

Directive 2010/40/EU Progress Report 2020 Bulgaria: Ministry of Transport, Information Technology and Communications

September 2020

1 Introduction

1.1 General overview of the national activities and projects

The Ministry of Transport, Information Technology and Communications prepared the Progress Report on the base of information, provided by its internal structures, the Ministry of Interior, Ministry of Regional Development and Public works, the Road Infrastructure Agency, subordinated to the Ministry of Regional Development and Public works, and respective Municipalities. The information is reflected as it is sent to the Ministry of Transport, Information Technology and Communications.

According to the Automobile Transport Act the Minister of Transport, Information Technology and Communications shall coordinate the activities for deployment and application of intelligent transport systems in the field of road transport and interfaces with other transport modes. For supporting the activity of the Minister of Transport, Information Technology and Communications an Intelligent Transport Systems Council was set up.

The Chair of the Council is the Minister of Transport, Information Technology and Communications, and Deputy Chairs are the Deputy Minister of Transport, Information Technology and Communications, a Deputy Minister of Interior and a Deputy Minister of Regional Development and Public Works.

The Directive is transposed in Bulgarian legislation with the following acts:

- AUTOMOBILE TRANSPORT ACT and
- ORDINANCE ON THE CONDITIONS AND PROCEDURE FOR IMPLEMENTATION OF INTELLIGENT TRANSPORT SYSTEMS IN THE FIELD OF MOTOR TRANSPORT AND FOR INTERFACES WITH OTHER MODES OF TRANSPORT.

The Road Infrastructure Agency continues the activities for the implementation of ITS in the direction of the Trakia and Struma motorways. Measures for the forthcoming activities have also been

identified. An electronic toll collection system has been developed and put into operation. Progress has been made in the development and implementation of National Access Points under the relevant Regulations, which are in the field of their activity.

The Ministry of Interior has upgraded the eCall system and the EUCARIS eCall National Functionality Interface is currently in regular operation. The system has issued a certificate of conformity.

The equipment of the Ministry of Interior with mobile automatic stations for speed control continues. In 2018, 28 units were purchased, and in 2020 - another 6. A tender procedure is underway for the purchase of about 160 more mobile stations. A Unified Center for Information Processing from all stations for speed control of road vehicles is under construction.

The purpose of these measures is to increase traffic safety through enhanced control.

The Ministry of Transport, Information Technology and Communications is in the process of developing a National Access Point under Regulation 2017/1926.

1.2 General progress since 2017

The progress made is described in detail in the next item 2

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2 Projects, activities and initiatives

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

2.1.1 Description of the national activities and projects

Description of the relevant initiatives, their objective, timescale, milestones, resources, lead stakeholder(s) and status:

Description of the relevant initiatives, their objective, timescale, milestones, resources, lead stakeholder(s) and status:

1. Development and implementation of an intelligent transport system within the scope of Trakia Motorway.

Road Infrastructure Agency is a beneficiary under Operational Programme on Transport and Transport Infrastructure (OPTTI) for the 2014 - 2020 programming period. On 12 December 2016, Administrative Contract No. DOPTTI-18/12.12.2016 was signed between the Ministry of Transport, Information Technology and Communications - Managing Authority of OPTTI and the Road Infrastructure Agency for the provision of grants for project BG16M10P001-4.001-0002 "Development and implementation of an intelligent transport system within the scope of Trakia Motorway".

The funding of the project is under OPTTI, Priority Axis 4 "Innovation in management and services – implementation of modernised infrastructure for traffic management, improvement of transport safety and security", Intervention Area No. 044 "Intelligent transport systems (including introduction of demand management, fee collection systems, IT systems for monitoring, control and information)". The project is co-financed by the European Union through the European Regional Development Fund, with agreed funds amounting to BGN 8,983,608.00 (VAT inclusive), and the deadline for implementation is 36 months.

The idea of the project proposal is directly related to increasing traffic safety for motor vehicles within the scope of Trakia Motorway and complying with the latest relevant directives of the European Union. The implementation of an intelligent transport system includes modernisation of the Trayanovi Vrata Tunnel and the deployment of specific road accessories located within the scope of Trakia Motorway in order to ensure maximum traffic security and increase road safety. The introduction of an intelligent transport system for the automatic identification of accidents in the Trayanovi Vrata Tunnel and the use of ITS accessories are expected to increase road safety and meet the requirements set out by EU Directive 2004/54/EC. Under the project, an intelligent transport system containing various hardware components and centralised software for monitoring, control and management of traffic within the scope of Trakia Motorway shall be developed and put into operation. The main activities to be implemented are as follows:

- Implementation of intelligent system for automatic identification of accidents, traffic management and modernisation of Trayanovi Vrata Tunnel;
- Supply and installation of variable message signs in different sections of Trakia Motorway with the possibility of real-time remote control;
- Supply and installation of weigh-in-motion sensors;
- Supply and installation of cameras for measuring average speed and monitoring of traffic by means of all related equipment in certain sections of Trakia Motorway.

The total indicative value of the public procurement contract is BGN 7,261,500, VAT excl. (BGN 8,713,800.00, VAT incl.), including unforeseen costs in the amount of BGN 211,500, VAT excl. The deadline for execution of the contract is 24 months.

2. Establishment of Traffic Management Control Center

Under contract No. DOPTI-1/24.09.2015, grants were provided on the basis of an application form for the project "Struma Motorway Lot 3 – Lot 3.1, Lot 3.3 and Zheleznitsa Tunnel". The project is financed

under OPTTI, Priority Axis 2 “Development of road infrastructure under the “main” and “expanded” Trans-European Transport Network” of OPTTI.

Following a procedure for selection of a contractor, on 30 December 2015 contract No. 163/30.12.2015 was concluded between the National Company for Strategic Infrastructure Projects (Contracting Authority) and DZZZD “AM STRUMA 3.1” (Contractor). Part of the subject of the contract is also the construction of a Traffic Management Control Center where information from all Intelligent Transport Systems (ITS) built on Lot 3 of Struma Motorway, including those in the Zheleznitsa Tunnel and the tunnels within the scope of Struma 3.2, shall be received and processed. The Center will be part of a complex of buildings and facilities designed for traffic management and road maintenance purposes.

Intelligent transport systems along the motorway will constitute the implementation of a Regional Road Infrastructure Management System (System). The purpose of the System is to efficiently manage traffic and the processes of road maintenance along the motorway through centralised and roadside technical facilities. The centralised technical facilities of the System will be physically implemented in the building provided for the Control Center and include the following:

- Central hardware infrastructure;
- Software applications for the System.

The roadside technical facilities of the System include the following:

- Traffic monitoring road station:
- Road station for meteorological monitoring:
- Road station for traffic management with limited content:
- Road station for traffic management with extended content:
- Road CCTV station with surveillance camera:
- Road CCTV station with static cameras:

The price for the implementation of the Traffic Control Center is BGN 800,000, VAT excl., as per the offer of the Contractor, and the price of the System is BGN 200,000, VAT excl.

3. Struma Motorway, Lot 3.1 – Zheleznitsa Tunnel from km 366+000 to km 370+400, Subsection No. 2 – from km 366+720 to km 369+000, including a service tunnel road at the southern gate of Zheleznitsa Tunnel and a helicopter landing site.

With the project for the construction of the Zheleznitsa Tunnel, it is necessary to put into operation new technical facilities of the System, which will integrate with the existing ones and ensure uninterrupted traffic management along the completed section. The following new facilities are planned to be deployed:

- Central Subsystem for Tunnel Message Management
- The Central Subsystem for Tunnel Message Management includes software applications that need to be integrated with both the existing subsystems of the Regional Road Infrastructure Management System and the Tunnel Data Collection, Monitoring and Management System (SCADA). Detailed functional requirements are given in Annex 8.1 (“Technical specification for the implementation of intelligent transport systems of the road network”) and item 7.3 of the explanatory

note of the conceptual design for the Zheleznitsa Tunnel (presented in Annex 1.1). It is necessary to use technical solutions allowing for the integration and continuity of traffic management functionalities for the whole road infrastructure.

Central hardware infrastructure components securing the functionalities of the Central Subsystem for Tunnel Message Management:

Provide the necessary facilities allowing for a working environment with sufficient resources for the software applications of the subsystem;

Road subsystem for tunnel message management comprising the following facilities:

Road station for traffic recording via inductive frames;

Road CCTV station;

Road station for road surface data;

Controlled road signs (CRSs);

Traffic lights;

The following facilities shall be provided as part of the Road Subsystem for Tunnel Message Management and the locations will be determined in accordance with the situation at the subsection:

Road station for traffic recording via inductive frames:

Provide for 1 road station for the north gate and 1 for the south gate;

The recording shall be carried out at an appropriate distance from the gates in all lanes for both roadways;

Road station for road surface data:

Provide for 1 road station for the north gate and 1 for the south gate;

Installation and reporting of data shall be carried out at an appropriate distance from the tunnel gates;

Provide information on wind speed and direction, precipitation and its volume, air temperature, humidity percentage, thickness of the water film on the road, freezing point of the road surface, temperature of the road surface and send signals when the road surface is frosty, frozen or icing.

Road CCTV station:

Provide for 1 road station for the north gate and 1 for the south gate;

The location of the road station shall be about 75 meters away from the gate;

Controlled road signs (CRSs):

Provide and deploy CRSs according to the requirements for Main transport and technical equipment of tunnels, as defined in Ordinance No. PД-02-20-2 of 21.12.2015 on the technical rules and standards for road tunnel design - Annex 9.1. The requirements for the CRSs are given in item 7 of the explanatory note of the conceptual design for the Zheleznitsa Tunnel (presented in Annex 1.1);

Traffic lights:

The design decision should provide for and position LED traffic lights sections for closing traffic in the tunnel according to the requirements for Main transport and technical equipment of tunnels defined

in Ordinance No. PД-02-20-2 of 21.12.2015 on the technical rules and standards for road tunnel design - Annex 9.1;

The technical design for Subsection 2 should provide for the construction of communication cables between the Motorway Management Center and the Zheleznitsa Tunnel.

The technical design should provide for a two-sided duct network for optical cables, of two $\phi 40$ HDPE pipes. The duct network shall be located on both sides of the motorway in this subsection – within the scope of the approved detailed development plan. The location of the duct network shall be consistent with the location of the duct network in the preceding motorway section, and for this purpose, the Contracting Authority shall provide for type cross-section profiles to the selected Contractor.

Build an optical communication connection for data transmission and control along the entire length of the motorway in the Subsection with two optic cables of 48 fibres each.

Along the motorway, in this subsection, two optical cables (one on each side of the motorway) with 48 fibres each shall be laid to connect the local communication centers to the motorway management center. The optical cables shall be located in a duct network on both sides of the motorway. This will ensure a reliable double reservation for the communication connection of the local centers at the tunnel gates and the control center.

2.1.2 Progress since 2017

Description of the progress in the area since 2017:

1. Contract No. D-36 of 23 March 2020 was concluded with the selected contractor "ITS Trakia" DZZD amounting to BGN 7,261,000, VAT excl.

On 16 October 2019, a tender procedure was announced with the subject "Appointment of a consultancy service contractor for the development and implementation of an intelligent transport system within the scope of the Trakia Motorway" with an indicative value of BGN 170,000, VAT excl. The decision for selection of a contractor is № 1 of 06 January 2020, with which the participant Trans Technical Association is selected as a contractor. The contract with No. PД-36-1 was concluded on 26 February 2020 and the price for the performance of the service is BGN 88,980, VAT excl.

2. The control center will be completed in 2021 as part of the contract with Contractor for Lot3.1.

In order to enable ITS to function along the constructed section of Lot 3.3 on Struma, as well as on section 1 of Lot 3.1 from km 359+000 to km 366+000, a temporary control center has been built on the territory of the Blagoevgrad District Road Management, which has been operational as of August 2020. There are 2 full-time job positions in this center (24 hours a day, every day of the year).

3. The activities for construction of ITS for the tunnel have not yet started

2.1.3 Delegated Regulation (EU) 2017/1926 on the provision of EU-wide multimodal travel information services (priority action a)

Pursuant to Article 4 (3) (a) of Delegated Regulation 2017/1926, with the support of the JASPERS initiative (<https://jaspers.eib.org/>), a draft Terms of Reference for the establishment of a national access point for provision of information services for multimodal travel information (Terms of Reference for Implementation of the National Access Point for Multimodal Travel Information Services), which is to be finalized as soon as possible. If necessary, the Bulgarian side expresses its readiness to submit to the EC the draft Terms of Reference.

The draft Terms of Reference also contain an example distribution of data providers in Bulgaria. Data providers should be the administrative units / entities responsible for the development, maintenance and operation of transport infrastructure and types of transport services. Each of them is responsible for providing static and / or dynamic data for one or more of the data categories. In accordance with the Annex to Delegated Regulation (EU) 2017/1926, the administrative units / entities responsible for providing the different categories of data are generally as follows:

- static data for the road network - Road Infrastructure Agency;
- static data for the railway network - NC "Railway Infrastructure";
- static data on the airport infrastructure - the airport operators;
- static data on road signs and regulations - Road Infrastructure Agency;
- data on tolls / tolls - Road Infrastructure Agency (toll system manager);
- information about the parking and rest areas - Road Infrastructure Agency; Parking and stop area operators; Bicycle parking operators;
- petrol stations and refueling stations - Road Infrastructure Agency (as the body responsible for issuing permits for connection to the existing road infrastructure); Gas station and refueling station operators;
- freight and logistics - Road Infrastructure Agency (restrictions, road signs); Freight and logistics center operators;
- dynamic data on road signs and regulations - Road Infrastructure Agency;
- information on road construction and repair activities - Road Infrastructure Agency;
- unexpected road events and conditions - Road Infrastructure Agency;
- meteorological conditions on the roads - Road Infrastructure Agency;
- Real-time traffic data - Road Infrastructure Agency;
- general information for the planning of the trip - voluntarily by the interested operators (Points of Interest);
- public transport: Location information - National Railway Infrastructure Company; Municipalities and / or municipal public transport managers (eg Sofia Center for Urban Mobility); port and airport infrastructure managers;

- public transport: Operational information - Bulgarian State Railways; Municipalities and / or municipal public transport managers (eg Sofia Center for Urban Mobility); all transport operators;
- public transport: Information on prices and purchase of tickets - Bulgarian State Railways; all transport operators;
- bicycle network data - municipalities (voluntary provision of data to supplement the maps from OpenStreetMap);
- data on the pedestrian network - municipalities (voluntary provision of data to supplement the maps from OpenStreetMap);
- supply and demand regime data - operators of car and bicycle sharing facilities.

The access point is expected to have the following functionality:

- providing access to data corresponding to the levels of service (Level of service) up to 3 inclusive, as defined in Delegated Regulation (EU) 2017/1926;
- services for searching and discovering the types of data, documentation and tools provided by the point for the providing transport services;
- management of the users of the access point (registration, identification, deregistration, etc.);
- visualization for end users of data and results of searches and queries;
- end-user multimodal travel planning services;
- web-based functions to support the input of certain categories of data by transport service providers.

Based on the Terms of Reference, we envisage to prepare tender documentation by the end of 2020 and in the first quarter of 2021 to start a tender procedure for the construction of a National Access Point according to Art. 3, paragraph 1 of Delegated Regulation (EU) 2017/1926, to be accessed through the website of the Ministry of Transport, Information Technology and Communications of the Republic of Bulgaria.

In accordance with Article 9, item 1 of Delegated Regulation (EU) 2017/1926, the Ministry of Transport, Information Technology and Communications is designated as the national body responsible for conformity assessments.

Measures undertaken, if any, to set up a national access point and on the modalities of its functioning: (including information on the web-link to the NAP and discovery services available to users)

Information on the progress made since 1 December 2019:

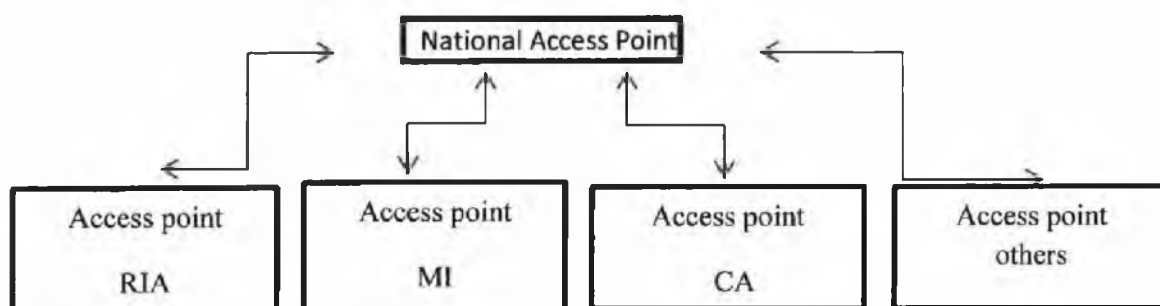
Additional information (e.g. which data types are being provided? Have metadata catalogues been implemented? Are quality requirements being checked?):

2.1.4 Reporting obligation under Delegated Regulation (EU) 2015/962 on the provision of EU-wide real-time traffic information services (priority action b)
(see guidance provided in Member States experts follow up meetings)

In accordance with Article 3, paragraph 1 of Delegated Regulation (EU) 2015/962, the Republic of Bulgaria has made the following national distribution of information access points, according to their functional competencies and the information at their disposal:

1. Access point to information required under the Regulation within the remit of the Road Infrastructure Agency.
2. Point for access to data for information related to the speed required by the Regulation - Ministry of Interior.
3. Point of access to waiting time data at border crossings to non-EU countries under the Regulation - Customs Agency.
4. Access point location data access point, etc. - are currently being clarified.
5. A national access point shall provide all required information in a single point of access for users to road and traffic data, including updates of data provided by road authorities, road operators and service providers relating to the territory of the a Member State.

Road authorities and road operators, in cooperation with digital map manufacturers and service providers, shall ensure the provision of appropriate metadata to enable users to discover and use the data sets provided through the national access point.



Based on an analysis of the current state of the data entered in the RIA information system, the Bulgarian side designates the portal <https://lima.api.bg> as a national access point, according to Art. 3 of Delegated Regulation № 2015/962. It is envisaged that from 15.09.2020 the following data published on the portal will be in a format fully compliant and interoperable with DATEX II:

☒ Static road data:

- road signs reflecting traffic rules and indicating hazards, such as:
 - permanent restrictions on access;
 - other traffic rules;
- traffic organization plans;
- location of the toll collection points;
- location of parking spaces and service areas;

☒ Dynamic road condition data:

- closed roads;
- closed lanes;
- closed bridges;
- accidents and incidents;
- poor road conditions;
- temporary traffic management measures;
- meteorological conditions affecting the road surface and visibility.

At present, given the availability of static, dynamic and traffic data, which are in the competence of various institutions, discussions are underway with relevant stakeholders on the availability of data and the possibility of providing them by the end of 2020. The information portal <https://lima.api.bg> will have the opportunity to publish the missing data, provided that the related institutions - source of information have an information system for this activity and the data are in the required format.

Measures undertaken, if any, to set up a national access point and on the modalities of its functioning:

Where relevant, the list of motorways not included in the comprehensive trans-European road network and identified priority zones:

Additional information (e.g. which data types are being provided? Have metadata catalogues been implemented? Are quality requirements being checked?):

2.1.5 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)
(see guidance provided in Member States experts follow up meetings)

The Republic of Bulgaria has defined the information portal - <https://lima.api.bg>, maintained by the Road Infrastructure Agency, as a national access point under Delegated Regulation (EU) No 886/2013, given the fact that a significant part of the data required under the Regulation, which must be provided by the access points to all public and / or private road operators and / or service providers are collected and updated by the Agency itself.

In this regard, the Road Infrastructure Agency has an information system LIMA, providing information on the current situation on the roads of the national road network, both from a mobile device and from a personal computer at the Internet address <https://lima.api.bg>.

The system is oriented both to the citizens and from the citizens to the Agency through feedback. The information for 20,000 km of national roads is provided through an interactive map, which is kept up to date by over 60 RIA operators throughout the country. It reflects the real situation on the roads and enables drivers of different types of motor vehicles to be informed about the introduced traffic restrictions, so that they have the opportunity to flexibly change and plan their routes.

The LIMA information system shall fall within the scope and cover the requirement for at least one of the following categories in the list of road safety events or circumstances with a set of data referred to in Article 3 of Delegated Regulation No 886/2013, namely:

- (a) a temporarily slippery roadway;
- b) animals, people, obstacles, debris on the roadway;
- c) unsecured scene;
- d) short-term road construction;
- e) reduced visibility;
- (f) a motorist in oncoming traffic;
- g) unsecured obstacle on the roadway;
- (h) extreme weather conditions.

In addition, the information system provides the information under Article 3, in accordance with the requirements of Art. 4 of Delegated Regulation (EU) № 886/2013 and contains the following data:

- (a) location of the event or circumstance;
- (b) the category of the event or circumstance as referred to in Article 3 and, where applicable, a brief description;
- (c) where appropriate, advice to motorists on how to adapt their driving style.

1. Article 7 (2) of the delegated regulation obliges Member States to provide a national access point, which includes access points set up by public and / or private road operators and / or service providers operating in their territory. The actions taken so far by the Republic of Bulgaria are the available maintained data on the portal <https://lima.api.bg>, defined as a national access point under Delegated Regulation (EU) № 886/2013, from 15.09. 2020 to be provided in machine-readable DATEX II format. The current activities will be implemented on 15.09.2020.

2. Article 10 (1) (b) states that no later than 12 months after the entry into force of the Regulation (1 October 2013), Member States must provide a description of the existing or intended national access point. By 15.09.2020, the activities under item 1 will be implemented and a description of the national access point will be provided <https://lima.api.bg>.

Progress made in implementing the information service, including the criteria used to define its level of quality and the means used to monitor its quality:

Results of the assessment of compliance with the requirements set out in Articles 3 to 8 of Delegated Regulation (EU) No 886/2013:

Where relevant, a description of changes to the national access point:

Additional information (e.g. sources of data used for the provision of safety related traffic information):

The national access point shall cover the requirement for at least one of the following categories in the list of road safety-related events or circumstances with a dataset referred to in Article 3 of Delegated Regulation (EU) No. 886/2013, namely:

- a) temporary slippery road;

- b) animal, people, obstacles, debris on the road;
- c) unprotected accident area;
- d) short-term road works;
- e) reduced visibility;
- f) wrong-way driver;
- g) unmanaged blockage of a road;
- h) extreme weather conditions.

In addition, it shall provide the information referred to in Article 3 in accordance with the requirements of Article 4 of Delegated Regulation (EU) No. 886/2013 and shall contain the following data:

- a) location of the event or the condition;
- b) the category of event or condition as referred to in Article 3 and, where appropriate, short description of it;
- c) driving behavior advice, where appropriate.

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

2.2.1 Description of the national activities and projects

Description of the relevant initiatives, their objective, timescale, milestones, resources, lead stakeholder(s) and status:

2.2.2 Progress since 2017

Description of the progress in the area since 2017:

2.3 Priority area III. *ITS road safety and security applications*

2.3.1 Description of the national activities and projects

Description of the relevant initiatives, their objective, timescale, milestones, resources, lead stakeholder(s) and status:

Currently, Road Infrastructure Agency is preparing technical assignments for the construction of intelligent transport systems for provision of dynamic data on safe and secure parking places for

priority areas on the national road network of the Republic of Bulgaria. The data will be made available for free use through the national access point. European funds shall be used for funding the projects.

2.3.2 Progress since 2017

Description of the progress in the area since 2017:

2.3.3 112 eCall (priority action d)

According to the decision of the Council for Intelligent Transport Systems to the Minister of Transport, Information Technology and Communications of 02.04.2015, the Directorate "National System 112", Ministry of Interior, is responsible for Priority Area III, priority action "d)" of Directive 2010/40 / EU - "Equipment of 112 centers to receive eCall from cars, with a view to harmonized provision of an interoperable eCall system throughout the EU".

In order to fulfill these obligations in the period 2013-2014, the Ministry of Interior participated as a member country in the HeERO 2 project, within which a pilot service was introduced in the training center of Center 112 Sofia and tests were conducted with 2 cars equipped with eCall on-board systems developed by Bulgarian manufacturers.

Within the project, equipment and software for pilot implementation of the eCall service were delivered, installed and tested.

During the tests, the possibility was shown to initiate the service from any point on the territory of the Republic of Bulgaria.

By the end of the project, two of the three mobile operators had implemented the eCall flag.

On the Bulgarian side, the project participants were united in a consortium of 6 partners: Intelligent Transport Systems Association (BAITS / ITS Bulgaria), Ministry of Interior, Enterprise Communications Group OOD, Mobiltel EAD, Icom OOD and Technical University - Sofia.

The total funding for all participants in the consortium was € 731,208, of which the Ministry of Interior absorbed € 53,203, of which 50% was European co-financing.

In the period 2016-31.03.2018, the Ministry of Interior participated in the project I_HeERO (Infrastructure_ Harmonized eCall European Pilot) to upgrade the architecture of the Centers 112 for the implementation of the eCall service and its full deployment in the Republic of Bulgaria. The project involved 58 partners, of which 11 EU member states, united in a consortium

For the implementation of the project on 28.04.2017 a public procurement procedure was opened with subject: "Full implementation and deployment of the eCall service on the territory of the Republic of Bulgaria in implementation of the European project I_HeERO".

On 24.11.2017 a contract for implementation was signed with the first ranked participant for the contractor of the public procurement, at a total value of BGN 701,466 without VAT, of which 50% are with European co-financing under the CEF instrument. Within the framework of the contract, the

necessary equipment for the realization of the service for Center Sofia, as well as the application and system software was delivered, installed and put into operation. The equipment delivered under the HeERO 2 project was installed as a backup in Center Ruse. Within the framework of the contract, necessary additional adjustments were made to the telephone exchange of the National Assembly 112, in view of the need to manipulate 15-bit M2M mobile telephone numbers. Successful tests were conducted with a model car after March 31, 2018, equipped with on-board eCall devices (IVS).

From 01.04.2018, the service "based on 112 eCall" was implemented in regular operation and fully integrated with the software used in the National Services 112 for management of emergencies. At the time of commissioning, all mobile operators have implemented the eCall flag. The service is available on the whole territory of the Republic of Bulgaria. The mandatory certification of the 112 Centers for the provision of this service, i.e. conformity assessment was also performed in accordance with Decision № 585/2014 / EU. The certificate for "Conformity Assessment" was issued by NavCert and was brought by the latter in accordance with the requirements of the Executive Agency "Bulgarian Accreditation Service", which then validated it pursuant to Art. 3 of the Delegated Regulation 305/2013.

According to an order of the Minister of Interior, on 05.05.2020 the National Interface for eCall functionality was connected to the EUCARIS platform and the interaction between the information and communication system of the National Assembly 112 and the National Interface for Functionality EUCARIS eCall was started in regular operation.

Thanks to the joint work of the DNS 112, DKIS, DESMS, GDNP directorates, with the implementation of the EUCARIS eCall functionality in regular operation, it became possible for eCall calls under the frame code (VIN code), emergency services and teams to receive data for the specifics of the crashed car from the National Register of Motor Vehicles and their owners, maintained by the Ministry of Interior, and for foreign cars on the territory of the country - from the databases of the countries participating in the eCall exchange of EUCARIS functionality. This information can also be obtained by vehicle registration number.

Information on any changes regarding the national eCall PSAPs Infrastructure and the authorities that are competent for assessing the conformity of the operations of the eCall PSAPs:

Additional information:

2.3.4 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. Article 5 (2) states that static data shall be accessible through a national access point. The Republic of Bulgaria designates the Road Infrastructure Agency as the sole source and administrator of static data for safe and secure parking places in Bulgaria as a "national access point" for static data under

Delegated Regulation (EU) № 885/2013 with e-mail address of the information portal - <https://lima.api.bg>. In the portal from 15.09.2020 the data will be freely available in machine-readable format DATEX II, as required by the Regulation.

2. In Article 5 (3), with regard to dynamic data, Member States (or national authorities) are responsible for setting up and managing a central national or international access point, which directs to each individual single access point of each car park operator, for trucks and / or service providers on their territory in the interest of users. The portal <https://lima.api.bg> is defined as a national access point, as it is able to publish and accordingly centralize all data (static and dynamic - of the individual points of access of each operator or service provider) of the public or private operators and service providers that have an information system and the necessary data for this activity.

The available static data for places for safe and secure parking will be transformed into the format required by the Regulation and published for free use on the information portal <https://lima.api.bg> on 15.09.2020, designated as a national access point for Delegated Regulation 885/2013.

3. Article 9 (1) (b) states that no later than 12 months after the entry into force of the Regulation, Member States must provide a description of the national access point. It will be announced on 15.09.2020 with the respective description, if applicable, as mentioned in the Regulation - Art. 9 (1) (b).

To keep the static data up-to-date, the Road Infrastructure Agency has created a matrix describing the responsibilities of each directorate, including the responsibilities of the specialized administration for entering data into the available geographic information system. According to the matrix of responsibilities, 24 layers of data have been identified so far, containing information about the physical location and characteristics of the roads, road facilities, road accessories and road elements of the national road network, which are essential and to be maintained.

Number of different parking places and parking spaces on their territory:

One hundred and nine (109)

Percentage of parking places registered in the information service:

Percentage of parking places providing dynamic information on the availability of parking spaces and the priority zones:

Additional information: (e.g. has a national access point been set up to provide truck parking data? Does it include dynamic data? What is the source of data (public / private)? Is data published on the European Access Point for Truck Parking hosted by DG MOVE? If not, is there any intention to do it in the future?)

The Republic of Bulgaria designates Road Infrastructure Agency as the sole source and administrator of static data for safe and secure parking places in Bulgaria for a “national access point” for static data with the following address of the information portal - <https://lima.api.bg>. Static data in the portal will be freely available in the required format. Regarding the dynamic data of each truck parking operator and/or service provider, in the event that each of them has an information system and data in the appropriate format, the national access point shall be able to publish such data for free use.

2.4 Priority area IV. *Linking the vehicle with the transport infrastructure*

2.4.1 Description of the national activities and projects

In order to make progress in the use of new telecommunications technologies in ITS on June 26, 2018 within the Digital Assembly in Sofia, a document of intent for cooperation in the field of connected and automated driving between Bulgaria, Greece and Serbia was signed. With the document, the three countries declared their intentions for cooperation for the implementation of "Connected and automated driving through a cross-border testing corridor in the Balkan region." The emphasis in the document was on the possibility of using the new 5G technologies in the interest of ITS.

Work on the implementation of the document of intent to continue periodic teleconferences between representatives of these three countries with the participation of the European Commission. During teleconferences discussing the possibility of taking concrete steps to quickly coordinated the construction of cross-border corridor for testing of connected and automated driving in the Balkan region and in particular for Bulgaria in the area of border crossing between Bulgaria and Serbia - Kalotina, through Sofia to the border checkpoint Kulata - Promahon on the Bulgarian-Greek border. Work under HORIZON 2020 Project “South Eastern European 5G Corridors (SEE-5G)” has begun to form technical working groups to specify the requirements for the preparation of a coordinated plan for the implementation of the initiative "Connected and automated driving: prospects for a cross-border testing corridor in the Balkan region."

For the implementation of 5G networks along the main roads in the European Union, a band of 3.6 GHz has been set. In Bulgaria, actions were taken to release the designated frequency bands and create an opportunity for their provision to operators. Authorizations for the use of radio frequency bands have been amended, and the agencies that use them have taken steps to replace the equipment.

Of the three countries, only Greece has launched a project to explore the possibilities for building infrastructure and testing a 5G network on the highways to the cross-border corridor. Bulgaria did not join the project due to delays in the construction of the highway to the borders with Greece and Serbia.

At the national level, meetings were held with the operators who expressed a desire to build 5G networks. The meetings discussed the possibility of building networks along the highway sections from

Kalotina border checkpoint to Sofia and Sofia - Kulata border checkpoint. In general, operators were reserved about the option of supplying and installing test equipment themselves across a cross-border corridor. Along with the financial arguments, they pointed out the need for changes in regulations restricting the construction of physical telecommunications infrastructure in the easement of the roads. These restrictions were defined in an Ordinance on road design issued by the Minister of Regional Development and Public Works.

MTITC has taken initiatives to remove legal restrictions on the construction of telecommunications infrastructure. They were organized meetings of expert level to find a solution. In April 2020, the ordinance was amended and restrictions on telecommunications operators were removed.

The Spatial Planning Act was additionally amended, with which the operators received additional reliefs for installation and replacement of equipment.

In 2019, there were changes in European legislation that had a direct impact on the work on ITS and in particular in the use of telecommunications. A Commission Delegated Regulation (EU) of 13.3.2019 was adopted to supplement Directive № 2010/40 / EU of the European Parliament and of the Council with regard to the deployment and operational use of Intelligent Shared Transport Systems. The act accents on technology ITS-G5, on account of the proposed technology 5G.

The main argument was the fact that G5 is a working technology and 5G is not yet implemented, which would slow down the process of implementing ITS. Large they carmakers already implemented pilot projects ITS-G5, including the supply of onboard equipment. Additionally, the frequency band used 5895-5905 MHz is close to that used in toll systems. This implies less investment in infrastructure for ITS-G5 projects.

5G was designated as a complementary technology that is expected to be deployed in main land transport routes by 2025. Cat 0 prospect indicates the use of a hybrid approach, combining z technology with more coverage as 3G / 4G / 5G and used ITS-G5.

In general, this reflected on the work of the administrations, as the activity of implementing 5G for ITS passed into the background. The main activity for implementation of ITS is performed by the Road Infrastructure Agency, which manages the activities for maintenance and development of the road network in the country and the accompanying infrastructure related to ITS.

Description of the relevant initiatives, their objective, timescale, milestones, resources, lead stakeholder(s) and status: in particular, provide information on the C-ITS deployment initiatives and their technical specifications.

2.4.2 Progress since 2017

Description of the progress in the area since 2017:

2.5 Other initiatives / highlights

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

Description of the relevant initiatives, their objective, timescale, milestones, resources, lead stakeholder(s) and status:

Implementation of an electronic charging system for road vehicles.

Activities for the implementation of ITS in the municipalities.

2.5.2 Progress since 2017

Description of the progress in the area since 2017:

Road Infrastructure Agency

Road Infrastructure Agency has successfully implemented a project: "Design, construction and introduction of electronic toll collection system for the use of Republican road network based on distance travelled for vehicles with total technically permissible maximum mass exceeding 3.5 tones (Toll) and based on time for passenger cars with total technically permissible maximum mass up to 3.5 tones (electronic vignette)". The project contractor is CONSORTIUM KAPSCH TRAFFIC SOLUTIONS, which was selected through an open procedure under the Public Procurement Act. The value of the project is about 180 million BGN including VAT, where the project is fully financed by the national budget.

Mixed system for collection of road charges is implemented within the project framework, which consists of two components: electronic time-based charging system (electronic vignette) for light vehicles, put into operation as of 01.01.2019, and electronic system based on distance travelled for heavy goods vehicles exceeding 3.5 tones, put into commercial operation as of 01.03.2020.

The Electronic Toll Collection System introduced in the Republic of Bulgaria is a GNSS-based (Global Navigation Satellite System) technology for positioning of a vehicle. A specialized unit "National Toll Administration" to the Road Infrastructure Agency was established, which, through 24-hour duty of IT experts, carries out the technical and software maintenance of the Electronic Toll Collection System.

The electronic system provides the following options for payment of the necessary fees for using the paid republican road network of road vehicles with a total technically permissible maximum mass exceeding 3.5 tones:

- Through GNSS-based on-board unit – reporting of toll charges is carried out through a vehicle-mounted on-board unit that generates data (toll declarations) necessary to calculate the charge due;

- Through a GPS device - the user of the paid republican road network must have a contract with a Declared Data Provider (so-called trust data), which is listed in a publicly disclosed list of the Road Infrastructure Agency. The Declared Data Providers must have a contract with NSP (National Service Provider), which processes the generated "raw" data from the GPS device and sends it to RIA;
- Through purchasing a route pass - owners and users of a road vehicle with a total technically permissible maximum mass exceeding 3.5 tones, who do not have on-board or GPS devices, can use the paid road network after purchasing a route pass. The route pass shall indicate the starting and ending point of the route, up to four intermediate points along the specified route and the technical characteristics of the vehicle (registration plate number, nationality of the vehicle, category of the road vehicle, its emission class, number of axles from the data under the Registration Certificate Part I of the motor vehicle). This service is pre-paid and entitles to a one-time trip on the specified route.

The control on the payment of road charges is carried out by the employees of the National Toll Administration, the authorities of the Ministry of Interior, as well as the Customs Agency, when the road vehicle leaves the territory of Bulgaria through a border crossing check point.

An important element of the law enforcement process is the activation of automatic enforcement through stationary control units (frames). 295 stationary control points (frames) are installed, equipped as follows:

- With WIM sensors (weighing in-motion sensors) – 100;
- With Weather stations – 150.

The law enforcement vehicles are 105 as a total - 55 mobile checkpoints and 50 mobile fining units, which carry out 24/7 control, by reading the license plate of the vehicle and checking in the system, whether the relevant road charges have been paid.

Municipalities

1. Contract BG16RFOP001-1.005-0001-C02 "Integrated urban transport system of the city. Rousse - second stage" with beneficiary Rousse Municipality, signed on 01.05.2017, the term of completion on 05.01.2021. Values of the project amounted to 24 002 815.60 BGN grants and own financing 341 369.99 BGN.

In the project proposal is included activity: "Upgrading the intelligent transport system by making video monitoring on 30 pcs. busy (main) intersections, described in details in the pre-feasibility study" . By implementing this activity will achieve video real-time monitoring of mobile and stationary objects located or passing through the monitored intersections and opportunity for future reference to the operations center. Value of that activity amounts to 1 803 523.81 BGN.

2. Contract BG16RFOP001-1.015-0003-C02 Integrated Urban Transport, Sliven "with a beneficiary, Municipality of Sliven, concluded on 13.01.2017 with a deadline of 13.1.2021. The value of the project amounts to BGN 13 660 560.33 grants and own financing 2 177 340.40 BGN.

In the project proposal is included activity "Implementation of systems for passenger information". At all stops of the public transport will be installed boards with a scheme of the lines, the stops and the schedule of the vehicles passing through a given stop, as well as the names of the stops on the respective lines. Boards with information about the stops on the line of the moving vehicle will be installed in the new vehicles as well. Value of that activity amounts to 433 938.94 BGN.

3. Contract BG16RFOP001-1.002-0003-C04 Integrated urban transport of Varna - second phase "with a beneficiary Municipality of Varna, concluded on 19.01.2017 with a deadline of 13.1.2021. The cost of the project amounts to BGN 28,642,932.61 grant and own financing BGN 7 621 553.13.

In the project proposal is included activity: "Upgrading of Intelligent Transport Systems for traffic counts and coordinated management of light controlled junctions along the routes of "Tsar Liberator" blvd, " Slivnitsa " blvd, "Seaside" and "Dunav" str. Value of that activity amounts to 2 543 000.00 BGN. Upgrading the system to advantage the city transport, built in the period 2015 – 2016, will be developed on 20 light-controlled junctions (so-called "green wave"), without coming into conflict with the city transport priority system.

- Upgrading the real-time passenger information system. Within the project in the period 2012-2015, it is envisage the supply and installation of equipment with information boards at 100 stops.
- The pedestrian safety system aims to reduce accidents occurring on pedestrian paths in the city of Varna. The system covers the construction of 25 pcs. Intelligent footpaths that automatically light up when a pedestrian is on the sidewalk.
- Further development of the systems for accessibility to the road junctions - 50 pcs. Intersections will be equipped with signaling devices for pedestrians with visual problems.

4. Contract BG16RFOP001-1.007-0003-C03 Development of integrated urban transport – city of Pleven" with a beneficiary Municipality, concluded on 03.04.2017 with a deadline of 19.05 .2021. The value of the project amounts to BGN 15,918,465.69 grant and own financing BGN 69 053.93.

In the project proposal is included activity: "Implementation of CCTV 16 pcs. at key intersections in the city of Pleven" The value of the indicated activity amounts to BGN 2 659 473.60 .

5. Contract BG16RFOP001-1.029-0002- "Integrated urban transport of the city of Dupnitsa" with a beneficiary Municipality, concluded on 26.05.2017. The contract ended on 21.02.2019. The value of the project amounts to BGN 6,702,404.92 grant and own financing BGN 241 506.90.

According to the project proposal are met two activities for development and put in operation a system for control of the public transport in the city:

- a) Supply of 59 number Electronic information boards that are placed on bus stops worth 295 200 BGN, VAT excluded;
- b). Built and put in operation a control system of the public transport in the city. The value of the indicated activity amounts to BGN 343 545.00.

6. Contract BG16RFOP001-1.016-0003-C04 Development of sustainable urban transport of the city of Gabrovo" with a beneficiary Municipality, concluded on 17.07.2017 with a deadline of 17.07.2021. The value of the project amounts to BGN 9 000 000.00 grant and own financing BGN 4 658 027.97.

The project proposal includes activity "Implementation of information and communication technologies (ICT) in urban transport". Within the activity is planned to perform delivery and installation of 104 pcs. electronic information boards of at stops on the territory of the city, delivery of 57 pcs. onboard equipment for public transport vehicles and construction of the urban transport management system (including hardware and software) . Value of that activity amounts to 1 222 504.10 BGN.

7. Contract BG16RFOP001-1.006-0003-C01 "Modernization and development of sustainable urban transport in the city of Stara Zagora - phase II", with beneficiary municipality. Signed on 02.01.2018 for a period of closure 02.01.2021. The value of the project amounts to BGN 13 967 992.80 grant and own financing BGN 759 619.60.

The project proposal includes activity: "Development of a working design, delivery and construction of a Urban Transport Management System" and includes the introduction of video surveillance at major intersections in the city with an intelligent system for congestion prevention due to queues of vehicles at traffic lights with replacement of traffic light sections . Value of that activity amounts to 3 932 538.00 BGN.

8. Contract BG16RFOP001-1.041-0001-C02 "Integrated metropolitan urban transport - phase II" with a beneficiary Sofia Municipality, concluded on 21.02.2018 with a deadline of 21.02 .2021. The value of the project amounts to BGN 107 333 494.63 grant and own financing BGN 18 152 447.26.

The project proposal includes Activity "Upgrading of the Intelligent Traffic Management System and the existing real-time passenger information system" including:

a) On-board equipment for public transport vehicles – upgrade;

b) Signaling for crossing with priority of trams - Transit signal priority (TSP). TSP is an operational strategy that facilitates the movement of transit vehicles on separate routes through controlled intersections through traffic lights;

c) Electronic Information Boards - upgrade with 220 pcs. EIT;

d) Providing video surveillance at public transport stops. Value of that activity amounted to 3 537 700.00 BGN.

9. Contract BG16RFOP001-1.024-0003-C03 "Integrated urban transport of the city of Kazanlak"- Stage 1" with a beneficiary Municipality. Signed on 23.03.2018 with a deadline of 23.04.2021. The cost of the project amounts to BGN 3,186,437.63 grant and own financing BGN 503 613.33

The project proposal includes activity "Development and implementation of an information system for urban transport management" - developed and introduced an information system for urban transport management, through which to monitor and manage the movement of buses in order to avoid their accumulation at certain points in the city at the same time. Will be installed 23 pcs. of

electronic information boards at stops to show the waiting passengers when the next bus will come. Value of that activity amounts to 153 916.67 BGN.

10. Contract BG16RFOP001-1.018-0004-C06 "Integrated urban transport of the city" with beneficiary Pernik Municipality. Signed on 15.05.2018, the term of completion 15 05.2021. The value of the project amounts to 6 552 227 BGN grant and own financing BGN 3 664 267.95

The project proposal includes activity "Electronic information boards at the stops of Public Urban Transport". Will be equipped 35 double stops with 70 electronic information boards and consumer information systems. Value of that activity amounts to 380 828.00 BGN.

11. Contract BG16RFOP001-1.004-0006-C01 "Integrated management model of urban mobility - Stage I" with beneficiary municipality of Burgas. Signed on 04.02.2019, the term of completion 04.02.2022. The value of the project amounts at BGN 7 758 281.11 grant and own financing BGN 2 221 979.88

The project proposal includes activity: "Introduction of an integrated traffic management system in Burgas" - The activity of introduction of an integrated traffic management system provides possibility for intervention at 22 traffic light intersections, 4 pedestrian traffic lights, 15 strategic locations for collecting traffic information. The integrated traffic management system includes several components:

- Central management software. It is envisaged that the traffic management system will be located in the already operating Center for Video Surveillance and Traffic Management in the city. Within the project will be equipping/upgrade existing hardware and communications systems to ensure the work of the newly introduced system for traffic management and its openness for further integration;
- Video surveillance: The intersections, which are located on the existing routes of BAL, are already equipped with video surveillance. To complete the video surveillance system, it is proposed to install cameras at 6 new intersections;
- APNR – installation of cameras for automatic recognition of registration numbers at 7 strategic locations in the city;
- Traffic light controllers: In accordance with the centralized traffic management system that will be developed, retrofitting or replacement of traffic light controllers at 26 traffic light regulated intersections is envisaged;
- Traffic detection: For each intersection - object of intervention, equipment with a traffic registration system is provided. In order to collect additional traffic information 15 strategic locations of the city will be equipped, other than the traffic light intersections located on the entrance-exit arteries of the city, as well as on the large inner city blvd. Traffic information will be collected at both points in both directions;
- Information boards with variable content (Variable Message Signs). At three key entry-exit points in the city will be installed information boards with variable content and the ability to remotely change messages from an operator working in the Traffic Management Center.

- Priority of public transport: The intersections, which are located on the existing routes of bus lines, already have the necessary equipment to ensure the priority of public transport vehicles. In order to supplement the scope of the priority system, the equipment at 5 more intersections along the route of the new Fast Bus Line is envisaged.

- Communication connectivity for data transmission: For the operation of the traffic management system it is planned to build a communication that will provide a reliable environment for data transmission. Communication connectivity is required for the operation of the following elements of the traffic management system: connection between CCTV cameras, traffic light controllers and VMS and CVUT, connection from detection systems to traffic light controllers and between vehicles and traffic light controllers. The introduction of an Integrated Traffic Management System is a key value-added component for achieving the project's objectives in terms of promoting multimodality at city level, improving the speed and quality of public transport services, improving the capacity of intersections and providing an advantage of the public transport. The value of the indicated activity amounts to BGN 2 007 104.00.

12. Contract BG16RFOP001-1.009-0005-C01 "Integrated urban transport of the city Veliko Tarnovo" with beneficiary Municipality. Signed on 19.07.2019, the term of completion 19.07 .2022. The value of the project amounts to BGN 10,409,573.31 grant and own financing BGN 724 199.20

The project proposal includes Activity "Implementation of Information and Communication Technologies (ICT)". Within the activity, it is envisaged:

a) Construction of a control center, for which it is planned to perform delivery and installation of: Server equipment -1 pcs., Workplace equipment -3 pcs., Communication equipment - 2 pcs. Integration with the e-municipality platform and public portal; Network equipment - 1 pcs., Video wall equipment -1 pcs., Software for management of combined services (park and ride) - 1 pcs., Centralized software for management and integration of 5 parking lots, subject to construction and modernization – 1, Software for management of information boards - 1 pcs.. Upgrading the management system of the paid parking zones – 1, Information internet portal – 1, SMS notification service – 1, Software installation and configuration - 1 pcs. The positioning system provides for the delivery and installation of on-board computers with GPS and GPRS, as well as a vehicle positioning system - software.

b) Implementation of a parking system and information boards for parking, which will be integrated with centralized databases in the control center, where information on the number of free parking spaces will be submitted and accordingly the information will be processed by a central information system and transmitted in a suitable form and format to the information boards for parking. The implementation of the parking system and information boards for parking will allow for the construction of a modern system for charging and access control and the commissioning of a complete solution for management and control of public and buffer parking lots.

c) Installation of electronic information boards at 22 of the busiest public transport stops. The value of the indicated activity amounts to BGN 1 612 560.00.

13. Contract BG16RFOP001-1.008-0010-C02 "Integrated urban transport of Blagoevgrad" with beneficiary Blagoevgrad Municipality. Signed on 10.10.2019 for a period of closure 10. 10.2022. The value of the project amounts to BGN 4 343 025.05 grant and own financing BGN 647 787.77

The project proposal includes Activity "Implementation of an electronic system for urban transport management" with two components - 1: Development of an electronic traffic management system and a system for informing passengers in real time and Component and 2: Construction and installation of metal frames for 80 information boards at the bus stops (incl. power supply for the boards).

The implementation of component 1) will provide the following: Communication and server infrastructure (including data center with boards), including the following equipment: cancer/crab, storage , video wall, backup power-UPS, server and 3 workstations; Data transmission equipment; Engineering and installation; Vehicle positioning system, control and management of public transport and electronic information boards (software), including the following equipment: 50 on-board equipment with GPS and GPRS for vehicles of MGOT; Information boards at bus stops; Citizen information service system (software), including a mobile application, a platform for traffic in road segments, a platform for news and events on the road and a platform for building routes for travel from point to point with public transport. Another essential part of the information system is the delivery and installation of 80 electronic information boards, which will be placed at public transport stops. Value of that activity amounts to 1 398 746.40 BGN.

14. Contract BG16RFOP001-1.011-0007-C01 "Development of an integrated urban transport system of Dobrich," with a beneficiary Municipality. Signed on 12.03.2020 with a deadline of 12.09.2022. The value of the project amounts to BGN 7 856 290.60 grant and own financing BGN 327 256.12.

The project proposal includes activities: 1) Implementation of an intelligent traffic management system - The activity covers research, design, construction and exercise of author's supervision for installation and commissioning of a traffic management system, which will change the cycles of 21 traffic light intersections in view to enhance the traffic with cars. The system helps to optimize traffic, based on real-time traffic reporting and adequate response to the situation worth BGN 1 582 599.65 and 2) Building a public transport management system to improve the reliability of public transport by ensuring compliance on the timetables. Value of that activity amounts to 898 620.00 BGN. The contract is in effect until September 12, 2022.

15. Contract BG16RFOP001-1.024-0004-C01 "Integrated urban transport in the town of Kazanlak - Stage II" with beneficiary municipality. Signed on 04.08.2020. The term of completion 04 0.12 .2022. The value of the project amounts to BGN 1 047 925.93 grant and own financing BGN 559 066.49

The project proposal includes activity "Upgrading of the information system built in Stage I". Twenty electronic information boards will be installed at operating stops to show the waiting passengers when the next bus will come. Value of that activity amounts to 81 700.00 BGN.

3 Key Performance Indicators (KPIs)

Note: The EC document on "ITS KPIs for the EU" is to be used for comprehensive definitions of the KPIs and further guidance. The EU EIP Activity 5 report on "ITS Deployment and Benefit KPIs definitions" is a complementary document providing in particular estimation methods.

KPI will be reported separately by type of road network / priority zone / transport network and nodes (when appropriate).

3.1 Deployment KPIs

3.1.1 Information gathering infrastructures / equipment (road KPI)

Figures to be provided by type of network / zone.

Figures to distinguish fixed and mobile equipment.

KPI to be calculated by type of network / zone (when relevant).

- Length of road network type / road sections (in km) equipped with information gathering infrastructures & Total length of this same road network type (in km):
- $KPI = (\text{kilometres of road network type equipped with information gathering infrastructures} / \text{total kilometres of same road network type}) \times 100$

3.1.2 Incident detection (road KPI)

Figures to be provided by type of network / zone.

KPI to be calculated by type of network / zone (when relevant).

- Length of road network type / road sections (in km) equipped with ITS to detect incident & Total length of this same road network type (in km):
- $KPI = (\text{kilometres of road network type equipped with ITS to detect incident} / \text{total kilometres of same road network type}) \times 100$

3.1.3 Traffic management and traffic control measures (road KPI)

Figures to be provided by type of network / zone.

KPI to be calculated by type of network / zone (when relevant).

- 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):
- $KPI = (\text{kilometres of road network type covered by traffic management and traffic control measures} / \text{total kilometres of same road network type}) \times 100$

3.1.4 Cooperative-ITS services and applications (road KPI)

Figures to be provided by type of network / zone.

KPI to be calculated by type of network / zone (when relevant).

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

3.1.5 Real-time traffic information (road KPI)

Figures to be provided by type of network / zone / node.

KPI to be calculated by type of network / zone / node (when relevant), and if relevant indicate the proportion of services accessible to passengers with reduced mobility, orientation and/or communication.

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

3.1.6 Dynamic travel information (multimodal KPI)

Figures to be provided by type of network / zone / node.

KPI to be calculated by type of network / zone / node (when relevant), and if relevant indicate the proportion of services accessible to passengers with reduced mobility, orientation and/or communication.

- Length of transport network type (in km) with provision of dynamic travel information services & Total length of this 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 the same transport nodes:
- $KPI = (\text{kilometres of transport network type with provision of dynamic travel information services} / \text{total kilometres of same transport network type}) \times 100$
- $KPI = (\text{number of transport nodes with provision of dynamic travel information services} / \text{total number of same transport nodes}) \times 100$

3.1.7 Freight information (multimodal if possible or road KPI)

Figures to be provided by type of network / zone / node.

KPI to be calculated by type of network / zone / node (when relevant), and if relevant indicate the proportion of services accessible to passengers with reduced mobility, orientation and/or communication.

- Length of road network type / road sections (in km) with provision of freight information services & Total length of this same road network type (in km):
- Number of freight nodes (e.g. ports, logistics platforms) covered by freight information services & Total number of the 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

3.1.8 112 eCalls (road KPI)

N.a. – will be provided through the COCOM 112 questionnaire

3.2 Benefits KPIs

3.2.1 Change in travel time (road KPI)

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

KPI = ((travel time before ITS implementation or improvement – travel time after ITS implementation or improvement) / travel time before ITS implementation or improvement) x 100

3.2.2 Change in road accident resulting in death or injuries numbers (road KPI)

Results shall be provided / aggregated at national level to be representative enough. If possible, distinction can be made between accidents resulting in deaths, serious injuries or slight injuries.

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

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

3.2.3 Change in traffic-CO2 emissions (road KPI)

Routes / areas where ITS has been implemented or improved should be specified. Length along / area within which the change in CO2 emissions is calculated should be long / wide enough to be representative.

KPI = ((traffic CO2 emissions before ITS implementation or improvement – traffic CO2 emissions after implementation or improvement) / traffic CO2 emissions before ITS implementation or improvement) x 100

3.3 Financial KPIs

ITS includes any types of systems and services altogether.

Annual investment in road ITS (as a % of total transport infrastructure investments):

Annual operating & maintenance costs of road ITS (in euros per kilometre of network covered):

