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**MINISTRY OF ECONOMIC AFFAIRS
AND COMMUNICATIONS**

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Directive 2010/40/EU Progress Report 2017,
Estonia

**Report under Directive 2010/40/EU**

## 1. Introduction
### 1.1. General overview of the national activities and projects

The following report provides an overview of the activities carried out by the Ministry of Economic Affairs and Communication, Estonian Road Administration, private stakeholders and by the City of Tallinn and Tartu in the field of road transport ITS and the implementation of the directive 2010/40/EU. The directive 2010/40/EU was adopted into Estonian law on 25th of May 2015 by changing the Traffic Act. The Act was complemented with paragraphs that regulate how new ITS solutions/applications in the road sector shall be implemented. Main documents beside the ITS directive 2010/40/EU that regulate Estonian ITS development from authority side are:

- The Estonian Transport Development Plan 2014 – 2020;

- Estonian Road Administrations road safety strategy 2016 – 2025;

- Estonian Road Administration strategy 2016 – 2019;

- Estonian Road Administration ITS development plan 2016 – 2030.


The main ITS services which are foreseen to target the strategic goals are:

- National road register;

- Estonian border e-service;

- eCall;

- Public transport info system;

- National traffic info database;

- Customs and forwarders e-services;

- Heavy and abnormal vehicle e-permit service;

- Smart port services.

Estonian public and private stakeholders take actively part in several cross-border projects and networking activities. ITS Estonia network, acting under ICT cluster, started its activities in 2017; it brings regularly together counterparts of Estonian ITS actors. In addition to local events, ITS Estonia brings Estonian ITS actors to international events.

Main ongoing ITS projects are:

- SMART E67: (TEN-T core network) cross-border (EST, LT, FIN) traffic management project;

- FinEstSmartMobility: ITS services between Estonia and Finland;

- Twin Port: Smart Port services in Estonia and in Finland.

### 1.2. General progress since 2014

Since 2014 many new ITS related services have been set up and put in development. The state road network has new roadside sensors and monitoring devices and the number of speed enforcement points is increased. The eCall readiness is achieved. Traffic information gathering is more automated and scaled to all public roads. Renewal of the national traffic information access point, traffic web-site and road register has started. First cross-border international TEN-T corridor ITS implementation projects have started. The Estonian Road Administration is updating the Traffic Info Centre (TIC), which will be renamed to Traffic Management Centre (TMC). TEN-T corridor, Tallinn ring road E265 ITS related traffic management study is in process and shall set the implementation guide for roadside ITS for years 2018-2023 in Estonian most heavily used ring roads. Dialogue between ITS stakeholders has actively been led by the ITS Estonia network.

### 1.3. Contact information

The Ministry of Economic Affairs and Communication, Suur-Ameerika 1, Tallinn, 10122, is responsible for the adoption of the directive 2010/40/EU.

Contact person is Mr Johann Peetre, +372 6256386, johann.peetre@mkm.ee.

## 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: Estonia has a regulation for handling National Road Register (NRR) data: all public road owners must keep the road register data updated. The NRR handling is under the responsibility of the Estonian Road Administration (ERA). NRR includes both state roads and municipal roads (including streets). New GIS based NRR is under development and will be launched Q1 in 2018. NRR covers also all TEN-T roads. From 2012 ERA is operating the central traffic information database Tarktee with a web portal and with REST services, acting as the national access point of open traffic data. The traffic database, new web-portal and REST services are under development and will be implemented Q2 in 2018. The renewal of REST traffic data services, which shall ensure the full connectivity with Datex II, are included in current development project. ERA is also running the national multimodal journey planner Peatus.ee covering the whole territory of Estonia. Peatus.ee is one of the most popular ERA e-services with more than 3,9 million yearly visits (2016). ERA is renewing all public transport info system legacy modules step by step. Firstly, the national journey planner will be renewed until 2019 using open source code. Using open source code for journey planner makes it easier to implement also cross border functionalities.

#### 2.1.2. Progress since 2014

Description of the progress in the area since 2014: Several ITS development and legacy renewal projects have been started, implemented or are in development: new national road register, new traffic-restriction info system, heavy and abnormal vehicles routing and permit e-service, state road maintenance task handling info system, TEN-T core network road E67 roadside traffic management with variable LED traffic signs and message boards (VMS) "SMART E67" and heavy vehicles road tax info system.

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

Measures undertaken, if any, to set up a national access point and on the modalities of its functioning: In 2012 the Estonian Road Administration (ERA) has set up the national traffic info web-portal www.tarktee.ee with traffic database and services covering all major, connecting and supporting state roads' traffic info (all TEN-T roads are covered within major road category). Traffic info database and services are based on ESRI ArcGIS server, which is handling real-time monitoring measurements and up to date road restriction data. Current traffic information database is also working as the national access point with REST services allowing to download real time open data. In 2017-2018 ERA is renewing national traffic information services by implementing the new web-portal and the new national access point to be fully compatible with Datex II format. The web-portal will have increased ergonomics and unique features for vehicle and restriction specific routing in all of Estonian public road network. ERA is responsible for running the national public road register. The road register data is available via ERA by manual requests or via website inquiries. Implementation of the new National Road Register (NRR) with road geometry data is in process. New NRR will have live WFS open data services for open road

data downloads. New NRR shall be in full use by the year 2018. By Estonian law all public road owners must keep the road database up to date. ERA has a road network department who is responsible for keeping road register data up to date and validated. Traffic information to the non-EU state border (Russian Federation) is available by online service www.estonianborder.eu. The border crossing information system works 24/7 and avoids queues in border by managing truck traffic and directing trucks to parking areas near border stations. The system allows to reserve a border crossing time and the clients get a notification when it is the right time to start the journey from the parking area to the border crossing.

Additional information: Main users of ERA national real-time traffic data access point are traffic information service providers such as Google and Waze who upload data within short intervals and share online information for in-car users. The quality of traffic restriction data is assured by the road work permits process and by the road construction work contracts. It is mandatory to inform ERA beforehand with accurate road restriction positions, start/end and other detailed data. New web based traffic restriction GIS tool was launched by ERA in 2017. The tool is suitable for all public road owners and companies to handle the traffic restriction data. Restriction owners, securely identified by ID card, can send traffic restriction data by a new web solution. State road restriction data is processed and validated 24/7 by the Traffic Management Centre of ERA. Traffic monitoring, camera and weather-related information is gathered with automatic real-time measuring devices owned and serviced by ERA. Service levels are described and monitored by ERA. National Road Register main datasets are also monitored periodically by ERA.

Where relevant, the list of motorways not included in the comprehensive trans-European road network and identified priority zones: State road no 94 Muuga port road from TEN-T road E20 to Muuga port. Route from E20 Tallinn-Narva road and E265 Tallinn ring road to Tallinn Old Harbour (number of streets inside Tallinn City used for cargo traffic to one of the main ports).

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

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: ERA has a large number of different online monitoring sensors in the state road network: 70 road weather stations, 97 traffic monitoring stations, 112 road cameras, 38 speed cameras with 58 cabinets and 3 weighing stations. All TEN-T roads are covered with three types of monitoring devices: road weather stations, road cameras and traffic monitoring devices. The data of monitoring devices is freely available for download in 10 and 15 min intervals from the national access point REST service. Information from road weather stations sensors is available if road is temporary slippery or there is low visibility. ERA has ongoing road side technology project "SMART E67" in which 9 LED variable message boards (VMS) will be installed in E67 road which is in TEN-T North-Sea Baltic core network, covering all major sections between the biggest junctions. Information about accidents, weather hazards and restrictions will be on roadside VMS without delay, hence increasing traffic safety. Safety related information is processed by ERA Traffic Management

center. SMART E67 will be in operation from the end of 2018.

Results of the assessment of compliance with the requirements set out in Articles 3 to 8 of Delegated Regulation (EU) No 886/2013: The ERA's national access point has real-time information which covers: temporary slippery road, short-term road works and reduced visibility. Information categories b, c, g and h of Article 3 are under development and will be available in the first part of year 2018. Due to the limited number of two carriageway roads, the wrong way driver alert is not achievable in short time perspective. Although due to the good signage of road traffic management in Estonia, the number of wrong way violators is very rare. This information will be available after 2019 only in Tallinn ring road E265, due to proportionally big investment. Article 4 services will be available in the first part of 2018 in TEN-T core network road E67 via roadside VMS LED signs and due to the work of ERA Traffic Management Centre. Article 4 services shall be scalable to Tallinn ring road E265 by 2020 (main connecting route to the biggest ports). All traffic related info is open data and available without fees.

Where relevant, a description of changes to the national access point: ERA has from 2012 Traffic database with REST open data services covering national access point features. The new national access point, which will be able to fully cover DATEX II, is in development and will be in operation in the second part of 2018.

Additional information: Main users of existing national access point are Google and Waze who transfer the safety related data to in-car applications. The number of the Waze traffic app users is high in Estonia and the service is also a good distribution channel for ERA's real-time traffic info. Additional developments to re-use Waze user safety related data by automated integrations are in work. The aim is to improve road maintenance and traffic safety. Waze feed data integration to ERA's traffic systems will be ready in Q4 2018.

## 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:

**COMPLEX** – is a freely available web-based customs declarations' processing system, developed by the Estonian Tax and Customs Board. The system was taken into use in 2006 and since then it has been regularly improved.

**MobiCarnet** – The objective of the project is to improve the transport flows of goods and reduce the time-consumption of the movement of goods in three strategic transport corridors between Estonia and Finland.

The leading partners are the Association of Estonian International Road Carriers and Finnish Transport and Logistics SKAL.

**SingleWindow** – The leading partner is the Estonian Maritime Administration with the Information System Authority for the maritime Single Window.

Also activities for a multimodal Single Window are ongoing.

**FinEstSmartMobility** – Sustainable intelligent transport solutions and cooperative mobility planning to solve cross-border mobility dilemmas. The project provides more fluent integration of different transport modes of inter-city and cross-border traffic with piloting and planning ICT-driven solutions. As an outcome transportation time for both passengers and cargo will be reduced. The better flow of people and good results in less $CO_2$ emission and noise in the port area as well as in the cities. Through cross-border approach end-to-end and user-centric experiences are ensured and better cross-border mobility planning achieved.

### 2.2.2. Progress since 2014

Description of the progress in the area since 2014:

**COMPLEX** – since 14.09.2017 we are able to change data between companies and custom services using the X-road platform. This enables seamless secure exchange of data over the internet. Also the COMPLEX system is being developed to enable verification of certificates issued by other authorities. E.g. verification of the first veterinary documents will begin in December 2017.

**Single Window** – In Estonian case, the Single Window can be implemented on down-to-top principle, meaning there is high interest from the sector and industry for having common rules and services available.

For that, the research group at the Estonian Purchasing and Supply Chain Association has been working with and lobbying the industry and transport sector for overlooking the doubts and fears and focusing on benefits of the Single Window. Within slightly less than 2 years of action between 2015 and 2017, the support toward digitalisation has raised significantly and rejection has been nearly neutralized. In January 2017 a memorandum of understanding was signed to start work on an intermodal SingleWindow document exchange platform by PROLOG, ERAA, ELEA, LTA, ITL, Tallinn Port, EVR Cargo AS, Transiidikeskus AS, Logistika Pluss OÜ, ACE Logistics Group AS, AS Schenker, Tallinn University of Technology, Tallinn University, Tallinn TTK University of Applied Sciences and Estonian Entrepreneurship University of Applied Sciences.

**MobiCarnet** – Main purpose of the MobiCarnet (MC) solution is to optimize and automate the process of local and international road transport by digitalization of the shipment information and its distribution to the all involved or interested counterparts in a smart way. It is a public data exchange platform where data can be processed and treated only under the supervision and acceptance of the data owner. The system creates automated or manually triggered data exchange events with documents and information to the users or user groups based on the shipment status and the role of the goods transport counterparts. The system has a graphical web user interface for the main shipping process participants for use throughout the shipment cycle of life. For the drivers, a communication tool called "Drivers App" has been created that works on the small-screen mobile devices (tablet or smartphone) and allows the driver to communicate with the system and confirm his actions to the different counterparts of the transport process. The system has facilities to use electronic consignment notes (e-CMR) digitally signed and treated more or

less automatically with diminished drivers' influence on the process. Access of the person to the system is verified trough ID Card or Mobile ID in Estonia. In Finland it is arranged through aski.fi until another secured gateway will be available.

MC's main purpose is to enable paper free shipping of goods. This includes the possibility to create, upload, store and manage in the system at least all mandatory shipment documents. The system provides user interface for shippers, receivers of the goods and others for role-based and process driven access to documents and the data. It makes it possible to communicate the load, vehicle and other data and the shipment documents to the State Authorities and the Law Enforcement Agencies. Communication with the Estonian e-Police System for the road-side checks is still under construction. Vehicle telematics data is achieved from the vehicles manufactured by Scania; Volvo, DAF and Mercedes Benz or using Ecofleet fleet management solution. Telemetric data is used only in the case of authorization is given by the truck owner.

MC contains two additional features in the product family. Tool called MobiADR – adviser for the driver on Dangerous Goods (ADR). Tool called MobiFootprint – for calculation of $CO_2$ emission per shipment.

The system is now under the piloting since August 2017 by two companies in Estonia and two in Finland. After the bug fixes and certain changes coming up from the first piloting and the piloting with wider range of the companies in October and November 2017 it will be opened for the public usage from the start of December 2017. Access to the system will be offered through the web shop on the MC Homepage (will be launched in new version in the end of October 2017).

**FinEstSmartMobility** – Annually more than 200 000 trucks are travelling through centers of Helsinki and Tallinn city to and out the Old Harbor/Tallinn and West Harbor/Helsinki. Harbors are both located in the city centers and lack extra parking spaces. Any extra time spent in the harbor area by heavy goods vehicles or by any ferry passenger for that matter creates a strain to the road network. In order to ease the pressure on harbors, trucks should arrive at the port area just-in-time when they are loaded to the ferries – not hours or days before the loading. Within FESM project such solutions will be developed. An important part of this is to better use the truck parking slot located in the ring roads.

Pilot E aims to update Estonian truck parking lots equipment. The pilot area is situated in the linkage of TEN-T core to the comprehensive road network, it's called Väo intersection and it's located beside the road E265. It will include guidance and information system for drivers. Väo parking area shall also be covered with free WIFI network with mandatory traffic info opening page which shall transfer real time traffic info for the HGV drivers. An important part of the work package is also a traffic management plan (TMP). It will act as a base document for future investments regarding to ITS solutions in the area.

Part of the work package is also the Tallinn sustainable urban mobility plan (SUMP). It's a pre-requisite for future transport infrastructure projects in the Tallinn capital region. Tallinn region SUMP will be produced in close cooperation with Finnish partners to ensure cross-border mobility planning as well as the exchange of best practices.

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### 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:

**Traffic Enforcement system** – As a pilot project 2 new types of traffic cameras have been deployed in Tallinn, which enable to identify 3 types of infringements and to forward them to the police automatically: speeding, crossing the intersection with a yellow or red light (prohibiting light) and using the dedicated public transportation lane without a permit or exception in law (e.g. electrical vehicles are allowed to use them as well).

**Large animal detection system** – In newly build section of TEN-T road E263 a detection and warning system will be introduced in 2019. Large animals are detected by radar and thermo-vision technology and signaled to drivers by roadside VMS traffic signs with safe speed limits.

#### 2.3.2. Progress since 2014

Description of the progress in the area since 2014: Number of speed cameras and measuring points hass increased and the project will continue. Automatic speed enforcement is seen as an effective traffic safety tool on Estonian roads. The number of road weather stations has increased and legacy stations are under renewal until 2019. Due to severe weather in winters, road weather info system is a priority for ERA. Slippery condition warnings from ERA road weathers stations are forwarded via national access point to Waze users.

#### 2.3.3. 112 eCall (priority action d)

National eCall PSAPs Infrastructure ready by 1st October 2017:

Yes.

Authorities that are competent for assessing the conformity of the operations of the eCall PSAPs:

Competent authority for assessing the conformity of the operations of the eCall PSAPs is Ministry of the Interior, Pikk 61, 15065 Tallinn, Estonia. Phone: (+372) 612 5008, E-mail: info@siseministeerium.ee.

#### 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: Over 80 parking areas suitable for trucks. Over 500 parking spaces for trucks.

Percentage of parking places registered in the information service: 90% of parking areas are shown in the traffic web-portal, info is shown in 3 levels by services available.

<u>Percentage of parking places providing dynamic information on the availability of parking spaces and the priority zones</u>: National road traffic info portal includes truck parking information covering all main and basic roads. Information is updated on regular basis by road transportation union. Dynamic truck parking occupancy services are not currently available. Special truck parking areas are situated in non-EU border to the Russian Federation. All three border truck parking areas have enough capacity. Special border crossing e-system is in use to reserve exact crossing timeslot and parking space in border truck parking area. Estonian main ports have also truck parking areas for ferry line customers and trucks heading to ferries. Updated information about truck parking areas is available in ERA national traffic info portal, parking areas are categorized in three levels by the delivered services. There are more than 80 truck parking areas which are presented in web-portal.

<u>Additional information</u>: ongoing EU supported project <u>FinEstSmartMobility</u> is working towards e-queuing system for trucks heading to Tallinn port ferry lines. Crucial goal is to get timeslots for direct boarding with special virtual truck line service trough Tallinn streets connecting TEN-T core roads with Tallinn port. Under same project ERA is piloting E265 Väo intersection truck parking area occupancy service with real-time data available through national access point. The parking area will be open with modernized E20 and E265 junction in 2019. ERA has recently studied truck parking situation on the TEN-T core network road E67 (Via-Baltica) with co-operation of Latvian and Lithuanian road authorities. ERA is currently building a new truck parking area beside E67 near Pärnu city. Truck parking area beside Tallinn ring road E265 is in the planning phase. ERA is planning to apply EU funds in co-operation with Latvian and Lithuanian road authorities to develop truck parking information services in existing and in new parking areas. Estonian truck parking info is not yet published on the European Access Point for Truck Parking.

## 2.4. Priority area IV. *Linking the vehicle with the transport infrastructure*
### 2.4.1. Description of the national activities and projects

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

**Priority system for public transport** – in Tallinn, in 2008 in the project CIVITAS SMILE Thoreb AB developed priority system for public transit in Tallinn. The system enables the control of traffic lights to give priority to public transport in intersections. All public transport chassis have been equipped with a computer and radio data modem which is configured to ask for priority green light in intersections. Public transport is monitored in real time and in cases of schedule lag, the system automatically asks the traffic lights controller for priority or the extension of the green light. The system is decentral and works automatically. All 650 public transport vehicles have been equipped with the system and 35 intersections have been equipped with the priority system as well. Each control module is programmed for each junction individually.

### 2.4.2. Progress since 2014

Description of the progress in the area since 2014:

N/A

## 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:

**Real time information services** – 10 information screens have been deployed in Tallinn, most of public transport has screens inside them to show next stops, new screens in trams show additionally connection possibilities and real-time arrival time; in Tartu 61 GPS tracking systems in busses, 73 screens inside busses to relay information to passengers and 90 real-time public transport screens in bus-stops have been deployed; in Harju county all public lines are equipped with GPS, 21 public transport screens have been deployed; 30 screens have been deployed in regional railway stops to better integrate them into county transportation and to enable multimodal transportation (some screens giving out information for both trains and buses).

**Park and ride** – 4 parking lots in the outskirts of Tallinn that are integrated into the Tallinn public transportation system. Parking and public transport is free for the customers, when they use public transportation for their movements, and if they will not leave their vehicles in the parking lot for consecutive days.

**Traffic monitoring system** – e.g. Tallinn has equipped 11 intersections with traffic census cameras, which relay information about traffic from all directions in five different categories.

**Heavy and abnormal vehicle e-service** – ERA operates e-service to allow heavy and abnormal vehicles to apply permits for special routes. ERA monitors in winter season real-time road embankment freezing levels and allows 52t vehicles to use a larger road network due to the fact that freezing increases road capacity.

**Traffic restriction e-service** – ERA operates national e-service for all public roads traffic restriction management. Road work contractors can apply restriction data with web-tool to road owners.

**Road maintenance GPS fleet management** – ERA has all road maintenance contractors' vehicles in one fleet management GIS system for supervision and better awareness of road maintenance situation.

### 2.5.2. Progress since 2014

Description of the progress in the area since 2014:

**Estonian activities in the field of self-driving vehicles** – in autumn 2016 the Government Office of Estonia together with Ministry of Economic Affairs and Communications **initiated an expert group on self-driving vehicles**. It will develop proposals for amending legislation (possible liability mechanisms, insurance, privacy and ethics etc.) for testing and, at later stages, operating fully autonomous vehicles (SAE International's standard J3016 levels 4 & 5, which would not require a human driver to operate). Currently we have drafted, together without legal consultants, the preliminary version of possible long-term amendments to Estonian legislation. The expert group on self-driving vehicles, and the working group of self-driving vehicles legal issues, proposed to create a broader regulation not only for self-driving cars, but for all IoT (internet of things) robots (stock-exchange robots, medical robots and other technology containing elements of artificial intelligence). Hence the need to regulate artificial intelligence as such. Concrete amendments and proposals are in the drafting phase.

As an interim solution, **it is now, from the 2$^{nd}$ of March, legal to test and operate self-driving vehicles in Estonia**, but there must legally be a "driver" present for liability issues (more specifically explained below). See also an explanatory promo video: https://www.facebook.com/marten.kaevats/videos/10212471724658852/. During our Presidency of the Council of the EU, in summer 2017 (middle of July until the end of August) we brought the first self-driving buses to operate in Tallinn replacing a tramline as the first pilot.

Currently, using driver assistance technology, e.g. Tesla autopilot, is allowed according to our Traffic Act § 2 (41): "driving a power-driven vehicle means [...] any activity of a person [which) influences the driving direction or speed of the power-driven vehicle with the help of control devices [...]". This also **enables testing and piloting all self-driving technology on all (public and private) roads** (pending the go-ahead by the Road Administration and the road owner e.g. municipalities like the City of Tallinn), while there is someone monitoring the vehicle or ready to take control. However, **a person is fully responsible for any potential damage** the self-driving vehicle causes in the case of an accident. Therefore, they will not be able to sue the car manufacturer as according to our law he is still considered to be the driver and as such, fully liable.

The regular bus-line operating regulations must be followed for piloting an autonomous bus (e.g. route permits etc., issued by the municipality). The aforementioned process is simpler when the vehicles are on a private road, e.g. **one of our next pilots will be in the Port of Tallinn**, where the route will not be connected to normal traffic. This means that the vehicle must only be approved by our Road Administration and the route by the road owner – no extra licences.

**To test self-driving technology**, e.g. self-driving cars, one has to take the following steps:

1. Apply for registration of the vehicle and request an individual approval (Estonian Traffic Act § 78) by writing to the Estonian Road Administration at info@mnt.ee. The applicant must send all relevant technical specifications of the vehicle. Any and all additional information that the applicant can send, e.g. material about previous testing abroad, is

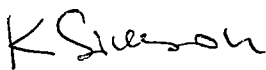welcome and will be taken into account.

2. Bring the vehicle to the Estonian Road Authority for a pre-registration check, where the Administration's team (which consists of experts in traffic safety and self-driving technology) will test the vehicle both in a closed area and in traffic to determine:

    a. how the driver is able to control the vehicle manually;

    b. how a person is enabled to take control of the vehicle from automated mode;

    c. how the vehicle is able to operate autonomously.

The individual approval is valid only in Estonia. To be more dynamic and take into account all possible specificities of potential testers, pilots, the precise testing conditions and procedures will be coordinated with the Road Administration during the registration process.

**Estonia participated in the Horizon 2020 international consortium to develop the world's first urban mobility platform**, funding for which has now been confirmed. FABULOS PCP focuses on how cities can use autonomous buses in a systematic way. Its goal is to push the market to create smart systems for the management of autonomous electric bus fleet operations and related services in urban environments. Robotic bus technology is fast approaching its market readiness stage, however current transport systems are not equipped to deal with such type of transportation. In order to capitalise on the potential of autonomous buses, cities should combine efforts in pushing the market to develop system solutions capable of bridging autonomous bus technologies and the cities' public transport systems, helping them to become smarter in the process, and also helping to open up demand for the autonomous vehicles industry.

In addition to self-driving vehicles, **self-driving delivery robots were legalised by the Parliament** (traffic area, liability, rights of robots and rights of other traffic against robots, requirements for marking – e.g. lighting, visibility, requirements for operators etc.). They will mainly be operating on sidewalks at similar speeds to pedestrians (see Starship Technologies and https://www.engadget.com/2017/06/15/estonia-welcomes-delivery-robots-to-sidewalks/). Link to the Traffic Act that regulates self-driving delivery robots - https://www.riigiteataja.ee/en/eli/524072017005/consolide.

With best regards,

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