Directive 2010/40/EU
Progress Report 2023
BULGARIA

August,2023

1   Introduction

1.1   General overview of the national activities and projects

According to the Automobile Transport Act the Minister of Transport 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 and Communications an Intelligent Transport Systems Council was set up. The Chairman of the Council is the Minister of Transport and Communications, and vice-chairmen are the Deputy Minister of Transport and Communications, the Deputy Minister of Interior, the Deputy Minister of Regional Development and Public Works and the Chairman of the State Agency "Road safety".

Directive 2010/40/EU of the European Parliament and of the Council of 7 July 2010 on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport (ITS Directive) is transposed in 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.

Within the responsibilities of the "Road Infrastructure" Agency, the activities on the implementation of ITS in the direction of the "Struma" motorway continue. The "Road Infrastructure" Agency has established National Data Access Points in accordance with Delegated Regulations (EU) No 885/2013, (EU) No 886/2013 and (EU) 2015/962, available at: https://datasheet.api.bg/. An electronic toll collection system based on time for passenger cars with total technically permissible maximum mass up to 3.5 tones (electronic vignette) and an electronic toll collection system based on distance traveled for heavy goods vehicles exceeding 3.5 tones (toll) have been developed and put into operation.

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 project "Improving the National Emergency Communications System 112", part of National Recovery and Resilience Plan is about to be launched.

The Ministry of Transport and Communications has established a National access point for provision of EU-wide multimodal travel information services in accordance with Delegated Regulation (EU) No. 2017/1926 (NAP) with initial functionality available at: https://www.mtc.government.bg/bg/category/294/nacionalni-tochki-za-dostp-do-transportna-informaciya.

1.2   General progress since 2020

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

1.3   Contact information

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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:

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

The funding of the project is under Operational Programme on Transport and Transport Infrastructure (OPTTI) 2014 - 2020, with the beneficiary "Road Infrastructure" Agency. The agreed funds amounting to BGN 8,983,608.00 (VAT inclusive). On 12 December 2016, Administrative Contract № DOPTTI-18/12.12.2016 was signed with "Road Infrastructure" Agency for the provision of grants for project BG16M1OP001-4.001-0002 "Development and implementation of an intelligent transport system within the scope of "Trakia" Motorway".

The project includes the modernization of the "Trajanovi 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 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.

Currently, the project has not been completed due to circumstances that led to the termination of the contract.

2. Establishment of Traffic Management Control Centre on "Struma" Motorway

The funding of the project is under Operational Programme on Transport and Transport Infrastructure (OPTTI) 2014 - 2020, with the beneficiary "Road Infrastructure" Agency. Under contract № DOPTI-1/24.09.2015, grants were provided for the project "Struma Motorway Lot 3 – Lot 3.1, Lot 3.3 and Zheleznitsa Tunnel".

Following a procedure for selection of a contractor, on 30 December 2015 contract № 163/30.12.2015 was concluded. Part of the subject of the contract is also the construction of a Traffic Management Control Centre 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 Centre 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 Centre and include the following: Central hardware infrastructure and 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 Centre 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 № 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.

The construction and assembly works of the "Zheleznitsa" tunnel were accepted on 13.01.2023 with the signing of a Constitutive Act to establish the suitability for acceptance of the construction. The following types of work were performed:

- Technology centers and switchgear;
- Tunnel Safety, Operation and Management Systems;
- Lighting in the Tunnel;
- Ventilation;
- Fire Alarm System;
- Tunnel Video Surveillance System;
- Audio Announcement System;
- Electronic access control system;
- Emergency SOS stations;
- Radio announcement and GSM communication system;
- Tunnel Construction Monitoring System;
- System for measuring physical quantities in the tunnel;
- Intelligent Traffic Management System;
- Central Monitoring and Management System.

2.1.2 Progress since 2020
Description of the progress in the area since 2020:

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

The contract with number D-36 was concluded on 23.03.2020 with the selected contractor in the amount BGN 7,261,000 excluding VAT. During the implementation of the project the need for changes was established, which lead to the impossibility of amending the contract, as a result of which the contract was terminated by means of an Additional Agreement.

2. Establishment of Traffic Management Control Centre on "Struma" Motorway

The Traffic Management Control Centre will receive and process information from all Intelligent Transport Systems being built on Lot 3 of "Struma" Motorway, including those in the "Zheleznitsa" tunnel and the tunnels within the scope of Lot 3.2. Due to technical problems, as well as an appeal of the planning procedures, the areas planned for the control centre turned out to be unsuitable for the purpose. In order to be able to function ITS on the constructed sections of Lot 3.3 and Lot 3.1 of "Struma" Motorway, a temporary control centre was built on the territory of Regional Road Administration Blagoevgrad, which has been functioning since August 2020, but cannot ensure the full functioning of the permanent control centre.

Another suitable site for the construction of a control centre is under discussion, for which the necessary planning and coordination procedures are being carried out.

3. „Struma" Motorway, Lot 3.1 – "Zheleznitsa" Tunnel from km 366+000 to km 370+400, Subsection № 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.

The construction and assembly works of the "Zheleznitsa" tunnel were accepted on 13.01.2023 with the signing of a Constitutive Act to establish the suitability for acceptance of the construction. The following types of work were performed:

Technology centres and switchgear:

- Newly constructed distribution substation at Northern Portal, which houses electrical equipment for power supply of the "Zheleznitsa" tunnel;
- Newly built technology Centre at Northern Portal, which that houses the Substation, Uredbi SR.N, Uredbi NN, Uredbi SL.T, Local control centre and GSM operators' premises;
- Newly built technology Centre at South Portal, which houses – Transformer, Uredbi SR.N, Uredbi NN, Uredbi SL.T, Local control centre and a room for GSM operators.

Tunnel Safety, Operation and Management Systems:

- "Lighting in the Tunnel" – A highly efficient and economical lighting system was built using LED lighting. They are controlled with five degrees of inclusion depending on the measurement of illumination by light meters. LED guiding road lights (illuminated marking elements) are installed on the pavements.
- "Ventilation" – The ventilation of the tunnels will be carried out with 32 jet fans of the Jet Fan type, located above the road lanes. To monitor the state of pollution from harmful emissions, monitoring stations are located in each pipe, including CO sensors; sensors for NO_2, sensors for visibility PM; Air speed and direction sensors; Temperature sensors.
- "Fire Alarm System" – An automatic fire alarm system was built using a sensor-optical cable for the timely notification of the emergency services and the exact location of the fire, as well as the automatic activation of ventilation and gas purification.
- "Tunnel Video Surveillance System" – The video surveillance system is made up of networked megapixel IP and networked rotating video cameras. A video surveillance system is implemented by: surveillance cameras; controlled cameras; surveillance cameras; cameras for recording vehicle registration numbers; hybrid thermal imaging IP cameras for detection of fire, smoke, movement, line crossing, etc. The video surveillance system provides the ability to detect incidents such as stopped traffic, accidents, fires, fallen and/or abandoned objects, pedestrians in both tunnel tubes. For the group transmission of the video signal from the video surveillance system, PoE power supply technology for IP cameras is used.
- "Audio Announcement System" – The audio announcement system consists of 82 pcs. horn tunnel speakers in the tunnel tubes and 24 pcs. speakers in the transition galleries. It broadcasts emergency messages in the event of a fire or accident in the "Zheleznitsa" tunnel.
- "Electronic access control system" - The built-in electronic access control system ensures the supervision and protection of all rooms, emergency stations, as well as the evacuation doors of the transverse connections, in case of entry.
- "Emergency SOS stations" – Equipment has been installed in the emergency stations in the combined niches and at the portals of the tunnel, including manual fire alarm buttons, as well as emergency SOS telephones.

- "Radio announcement and GSM communication" system – The coverage of the Ministry of Interior frequencies is provided by the system. The radio coverage system in the tunnel consists of active and passive equipment. A TETRA base station, broadcast cable and optical cable have been installed.
- "Tunnel Construction Monitoring System" – A monitoring system has been implemented for the tunnel construction, watching for signs of the facility's stability being compromised.
- "System for measuring physical quantities in the tunnel" – The system for measuring physical quantities has been built, which monitors the state of pollution. For this purpose, five monitoring stations are installed in each pipe. On the northern and southern portals, 2 pcs. meteorological stations for monitoring meteorological indicators are installed. Depending on the readings of the devices in the monitoring and meteorological stations, scenarios have been developed, according to which the SCADA system controls the ventilation and information is fed to the traffic management system.
- "Intelligent Traffic Management System" – An intelligent system for safe traffic management has been built, consisting of controllable road signs /UPZ/, traffic lights, barriers, traffic detector, gauge sensor, traffic management system, traffic flow data collection, identification and analysis, connection with the central control system, distribution of individual functions on the system levels, providing access for emergency services, police, fire and emergency safety in all operating conditions.
- "Central Monitoring and Management System" – A central system for monitoring and control - a SCADA system – has been built. The purpose of the built system is to ensure continuous reliable operation and monitoring and control according to set scenarios of all safety systems in the tunnel.

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

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

Progress made in terms of the accessibility and exchange of the travel and traffic data types set out in the Annex:

In 2021, the Ministry of Transport and Communications created a portal — National Access Point (NAP) with initial functionality, available on: https://www.mtc.government.bg/bg/category/294/nacionalni-tochki-za-dostup-do-transportna-informaciya. The NAP provides access to:
- Route schedules on bus lines of the national transport scheme
- Passenger trains timetable
- Online reservation and ticketing system for trains
- Real-time RADAR system for train allocation
- Time schedules for passenger flights from the Bulgarian international airports
- The electronic platform LIMA for information on safe and secure parking places, real-time traffic data – closed sections, bypass routes, accidents and hazards, restrictions on the national road network, weather conditions, etc.

A draft Terms of Reference for the construction of the NAP to its full functionality has been prepared. It has been approved by the State e-Government Agency. A tender procedure for the selection of a contractor is forthcoming.

Geographical scope of the data set out in the Annex accessible via the national access point, and their quality, including the criteria used to define this quality and the means used to monitor it:

Linking of travel information services:

Results of the assessment of compliance referred to in Article 9:

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

Additional information (e.g. have metadata catalogues been implemented?):

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)

Progress made in terms of the accessibility, exchange and re-use of the road and traffic data types set out in the Annex:

In connection with the implementation of the provisions of Art. 4-6 of the Regulation, regarding accessibility, exchange and re-use of the data, the data required under Delegated Regulation (EU) 2015/962 are published and freely available for use in a machine-readable format, fully compliant and interoperable with DATEX II- https://datasheet.api.bg/.

Geographical scope and the road and traffic data content of real-time traffic information services and their quality, including the criteria used to define this quality and the means used to monitor it:

Pursuant to the provisions of Article 13 "Reporting", entered into force on 01.01.2023 by Delegated Regulation (EU) 2022/670, a list and visualization in the form of a map of the roads included in the primary road network has been provided. According to Article 16 of "Entry into force and application" Delegated Regulation 2022/670 will apply from 01 January 2025.

Results of the assessment of compliance referred to in Article 11 with the requirements set out in Articles 3 to 10:

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

The information portal LIMA, maintained by "Road Infrastructure" Agency and located at: https://datasheet.api.bg/ , is designated as a National Access Point pursuant to Art. 3 of Delegated Regulation (EU) 2015/962.

Where relevant, a description of changes to the priority zones:

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

The following categories of data are published at https://datasheet.api.bg/ :

1.   Update of static road data according to Article 8 of Delegated Regulation (EU) 2015/962, which include:
  * road signs reflecting traffic rules and indicating hazards, such as:
    - permanent access restrictions;
    - other traffic rules;
  * traffic organization plans;
  * road classification;
  * location of toll collection points;
  * location of parking spaces and service areas
2.   Updating of dynamic road condition data according to Article 9 of Delegated Regulation (EU) 2015/962, which include:
  * closed roads;
  * closed roadways;
  * closed bridges;
  * accidents and incidents;
  * bad road conditions;
  * temporary traffic management measures;
  * weather conditions affecting the road surface and visibility.
3.   Updating traffic data according to Art. 10 of Delegated Regulation (EU) 2015/962.

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)

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:

The information portal LIMA, maintained by API – https://datasheet.api.bg/ and located at the address: https://datasheet.api.bg/, has been designated as a National Access Point under Delegated Regulation (EU) № 886/2013.

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

In order to implement the provisions of Article 10, paragraph 2, letter "a" of Delegated Regulation (EU) № 886/2013, the following lists of data have been updated on the National Access Point https://datasheet.api.bg/ :

1.   Hazards – events or circumstances related to traffic safety:
   • Accidents and mishaps;
   • Danger on the roadway.
2.   Weather conditions – data on weather conditions in real time, collected from 7 weather stations located along the republican road network, namely Gorna Verenitsa, Kresna, Razlog – Predela, Shipka, Kostandovo, Ivanovtsi – Pass of the Republik republika, Gintsi – Petrohan.
3.   Construction / Closed – data on repairs according to republican road network, as well as information on the reasons and expected results:
   • Closed roads;
   • Closed roadways;
   • Short-term road construction.

In addition, at the national access point, the data is freely available in a machine-readable format, updated in real time every 15 minutes, providing the information under Art. 3, in accordance with the requirements of Art. 4 of the Regulation, namely:

   • location of the event or circumstance;
   • category of the event or circumstance as referred to in Article 3 and, where applicable, a brief description;
   • where appropriate, advice to motorists on how to adjust their driving style.

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 2020
Description of the progress in the area since 2020:

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, the "Road Infrastructure" Agency is preparing technical assignments for the construction of intelligent transport systems for providing dynamic data on safe and secure parking areas for priority areas along the republican road network of the Republic of Bulgaria. The data will be made available for free use through the national access point. The financing of the project is planned to be with European funds.

2.3.2 Progress since 2020
Description of the progress in the area since 2020:

2.3.3 112 eCall (priority action d)
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:

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 centres 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.

The eCall service ensures that in the event of a traffic accident, a vehicle that is equipped with an eCall device (IVS) automatically connects and communicates with an emergency communications reception centpe in National System 112. The on-board device automatically sends to the emergency communications reception centre in National System 112 a minimum data set (MSD), which includes the exact location of the accident, information about the vehicle and its occupants. The system enables an audio connection and subsequent voice communication with a National System 112 operator. The data from the MSD package is visualized in the operator's electronic card, and the location and direction of movement of the vehicle is indicated on the geographical map. In this way, timely assistance is provided to the relevant emergency response services in the event of a serious road accident, even if the occupants of the vehicle are unconscious or in a helpless state. The resulting location data and vehicle information is sufficient for immediate activation of Emergency Response Forces (ERFs) and their teams.

The eCall device allows, in the event of an accident, the driver or passengers in the vehicle to forcefully activate a signal for help by pressing and holding the SOS button.

From 05.05.2020, the EUCARIS eCall service was also introduced, which allows, upon receiving an eCall call, by the frame code (VIN code), ERFs and the teams to receive data on the specifics of the vehicle involved in the accident and the vehicle owners from the National Register of Road Transport Vehicles, maintained in the Ministry of the Interior, and for foreign cars on the territory of the country – from the relevant databases of the countries participating in the exchange of EUCARIS eCall functionality.

As a leading structure in the field of emergency communications in the Republic of Bulgaria, the National System 112 Directorate closely monitors the processes of introducing eCall systems in Europe and conducts tests for interoperability and the roaming of eCall service.

eCall is one of the important technologies laid down in the Development Concept of National System 112 and the construction of a next generation (NG112) system for receiving emergency communications and resource management for emergency response services. The project "Improving the National Emergency Communications System 112", part of National Recovery and Resilience Plan is about to be launched.

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)

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

The static data for safe and secure parking spaces for trucks and commercial vehicles is about to be updated. According to Art. 9, paragraph 2, letters "a" and "b" "Road Infrastructure" Agency has identified 80 nos. parking lots located along the national road network - https://datasheet.api.bg/.

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?)

After an analysis of the quality of the static data for safe and secure parking areas for trucks and commercial vehicles, as well as on the basis of the Agency's functional competences, the information portal LIMA,

maintained by the "Road Infrastructure" Agency and located at the address: https://datasheet.api.bg/ , has been designated as a National Access Point under Delegated Regulation (EU) No. 885/2013.

The National Access Point updates static data related to parking areas, their safety and their equipment, namely:

- location of safe and secure parking areas for trucks and commercial vehicles (latitude and longitude);
- identification of the parking area (name and address of the truck parking area);
- information about the main road identifier (in case of access from two different roads);
- total number of free parking spaces;
- information about specific equipment or services for certain freight vehicles;
- price and monetary unit for parking spaces;
- number of parking spaces for refrigerated vehicles;
- description of the security, safety and service provision equipment in the car park, such as:
  - availability of internet connectivity;
  - availability of video surveillance;
  - availability of lighting;
  - presence of a fence at the parking places, etc.
- contact information for the parking lot operator.

In order to ensure the interoperability of information services on the territory of the European Union, the static data required under the Regulation are freely available in a machine-readable format fully compliant and compatible with DATEX II.

On https://datasheet.api.bg/ it is possible to publish and centralize the dynamic data related to the availability of free parking spaces, including whether the parking lot is filled/closed or the number of free spaces, from the individual Unified Access Points of each parking operator and/or service provider, but at the moment the relevant stakeholders (public or private parking lot operators and service providers) are unable to submit them to the National Access Point due to the lack of an information system and/or lack of dense data set.

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

2.4.1   Description of the national activities and projects

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 2020
Description of the progress in the area since 2020:

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:

2.5.2   Progress since 2020
Description of the progress in the area since 2020:

List of implementing contracts concluded under the priority" Integrated Urban Transport" under procedure BG16RFOP001-1.001-039" Implementation of integrated urban renewal and development plans:

1.   **Contract BG16RFOP001-1.005-0001-C02 "Integrated urban transport system of the city. Rousse - second stage"** with beneficiary Rousse Municipality, signed on 05.01.2017, and ended on 04/01/2022. The value of the project amounts to BGN 17,506,572.66.

Under the contract, an activity has been implemented: "Upgrading the intelligent transport system by providing video monitoring of 30 pcs. busy intersections." A real-time video surveillance installation of mobile and stationary objects located or passing through the monitoring intersections in the traffic management control center has been carried out. The contract with the selected contractor under the Public Procurement Act is worth BGN 1,455,361.30. excluding VAT. With the implementation of the project financed under OP "Regional Development" 2007-2013 in 2015, the following were introduced:
- Electronic passenger charging system;
- Public transport control and management system and GPS-based electronic information board.

Separately from the Contract, joint financing by the Municipality of Ruse and the state made it possible on 02.06.2023 to put into operation a parking lot for heavy-duty vehicles with 600 units, places. The facility has all the conditions for rest and hygiene needs for truck drivers. The parking lot has a system that includes a connection to the border crossing and a notice board for the order in which cars should cross the Danube Bridge. With the construction of this facility, the problem of the accumulation of heavy goods vehicles and the formation of kilometer-long queues before the border crossing point has been reduced to a large extent.

2. Contract BG16RFOP001-1.015-0003-C02 Integrated Urban Transport, Sliven "with a beneficiary, Municipality of Sliven, concluded on 13.01.2017 and ended on 03.11.2022. The value of the project amounts to BGN 11 657 316,57 grants.

Under the contract, an activity related to the implementation of a passenger information system has been carried out. At all public transport stops are installed boards with a scheme of the lines, stops and schedules of vehicles passing through a given stop, as well as the names of the stops on the respective lines. The value of these activities amounts to BGN 433,938.94.

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 and ended on 17.12.2021. The cost of the project amounts to BGN 28, 972 320,99 grant.

Under a contract, an activity has been implemented to upgrade the intelligent transport systems for traffic counting and coordinated management of light-regulated intersections along the routes of public transport. The value of this activity amounts to BGN 2 543 000.00. The upgrade of the existing system for the advantage of public transport vehicles, with the inclusion of 20 light-regulated intersections. Equipment with information boards at 100 stops was delivered and the real-time passenger information system was upgraded. Built 25 pcs. Smart pedestrian crossings that start to automatically glow when a pedestrian who has stepped on a pedestrian crossing is detected

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 30.09.2022. The value of the project amounts to BGN 14 989 444,03.

The project proposal includes an activity: Implemented video surveillance system at 16 key intersections in the city of Pleven. The value of the mentioned activity amounts to BGN 2,316,000,00.

In the period from 2017 to 2020 in the city of Pleven under the Project "Development of integrated urban transport - city of Pleven" intelligent transport systems were put into operation as follows:

4.1. "Electronic tax system in mass urban public transport (MUPT)", which ensures effective and sustainable

management of this transport service.
The system has possibilities for:

- reorganization of route network – lines/stops;
- it generates and maintains detailed information for urban transport management, including passengers number per line, for each vehicle, for each stop;
- it generates and maintains automatic registration and administration of revenues.

The software used for this system operation is a central software (server-based) for sale, report and check-up of transport documents(open source). The ticket system is fiscalized to National Revenue Agency.

4.2. "System for video surveillance at key crossroads in Pleven.

System for video surveillance comprises 16 key crossroads and main exit-entrance thoroughfares of the city. It ensures 24-hours surveillance of street traffic; effective control and management of the traffic; it guarantees security of the physical media, traffic safety, identification and tracking of a vehicle in case of road accident, etc. For the system operation have been installed servers, workstations, network equipment, cameras etc. The applied software for this system operation is Open Architecture Video Management System (VMS).

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 *10.02.2020*. The value of the project amounts to BGN 6,378192.90 grant and own financing BGN 32 191,15.

Under contract, a system of control of public transport was implemented. The value of this activity amounts to BGN 343 545.00. excluding VAT. 59 pcs delivered. electronic information boards worth BGN 295 200. excluding VAT

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 10.11.2021. The value of the project amounts to BGN 8,292,193.48 grant and own financing BGN 2 839 987,48.

Under the contract, the activity "Implementation of information and communication technologies (ICT) in urban transport" has been implemented. Delivery and installation of electronic information boards 104 pcs. Built the system for urban transport management. The value of a contract under the Public Procurement Act is BGN 1 063 291,10 excluding VAT.

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 with a deadline of 10.11.2021. The value of the project amounts to BGN 12 861 629.29 grant.

An activity has been carried out for the delivery and construction of a public transport management system at 35 light-regulated intersections and video surveillance on the lines of public transport. The value of this activity amounts to BGN 3,870,000.00. excluding VAT. The system is capable of expansion and upgrade:

- A strategic traffic management system;
- Electronic information boards;
- A system for the dissemination of information based on internet, mobile and smart telephony services and applications.

Another activity under the project **"Modernisation and development of sustainable urban transport in Stara Zagora** – Phase II" was introduction of an automated charging system. The main activities in the implementation of this component are:
- Three hotspots equipped for issuing/activating ticket products/cards;
- Installed vending machines for the sale of ticket products on board 77 bus and trolleybus vehicles;
- Ticket machines installed and installed in 10/десет/public spaces in the city of Stara Zagora;

- Validators installed in 77 bus and trolleybus vehicles;
- Issuing electronic contactless cards;
- The possibility to plan travel and purchase a ticket product via a website (user portal) available at https://transport.starazagora.bg and a mobile app for users.

8. Contract BG16RFOP001-1.041-0001-C02 "Sofia Integrated urban transport - phase II" with a beneficiary Sofia Municipality. Signed on 23.02.2018 with a deadline of 23.10.2023. The value of the project amounts to BGN 106,134,690.87. grant and own financing BGN 16,328,635.95. own co-financing.

Under contract, activities have been implemented to upgrade the intelligent traffic management system and a real-time passenger information system. Electronic information boards were delivered – 220 pcs. Currently, there is an activity related to the provision of video surveillance at public transport stops. The value of this activity amounts to BGN 1 392 470.00.

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 and completed of 05.08.2021. The cost of the project amounts to BGN 3,122,359.63.

Under contract, an activity for the development and implementation of an information system for urban transport management has been implemented. The value of this activity amounts to BGN 153 916.67.

10. Contract BG16RFOP001-1.018-0004-C06 "Integrated urban transport of the city Pernik" with beneficiary Pernik Municipality. Signed on 15.05.2018, with a completion period of 55 months. The project has been completed according to the grant deadline, but has not been verified. The value of the project amounts to BGN 6,552,227.05 grant and own financing BGN 3,664,267.95.

Under the contract, the delivery of electronic information boards at the stops of public transport at 35 double stops was carried out. A public transport control system has been introduced. The value of this 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 04.08.2023. The value of the project amounts at BGN 7 757 507.11 grant and own financing BGN 2 221 979.88.

Under the contract, the following activities have been implemented: "Introduction of an integrated traffic management system in the town Burgas" within the framework of which an integrated traffic management system and Improvement of the speed and quality of service of public transport has been introduced, throughput at intersections has been improved and the provision of an advantage to urban transport. The value of the activities amounts to BGN 2 005 509.00. VAT excluded.

The Municipality of Burgas has introduced and maintains an integrated web-based and mobile version City Platform SMART BURGAS, within which information is provided on traffic flows and parking opportunities in municipal parking lots and in urban areas for street paid parking within the city. In the near future, new platform upgrades will be able to integrate new data for safe and secure truck parking, if such information would be provided, both within the city and beyond.

The project "Integrated model for urban mobility management - stage 1" was implemented in the period 2019 - 2023. The activities of the project include integrated measures to improve mobility in the city and optimize city traffic, including:

• Upgrade of 26 traffic light intersections by installing new equipment providing an adaptive and coordinated mode of traffic light control based on traffic load information generated by traffic detection sensors installed at intersections and on major road arteries; surveillance cameras and cameras for reading vehicle number plates;

• Delivery and commissioning of an intelligent integrated traffic monitoring and management system, communicating with the upgraded "smart intersections" and locations for collecting traffic information; and the installed VMS - information boards at the main entrances of the city to provide road information for trucks and other vehicles;

• Upgrading the city's video surveillance system with new cameras on the road arteries;

• Installation of 3 VMS-information boards at the main entrances of the city to provide traffic information for trucks and other vehicles.

The traffic management and monitoring system is located in the city's existing 2017 Video Surveillance and Traffic Management Center, which provides all aspects of the city's mobility management from a single point, using the system as a monitoring, control and prevention tool .

In connection with the further development of the existing intelligent transport systems and the introduction of new ones, the Municipality of Burgas focuses on the following new challenges:

• Upgrading the used ticket system for urban transport in order to provide opportunities for MaaS services;

• Introduction of a parking management system in the parking areas and parking lots of the municipality, integrated with the SMART BURGAS platform and the Integrated Traffic Management System.

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 19.12.2023. The value of the project amounts to BGN 11,071,531.18 grant and own financing BGN 1 591 048.50

Under the contract, an activity for the introduction of information and communication technologies is carried out. A control center is being built, including a transmission medium; equipped with on-board computers the vehicles of the public transport of the city. Veliko Tarnovo; 22 pcs were placed. electronic information boards at the busiest public transport stops. The value of this activity amounts to BGN 1 578 556.00.

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. 10.2023. The value of the project amounts to BGN 4 343 025.05 grant and own financing BGN 647 787.77

Under the contract, an activity for the implementation of an electronic system for urban transport management is implemented by building an electronic traffic management system and a real-time passenger information system. Delivery of 80 pcs. information boards at the stops. The value of this activity amounts to BGN 1 398 746.40.

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 12.12.2023. The value of the project amounts to BGN 7 856 290.60 grant and own financing BGN 327 256.12.

According to the signed contract for BFP, activities related to Implementation of an intelligent traffic management system are being implemented and a public transport management system is being built. Value of that activity amounts to 898 620.00 BGN.

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 and completed of 16. 03.2023. The value of the project amounts to BGN 1 047 925.93 grant and own financing BGN 559 066.49

An information system for urban transport management has been put into operation under the project; 20 electronic information boards on public transport stops were put into operation. The value of this activity amounts to BGN 652,296.86.

3 Key Performance Indicators (KPIs)

<u>Note</u>: *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).

- <u>Length of road network type / road sections (in km) equipped with information gathering infrastructures & Total length of this same road network type (in km)</u>:

- <u>KPI</u> = (kilometres of road network type equipped with information gathering infrastructures / total kilometres of same road network type) x 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).

- <u>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)</u>:
KPI = (kilometres of road network type equipped with ITS to detect incident / total kilometres of same road network type) x 100
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).

- <u>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)</u>:
- <u>KPI</u> = (kilometres of road network type covered by traffic management and traffic control measures / total kilometres of same road network type) x 100
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 = (kilometres of road network type covered by C-ITS services or applications / total kilometres of same road network type) x 100
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 = (kilometres of road network type with provision of real-time traffic information services / total kilometres of same road network type) x 100

3.1.3 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 = (kilometres of transport network type with provision of dynamic travel information services / total kilometres of same transport network type) x 100
- KPI = (number of transport nodes with provision of dynamic travel information services / total number of same transport nodes) x 100

3.1.4 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

3.1.5 112 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):