PROGRESS REPORT TO THE EUROPEAN COMMISSION ON THE PROGRESS MADE FOR THE IMPLEMENTATION OF THE DIRECTIVE 40/2010/EU

Republic of Lithuania, according to 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, identified main national goals and directions of intelligent transport system (ITS) development and implementation in the National Transport Development Program 2014-2022. Here is setted two main objectives:

- to deploy intelligent transport systems and technologies that will ensure better mobility of passengers and goods on the TEN-T roads, on other roads of state and local significance, urban streets, railways and inland waterways;
- to increase traffic safety and safety by continuing investing in the development of safety measures for traffic infrastructure, especially, in engineering and intellectual safety measures.

ITS are essential to ensure and for increasing traffic efficiency (traffic management and provision of information), performance of Lithuanian Road Administration under the Ministry of Transport and Communications (hereinafter referred to as LRA) activity, traffic safety (speedometers - part of vision Zero) and ensuring compliance with the rules.

The development is based on the principles of open data and interoperability in order to ensure the diffusion of services, data utilization and interoperability with other countries.

Lithuania has successfully implemented activities and projects setted in the first Progress report and also launched a whole series of new ones, information about them is given below.

I. OPTIMAL USE OF ROAD, TRAFFIC AND TRAVEL DATA

TRAVEL DATA - MULTIMODAL JOURNEY PLANNING (IS VINTRA)

In November 2015 a new convenient route planning system was developed. Route search and planning electronic service is based on the Public transport Multimodal Journey Planning Database System (hereinafter referred to as IS Vintra), which enables to get all required information quickly, to compare the trip by public transport with that in a private car and thus to select the most suitable (fastest, shortest or most economical) alternative.
IS Vintra is specific because it collects the route data of different public transport modes in Lithuania (road, air, water and railway). When planning a new route, the system will select the fastest, most economical or shortest route, visualize its track, stops, will calculate the driving time, etc. The system is adapted not only for computers but for other mobile devices (notepad and smart phones); therefore, a passenger will be able to review relevant timetables, maps, timetables of the selected stop, find information on a concrete vehicle and its arrival and departure time. This system is available at the address: http://www.visimarsrutai.lt/.

Main Functions of IS *Vintra*:

- to collect, to process, to systematize data for different public transport modes and other pertaining information;
- to form and to visualize route data for various public transport modes and information upon request and to compare with the travel data by public car on the territory of the Republic of Lithuania;

- to search route points and place them on the map.

In 2018 LRA has signed the Agreement on ***ITS – The Grant. Lithuania started a CEF Programme Support Action in January 2018 to support the early implementation of the Commission Delegated Regulation 2017/1926 on the provision of EU-Wide Multimodal Travel Information Services***, which aims to make current public and private transport data available in the harmonized European data/format/ exchange protocol via national access point (IS Vintra) and by directly linking different local/ regional and (or) national multi-modal transport (road, air, water and railway) information services. The project implementation will guarantee the Lithuanian public and private transport data harmonization to the existing European standards. Current Vintra database will be harmonized with the EU approved NeTEx standard. NeTEx standard will enable smooth public transport data exchange among EU member states. It will not only enable Vintra data transfer to the third countries but will provide a possibility to integrate databases of other countries carrying NeTEx standard into Vintra system.

Future actions:

Development of National Access Point Services;

VINTRA's CDB, as National Access Point (NAP) for the provision of access to the travel and traffic data will be expanded with the dataset according to the Annex I of the forthcoming delegated regulation. To this end, measures for the provision of additional data to the NAP will be finalized in co-operation with stakeholders (the state road transport inspectorate, municipalities association, representatives of the largest intercity and long-distance carriers such as TOKS, KAUTRA, etc.). On this basis, an action plan will be prepared for the period until the completion of the project. Together with other measures, the Action Plan will include measures aimed at publicizing the objectives and results of the project. In the same way, the form and methods of cooperation will be validated with stakeholders, determined responsibilities to achieve the overall objective of the project - provision of better travel information services for passengers. Implemented measures for the extension of the NAP will ensure that users will have access to the right scope of the travel and traffic data and information with the appropriate data sharing mechanism.

The activity consists of the following steps:

- develop a comprehensive stakeholders map and legally validate cooperation with them with a view achieve the project objectives;
- outline the measures for accessibility, exchange and re-use of static travel and traffic data according to the time-table described in the forthcoming delegated regulation;
- control the implementation of measures as foreseen in the action.

Implementation of Data Quality Assurance Tools;

The data related to the organization of travel in the public transport central database (CDB) has been stored since 2015. Accumulated data are used for analysis and travel planning. However, because of existing organizational deficiencies and lack of appropriate technical capabilities, data integrity, completeness, accuracy and up-to-dateness of the data are not guaranteed. As a result, unsatisfactory quality data do not encourage passengers to use the VINTRA services when planning their public transport journeys. In order to ensure the high quality of primary travel and traffic data, it is planned to develop two different types of tools:

- multipurpose API, that will facilitate integration of other relevant information systems to ensure the relevance of the data;
- a set of data validation and control algorithms and rules to ensure that data is integral and consistent.

The project activity consists of the following steps:

- analysis of data sets, structures and sources;
- development of the requirement for multipurpose API;
- development of the requirements for data validation, control algorithms and rules;
- development and implementation of data quality validation tools, training of users.

In addition, it is planned to implement additional organizational measures that ensure control over the completeness and timeliness of the primary data submitted to the NAPs.

Interaction of Static Travel Data

VINTRA has been developed using codes and technologies, such as Oracle Database, Java, ESRI ArcGIS, etc. For data exchange with the external information systems GTFS format specification used. VINTRA is the state information system, which can be accessed by unauthorized user through a web browser. The accumulated data as an open data is published on the website http://www.visimarsrutai.lt/ VINTRA does not have an integrated interface for data exchange with similar information systems implemented in other countries. For this technical reason, currently no possibility exists to provide the EU-wide multimodal travel information services. This gap is essential for Lithuania.

As the first step for the integration with the EU-wide multimodal travel information services, it is planned to implement measures for the provision of access to the static scheduled transport datasets at the level of the NAP as defined in Annex I of the forthcoming delegated regulation. Also, based on the detail analysis of the national data model as well as requirements of the Transmodel data model technical specification for the static schedule travel data integrity with EU-wide adopted standards and formats will be designed, a national profile of NeTEx in order to complete the data conversation/mapping activities in conjunction with the common European profile will be created.

National Data Integration into NeTEx;

In order to facilitate the integration of the static scheduled transport data sets from the national standards and technical specifications into NeTEx at the level of NAP, analysis of the requirements of the Transmodel data model and technical issues for data model transformation will be conducted. Based on the analysis, the technical requirements for the transformation of the existing data model into NeTEx will be elaborated. The technical specification will cover the requirements for the development of the data mapping/translation tools and their implementation.

The results of this activity will provide the necessary preconditions for the following step: launch of the pilot project for the development and finalization of the national profile (based on the underlying Transmodel data model) in conjunction with the common European profile.

Creation of National NeTEx profile.

Developing a national profile requires in a first step the agreeing of a profile by the involved stakeholders. NeTEx covers many types of transport data, and can be used in a many of different workflows and to support different levels of detail in the data exchange. However a given group of stakeholders using NeTEx are likely to be using only a subset of the schema for an agreed purpose. Furthermore they may have more explicit requirements as to which namespaces and identifier sets are used and which elements and attributes are mandatory in the exchanged data. Using NeTEx therefore requires a number of choices to be made. The set of choices may be described more formally as a profile. The participation in the NeTEx working group WG3 - SG9 to develop a common European Profile for NeTEx is crucial for this activity, as the National Profile will be developed in close alignment to the European Profile.

The elaboration of a national profile covers the following main tasks:

- Decide which data elements are to be exchanged. For example stops, routes, journey patters, timetables, fare structures, etc. This depends on the functional scope of the systems and the use cases for exchanging data.
- Decide which types of version frame are to be used to exchange the data. In many cases, a single type of frame (e.g. TIMETABLE FRAME) has all the elements needed for the function (since the frames is chosen to group related elements). However sometimes elements from several different frames are needed; in this case a COMPOSITE FRAME is also used to group the frames into a coherent set with common validity conditions and compatible versions.
- Choose the namespaces and identifiers to use to identify instances of elements as unique. NeTEx allows declaring a globally unique context for each identifier, but it is up to the implementer to allocate specific domains for this purpose and to decide the semantics of the codes within the namespace.
- Select the specific attributes of the elements which must, may, or must not be present (other than the attributes which are mandatory in the NeTEx schema and must always be present).
- Determine the granularity of elements within the frame. When outputting data elements within a given frame in some cases the implementer has a degree of freedom to the exact organization of elements within the frame.
- Determine the level of versioning to be exposed in the exchanged data. All NeTEx objects can hold detailed versioning attributes, and the data attributes may be exposed in the exchange format so that importing and exporting systems can use them to process changes efficiently.
- Select the protocol to be used to exchange NeTEx XML documents. The content of a NeTEx document is independent of the method used to transfer it - and in fact the latter may vary according to the application. The stakeholders using NeTEx will need to decide which method of transmission i.e. protocol they wish to use, and also ensure that the bandwidth and processing capacity are appropriate to the data content and frequency of exchange that is envisaged.
Working out the national profile demands detailed knowledge of the NeTEx CEN/TS 16615 Standard and the underlying conceptual data reference model Transmodel EN 12896. Therefore the national working group will include international experts in the field of NeTEx standard development for exercising the profile development.

The project activity consists of the following steps:
- study of the NeTEx specification and guidelines;
- description of the current national travel and traffic data situation and possibilities for the transformation;
- design of the technical specification for the development data mapping/translation tools for the integration of datasets from the national standards into NeTEx based on the Transmodel data model v.5.1;
- develop the national profile of NeTEx for the completiOn the data conversation/mapping activities and finalise within CEN.

INFORMATION ON THE IMPLEMENTED PROJECT "ROAD DATA E-SERVICE DEVELOPMENT"

In 2017 the LRA started the implementation of the project *Road Data E-service Development* when implementing national significance road maintenance and development and traffic safety policy on national significance roads in order to organize and coordinate national significance road rehabilitation, maintenance and development. The project aims to create a progressive road data e-service for road data suppliers and economy entities using road data from centralized national and local significance road database, where road data were managed from the beginning until the end of the road asset life-cycle. The National and Local Significance Road Asset

Management Information System will guarantee the creation of higher quality and more convenient e-services in the transport sector and provision at the Lithuanian and European level. Processes optimized during the project will have a positive impact on the Road Administration and municipality resources. It will facilitate and simplify road asset management, which will shorten working hours for entering data and similar mechanical actions. The road project management implementation and integration of projects managed by municipalities into the Road Administration Road Asset Management Information System will help to avoid duplication of the coordination and to concentrate on direct activities. The Road Asset Management Information System will contribute to the road maintenance quality assurance. It is planned to complete project activities by the end of 2020.

Project implementation:

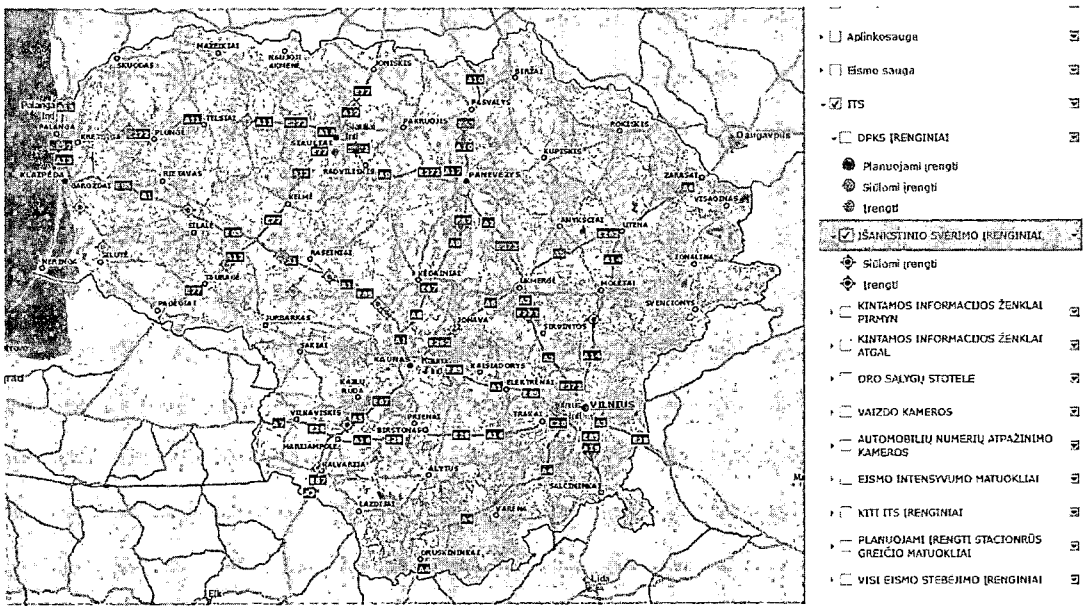
II quarter of 2016 project's *Road Data E-service Creation Investment* (feasibility studies), based on which an application for financing from 2014–2020 European Union fund investment action programme priority 2 *Promotion of Information Society* 02.3.1-CPVA-V-528 instrument *Intelligent Transport Services and Applied Solutions.*
IV quarter of 2017 signed with CPPA project *Road Data E-service Creation. Financing contract.*
I quarter of 2018 *Road Data E-Service Creation and Implementation Services. Terms of Reference.*
II quarter of 2018 planned invitation to tender on *Road Data E-service Creation. Technical Supervision Service Procurement.* Currently, tender documentation is under preparation.
III quarter of 2018 it is planned to open international tender on *Road Data E-service Creation. Implementation Services Procurement.*
IV quarter of 2020 it is planned to start the exploitation of the National and Local Significance Road Asset Management Information System.

II. CONTINUITY OF TRAFFIC AND FREIGHT MANAGEMENT ITS SERVICES

PRESELECTION

The system monitors violations of road traffic regulations; however, it does not fine automatically, but helps LTSA officers to identify overloaded trucks in the main flow.

Automatic preliminary weighing equipment (systems) installed in addition to the existing traffic volume counters (CA Traffic Black Cat Midi) on two traffic lanes (in one direction) will measure vehicle's axle loads and the total weight of each car without impacting and stopping cars. Vehicle number plate recognition camera (VNPRC) will identify overloaded vehicles according to the commands, received from preliminary weighing point (PWP). Data from PWP and VNPRC are forwarded to EIS for processing.

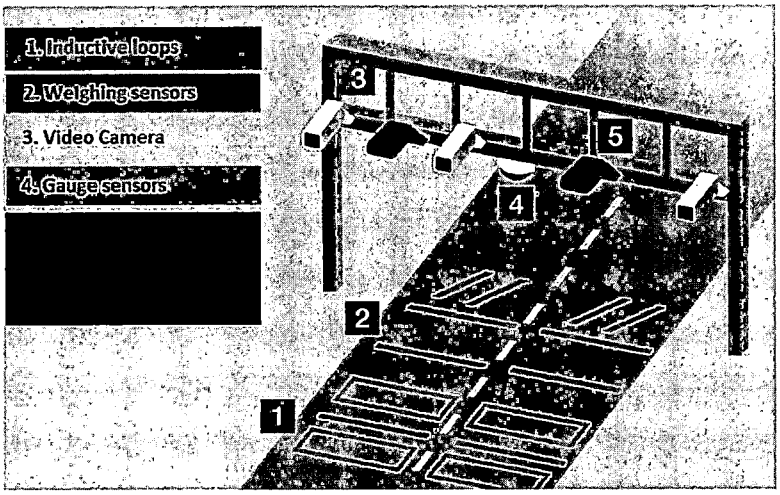


MULTIFUNCTIONAL TRAFFIC ENFORCEMENT SYSTEM (MTES)

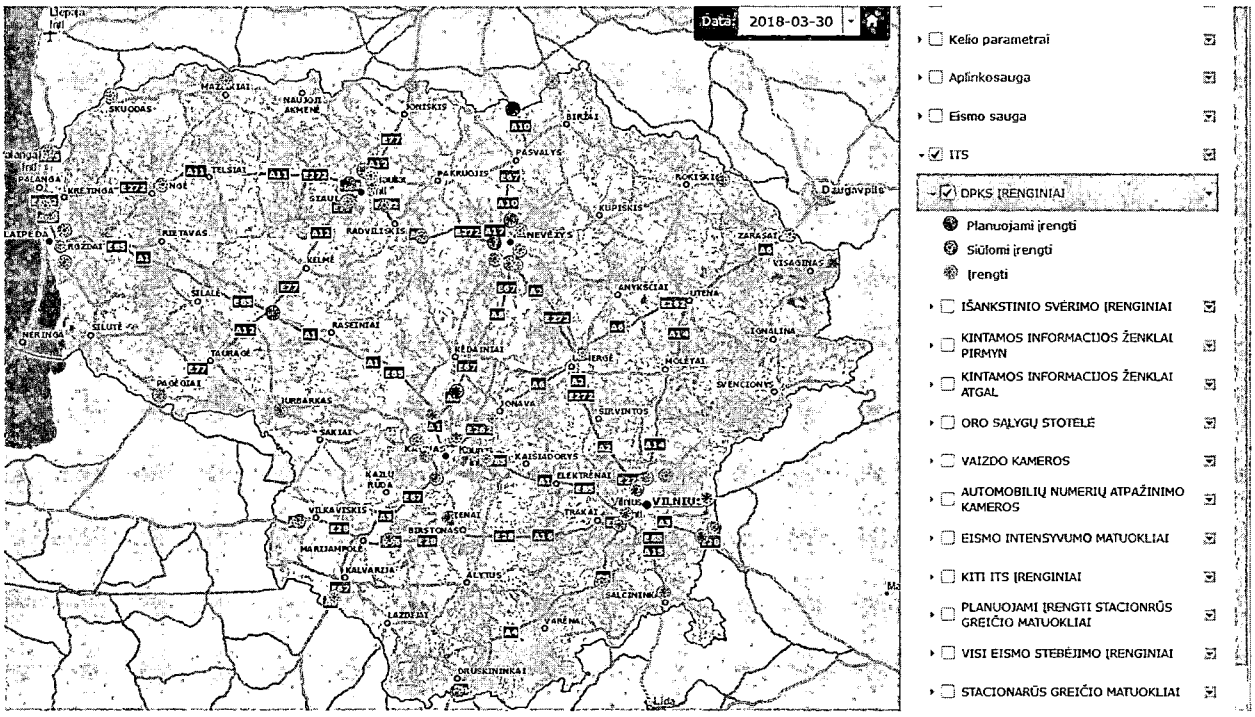
The implementation of Multifunctional Traffic Enforcement System has been started on the main roads. In total, three check-points have been installed on the roads.

The system will not only weigh the cars, but will also register their dimensions, read number plate data and collect traffic volume statistics. The data collected by these systems could be used to check if road user charge has been paid; if a vehicle has been insured and has valid technical supervision certificate.

The aim of the system is to send a fine cheque for vehicle holders who exceeded the weight limits or made other violations in the same manner as an identified violator gets the speeding fine cheque now.



Violation enforcement system is being implemented in three high traffic volume road sections in Lithuania on the highway *Vilnius–Kaunas* near the Kaunas Sea, on the road Via Baltica between Kalvarijos and Lithuanian–Polish border and on the road *Kaunas–Zarasai–Daugavpils* near Jonava.



Violation enforcement system will perform a number of functions at the same time, which is one of the biggest advantages. The following electronic equipment will be mounted on the road: cameras, various sensors, inductive loopes. Information system which will process the data collected by this equipment will be developed and will be integrated into the implemented traffic control systems.

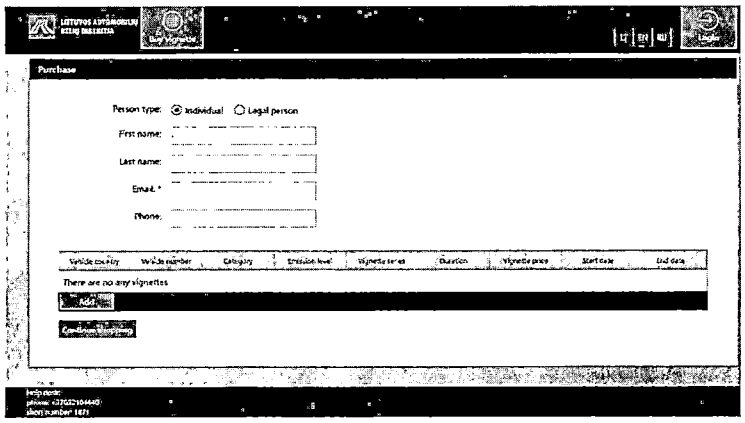
Gates will be installed above the road at the violation point, where sensors will measure the vehicle's dimensions, video cameras will record front, lateral and rear view of the vehicle, number plate recognition and video cameras will record possible acts of vandalism. Systems will need electricity and communication inlets.

Violation enforcement system will identify:

- Vehicle's weight, exceeded axle loads;
- Heavy vehicles using the roads without permission;
- Vehicles without valid technical supervision certificate;
- Not insured vehicles;
- Vehicles wanted by the police, state border security, customs;
- Traffic flow speed and volumes;
- Types of vehicles;
- Routes of vehicles.

ELECTRONICAL VIGNETTE

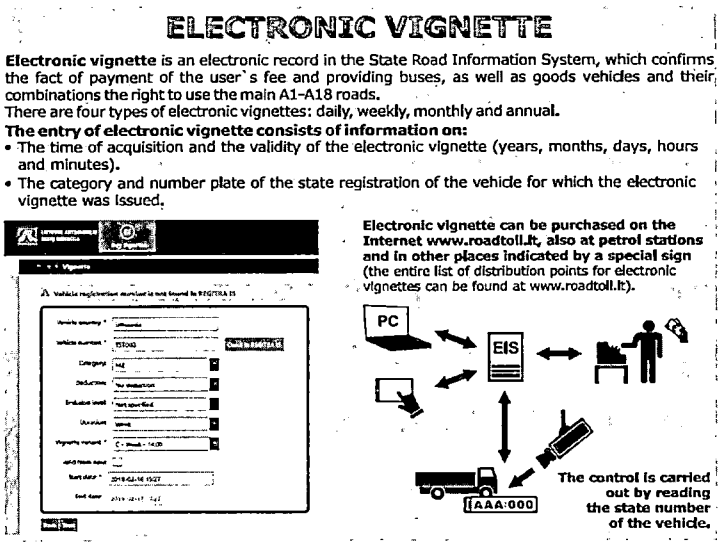
On 15-06-2017 LRA with an economy subject group consisting of JSC *Tolleda* and JSC *Proit* signed a contract on the Road User Charge Registration Services. The contract duration: 18 months. On 13 December 2017 the modulus of the national significance Road Traffic Information System road user charge registration was created and the exploitation of pilot services was started. Currently, road user charge can be paid in both ways: a conventional method (by buying a vignette) or a new method via information system.



After a pilot period, road user charge registration services will be provided via information system. A road user who wants to pay the charge will be able to make it at home or in the office having entered the system. Those unable to connect to the system, will be able to pay the charge at not less than 300 user charge payment points at petrol stations or other places on the territory of the Lithuanian Republic near cross-border sections at the access road to toll national significance roads as well as other additional and convenient places to road users.

The new Road User Charge Payment System will be more innovative, convenient and user-friendly.

Information in English: https://sumin.lrv.lt/en/news/electronic-vignettes-come-into-force-in-lithuania

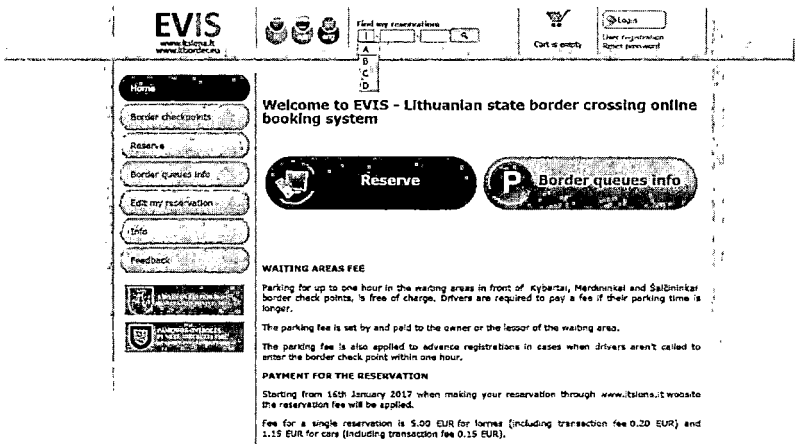


ELECTRONIC BORDER CROSSING SYSTEM (EVIS)

The Directorate of border crossing infrastructure under the Ministry of Transport and Communications of the Republic of Lithuania (there and after – Directorate) carries out an assigned function to secure fluent access to the border check points, executes formation, registration and regulation of the queues on the approaching roads.

The Directorate administers the electronic system of the management of the queues of the vehicles, waiting to cross the state border of the Lithuanian Republic (there and after – EVIS).

EVIS allows clients to electronically preregister for the border crossing by way of choosing the most convenient time and the ch eckpoint of border crossing.



Currently EVIS is being introduced at the Kybartai border check point on the border of the Lithuanian Republic and Kaliningrad region of the Russian Federation and at the Medininkai, Lavoriskes and Salcininkai border check points on the border of the Lithuanian Republic and the Belorussian Republic.

The online preregistration (www.lithuanianborder.eu) for the border crossing is available only for trucks which choose Medininkai, Lavoriskes, Salcininkai and Kybartai border check points and for cars which cross Kybartai border check point.

The preregistration fee is 5 Eur for a truck and 1,15 Eur for a car.

In front of the Kybartai, Medininkai and Salcininkai border checkpoints there are safe comfortable waiting areas, equipped with all essential facilities necessary for the rest of drivers and passengers. LED displays, radio or SMS notify the drivers waiting in the electronic queue about the time to cross the border.

The Directorate is looking for the possibility to attract the private sector to build a similar waiting area in front of the Lavoriskes border check point.

APLICATION EISMOINFO

On 10 May 2017 application *Eismoinfo*, designed to inform road users on traffic conditions and to collect reports on traffic incidents or other relevant information was created. Mobile application *Eismoinfo* enables to:

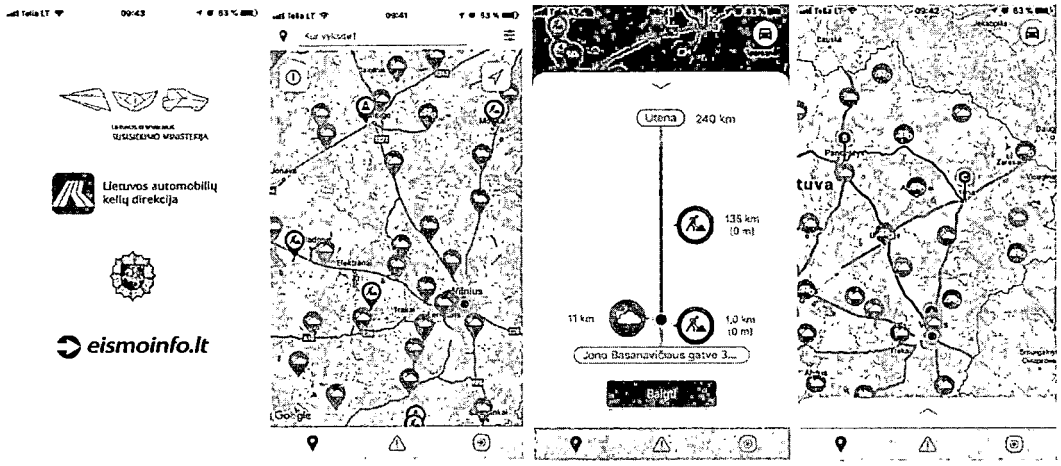
- **Review relevant and complete information on the map:** road condition, traffic volumes, traffic restriction, broadcasts of road-side cameras.
- **Review additional information**. Standard map information is supplemented with additional information from the app itself: additional map layers for places to visit, rest and electric vehicle charging stations, vignette distribution places.
- **Plan a route and see all relevant information**. Choose an origin and destination as well as mid stops for your route and see all the relavent information either on a map or schematic line. Everythinmg is there to help you make any decision on which road to take to make your trip more pleasant.
- **Receive *push notifications*** about relevant traffic and weather condition changes near you and your route.
- **Receive voice mails** on traffic disturbancies on the planned route (traffic restriction due to works, traffic accidents, obstacles, etc.)

- **Report an issue on the route through a call or in-app.** If you see any obstacle or traffic violation of any kind -feel free to report it with multimedia attachments using in-app form or just make a call to the Traffic Information Centre operator. This way you will help us keep our roads in good shape.
- **Use the app as a dashcam.** Application has a dashcam working in a loop-over mode. Make a recodring of any moment of your trip by defining the prie- and post-recoding intervals. The video is stored in the application for your convenience.

"Eismoinfo" is an application that informs you about the traffic and road conditions on national roads as well as helps you report any issues you notice while traveling.

Application features include:
• Review relevant and complete information about traffic conditions on the map: road and weather conditions, information on traffic intensity and traffic restrictions, broadcasts of road-side cameras.
• Review additional information. Standard map information is complemented with additional information from the app itself: additional map layers for places to visit, rest areas, electric vehicle charging stations as well as headpiece distribution places.
• Plan a route and see all relevant information. Choose an origin and destination as well as mid stops for your route and see all the relevant information on either a map or schematic line. Everything is there to help you make any decision on which road to take to make your trip more pleasant.
• Receive push notifications about relevant traffic and weather condition changes near you and on your route.
• Report an issue on the route through a call or in-app. If you see any obstacle or traffic violation of any kind – feel free to report it with multimedia attachments using in-app form or just make a call. This way you will help us keep our roads in good shape.
• Use the app as a dashcam. Application has a dashcam working in a loop-over mode. Make a recording of any moment of your trip by defining the pre- and post-recording intervals. The video is stored in the application for your convenience.

Information is provided in Lithuanian and English.

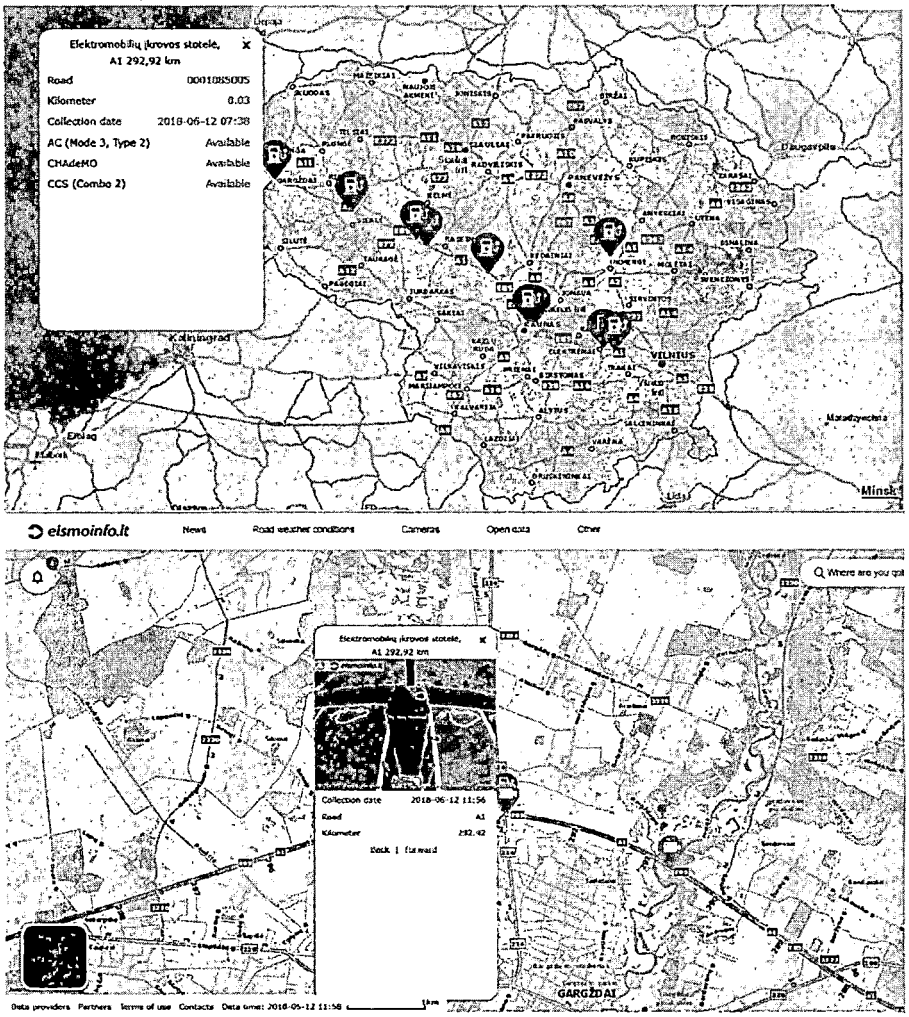


EV APPLICATION

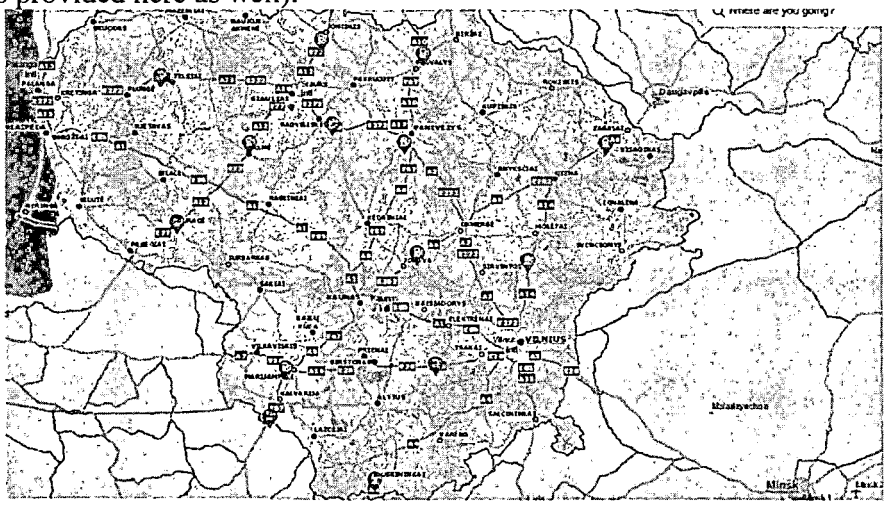
Creation of electronic services for electric vehicle users: users may find electric vehicle public charging points via website www.eismoinfo.lt or, using mobile Eismoinfo application,

observe the status of charging points and real time information from the view from cameras of electric vehicle charging points.

Sample information available to the user on the website www.eismoinfo.lt is presented in the figure below.



Upon implementation of other project stages, the rest of public electric vehicle charging points from national and, later, from municipalities will be integrated (map of EV infrastructure development is provided here as well).



III. ITS ROAD SAFETY AND SECURITY APPLICATIONS

SPEED CAMERAS

In 2018 public procurement procedures on purchasing 30 speed cameras (SC) on national roads will be started. The project will be completed in one year.
It is planned to measure speed with Doppler radar, which takes a picture of a vehicle exceeding the speed limit. Planned locations:

No	Road No	Road name	Name of settlement	SC location, km	Road side	X	Y
1	144	Jonava–Kėdainiai–Šeduva	Dotnuva	43,174	K	6136591,3	492969,55
2	166	Plungė–Vėžaičiai	Vėžaičiai	35,190	K	6178731,57	340848
3	168	Klaipėda–Kretinga	Kalotė	8,000	S	6186596,11	320522,14
4	102	Vilnius–Švenčionys–Zarasai	Švenčionys	83,200	D	6112081,42	636742,57
5	120	Radiškis–Anykščiai–Rokiškis	Kavarskas	10,730	D	6143899,54	558389,89
6	125	Biržai–Raubonys	Pabiržė	6,840	K	6228055,55	539409,43
7	132	Alytus–Seirijai–Lazdijai	Seirijai	24,330	K	6010960,44	487795,72
8	136	Vinčai–Pilviškiai–Vilkaviškis	Pilviškiai	16,020	D	6064362,2	450551,33
9	138	Vilkaviškis–Kudirkos Naumiestis–Šakiai	Kataučizna	17,660	K	6070168,11	428109,03
10	140	Kaunas–Zapyškis–Šakiai	Zapyškis	18,250	D	6087894,87	478377,47
11	141	Kaunas–Jurbarkas–Šilutė–Klaipėda	Vilkija	32,280	K	6101141,21	471881,68
12	144	Jonava–Kėdainiai–Šeduva	Akademija	46,880	K	6139824,88	491266,95
13	151	Pakruojis–Linkuva	Linkuva	14,870	D	6216523,66	497950,3
14	154	Šiauliai–Gruzdžiai–Naujoji Akmenė	Piktuižiai	27,470	K	6224816,61	449776,69
15	154	Šiauliai–Gruzdžiai–Naujoji Akmenė	Šakyna	32,210	D	6227364,67	445827,38
16	155	Kuršėnai–Mažeikiai	Papilė	21,290	K	6224900,42	424866,95
17	164	Mažeikiai–Plungė–Tauragė	Rietavas	77,650	K	6179102,14	369785,22
18	165	Šilalė–Šilutė	Žemaičių Naumiestis	41,390	K	6138273,75	354767,76
19	166	Plungė–Vėžaičiai	Plungė	2,130	D	6198337,51	364734,18
20	168	Klaipėda–Kretinga	Kretinga	21,340	K	6197754,18	326691,09
21	196	Ariogala–Raseiniai–Kryžkalnis	Raseiniai	37,240	K	6137642,55	444965,18

22	201	Marijampolė–Kalvarija	Kalvarija	18,560	D	6030676,6	449606,5
23	216	Gargždai–Kretinga	Kretinga	21,720	D	6197765,19	328899,8
24	216	Gargždai–Kretinga	Jokūbavas	12,900	D	6191007,32	333949,47
25	218	Kretinga–Skuodas	Kretinga	1,440	D	6200476,94	327717,16
26	227	Jakai–Dovilai–Laugaliai	Dovilai	9,900	D	6174562,69	333685,19
27	228	Dauparai–Gargždai–Vėžaičiai	Gargždai	6,530	D	6178379,54	335939,15
28	229	Aristava–Kėdainiai–Cinkiškis	Kėdainiai	9,500	K	6126774,67	496913,72
29	230	Mauručiai–Vinčai–Puskelniai	Ąžuolų Būda	19,250	K	6062812,71	469088,64
30	231	Vytinė–Vaitkuškis–Ukmergė	Ukmergė	6,400	D	6122434,3	549589,22

AVERAGE SPEED MEASURING SYSTEMS

Principle of action. Average speed cameras consist of two cameras, which are in different places of the same road, and central software in the data center. When the driver passes the first camera, the vehicle's number plate is identified and sent to the central software. The second speed camera performs the same action and only then the data obtained in the central software from both cameras are compared and average driving speed is calculated. If average speed is exceeded, central software applies to both cameras additionally in order to get photos of the general view of the vehicle and only then the common and encoded data package is sent to the Administrative Violation Register, where the protocol of the violation is formed.

Two infrared lights are mounted at the distance of 20 meters from each camera. Each of them is directed to different road lanes so that not only the vehicle's number plate, but the vehicle itself is identified in the dark.

This system is implemented due to its extremely high efficiency in terms of traffic safety. Tests have shown that when this measure has been implemented on the road section, a number of road accidents and fatalities can be reduced by up to 85 per cent.

AVERAGE SPEED MEASURING CONTROL SECTIONS:

No	Road No	Road name	Beginning of the section, km	End of the section km	Section length, km
1	A12	Riga–Šiauliai–Tauragė–Kaliningrad	168,944	173,581	4,637
2	A12	Riga–Šiauliai–Tauragė–Kaliningrad	7,041	10,242	3,201
3	A11	Šiauliai–Palanga	40,326	47,445	7,119
4	A7	Marijampolė–Kybartai–Kaliningrad	8,521	11,225	2,704
5	A4	Vilnius–Varėna–Grodno	87,938	96,228	8,29
6	A15	Vilnius–Lida	19,946	24,447	4,501
7	A3	Vilnius–Minsk	12,519	17,711	5,192
8	A16	Vilnius–Prienai–Marijampolė	36,639	43,504	6,865
9	A6	Kaunas–Zarasai–Daugavpils	154,77	158,173	3,403

10	A9	Panevėžys–Šiauliai	14,03	20,555	6,525
11	A8	Panevėžys–Aristava–Sitkūnai	47,99	53,23	5,24
12	A5	Kaunas–Marijampolė–Suwałki	76,936	80,368	3,432
13	A10	Panevėžys–Pasvalys–Riga	46,902	50,462	3,56
14	A12	Riga–Šiauliai–Tauragė–Kaliningrad	113,13	118,301	5,171
15	141	Kaunas–Jurbarkas–Šilutė–Klaipėda	44,526	50,712	6,186
16	141	Kaunas–Jurbarkas–Šilutė–Klaipėda	164,013	168,989	4,976
17	164	Mažeikiai–Plungė–Tauragė	80,812	86,173	5,361
18	122	Daugavpils–Rokiškis–Panevėžys	93,193	97,295	4,102
19	102	Vilnius–Švenčionys–Zarasai	77,198	81,946	4,748
20	103	Vilnius–Polock	18,461	22,157	3,696
21	A13	Klaipėda–Liepāja	33,309	36,184	2,875
22	A16	Vilnius–Prienai–Marijampolė	83,868	88,293	4,425
23	130	Kaunas–Prienai–Alytus	41,615	44,919	3,304
24	A6	Kaunas–Zarasai–Daugavpils	112,107	114,237	2,13
25	A8	Panevėžys–Aristava–Sitkūnai	13,013	17,902	4,889

IV. LINKING THE VEHICLE WITH THE TRANSPORT INFRASTRUCTURE

VEHICLE TO INFRASTRUCTURE (V2I)

LRA realized a pilot line test installation from September 2017 until January 2018 on Lithuania's motorway A1 from the vicinity of Kaunas to Vilnius.
January 2018 – V2X technology enables the exchange of data between vehicles and their environment using wireless communication. Essential information is being sent and received in real time to support all road users and traffic service centers in their decision-making process. Information ranging from road works to weather conditions, speed limits or probe vehicle data were put on trial with the Roadside Unit. The information is distributed to the OBUs (Onboard Units) installed in the cars. It also works the other way around: OBUs are connected to the electronic car-system, reading the sensor information, and sending information about the status, e.g. of fog light, wind screen wiper and hazard warning lights, to the Roadside Unit. In Addition to the testing with the OBU information was visualized on an android tablet with the V2X Application.

For the implementation of these (existing and planned) measures in 2018, funds (over 63 million Eur.) are planned for:
- ITS experts and consultants (4000 Eur.);
- Information technology (IT) goods and services (753400 Eur.);
- Other ITS goods and services, including services of audit (673400 Eur,);
- Purchase of infrastructure and other structures (58660900 Eur);
- Machinery and equipment (1295300 Eur.);
- the creation and acquisition of intangible assets, computer software and licenses (1759000 Eur).

Lithuania will continue to work with ITS assistance to ensure effective congestion and accident reduction, traffic control and addressing public transport issues, provide innovative traffic management services, enable users to access comprehensive information and make transport safer.