Intelligent Access, e-waybills and eFTI Developments in Estonia

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Co-funded by the European Union

Introduction

Since 2010 Estonian Transport Agency (ETA) has been developing Intelligent Access (IA). In the beginning, it was meant only for the wintertime 52t timber transport, if the pavements were frozen at the min 0,5m depth. For that reason, the digital vertical temperature sensors (max 2,5m deep) were installed over Estonia. [1] At the same time, the strong infra corridors were analyzed and mapped [2] (in the SmartRoad – the green color digital road corridors with daily update time at 4 pm). In the VELUB system, it is possible to apply for the special vehicles permit for up to 1 year. [3]

As the climate change proceeded, the wintertime allowed corridor window decreased quickly, we started in ETA to develop the year around 52t (the violet corridors) IA system [4] with the legislation. [5] IA has been used since 2015 by ca350 truck/y, mostly by timber trucks so far, but also increasing others.

ETA signed on 9th April 2020 the memorandum to develop with 9 other stakeholders the e-waybill for the bulk material transport in road maintenance sector. After that we have had many pilot contracts and are using it as mandatory since 01.01.24 in our road building.

To be ready for the application of the provisions of the Regulation of the electronic freight transport information (eFTI), Estonian Ministry of Economic Affairs and Communications (now Ministry of Climate) has developed and tested during the years 2020-2023 a cross-border eCMR indexing prototype together with the partners from the Nordic Baltic region.

Also, Estonia as a lead partner, together with other EU Member States have just recently in spring 2023 started a new, 3-year long project eFTI4EU co-funded by Connecting Europe Facility (CEF) with a big part of it being piloting the eFTI Gate solution.

The future of freight transport is digital
CEF Project 2023-2026

- PARTNER
- OBSERVER

> eFTI Architecture
> eFTI Gate Specifications
> National Roadmaps
> Pilots
> Communication on eFTI
> Dissemination via events and publications

eFTI4EU Project   www.efti4eu.eu   1

Different waybill types in Estonia

1) CMR paper
eCMR/eFTI
eFTI4EU.eu project ongoing.

2) Internal state paper waybill
e-waybill
Since 2020 pilots in ETA's building contracts, sinve 2024 comulsory.

3) Abnormal HV permit/waybill, based on:
**IA (Intelligent Access) on the VELUB system**
GNSS for the 52t on the Smart Road map + min 7 axles; double tires; Euro 5;
+OBW & e-waybill in the future for the 60t & min 8 axles; 20,75m; double tires; Euro 6

1. VELUB Intelligent Access

Since the HVTT15 paper [6], much work has been done in Estonia in the logistics digitalization area which has been also described shortly below to understand in the better way, the different cloud-based logistic systems, and their common ground (see also the HVTT16 paper [7] and the EU Aeroflex project workshop [8]).

For example, if the (i.e. abnormal) HV is in the wrong road corridor (see Fig. 1) or has a total OBW [9] mass over the limited value etc, the cloud-based eCMR can change the cell red and send the notice to controlling organizations.
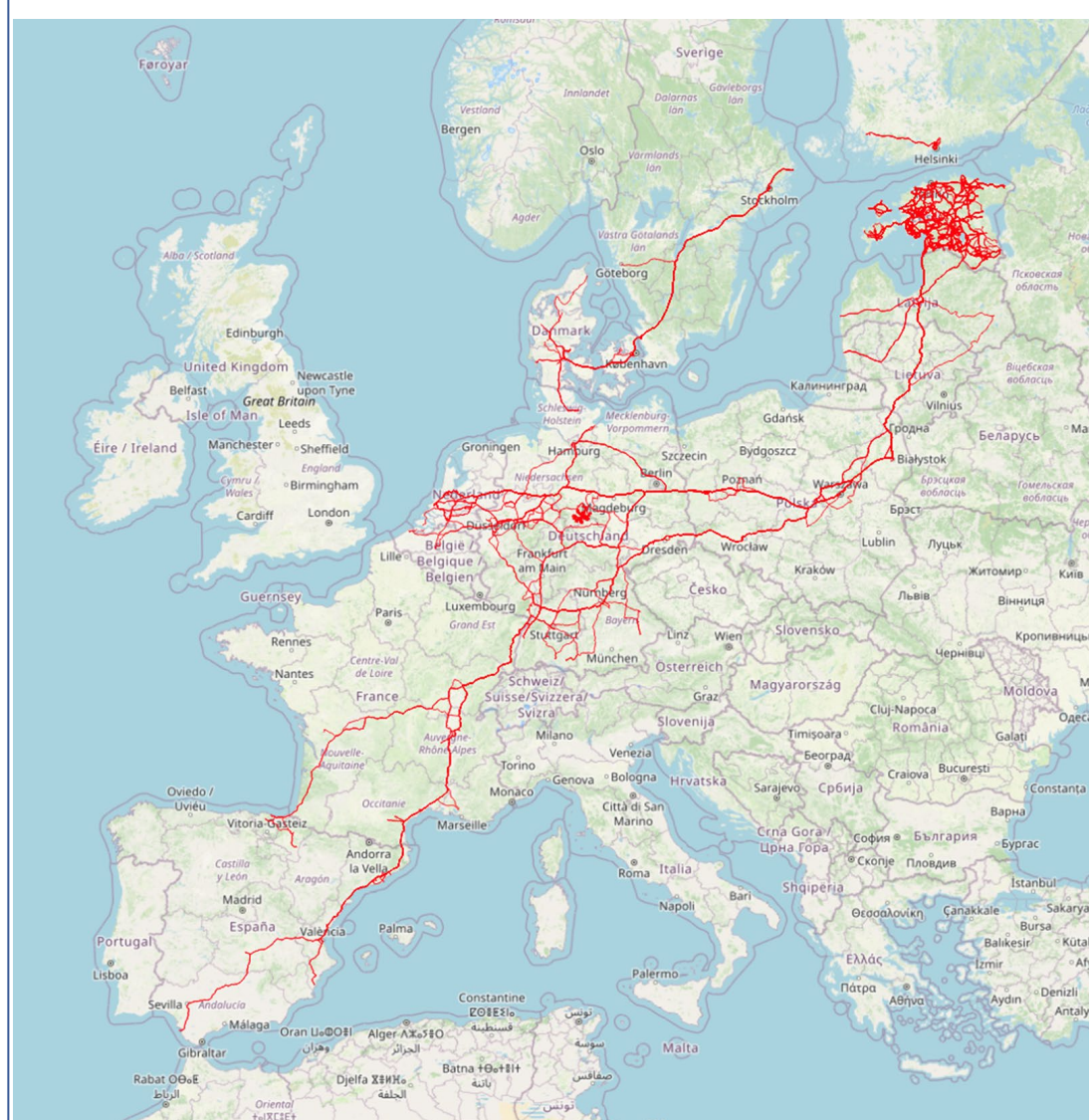
In the CEDR report Intelligent Access (IA): current NRA practices [10], there has given good overview about IA ongoing developments. Also, in the Revision of the **Weights and Dimensions Directive 96/53/EC** [11] there is already mentioned **Intelligent Access Policies (IAP)** using possibilities.

Fig. 1. Demo GNSS & OBW HV data (IAP) tracking in EU.

2. eCMR pilots and ongoing process

EU Regulation 2020/1056 Electronic Freight Transport Information (eFTI) demands EU member states to accept the digital transport documents at the level of competent authorities starting from the first half of 2026. In order to be ready for eFTI Estonian Ministry of Economic Affairs and Communications (as of July 2023 Ministry of Climate) has developed and tested during the years 2020-2023 a cross-border eCMR indexing prototype between Estonia, Latvia, Lithuania, and Poland during the DIGINNO-Proto, DINNOCAP and The NDPTL Goes Real-Time economy: eCMR projects. During the pilot projects the technical development took place, and the concept followed a logic of not uploading any eCMR documents to the central database but linking them via national indexing scheme. Central point or connecting layer for secure data exchange between economic operators and competent authorities such as Police or Customs was created and called as index registry.(see Fig. 2) [12]
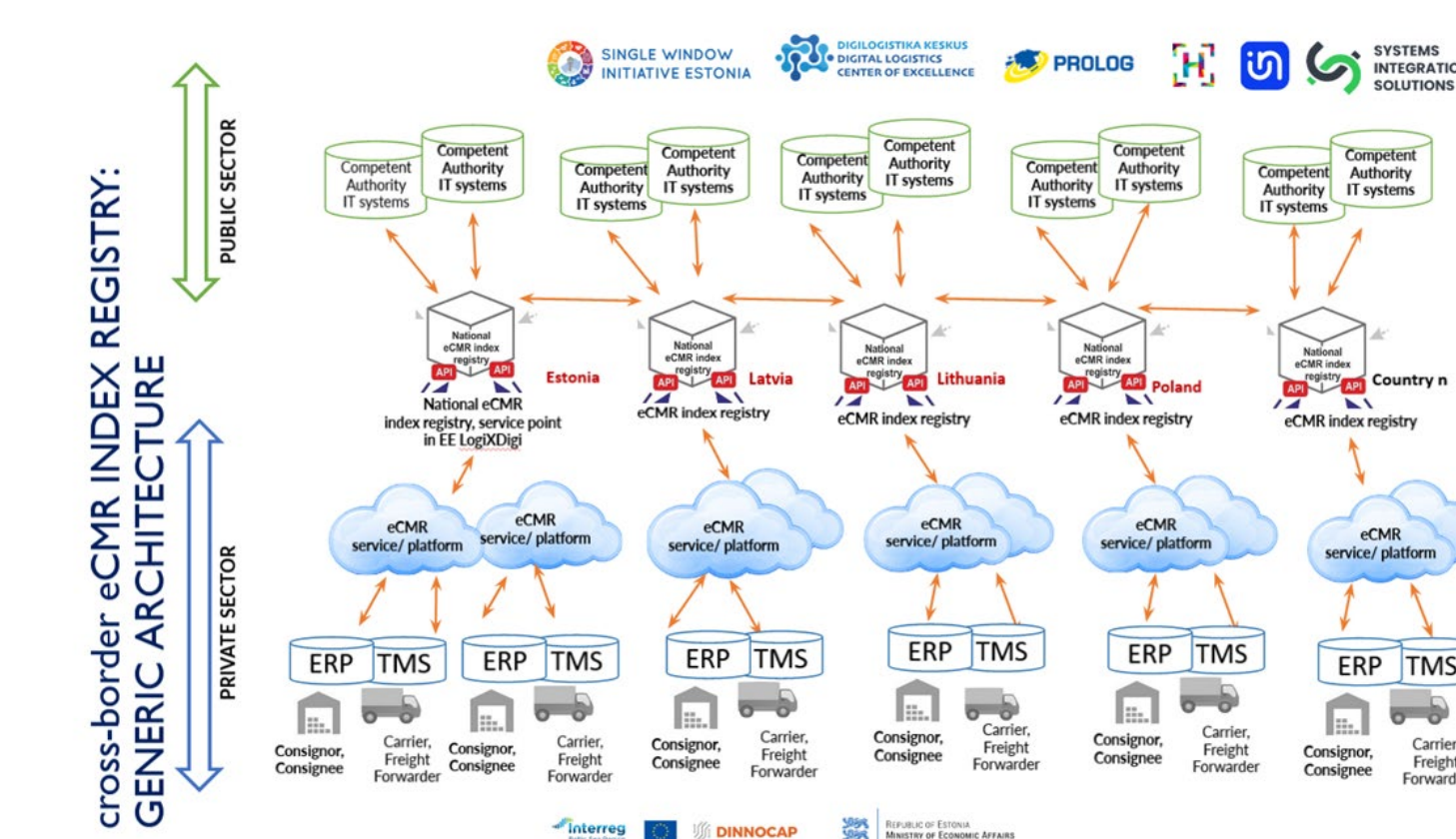
Fig. 2. DINNOCAP Project eCMR and eFTI indexing architecture

In 2022 Estonia conducted an analysis on Estonian National Access Point [13] which provided a comprehensive and exhaustive mapping of the different options, solutions, risks, and threats for the development, ownership and location of eFTI NAP (now called eFTI Gate), taking into account the legal and economic specificities of the different economic sectors.

During the same years, and intensively starting from 2019, Estonian experts from the abovementioned projects have provided support to European Commission and its expert group Digital Transport and Logistics Forum, gathering feedback and reflecting the architecture principles for eFTI and the structure of indexing and identifiers.

In 2023, Estonia as a lead partner together with project partners from Finland, Lithuania, Germany, France, Italy, Portugal, Austria and Belgium and observers from Spain, Ireland and the Netherlands got funding from CEF for project called eFTI4EU. The goal of the eFTI4EU Project envisages to develop the eFTI Gate technical requirements to the fullest and establish harmonized rules for trusted networks of eFTI Gate platforms and its components. Project involves in total 23 different partners (public and private) from the abovementioned countries.

The total budget is 28.3 million euros from which 50% is funded by CEF, and the project will last three years – from 2023 to 2026.The work is carried out in parallel with the setting up of the requirements of the eFTI Platforms and Service Providers – the ones responsible for managing and maintaining the transport data for economic operators.

3. Internal state e-waybill using experience

In 2020, ETA carried out three procurements, where it was mandatory to use an e-waybill of lading for the transport of the bulk materials for the road building. The special requirements for documenting, the works applied to both: the contractor and the owner's supervision. All consignment notes for the bulk materials and the summary tables, compiled based on them, had to be prepared in an electronic data exchange platform. [14]

The pilot projects assumed the use of either the Waybiller (a service provider) environment developed in Estonia or an analogous electronic data exchange platform (at the moment 3 different service providers). The procurement required that the digital platform allow the creation of separate objects and GNSS location-based tracking of each load.

The vehicle and/or trailer number information had to be generated automatically from the traffic register database and had to reach the electronic environment on the e-waybill. If the truck had a special cargo permit of 48 or 52 tons its data, permit number, and the validity period had to be included. Supervisors and subscribers needed to have access to the environment so that they could control the information through the cloud. For example, supervisor had to check the e-waybills for bulk materials provided by the contractor and confirm receipt of the load in the digital environment. Also, during the asphalting works, the engineer used a data exchange platform to validate the e-waybill of asphalt loads arriving at the site. In total, more than 10 000 paper waybills were avoided by using e-waybills in pilot building contracts.

In 2022-2023 over 30 pilots were made to prepare for the full transition to e-waybills in 2024, for the transport of the bulk materials.

EC2019/1213 Standardisation request OBW

eFTI 2020/1056/EC
IAP in the updated 96/53/EC

Fig. 3. TRA bulk material e-waybill demands are compliant to EU directives (eFTI & IAP)

Acknowledgements

Conclusion

E-waybill development in Estonian state road building, abnormal transport IA, and other areas have given us already a lot of savings in CO_2 emissions, making transport more efficient at the same time - with the single data entry to the cloud, etc. Defiantly there is still a lot to do and develop in coming years, to achieve EU's climate targets in the transport sector, using digitalization as a tool for helping it.

Estonia together with other EU states, are working together to achieve the EU digitalization goals and to make the freight transport between the states, and inside the state, more efficient.

ETA's bulk material e-waybill piloting and usage is just a small part of internal transport (ca 5%), but it is a huge step to digitize all internal waybills (over 2 mln/y) together with Climate Ministry, and together with international eCMR, based on the eFTI regulation.

In 2024 ETA is demanding e-waybills in all building contracts. There are already now many interested IT companies with big interest to develop e-waybills in Estonia, as it's not so complicated in 21. century anymore.

Digitized cloud-based transport and road information systems are allowing much further IA development - to protect road constructions and increase traffic safety. At the same time, transport transparency increases. Hopefully standardized IAP data fields (vehicle data, see p.2) will be compatible with the eFTI data fields (freight data, see p.3), so the EU road owners can have good tool in the future to protect the aging infra and at the same time to allow more efficient and greener transport.

Standardized fields allow the service provider to offer the standardized service all over EU and compete each other on the free EU market with the increasingly better service – **it opens the doors to the better and greener HV transport system in EU.**

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