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MINISTRY OF INFRASTRUCTURE AND TRANSPORT



ITS PROGRESS REPORT FOR GREECE December 2017

Ministry of Infrastructure and Transport

Progress Report on ITS

According to the 2010/40/EU Directive

Hellenic Ministry of Infrastructure
and Transport

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This is a joint document authored by the staff of the Hellenic Ministry of Infrastructure and Transport according to the requirements of the Directive 2010/40/EU, with the cooperation of the main Hellenic authorities and entities that implement, fund, monitor or simply use ITS. The data presented in this report have been collected from the authorities and entities and have been assessed, elaborated, classified and reviewed by the Ministry

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Directive 2010/40/EU

Progress Report 2017

Greece

1 Introduction

1.1 General overview of the national activities and projects

This Progress Report was conducted for the purposes of the ITS Directive and it aims to assess the performance and deployment status of ITS in Greece. This is the second Progress Report on ITS, providing a quick snapshot of the relevant activities during the period 2014-2017. Although it is the second time that the national authorities are reporting collectively on the activities in the ITS sector, a different approach was taken, for which the structures are yet under development. As such, the assessment of the ITS operations contained in this report is based on the use of Key Performance Indicators (KPIs), as defined by the Activity 5 of European ITS Platform.

In Greece, during the past years, there has been a significant progress in the field of transport resulting in the modernization of the country's transport systems, predominantly through the investment in "hard" infrastructure but also - and to a large extent - through the penetration of ITS applications. This review focuses on the implementation of Intelligent Transport Systems and Operations, on which more attention has been paid lately. With the proliferation of the ITS Technologies in more road networks and in more cities - not only the largest ones - the use of VMS along the highways, real-time information available to the road and public transport users, traffic control cameras, electronic toll collection, travel planning and parking applications, RFID technologies on railway and freight transport, the list of ITS applications is extensive.

Despite the economic challenge, considerable progress has been achieved in ITS investments. Nevertheless, there is a need of leveraging their efficiency through research, capacity building, knowledge sharing and policy dialogue in order to integrate these achievements into benefits.

The development of a ***common monitoring and reporting framework for ITS projects*** that has been initiated with the previous report is ongoing with the contribution by various authorities and entities and their expert staff, under the coordination of the Hellenic Ministry of Infrastructure and Transport. The results from this effort indicate that the

framework is readily applicable to the projects supported by most of the related bodies, and that it is a useful tool for monitoring the performance of projects. Nevertheless, better ITS monitoring by the implementation bodies can provide more information on road safety and the environment, which affect ITS performance.

1.2 General progress since 2014

By 2014 Greece had implemented a number of large scale ITS projects, mainly in the field of road transport and in large cities (Athens and Thessaloniki) or on major motorways, while a lack of ITS deployment in other urban and rural areas was observed. As a result, the deployment of ITS was largely fragmented and limited in geographical scope. In 2017, noteworthy progress is made in this sector, since regional/local projects have taken place and urban areas and smaller cities have been involved. However, more steps can be taken in this direction, as for instance sea transport, especially short sea transport interconnecting islands has not seen substantial implementation of ITS.

An obstacle noticed in 2014 was the fact that research, design and implementation in the ITS area had been carried out for years without following a common strategic framework for their deployment, a national open architecture and common national or European standards, and without always ensuring the required interoperability across systems and services. This situation is improved in 2017, while the majority of the projects have been held in accordance with national and European standards and specifications. However, only a few projects contribute to the implementation of interoperability across systems and services.

Moreover, during the years 2011-2014, ITS applications remained at a pilot stage or within limited scope, without the potential for further growth and expansion. In many cases, administrative, organizational and financial problems prevented the adoption of successful "case studies" on a broader scale. In 2017, several of these problems have been overcome, and a considerable portion of the projects are in general use.

In addition, challenges highlighted in 2014, such as restrictions in financing, high investment costs and inherent weakness in public administration, have often hindered the deployment, maintenance and integration of ITS applications. In 2017, though financial restrictions still exist, the public and private resources invested in ITS are significant.

Owing to Greece's particular characteristics, in 2017 transport networks are still faced with substantial challenges in infrastructure connections. Road safety issues are also a significant challenge, especially for road transport operators.

1.3 Contact information

The department responsible for ITS Reporting is the Department of Transport Planning and Development. The contact details are:

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1.4 Projects by priority area

1.4.1 Priority area I. Optimal use of road, traffic and travel data

In this section, the projects related to the optimal use of road, traffic and travel data are described in detail. Some of the projects described below belong to other priority areas, too. These projects are:

- Priority areas I, II
 - Web based electronic licensing system for special transport through the road network of Egnatia Odos SA
 - Traffic Management System – Motorway of Central Greece
 - Traffic Management System – Ionian Odos
- Priority areas I, III
 - Installing Variable Message Signs - ATHE Motorway
 - Vehicle Detection System Installing
 - Closed Camera Node Tracking Circuit
 - Installing Variable Message Signs
 - Geographic Information System – Nea Odos
 - Geographic Information System – Kentriki Odos
- Priority areas I, II, III
 - Integrated Intelligent Transport System (ITS) for traffic management, road safety and user information at “Charilaos Trikoupis” Bridge
- Priority areas I, II, III, IV
 - Provision of technical support to the competent unit of the Ministry of Infrastructure and Transport for the effective and valid updating of DG MOVE's TEN-Tec Portal database under the CEF TRANSPORT - PSA

- ITS Observatory

1.4.1.1 Description of national activities and projects

- **Passenger Information System (PIS)**

The Passenger Information System project deals with the creation of an information system for passengers at the major stations in Greece and at the main stations of the Airport-Kiato line. It is a national project implemented by TRAINOSE, and lasted from 2015 to 2016. The project has been opened to general use, and belongs to the multimodal rail network. Project financing came from private resources and amounts to 80.000 €. In its implementation, ITS standards and specifications have not been included, and the project is not part of any legislative framework related to the application and operation of ITS.

- **IP Surveillance System**

IP Surveillance System project deals with the installation of a closed circuit television system CCTV at the TRAINOSE oilfield. It is a national project, implemented by TRAINOSE in 2014. The project has been opened to general use, and belongs to the multimodal rail network. Project financing came from private funds and amounts to € 40.000. In its implementation, no specifications and standards of Intelligent Transportation Systems (ITS) have been applied, and the project is not part of any legislative framework related to the application and operation of ITS.

- **Train tracking system development via GPS - Fleet management**

The Train tracking system via GPS - Fleet management focuses on the installation of GPS on all trains hired by TRAINOSE with the main objective of optimal fleet control. It is a national project, whose operation is ongoing, and is being implemented by TRAINOSE. The project has been opened to general use and belongs to multimodal / railway networks. Project financing came from private resources. The development of the project involves Divico Security, while its implementation does not apply standards of Intelligent Transportation Systems (ITS). The project is not part of any legislative framework related to the application and operation of ITS.

- **Live Suburban Railroads**

The Live Suburban Railroads project focuses on the passenger information system. It concerns the Athens - Kiato, Piraeus - Chalkis, Larissa - Thessaloniki suburban lines and provides real-time map locations of trains and estimated train arrival times at each passenger station. It is a local project implemented by TRAINOSE. The project has been opened to general use and belongs to the multimodal / rail network. Project financing came from private resources. In its implementation, no specifications and standards of Intelligent

Transportation Systems (ITS) have been applied and the project is not part of any legislative framework related to the implementation and operation of ITS.

•Integrated ticketing system development

The Integrated ticket system development project focuses on the creation of a uniform transfer license based on the European RCT2 standard (ticket and booking together in one chunk). It is a national project implemented by TRAINOSE. The project has been opened to general use and belongs to the ticketing issuing system. Project financing came from private resources. In its implementation, no specifications and standards of Intelligent Transportation Systems (ITS) have been applied and the project is not part of any legislative framework related to the implementation and operation of ITS.

•Passengers services mobile application

The Passenger services mobile application focuses on creating an application for IOS and ANDROID ticketing. It is a national project implemented by TRAINOSE in 2017. The project has been opened to general use and belongs to the Ticketing issuing system. Project financing came from private funds and amounts to € 30.000. In its implementation, no specifications and standards of Intelligent Transportation Systems (ITS) have been applied and the project is not part of any legislative framework related to the application and operation of ITS.

•GreenYourMove (GYM)

The GreenYourMove (GYM) project is a European Research Project co-funded by the European Union's financial institution for the environment, LIFE. The main objective of the GreenYourMove project is to develop and promote a co-modal navigation pilot with the direct aim of minimizing greenhouse gases in Europe. It is a European project whose operation is underway with the goal of being completed in 2018 and implemented by the University of Thessaly. The project is a pilot test and is part of the multimodal / rail networks. Project financing came from co-financing and amounts to 26.728 € to date.

The expected results from the project are the reduction of greenhouse gases at European level and the switch of passengers from the road to the railways. Project participants are the University of Thessaly, EMISIA, AVMAP, CHAPS, PLANNERSTACK, while there is cooperation with the Netherlands and the Czech Republic. In its implementation, no specifications and standards of Intelligent Transportation Systems (ITS) have been applied and the project is not part of any legislative framework related to the application and operation of ITS.

•Intelligent Portable Control System (iBorderCtrl)

The Intelligent Portable Control System (iBorderCtrl) is an innovative project aimed at returning faster and better border control to third-country nationals crossing the land borders of EU Member States with technologies that adopt the future development of Schengen border management. It is a European project whose operation is in progress with the goal of being completed in 2019 and implemented by European Dynamics. The project is a pilot test and belongs to cross-border networks. Project financing came from public funds and amounts to € 60.000 to date.

The expected results from the project are to improve passenger and freight transport processes in non-Schengen countries. The list of collaboration includes European Dynamics, ICCS, STREMBLE, Manchester Metropolitan University, iTTi, EVERIS, BIOSEC, JAS, KEMEA and TRAINOSE, and other EU countries. In its implementation, no specifications and standards of Intelligent Transportation Systems (ITS) have been applied, and the project is not part of any legislative framework related to the application and operation of ITS. The main objective of developing and implementing the project for European Dynamics is to improve the timing of trains arriving from the border.

•New Cooperative Business Models and Guidance for Sustainable City Logistics (NOVELOG)

The NOVELOG project focuses on the knowledge and understanding of the distribution of goods and the travel of services by providing guidance on the implementation of results and sustainable policies and measures. This guidance will support the choice of optimal and workable solutions for urban freight and transport services and will facilitate stakeholder cooperation and development, field trials and transfer of best governance and business models. It is a European project whose operation is underway with the goal of being completed in 2018 and it is being implemented by CERTH.

The project is a pilot test and belongs to the category of cross-border networks. Project financing came from public funds and amounts to € 40.000 to date. The expected result from the project is the transportation of loads with pallets with the main objective of improving the load factor and the carbon footprint. In its implementation, no specifications and standards of Intelligent Transportation Systems (ITS) have been applied and the project is not part of any legislative framework related to the application and operation of ITS.

•Reducing Environmental Footprint based on Multi - Modal Fleet management Systems for Eco - Routing and Driver Behaviour Adaption (REDUCTION)

The REDUCTION project deals with the reduction of the energy and environmental footprint of transport in the EU through the adoption of optimal economic driving models. It is a European project implemented by the University of Hildesheim from 2012 to 2015. The project has been opened to general use and belongs to the multimodal / rail networks. Project financing came from European resources and amounts to 120.0000 €.

The expected results from the project are the creation of an optimal mechanization model and its application to the fleet operated by TRAINOSE. Participants are the University of

Hildesheim, the Aalborg University, the University of Thessaly, Delphi Electronics, CTL Logistics, FlexDenmark and other EU Member States. In its implementation, no specifications and standards of Intelligent Transportation Systems (ITS) were applied, and the project is not part of any legislative framework related to the application and operation of ITS. For the University of Hildesheim, the main objective of developing and implementing the project is to reduce greenhouse gas emissions and improve the company's services to passengers.

•Green Intermodal Freight Transport (GIFT)

The GIFT project deals with the reduction of carbon footprint in SE Europe by finding optimal freight routes. It is a European project implemented by the Ministry of Infrastructure and Transport from 2011 to 2014. The project has been opened to general use and belongs to the multimodal / railway networks. Project financing came from European funds, and amounts to € 60.000.

The expected result from the project is the reduction of air pollution. Participants are the Ministry of Infrastructure and Transport, the University of Aegean, Rail Cargo Hungaria, and other SE Europe member countries. In its implementation, no specifications and standards of Intelligent Transportation Systems (ITS) have been applied and the project is not part of any legislative framework related to the application and operation of ITS. For the Ministry of Infrastructure and Transport, the main objective of the project's development and implementation is to reduce greenhouse gas emissions and improve freight services.

•CROCODILE II (Connecting Europe Facility 2014-2020) (No. 2014-EU-TM-0563-W INEA/CEF/TRAN/M2014/1058107 Grant Agreement)

The CROCODILE II project contributes to the implementation of priority actions (b), (c), (e) of Directive 2010/40 / EU and of the related Regulations (962 / EU / 2015, 886 / EU / 2013 and 885 / EU / 2013) respectively issued by the EU.

For the participating entities, the beneficiary of the project is the Hellenic Ministry of Infrastructure and Transport and the implementing bodies are Egnatia Odos SA, the National Center for Research and Technological - Hellas / Hellenic Institute of Transport (CERTH/HIT), the University of Patras, and Western Macedonia University of Applied Sciences. Further, nine member states cooperate along the Orient-East-Med Central Line of the Trans-European Road Network: Austria, Germany, Greece, Italy, Cyprus, Romania, Poland, Slovenia and Czech Republic.

The main development / implementation objectives of the project are the operation of a central point of data collection and access for real-time traffic, with simultaneous implementation of standard interfaces with the National Access Point and third parties, and the use of data to provide real-time ITS services to users through other available corporate tools / platforms (e.g., Web site, Geoportal).

In more detail, EGNATIA ODOS S.A. will implement the following actions:

-Installation of 40 "smart" cameras with video content analytics (SUBPART 1)

- Installation of 10 meteorological stations (8 fixed and 2 portable) (SUBPART 2)
- Creation of a single-point data collection point (e.g. Egnatia Single Access Point, Egnatia SAP) for the development of Intelligent Transport Services, which will also be the point of interconnection with the National Access Point (SUBPART 3.A)

The project is ongoing and it is scheduled to be completed by December 2018.

- Upgrade of traffic management software to five (5) regional Traffic Control Centers (Ioannina, Anilio, Grevena, S10-Kastania, Symvolou) for the regular and automatic uploading of data to the central storage database of the collected data in Egnatia SAP (SUBPART 3.B)

It is a regional / local project implemented by Egnatia Odos SA. and runs from 2016 to 2018. In addition, the project is ongoing and has been piloted, while it is part of motorways. The total budget reaches the amount of € 600.000 (plus Value Added Tax). The funds are 80% public and the rest 20% comes from European Grant (INEA/CEF/TRAN/M2014/1058107 Grant Agreement).

This project is expected to contribute to:

- The fullest coverage of road sections of the motorway with equipment (cameras, meteorological) for data collection
- The improvement and upgrading of traffic management software at the Motorway Traffic Control Centers so as to enhance their uniformity and to remove their compatibility issues in general with newer operational working environments
- The uniform organization of all data on traffic and prevailing motorway conditions at a single point of access and disposal (e.g. Egnatia SAP) in standard data formats (e.g. DATEX II) under the relevant delegated regulations of Directive 2010/40 / EU

The project will be carried out according to standards (EU Delegated Regulations: 962/2015, 886 & 885/2013, DATEX II, EASYWAY ITS Deployment Guidelines, EU ITS Platform Reports, PIARC - ITS Handbook). The standards mentioned above are related to European interoperability and compatibility of ITS. In addition the project will contribute to the implementation of PD 50/2012, NATIONAL ITS STRATEGY 2015, NATIONAL ITS ARCHITECTURE 2016.

•ITS Observatory

ITS Observatory (<http://its-observatory.eu/its-observatory/>) is a European project of general use with main objective the development of an on-line information database on all ITS projects in Europe (Pan-European Intelligent Transport Systems Observatory).

It is a Pan-European project, funded by HORIZON 2020, with ERTICO - ITS EUROPE as the lead partner. It has a duration of 2,5 years (2015-2017), it is still in progress and in general use, and it belongs to databases in the form of a website. Project funding came from Horizon 2020 (H2020) and amounts to € 1.337.259.

The expected outcome of the project is easy and quick access to timely and reliable data on the ongoing implementation of ITS in Europe as well as the best available information on

results that will help users develop and implement ITS policy goals and strategies. The coordinator of the project is ERTICO, and Greece participates through CERTH / HIT and HIPE, while there is cooperation with Belgium, Denmark, Austria, Italy, United Kingdom. No specifications and standards of Intelligent Transportation Systems (ITS) have been implemented. Also, the project is part of the legislative framework Directive 2010/40 / EU related to the implementation and operation of ITS.

CERTH / HIT as a project partner provides scientific support for the development and evaluation of the Pan-European Intelligent Transport Systems Observatory that develops the project.

•Provision of technical support to the competent unit of the Ministry of Infrastructure and Transport for the effective and valid updating of DG MOVE's TEN-Tec Portal database under the CEF TRANSPORT - PSA

CEF TRANSPORT- PSA is a national project that deals with the provision of technical support to the competent unit of the Ministry of Infrastructure and Transport for the effective and valid updating of DG MOVE's TEN-Tec Portal database. Its main objective is the development of an online data base, which includes geospatial and descriptive information on projects implemented with the support of the TEN-T programme. The database contains data on all Trans-European Transport Networks as well as for projects funded under the TEN-T and CEF programmes. It falls under Priority I to optimize the use of road, traffic and travel data.

The lead stakeholder of the project is CERTH-HIT (Hellenic Institute of Transport, part of the Centre for Research and Technology Hellas), while there is cooperation with other EU countries, and the funds come from Greek Ministry of Infrastructure and Transport with the total amount reaching € 21.000. The project is ongoing and it is scheduled to last 6 months (2017).

The expected outcome of the project is to provide users with the ability to visualize all data through an online Geographic Information Systems platform that supports all common functions of a Geographic Information System. In addition, this project makes it easier for the competent authorities to manage the current transport related projects.

No specifications and standards of Intelligent Transportation Systems (ITS) have been implemented. Also, the project is part of the legislative framework Directive 2010/40/ EU on the National Intelligent Transport Systems Strategy, related to the implementation and operation of ITS. CERTH has developed the TEN-Tec National Platform.

•Integrated Traffic Management and Traffic Monitoring Platform to inform citizens about the conditions of multi-channel traffic in the Municipality of Kavala

The project focuses on the provision and installation of a driver information system for route travel times and the availability of parking spaces in the city of Kavala. It is a local project that was implemented in 2015 by the Municipality of Kavala. The project has been opened to general use and belongs to the category of urban road network. Project funding came from public funds and amounts to € 16.000. The main objective of the project is to inform

drivers and passengers. In its implementation, no specifications and standards of Intelligent Transportation Systems (ITS) have been applied and the project is not part of any legislative framework related to the application and operation of ITS. Finally, the main objective of the Municipality of Kavala was the reduction of unnecessary movements, and the improved service to citizens and visitors.

•Intelligent Telematic Information System for Drivers and Citizens for Traveling and Parking in the Municipality of Kalamata through Multi-Channel Information - "Intelligent Movement"

The project focuses on the supply and installation of a passenger information system for traffic, parking and public transport in Kalamata. It includes motion sensors, electronic signs and a telematics system for urban city busses. It is a local project that was implemented in 2015 by the Municipality of Kalamata. The project has been opened to general use and belongs to the category of urban road network. Project funding came from public funds and amounts to € 159.000. The project is not part of any legislative framework related to the application and operation of ITS. The main objective of the project is to inform drivers and passengers while upgrading public transport.

•Integrated Traffic Management and Tracking Platform to inform citizens about traffic conditions in the Municipality of Ioannina through multiple communication channels

The project focuses on the implementation of a traffic measurement system using traffic sensors and information for drivers using electronic signs. It is a local project that was implemented in 2015 by the Municipality of Ioannina. The project has been opened to general use and belongs to the category of urban road network. Project funding came from public funds and amounts to € 147.000. The project is not part of any legislative framework related to the implementation and operation of ITS. The main objective of the project is the optimal use of the urban road network. In particular, the main objective of the Municipality of Ioannina is to inform the drivers.

•Supply, installation and maintenance of traffic count stations in Egnatia Odos motorway and sections of National Highways

The project includes the supply, installation, maintenance and assurance of good operation for two years of traffic count stations in sections of Egnatia Odos, its Vertical Axes and parts of the National Highways that are alternative or complementary to the Egnatia Odos axis (35 portable traffic devices for 40 count stations covering 35 road sections). The traffic count stations record the basic characteristics of traffic (volume, classification, speed, timegap, etc.). The project also includes the necessary equipment and software for the transfer of the collected data to the relevant central database (in the headquarters of Egnatia Odos SA.) in almost real time -(every 5 minutes).

The main objective of the project is to enrich the information which is available to Egnatia Odos SA (and other road operators and planning authorities)regarding the traffic

characteristics and traffic conditions in parts of the core road network in Northern Greece, by extending the existing traffic count system (which included traffic count stations along Egnatia Odos motorway only). The collected data can be used i)for statistical analysis of the traffic characteristics and ii)for detection of incidents (“abnormal” traffic conditions – e.g. reduction of average traffic speed below a predetermined threshold) and sending of the appropriate notifications/alarms to the road operators in real time. Besides that, the above data can be disseminated to the public through internet and mobile applications, road electronic signs etc.

The project, which also includes the (in progress) services for the technical support / ensuring of the proper operation and the annual maintenance of the stations for two years was incorporated and implemented as a distinct Sub-project (contract) in the Operational Program "Enhancement of Accessibility", Operation "Observatory of Egnatia Odos", under the NSRF 2007-2014. It falls under Priority I to optimize the use of road, traffic and travel data. It is a local project whose operation is ongoing, as supplies and facilities have been completed and all stations have been in operation since April 2016. At this stage (June 2017), the project is in the phase of the 2nd year of the maintenance and operation of the stations. It will be completed in April 2018 (when the 2nd year maintenance services of the stations will be completed). The project is being implemented by EGNATIA ODOS SA, it has been opened to general use and belongs to the category of the national and European road network. Project financing came from public funds and amounts to 226.534 €.

In its implementation, no specifications and standards of Intelligent Transportation Systems (ITS) were applied, and the project is not part of any legislative framework related to the application and operation of ITS.

•Web based electronic licensing system for special transport through the road network of Egnatia Odos SA

Egnatia Odos SA, in order to improve the management of the licensing of special transports (overweight/oversized loads and vehicles) through its road network, has developed internally and uses a Vehicle Permit Management System (VPMS), which supports the whole procedure (intermediate checks, actions and approvals, communications between the involved company and stakeholders units, etc.). It consists of two different interfaces. The first concerns the customization and management of the application by authorized Egnatia Odos SA users. The second interface concerns the access via the web of the transport companies who want to do the special transport and offers them the ability to apply for the license (and upload all the required documents) and download and print the license after it is issued. All data are stored in a database.

The expected results of the project are the optimization and acceleration of the procedure for the granting of special permits in order to better serve the carriers. Yet another benefit is the better control and knowledge of such vehicle trips for the road operator which helps improving traffic safety.

Besides these obvious results, one of the benefits of the project is that all related with the special trips information (route, vehicle characteristics, trip date and hours etc.) can be

provided to the stakeholders (road operator regional units, traffic police, toll station operators, etc.) and the public (road users). Specifically, this can be achieved through the Geoportal of EGNATIA ODOS SA (Geoportal is a web portal developed by the company, through which a large volume of geospatial information is related to other information systems within the company and is available for use by government agencies and the general public) which is continuously being fed from the VPMS database and enables its users to request and receive information on the trips of these special vehicles (e.g. how many such trips and with what vehicle characteristics have been approved for a particular section in a particular day).

It falls under Priority I to optimize the use of road, traffic and travel data. It is a local project whose operation is in progress and is expected to end in 2017. The project is being implemented by EGNATIA ODOS SA, it is open to general use and belongs to the category of motorways. The project was implemented in-house with no additional costs for Egnatia Odos SA.

In its implementation, no specifications and standards of Intelligent Transportation Systems (ITS) are applied, and the project is not part of any legislative framework related to the application and operation of ITS.

• **Upgrading the traffic cameras management system of S10-Vermiou Traffic Control Center (TCC)**

Upgrading of the traffic cameras management system at the S10-Vermiou TCC concerns the upgrading of the management system of ninety traffic monitoring cameras (CCTV) at Polymylos – Veria road section, which is a 26 km mountainous section of the Egnatia Odos Motorway in West Macedonia region with 14 successive tunnels. The project includes briefly:

- Removing / dismantling existing central systems (Pelco VMX300-E etc. at TCC-S10 and to 3 local Control Centers) and replacing them with a new IP video central system.
- Installation of new CCTV software with features such as: control of switching signals from encoders to decoders, display of signals at operator stations, sequence programming in sequence, PTZ cameras control, video recordings in recording media, playback of recorded video and external storage (export) in a standard format, connection to I/O modules for alarm input and automatic display execution, configuration / signal quality settings in the codecs / decoders, programmable (via API / SDK) for connection to third-party systems (e.g. Web system for transferring images to separate decoders for export video on the Internet)
- Installation, commissioning of four servers, configuration of the CCTV software application and connection to the field equipment
- Remove / disable existing field encoders and decoders
- Installation of two main and backup systems for continuous recording of 96 video signals at CIF / 5fps resolution for 15 days and at least 8 TB.

It is a regional / local project implemented by Egnatia Odos SA. and was carried out in 2016. In addition, the project has been fully implemented and has been opened to general use, while it is part of motorways. Project funding came from public funds and amounts to €

60.000. In its implementation, no specifications and standards of Intelligent Transportation Systems (ITS) have been applied, and the project is not part of any legislative framework related to the implementation and operation of ITS.

The main goal of developing / implementing the project for the Agency is the use of modern technologies in critical infrastructure systems and in executive traffic management centers that allow a high level of service to users.

The expected results of the project are to improve event detection through a fuller depiction of the traffic management cameras of the Veria - Polymylos road section of the Egnatia Odos Motorway, and to improve the traffic management and timely information of the users through the implementation of appropriate traffic scenarios.

•Upgrading the traffic cameras management system of SYMVOLOU Traffic Control Center (TCC)

Upgrading the traffic cameras management system of Symvolou TCC concerns the upgrading of the management system of twenty-eight traffic management cameras (CCTV) in the vicinity of Symvolou tunnel (-twin tube tunnel of 1,145-meter length per tube)of the Egnatia Odos Motorway in the East Macedonia region. The project includes briefly:

- Installation of new CCTV software with features such as: control of switching signals from encoders to decoders, display of signals at operator stations, sequence programming in sequence, PTZ cameras control, video recordings in recording media, playback of recorded video and external storage (export) in a standard format, connection to I/O modules for alarm input and automatic display execution, configuration / signal quality settings in the codecs / decoders, programmable (via API / SDK) for connection to third-party systems (e.g. Web system for transferring images to separate decoders for export video on the Internet)
- Installation, commissioning of a server, configuration of the CCTV software application and its connection to the field equipment
- Installation of five new 42 "monitors.

It is a regional / local project implemented by Egnatia Odos S.A. and was carried out in 2016. In addition, the project has been fully implemented and has been opened to general use, while it is part of motorways. Project funding came from public funds and amounts to € 50.000. In its implementation, no specifications and standards of Intelligent Transportation Systems (ITS) have been applied and the project is not part of any legislative framework related to the implementation and operation of ITS.

The main goal of developing / implementing the project for the Agency is the use of modern technologies in critical infrastructure systems and in executive traffic management centers that allow a high level of service to users.

The expected results of the project are to improve event detection through a fuller depiction of the traffic management cameras of the Symvolou tunnel –of the Egnatia Odos Motorway and to improve the traffic management and timely information of the users through the implementation of appropriate traffic scenarios.

•Installation of traffic surveillance and traffic control equipment in new road sections and in particular: i. Vertical Axis A29 - Koromilia – Crystallopiigi Section, ii. Road Section Florina - Niki

I.)The project concerns the installation of road traffic monitoring and control equipment in the new road section Koromilia - Crystallopiigi (20 km), of the Siatista-Crystallopiigi vertical axis of the Egnatia Odos Motorway (A29), which includes the Ieropiigi and Crystallopiigi tunnels (each appr.550 m long). In summary, the project includes:

- Installation of 2 Variable Message Signs (VMS)
- Installation of 24 Lane Control Signs / LCS (in tunnels)
- Installation of traffic lights in orifices and tunnels
- Installation of 4 infrared sensors detection devices (either side of the tunnels)
- Installation of 4 vehicle detection devices with inductive loops for traffic measurements
- Installation of a central computer system with software for monitoring / control of the above-mentioned traffic equipment and other tunnel infrastructure (SCADA / TMS)
- Installation of 20 Closed Circuit Television (CCTV) cameras at and within the tunnels and relevant central surveillance system at the Control Center
- Installation of SOS phones in tunnels
- Installation of over-the-air communication infrastructure for the interconnection of the above equipment

II.)It also includes the installation of information equipment for road users in the new section Florina - Niki (15 km.), of the vertical axis Kozani - Florina - Niki of Egnatia Odos (KA 50). The project involves the installation of 2 VMS on the road axis and their connection to a central control system.

It is a regional / local project implemented by Egnatia Odos SA and it lasted from 2015 to 2017. Additionally, the project has been fully implemented and has been opened to general use while it belongs to motorways. Project funding came from public funds and amounts to € 840.000(in total for both projects I(€ 770.000) and II(€70.000)).In its implementation, no specifications and standards of Intelligent Transportation Systems (ITS) have been applied, and the project is not part of any legislative framework related to the implementation and operation of ITS.

The main goal of developing / implementing the project for the Agency is the use of modern technologies in critical infrastructure systems and in executive traffic management centers that allow a high level of service to users.

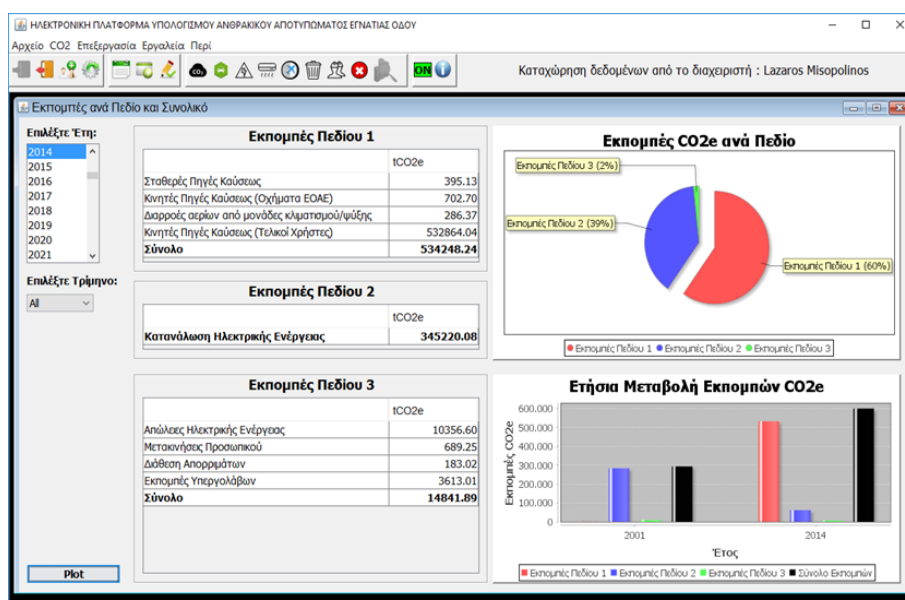
The expected results of the project are the increased road surveillance, traceability and traffic management in the sensitive tunnel sections of the road, as well as the ability to deliver messages for the entire road section of Koromilia - Crystallopiigi to the road users through the Variable Messages Signs. It is also possible to provide messages for the Florina - Niki road section to the road users through the Variable Message Signs.

•**Development of an electronic platform for calculating carbon footprint of Egnatia Odos motorway**

This project developed the methodological framework on which the quantification of emissions from the operation and maintenance of the motorway is based, and the creation of the carbon footprint model.

The carbon footprint calculations were performed for each Field (1st - 2nd - 3rd) separately, where, with the aid of analytical tables, the equivalent CO2 emissions were recorded for each activity as calculated from the primary or secondary input data. Also, the technical specifications of the special software electronic platform for calculating carbon footprint of Egnatia road have been developed.

The resulting model as well as the new-developed software were piloted for a period of 6 months, during which all the necessary primary data were introduced to test and improve the processes for calculating the emissions of each activity.



Graphical presentation of emissions per Scope, from the Egnatia Odos carbon footprint software

In the final Phase, training of the staff of Egnatia Odos SA (E.O.A.E.) was carried out, both on the collection and evaluation of the appropriate input data, as well as on the use and updating of the software, and presented a revised action plan for the modelling of E.O.A.E.'s AA based on the overall findings of the pilot implementation and proposals for action to reduce carbon footprint in the future.

The Project was constructed in one year and was implemented as a distinct Subproject (contract) in the Operational Program "Enhanced Accessibility", "Egnatia Motorway Observatory" under ESPA 2007-2014.

It is a regional / local project implemented by Egnatia Odos SA and was carried out in 2016. In addition, the project has been fully implemented and has been opened to general use

while it is part of motorways. Project funding came from public funds and amounts to € 20.000. In its implementation, no specifications and standards of Intelligent Transportation Systems (ITS) have been applied and the project is not part of any legislative framework related to the implementation and operation of ITS.

The main development / implementation objective for the Agency is knowledge of greenhouse gas emissions and calculation of carbon footprint, with the aim of:

- Continuous updating of E.A.O.E. Strategic Planning on Sustainable Development, Energy Management and Environmental Management
- The use of data and results for the implementation of actions to reduce and compensate carbon footprint
- The dissemination of results and information to stakeholders and the public
- The implementation and use of this software in other operating and maintenance bodies (Public and Private) of motorways.

The expected results of the project are the systematic recording of the necessary data in the software for calculating the carbon footprint of the company (E.O.A.E.) and its activities, the monitoring of the annual emissions, the proposal and the implementation of carbon footprint reduction / compensation measures, and the benchmarking of annual emissions and monitoring of carbon footprint reduction.

•Integrated Intelligent Transport System (ITS) for traffic management, road safety and user information at “Charilaos Trikoupis” Bridge

The "Charilaos Trikoupis" Bridge is a special project which, along with adjacent accesses, is 3.5 kilometers in length and includes a three-level building and two toll squares with fourteen available toll lanes in total. The most important systems / tools for traffic management of the Bridge are:

- The Bridge Control Center operates on a 24-hour basis to collect and analyse traffic data in real time so that the center's operators are immediately aware of the traffic situation.
- There is a CCTV where sixty-four cameras are installed and operated along the bridge and in the building. Images from the cameras are transferred via optical fiber to the Bridge Control Center for simultaneous overview of different areas of the project.
- There are two Variable Messages Signs (VMS) at Bridge entries, which are controlled by the Control Center and provide information / alerts to users for events, diversion - lane changes, and dangerous weather events.
- There are two meteorological stations on the Bridge, where they collect data (such as wind speed, temperature, etc.). If the permitted limits are exceeded, the Control Center proceeds with the implementation of appropriate action plans in accordance with the Bridge operation manuals. Additionally, at selected positions of the Bridge there are temperature sensors on the deck of the Bridge.

- In each Pillar there are installed emergency telephones for the public in both directions, which are connected to the Control Center.
- At the toll stations there is the choice of payment by cash, credit card and electronically by passing through the special bands using transceivers.
- The Bridge and four other motorways are involved in shaping a national framework for the interoperability of electronic tolls and in line with the European Directive.

The Ministry's services have the possibility to connect directly to the central system of the Bridge and receive in real time the traffic data as well as the toll transaction data.

The project was started in 1997 and completed in 2004, and its operation and maintenance are planned until 2039, when the bridge concession expires. It is a regional / local project implemented by "GEFYRA" with a consortium. In addition, the project has been fully implemented and has been opened to general use, while it belongs to the concession projects. Regarding the financing of the project, a loan from the European Investment Bank (EIB) was provided by co-financing from National-Community resources, the Greek State, as well as from Private Contractor resources. GEFYRA is a concession contract with a total construction cost of € 800.000.000.

In its implementation, specifications and standards of Intelligent Transportation Systems (ITS) were implemented, namely the concession agreement between the Greek State and GEFYRA SA, ratified by Law 2395/1996, and the Regulation of Studies and Research. These standards do not concern the Pan-European functionality and compatibility of ITS. Also, the project is not part of any legislative framework related to the implementation and operation of ITS.

The participating institutions are the Ministry of Infrastructure and Transport (Directorate of LSEP), GEFYRA SA (Project Contractor - Concession Company) and GEFYRA OPERATION SA (Operation and Maintenance Company).

The main goal of developing / implementing the project for the Agency is event detection and one-minute response to ensure a high level of road safety for the users of the Bridge, as well as to maintain a smooth traffic flow. In addition, the objective is to immediately notify users via electronic signboards for any events, and severe weather events. The main objectives include the collection and analysis of traffic data in real time, which helps to traffic management.

The main expected outcome of the project is the detection of incidents and a one-minute response to emergencies in order to avoid a possible secondary accident. The immediate response to events is aimed at quickly clearing events by patrol groups. An additional result is the immediate notification of the users via the electronic signposts for events, and severe weather events. Real-time collection and analysis of the traffic data is also expected, so that the control center operators have full traffic awareness on a 24-hour basis.

•Supply of passenger information equipment for the project NODES - New Tool for Design and Operation of Urban Transport Interchanges

The project involves the provision of two interactive infokiosks and a Variable Message Sign (VMS), and their installation at the IKEA Thessaloniki Terminal Bus Station (transit station). It is a regional / local project implemented by the Thessaloniki Urban Transport Council (SASTH) and was held in 2014. In addition, the project has been fully implemented and has been opened to general use, while it belongs to the urban road network. Project financing came from co-financing under the 7th EU Framework Program and amounts to € 32.300.

In its implementation, standards of Intelligent Transportation Systems (ITS) have been applied, namely the CE standards (Infokiosk, VMS), IP 55 (VMS), and ISO manufacturer (Infokiosk, VMS). The standards and equipment selected are in line with Article 8 and, in particular, with the basic principles of Annex II Directive 2010/40 / EU, and in particular: They support uninterrupted service provision, promote access equality, support maturity, and finally make intermodality possible. Also, the project is not part of any legislative framework related to the implementation and operation of ITS.

The expected outcome of the project is to evaluate the impact of providing information (static and real time) on passenger behaviour and choices through the use of 2 Infokiosk and 1 VMS Signal installed at the IKEA Thessaloniki Terminal Bus Station (interchange).

Participant in the project is the Thessaloniki Urban Transport Council, and in the NODES project, in which this action was implemented, 17 partners from 9 member states. Finally, the main objectives for the development / implementation of the project for the Agency are:

- Promotion of Public Transport
- Facilitating intermodality in public transport
- Upgrading the provision of information to the traveling public
- Improvement of waiting times at interchanges
- Assess the impact of providing information on passenger behaviour and choices.

•Traffic Management System - Motorway of Central Greece

The Traffic Management System is composed of an Open Traffic Management System and a Tunnel Management System. This includes the installation and operation of the following:

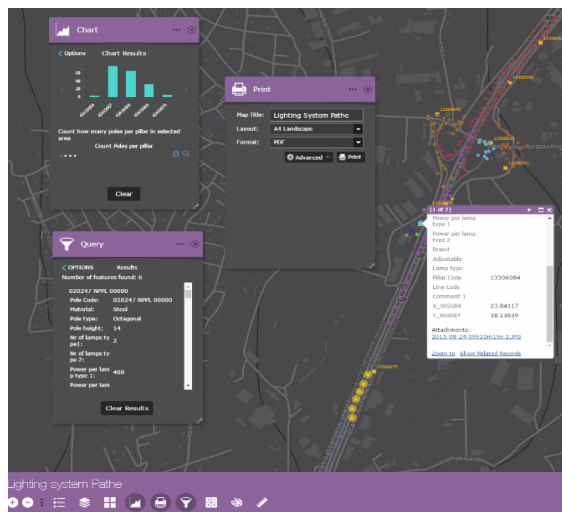
- Control centre
- Meteorological Stations
- Variable Messages
- Emergency telephones along the Motorway
- Node monitoring cameras and other points of interest
- Air Quality Measurement Station
- Vehicle Counting Systems

The main objective of the project is the construction and use of integrated Traffic Management Systems.

The project started in 2016, it is ongoing and 40% has been completed, while 155 km are in service. It is a national project implemented by KENTRIKI ODOS OF GREECE SA CONCESSION COMPANY, and it is part of motorways. Project financing came from public and private resources, with a total construction cost of € 820.955. Participating institution is the NEA ODOS SA CONCESSION COMPANY.

In its implementation, specifications and standards of Intelligent Transportation Systems (ITS) have been applied and the project is not part of any legislative framework related to the application and operation of ITS.

•Geographic Information System – Kentriki Odos



The project concerns a hybrid information system for imaging, analysing, processing and sharing geospatial data. The main portal of the system is an online application. All organization users (with different access levels) are associated with their corporate data and have access to the source components: field inventories, study plans and related files such as tabulated data, photos, videos, and related documents. The user has the ability to navigate on a dynamic map to select items of interest, visually inspect, process and / or inspect and extract all relevant information in tables, as well as easily create printable files, images. In addition, the map can use tools that the application has to query, perform statistical checks, and generate charts. The end platform supports common data sharing and concurrent use.

The project is ongoing, 80% has been completed and is a pilot test, in the final test phase, while the implementation schedule is in December 2017. It is a national project implemented by KENTRIKI ODOS OF GREECE SA CONCESSION COMPANY, and it is part of motorways. Project financing came from private resources. Participating institution is the NEA ODOS SA CONCESSION COMPANY.

The main objective of the project is the direct and uniform provision and sharing of information on basic motorway components both for operation and maintenance and for optimizing the project.

The expected results of the project are the direct and uniform provision and sharing of information on geospatial data both internally and to competent departments, and the visualization, processing / updating and analysis of geospatial data.

In its implementation, no specifications and standards of Intelligent Transportation Systems (ITS) have been applied and the project is not part of any legislative framework related to the application and operation of ITS.

•Traffic Management System - IONIA ODOS Motorway

“Traffic Management System - IONIA ODOS Motorway” is a national project implemented on Ionia Odos which includes the installation and operation of:

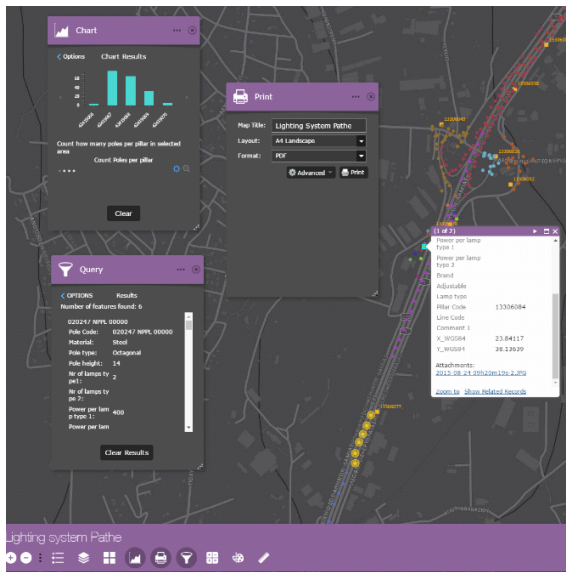
- a Control Centre
- Meteorological Stations
- Variable Message Signs
- Emergency telephones along the motorway
- Node and other points of interest monitoring cameras
- an Air Quality Measurement Station
- a Vehicle Counting System

Though the timetable schedule is completed, the project is still ongoing and only 65% of the Open Traffic Management System and the Tunnel Management System installation has been completed (155 km of the motorway operational by this moment).

The project is funded by both private and public resources and the total amount of funds reaches 1.225.930 € for the years 2015-2016. The implementation body is NEA ODOS S.A. Concession Company.

During the project’s implementation, there have been applied specifications and standards of Intelligent Transportation Systems (ITS) but they are not related to the interoperability between systems and services. Nevertheless, the project is not part of any legislative framework related to the implementation and operation of ITS.

An expected result of the project would be the increased users’ road safety and the direct provision of information.



•Geographic Information System – Nea Odos

“Geographic Information System” is a national project on pilot stage. It is concerned with the implementation of a hybrid information system for imaging, analyzing, processing and sharing geospatial data. The main portal of the system is an online application. All organization users (with different access levels) are associated with their corporate data, and have access to the source components whose sources are: field inventories, study plans and related files such as tabulated data, photos, videos, and related documents. The users have the ability to navigate on a dynamic map to select items of interest, visually inspect, process and / or inspect and extract all relevant information in tables, as well as easily create printable files, images etc. In addition, the map can use tools that the application has to query, perform statistical checks, and generate charts. The end platform supports common data sharing and concurrent use. Nevertheless, the project is scheduled to be accomplished by December 2017 and is now ongoing (80% completed).

The project is funded by private resources and the implementation body is NEA ODOS S.A. Concession Company.

During the project’s implementation, no specifications and standards of Intelligent Transportation Systems (ITS) have been applied and the project does not contribute to the interoperability between systems and services. Moreover, the project is not part of any legislative framework related to the implementation and operation of ITS.

Some expected results of the project are the direct and uniform provision of information on geospatial data, both internally and to competent departments, as well as the visualization, updating and analysis of geospatial data.

•Installing Variable Message Signs - ATHE Motorway

“Installing Variable Message Signs - VHF Motorway” is a national project in general use. For optimal traffic management and in the context of informing users about the prevailing conditions on the motorway, new VMSs have been installed at specific points of interest (Varybobi, Thebes, Atalanti). They allow users to be informed of major transport-related

events (traffic, accidents, and roadblocks) or other events (marches, concerts, extreme weather events) and provide instructions to users to avoid accidents or delays. The modification of the messages is remotely done by the Traffic Management Center. Nevertheless, the project is now completed.



The project is funded by private resources and the implementation body is NEA ODOS S.A. Concession Company.

During the project's implementation, specifications and standards of ITS (EN 12966-1:2005) have been applied but the project does not contribute to the interoperability between systems and services. Moreover, the project is not part of any legislative framework related to the implementation and operation of ITS.

Expected results of the project are the increased users' road safety and the direct provision of information.

•Vehicle Detection System Installing

"Vehicle Detection System Installing" is a national ongoing project in the final testing phase. The installation of Vehicle Detection System allows the Remote System to be managed by the Traffic Management Center-through appropriate installed software - providing traffic information. Although the timetable schedule is completed, the percentage of completion is 95% so the project is still ongoing (the final testing phase is remaining).

The project is funded by private resources and the implementation body is NEA ODOS S.A. Concession Company.

During the project's implementation, the standards EN 12966-1:2005 of ITS have been applied but the project does not contribute to the interoperability between systems and services. Moreover, the project is not part of any legislative framework related to the implementation and operation of ITS.

Expected results of the project are the increased users' road safety and the direct provision of information.

•Closed Camera Node Tracking Circuit



“Closed Camera Node Tracking Circuit” is a national project in the final testing phase. Twenty-six closed-circuit television cameras have been installed on the motorway, which are handled by the Traffic Control Center operators through special software. Users can access each camera and use the software to modify the image, zoom in or out, and modify its settings. This feature allows users to know traffic status as well as weather conditions in these motorway locations. This work further increases the coverage of the motorway. Concerning the status of the project, it is completed.

The project is funded by private resources and the implementation body is NEA ODOS S.A. Concession Company.

During the project’s implementation, standards EN 55103-1, 55103-2, EN 55130-4, EN 55022, EN 55024, EN 61000-3-2, EN 61000-3-3 of ITS have been applied but the project does not contribute to the interoperability between systems and services. Moreover, the project is not part of any legislative framework related to the implementation and operation of ITS.

Expected results of the project are the increased users’ road safety and the direct provision of information.

1.4.1.2 Progress since 2014

Most projects described in priority I started their implementation and operation after 2014. For the projects whose progress is known, it is reported that “IP Surveillance System” is completed, while in 2014 its progress was ongoing and it was only implemented for fuel supply control in railway engine rooms. As for “Train tracking system development via GPS”, it is still ongoing but now it is open to general use. In addition, “Integrated ticketing system development”, “Integrated Traffic Management and Traffic Monitoring Platform” to inform citizens about the conditions of multi-channel traffic in the Municipality of Kavala and Passenger services mobile application were ongoing, while now they are completed successfully. The progress of some projects is unknown, because no data were available since 2014. It is remarkable that many projects have been developed after 2014, several of which have already been completed. Some examples are:

- Passenger Information System
- Live Suburban Railroads
- Intelligent Movement

- Integrated Traffic Management and Tracking Platform to inform citizens about traffic conditions through multiple communication channels
- Supply, installation and maintenance of traffic count stations in Egnatia Odos motorway and sections of National Highways
- Web based electronic licensing system for special transport through the road network of Egnatia Odos SA
- Upgrading the traffic cameras management system of S10 VERMIYOU Traffic Control Center (TCC) in Egnatia Odos motorway
- Upgrading the traffic cameras management system of SYMVOLOY Traffic Control Center (TCC) in Egnatia Odos motorway
- Installation of traffic surveillance and traffic control equipment in new road sections constructed by Egnatia Odos SA
- Development of an electronic platform for calculation carbon footprint of Egnatia Odos motorway
- Installing Variable Message Signs- ATHE Motorway
- Vehicle Detection System Installing
- Closed Camera Node Tracking Circuit

1.4.1.3 Reporting obligation under Delegated Regulation (EU) 2015/962 on the provision of EU-wide real-time traffic information services (priority action b)

Background

The European ITS Platform (EU EIP, www.its-platform.eu) project is funded by the EC under the Connecting Europe Facility. Within this project sub-activity 4.6 aims at monitoring, harmonisation and data exchange with respect to Single Points of Access in Europe, covering the following topics:

- the provision of information services for safe and secure parking places for trucks and commercial vehicles ((EU) 2013/885),
- the provision, where possible, of road safety-related minimum universal traffic information free of charge to users ((EU) 2013/886),
- the provision of EU-wide real-time traffic information services ((EU) 2015/962) and
- the provision of EU-wide multimodal travel information services.

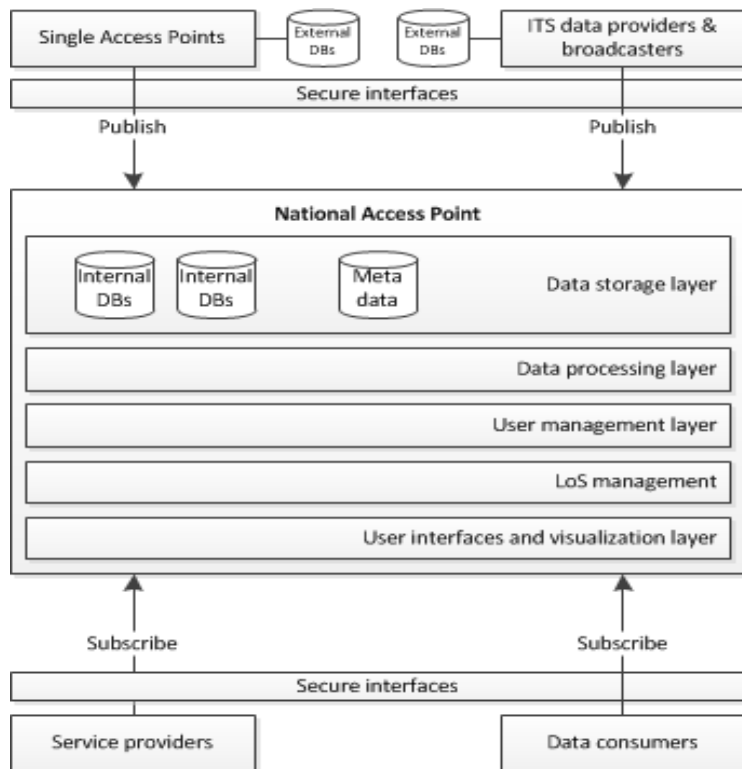
The Ministry responsible for implementing this Delegated Regulation of the National Access Point is the Ministry of Infrastructure and Transport and the implementing body is Centre for Research and Technology Hellas – Hellenic Institute of Transport. The implementation is foreseen on Q4_2017 – Q4_2018.

The real-time information that will be provided include:

- *Traffic Volume*
- *Speed*
- *Travel time*
- *Congestion related data*
 - *Queue length (specific in GR-NAP)*
 - *Queue start position (specific in GR-NAP)*
 - *Data (i.e. waiting time) at borders/border-crossings*
 - *Dynamic speed limit*
 - *Overtaking bans on HGV*
 - *Charging Points – Dynamic data*
 - *Traffic Management Measures – Dynamic data*
 - *Freight Logistics Information – Dynamic data*
 - *Level of Service*
 - *VMS messages*
 - *Vehicle class*
 - *Filling Stations – Dynamic data:*
 - *Location of station*
 - *Availability of Petrol, Diesel, Liquefied natural gas, Hydrogen*
 - *Accessibility information*
 - *Default time limitations*
 - *Freight Logistics – Dynamic data:*
 - *Default time limitations*
 - *Location of delivery areas*

The usage of NAP will be monitored and a method for quality assessment is planned to be defined. The above – mentioned data will be available in the NAP and through web-links and the data exchange will be carried out via DATEXII. Moreover, metadata and data discovery services will be available and compatible with the Coordinated Metadata Catalogue. Nevertheless, there will be coverage of Core and Comprehensive TERN and interfaces with urban areas within Greece, as well as with other countries' NAPs and data providers from Crocodile 2 partner countries.

For the initial operating phase of the NAP (2018), at least two organizations will provide data to the NAP (CERTH-HIT and Egnatia Odos S.A.). Other data providers will be contacted as well (within the activities of the Crocodile 2 project) during 2018.



1.4.1.4 Reporting obligation under Delegated Regulation (EU) No 886/2013 on data and procedures for the provision, where possible, of road safety-related minimum universal traffic information free of charge to users (priority action c)

The Ministry responsible for implementing this Delegated Regulation of the National Access Point is the Ministry of Infrastructure and Transport and the implementing body is Centre for Research and Technology Hellas – Hellenic Institute of Transport. The implementation is foreseen on Q4_2017 – Q4_2018.

The safety related minimum universal traffic information that will be provided include:

- Short term Road works
- Obstacle, Type of obstacle (debris, animal, people)
- Unmanaged blockage of a road
- Unprotected accident area
- Wrong-way driver
- Temporary Slippery road
- Reduced visibility
- Exceptional weather conditions affecting driving

The usage of NAP will be monitored and a method for quality assessment is planned to be defined. The above – mentioned data will be available in the NAP and through web-links, and the data exchange will be carried out via DATEXII. Moreover, metadata and data discovery services will be available and compatible with the Coordinated Metadata Catalogue. Nevertheless, there will be coverage of Core and Comprehensive TERN and interfaces with urban areas within Greece, as well as with other countries' NAPs and data providers from Crocodile 2 partner countries.

For the initial operating phase of the NAP (2018), at least two organizations will provide data to the NAP (CERTH-HIT and Egnatia Odos S.A.). Other data providers will be contacted as well (within the activities of the Crocodile 2 project) during 2018. Assessment of compliance is planned and will be defined.

1.4.2 Priority area II. Continuity of traffic and freight management ITS services

In this section, the projects related to the continuity of traffic and freight management ITS services are described in detail. Some of the projects described below belong to other priority areas, too. These projects are:

- Priority areas I, II
 - Web based electronic licensing system for special transport through the road network of Egnatia Odos SA
 - Traffic Management System – Motorway of Central Greece
 - Traffic Management System – Ionian Odos
- Priority areas II, III
 - Replacing Payment Methods Plates with corresponding electronic ones – Kentriki Odos
 - Replacing Payment Methods Plates with corresponding electronic ones – Nea Odos
 - Replacing Payment Methods Plates with corresponding electronic ones – Kentriki Odos
 - Replacing Payment Methods Plates with corresponding electronic ones – Nea Odos
- Priority areas I, II, III
 - Integrated Intelligent Transport System (ITS) for traffic management, road safety and user information at “Charilaos Trikoupis” Bridge
- Priority areas II, IV
 - Back Office System

- Priority areas I, II, III, IV
 - Provision of technical support to the competent unit of the Ministry of Infrastructure and Transport for the effective and valid updating of DG MOVE's TEN-Tec Portal database under the CEF TRANSPORT - PSA
 - ITS Observatory

1.4.2.1 Description of the national activities and projects

•Installation of RFID system on trains

Installation of RFID system on trains is a project that deals with the installation of RFID system with the main objective of better container management. It is a national project implemented by TRAINOSE. In addition, the project has been opened to general use and belongs to the multimodal rail network. Project financing came from private funds. In its implementation, no specifications and standards of Intelligent Transportation Systems (ITS) have been applied and the project is not part of any legislative framework related to the implementation and operation of ITS.

•Server Room

Server Room is a project that deals with installing Server Room, with the main goal of supporting company data security, application management, threats of hybrid wars. It is a national project implemented by TRAINOSE in 2016. In addition, the project has been opened to general use and belongs to IT Infrastructure. Project funding came from private funds and amounts to € 200.000. In its implementation, no specifications and standards of Intelligent Transportation Systems (ITS) have been applied, and the project is not part of any legislative framework related to the implementation and operation of ITS. The expected outcome of the project is the strengthening of TRAINOSE infrastructure.

•Cooperative Logistics for Sustainable Mobility of Goods – CO-GISTICS

The CO-GISTICS project develops collaborative ITS services that find application in the supply chain. The integration of existing freight and transport systems with innovative solutions such as "collaborative services" and "intelligent loads" are the main objectives of the project; the solutions have led to increased energy efficiency and sustainable mobility of goods.

It is a Pan-European project which is funded by the CIP - Competitiveness and Innovation Program, with ERTICO - ITS EUROPE as the lead partner. The runtime is from 2014 to 2017. In addition, the project has been piloted and is part of the Urban Road Network. Project funding came from the CIP - Competitiveness and Innovation Program and the total cost of

the project is € 7.492.000. In its implementation, the standards CEN TC278 WG 16 / ISO TC204 WG 18 of the Intelligent Transportation System (ITS) were applied.

The Collaborative Intelligent Transport Systems services developed in the project are interoperable between the participating cities / countries. The project contributes to the implementation of Directive 2010/40 / EU, demonstrating the benefits of vehicle-infrastructure interconnection. Also, the project is part of the legislative framework Directive 2010/40 / EU related to the implementation and operation of ITS.

CERT / HITT as a project partner provided scientific support for the development and evaluation of the pilot applications for Cooperative Intelligent Transport Systems in the freight sector in the project.

- **ITS Observatory** (see page 13)
- **Provision of technical support to the competent unit of the Ministry of Infrastructure and Transport for the effective and valid updating of DG MOVE's TEN-Tec Portal database under the CEF TRANSPORT – PSA** (see page 14)
- **Web based electronic licensing system for special transport through the road network of Egnatia Odos SA** (see page 16)
- **CROCODILE II (Connecting Europe Facility 2014-2020) (No. 2014-EU-TM-0563-W INEA/CEF/TRAN/M2014/1058107 Grant Agreement)** (see page 12)
- **Integrated Intelligent Transport System (ITS) for traffic management, road safety and user information at “Charilaos Trikoupis” Bridge** (see page 21)
- **Research, Financing, Installation, Maintenance Support, Maintenance and Technical Management of Integrated Passenger Information System and Fleet Management for ETHEL and ILPAP with SDIT (Action 1.2)**

The scope of the project concerns the research, financing, installation, operation (including maintenance and technical management) of a Fleet Management and Passenger Information System (Telematics System) for buses and trolleys. This system will be implemented and will operate through a Public-Private Partnership (PPP) that will have a duration of twelve (12) years from the entry into force of the Partnership Contract.

The Integrated Telematics System (OTS) will be utilized by OASA and the bus and trolley transport operators, and will aim to optimize the performance and quality of the provided transport and related services.

The OTS will briefly provide the following functionality:

- Real-time tracking of the location of all vehicles
- Fleet coordination and tracking
- Management, monitoring and supervision of a transport project
- Support for planning and organizing a transport project
- Passenger information for real-time vehicle transit times.

It is a regional/ local project, with the implementation within the Athens Urban Transport Organization (OASA). The Partnership Contract was signed on 30/6/2014 for 12 years. The service period began on 21/3/2016; the project is now in general use and belongs to the Athens Urban Transport Network. Regarding of the financing of the project, the proposed transaction will be implemented in the context of a non-contributory PPP project and involves the partial financing of the system's initial capital investment. The amount is € 4.974.714.

The main development/ implementation objectives are:

- Qualitative and quantitative upgrading of the transport services provided
- Real-time monitoring of bus and trolleybuses for optimal fleet management and better use of rolling stock
- More complete, timely and more accurate passenger information with in-vehicle dynamic on-board intelligence and smart stops
- Reduction of waiting time for passengers at stops and total travel time
- Improve travel quality.

The expected results of the project are:

- Improving the productivity of the urban transport system,
- Improving the transport system and services to citizens,
- Better quality of life, better management of the transport system and environmental resources,
- Upgrading the attractiveness of Mass Media through improving their operation and better co-ordination,
- Improving the wider urban environment (e.g. increasing safety, reducing air pollution and noise pollution), and
- Creation of new technology jobs.

The Athens Urban Transport Organization (OASA) participates, and there is no cooperation with other Member States. Intelligent Transportation System (ITS) specifications and standards have been applied, including Extensible Markup Language (XML), Bus Vehicle Area Network (SAE J1939), GTFS Telematics Data Exchange Standard, and Standard Wi-Fi IEEE 802.11b/g/n. The project is not part of a legislative framework related to the implementation and operation of ITS.

•Research, Financing, Installation, Operation Support, Maintenance and Technical Management of a Unified Automatic Collection System for OASA Group companies with SDIT (Action 1.1)

The subject of the project is the research, financing, installation, maintenance and technical management of a Unified Automatic Collection System with SDIT, hereinafter referred to as, “Automated storage and retrieval system” (ASRS). This system will cover and serve all means

of public transport (thermal buses, electric buses - trolley buses, metro, railways, tramways, suburban railway - only for the geographical area of the OASA), operating in the geographical area of OASA. The system will be implemented and will operate through a Public-Private Partnership (PPP) that will last twelve years from the entry into force of the Partnership Contract.

ASCR will be utilized by OASA SA, the public limited company named "Road Transport SA" - as it results from the merger of ETHEL and ILPAP - the public limited company, called "Fixed Transports SA" (STASY) – as it results from the merger of AMEL, TRAM and ISAP - as well as the suburban railway to optimize the services and the fare system. All the above-mentioned companies are operating and governed by laws 3920/2011, 2669/1998, 3429/2005 and 2190/1920.

The ASRS will have the following functional characteristics: First, it will support two types of fares in the form of electronic "smart cards". In these will be stored as many data of the fare and its use (movement) are required for the application of the fare products chosen by OASA. Also, validation of "smart cards" will be mandatory on every embarkation, even if they are replaced by time cards or imperfections. In bodies where the ASRS will be implemented as a closed grid system, validation will also be mandatory upon exit.

The ASRS equipment will include terminal devices for issuing, recharging, validating and controlling smart cards. Apart from terminal devices, the ASRS also provides for Management Centers, which have centralized information and security controls for terminal devices and transaction security.

The main development/ implementation objectives for the project are the limitation of loss from smuggling, the limitation of counterfeit/ voucher fake phenomena, and the Single Transboundary Treatment. Also, important objectives are the revenue sharing, the implementation of "electronic gateways" and closed system, and the introduction of new fare products/ combined product use.

It is a regional/ local project, with the implementation under the charge of the Athens Urban Transport Organization (OASA). The construction of the project is implemented in three phases. The first phase of the project was completed on 29th December 2015, the second phase on 31st October 2016, and the third phase was completed in four individual phases:

-Phase 3A: 31.01.2017 - Duration 7 months (19th month -25th month)

-Phase 3B: 31.03.2017 - Duration 2 months (26th month -27th month)

-Phase 3C: 31.05.2017 - Duration 2 months (28th month -29th month)

-Phase 3D: 31.07.2017 - Duration 2 months (30th month -31st month)

The project is in progress, with a 95% completion rate, will be put into general use at the end of the construction period, and is part of the Athens Urban Transport Network. Regarding the financing of the project, the proposed transaction will be implemented in the context of a non-contributory SDIT project, and involves the partial financing of the system's initial capital investment. The amount is € 63.773.238.

Expected results of the project are:

- Improving the productivity of the urban transport system, and in particular the production, handling, selling and controlling of the fare,
- Reduction of ticket escape,
- Improving the image of the transport system, its usability, commercial operation and the services provided to citizens,
- Upgrading the attractiveness of Mass Media, by improving their services and providing flexible pricing policy,
- Creating opportunities for combinational products and trade alliances / partnerships, and
- Creation of new technology jobs

The Athens Urban Transport Organization (OASA) participates in the project, and there is no cooperation with other Member States. For its implementation, specifications and standards of Intelligent Transportation Systems (ITS) have been applied. The design of the entire system and equipment is done through the application study developed by the Contractor. The use of international standards is pursued with the relevant specifications laid down for the preparation of the implementation study. The main categories of project-related standards that are contiguous if not identical to those of ITS are:

Interface and information standards

- Transit Communication Interface Profile (TCIP)
- Extensible Markup Language (XML)
- Bus Vehicle Area Network (SAE J1708, J1939)

Communication technologies standards

- Standard Wi-Fi IEEE 802.11b
- Wi-Fi IEEE 802.11 Mesh Network
- ISO14443 A&B

The applied standards concern pan-European interoperability and compatibility of ITS, in accordance with Article 8 of Directive 2010/40/EU "The necessary standards to be envisaged for interoperability, compatibility and continuity for the development and operational use of ITS are developed in priority areas and priority actions"

OASA requires interoperability between the following systems:

- ASCR and Telematics OSY
- ASCR and ERP OASA

The contractors of these systems have a contractual obligation to develop software in accordance with the most up-to-date rules, in the form of standards, art and science, including a more general understanding of interoperability between Information Systems.

The project is not part of a legislative framework related to the implementation and operation of ITS.

•**Traffic Management System - Motorway of Central Greece** (see page 23)

•**Replacing Payment Methods Plates with corresponding electronic ones – Kentriki Odos**



The project concerns decommissioning existing prism plates and replacing them with electronic ones. This project provides better understanding and readability of payment methods as users approach Toll Stations. This improves safety and optimizes the operation of Stations.

The project has been completed and is in the final test phase. It is a national project implemented by KENTRIKI ODOS OF GREECE SA CONCESSION COMPANY, and it is part of motorways. Project financing came from private resources. Participating institution is the KENTRIKI ODOS OF GREECE SA CONCESSION COMPANY.

The expected results and main objective of the project are the optimization of Toll Stations operation, and the reduction of maintenance costs for obsolete equipment. In its implementation, as far as the specifications and standards of Intelligent Transportation Systems (ITS) are concerned, EN 12966-1:2005 has been applied and the project is not part of any legislative framework related to the application and operation of ITS.

•**Back Office System**

The Back Office System (BOS) is enabled to support various features. Electronic toll billing is in place, and users equipped with a Kentriki Pass transceiver can cross the electronic toll stations of the motorway tolls by charging their passports for their passage. Additionally, the system enables users to make payments to their account in manual payload bands. The System is being developed to collect reliable information to provide an ever-increasing level of service to end-users. Within this development, the following functions have been developed:

- The Kentriki Pass website allows users to access their online accounts and preview their balance and recent payments.
- Immediate Account Charge via the Kentriki Pass website for users who wish to refill their account using their credit card.
- Development of an application that allows users to make deposits through the Back Office System.
- Issue of Annual Toll Expenditure Certificate from the Back Office System.
- Scan transceivers through the Back Office System.

- Money Transfer Service which sends an electronic file to the Back Office System and displays the amounts counted by the counting company after deposit.
- Fixed-Line Operation via Bank Account or Credit Card.

The project started in 2015, has been completed and is in the final test phase. It is a national project implemented by KENTRIKI ODOS OF GREECE SA CONCESSION COMPANY, and it is part of motorways. Project financing came from private resources and amounts to € 1.079.400. Participating institution is the KENTRIKI ODOS OF GREECE SA CONCESSION COMPANY.

The expected results (that also satisfy the main objective) of the project are the optimization of Toll Stations operation, and the reduction of maintenance costs for obsolete equipment.

In its implementation, as far as the specifications and standards of Intelligent Transportation Systems (ITS) are concerned, EN 12966-1:2005 has been applied, and the project is not part of any legislative framework related to the application and operation of ITS.

•**Traffic Management System - IONIA ODOS Motorway** (see page 25)

•**Replacing Payment Methods Plates with corresponding electronic ones – Nea Odos**

“Replacing Payment Methods Plates with corresponding electronic ones” is a national project in the final testing phase, and deals with the decommissioning of existing prism plates and their replacing with electronic ones. This project provides better understanding and readability of payment methods as users approach Toll Stations, and consequently improves safety and optimizes the operation of the stations. Concerning the status of the project, it is completed.

The project is funded by private resources and the implementation body is NEA ODOS S.A. Concession Company.

During the project implementation standards EN 12966-1:2005 of ITS were applied but the project does not contribute to the interoperability between systems and services. Moreover, the project is not part of any legislative framework related to the implementation and operation of ITS.

Expected results of the project are the optimization of Toll Stations operation and the reduction of maintenance costs for obsolete equipment.

•**Guideport**

The GUIDEPORT project aims to develop a portal based on a unified platform and integrate locational and transport information from moving and stationary sources in a smart port and its region. The information will derive from the port and regional infrastructure, and from instrumentation located within the passenger and freight vehicles that use the port. GUIDEPORT aims to make its ports more appealing to passengers and logistics companies, and to increase their competitiveness at a transnational level. Better quality of life for the residents of urban areas near ports is expected, as improved port operations, port access and vehicle guidance will reduce their exposure to time delays and air pollution. The project seeks to satisfy the needs of users of ports and port areas. Fleet managers, logistics

companies, freight and private cars are among the project target group. Port and regional/local authorities of regions and ports are willing to improve their services and to see the urban area services improved.

GUIDEPORT consists of four main services. These services are:

- Traffic Conditions
- Safety and Security info
- Information on Vehicle Location and
- Reports on Traffic.

Traffic conditions concerns identification of the best route for port access and congestion avoidance. This service collects GPS/video vehicle location, traffic conditions and incident data and transmits traffic conditions information to urban network and port authorities. It provides best-route guidance to fleet management, trucks and private vehicles, based on traffic conditions on main routes leading to/from port. This will be based on information received from instrumentation located on moving vehicles and in urban network. The best route is developed for fleet managers scheduling resulting in guidance of trucks/cars accessing port and avoiding its congestion.

Safety and Security info concerns port safety and security. This service provides safety and security information to port authorities (or authorities at other sensitive location in urban port network). It collects information from cars transiting through the port or other sensitive sub network. It is based on operational/storage/safety criteria. It is realized via automatic license plate recognition of vehicles entering/exiting port (or other sensitive location in urban port network) and network infrastructure.

Information on vehicle location concerns high-accuracy vehicle location and logistics. This service will guarantee high-accuracy information to port authorities (or authorities at other sensitive location) on vehicle movements in and near the port or other sensitive service node. It is based on vehicle instrumentation and network infrastructure. The high accuracy of vehicle trajectory is ensured with GNSS (high-quality GPS, Glonass and EGNOS-Galileo) receivers.

Reports on traffic concerns incident detection & road impacts. This service consists of incident-related guidance to authorities and drivers based on detected traffic problems, congestion and incidents in and near the port (or other sensitive service node). It is based on vehicle instrumentation and network infrastructure. Also here the high accuracy of vehicle trajectory is ensured with GNSS (high-quality GPS, Glonass and EGNOS-Galileo) receivers.

The project has also developed an Integrated Accessibility and Routing Guidance Platform, to enhance safe multimodal transport in sustainable smart ports and regions.

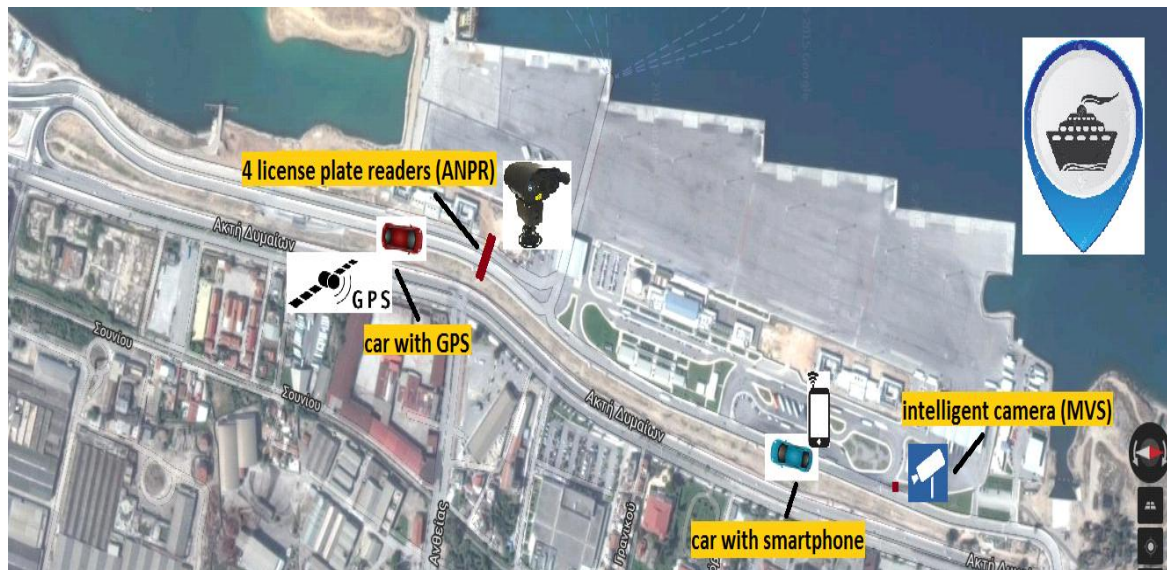
It is a European project, co-funded by the European Union - European Regional Development Fund (ERDF) - and by National Funds of Greece and Italy under the European Territorial Cooperation Programme Greece-Italy 2007-2013 3rd Call. The project has been opened to general use and belongs to urban networks. The project involves two regional authorities (Decentralised Administrations of Western Greece, Peloponnese and Ionian Islands; and Apulia) and two key ports (Brindisi and Patras); and a major University

(University of Patras) specialising in ITS development, integration and evaluation. Implementation of cutting edge technologies and ITS (such as machine vision, radar, GPS/GNSS) will offer integrated services including improved incident detection, route guidance, logistics and safety/security measures to improve access and safety in ports and their areas. Public/private sector, regional authorities, SMEs are expected to join the project network and Port Centre of Competitiveness, thus assuring sustainability of investments and operations. The complete system will be sustainable and can lead to system expansion within the national Master Plan, and EU Directive 2010/40.



The GUIDEPORT project expected outputs will be addressed to:

1. Sustain Port-ITS Network of public/private transport operators, regional/local authorities, and decision makers to support project services, and to report the network design & operation.
2. Encourage the involvement and collaboration of stakeholders, such as regional and port authorities, and transport operators, through the organisation of regional workshops for synthesizing needs, experience and feedback.
3. Guide public/private users in using services through the provision of a toolkit of educational material to increase skills and competences.
4. Collect and make available a database of best ITS-port practices & specifications.
5. Provide a unified web-based portal and support the use of new services based on regional infrastructure and instrumentation in passenger and freight vehicles.
6. Demonstrate the pertinence of the services provided through the experimentation in pilot areas (WESTERN Greece and Apulia).
7. Establish a set of recommendations, in terms of Capitalisation Plan, Impact Analysis and a Center of Competitiveness for taking up GUIDEPORT by other users/regions and increase the Port Competitiveness.



Finally, the project results are expected as medium and long term effects of project activities. The project will result in reduction of congestion in ports and near-port areas. Less congestion leads to lower gas emissions, time delays and oil consumption. Subsequently it is assumed that the use of these services will save money. Logistics companies will also encounter economic benefits owing to the high standards in terms of safety and security provided. Based on the above the port will gain in competitiveness compared to their competitors and eventually see its market share increase.

In addition to the positive results for system users, advantage will derive for near-port urban regions. The project services lead to reduction of negative side effects from port operations. Port-influenced heavy traffic, incidents and pollution will be reduced. Endorsement of ITS techniques and technologies will result to better understanding of their importance on behalf of the administrative authorities. The number of potential new users embracing port-ITS will increase. This will lead to establishing GUIDEPOR at additional locations, leading to a larger percent of ITS use, in coherence with EU policies. In the long term, the benefit from improved route guidance and safety/security measures will lead to substantial impacts, i.e. pollution reduction, property preservation, health improvement.

The project partners were the University of Patras (LP), Port of Patras, Decentralized Administration of Peloponnese, Western Greece and the Ionian, Port of Brindisi, University of Salento.

- GIFT 2.0

GIFT 2.0 is an online platform, different from many existing ones, that it contains TRAVEL INFORMATION, but mainly its answers to everyday questions. Responses to recipients have a common, that of transportation, which handles the goods, which has changed dramatically and that moves through the web faster and faster.

GIFT 2.0 aims at demonstrating how to develop the Adriatic-Ionian geographical area, in Apulia and Greek Regions, with a multipurpose approach through the joint coordinated management of existing infrastructures and common services, in order to integrate new

traffic flows (short connections, neighborhoods and long distances) and consolidate redistributing the existing ones in an optimized way, minimizing generalized costs.

In particular, the Trip Planner platform consists of a software platform to help users, once fed with appropriate data, to plan, with no interruption, intermodal, inter-regional, cross-border trips, in the project areas in Puglia and Greece, using public transport, integrating routes on foot or by bicycle and permitting the passage between intermediate points. Passengers can have easy access to useful information for reaching their destination: travel data, estimates of the price of tickets and the trip itself, timetables and means transit times, info-mobility.

The platform also contains back-end solutions enabling insertion and management of transport data, and for integration within its geographical map of information on the passenger and freight services coming from Pilot cases: such as points of interest and markers (e.g.: bicycle parking stations), real time positions of certain modes of transport, useful data for freight shipment. It contains a tool making it easy to insert and update the GTFS in the platform.

When calculating trips, the platform can manage the different time zones between Italy and Greece. Moreover, it allows to estimate trip costs considering not just those of single routes to be travelled, but also kilometer fares in places where the kilometer calculation system is applied (for example, in Puglia). In its planning data output, the platform shows the user the links to the websites of the travel agencies involved in the trip planned; from which, if they have a ticket sales system, the user can buy tickets.



The relationship between GIFT 2.0 and ITS lies in providing personalized services. In particular, the objectives of this project are:

- Saturating the existing infrastructures using a system of smart services both for transport and logistics through GIFT 2.0 platform

- Improving the accessibility for passengers and goods within the Adriatic Ionian area, e.g. through the modeling of multimodal Uniticketing.
- The development of a network among the Greece-Italy 35 hubs identified with a joint tool of service for passengers and freight.
- Boost of the public transportation use with intermodal, interregional and cross border trip planner and real time data flow.

Training and Information on business, labor and environmental opportunities created by an integrated transport and logistics system based on GIFT 2.0 platform.

Within the GIFT 2.0 project, an inter-modal, inter-regional and cross-border Trip Planning platform model has been created. The platform model is based on open source solutions and international standards which relate to data exchange about public passenger transport services and between different information systems, based on formats agreed with the partners.

The model was designed in consequence of the large quantity of information received from Partners and to be inserted in the platform.

It enables technological integration, in the Trip Planning system, of some information coming from activities implemented in the project through Pilot cases, referred to both passengers and freight transport.

For passenger transport the following have been done:

- **INFOKIOSKS:** Information system with wireless connectivity for the end-users, providing them access to GIFT 2.0 platform and additional customized information, that will consist of 7 kiosks placed at transportation hubs at Patras Port, Patras Train station, Araxos airport, Interregional Bus stations at Patras, Pyrgos and Agrinio. (Chamber of Commerce of Achaia and Region of Western Greece)
- **INFO-POINT:** Information system with wireless connectivity for end users such as cruisers and yachters, providing them access to GIFT 2.0 platform and additional customized information and an APP for smartphone and tablets providing relevant services. The system consists of 4 kiosks placed at Marinas of Patras, Katakolo, Nafpaktos and Palairos. (Chamber of Commerce of Achaia and Region of Western Greece)
- **DISPLAY:** Display for bus and ship information platforms consisting of access points and content provision servers, placed within 3 buses of Achaia interregional bus company and 2 bus stations at Patras and Aegio, 4 ships and 3 ports of Patras, Aegio and Kyllini, and 2 city bus stations and 4 city busses. The system will provide real time access to the Gift 2.0 platform and additional information services. (Chamber of Commerce of Achaia and Region of Western Greece)

- **SMART PLANNER:** Via web and app iOS assist trips, including trips to hard-to-reach destinations and in tourist season, given available trip cost budget and trip time budget; emphasis on travellers with reduced mobility and access to resources. (the University of Patras, Chamber of Commerce of Achaia, Chamber of Commerce of Ioannina)
- **BIKE SHARING:** Bike sharing in Patras. The Region of Western Greece establishes a bicycle sharing system composed of 50 bicycles and 8 parking points distributed in the city of Patras. The service will be granted free of charge with a simplified process of booking and identification. (Chamber of Commerce of Achaia and Region of Western Greece)

For the transportation of goods the following has been developed:

- **GIFTCARGO:** GIFTCARGO is a platform able to clear the demand/supply freight market through identification of multiple schedules while maximizing the use of full capacity by using the electronic shipping manifest (the University of Patras, Chamber of Achaia, Chamber of Ioannina)

The project partners are Puglia Region - Assistance of Transport and Public Works, Region of Western Greece, Metropolitan City of Bari, the University of Patras, University of Salento, Chamber of Commerce of Achaia and Region of Western Greece, Chamber of Commerce of Ioannina, Chamber of Commerce of Bari, Innopolis and Province of Bat.

The project was developed following a shared methodological approach to:

- Reduce transit costs and times for macro regional trips
- Reduce environmental impact
- Improve management of information on the integrated transport (ITIMS) of all project hubs
- Increase the economic efficiency of port operations through operations to consolidate goods (LCL) and for connection of the port areas
- Ensure sustainable growth in transport systems at all hubs and for all methods: rail, tyres, sea and air.

Notably, the project has become part of a specialized integrated, intermodal, cross border platform.

1.4.2.2 Progress since 2014

Most projects that are described in priority II started their implementation after 2014. For those whose progress is known, it is reported that “Installation of RFID system on trains”, “Back Office System” and “Cooperative Logistics for Sustainable Mobility of Goods” (COLOGISTICS) are completed successfully, while in 2014 their progress were ongoing. The

progress of some projects is unknown, because no data were available since 2014. Finally, it is notable that many projects have been developed after 2014 and their progress is ongoing, such as:

- ITS Observatory
- Provision of technical support to the competent unit of the Ministry of Infrastructure and Transport for the effective and valid updating of DG MOVE's TEN-Tec Portal database under the CEF TRANSPORT-PSA
- Web based electronic licensing system for special transport through the road network of Egnatia Odos SA
- Crocodile II (Connecting Europe Facility 2014-2020)(No. 2014-EU-TM-0563-W INEA/CEF/TRAN/M2014/1058107 Grant Agreement)
- Traffic Management System-Motorway of Central Greece

1.4.3 Priority area III. ITS road safety and security applications

In this section, the projects related to the ITS road safety and security applications are described in detail. Some of the projects described below belong to other priority areas, too. These projects are:

- Priority areas I, III
 - Installing Variable Message Signs - ATHE Motorway
 - Vehicle Detection System Installing
 - Closed Camera Node Tracking Circuit
 - Installing Variable Message Signs
 - Geographic Information System – Nea Odos
 - Geographic Information System – Kentriki Odos
- Priority areas II, III
 - Replacing Payment Methods Plates with corresponding electronic ones – Kentriki Odos
 - Replacing Payment Methods Plates with corresponding electronic ones-Nea Odos
 - Replacing Payment Methods Plates with corresponding electronic ones – Kentriki Odos

- Replacing Payment Methods Plates with corresponding electronic ones – Nea Odos
- Priority areas I, II, III
 - Integrated Intelligent Transport System (ITS) for traffic management, road safety and user information at “Charilaos Trikoupis” Bridge
- Priority areas I, II, III, IV
 - Provision of technical support to the competent unit of the Ministry of Infrastructure and Transport for the effective and valid updating of DG MOVE's TEN-Tec Portal database under the CEF TRANSPORT - PSA
 - ITS Observatory

1.4.3.1 Description of the national activities and projects

• SAFER LC

Safer LC (Safer Level Crossing by Integrating and Optimizing Road-Rail Infrastructure Management and Design) is a European Research Programme, which aims to reduce the number of casualties at level nodes of the railway network by implementing Intelligent Transportation Systems. The project is co-funded by HORIZON2020 and the lead stakeholder is UIC, the Worldwide Railway Organisation. In addition, the project is ongoing and its scheduled duration is from 2016 until 2019. Moreover, its financing is based on public resources and reaches the amount of € 50.000 for the years 2016-2017.

The bodies who cooperate are UIC (Worldwide Railway Organisation), VTT (Technical Research Centre of Finland), NTNU (Norwegian University of Science and Technology), IFSTTAR (French Institute of Science and Technology for Transport, Spatial Planning, Development and Networks), FFE (FFE Transportation Services, Inc.), CERTH-HIT (Hellenic Institute of Transport, part of the Centre for Research and Technology Hellas), TRAINOSE, INTADER Research Technology Innovation, CEREMA, GLS (General Logistic System), RWTH (RWTH Aachen University), UNIROMA3 (University of Roma), COMM (European Commission), IRU (World Road Transport Organisation), SNCF (National Society of French Railways), DLR (Docklands Light Railway), UTBM (University of Technology Belfort-Montbeliard).

During its implementation, no specifications and standards of Intelligent Transportation Systems (ITS) have been applied and the project is not part of any legislative framework related to the implementation and operation of ITS.

An expected result of the project would be the development of an application that will connect interactively the taxi and railway fleet at the area of Thessaloniki.

• COMPASS4D

COMPASS4D (Cooperative Mobility Pilot on Safety and Sustainable Services for Deployment) is a European project, whose objective is the improvement of road safety by reducing the level of congestion of road transport. Seven European cities (Bordeaux, Copenhagen, Eindhoven-Helmond, Newcastle, Thessaloniki, Verona & Vigo) have joined forces for this purpose and jointly implemented three pilot cooperative services, Road Hazard Warning, Red Light Violation Warning and Energy Efficient Intersection service.

The lead stakeholder of the project is ERTICO – ITS EUROPE and the cooperating authorities/organizations in Greece are CERTH-HIT (Hellenic Institute of Transport, part of the Centre for Research and Technology Hellas), ICCS (Institute of Communication and Computer Systems), Region of Western Macedonia, INFOTRIP, TAXIWAY. The project is funded by CIP (Competitiveness and Innovation Programme) and the total amount reached € 9.960.006. It is now completed and it lasted 3 years (2014-2016).

The expected result of the project is the implementation of Cooperative Intelligent Transportation Systems in order to substantially improve road safety, increase energy efficiency and reduce the level of congestions of road transport.

The project contributes to the implementation of Directive 2010/40/EU, demonstrating the benefits of vehicle-infrastructure interconnection, and has been carried out according to the CEN TC278 WG 16/ISO TC204 WG 18 standards of ITS.

•C-MOBILE

C-MOBILE (Accelerating C-ITS MOBility Innovation and DepLoyment in Europe) is a European project that deals with the improvement of road safety and energy efficiency on modern European road networks through the implementation of Cooperative Intelligent Transportation Systems.

The lead stakeholder of the project is IDIADA AUTOMOTIVE TECHNOLOGY SA and the cooperating authorities/organizations in Greece are CERTH-HIT (Hellenic Institute of Transport, part of the Centre for Research and Technology Hellas), ICCS (Institute of Communication and Computer Systems), Region of Western Macedonia, INFOTRIP, TAXIWAY and Traffic Technique S.A. The partner countries are Spain, Denmark, Netherlands, United Kingdom, Belgium, France, Italy and Germany.

The project is funded by HORIZON 2020 and the total amount reached € 15.059.453. The project is ongoing and is scheduled to last 4 years (2017-2020).

The expected result of the project is the improvement of road safety and the reduction of energy consumption of urban road network.

The project contributes to the implementation of Directive 2010/40/EU and will be carried out according to standards related to architecture, communications and services of Cooperative Intelligent Transport Systems. The services and systems developed within the

project will be interoperable and expandable for immediate implementation in all EU member states.

- **ITS Observatory** (see page 13)

- **Provision of technical support to the competent unit of the Ministry of Infrastructure and Transport for the effective and valid updating of DG MOVE's TEN-Tec Portal database under the CEF TRANSPORT – PSA** (see page 14)

- **CROCODILE II (Connecting Europe Facility 2014-2020) (No. 2014-EU-TM-0563-W INEA/CEF/TRAN/M2014/1058107 Grant Agreement)** (see page 12)

- **Driving Behaviour and Remote Diagnostics System**

The project “Driving Behaviour and Remote Diagnostics System” is a regional/ local project with main objective the installation of advanced driver assistance systems on the vehicles of Attiki Odos and the deployment of its results. The project timetable was from October 2014 to February 2015, so it is now completed and in general use. The stakeholders of the project are Attikes Diadromes S.A. and G4S Hellas and the financing comes from private resources (€ 40.000).

In order to achieve the aims of the project the drivers were provided with real-time information in order to improve their driving and driving behaviour. The results would be used to investigate any improvement made.

During its implementation, no specifications and standards of Intelligent Transportation Systems (ITS) have been applied and the project is not part of any legislative framework related to the implementation and operation of ITS.

- **Integrated Intelligent Transport System (ITS) for traffic management, road safety and user information at “Charilaos Trikoupis” Bridge** (see page 21)

- **Motorway Management System (Korinthos-Tripoli-Kalamata-Lefktron-Sparti)**

Motorway Management System (Korinthos-Tripoli-Kalamata-Lefktron-Sparti) is a regional/ local project whose objective is the implementation of an Integrated Traffic, Incident and Equipment Monitoring and Management System. The project lasted 9 years (2008-2016) and is in general use.

The implementation body is MOREAS S.A. and the funding of the project came from a concession contract (N3559/2007, N4354/2015 and N4368/2016). During its implementation, the specifications and standards of Intelligent Transportation Systems (ITS) applied were NTCIP 9001 (National Transportation Communications for ITS Protocol), TLS (Technische Lieferbedingungen Fur Streckenstationen (BAST)), EN12966/2005 and EN12369/2006. The project is not part of any legislative framework related to the implementation and operation of ITS.

The main expected results of the project were the continuous traffic and equipment monitoring and the best utilization of the operation and security equipment in order to achieve immediate response in case of road incidents.

•**Completion of Western Regional Motorway of Aegaleo and networks**

This project is concerned with the completion of the construction of a fully functional motorway of 2,44 km in the Region of Aegaleo. The project lasted 10 years (2008-2017). The implementation body was the Prefecture of West Attica and its funding is based on public resources.

During its implementation, no specifications and standards of Intelligent Transportation Systems (ITS) have been applied and the project is not part of any legislative framework related to the implementation and operation of ITS.

•**Geographic Information System – Kentriki Odos** (see page 24)

•**Replacing Payment Methods Plates with corresponding electronic ones – Kentriki Odos** (see page 38)

•**Geographic Information System – Nea Odos** (see page 26)

•**Installing Variable Message Signs - ATHE Motorway** (see page 26)

•**Vehicle Detection System Installing** (see page 27)

•**Closed Camera Node Tracking Circuit** (see page 28)

•**Replacing Payment Methods Plates with corresponding electronic ones – Nea Odos** (see page 39)

1.4.3.2 Progress since 2014

Most of the projects that are described in priority III started their implementation after 2014. For the projects whose progress is known, it is reported that COMPASS4D is completed successfully, while in 2014 its progress was ongoing. The progress of some projects is unknown, since no data have been available since 2014. Notably, many projects have been developed after 2014 and their progress is either ongoing or completed, such as:

- Safer LC (ongoing)
- C-Mobile (ongoing)
- ITS Observatory (ongoing)
- Provision of technical support to the competent unit of the Ministry of Infrastructure and Transport for the effective and valid updating of DG MOVE's TEN-Tec Portal database under the CEF TRANSPORT-PSA (ongoing)
- I-HeERO (ongoing)
- HeERO "Harmonised eCall European Pilot" (completed)
- Crocodile II (Connecting Europe Facility 2014-2020)(No. 2014-EU-TM-0563-W INEA/CEF/TRAN/M2014/1058107 Grant Agreement) (ongoing)

- Driving Behaviour and Remote Diagnostics System (completed)
- Motorway Management System (Korinthos - Tripoli - Lefkron - Sparti) (completed)
- Competition of Western Regional Motorway of Aegaleo and networks (completed)
- Geographic Information System (ongoing)
- Replacing Payment Methods Plates with corresponding electronic ones (completed)

1.4.3.2.1 112 eCall (priority action d)

The National eCall PSAPs Infrastructure (eCall) is available since October 1, 2017, located at the Civil Protection Agency's premises. An on-the-spot check by Mr. A. Rooke, the i-HeERO coordinator at the Civil Protection premises, has taken place, too.

The following projects refer to the implementation of the 112-eCall in every member state of European Union. Both projects are also included in priority III, but their main axis corresponds to this priority action.

•I-HeERO

The national project I-HeEro (Infrastructure- Harmonised eCall European Pilot) is concerned with the second phase of implementation of eCall. It aims to upgrade the existing infrastructure in order to service eCall calls on the basis of the latest regulations and standards and expand the service for heavy vehicles and bicycles. It is part of the international effort to implement interoperable eCall in every member state of European Union, according to Directive 2010/40/EU.

ECall is an emergency call to the united European number “112” and it is activated through a special device placed in the vehicle in case of an accident, automatically or manually. In this case the call is routed to the nearest Call Center to which it sends a special encoded message. This message includes information such as the exact geographical location of the accident, and the time and vehicle number of the vehicle. The message is decoded and the call is forwarded to the responsible operator of the Center along with the decoded data of the message. The operator can chat with the passengers in order to organize the rescue mission better. In this way, it is expected that the rescue time of the rescue services will be shortened and the organization of the rescue will be better organized, as this information will be known in advance. ECall is estimated to save up to 2,500 lives a year in the European Union, reducing at the same time the serious injuries to tens of thousands, and also reducing their consequences.

The stakeholders of the project are Hellenic Ministry of Infrastructure and Transport, Institute of Communication and Computer Systems (ICCS), COSMOTE A.E. and G4S TELEMATICS A.E.

The project is ongoing, with the 95% of the total work already completed. It started in January of 2015 and was scheduled to come to an end by December 2017. Its pilot implementation takes place on national European Road Network and the Ministry has

acquired an eCall Call Center, which is in the possession of the General Secretariat for Civil Protection.

Total budget of the project reaches the amount of € 1.288.000 and the funds come from CEF (Transport Call 2014). Further, on behalf of Greek partners, the project also includes PTL EPE (Papageorgiou Transports & Logistics) and Development Company of Municipality of Trikala (E-Trikala).

The project contributes to the implementation of Directive 2010/40/EU and will be carried out according to standards (3GPP TS 26.267, 3GPP TS 26.268, 3GPP TS 26.269, EN16062 ECall high level application requirements (HLAP), EN16072 Pan European eCall-Operating requirements and EN15722 eCall minimum set of data (MSD)). The standards mentioned above are related to European interoperability and compatibility of ITS.

In Europe there are four certified operators that perform Compliance Assessment for e-Call. However, according to E.S.Y.D (Hellenic Accreditation System), there are no authorities assigned for assessing the conformity of the operations of the eCall PSAPs in the framework of Regulation (EU) 305/2013 and according to EN 16454. Hence, the Ministry and in particular the Strategic Transport Directorate requested in writing from the Ministry's financial services permission to tender to assign the Compliance Assessment to one (1) of the four (4) above mentioned certified authorities. This process is ongoing until March 2018, following a time extension of 3 months, by the director of INEA.

•HeERO «Harmonised eCall European Pilot»

The HeERO project concerned the pilot implementation of the eCall system in the countries participating in the project, including Greece. It was funded by the European Commission and had an original duration from 1-1-2011 to 31-12-2013. After the approval of EU, its duration was extended until 30 June 2014. The project is national and is now completed. The project refers to the national and European road network.

ECall is an emergency call to the single European number "112", which is activated by means of a special device in the vehicle, either manually or automatically, in the event of a serious collision. In this case the call is routed to the nearest Call Center to which it sends a special encoded message. This message includes information such as the exact geographical location of the accident, and the time and vehicle number of the vehicle. The message is decoded and the call is forwarded to the responsible operator of the Center along with the decoded data of the message. The operator can chat with the passengers in order to organize the rescue mission better. In this way, it is expected that the rescue time of the rescue services will be shortened and the rescue will be better organized, as this information will be known in advance. ECall is estimated to save up to 2,500 lives a year in the European Union, reducing at the same time the serious injuries to tens of thousands, and also reducing their consequences.

Total budget of the project reaches the amount of € 367,516.22 and the funds come from FP7 (7th Framework Programme for Research and Technological Development). Further, the lead stakeholder of the project was the Hellenic Ministry of Infrastructure, Transport and

Networks and the partners were the Institute of Communication and Computer Systems (ICCS) and G4S TELEMATIX A.E.

The project contributes to the implementation of Directive 2010/40/EU and was carried out according to standards (3GPP TS 26.267, 3GPP TS 26.268, 3GPP TS 26.269, EN16062 ECall high level application requirements (HLAP), EN16072 Pan European eCall-Operating requirements and EN15722 eCall minimum set of data (MSD)). The standards mentioned above are related to European interoperability and compatibility of ITS.

1.4.3.3 Reporting obligation under Delegated Regulation (EU) No 885/2013 on the provision of information services for safe and secure parking places for trucks and commercial vehicles (priority action e)

1. Legislation

The legislation directives and regulations related to the development and exchange of information for the safe and secure truck parking areas are the following:

- Directive 2008/96/EC on road infrastructure safety management. This Directive introduced in the EU legislative framework the term of *safe parking areas* for sufficient roadside parking, both for crime prevention and for road safety. Moreover the provision of sufficient safe parking areas should form an integral part of road infrastructure safety management, according to Dir. 2008/96/EC.
- Directive 2010/40/EU on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport. This Directive sets as a priority the provision of information services for *safe and secure parking* places for trucks and commercial vehicles and the provision of reservation services for safe and secure parking places for trucks and commercial vehicles.
- Regulation (EU) No 165/2014 on tachographs in road transport, repealing Council Regulation (EEC) No 3821/85 on recording equipment in road transport and amending Regulation (EC) No 561/2006 of the European Parliament and of the Council on the harmonisation of certain social legislation relating to road transport.
- Regulation (EU) N° 885/2013 with regard to the provision of information services for safe and secure parking places for trucks and commercial vehicles. The regulation is supplementary to the ITS Directive 2010/40/EU and highlights the importance of the safe and secure truck parking areas on combating and preventing the road freight crime.
- The Guidance Document for Member States on technical implementation of Delegated Regulation 885/2013 (2016) in relation to the European Access Point for Truck Parking Data, clarifies the steps for the successful implementation of Regulation 885/2013.

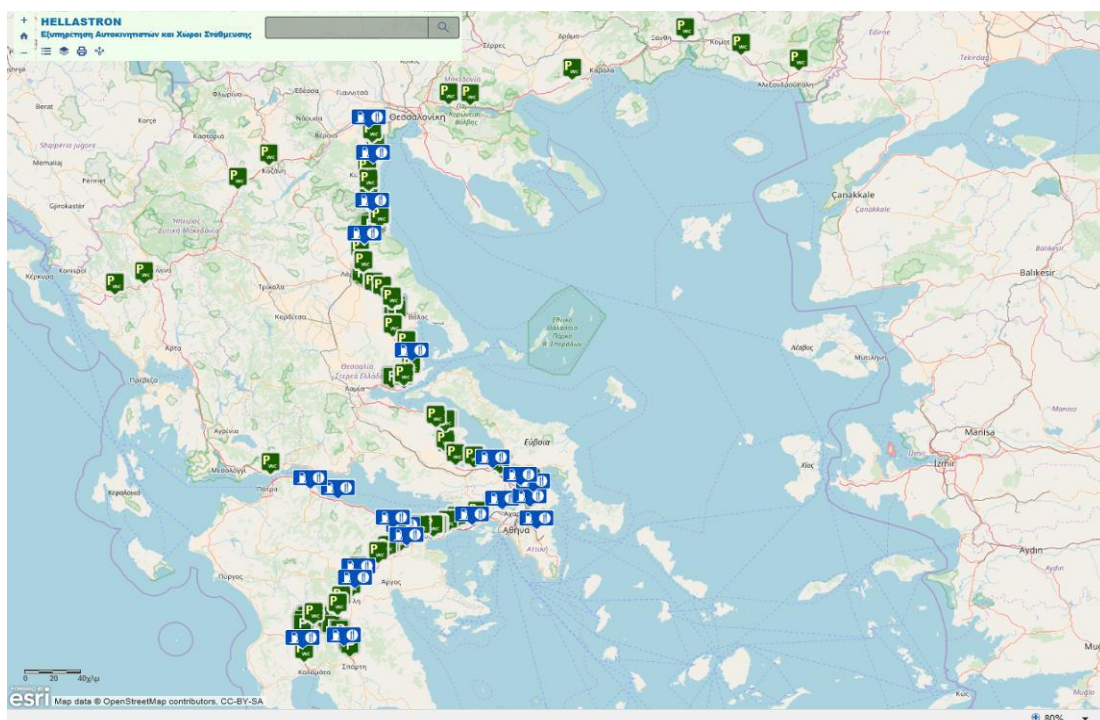
The Guidance document for the Delegated Regulation 885/2013 (2016) clarifies the data collection for Truck Parking areas, since it defines the exact data naming and the type of information, with examples for each parameter value and/or description, according to Datex II. The Static Truck Parking information requirements were used for the scope of this paper and include: the identification information of the parking facilities (name and address of the parking area); the location information of the entry point; the primary road identifier/direction information; the parking exit information; the total number of parking places for trucks; the price and currency of parking places; contact information of parking operator; and information on safety and equipment of the parking area (description of the security, safety and service equipment).

2. National Access Point

The Ministry responsible for implementing this Delegated Regulation of the National Access Point is the Ministry of Infrastructure and Transport and the implementing body is Centre for Research and Technology Hellas – Hellenic Institute of Transport. The implementation is foreseen on Q4_2017 – Q4_2018.

Delivery of (static) information to the European Access Point has not yet been completed. Currently available information on SSITPs in Greek Motorways network is available at the following link of Hellastron (HELLENIC ASSOCIATION of TOLL ROAD NETWORK):

<http://www.arcgis.com/apps/View/index.html?appid=66d6ffdf3af649b9a77b75927f952dee>



The usage of NAP will be monitored and a method for quality assessment is planned to be defined. The above-mentioned data will be available in the NAP and through web-links, and the data exchange will be carried out via DATEXII. Moreover, metadata and data discovery services will be available and compatible with the Coordinated Metadata Catalogue. Nevertheless, there will be coverage of Core and Comprehensive TERN and interfaces with

urban areas within Greece, as well as with other countries' NAPs and data providers from Crocodile 2 partner countries.

For the initial operating phase of the NAP (2018), at least two organizations will provide data to the NAP (CERTH-HIT and Egnatia Odos S.A.). Other data providers will be contacted as well (within the activities of the Crocodile 2 project) during 2018. Assessment of compliance is planned and will be defined.

3. Measuring Progress on ITS

According to Directive 2010/40/EU on the framework for the development of Intelligent Transport Systems in the field of road transport and interfaces with other modes of transport, the Ministry of Transport has called on authorities such as Administrative Regions, municipalities, companies which generally are related to the carriage of passengers and goods as well as entities that implement, fund, monitor or simply use Intelligent Transport Systems in order to collect data on their operation. These entities responded promptly by sending the necessary data for the preparation of the progress report on the actions of Greece in the field of Intelligent Transport Systems.

The following text presents and analyzes the implementation and progress of Intelligent Transport Systems, and in particular focusing on safe and secure truck and commercial vehicle parking spaces. Additionally, these data are compared with those generated in 2014.

Table 1.4.3.3.1 Elements of safe and secure parking spaces for trucks and commercial vehicles			
N.	Motorways	2014	2017
•	Egnatia Odos	<ul style="list-style-type: none"> • <u>Service Areas (parking, toilets, meals, fuel, car repair)</u> <ul style="list-style-type: none"> • <u>Available parking spaces:</u> 30 • <u>Rest Areas (parking + toilets)</u> <ul style="list-style-type: none"> • <u>Available parking spaces:</u> 141 	<ul style="list-style-type: none"> • 1x2 (two-sided) Service Station (1):30 parking spaces • 7x2 (two-sided) Parking spaces (2): a total of 110 parking spaces • 2x1 (one-sided) Parking spaces (2): a total of 31 parking spaces
•	Moreas	<ul style="list-style-type: none"> • 2 Service Stations (two-sided) • 2 Service Stations (one-sided) 	<ul style="list-style-type: none"> • 2 Service Stations (two-sided) • 2 Service Stations (one-sided)

•	Aegean Motorway	<ul style="list-style-type: none"> • 5 Service Stations (two-sided) • 1 Service Stations (one-sided) 	<ul style="list-style-type: none"> • 5 Service Stations (two-sided) • 10 parking spaces (84 truck parking spaces / 42 bus parking spaces)
•	Attiki Odos	-	-
•	Olympia Odos	<ul style="list-style-type: none"> • 9 Service Stations (two-sided) • 1 Service Stations (one-sided) 	-
•	Rio-Antirio Bridge	-	<ul style="list-style-type: none"> • 2 parking spaces and 12 truck parking spaces + 36 parking spaces for passenger cars
•	Ionian Odos	<ul style="list-style-type: none"> • 7 Service Stations (two-sided) • 3 Service Stations (one-sided) 	<ul style="list-style-type: none"> • 17 spaces • 52 parking spaces
•	Central Greece Motorway	<ul style="list-style-type: none"> • 5 Service Stations (two-sided) • 1 Service Stations (one-sided) 	<ul style="list-style-type: none"> • 4 spaces • 6 parking spaces

Based on the above comparison table it was observed that Egnatia Odos and Moreas Motorway did not show any change compared to 2014 in terms of service stations and rest areas.

On the other hand, 10 parking spaces (84 truck parking spaces / 42 bus parking spaces) were added to the Aegean motorway. Moreover, while in 2014 there were data on the motorway of Olympia Odos, in 2017 we did not have the corresponding data. Similarly, the Rio-Antirio Bridge data were available only for year 2017. There was therefore no fertile ground for comparison. Finally, for Attiki Odos no data were collected. Also, 52 parking spaces were added to the Ionian Odos and 6 parking spaces to the Central Greece Motorway. Finally, in Central Greece Motorway the number of service stations was reduced.

As far as the control of the financial progress of the above projects is concerned, it will be carried out at a later stage, after the corresponding data have been collected.

Percentage of parking places registered in the information service

Table 1.4.3.3.2 Percentage of parking places registered in the information service		
N.	Motorways	2017
•	Egnatia Odos	100%
•	Moreas	0
•	Aegean Motorway	0
•	Attiki Odos	-
•	Olympia Odos	-
•	Rio-Antirio Bridge	0
•	Ionian Odos	-
•	Central Greece Motorway	-

Table 1.4.3.3.3 Percentage of parking places providing dynamic information on the availability of parking spaces and the priority zones		
N.	Motorways	2017
•	Egnatia Odos	0
•	Moreas	0
•	Aegean Motorway	0
•	Attiki Odos	-
•	Olympia Odos	-
•	Rio-Antirio Bridge	0
•	Ionian Odos	-
•	Central Greece Motorway	-

1.4.4 Priority area IV. Linking the vehicle with the transport infrastructure

In this section, the projects related to the interoperability between the vehicles and the transport infrastructure are described in detail. Some of the projects described below belong to other priority areas, too. These projects are:

- Priority areas II, IV
 - Back Office System
- Priority areas I, II, III, IV
 - Provision of technical support to the competent unit of the Ministry of Infrastructure and Transport for the effective and valid updating of DG MOVE's TEN-Tec Portal database under the CEF TRANSPORT - PSA

- ITS Observatory

1.4.4.1 Description of the national activities and projects

- **ITS Observatory** (see page 13)

• **Provision of technical support to the competent unit of the Ministry of Infrastructure and Transport for the effective and valid updating of DG MOVE's TEN-Tec Portal database under the CEF TRANSPORT – PSA** (see page 14)

- **Back Office System**

The Back Office System (BOS) is enabled to support various features. Electronic toll billing is in place, and users equipped with a Kentriki Pass transceiver can cross the electronic toll stations of the motorway tolls by charging their passports for their passage. Additionally, the system enables users to make payments to their account in manual payload bands. The System is constantly being developed to collect reliable information to provide an ever-increasing level of service to end-users. Within this development, the following functions have been developed:

- The Kentriki Pass website that allows users to access their online accounts and preview their balance and recent payments.
- Immediate Account Charge via the Kentriki Pass website for users who wish to refill their account using their credit card.
- Development of an application that allows users to make deposits through the Back Office System.
- Issue of Annual Toll Expenditure Certificate from the Back Office System.
- Scan transceivers through the Back Office System.
- Money Transfer Service that sends an electronic file to the Back Office System and displays the amounts counted by the counting company after deposit.
- Fixed-Line Operation via Bank Account or Credit Card.

The project started in 2015, has been completed and is in the final test phase. It is a national project implemented by KENTRIKI ODOS OF GREECE SA CONCESSION COMPANY, and it is part of motorways. Project financing came from private resources and amounts to € 1.079.400. Participating institution is the KENTRIKI ODOS OF GREECE SA CONCESSION COMPANY.

The expected results (also satisfying the main objective of the project) are the optimization of Toll Stations operation, and the reduction of maintenance costs for obsolete equipment. In its implementation, as far as the specifications and standards of Intelligent Transportation Systems (ITS) are concerned, EN 12966-1:2005 has been applied and the project is not part of any legislative framework related to the application and operation of ITS.

1.4.4.2 Progress since 2014

The implementation of most projects described in priority IV started after 2014. The project whose progress is known since 2014 is the Back Office System, which is completed successfully, while in 2014 its progress was ongoing. The progress of some projects is unknown, because no data have been available since 2014. Notably, ITS Observatory and Provision of technical support to the competent unit of the Ministry of Infrastructure and Transport for the effective and valid updating of DG MOVE's TEN-Tec Portal database under the CEF TRANSPORT - PSA started their implementation after 2014 and are expected to be completed in 2017.

1.5 Other initiatives / highlights

1.5.1 Description of other national initiatives / highlights and projects not covered in priority areas 1-4

• Motorway Management System of Olympia Odos

Motorway Management System of Olympia Odos is a national project whose objective is the implementation of a monitoring and management system that includes:

- Inductive loops
- Close Circuit TV system
- An automatic tunnel event detection system
- Open-air and tunnel SCADA
- Variable Message Signs
- Infrared vehicles detection system
- Meteorological and environmental stations
- Emergency telephones

The project is ongoing (80% completed) and is estimated to be accomplished by the end of December 2017. The implementation body is OLYMPIA ODOS S.A. and the project is cofunded according to a concession contract (N.3621/10.12.2007 and N.4129/2013).

• Integrated Aegean Motorway Management System

This project is national and its main objective is the Integration of Aegean Motorway Management Systems. The project is ongoing (50% completed) and is estimated to be accomplished by December 2019. Implementation body is AEGEAN MOTORWAY and the project is funded by public resources, with the total amount of financing reaching the € 17.000.000.

The project is expected to optimize the response time to events, to inform the infrastructure and the users and to minimize the decision-making time at operational level. Moreover, in

the implementation system there will be the potential of interconnection and sharing data. The specifications and standards of ITS Technology applied in this project are European ITS Standards (FRAME).

1.5.2 Progress since 2014

The progress that is known since 2014 is the Motorway Management System of Olympia Odos, which is 80% completed, while in 2014 its progress was ongoing. Notably, for project Integrated Aegean Motorway Management System no data were available in the report of 2014, its progress is ongoing and it is expected to be completed in 2019.

2 Key Performance Indicators (KPIs)

2.1 Deployment KPIs

In order to assess the deployment of ITS systems we will analyse the Key Performance Indicators, as defined by EU ITS Platform. The Key Performance Indicators refer to the information gathering infrastructure and equipment, incident management, traffic management and traffic control measures, cooperative ITS services and applications, provision of real-time information, dynamic travel information, and freight information and free access to 112eCalls.

The implementation bodies that provided information related to KPIs are Egnatia Odos, Moreas, Aegean Motorway, Attiki Odos, Prefecture of West Attica, OASA, Olympia Odos, Rio-Antirio Bridge, Ionian Odos (Nea Odos) and Central Greece Motorway.

As far as the provision of freight information and implementation of 112eCall is concerned, lack of available data is noticed for most of the aforementioned bodies.

2.1.1 Information gathering infrastructures / equipment (road KPI)

- $KPI = (\text{kilometres of road network type equipped with information gathering infrastructures} / \text{total kilometres of same road network type}) \times 100$

Table 2.1.1.1 Information gathering infrastructures / equipment				
N.	Motorways	2017		
		Length of road network/road section	Total length	KPI
•	Egnatia Odos	184 km	658 km	28%
•	Moreas	205 km	205 km	100%
•	Aegean Motorway	550 km	550 km	100%
•	Attiki Odos	70 km	70 km	100%
•	Olympia Odos	201.5 km	201.5 km	100%
•	Rio-Antirio Bridge	3.5 km	3.5 km	100%

•	Ionian Odos (Nea Odos)	374 km	374 km	100%
•	Central Greece Motorway	57 km	57 km	100%

Figure 2.1.1.1: Information gathering infrastructures/equipment

It is noted that the information gathering infrastructure/equipment has been installed along the entire length of the roads except for Egnatia Odos (remark : the 184 km of Egnatia Odos motorway refer to road sections with continuous 24x7 traffic surveillance via a manned TCC. Other information gathering infrastructures (i.e. traffic counting units, toll stations, etc.) are installed and operating to the whole motorway).

2.1.2 Incident detection (road KPI)

- Length of road network type / road sections (in km) equipped with ITS to detect incident & Total length of same road network type (in km)
- KPI = (kilometres of road network type equipped with ITS to detect incident / total kilometres of same road network type) x 100

Table 2.1.2.1 Incident detection				
N.	Motorways	2017		
		Length of road network/road section	Total length	KPI
•	Egnatia Odos	184 km	658 km	28%
•	Moreas	5.1 km	205 km	2.5%
•	Aegean Motorway	24 km	550 km	20.3%
•	Attiki Odos	70 km	70 km	100%
•	Olympia Odos	158 km	201.5 km	92%
•	Rio-Antirio Bridge	3.5 km	3.5 km	100%
•	Ionian Odos (Nea Odos)	374 km	374 km	100%
•	Central Greece Motorway	57 km	57 km	100%

Figure 2.1.2.1: Incident detection

Incident detection has been installed along the entire length of the roads on Attiki Odos, Rio-Antirio Bridge, Ionian Odos (Nea Odos) and Central Greece Motorway. For Egnatia Odos Motorway see remark in Table 2.1.1.1. For the rest of motorways the project has not been completed in the total length of the roads.

2.1.3 Traffic management and traffic control measures (road KPI)

- Length of road network type / road sections (in km) covered by traffic management and traffic control measures & Total length of this same road network type (in km)
- KPI = (kilometres of road network type covered by traffic management and traffic control measures / total kilometres of same road network type) x 100

Table 2.1.3.1 Traffic Management and Traffic control measures				
N.	Motorways	2017		
		Length of road network/road section	Total length	KPI
•	Egnatia Odos	184 km	658 km	28%
•	Moreas	205 km	205 km	100%
•	Aegean Motorway	550 km	550 km	100%
•	Attiki Odos	70 km	70 km	100%
•	Olympia Odos	201.5 km	201.5 km	100%
•	Rio-Antirio Bridge	3.5 km	3.5 km	100%
•	Ionian Odos (Nea Odos)	374 km	374 km	100%
•	Central Greece Motorway	57 km	57 km	100%
•	OASA	-	-	-
•	Integration of Aegaleo and Merger Networks Western Regional (Western Attica Region)	2,44 km	178 km	1,37%

Figure 2.1.3.1: Traffic Management and Traffic Control measures

For all projects except for Integration of Aegaleo and Merger Networks Western Regional (Western Attica Region) and Egnatia Odos (see remark of Table 2.1.1.1.) the traffic management and traffic control measures have been installed along the entire length of the road.

2.1.4 Cooperative-ITS services and applications (road KPI)

- Length of road network type / road sections (in km) covered by C-ITS services or applications & Total length of same road network type (in km)
- $KPI = (\text{kilometres of road network type covered by C-ITS services or applications} / \text{total kilometres of same road network type}) \times 100$

Table 2.1.4.1 Cooperative-ITS services and applications				
N.	Motorways	2017		
		Length of road network/road section	Total length	KPI
•	Egnatia Odos	35.7 km	658 km	5.4%
•	Moreas	0 km	205 km	0%
•	Aegean Motorway	-	550 km	-
•	Attiki Odos	0 km	70 km	0%
•	Olympia Odos	0 km	201.5 km	0%
•	Rio-Antirio Bridge	0 km	3.5 km	0%
•	Ionian Odos (Nea Odos)	-	374 km	0%
•	Central Greece Motorway	-	57 km	0%

As far as the cooperative-ITS services and applications, no data were available for Aegean Motorway, Ionian Odos (Nea Odos) and Central Greece about the length of road network/road section where they have been installed. As far as Egnatia Odos is concerned, cooperative-ITS services and applications are installed over a short length of the road(remark: the 35,7 km of Egnatia Odos motorway refer to tunnels with radio communication systems installed which have FM-break in capabilities to broadcast live or recorded emergency messages to drivers,12V application)

For Moreas, Attiki Odos, Olympia Odos and Rio-Antirio Bridge no progress has been made in cooperative-ITS services and applications.

2.1.5 Real-time traffic information (road KPI)

- Length of road network type / road sections (in km) with provision of real-time traffic information services & Total length of same road network type (in km)
- $KPI = (\text{kilometres of road network type with provision of real-time traffic information services} / \text{total kilometres of same road network type}) \times 100$

Table 2.1.5.1 Real-time traffic information				
N.	Motorways	2017		
		Length of road network/road section	Total length	KPI
•	Egnatia Odos	184 km	658 km	28%
•	Moreas	0 km	205 km	0%
•	Aegean Motorway	550 km	550 km	100%
•	Attiki Odos	70 km	70 km	100%
•	Olympia Odos	201.5 km	201.5 km	100%
•	Rio-Antirio Bridge	0 km	3.5 km	0%
•	Ionian Odos (Nea Odos)	55 km	219 km	25%
•	Central Greece Motorway	30 km	57 km	53%

Figure 2.1.5.1: Real-time traffic information

Real-time traffic information has been installed along the entire length of the road on Attiki Odos, Aegean Motorway and Olympia Odos. For Egnatia Odos Motorway see remark in Table 2.1.1.1. For the rest of motorways the project has not been completed over the total length of the road.

2.1.6 Dynamic travel information (multimodal KPI)

- Length of transport network type (in km) with provision of dynamic travel information services & Total length of same transport network type (in km)
- Number of transport nodes (e.g. rail or bus stations) covered by dynamic travel information services & Total number of same transport nodes
- $KPI = (\text{kilometres of transport network type with provision of dynamic travel information services} / \text{total kilometres of same transport network type}) \times 100$
- $KPI = (\text{number of transport nodes with provision of dynamic travel information services} / \text{total number of same transport nodes}) \times 100$

Table 2.1.6.1 Dynamic Travel Information							
N	Motorways	2017					
		Length of road network /road section	Total length	Number of nodes	Total nodes	KPI (km/Total km)	KPI (number/total number)
•	Egnatia Odos	-	-	-	-	-	-
•	Moreas	5.1 km	205 km	0	0	2.5%	0%
•	Aegean Motorway	-	550 km	-	-	-	-
•	Attiki Odos	70 km	70 km	0	0	100%	-
•	Olympia Odos	201.5 km	201.5 km	-	-	100%	-
•	Rio-Antirio Bridge	0 km	3.5 km	0	0	0%	0%
•	Ionian Odos (Nea Odos)	-	219 km	-	-	0%	0%
•	Central Greece Motorway	-	57 km	-	-	0%	0%
•	OASA	6.400 km (development of bus lines and trolleybuses)	6.400 km	7.800	7.800	100%	100%
•	Integration of Aegaleo and Merger Networks Western Regional (Western Attica Region)	-	-	-	-	-	-

Figure 2.1.6.1: Dynamic Travel Information

Real-time traffic information has been installed along the entire length of the road on Attiki Odos, Olympia Odos and OASA. For the rest of motorways the project has not been completed over the total length of the road.

As far as the number of transport nodes, network type the data are available only for OASA where the project is completed 100%.

2.1.7 Freight information (multimodal if possible or road KPI)

- Length of road network type / road sections (in km) with provision of freight information services & Total length of same road network type (in km)
- Number of freight nodes (e.g. ports, logistics platforms) covered by freight information services & Total number of same freight nodes
- KPI = (kilometres of road network type with provision of freight information services / total kilometres of same road network type) x 100
- KPI = (number of freight nodes with provision of freight information services / total number of same freight nodes) x 100

Table 2.1.7.1 Freight Information							
N	Motorways	2017					
		Length of road network/road section	Total length	Number of nodes	Number total nodes	KPI (km/Total km)	KPI (number / total number)
•	Egnatia Odos	-	-	-	-	-	-
•	Moreas	0 km	205 km	0	0	0%	0%
•	Aegean Motorway	-	550 km	-	-	-	-
•	Attiki Odos	0 km	70 km	0	-	0%	-
•	Olympia Odos	-	201.5 km	-	-	-	-
•	Rio-Antirio Bridge	0 km	3.5 km	0	0	0%	0%
•	Ionian Odos (Nea Odos)	-	219 km	-	-	-	0%
•	Central Greece Motorway	-	57 km	-	-	-	0%

As far as the freight information, no data were available for all of the motorways about the length of road network/road section and the number of freight nodes where they have been installed.

2.1.8 112 eCalls (road KPI)

Table 2.1.8.1 112 eCalls					
N	Motorways	2017			
		Number of 112- eCall	Number of incorrect 112- eCall	Number of manual 112- eCall	Number of incorrect manual 112- eCall
•	Egnatia Odos	-	-	-	-
•	Moreas	-	-	-	-
•	Aegean Motorway	-	-	-	-
•	Attiki Odos	-	-	-	-
•	Olympia Odos	-	-	-	-
•	Rio-Antirio Bridge	-	-	-	-
•	Ionian Odos (Nea Odos)	-	-	-	-
•	Central Greece Motorway	-	-	-	-

As far as the 112-eCalls, no data were available for all of the motorways.

2.2 Benefits KPIs

In order to assess the benefits of the deployment of the ITS systems we will analyse the Key Performance Indicators, as defined by EU ITS Platform. The Key Performance Indicators refer to the change in travel time, the change in road accident resulting in death or injuries numbers and the change in traffic-CO2 emissions.

The implementation bodies that provided information related to KPIs are Egnatia Odos, Moreas, Aegean Motorway, Attiki Odos, Prefecture of West Attica, OASA, Olympia Odos, Rio-Antirio Bridge, Ionian Odos (Nea Odos) and Central Greece Motorway.

2.2.1 Change in travel time (road KPI)

Figures to be provided also include vehicle.km for the route / area considered

$$\text{KPI} = ((\text{travel time before ITS implementation or improvement} - \text{travel time after ITS implementation or improvement}) / \text{travel time before ITS implementation or improvement}) \times 100$$

Table 2.2.1.1 Change in travel time				
N	Motorways	2017		
		Travel time before	Travel time after	KPI
•	Egnatia Odos	-	-	-
•	Moreas	-	-	-
•	Aegean Motorway	-	-	-
•	Attiki Odos	-	-	-
•	Olympia Odos	-	-	-
•	Rio-Antirio Bridge	4 min	4 min	0%
•	Ionian Odos (Nea Odos)	-	-	-
•	Central Greece Motorway	-	-	-

As far as the change in travel time, no data were available for the motorways except for Rio-Antirio bridge where no change has been detected.

2.2.2 Change in road accidents resulting in death or injuries numbers (road KPI)

- Number of road accidents resulting in death or injuries before ITS implementation or improvement
- Number of road accidents resulting in death or injuries after ITS implementation or improvement

Table 2.2.2.1 Change in road accidents resulting in death or injuries numbers				
N	Motorways	2017		
		Number of death/injuries before	Number of injuries after	KPI
•	Egnatia Odos	-	-	-
•	Moreas	-	-	-
•	Aegean Motorway	-	-	-
•	Attiki Odos	-	-	-
•	Olympia Odos	-	-	-
•	Rio-Antirio Bridge	1	1	0%
•	Ionian Odos (Nea Odos)	-	-	-
•	Central Greece Motorway	-	-	-

As far as the change in road accidents resulting in death or injuries numbers, no data were available for the motorways except for Rio-Antirio bridge where the number of injuries did not change.

2.2.3 Change in traffic-CO2 emissions (road KPI)

$KPI = ((\text{traffic CO2 emissions before ITS implementation or improvement} - \text{traffic CO2 emissions after implementation or improvement}) / \text{traffic CO2 emissions before ITS implementation or improvement}) \times 100$

Table 2.2.3.1 Change in traffic-CO2 emissions				
N	Motorways	2017		
		Traffic CO2 emissions before	Traffic CO2 emissions after	KPI
•	Egnatia Odos	-	-	-
•	Moreas	-	-	-
•	Aegean Motorway	-	-	-
•	Attiki Odos	-	-	-
•	Olympia Odos	-	-	-
•	Rio-Antirio Bridge	-	-	-
•	Ionian Odos (Nea Odos)	-	-	-
•	Central Greece Motorway	-	-	-

As far as the change in traffic-CO2 emissions, no data were available.

2.3 Financial KPIs

In order to assess the financial contribution of the ITS systems we will analyse the Financial Key Performance Indicators, as defined by EU ITS Platform. The Financial Key Performance Indicators presented in Table 2.3.1 originate in Table VI: ITS Key Performance Indicators-KPIs as defined in EU EIP Activity 5 WP2. Unfortunately, no data were available for most of the projects in this table. The Financial Key Performance Indicators presented in Table 2.3.2 originate in Table IV: Investments in ITS-Motorway data.

The implementation bodies that provided information related to KPIs are Egnatia Odos, Moreas, Aegean Motorway, Attiki Odos, Prefecture of West Attica, OASA, Olympia Odos, Rio-Antirio Bridge, Ionian Odos (Nea Odos) and Central Greece Motorway.

Table 2.3.1 Financial KPIs			
N	Motorways	2017	
		Annual investment in road ITS (as % of total transport infrastructure investments)	Annual operating & maintenance costs of road ITS (in euros per kilometre of network covered)
•	Egnatia Odos	1-3%	1000-1500
•	Moreas	-	-
•	Aegean Motorway	-	-
•	Attiki Odos	9,56 %	24714 euro/km
•	Olympia Odos	-	-
•	Rio-Antirio Bridge	-	-
•	Ionian Odos (Nea Odos)	-	-
•	OASA	-	-
•	West Attica Region	-	-

Table 2.3.2 INVESTMENTS IN ITS-MOTORWAY DATA								
Motorway	Total Length	Investments in ITS Infrastructure	Investments in ITS services to the end user	Total Investments in Transport	Percentage of Investments in ITS Infrastructure over the total amount (%)	Percentage of Investments in ITS services to end user over total amount (%)	Investments in ITS infrastructure/total road length	Investments in ITS services to the end user/total road length (€/km)
(1)	(km) (2)	(€) (3α)	(€) (3β)	(€) (4)	(5α)=(3α)/(4)	(5β)=(3β)/(4)	(€/km) (6α)=(3α)/(2)	(6β)=(3β)/(2)
Egnatia Odos (Egnatia Odos)	920	217.602 €	8.932 €	-	-	-	-	-

Observatory)								
Egnatia Odos (Polymilos-Veria)	26	60.000 €	-	-	-	-	-	-
Egnatia Odos (Symbolou Tunnel)	1,1	50.000 €	-	-	-	-	-	-
Egnatia Odos (Koromilia-Kristalopigi)	20,0	770.000 €	-	3.670.000 €	21%	-	-	-
Egnatia Odos (Florina – Niki 50.3)	14,5	70.000 €	-	533.366 €	13%	-	-	-
Egnatia Odos (CROCODILE II)	920	183.000 €	70.000 €	-	-	-	-	-
Egnatia Odos – TOTAL	934,5	1.350.602 €	78.932 €	4.203.366 €	32%	2%	1.446 €/km	85 /km
Eleusina-Korinthos-Patra Motorway (OLYMPIA ODOS)	201,5	-	-	-	-	-	-	-
Nea Odos (Ionia Odos)	376	18.586.192		716.948.904€	2.6%		49.431	
Central Greece Motorway (E65)	231	12.404.516	-	390.581.145	3.2%	-	53.700	-
Aegean Motorway	550	18.000.000	-	1.200.000.000	1.4%	-	30.909	-

Motorway Korinthos-Tripoli-Kalamata and Leuktro-Sparti road network (Moreas)	205	-	-	-	-	-	-	-
Attiki Odos	70	1730000	340000	1810000	9,56%	1,88	24714,28	4857
Rio-Antirio Bridge	3,5	0	0	0	0	0	0	0

ANNEX I

I. MOTORWAYS								
Project	Authority/Entity	Priority	Status	Budget (*1000€)				Total (*1000 €)
				2014	2015	2016	2017	
Web based electronic licensing system for special transport through the road network of Egnatia Odos SA	Egnatia Odos	I,II	Ongoing	-	-	Inside of the company	Inside of the company	
Upgrading the traffic cameras management system of S10-VERMIOU TCC	Egnatia Odos	I	Operational	-	-	60	-	60

Upgrading the traffic cameras management system of SYMVOLOY TCC	Egnatia Odos	I	Operational	-	-	50	-	50
Installation of traffic surveillance and traffic control equipment in new road sections and in particular: i. Vertical Axis A29 - Koromilia – Crystallopi gi Section, ii. Road Section Florina - Niki	Egnatia Odos	I	Operational	-	70	545	225	840
Development of an electronic platform for calculating carbon footprint of Egnatia Odos motorway	Egnatia Odos	I	Operational	-	-	20	-	20
Traffic Management System – Motorway of Central Greece	Center of Greece SA Concession Company	I, II	Ongoing	-	-	820.955	-	820.955

Geographic Information System – Kentriki Odos	Center of Greece SA Concession Company	I, III	Ongoing	-	-	-	-	-
Traffic Management System – Ionian Odos	Nea Odos SA Concession Company	I, II	Ongoing	-	195.770	1030.160	-	1225.93
Geographic Information System – Nea Odos	Nea Odos SA Concession Company	I, III	Ongoing	-	-	-	-	-
Installing Variable Message Signs	Nea Odos SA Concession Company	I, III	Operational	-	-	-	-	-
Vehicle Detection System Installing	Nea Odos SA Concession Company	I, III	Ongoing	-	-	-	-	-
Closed Camera Node Tracking Circuit	Nea Odos SA Concession Company	I, III	Operational	-	-	-	-	-
Replacing Payment Methods Plates with corresponding electronic ones – Kentriki Odos	Kentriki Odos SA Concession Company	II, III	Operational	-	-	-	-	-
Back Office System	Kentriki Odos SA Concession Company	II, IV	Operational	0	1079.4	0	0	1079.4

Replacing Payment Methods Plates with corresponding electronic ones-Nea Odos	Nea Odos SA Concession Company	II, III	Operational	-	-	-	-	-
Driving Behavior and Remote Diagnostics System	Attikes Diadromes SA	III	Operational	-	40	-	-	40
Motorway Management System (Korinthos-Tripoli-Kalamata-Lefktron-Sparti)	Moreas SA	III	Operational	-	-	-	-	-
Completion of Western Regional Motorway of Aegaleo and networks	Region of Attica Directorate of Western Attica Technical Projects	III	Operational	-	-	-	-	-
Replacing Payment Methods Plates with corresponding electronic ones – Kentriki Odos	Center of Greece SA Concession Company	II, III	Operational	-	-	-	-	-
Installing Variable Message Signs - ATHE	Nea Odos SA Concession Company	I, III	Operational	-	-	-	-	-

Motorway								
Replacing Payment Methods Plates with corresponding electronic ones – Nea Odos	Nea Odos SA Concession Company	II, III	Operational	-	-	-	-	-
Motorway Management System of Olympia Odos	Olympia Odos SA		Ongoing	-	-	-	-	-
Integrated Aegean Motorway Management System	Aegean Motorway		Ongoing	4.000	4.000	4.000	5.000	17.000

II. URBAN NETWORK

Project	Authority/Entity	Priority	Status	Budget (*1000€)				Total (*1000€)
				2014	2015	2016	2017	
Integrated Traffic Management and Traffic Monitoring Platform to inform citizens	Municipality of Kavala	I	Operational	-	166	-	-	166

about the conditions of multi-channel traffic in the Municipality of Kavala								
Intelligent Telematic Information System for Drivers and Citizens for Traveling and Parking in the Municipality of Kalamata through Multi-Channel Information - "Intelligent Movement"	Municipality of Kalamata	I	Operational	-	159	-	-	159
Integrated Traffic Management and Tracking Platform in the Municipality of Ioanniina inform citizens about traffic conditions through multiple communication channels	Municipality of Ioannina	I	Operational	-	147	-	-	147
Supply of passenger information equipment for the project NODES - New Tool for Design and	SASTH	I	Operational	32.3	-	-	-	32.3

Operation of Urban Transport Interchanges								
Cooperative Logistics for Sustainable Mobility of Goods - CO-GISTICS	ERTICO – ITS Europe	II	Operational	-	-	-	-	7492
Cooperative Mobility Pilot on Safety and Sustainable Services for Deployment - COMPASS4D	CIP	III	Operational					9996.006
Accelerating C-ITS Mobility Innovation and deployment in Europe – C-MOBILE	HORIZON 2020	III	Ongoing					15059.45342
Guideport	Decentralised Administration of Western Greece, Peloponnese and Ionian Islands	II	Operational					

III. NATIONAL AND EU ROAD NETWORK

Project	Authority/Entity	Priority	Status	Budget (*1000€)				Total (*1000€)
				2014	2015	2016	2017	
Supply, installation and maintenance of traffic control equipment in Egnatia Odos motorway and sections of National Highways	Egnatia Odos	I	Ongoing	-	154.077	65.989	6.468	12924
I-HeERO	Ministry of Infrastructure and Transport, EPISEY, COSMOTE SA, G4S TELEMATICS SA	Priority action d	Ongoing	-	-	-	-	1228
HeERO «Harmonised eCall European Pilot»	Ministry of Infrastructure and Transport	Priority action d	Operational	-	-	-	-	367516.22

IV. CROSS-BORDER NETWORK

Project	Authority/ Entity	Priority	Status	Budget (*1000€)				Total (*1000€)
				2014	2015	2016	2017	
Intelligent Portable Control System (iBorderCtrl)	European Dynamics	I	Ongoing	-	-	30	30	60
New Cooperative Business Models and Guidance for Sustainable City Logistics (NOVELOG)	CERTH	I	Ongoing	-	20	20	-	40
CROCODILE II (Connecting Europe Facility 2014-2020)(No. 2014-EU-TM-0563-W INEA/CEF/TRAN/M2014/1058107 Grant Agreement)	CEF	I	Ongoing	0	3364	15413	16028.5	34805.5
GIFT 2.0	ETCP Greece Italy 2007-2013	II	Operational					

V. MULTIMODAL RAILWAY

Project	Authority/Entity	Priority	Status	Budget (*1000€)				Total (*1000€)
				2014	2015	2016	2017	
Passenger Information System (PIS)	TRAI NOSE	I	Operational	-	40	40	0	80
IP Surveillance System	TRAI NOSE	I	Operational	40	-	-	-	40

Train tracking system development via GPS - Fleet management	TRAINOSE	I	Ongoing	-	-	-	-	-
Live Suburban Railroads	TRAINOSE	I	Operational	-	-	-	0	0
Reducing Environmental Footprint based on Multi - Modal Fleet management Systems for Eco - Routing and Driver Behaviour Adaption (REDUCTION)	University of Hildesheim	I	Operational	60	60	-	-	120
Green Intermodal Freight Transport (GIFT)	Ministry of Infrastructure and Transport	I	Operational	60	-	-	-	60
Installation of RFID system on trains	TRAINOSE	II	Operational	-	-	-	-	-
SAFER LC	UIC	III	Ongoing			25	25	50

VI. SEVERAL

Project	Authority/ Entity	Priority	Status	Budget (*1000€)				Total (*1000 €)
				2014	2015	2016	2017	
Passengers services mobile application	TRAINOSE	I	Operational	-	-	-	30	30
GreenYour Move (GYM)	University of Thessaly	I	Ongoing	-	12.58	7.692	6.456	26.728
ITS Observatory	HORIZON 2020	I,II,III,IV	Operational	-	-	-	-	1337.2595
Provision of technical support to the competent unit of the Ministry of Infrastructure and Transport for the effective and valid updating of DG MOVE's TEN-Tec Portal database under the CEF TRANSPORT - PSA	Hellenic Ministry of Infrastructure and Transport	I,II,III,IV	Ongoing	-	-	-	-	21

Research, Financing, Installation, Maintenance Support, Maintenance and Technical Management of Integrated Passenger Information System and Fleet Management for ETHEL and ILPAP with SDIT (Action 1.2)	OASA	II	Operational	1594.149	1632.05949	1748.506		4974.71449
Research, Financing, Installation, Operation Support, Maintenance and Technical Management of a Unified Automatic Collection System for OASA Group companies with SDIT (Action 1.1)	OASA	II	Ongoing	0	1440.6	6635.40429	40699.1541	48775.1584
Integrated Intelligent Transport System	GEFYRA (HELLASTRON)	I, II, III	Operational	-	-	-	-	800.000

(ITS) for traffic management, road safety and user information at "Charilaos Trikoupis" Bridge								
Server Room	TRAINOSE	II	Operational	-	-	200	-	200