management System development – study - ONGOING**

The capital city (Budapest) in the beginning of 2009 has developed the Parking Management System (PMS) in the CONNECT project. 3 parking facilities had been integrated into the system. In the pilot the availability data of the integrated parking places had been successfully forwarded to the center and displayed on the dynamic VMSs at the parking places. That pilot system would serve as the base of a dynamic and centralized Parking Management System in the capital city. During the modernization of the system in 2012 a Sitraffic Guide Module has been developed into the road TMS center thus PMS became also the part of the TMS.

Based on the successfully implemented pilot system, further developments had been planned with the implementation of further facilities on defined places of the capital city. In this project a unified PMS system would be developed with the use of the ITS solutions and connected to the central TMS and the parking places.

As preparatory part of the implementation a study will be made till the end of the year to show the qualitative and quantitative measures of the possible system expansion.

**Responsible:**

BKK Public Roads Private Limited Co.

- Dénes KOVÁCS, director [denes.kovacs@bkk-kozut.hu](mailto:denes.kovacs@bkk-kozut.hu)
- Gergely RÓNAI, chief engineer [gergely.ronai@bkk-kozut.hu](mailto:gergely.ronai@bkk-kozut.hu)

## **PRIORITY AREA III:**

### **ITS road safety and security applications**

## **GENERAL TRANSPORT SAFETY DEVELOPMENT**

**KÖZOP-1.5-0-09-11-2011-0010 (2011-2015) – 1 171 650 327 HUF**

**Transport safety related investments on the motorway and expressway network of Hungary - ONGOING**

The project had paid special attention to the traffic management and monitoring system development of the expressway and motorway network with regards to the study “Defining the base electronic infrastructure of the Highway Engineerings”. In line with the study the coverage insufficiencies are decreased on the network and new VMSs had been deployed to the junctions and decision points where traffic diversions can be made. Further VMSs had been deployed on M0 to ensure the control activities. As part of the project traffic management devices have been procured for the cross-border traffic management on M7-M70 node and on the Croatian border section.

### **Implemented sub-projects:**

- |                                                                                                                   |                 |
|-------------------------------------------------------------------------------------------------------------------|-----------------|
| /1 Deployment of VMS portals and surveillance cameras on M7-M70 node and the at the Letenye cross-border section: | 188.884.880 HUF |
| /2 Deployment of VMS portals on the southern section of M0 and on the defined sections of M3 and M43:             | 387.823.431 HUF |
| /3 Deployment of VMS portals on the southern section of M0 and on the defined sections of M1, M6, M7 and M70:     | 367.672.668 HUF |
| /4 Expansion of the of Traffic Counter Stations’, Meteorological Stations’ and Surveillance Cameras’ systems:     | 227.269.348 HUF |

### **Responsible:**

Hungarian Public Road Non-profit Pte. Ltd. Co. (MK)

- Nóra ECK, [eck.nora@kozut.hu](mailto:eck.nora@kozut.hu)

**KÖZOP-3.5.0-09-11-2011-016 (2011-2015) ITS sub-project – 1 320 000 000 HUF**  
**Transport safety development on national road network - ONGOING**

Hungarian Public Road Non-profit Pte. Ltd. is making a traffic light reconstruction programme for the national road network in the frame of this project (except Pest county). Current works are going to be finished by the end of this year. The whole project is planned to be finished at 31<sup>st</sup> of May, 2015. The greatest advantage of the new remote control system is that all the newly constructed traffic light control devices will be attached to this system. Thanks to the integration the diversity of the current remote controls systems will be slightly eliminated and one standardized system will be applied in the dispatcher center. In this project 452 devices will be replaced and integrated to the new software. The new software will be up-to-date with a high service level in line with the demands of the technological expectations. Communication is based on IP connection.

Delivering and replacement of the devices and implementing the new software is based on public procurements. Total budget is 1,32 Billion HUF. Remote control system is around 200 Million HUF (120 Million HUF for software development and 80 Million HUF for implementing the existing software).

**Responsible:**

Hungarian Public Road Non-profit Pte. Ltd. Co. (MK)

- Zoltán NAGY, head of department, traffic engineering, [nagy.zoltan@kozut.hu](mailto:nagy.zoltan@kozut.hu)

## **INFORMATION SERVICES FOR SAFE AND SECURE PARKING PLACES FOR TRUCKS AND COMMERCIAL VEHICLES**

**EWII. A3.1.1. (2012.12.31.) – 12 670 000 HUF**

**Static information collection and dissemination for freight traffic on parking systems and possibilities of the main transport corridors (TEN-T corridors)**

**EWII. A3.1.1. (continuation of EWI. S3.1.1.):** The main aim is the development of a multi-lingual open web interface for the truck drivers and commercial vehicle drivers where the main data of the parking places regarding the transport corridors are accessible. The implementation of a static database for the eligible parking places is making the planning of the mandatory resting times more effective. Thus the implementation indirectly raises the transport safety.

The required information could be gathered from the road operators and the connected parking place operators (Hungarian Public Roads NLtd., Motorway operators) and also from the site-operators with eligible service-level and from the forwarders (drivers, restaurants, etc.). The quality, timeliness and reliability of the implemented information are the responsibility of the data server operators, or their person in charge. Access to the data is made by private username and password. Every change in the data is automatically logged.

Accessibility is opened for every national and international user with different languages. The system is easily expandable with further languages on request. The topology of the system is provided by the map developments based on the National Road Databank (OKA) and the Transport Information System and Databank (KIRA).

As a result an internet based information system had been developed to maintain and make accessible the data of the roadside parking places of the main transport routes in line with the road-user demands. Indirectly transport safety also had been raised by the better predictability of the mandatory rest-period.

### **Responsible:**

Hungarian Public Road Non-profit Pte. Ltd. Co. (MK)

- Zoltán VÁLYI, deputy head of department, [valyi.zoltan@kozut.hu](mailto:valyi.zoltan@kozut.hu)

**EWII. A3.1.2. (2012.12.26.) – 59 920 000 HUF**

**Real-Time Dynamic Information Services for the freight traffic on the main transport corridors /parking monitoring systems, availability monitoring, navigation and recommendations, etc./**

**- The extension of the M1 parking monitoring system (involving Arrabona left and Moson right lay-bys)**

**EWII. A3.1.2.:** The extension of the M1 parking control system implemented within the framework of EasyWay 1 project is completed in the current project (involving Arrabona left and Moson right lay-bys). The parking control system of trucks helps drivers to spend their rest-period by indicating free parking places in advance according to each lay-by at that moment. The operation of the system is based on image processing the measure of occupancy includes cameras and processing units operating beside them, display is carried out by a dynamic indicator integrated in a fix board.

The largest transit traffic volume is going on the M1 motorway in the east-west direction. It could causes serious problems in taking the rest-periods for truck drivers especially in the late hours and during the nights. The main aim of the project to optimize this constrained capacity for better utilization and availability.

The main problem is that while few parking places are overloaded others are having a lot of free capacity, and truck drivers can get no information about these characteristics. Drivers can't predict surely where they will take their resting time and what sort of services will be available there. Near this uncertainty the different traffic restrictions of the countries make further difficulty for the drivers.

In the project the earlier implemented pilot system has been restructured regarding the growing demands and the experiences gathered from the M1 Arrabona (119 kmsz, Győr) parking monitoring system (right side of the motorway). The monitoring system has been expanded also to the left side as the parking place there can be approached from both sides. Moson parking place has been also integrated to the system as an alternative choice possibility. The evaluation of the extended pilot will be a further project.

As a result parking and resting-period planning has become more predictable. Load of the parking places became better distributed. Transport safety indirectly raised (by lesser accident caused by tiredness).

**Responsible:**

Hungarian Public Road Non-profit Pte. Ltd. Co. (MK)

**Responsible:**

National Toll-Payment Services Pte. Co. Ltd. (NÚSZ) (previously: ÁAK)

- Zsolt SZOVA, [szova.zsolt@nemzetiutdij.hu](mailto:szova.zsolt@nemzetiutdij.hu)

## **CROCODILE A5/2 (2014-2015) – 700 000 EUR**

### **Extension of M1 ITP system (incl. data exchange on available places with neighboring countries) – PLANNED**

**CROCODILE A5/2.:** The amount of heavy vehicle is outstanding on motorway M1, as it is the main transportation corridor to Germany, and Western-Europe. The demand on parking lots cannot be satisfied, especially from dusk till dawn. At nights trucks are parking even on rest area roads, ramps. The parking information system in operation covers only 3 parking areas (110 parking lots). For building up a service, and to provide more options for truck drivers, we plan to deploy monitoring in service areas all along motorway M1 with higher parking capacity, and we would like to display the availability of foreign rest area parking lots (other/foreign motorway operators). We plan to provide parking information to other/foreign motorway operators to be displayed, and we plan to publish the availability in Hungary via internet and/or mobile devices (e.g. common app).

Our aim is to eliminate parking anomalies, to prevent the damages in the infrastructure, and to avoid the risk of accident, by providing the tool for planning the mandatory rest times for drivers.

#### **Responsible:**

Hungarian Public Road Non-profit Pte. Ltd. Co. (MK)

- Tamás TOMASCHEK, traffic engineering team-leader [tomaschek.tamas@kozut.hu](mailto:tomaschek.tamas@kozut.hu)

## **THE HARMONIZED PROVISION FOR AN INTEROPERABLE EU-WIDE E-CALL SERVICE**

### **Implementation of the unified emergency call number (112) and building up the e-Call base infrastructure (2010-2014.05.19.) – 2 588 000 000 HUF**

In Hungary the unified emergency call number and the connected call centers are officially operating from the 19<sup>th</sup> of May 2014. The emergency call centers had been constructed in Miskolc and Szombathely. These call centers will be also functioning as the Public Safety Access Points (PSAPs) for the e-Call system. Automatic emergency call system is still not operating in Hungary. Contractor had been committed himself for fulfill the regulatory expectations after the finalization of the EU legalization of the type-approvals and related tasks (decision forecasted for 2015 Q1).

The remaining tasks regarding e-Call implementation are:

- the development of PSAPs systems,
- the deployment of e-Call modems to make e-Calls identifiable,
- handling and processing the “e-Call flag” and connected minimum sets of data (MSD).

Further task of the mobile service providers is to make their cellular network suitable for e-Calls.

Building up the base infrastructure is consisted of the following costs:

Construction costs (Call centers at Miskolc and Szombathely)	750 000 000 HUF
Equipment costs	48 000 000 HUF
IT system development	1 790 000 000 HUF
<b>Total:</b>	<b>2 588 000 000 HUF</b>

Hungary was an observer member of the HeERO 2 project.

#### **Responsible:**

Ministry of Interior – National Police Headquarters

National Media and Information Communications Authority

Ministry of National Development



**Automatic emergency call system (e-Call) (2013-2017) – 80 000 000 HUF (2013 and 2014) - ONGOING**

Connected to the e-Call implementation the following activities had been made:

- Pilot communication system and tests between the e-Call OBU and the mobile e-Call centers (preparing the connection to HeERO projects)

As part of the above project the main tasks were

- the analyzing of the technology used by the Finnish partners,
- development of the Hungarian testing methodology,
- carrying out the tests, and event logging,
- forwarding the MSDs generated by the e-Calls to the PSAPs,
- receiving and processing the incoming calls, storing in a database,
- validating and evaluating the recorded MSDs in the Finnish system,
- KPI definitions and measurements.

In line with the Finnish-Hungarian cooperation e-Call interoperability tests had been made in 2014. Interoperability tests had been executed in Finland and Czech Republic.

**Responsible:**

Hungarian Transport Administration (KKK)

- Tibor MOCSÁRI, head of department, traffic engineering, [mocsari.tibor@kkk.gov.hu](mailto:mocsari.tibor@kkk.gov.hu)

## **PRIORITY AREA IV:**

### **Linking the vehicle with the transport infrastructure**

## **CROCODILE A4/2 (2014-2015) – 500 000 EUR**

**Dynamic Database of Road Works - Extension/enhancement of the maintenance fleet management system (FMS), and building up a real time database that will provide on-line data for the information exchange platform (DATEX II node) in order to fulfill the requirements of priority areas c and e of the ITS Directive – PLANNED**

**CROCODILE A4/2:** Temporary road works are essential part of maintenance activity from snow clearance to paving, and in many cases the work site is moving continuously. Tracking of motorway maintenance vehicle is not solved, yet, so the exact position of these moving road works cannot be defined. The goal of this project is to provide more adequate information for the road users, as well as to enhance incident management by directing all available units near to the spot, for recovery. To reach our goal, all maintenance vehicle, and trailers on motorways should be included in the common Fleet Management System (FMR) at Hungarian Public Road Nonprofit Pte Ltd Co. (MK). New interfaces and databases should be developed, for receiving data on current position, and other attributes (e.g. speed limit in force). With the help of this real time database, on-line data will be provided for the information exchange platform (DATEX II node) in order to fulfill the requirements of priority areas c and e of the ITS Directive.

### **Responsible:**

Hungarian Public Road Non-profit Pte. Ltd. Co. (MK)

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# **SUMMARY**

		ITS BUDGET [€] <sup>3</sup>	COMMENTS
<b>PRIORITY AREA I: Optimal use of road, traffic and travel data</b>			
<b>MULTIMODAL TRAVEL INFORMATION SERVICES</b>			
	EWIL (A1.2.2.)	989 991 €	
	EDITS - 4CE433P2 (2012-2014)	237 844 €	
	SEE-ITS - SEE/D/0099/3.2/X. (2012-2014)	200 140 €	
<b>REAL-TIME TRAFFIC INFORMATION SERVICES</b>			
	EWIL (A4.2.1., A1.2.3., A4.2.4., A1.1.2., A1.1.5., A1.1.6.)	1 936 933 €	
	CORCODILE (A5/3)	100 000 €	PLANNED
	Implementing TMS at the Ukrainian-Hungarian border region	714 000 €	PLANNED
<b>RURAL AND MUNICIPAL ITS DEVELOPMENT</b>			
	DAOP-3.2.1/A-09-2009-0010 (2009-2013)	1 666 996 €	
	DAOP-3.2.1/A-09-2009-0003 (2009-2013)	840 602 €	
	DDOP-5.1.2/B-09-2009-0001 (2009-2013)	2 659 321 €	
	ÉMOP-5.1.2-09-2009-0008 (2009-2013)	1 249 781 €	
	Developing tram transport network of Szeged city	1 396 429 €	Total cost: 104 285 714 €
	Developing tram transport network of Miskolc city	535 714 €	Total cost: 135 000 000 €
	Developing tram transport network of Debrecen city	346 429 €	Total cost: 63 214 286 €
<b>ITS DEVELOPMENTS OF THE CAPITAL CITY</b>			
	Further development of the Budapest TCC (2014)	47 143 €	
	KARESZ (2013-2014)	1 285 714 €	ONGOING
	E-TICKET (2011-2016)	18 952 489 €	ONGOING
	CONGESTION CHARGE (2012 -2013)	135 518 €	
	FUTÁR - KMOP-2.3.1/A-2009-0001 (2009-2014)	23 744 940 €	
	KÖZLEKEDÉSSZERVEZÉS (2014-2015)	1 103 751 €	ONGOING
	P+R (2014-2015)	6 239 857 €	ONGOING
	FREIGHT TRAFFIC (2012-2015)	427 582 €	ONGOING
	TVM (2013-2019)	12 321 429 €	ONGOING

<sup>3</sup> Nett values

		ITS BUDGET [€] <sup>4</sup>	COMMENTS
<b>PRIORITY AREA II: Continuity of traffic and freight management ITS services</b>			
<b>DEVELOPING TRAFFIC MANAGEMENT SYSTEMS ON TRANSPORT CORRIDORS</b>			
	EWII. (A2.2.1., A2.1.1., A4.1.1.)	1 891 649 €	
	CORCODILE (A2/1, A3/1, A3/2, A4/4)	1 725 000 €	PLANNED
	Mobile payments (2012-2014)	2 867 857 €	Further budgetary indications: 14 285 714 €
<b>DEVELOPING TRAFFIC MANAGEMENT AND INFORMATION SYSTEMS</b>			
	EWII. (A2.2.2., A4.1.2., A4.1.6., A4.1.5.)	1 960 501 €	
	TIMS (2009-2014)	15 444 000 €	Further budgetary indications: 19 100 000 €
	TM projects of the capital city (2014 -2016)	1 303 571 €	ONGOING
	CROCODILE (A4/1, A4/3, A5/1)	550 000 €	PLANNED
<b>FREIGHT TRAFFIC MANAGEMENT OF TRANSPORT CORRIDORS</b>			
	EWII. (A3.2.1.)	14 107 €	
	Expansion of traffic monitoring camera network (2014)	125 000 €	
	HU-GO (2013.07.01.)	100 151 856 €	
	PIR (2014)	17 857 €	ONGOING
<b>PRIORITY AREA III: ITS road safety and security applications</b>			
<b>GENERAL TRANSPORT SAFETY DEVELOPMENT</b>			
	Transport safety related investments on the motorway and expressway network of Hungary (KözOP 1.5.0)	4 184 465 €	ONGOING
	Transport safety development on national road network (KözOP 3.5.0)	4 700 000 €	ONGOING
<b>INFORMATION SERVICES FOR SAFE AND SECURE PARKING PLACES FOR TRUCKS AND COMMERCIAL VEHICLES</b>			
	EWII. (A3.1.1., A3.1.2.)	259 250 €	
	CROCODILE (A5/2)	700 000 €	PLANNED
<b>THE HARMONIZED PROVISION FOR AN INTEROPERABLE EU-WIDE E-CALL SERVICE</b>			
	e-Call base infrastructure (2010-2014)	9 242 850 €	
	e-Call (2013-2017)	285 714 €	Further budgetary indications: 120 000 €
<b>PRIORITY AREA IV: Linking the vehicle with the transport infrastructure</b>			
	CROCODILE (A4/2)	500 000 €	PLANNED
<b>TOTAL</b>		<b>223 056 280 €</b>	

<sup>4</sup> Nett values