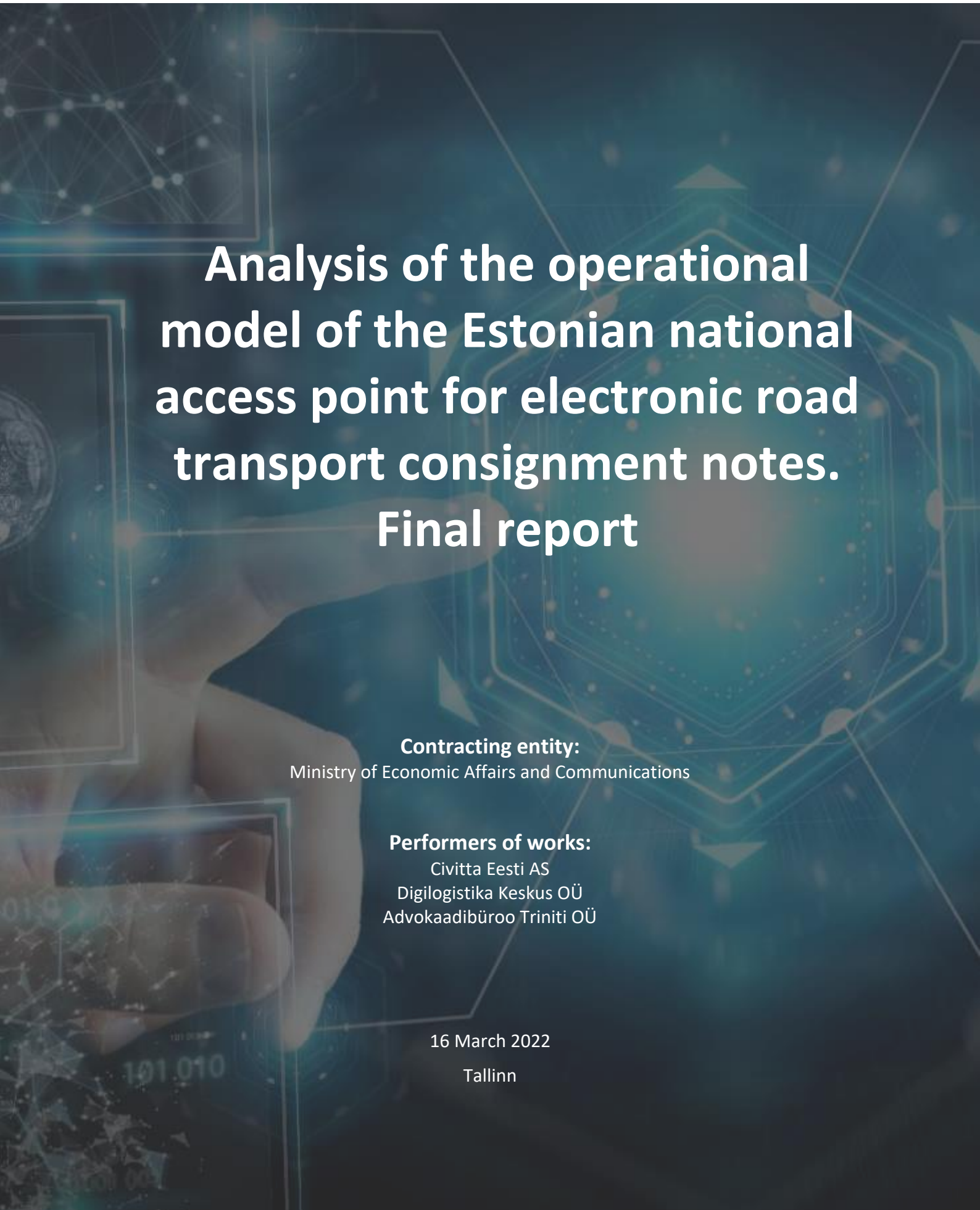

Analysis of the operational model of the Estonian national access point for electronic road transport consignment notes. Final report

Contracting entity:
Ministry of Economic Affairs and Communications

Performers of works:
Civitta Eesti AS
Digilogistika Keskus OÜ
Advokaadibüroo Triniti OÜ

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Tallinn

‘Analysis of the operational model of the Estonian national access point for electronic road transport consignment notes. Final report’

Contracting entity: Ministry of Economic Affairs and Communications, Estonia

Performers of works: Civitta Eesti AS, Digilogistika Keskus OÜ, Advokaadibüroo TRINITI OÜ

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Report available via: https://realtimeeconomy.ee/

CONTENTS

DEFINITIONS AND ABBREVIATIONS

DEFINITION/ABBREVIATION	EXPLANATION
API	Application Programming Interface
AWB	A document accompanying any goods sent by an international air courier to provide detailed information about the consignment and enable tracking thereof
CAP	Common Access Point, see also NAP
CEF	Connecting Europe Facility
CIM	An internationally standardised freight document issued in the rail transport sector (Contract of International Carriage of Goods by Rail)
CMR	A contract based on the UN CMR convention and a certificate confirming an international freight transportation operation. Source document: Convention on the Contract for the International Carriage of Goods by Road (CMR) of 19 May 1956 ECE/TRADE/C/CEFACT/2018/14) (Contract of carriage by road)
DTLF	Digital Transport and Logistics Forum, an expert group of DG MOVE of the European Commission
eBSI	European Blockchain Services Infrastructure
eCMR consignment note	eCMR is the electronic version of CMR: a consignment note issued, forwarded, and received in the electronic format, which enables automatic and electronic processing thereof. *(Contract of carriage by road)*
Additional protocol to the eCMR	'Additional protocol to the CMR concerning the electronic consignment note' *Additional Protocol to the CMR concerning the electronic consignment note (eCMR) of 20 February 2008*
eCMR data set	a set of the main parts of consignment information which eCMR must include based on the CMR convention and the additional protocol thereto
eFTI	electronic freight transport information or eFTI means a set of data elements that are processed by electronic means for the purpose of exchanging regulatory information among the economic operators and between the economic operators and competent authorities
eFTI regulation	Regulation (EU) 2020/1056 of the European Parliament and of the Council of 15 July 2020 on electronic freight transport information
eFTI platform	for the purposes of the eFTI regulation and this document, a solution based on information and communication technology (ICT), such as an operating system, an operating environment, or a database, intended to be used for the processing of eFTI
eFTI service	a service consisting of eFTI processing by means of an eFTI platform, alone or in combination with other ICT solutions, including other eFTI platforms
eFTI service provider	for the purposes of the eFTI regulation and this document, a natural or legal person which provides an eFTI service to the economic operators on the basis of

	a contract. The term of an eCMR service provider is used in this document and it also covers the concept of an eFTI service provider
eIDAS regulation	Regulation (EU) No 910/2014 of the European Parliament and of the Council of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC
electronic freight transport information	see the definition of 'eFTI' above
EVR	Estonian Electronic (wood hauling) Consignment Note Registry (national)
ELVIS	Information system of the Estonian Forest and Wood Industries Association, which enabled creating electronic consignment notes (the service was closed on 19 November 2021).
EMDE	Estonian Electronic Maritime Information System
EMTA	Estonian Tax and Customs Board
ICT	Information and communication technology
GDPR	Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (the GDPR);
indexing	registration of the metadata of freight and documents, see also 'metadata registry'
LIKTA	Latvian Information and Communication Technology Association
metadata	The key data of a freight document which make the document findable (document number, identifier in the form of the truck/trailer number, location of the document in the eFTI platform) (metadata)
metadata registry	The metadata registry or index registry is a solution where the eFTI platforms register the documents drawn up. In one possible solution, the index registry is managed by the NAP. (*metadata registry)*
NAP	national access point for the mediation of inquiries *(National Access Point)*
OOP	the principle of once-only submission of data, which means the possibility to submit the data which have already been submitted to the competent authority of one country to the competent authority of another country via the international inquiry mechanism (the once-only principle)
OOTS	a technical solution for once-only submission of data (a once-only technical solution)
PKI	public key infrastructure
PPA	Police and Border Guard Board

competent authority	a public authority, agency, or other body which is competent to perform tasks pursuant to the legal acts referred to in Article 2(1) and for which access to regulatory information is necessary, such as checking, enforcing, validating, or monitoring compliance on the territory of a Member State
RE	State budget
RES	State budget strategy
RIA	Information System Authority
SMGS	SMGS is issued to a specific name as a non-portable and non-transferable document. This means that goods are sent to the designated consignee who ordered the goods and must pick up the goods in person.
SMIT	The IT and Development Centre of the Ministry of the Interior
TARA	the authentication tool of e-Estonia, part of the eIDAS network
TRAM	Transport Administration

INTRODUCTION

In July 2020, the **European Union Electronic Freight Information (eFTI) Regulation**[1] was approved and entered into force on 20 August; the regulation sets requirements on Member States **to accept freight transport documents in electronic form** from the entry into force of the regulation in 2025. Thereby, the eFTI regulation creates the framework for paper-free but also secure and interoperable information exchange between businesses and authorities and supports the smoother movement of goods in the EU.

Those businesses which decide to use electronic tools and information systems instead of paper documents should be provided an opportunity to submit their information to the competent authorities via eFTI platforms and the data can be forwarded from there based on the prescribed procedures to the competent authorities of an EU member state or displayed on the eFTI platform. One of the options provided in the eFTI regulation for ensuring smooth and optimum information exchange is that the Members States may also create access points for information exchange if they wish and if necessary; these access points may be either national (NAP – National Access Point) or commonly organised in another manner (CAP – Common Access Point).

The delegated and implementation acts of the regulation which specify the technical requirements for the eFTI data exchange platforms and national information systems, as well as the principles of the data exchange between them and the structure and role of the national access points, which enable the mediation of potential inquiries, are still being prepared by the European Commission at the time of drawing up this analysis. Those implementation and delegated acts are expected to be adopted in Q1 and Q3 2023. At the time of drawing up this analysis, **the respective expert group of the European Commission, the DTLF (*Digital Transport and Logistics Forum*[2])** is conducting the respective preliminary work for the mapping and assessment of different functional and technical possibilities through which it would be possible to grant access for the national competent bodies conducting control or supervision to the freight documents and the data thereof. Creation of a network of national or common access points is also increasingly included in these discussions.

Even though the eFTI regulation provides the general guidelines on how the movement of electronic freight information must be organised, there are currently no specific instructions for a national system. No documentation or instructions have also been drawn up on whether an access point should be a public or private sector service based on the form of ownership. As the members states will be able to voluntarily decide whether to create an access point, the Members States will have discretion here.

The content of this analysis is the analysis of the operating model of a central Estonian access point, i.e. the comparative highlighting of the technical, financial, and legal prerequisites and restrictions arising form the form of ownership and location if a national access point is created, as well as justified descriptions of the scenarios. **The analysis was drawn up with the purpose** of collecting and providing an input to decide how a central access point of the road transport consignment note may function in Estonia and which are the potential strengths and weaknesses of different alternatives.

The analysis is based on the presumption that Estonia is implementing access points for the national exchange of information between competent authorities and eFTI platforms and that other countries also have access points through which it is possible to make inquiries. Even though one of the alternatives of information exchange is the lack of the NAP in Estonia or in the entire international eFTI architecture, the consolidated NAP of the competent authorities in Estonia is presumably the most functional solution for the connection to the eFTI information exchange platform and the international ecosystem. Thereat, one of the important arguments in the favour of the NAP is the implementation of the once-only principle

[1] The electronic freight transport information (eFTI) regulation (EU) 2020/1056, LINK
[2] Digital Transport and Logistics Forum, LINK

(single entry and inquiry of the data), which is also familiar from other sectors where cross-border information exchange is already functioning.

The following scenarios are examined:

- **The NAP is privately owned** – the NAP is a private service provider who must ensure equal treatment, transparency, and neutrality in the provision of the services in the market. The service is developed by using the means found by the company and the sustainability thereof is ensured by service fees;
- **The NAP is procured by the state as a private sector service** – same as above, but the funding model is ensured by the state, via a public procurement. The service provider will find the means for the development of the service via service fees;
- **The NAP is owned by a public authority** – the NAP is owned by a government agency / as a public service;
- **The NAP is owned by a public enterprise** – the NAP is owned by a state-owned enterprise and provides the service through a neutral, potentially monopolistic status;
- **The NAP is in the joint ownership of the private and public sectors** – the NAP is a jointly funded and created service:
- **No central NAP in Estonia** – the service must be provided by a foreign partner, covering the connection between the competent authorities in Estonia and connections to the public registers of Estonia via X-road.

In the period when the analysis was drawn up, no eFTI access points had not yet been created in any European countries, even though prototype solutions have been created, as well as similar solutions for other sectors. Three sectoral projects carried out in the Baltic Sea region on the initiative of Estonia in which the partners of this analysis participated – **DIGINNO[3], DIGINNO-Proto[4]**, and **DINNOCAP[5] –** have involved examining different practical solutions for the organisation of paperless freight transport. Within the framework of those projects, a prototype of the cross-border eCMR indexing and index registry network was also developed and tested in the cooperation of Estonia, Latvia, Lithuania, and Poland[6], the nature of which reflects the functionalities and cross-border implementation of an access point. This prototype was primarily focussed on an example of the availability of the electronic version of the road freight transport CMR based on the UN convention[7] and its additional protocol[8], which proved the functioning of the inquiries between competent authorities and the eCMR service providers in the case of national as well as cross-border inquiries. The prototype solution is suitable for the implementation of eFTI by architecture.

This document consists of twelve chapters. The first chapter describes the terms of reference and the methodology used in different parts of the work. The second chapter describes the baseline situation of planning the NAP and the current and further exchange of freight transport information and the role of the NAP in this process. The third chapter covers the legal framework of creating eFTI and the NAP. The fourth chapter describes the architecture of the eFTI and road freight transport consignment note access point, functional and non-functional requirements, which are seen as the functions of the NAP in the analysis period. The fifth chapter covers international developments and the course of the projects which are involved in the developments in the same field. The sixth and seventh chapters examine in depth the strengths and weaknesses of the six scenarios described above, the conclusions, and the financial analysis of the alternatives viewed. The eights chapter describes the selection process of the three scenarios

[3] The DIGINNO project, LINK
[4] The DIGINNO-Proto project, LINK
[5] The DINNOCAP project, LINK
[6] The final report of the testing of eCMR indexing prototype version 2.0., LINK
[7] UN Convention on the Contract for the International Carriage of Goods by Road LINK
[8] Additional protocol of the UN Convention on the Contract for the International Carriage of Goods by Road (2008), LINK

selected with the contracting authority in the middle of the analysis project, and the detailed financial analysis of the selected scenarios. The ninth chapter presents the roadmaps of the three selected scenarios until 2025 when the eFTI regulation will enter into force. The tenth chapter describes in further detail which authority should be responsible for the NAP if the NAP is created and owned by the public sector. The eleventh sector includes the discussion and the challenges related to the form of ownership of the NAP. The twelfth chapter consolidates the proposals.

The document has three annexes. 'Annex 1: List of interviewees' includes the list of interviewees, '

Annex 2: Financial analysis analysis' includes the financial analysis, and 'Annex 3: Specified economic analysis (three most potential alternatives)' includes a specified financial analysis of the three selected or the most potential alternatives. The document has summaries in Estonian and English languages.

1. DESCRIPTION OF THE METHODOLOGY

This analysis was drawn up as a result of the public procurement 'Analysis of the operating model of the Estonian national central electronic road transport consignment note access point (NAP)', reference number 239359 and in compliance with the terms and conditions specified in the source documents of the public procurement and the tender declared successful.

The analysis was carried out in the period from September 2021 to March 2022.

1.1. STAGES OF THE ANALYSIS

An action plan was drawn up for conducting the analysis and a methodology was specified which would be compliant with the terms of reference of the public procurement and enable achieving the goals set.

The work was conducted in four stages:

The preparation operations of the project involved harmonisation of the expectations and understandings of the project teams of the contracting authority and the tenderer; the project plan and schedule and the list of documents which the document analysis was based on was specified according to the results thereof.

In the second stage, the scenarios were described, incl. analyses of foreign practices, SWOT, financial and legal analyses. The second stage also involved interviews with the representatives of the stakeholders and with experts.

The third stage involved selecting the three most potential scenarios and detailed descriptions thereof, incl. specification of the financial and legal analysis, description of the functional and non-functional requirements, creation of an architectural view, funding models, and roadmaps.

In the fourth stage, within the framework of the summarising activities of the project, the conclusions of the analysis were consolidated, validation seminars took place, final documents were drawn up and introduced and delivered to the contracting authority.

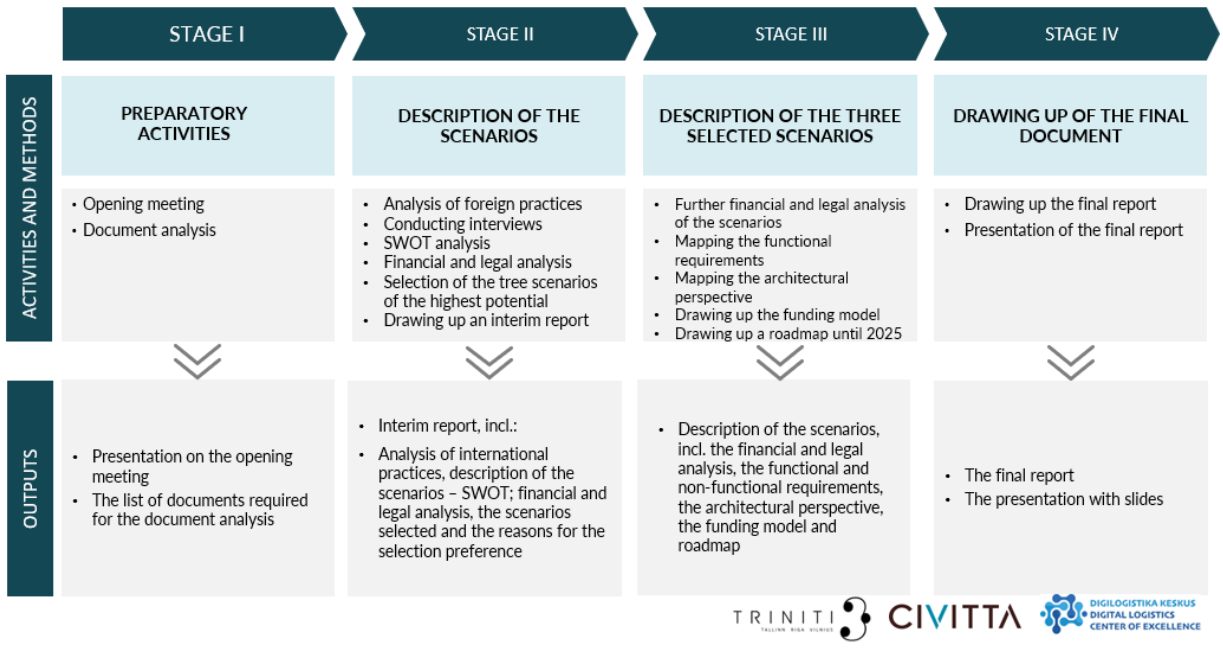


FIGURE 1. ACTIVITIES AND METHODS OF THE ANALYSIS

1.2. DOCUMENT ANALYSIS

The document analysis included consolidation of the information which had been published in the sector so far to open the background and nature of the NAP and the information known for the planning and implementation of an eFTI data exchange environment, the EFTI NAP, and the eCMR NAP.

Different relevant development plans, studies, and analyses were examined for the assessment of the development and functioning model of the NAP. The documents of the background study of the Transport and Mobility Development Plan drawn up by ITF/OECD[9], the materials of the draft Transport and Mobility Development Plan 2021–2023[10], as well as the real-time economy vision of Estonia[11] were taken into consideration.

The documents and final reports of [12] and annexes to the projects of DIGINNO, DIGINNO-Proto, and DINNOCAP provided a significant input. The documents drawn up within the framework of the projects and in the light thereof were also used as input, incl. the feasibility analysis of a functioning cross-border eCMR solution[13], the roadmap for the implementation of the eCMR in the Baltic Sea region[14], the roadmap of the digitalisation of Estonian Maritime Transport[15]. The feasibility analysis of a functioning cross-border eCMR solution[16] and the final report of the real-time economy impact analysis were also examined closely to assess the functioning of the NAP[17].

Further documents analysed for the work included the legal analysis of the Accelerate Estonia eCMR project[18] and the explanatory memorandum of the regulation, the work documents of the Digital Transport and Logistics Forum, and the information of the project for the development of a development model for the national use of eCMR consignment notes.

1.3. LEGAL ANALYSIS

The legal analysis included the adopted eFTI regulation and other legislation implemented in the field, as well examining what has been implemented in the field. Within the framework of the above, the eFTI regulation, the legislation from the area of application of the regulation[19], the preparatory documentation of the delegated and implementation acts at the stage of drawing up, and the impact analysis documents accompanying the draft regulation were also examined in detail[20].

In connection with the implementation of the eCMR, the CMR convention[21] and the additional protocol thereof[22], as well as the current situation of the national and pan-European entry into force of the regulation were examined. The connections between the Mobility Package[23] and establishing the NAP were also taken into consideration.

[9] The background study of the Transport and Mobility Development Plan drawn up by ITF/OECD, LINK
[10] Materials of the draft Transport and Mobility Development Plan 2021–2023 LINK and LINK
[11] Real-time economy vision and action plan, LINK
[12] The final report of the DIGINNO-Proto project LINK and the annexes thereto LINK.
[13] The feasibility analysis of a functioning cross-border eCMR solution, LINK
[14] The roadmap of the implementation of the eCMR in the Baltic Sea Region, LINK
[15] Estonian Road Transport Digitalisation Roadmap 2020-2024, LINK
[16] The feasibility analysis of a functioning cross-border eCMR solution, LINK
[17] Final report of the real-time economy impact analysis, LINK
[18] Accelerate Estonia eCMR project, LINK
[19] eFTI Regulation, Article 2
[20] The impact analysis accompanying the proposal for the eFTI regulation, LINK
[21] United Nations (1956), LINK
[22] UNECE, LINK
[23] The EU Mobility Package, LINK

The access points of other sectors were also examined, primarily the NAP of the ITS directive[24] and the implementation thereof to identify any potential common features. The European Maritime Single Window environment regulation[25], the EU Customs Code regulation[26], the legislation on international transport of hazardous goods[27], international waste transport[28], and other legislation were taken into consideration which leave the eFTI regulation out of the direct area of application, but are tightly related to freight transport information.

The national law which consolidates the international legislation and conventions and enforces the national procedures was also examined, above all incl. the Road Transport Act[29], the Law of Obligations Act,[30] and the Traffic Act[31].

Furthermore, the eIDAS regulation[32], the proposal for the amendment of the eIDAS regulation[33], and the GDPR for the protection of natural persons in the processing of personal data were also examined[34].

The legal analysis also included systematising the information concerning the pieces of legislation directly related to the eFTI which are still being drawn up and will have a direct impact on the implementation of the NAP – the so-called delegated and implementation acts of the eFTI regulation which will probably be adopted in 2023. Thereat, from the perspective of legal analysis, information was added to the report which is already known for the preparation of legislation by the time of drawing up this report, even though the content thereof may not be final or legally binding.

1.4. METHODOLOGY OF ANALYSING THE SCENARIOS

Focus group interviews were conducted with representatives of the authorities, organisations specified by the contracting authority for the assessment of the alternatives to the functioning models of the NAP provided by the contracting authority and to obtain input (see Annex 1: List of interviewees). The input collected was consolidated.

Based on the SWOT methodology, the following was described for each scenario:

- strengths;
- weaknesses;
- threats;
- opportunities.

The input from the interviews was supplemented and systematised within the framework of the SWOT analysis by combining the PESTEL methodology in the categories, i.e. systematising the results obtained and complementing them with further components examined with the following main criteria groups separated from the PESTEL methodology:

- economic arguments, e.g. the circumstances applicable to the feasibility and maintenance of the service;
- technological arguments;
- legal arguments;

[24] The ITS directive, LINK
[25] EU regulation 2019/1239 establishing a European Maritime Single Window environment, LINK
[26] The EU Customs Code Regulation, 952/2013, LINK
[27] UNECE, LINK
[28] EC regulation 1013/2006 on waste consignments, LINK
[29] The Road Transport Act LINK
[30] The Law of Obligations Act, LINK
[31] The Traffic Act, LINK
[32] The eIDAS regulation, LINK
[33] The proposal for the amendment of the eIDAS regulation, LINK
[34] Regulation 2016/679, LINK

- operative arguments, incl. the speed of decision-making and the flexibility in organising the activities required for the development;
- cooperation with stakeholders.

The distinguishing components in the comparison of the alternatives and considering of the parts included:

- the relative simplicity or complexity of creating the solution – making connections with public authorities and the users of the service;
- the relative simplicity or complexity of risk management and alleviation;
- the relative simplicity or complexity of the management and alleviation of legal restrictions.

Some of the criteria of the SWOT are not included in the tables, as the requirement applies equally to all scenarios;

- Security, as it is universal in the context of all scenarios;
- backing-up and operating the service through a back-up server in the case of failures, as this applies uniformly in the case of all scenarios;
- transfer of the service if the service is not available or is discontinued;
- the relative complexity of the availability of technical or technological solutions.

As a result of the SWOT analysis, the most important criteria of each alternative were mapped. The SWOT methodology does not provide the basis for determining the best alternative, but opens the strengths, weaknesses, threats, and opportunities of each alternative. In order to find the best alternative, a financial analysis must be conducted and discussion seminars held with the steering group and the contracting authority.

1.5. METHODOLOGY FOR THE SELECTION OF THE THREE SCENARIOS OF THE HIGHEST POTENTIAL

A new combined and case-specific set of selection criteria and methodology were created for the project, which involves using two-stage assessment:

a) all alternatives were assessed:
   i) taking into consideration the results of the expanded SWOT analysis,
   ii) in the light of the critical factors. The critical factors may include the categories or requirements in the case of which a failure to meet the criterion would rule out bringing further the alternative in question. Such exclusion method is used in the practice of the law, for example.
   iii) based on the results of the financial analysis, i.e. those of the highest potential are highlighted and the ones which would be difficult to realise from the perspective of the financial analysis are excluded.
b) The second stage involved a specified analysis of the three alternatives of the greatest potential, as well as suggestions on which alternative would be the one with the most potential.

1.6. METHODOLOGY OF THE FINANCIAL ANALYSIS OF THE SCENARIOS

The financial analysis consists of the following parts:

a) a comparative modelled analysis of the costs and revenues of the alternatives. The comparison specifies the expected costs and revenues of establishing the NAP in the first five years, the potential structure thereof, the estimated volumes, and the differences between the alternatives;
b) an analysis and comparison (in the form of a table) about the contribution of the state to the establishing and maintenance of the NAP by alternatives;
c) an analysis and comparison (in the form of a table) including the profit/loss of the NAP in five years from the perspective of the owner;
d) a comparative table including the profit/loss from the perspective of the owner of the NAP, leaving aside the potential revenue from foreign markets;
e) the financial analysis of all three alternatives.

All costs are based on a situation in which the owner of the NAP lacks the competence or resources for implementing the activity. The cost of organising a public procurement was also taken into consideration. If the authority already has procurement specialists, they will probably be tasked with the activity and no further costs are presumably incurred (their remuneration is included in the budget of the authority). This was still included in the analysis and in the calculation of potential costs, but it was specified that the activity was an additional activity and the need for additional resources to cover the costs of the activity may not actually arise in some cases.

The wages were calculated based on the wage calculation principles used in the studies conducted before, i.e. the cost of one position in IT development and in the public sector. The wages were also compared to the payroll survey documents of Fontes[35]. The extent of the fees was compared to the feasibility analyses of different projects and validated with private and public sector experts.

1.7. METHODOLOGY AND SOURCES OF CALCULATING THE VOLUME OF THE MARKET

The indirect model must be used to calculate the volume of the market in Estonia, in the nearby countries, and in entire Europe, as neither Statistics Estonia nor Eurostat collect information on the number of consignment notes[36].

The model for analysing the market volume developed in the Single Window cooperation network[37] and used so far, the statistical analysis of businesses, and modelling based on expert assessments were used to calculate the volume of the market.

The statistical data of the largest companies which form 27% of the market of international road transport in Estonia, in total, were used as the base sample for the analysis.

Large international logistics companies are involved in direct freight transportation operations as well as consolidated consignments. Haulage via a terminal network does not involve drawing up separate CMRs for each international consignment, but one consignment note is drawn up for the consolidated consignments (per one transport vehicle) moving between terminals. On the other hand, one consignment often includes the goods of several different clients with each being equipped with its own CMR.

Based on expert assessments, it would not be feasible to draw up common delivery documents in the case of grouping consignments when using digitalised processes in the future, but a single consignment-based data package will be used from the place of origin to the destination. This means that in the case of the

[35] The payroll surveys of Fontes, LINK
[36] Eurostat, LINK
[37] The Single Window cooperation network, LINK

digitalised future processes, the number of consignments may be deemed equal with the number of digital eCMR consignment notes.

Base on expert assessments, the volumes of the companies included in the sample, and the opinions of market participants, the estimated total number of international consignments moving in Estonia is 3.5 million consignments per year and these are the consignments for which a NAP would probably be required. The estimated volumes do not include parcel deliveries or national freight transportation operations between Estonian companies.

1.8. METHODOLOGY FOR CALCULATING THE FEE FOR THE NAP (SERVICE FEE)

The price of the service was calculated based on the need for investments and the expected costs, with process- and product-based, as well as activity-based principles of cost accounting used in the analysis. The volume of the estimated costs (incl. the volume of work) is based on the assessments made on the basis of previous similar analyses and on the expert assessment of the author of the document. Representatives of the RIA were also consulted with, as well as those of the foreign countries where the NAP has been deployed in other sectors to assess the possibility of charging a fee in the case of private or public sector owners.

The calculation of the expected price of a consignment note and the price currently accepted in the market, as well as the maximum price, were also taken into consideration. Based on the above, the maximum amount was found which an eFTI service provider would be prepared to pay to the NAP to ensure the accessibility of the document (in the case of private and public sector services).

1.9. METHODOLOGY OF THE FUNCTIONAL AND CROSS-FUNCTIONAL OR NON-FUNCTIONAL REQUIREMENTS FOR AN ACCESS POINT

As the NAP is an inquiry exchange environment between eFTI platforms, the information systems of competent authorities, and other NAPs, it is also subject to the architectural requirements for a wider eFTI data exchange environment.

The input for the requirements discussed in this document includes the details of the eFTI regulation, the work of the subgroups of the DTLF for the functional and technical aspects of the eFTI[38] and the experts thereof, the developed requirements for the architecture of the eFTI, and the information on the categorisation of the requirements as of March 2022.

The functional requirements mean the functions of the system to be created as well as explanations, i.e. which operations the information system or data exchange platform must enable.

The functional requirements for establishing an NAP are described in this document based on information from the eFTI regulation and the work of the DTLF, based on which the requirements are developed as advice applicable all over Europe and for which there are not yet any certain legal decisions at the time of drawing up this work.

The non-functional or cross-functional requirements are the criteria which the information system must comply with to fulfil those functions. These are based on the requirements of the eFTI regulation and the preparatory documentation of the delegated and implementing acts.

The requirements for the cross-functionality of a digital state[39] of the Ministry of Economic Affairs and Communications agreed on by the Digital State Architecture Council, i.e. the framework developed to

[38] DTLF, LINK
[39] The requirements for the cross-functionality of a digital state, LINK and LINK

ensure the cross-functionality of public sector software developments, were also used. The respective requirements are described under the following categories: development, deployment, architecture, quality, security, and data. This document includes the most important of the list which are relevant from the perspective of the functions discussed in the analyses on the access point and the preliminary work done so far.

The non-functional requirements are also related to the implementation of the ISO/IEC 25021 standard[40] in general and are structured as follows: functionality, reliability, usability, efficiency, maintainability, and portability. Those definitions include the functionalities which are concerned with suitability, security, failure resistance, resource use, changeability, stability, testability, compatibility, and interoperability.

[40] ISO/IEC 250210:2011 Systems and software engineering – System and software quality models, LINK

2. BASELINE SITUATION AND EXPECTATIONS IN CONNECTION WITH ELECTRONIC EXCHANGE OF FREIGHT TRANSPORT INFORMATION

The possibilities for national and cross-border use of eCMR consignment notes and for inquiring this data in a harmonised manner and in a digital format do not merely depend on the wishes of public authorities or businesses or the respective decisions of individual countries, as the deployment of digital freight transport documents calls for the preparedness to process the data in the entire extent of the delivery chain.

As there are few eCMR consignment notes in use and the level of standardisation is low, there are only a few service providers, no cross-border agreements have been initiated for mutual inquires, and there is no technological framework or services, no significant steps have been taken so far for the digital use thereof.

Data exchange platforms and services have been established for freight information documents in Estonia and in other European countries which help to exchange information between businesses but do not enable fully conducting all supervision operations due to technological, legal, or economic limitations, as well as the fact that the requirements are not harmonised[41]. As freight transport is a mobile process between companies and countries, **extensive rules, data standards, and technologies must be agreed on to establish a uniformly functioning digital internal market** which would enable granting access to the data to all parties without the need for excessive country-specific adjustments. In connection with the implementation of the eFTI regulation, such operations will be standardised and a basis will be created for equal treatment and accesses.

Ratification of the Additional Protocol to the CMR Convention on eCMRs[42] in different EU and neighbouring counties throughout the years has created an opportunity to take steps towards the digitalisation of consignment note information and the cross-border harmonisation of requirements. The respective convention-focussed interest and the cross-border cooperation between authorities have remained relatively low, though. The eFTI regulation and implementation of the cross-border DIGINNO and DINNOCAP eCMR projects for indexing and index registry networks have increased the interest, awareness, and preparedness of the parties to take the respective steps in the field of eCMR consignment notes and to do it in the same rhythm with the planning of the implementation of eFTI.

Below, the process of submitting and inspecting freight transport information today and the potential changes in the process in connection with the deployment of the NAP are described.

2.1. STATE OF ART SITUATION OF THE DIGITALISATION OF FREIGHT TRANSPORT INFORMATION

Regionally, the digitalisation of freight transport information is steered by several stakeholders as well as the European Commission, which has set eCMR consignment notes and the general wider digitalisation of freight transport information as its priority.

The paper format remains the most common form of documentation over all types of freight transport. In the case of national freight transportation operations, the legislation also calls for the existence of freight

[41] Such services include, for example, Waybiller and EVR in Estonia and Pionira, Transfollow, etc. internationally.
[42] In Estonia, for example, the respective convention was enforced on 31 January 2017, Order of the Government of the Republic no. 338, 13 October 2016, LINK

transport documents that may also be in an electronic format. Digital consignment notes would reduce the cost of data entry and thereby increase the efficiency of the companies operating in the sector.

In addition, the digitalisation of freight transport documents and making the freight transportation process visible for the parties and inspectors enables to make road transport contactless in the conditions of pandemics, with conducting inspections and exchanging information about the documentation of a consignment not requiring stopping the vehicle or any direct contacts between the driver and the official.[43]

Thereat, the wider digitalisation of freight documents and availability of the registries are the further prerequisites for organising the eFTI and information exchange between different countries or companies, incl. for the successful implementation of the national and international NAPs.

This approach would make the entire delivery chain significantly more transparent and increase the efficiency thereof. Any infrastructure is created state-by-stage and therefore, establishing a common data exchange platform involving all modes of transport (multi-modal) also remains a target for the longer perspective.

Above all, digitalisation of freight transport documents and establishing eFTI rules will enable:

- reducing the administrative costs of the SME sector, as well as large companies on retaining and sending freight transport information and submitting the information to competent authorities;
- increasing the competitiveness of the transport and logistics sector;
- thereby also increasing the competitiveness of the trade and industrial sectors;
- reducing the environmental impact from freight transport;
- increasing the efficiency of state supervision operations, incl. ensuring more efficient supervision of cabotage operations.

Deployment of digital freight documents will reduce the extent of shadow economy (incl. fraud, violations of the rules of cabotage operations, haulage of overweight loads, etc.), as the digital dataset always leaves a mark of any operations, locations, individuals, etc. This will in turn accelerate the investigation of fraud and simplify collection of evidence. In the case of value added tax fraud, the data can be used to prove that the cross-border freight transportation operation occurred and it will thus no longer be necessary to process the transaction with the VAT of 0% if there are digital confirmations. It will also no longer be necessary to submit copies of expense documents and the processing thereof can be automated.

On the background of the benefits described above, there are also several factors which have halted foregoing paper documentation so far. Based on research conducted by the European Commission in 2018 and the Estonian Road Transport Digitalisation Roadmap drawn up within the framework of the DIGINNO project, the main challenges[44] which prevent making digital freight documents mandatory include the following:

- **Legal** – the laws require the submission of documents in the paper format. The use of digital documents is permitted by the legislation in Estonia, but is not mandatory. The same rules do not, however, apply to all Members States.
- **Technical** – different software applications are not compatible and hence do not enable exchanging information.
- **Lack of skills** – many parties to freight transport operations, individuals as well as companies, lack the digital competence required.
- There are also parties who are **not interested** in a more transparent and more easily controlled freight transport system.

[43] Vision for the digitalisation of Estonian road transport LINK
[44] State of play and barriers to use electronic transport documents for freight transport LINK

- **Lack of business opportunities** – the private sector has not been interested in developing the services so far, as it has not been possible to implement the services in the market.
- Some companies have also expressed the **fear** of their data becoming open to all parties if the information systems are not secure enough.

2.2. PARTIES TO THE EXCHANGE AND INSPECTION OF FREIGHT TRANSPORT INFORMATION

Traditionally, the delivery chain of goods mainly includes **the companies related to the production, storage, and transport of goods and other companies providing support services or infrastructure for them.** The main parties to the freight transport information and documentation are **the sender of the goods, the hauler, and the recipient of the goods**. The most important parties in the context of the EFTI and the road transport consignment note are the individuals who are currently tasked with signing the consignment notes and the consumers and users include different other units and employees of the companies who are not directly in contact with freight transportation operations or orders for such operations. For example, consignment notes have an important place in accounting, reporting, and fulfilling orders.

In addition to the private sector parties, the competent authorities participating in the freight transport process based on the power granted to them to perform supervision operations in the interests of traffic safety, environmental protection, or tax accounting, must also be taken into consideration in the handling of freight documents. **The government has mainly been performing supervision operations by visual inspection of paper documents** which means stopping the freight transportation process for the duration of the inspection.

In the case of a digital delivery chain, however, the government is involved as an equal party, which **enables the cross-use of the data of different registries and information systems, as well as automatic inspection operations and optimised use of the human resources involved**. This approach makes the entire delivery chain significantly more transparent and increases the efficiency thereof.

The Police and Border Guard Board (PPA)[45] checks the gross vehicle weight and roadworthiness of the vehicle, the fixing of the load, the validity of the driving licence and work permit of the driver and compliance with the rules of working and rest time, the existence of the activity and transport licences of the hauler, whether the operation is a cabotage operation, etc. in the case of road transport consignments. The officials do not, however, always complete full checks, but may only check the consignment, for example. The previous profile of the company or the driver often has a role in the inspections (the risk analysis).

Based on a similar risk analysis, trucks are inspected by the officials of the **Estonian Tax and Customs Board (EMTA)**[46], who are mainly tasked with the prevention, obstruction, or identification of potential smuggling, tax fraud, or another economic crime.

Another national institution interested in freight transport-related information is the **Transport Administration (TRAM)** [47] **,** which issues special permits for excessively heavy loads, taking into consideration the condition of the roads and bridges on the planned route. The Transport Administration is also the national contracting authority for the construction and maintenance of state roads and is therefore interested in the information on the weight, assortment, and origin of a consignment (e.g. does the material come from the right quarry, is it compliant with the certificate or origin and the specifications).

[45] Police and Border Guard Board, LINK
[46] Estonian Tax and Customs Board, LINK
[47] Transport Administration, LINK

The Environmental Board[48] performs supervision operations for the purposes of reducing environmental impacts and is primarily interested in certain modes of transport, such as information on waste, liquid fuels, chemicals, and other consignments hazardous to the environment. It also supervises wood hauling operations.

The Agriculture and Food Board[49] **(previously known as the Veterinary and Food Office)** is in charge for supervising the transport of live animals and foodstuffs, using the process of applying for special permits for this purpose in certain cases, and the Rescue Board requires operative information about potentially hazardous consignments in the case of traffic accidents involving the truck as one of the parties.

Statistics Estonia[50], which cannot be deemed a control or supervision authority but requires annual reports from businesses about freight transportation operations on the basis of a sample or under a general procedure, is also interested in electronic freight transport information. Statistics Estonia believes that the use of electronic consignment notes may increase the accuracy of statistical information and support the collection of the data submitted based on the sample.

Other authorities who must also receive more-detailed eFTI information **and their requirements** will be mapped in detail in the preparatory phase of the eFTI and specified in a separate delegated act of the eFTI.

The supervision operations of competent authorities and the documentation and information required are regulated by national law (see also Chapter 3.1. 'National law'), which is based on international conventions and the EU law. The national procedures will in turn be described in the delegated acts of the eFTI and further information about each procedure must be described separately upon entry into force of the eFTI.

2.3. AS-IS PROCESS OF THE EXHANGE AND INSPECTION OF FREIGHT TRANSPORT INFORMATION

Traditionally, the delivery chain of goods has mainly consisted of the companies involved in the production, storage, and transportation of the goods. The government has mainly conducted supervision operations via competent authorities by visual inspection of paper documents, which means stopping the freight transportation process for the duration of inspection or sending the original documents or copies to an authority conducting the inspection after the freight transportation operations.

The ordering party of the goods (the consignee) and the supplier (the consignor) form datasets about ordering goods and the composition of the goods, using different software applications for this purpose. Data are submitted, some of which is required for managing the order, some for ordering and providing the transport service, incl. the data which must be specified in an eCMR consignment note or in the eFTI dataset and presented to the authorities, if necessary (see also Figure 1, Stage I). Upon starting the process of ordering a transport service, freight forwarders and freight transportation companies must be included in the information exchange for planning the freight transportation operation and making the decisions required. Such information exchange usually occurs in a combined manner – partly via software, partly by e-mail, but on rare occasions via a connected platform or service. The information about the freight transportation operations and its details is added to the data, incl. the contact details of the hauler, the existence of transport permits is checked, and comments are added about the track and trailer.

In the event of national freight transportation operations, a bill of lading must be drawn up based on the type of the goods. In the case of an international freight transportation operation, the party ordering the transport and transport company are both responsible for putting together the freight documents and additional documents with information on the goods and the freight transportation operation based on the CMR Convention (see also Figure 1, Stage II). The transport company or the hauler is responsible for ensuring the existence of the additional documents which are required for the freight transportation

[48] The Environmental Board, LINK
[49] The Agriculture and Food Board, LINK
[50] Statistics Estonia, LINK

operation and must be submitted to the competent authorities. Consignment notes are drawn up with the help of a respective software application or on paper, with three copies of the consignment note drawn up on both occasions and signed. Additional required documents, copies of permits, and other documents arising from the law are added.

In the period of drawing up the analysis, only a very small share of international freight transportation operations was performed by using eCMR consignment notes and those operations mainly involved certain cooperation partners who were using platform software with multiple interfaces.

During the period of active freight transportation, the documents are retained by the sender of the goods and the truck driver. For competent authorities to conduct an inspection of the documents, the truck would have to be stopped and the driver would have to present the documents (Figure 1, Stage III). In this stage, the consignment note can only be amended by adding comments in the prescribed extent or, in exceptional cases, by recording the operations related to the replacement of the truck or driver.

After the freight transportation operation, confirmations are required from all parties and successful delivery of the goods to the destination must be registered (Figure 1, Stage IV) and two copies of the consignment notes signed. If necessary, comments on the goods being spoilt, broken, or on the delayed arrival of the consignment are added to the documents.

The most resource-intensive and the least transparent operation of the current process in the case of using paper documents is the arrival of original documents to the accounting departments of the sender, the recipient, and the hauler, which will form the basis for confirming the completion of the freight transportation operation (Figure 1, Stage V). In this stage, physical documents must be used as the basis for the settling of accounts between the companies involved, and the documents must also be added to the document repository for archiving.

After the freight transportation operation, inspection of the freight transportation documents by competent authorities may be conducted as a follow-up operation (Figure 1, Stage 6). This calls for sorting the paper copies in the archive, and sending or scanning original documents for competent authorities, if necessary.

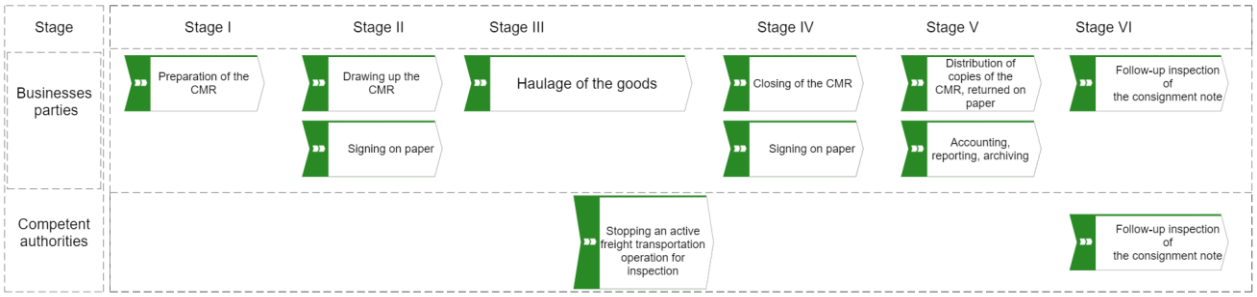


Figure. The processes of the life cycle of a consignment note/CMR and the inspection conducted by competent authorities (AS-IS)
(Source: Digilogistika Keskus, 2022

FIGURE 2. DESCRIPTION OF THE AS-IS PROCESS OF THE PREPARATION AND USE OF CMRS AND THE FOLLOW-UP ACTIVITIES

The rigidity of the process of international freight transport is also evident from the fact that the delivery documents of the goods must be submitted on paper today:

- consignment documents as the main information carriers travel the entire long journey with the driver;
- the paper documents are signed at the destination by the recipient and the driver;
- postal services are often used to communicate information about the successful completion of a freight transportation operation and the details of the operation to the sender, or the driver will first deliver the copies of the documents left to the hauler to their employer, who will then send them to the sender of the goods to prove a successfully completed freight transportation operation.

Therefore, the entire process is very slow and the payments made for freight transportation operations are received with a long delay. The process of freight transport also cannot be digitally tracked in real time, which complicates the work of the parties to the freight transport and the supervision authorities and reduces the transparency of freight transport for the haulers, the parties ordering and dispatching the goods, and other parties.

2.4. TO-BE PROCESS OF FREIGHT TRANSPORT INFORMATION EXCHANGE

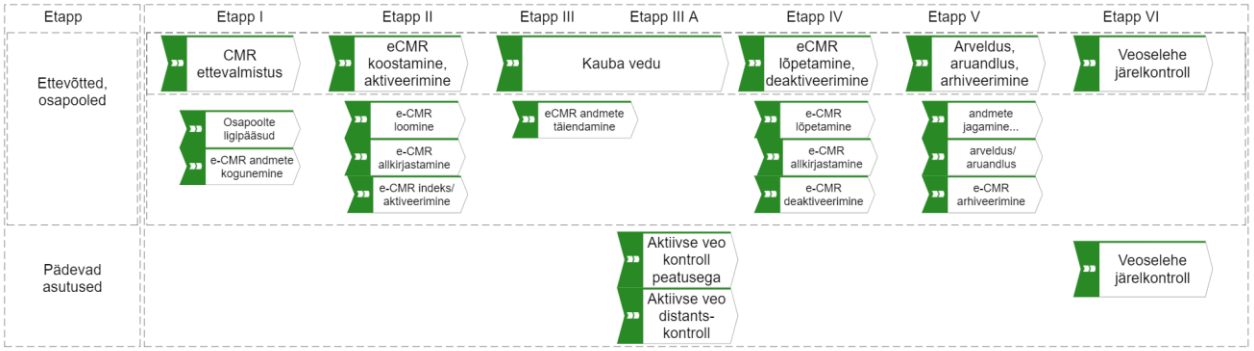
The exchange of electronic freight transport information and the use of CMR platforms enables drawing up, signing, and verifying eCMR consignment notes through compliant eFTI platforms and as much as possible without interrupting the transport process or without requiring businesses to perform excessive additional operations for submitting the data.

In the current situation, inspecting digital freight documents also involves making inquiries from different service providers, in addition to stopping the vehicle. The inquiring process is complicated and time-consuming and has given rise to a situation in which the submission and inspection of paper documents is often a simpler and faster solution compared to digital freight documents.

If the road transport information was accumulated into one network, real-time supervision of the entire dataset required could be performed (e.g. the freight transport document (CMR), activity licence, data about the driver). Furthermore, it helps to collect statistical information, perform justified inspections, carry out risk analyses, or, in the event of a traffic accident, gain quick access to the details of the consignment and the goods.

If a freight transportation operation could be fully based on an eCMR consignment note, the eCMR could be activated on the eCMR platform (at the eCMR service provider, on the eFTI platform). If the principle of indexing all consignment notes generated in the NAP system was applied in the case of access points, the indexing or activation of consignment notes would also occur in this stage in the future.

By using electronic data exchange solutions in the future, consignment notes could be closed upon the freight transportation operation being marked completed and the respective information could be sent to all parties involved by one entry.



Joonis. e-veoselehe/ e-CMR elutsükli protsessid ja pädevate asutuste läbiviidav kontroll *(TO-BE)*
(Allikas: Digilogistika Keskus 2022)

FIGURE 3. DESCRIPTION OF THE TO-BE PROCESS

At this point, it is important to remark that the current eFTI regulation and implementation thereof will not solve all of the issues listed, as its area of application is not wide enough and all details of the truck and the driver will initially be left aside. However, remote control, the mediation of searches for additional permits, and the exchange of inquiries between public registries would still be a significant step forward.

2.5. EXISTING ECMR SOLUTIONS IN ESTONIA

When it comes to digital freight transport documents, there is already a small number of solutions developed for international or national purposes in Estonia.

The Association of Estonian International Road Carriers developed the **MobiCarnet**[51] eCMR solution in 2017–2018 to support international freight transportation operations, but it was not taken into use due to the lack of an international infrastructure which would enable using eCMR consignment notes in cross-border freight transportation operations. On the other hand, the company Ospentos AS has successfully managed to implement e-waybills for the air cargo carried by road from European airports to the terminal in Estonia and vice versa through the Estonian service provider **QStep**[52]. The company has developed an e-airwaybill and eCMR cross-use for its own purposes although the drivers are still required to present paper documents upon inspections on the road.

In addition to the aforementioned solutions, there are several other companies in Estonia which have prepared their information systems for drawing up and exchanging eCMR consignment notes if minor updates are made.

The use of digital eCMR consignment notes has gathered pace significantly at the national level: wood and crushed stone and sand hauling and transport of cereals are increasingly performed with eCMR consignment notes and the development has occurred thanks to the cooperation agreements concluded in the sector, as well as the demands from the public sector to start using eCMR consignment notes.

In wood and timber hauling, eCMR consignment notes have been used in the **ELVIS** system for fifteen years and almost 90% of wood hauling operations has involved using ELVIS. The ELVIS service is now closed and a new system has been developed to replace it, the **EVR**[53], which is used to register eCMR consignment notes from different forest management software applications, also enabling adding the consignment notes via an interface. The solution is being developed by the Estonian Forest and Wood Industries Association (EMPL)[54]. The data can be inquired by relevant competent authorities, such as the Ministry of the Environment and the Tax and Customs Board.

In the national transport of crushed stone and road construction material, the use of an eCMR service has been successfully promoted and piloted by the Transport Administration (previously known as the Road Administration). As of 2021, it has been mandatory for the tenderers to use eCMR consignment notes in the public procurements for road construction for the purposes of the assessment of the haulage of the material, incl. the origin of the material, the type and weight of the product. The use of eCMR consignment notes has reduced the number of overweight consignments and the transport of materials can now be monitored real-time and is supervised by the Transport Authority through construction supervision partners.

The largest national provider of the consignment note service is **Waybiller**[55], whose volumes have increased in road construction, as well as in the national hauling of other bulk goods. Waybiller is also connected to the information systems of the terminal operators at the port and quarries, which ensures the inspection of the weight of consignments upon dispatching and receiving. For example, Eesti Killustik AS with more than 30 quarries in Estonia has discontinued issuing paper consignment notes and all loads dispatched from the quarries are equipped with Waybiller eCMR consignment notes. Another example is PU KEVILI, which has been fully using Waybiller for the transport of cereals since 2019, drawing up 5,000 paper delivery notes per year and ensuring the reliability of the haulers and the orders being completed for their clients (sellers of cereals), as all parties know who loaded cereal on the truck, when, how much, and when did the consignment arrive.

[51] MobiCarNET, LINK
[52] QStep, LINK
[53] The EVR, LINK
[54] The Estonian Forest and Wood Industries Association, LINK
[55] Waybiller, LINK

There are also large companies which have developed their own eCMR platforms used with their partners. For example, Graanul Invest has developed a digital gate for chipped wood and raw material hauling and is also using eCMR consignment notes to transport wood granules to the Port of Riga.

Different competent authorities can currently access the systems via X-road, but connecting such e-services provided by the private sector with public systems remains case-specific for now and each have their own rules, environments, and user interfaces for accessing the platforms. This solution is of an uneven quality, burdens the administration system with inquiries being made towards several different consignment note platforms, may not meet the expectations of the user groups (e.g. the authorities are unable to verify the data via the internal systems of competent authorities), and fails to ensure the equal treatment of businesses.

2.6. ROLE OF AN ACCESS POINT

As freight transport also includes dynamic data, in addition to the documents reported, and is related to the wider information exchange process between businesses and governments, one of the solutions for achieving uniformly functioning supervision processes is to agree on the rules, data standards, and technologies which would enable ensuring as harmonised access to the data as possible for the government, the service providers, and the businesses.

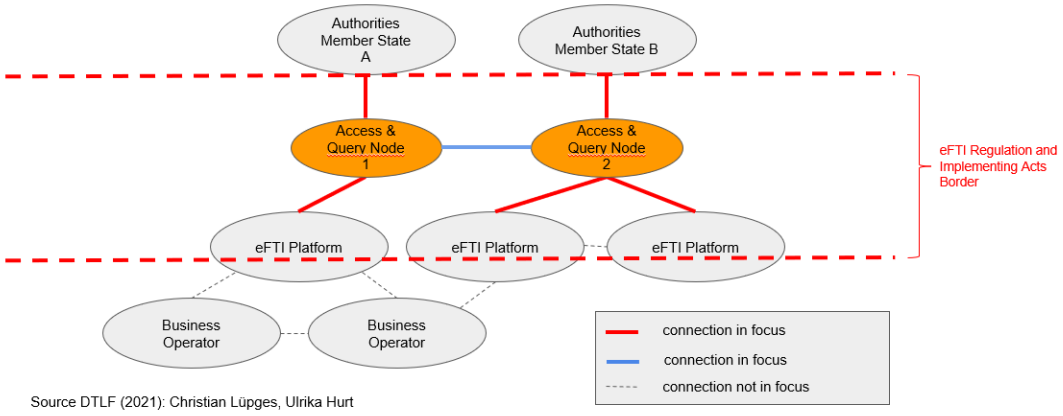
An extra tool and a tool for mediating inquiries centrally could be an access point or the inquiry exchange centre which would connect the parties so that the competent authorities are not required to make individual connections or inquiries to separate service providers, therefore ensuring the movement and inquiry of a minimum amount of data (thus, as fast as possible).

In the field of freight transport, access points(s) could form services that connect the data exchange and inquiries between public datasets and private service providers, public datasets and the respective access points of other countries, as well as between the e-services of the private sector in case the information from public datasets must be used. This would enable creating a network of freight transport datasets operating based on uniform rules which would enable automating the state supervision processes and supporting the business processes of economic operators. The network of access points would also enable sending the same information from the information systems of other countries or from private service platforms if the respective connections have been created.

A road transport eCMR access point would enable inquiring the documents of national as well as international freight transportation operations via one environment irrespective of the service platforms in which the documents were drawn up or managed.

The primary tasks of the wider, multi-modal transport eFTI NAP are to enable competent authorities (incl. those of other countries) to make control inquiries to all eCMR services deemed compliant with the requirements of eFTI, mediate the eCMR consignment notes drawn up by eFTI service providers, and potentially validate the compliance thereof with the data standard[56] established to make the operations as smooth as possible. This applies to all modes of transport and uniformly over the European Union.

[56] The standards and operations to be approved by the implementing acts of the eFTI regulation in 2023



Source DTLF (2021): Christian Lüpges, Ulrika Hurt

FIGURE 4. THE POSITION OF THE NAP IN THE LEGAL SPACE OF THE EFTI (SOURCE: DLTF)

The NAP should enable data inquiries by competent authorities from the eFTI platforms irrespective of which eFTI service provider is used by businesses or in which European country or which NAP is used by the public authority or body to make the inquiry. In addition to national inquiries, it must also be possible to use the NAP for making inquiries to other countries to the eFTI platforms there. The purpose of the inquiries made through the NAP is to obtain an overview of the existence, comprehensibility, and content of data based on the data standard agreed on.

The NAP participates in the inspection of consignment notes and transport documentation during active freight transportation operations (national inquiries, national inquiries between the NAPs of other countries and to eFTI platforms, or an inquiry from a foreign country to the Estonian eFTI platforms).

The functions of the NAP also involve the registration of the activation and publishing of key documents, i.e. consignment notes, and closing or deactivating the consignment notes after the completion of the freight transportation operation, i.e. **registration of the metadata of freight transportation operations and consignment notes or the indexing of consignment notes and closing the indexes**. This process may turn out to be an operation with a minimum data composition in which the eFTI platform performs most of the preparations, but this obligation will probably not fall on the NAP. The NAP can also participate in the follow-up inspection of consignment notes or in verifying that a specific consignment note has been indexed.

Based on the analysis of taking into use eCMR consignment notes and the analyses of the DIGINNO-Proto project and the DTLF, indexing is a good solution which ensures the double verification and high-level validation of the authenticity of the eCMR consignment notes drawn up, increases the trust in the regional ecosystem by preventing the eFTI platform from amending/falsifying the metadata of a document independently. The prevention of such fraud is one of the roles of the certification of eFTI platforms. Indexing, however, primarily helps to make information quicker to find and reduce the data volume and traffic of inquiries when a competent authority is making an inquiry.

If a solution is developed and agreed on for sending data from all eFTI platforms to all platforms without direct inquiries and without registering the data in the NAP, it may no longer be necessary to index consignment notes in the NAP in the later stages of the implementation of the eFTI.

The NAP will give the parties ordering freight transportation operations, haulers, and recipients of the goods more freedom in deciding whose services to use, as the sale requirements apply to all service platforms and they are subject to equal requirements. There will also be one common channel established for state supervision for making control inquiries about the trucks in traffic or about the consignment notes which are already closed.

Even though access points (the NAP or CAP) are one of the central resources and implementation factors in the digitalisation of the chain of information exchange between the parties, it is important to highlight that establishing the NAP alone will not create digitalisation-related impacts for the entire sector. In

order to achieve an impact, the software applications of businesses and the eFTI platforms must also be developed and the services must be taken into use widely. The set of solutions to be created will bring along significant impacts from the perspective of socio-economic and information technology-related efficiency.

2.7. FUNCTIONS AND OPPORTUNITIES OF THE NAP

The eFTI regulation establishes the multi-modal obligation of the Members States to accept electronic freight transport information, which means that the eFTI services can be discussed in the case of any mode of transport, which should be kept in mind in establishing the NAP. On the other hand, the situation differs greatly when it comes to different modes of transport and the implementation of the NAP will come with greatest changes in the field of road transport, as other modes of transport already have central or connected information exchange environments.

In addition to other requirements, all modes of transport have their own main bills of lading / consignment notes / shipping notes which can be inquired and used over the NAP in a digitalised format irrespective of the different names or formats, if necessary.

In the transportation of air cargo, the AWB (Air Waybill) is used as a delivery document. The digital format of the document is the e-AWB and the majority of aviation companies worldwide have taken it into use (incl. all European airlines). As air cargo is carried by planes and, in exceptional cases, by road between two airports (the Road Feeder Service), the consignments in the case of which some of the journey is covered by road must at least be registered, indexed, and made available via the NAP to enable supervision.

In the case of rail transport, the SMGS and CIM are used as delivery documents. On the other hand, there is no need for stopping a train to inspect the consignments and the information exchange with the government is solved by direct interfaces of the information systems or via online environments; however, an increase in the number of service providers or the harmonisation of connections may result in connecting the rail transport information exchange with the eFTI NAP, bringing along time and resource savings. This occurs, for example, in a situation of truck trailers or containers being loaded on a railway platform which have active CMRs but are transported on the railway in a certain stage of the freight transport operation as a combined transport operation.

In the case of sea transport, the central documents are the bill of lading (B/L) and the manifest. Estonia uses the EMDE[57], which is a portal in Estonia compliant with the requirements of the contract contact point of maritime affairs (the Maritime Single Window) and in which all arrival and departure documents of the vessels arriving in Estonia are registered. As the system is connected to all relevant competent authorities, it is not necessary to organise the exchange of the data of sea transport consignment notes via the NAP.

The road transport consignment notes are most lacking from the perspective of the visibility of digitalisation, as well as from the technological perspective, which arises from the fractured nature of the sector and the multitude of service providers. In the case of road transport, further requirements are added based on the traffic and environmental safety, tax calculation, and the requirements applied to haulers. This is why the architectural solution of the NAP is primarily focussed on road transport.

Nevertheless, the eFTI NAP is one of the tools used by competent authorities for making inquiries through a certain channel, which primarily brings a change to the inspection of national and international road transport consignments and freight information. In addition to the requirements of the eFTI, it should also be kept in mind that the NAP may not only be used for fulfilling the obligation established by the regulation, but must also enable establishing conditions for optimising the processes of national and cross-border, as well as B2B freight transportation operations.

[57] Estonian Maritime Information System, LINK

3. LEGAL FRAMEWORK FOR ESTABLISHING AND IMPLEMENTING THE NAP

Even though goods are also transported by sea, inland water ways, air, and rail, in addition to roads; even though not only goods are transported on roads, but also passengers and waste, for example; and even though the legislation regulating road freight transport prescribes the obligation of the participants in the delivery chain to fill in, retain, and submit to competent authorities not only consignment notes but also different other documents, this analysis is focussed on the issues of establishing and operating **a road freight transport electronic freight transport information access point**.

Both the requirements arising from the national, as well as the EU law, and the relevant international conventions which Estonia has adopted are applied to the freight transport on Estonian roads. The following are the most important of those in the context of this analysis.

3.1. NATIONAL LAW

In the context of the national law, the most important acts of law concerning the implementation and potential digital use (directly or via the NAP) of eCMR consignment notes are the Road Transport Act, the Law of Obligations Act, and the Road Traffic Act.

Freight transport is organised based on the Road Transport Act, unless specified otherwise in Regulations 1071/2009 and 1072/2009 of the European Parliament and of the Council or an international contract. In the context of this analysis, international contracts primarily mean the CMR Convention and the Additional Protocol to the CMR Convention. **The contractual relationship between the consignor and the organiser of the freight transport operation** is subject to the provisions of the Law of Obligations Act on the contract for the carriage of goods.

The Road Transport Act [58] establishes the grounds for road transport, the duties of road haulage undertakings and senders of goods, requirements for cargo safety, requirements for road transport drivers, liability for infringement of the requirements, and the organisation of state supervision.

Pursuant to the **Law of Obligations Act**[59] and primarily section 780 thereof, before the delivery of the goods to the carrier, the sender shall place the documents which are necessary for customs clearance or other formalities to be conducted (accompanying documents) at the disposal of the carrier and shall also provide the carrier with information which is necessary for this purpose.

Pursuant to subsection 88 (6) of the **Road Traffic Act**[60], the driver must carry the delivery documents of the consignment during freight transport, in addition to the documents referred to in this section, and such documents may be electronic.

In the **Road Transport Act**, the use of electronic delivery documents of a consignment is covered in subsection 35 (11) on road transport, based on which upon using electronic carriage documents, the sender of goods must be authenticated in an online environment or the carriage documents must be digitally signed and upon their use the driver must ensure the electronic availability of the carriage documents to the authority exercising state supervision.

The explanatory memorandum of the draft legislation[61] which the Road Transport Act and the text of subsection 88 (6) of the Road Traffic Act, in force since June 2018, are based on states the following, among

[58] The Road Transport Act LINK
[59] The Law of Obligations Act, LINK
[60] The Traffic Act, LINK
[61] Draft Road Transport Act 488 SE, passed on 19 December 2017, LINK

other things: 'If electronic delivery of documents of a consignment are used, the driver must prove the existence of such documents to the person conducting state supervision by using a smartphone, portable computer, or another electronic device (the obligation to submit the documents is established by subsection 38 (2) of the Road Traffic Act). It must be possible to present the delivery documents of a consignment which are submitted electronically in an unchanged form at a later date, for example, in the course of a misdemeanour procedure. Electronic delivery documents of a consignment must be created by using certified or approved programmes and signed digitally or verified by a digital stamp. The delivery notes of a consignment may include a CMR delivery note (mainly used in international freight transport based on the CMR Convention) or a bill of lading which is mainly used in national freight transport based on the Law of Obligations Act.'

Even though the law applicable in Estonia allows the use of electronic delivery documents, the relevant regulation remains relatively general for now. **The lack of clarity on in which cases and in which format it is currently legally acceptable to use electronic delivery documents, what the situation will be like in the transition period before the implementation of the eFTI, and what it will be like when the eFTI has been implemented is probably one of the most important factors which prevents a wider use thereof.**

3.2. EUROPEAN UNION LAW

Regulation (EU) 2020/1056 on electronic freight transport information **('the eFTI regulation')**, which will be applied from 21 August 2024, establishes the legal framework for the electronic transmission of the freight transport-related information prescribed by legal provisions between the relevant companies and competent authorities, including:

a) the conditions based on which competent authorities are required to accept regulatory information when that information is made available electronically by the economic operators; and
b) the rules on the provision of services related to making regulatory information available electronically by the economic operators to competent authorities.

Based on recital 4 of the eFTI regulation, the absence of a uniform legal framework at the union level requiring competent authorities to accept relevant freight transport information, required by legislation, in electronic form, is considered to be the main reason for the lack of progress towards the simplification and greater efficiency of information exchanges made possible by available electronic means.

Recital 13 of the regulation advises to consider the establishment of access points for competent authorities to minimise costs for both competent authorities and economic operators. Thereat, those access points would act only as intermediaries between the eFTI platforms and competent authorities, and should therefore neither store nor process the eFTI data to which they mediate access, except for metadata connected to eFTI data processing, such as operation logs necessary for monitoring or statistical purposes.

The regulation will be applied from 21 August 2024, but the first delegated acts issued on the basis thereof must be adopted at least 18 months earlier and the first implementing acts at least 12 months earlier.

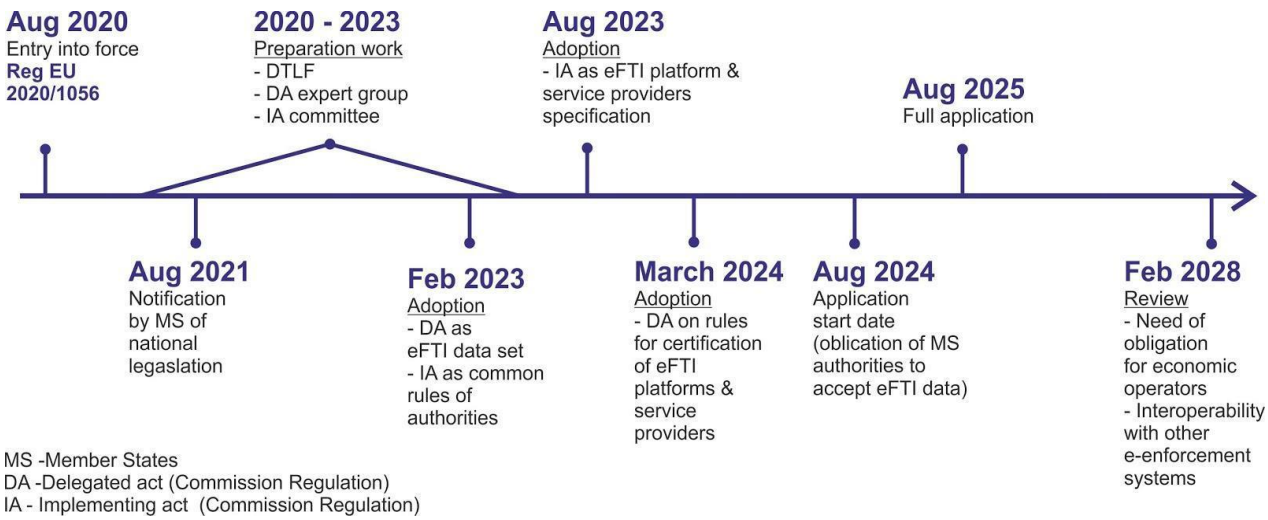


FIGURE 5. THE SCHEDULE OF ADOPTING THE LEGISLATION OF THE EFTI REGULATION, INCL. THE DELEGATED AND IMPLEMENTING ACTS (SOURCE: THE EUROPEAN COMMISSION)

At the time of drawing up this report, state authorities do not yet have regulation on NAPs and the implementing acts of the eFTI regulation are still being drawn up and based on the expected schedule of the European Commission, the content of the legislation and the proposals to adopt the legislation will be made publicly available approximately six months before the expected date of adopting the respective legislation.

As the delegated and implementing acts issued on the basis of the eFTI regulation are still being developed, this analysis is limited to the provisions of the regulation itself. It should also be kept in mind that the substantial area of application of the eFTI regulation is only limited to the notification requirements arising from legal provisions, i.e. the obligations of businesses related to the freight transport in the territory of the EU to make available to competent authorities the information specified in the legislation listed in Article 2 (1) of the regulation and the obligation of the respective competent authorities to accept the information even if it is submitted in the electronic format.

Based on recital 7 of the eFTI regulation, the regulation 'should be without prejudice to the provisions of Regulation (EC) No 1013/2006 of the European Parliament and of the Council concerning procedural requirements for shipments of waste and to the provisions referring to controls by customs offices'. It 'should also be without prejudice to the reporting obligations, including those relating to the competence of customs offices or the competence of other authorities, set out in Regulation (EU) No 952/2013 of the European Parliament and of the Council or in implementing or delegated acts adopted thereunder or in Regulation (EU) 2019/1239 of the European Parliament and of the Council'. This means that those systems can function independently, but the eFTI platforms could also be the parties to the exchange of the data. The connection to an eCMR or eFTI NAP is a separate issue which can be implemented when permitted by the future legal space.

From the legal perspective, Members States are not under the obligation to establish EU-wide access points, but the minimum functionality of the NAP will probably be defined in the form of advice[62] in one or several of the aforementioned delegated or implementing acts.

Based on the information available, there are no plans to regulate the form of ownership of access points at the level of the EU[63].

[62] the expert assessment of the analysis team based on the discussions of the DTLF
[63] already now

3.3. DELEGATED AND IMPLEMENTING ACTS OF THE EFTI IN THE PROCESS OF DRAWING UP

The potential requirements applicable to all Members States which should be taken into consideration in establishing the NAP are based on the requirements applicable to the different parties of implementing the eFTI regulation, incl. relevant companies, eFTI platforms, and competent authorities, will only be enforced via the delegated and implementing acts of the eFTI which are still in the process of drawing up.

These pieces of legislation will be adopted in 2023 and are related to the following articles of the eFTI regulation:

the eFTI common data set and eFTI data subsets based on Article 7: 'The Commission shall adopt delegated acts in accordance with Article 14 to supplement this Regulation by establishing and amending the eFTI common data set and eFTI data subsets in relation to the respective regulatory information requirements referred to in Article 2(1), including corresponding specifications on the definition and technical characteristics for each data element included in the eFTI common data set and eFTI data subsets. When adopting the delegated acts referred to in paragraph 1, the Commission shall: (a) take into account relevant international conventions and Union law; and (b) seek to ensure the interoperability of the eFTI common data set and eFTI data subsets with relevant data models that are accepted internationally or at the Union level, including multi-modal data models'.

This provision is very important from the perspective of the eCMR and eCMR NAP, as it is important for the CMR dataset to be usable both in the UNECE framework and the EU framework, of which the first has also been implemented outside of the EU.

The respective delegated act will probably be adopted not later than by 21 February 2023.

The common procedures and rules for access based on Article 8 of the eFTI and the implementing acts which are still at the stage of drawing up. The following is specified, among other things: 'The Commission shall adopt implementing acts laying down common procedures and detailed rules, including common technical specifications, for access by competent authorities to eFTI platforms, including procedures for the processing of regulatory information and for communication between competent authorities and the economic operators in relation to that information. When adopting the implementing acts referred to in paragraph 1, the Commission shall seek to enhance the efficiency of the administrative procedures and to minimise compliance costs both for the economic operators and competent authorities.'

This provision is important from the perspective of the NAP, as it will presumably also include detailed information on which procedure and rules for access the NAP should be used for and what are the procedure of use and implementation, accesses, and rights thereof.

The respective implementing act will be adopted by 21 February 2023 at the latest.

The requirements for competent authorities based on Article 5 of the regulation and the future delegated and implementing acts which are yet to be adopted on how the government must be able to make inquiries and receive data. Including: 'Where the economic operator concerned has made, regulatory information required pursuant to Regulation (EC) No 1013/2006 available electronically in accordance with Article 4 of this Regulation, the competent authorities concerned shall also accept such regulatory information without the agreement referred to in Article 26(3) and (4) of Regulation (EC) No 1013/2006' and 'Where regulatory information required pursuant to a specific Union legal act or national law referred to in Article 2(1) includes official validation, such as stamps or certificates, the respective authority shall provide that validation electronically, in accordance with the requirements established by the delegated and implementing acts referred to in Articles 7 and 8', and 'In order to comply with the requirements set out in paragraphs 1 to 3 of this Article, Member States shall take measures to enable all their competent authorities to access and process regulatory information made available by the economic operators in accordance with Article 4'.

Requirements for eFTI platforms and eFTI service providers based on Articles 9 and 10 of the eFTI regulation.

These requirements are very important from the perspective of the NAP, as they include detailed information on how the eFTI platforms must make data available to competent authorities and which activities are required by the eFTI platform and which by the NAP to enable registration of the metadata of freight transportation operations (the work of the so-called index registry).

The respective implementing act will be adopted by 21 August 2023 at the latest.

The detailed requirements for **eFTI platforms** based on Article 9 of the regulation and an implementing act which is yet to be adopted:

- personal data can be processed in accordance with Regulation (EU) 2016/679;
- commercial data can be processed in accordance with Article 6;
- competent authorities can access and process data in accordance with the specifications adopted by means of delegated and implementing acts referred to in Articles 7 and 8;
- the economic operators can make information available to competent authorities in accordance with Article 4;
- a unique electronic identifying link can be established between a shipment and the related data elements, including a structured reference to the eFTI platform where the data is made available, such as a unique reference identifier;
- data can be processed solely on the basis of authorised and authenticated access;
- all data processing is duly recorded in operation logs to allow, as a minimum, the identification of each distinct processing operation, the natural or legal person having made the operation and the sequencing of the operations on each individual data element; if an operation involves modifying or erasing an existing data element, the original data element shall be preserved;
- data can be archived and remain accessible for competent authorities in accordance with the relevant Union legal acts and national law laying down the respective regulatory information requirements;
- the operation logs referred to in point (g) of this paragraph are archived and remain accessible for competent authorities for auditing purposes for the period of time specified in the relevant Union legal acts and national law laying down the respective regulatory information requirements and, for monitoring purposes, for the periods of time referred to in Article 17;
- data is protected against corruption and theft;
- the data elements processed correspond to the eFTI common data set and to eFTI data subsets as established by the delegated acts referred to in Article 7, and can be processed in any of the official languages of the Union as provided for by the relevant Union legal acts and national law laying down the respective regulatory information requirements.

The provisions on the certification of eFTI platforms based on Articles 11, 12, and 13 of the regulation.

Those provisions and specifications are important to determine what are the set of the functional and non-functional requirements for eFTI platforms, the NAPs, and competent authorities and the requirements for the certification of eFTI platforms established on the basis of the organisation of data exchange.

The respective delegated act is expected to be adopted in March 2024.

The **operations and technological solutions** for ensuring the functioning of the following provisions will also be specified via these acts.

Requirements for economic operators based on Article 4 of the eFTI regulation. Including: 'Where the economic operators make regulatory information available electronically to a competent authority, they shall do so on the basis of data processed on a certified eFTI platform and, if applicable, by a certified eFTI service provider' and 'Information in machine-readable format shall be made available via an authenticated and secure connection to the data source of an eFTI platform' and 'The economic operators shall communicate the unique electronic identifying link referred to in point (e) of Article 9(1) that enables the competent authority to uniquely identify the regulatory information related to the shipment'. And 'Information in human-readable format requested by competent authorities shall be made available on the spot, on the screen of an electronic device owned by the economic operator concerned'.

Those provisions are important from the perspective of the NAP, as they specify how a specific economic operator can make information accessible to competent authorities and how the NAP can simplify presentation of information in this process.

Various different working groups are working on specifying and preparing the requirements, including a new subgroup (SubGroup 3) consisting of the representatives of the Members States which is involved in preparing the implementing acts[64].

3.4. CMR CONVENTION AND THE ADDITIONAL PROTOCOL

The international road transport bill of lading or CMR was implemented based on the United Nations Convention on the Contract for the International Carriage of Goods by Road (the CMR Convention) and has been in force in Estonia since 1 August 1993[65]. The additional protocol enabling the use of electronic consignment notes (the e-CMR protocol) entered into force in Estonia on 31 January 2017[66] and is in force in 31 countries, including in 20 EU Members States as at March 2022[67].

Pursuant to Article 2 of the eCMR Protocol, a consignment note used in international road transport which is compliant with the regulation may be electronic and may be sent via electronic communication; Article 5, however, leaves it to the persons interested in preforming a freight transportation contract to decide on the procedure and conclude agreements on implementation.

This means that similarly to the Estonian national law, a legal basis has been established for the use of electronic freight transport documents, but there are no common standards, which is why the solutions used by different haulers, logistics companies, and providers of electronic freight transport information processing services may not be compatible. There is also no uniform procedure for submitting information to competent authorities.

Thus, this version of the **Additional Protocol to the CMR Convention** leaves the persons interested in performing freight transportation contracts free to decide on the electronic format and the information systems used when it comes to the procedures related to electronic consignment notes, which is why Estonia cannot establish any national procedures that would be mandatory to apply in the case of international road transport. Therefore, the use of any national access point to be established in Estonia could only be voluntary for international haulers.

On the other hand, CMRs are also mentioned in the eFTI regulation, with **recital 6 of the regulation stressing** 'the obligation for competent authorities to accept information made available electronically by economic operators should also apply whenever provisions of Union legal acts or national law falling within the scope of this Regulation require information that is also referred to in relevant international conventions, such as the conventions governing the international contracts of carriage in the different transport modes, for example the **UN Convention on the Contract for the International Carriage of Goods**

[64] The DTLF; SubGroup 3, LINK
[65] Riigi Teataja (1993), Convention on the Contract for the International Carriage of Goods by Road (CMR), LINK
[66] Riigi Teataja (2017), The eCMR Protocol of the Convention on the Contract for the International Carriage of Goods by Road (CMR)
[67] The Additional Protocol to the UN Convention and the website on the implementation thereof

by Road (CMR), the Convention concerning International Carriage by Rail (COTIF), the IATA Resolution 672 on E-air Waybill, the Convention for the Unification of Certain Rules for International Carriage by Air (Montreal Convention), and the Budapest Convention on the Contract for the Carriage of Goods by Inland Waterways (CMNI)'.

This, however, means that the use of the road transport consignment note or the CMR and the eCMR in the network of eFTI access points which this document focusses on must, and surely will be, successfully ensured.

3.5. OTHER RELATED LEGISLATION

As processing electronic freight transport information involves processing personal data, this processing must occur in compliance with **Regulation (EU) 2016/679** of the European Parliament and of the Council on protection of natural persons with regard to the processing of personal data and on the free movement of such data (the General Data Protection Regulation, **'GDPR'**). Thereat, it should be kept in mind that pursuant to Article 6 (1) of the GDPR, the processing of personal data is only lawful if at least one of the conditions listed in the subsection is met and in the respective extent. The requirements for the processing of personal data must be taken into consideration in establishing the NAP from the stage of designing the solution.

If the NAP is realised in a manner which calls for the e-identification and authentication of users through own information systems in this direction, the requirements of **Regulation (EU) No 910/2014** European Parliament and of the Council on the trust services required for electronic identification and electronic transactions in the internal market ('the **eIDAS** regulation') must be taken into consideration. The availability, previous applicability, and wide extent all over Europe of the trust services qualified within the framework of eIDAS allows assuming that the trust service providers qualified in the eIDAS framework[68] are capable of ensuring authentication at the required level. The e-signature trust services[69] are also appropriate and relevant and may enable mutual acknowledgement and interoperability of digital signatures.

As the use of a NAP would inevitably also concern the freight freight transportation between members states, the rules of mutual acknowledgement of the e-identification means established by Article 6 of the eIDAS regulation should also be kept in mind in this case, which would mean, among other things, the obligation of the NAP as an operator of a public service to accept in authenticating users those e-identification means issued by other Members States the level of assurance of which is at least as high as in the case of the respective means used nationally. As the level of assurance of all e-identifications means (ID-card, Mobile-ID, and Smart-ID) used nationally in Estonia is 'high', it is not necessary to ensure support to the e-identification means with lower assurance levels in designing the solution. It is important to highlight that a proposal for the amendment of the eIDAS regulation[70] was being negotiated in the period of drawing up this analysis and will bring along additional opportunities for the implementation of eID and the interoperability of cross-border information systems.

3.6. LEGAL CHALLENGES, OPPORTUNITIES FOR OVERCOMING THE RESTRICTIONS

The eFTI regulation is directly applicable in the entire territory of the EU and cannot be circumvented by any national legislation. Pursuant to Article 10, eFTI service providers are required to ensure to competent authorities direct access to the information about freight transport required by the legislation which is

[68] The list of trust service providers certified in the eIDAS framework, LINK
[69] European Union trust services, LINK
[70] The proposal for the amendment of the eIDAS regulation, LINK

being processed with the help of those eFTI platforms without any charges or fees. Thus, the NAP would also not be able to charge a fee from competent authorities for allowing access to this information.

As the delegated and implementing acts to be issued based on the regulation are yet to be adopted, it is not yet possible to consider the restrictions arising from them. On the other hand, those acts can specify the functioning of the NAP, providing common instructions to all Members States which wish to establish a NAP. Irrespective of the potential scope and level of detail of the instructions, the NAP will remain a voluntary solution for the Members States, and the principle that the data exchange must be free for the government will also remain in place, i.e. the NAP will not be able to charge public authorities for inquiring or sending data, irrespective of the form of ownership.

As specified above, the eFTI regulation and the delegated acts thereof which are yet to be adopted describe the specific dataset that must be made available about goods. This means that European countries will primarily focus on this data in data exchange and any connections to additional datasets will not initially be included in the functionality of the NAP. Connections to the access points of other sectors or the data environments established on the basis of other regulations of the European Union will also not be considered at first. As those datasets or services are directly related to road transport, it is likely that the option of connecting the data may be considered in the later stages of pan-European digitalisation of freight transport.

Estonia does not have any other significant options in the form of adopting or amending national legislation for overcoming the restrictions arising from the eCMR protocol and the eFTI regulation. It is, however, possible to adopt or amend the national legislation outside of the mandatory area of application of the EU law, which could be implemented in Estonia on the voluntary basis when it comes to cross-border freight transport. Yet, it should be kept in mind here that the exact limits of the mandatory area of application of the EU law will only become known when the delegated and implementing acts to be issued of the basis of the eFTI regulation have been adopted; in the text of the regulation, access points are only referred to in two recitals and even then, in the form of ‘should be considered’ or ‘could be considered’[71].

[71] The eFTI regulation, recitals

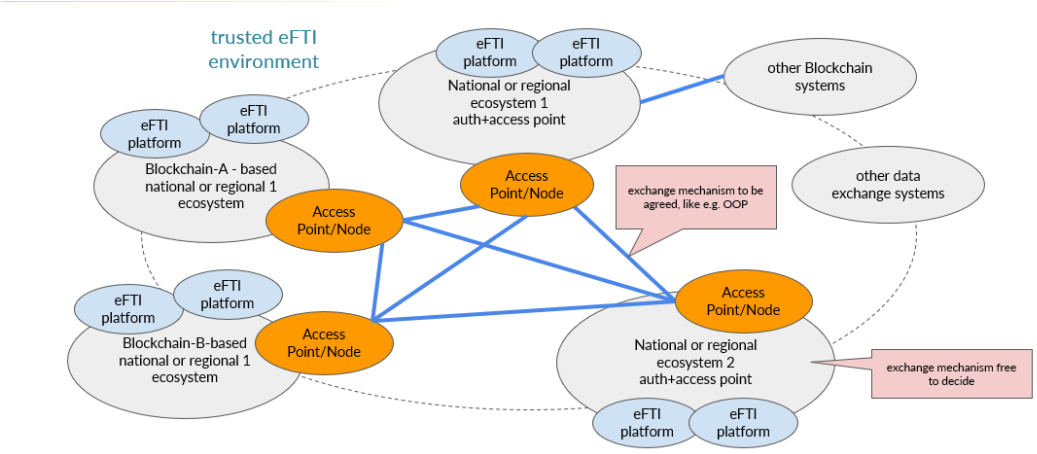
4. THE ARCHITECTURE OF AND REQUIREMENTS FOR AN EFTI ACCESS POINT

4.1. NAP PLATFORM AND THE ARCHITECTURE OF THE EFTI INFORMATION EXCHANGE

From the international perspective, establishing a network of NAPs functioning all over Europe is a technological challenge, as different countries have different preferences when it comes to the structure and technologies of national information exchange, even if a harmonised data standard can be established for the freight transport information shared or made accessible to the government by defining the mandatory part thereof.

Some European countries already prefer using the public key blockchain technology in the national data exchange, but there are also countries which prefer traditional e-governance technologies or other solutions that are already in use.

Irrespective of the structure of national information exchange, the technology used for connecting information systems to one another, or the technological bases for the functioning of the NAP, the eFTI and eCMR data can be exchanged via access points based on an agreed uniform technological solution which may be completely separate, if necessary.



Source: European Commission, DTLF, Christian Lüpges, Ulrika Hurt, Roberto Garcia Escallon (2021)

FIGURE 6. THE COMPONENT DIAGRAM OF THE NATIONAL PARTIES TO THE NAP (SOURCE: DTLF)

Even in a situation in which it is relatively difficult to align different platforms due to different national e-governance technologies and blockchain ecosystems, the mutual inquiry mechanism between different access points can be built so that the data can be inquired irrespective of the nature of connections to other information systems of a common national or regional access point.

Such hybrid solution would also support the future developments of the eFTI sector, which would involve access points enabling exchange of information between different eFTI platforms. The current NAPs are certainly not required to start providing this option.

One of the options for information exchange between NAPs is to implement the EU e-governance solutions or the public key infrastructure (PKI), which is used in Estonia as an X-road solution, as well as in the solutions of other EU Members States. Such network has already been implemented or is about to be implemented in the cross-border data exchange models in other sectors. Another option is to create a new separate technological solution which would be compatible with different national data exchange systems and the eFTI platforms with respect to data exchange.

Depending on the member state, the NAP can organise data exchange with its clients based on different or combined methods.

In Estonia, for example, the NAP should be connected to competent authorities via X-road, while connecting with eFTI service providers may be organised via X-road or the API, or via a blockchain infrastructure (e.g. EBSI[72]) as a future solution, if possible.

The once-only principle (OOP) should be preferred in connecting NAPs with one another, as well as the related once-only technical solutions which are being developed within the framework of the CEF[73].

There are three directions in the NAP data exchange:

- the direction of the eFTI platforms
- the direction of competent authorities
- the direction of the NAPs of other countries (or other inquiry frameworks)

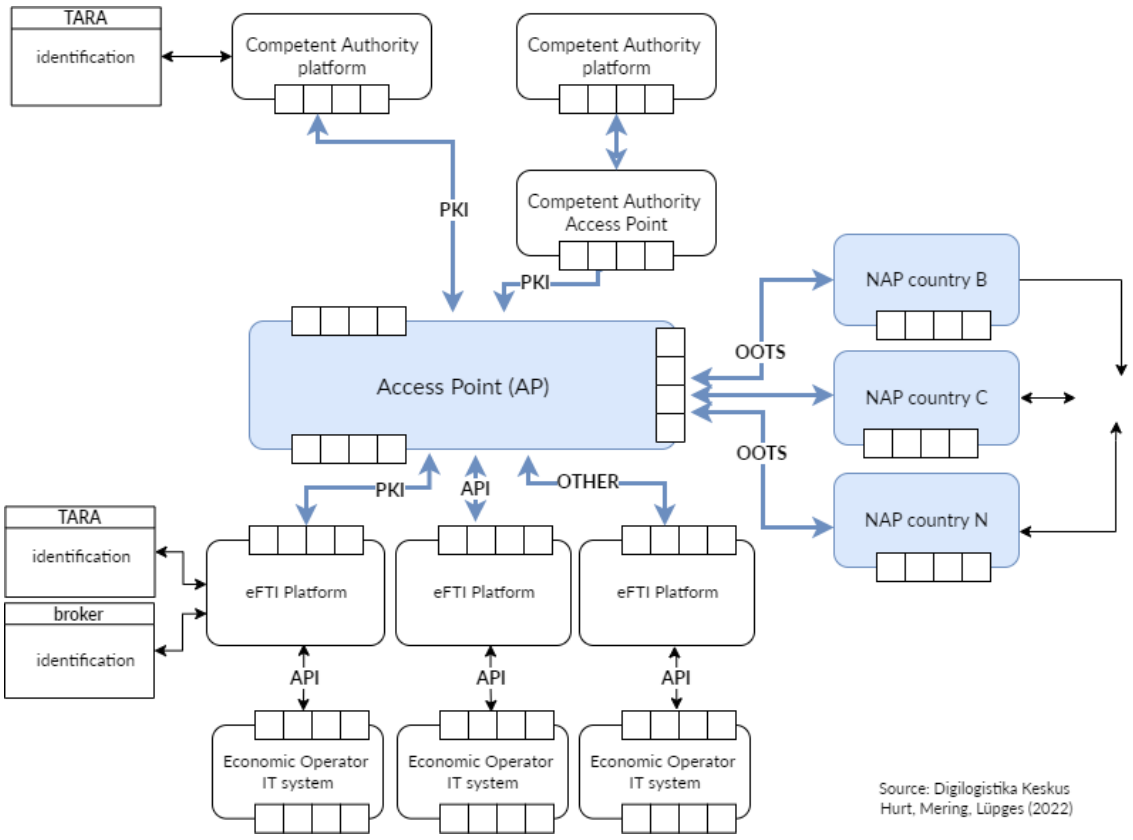


FIGURE 7. THE PARTIES AND THE NAP-CONNECTIONS IN THE INTERNATIONAL CONTEXT

Any cross-border data exchange can, however, function by using the tools of e-governance and through the EU interoperability framework[74] and the CEF IT building block[75] application, even though some of the parties are not public authorities and their information systems are not public sector datasets/registries.

The requirements for the eFTI information exchange architecture and for the functional and non-functional requirements are being drawn up by the DTLF and will form the basis for drawing up the delegated and implementing acts of eFTI.

[72] The European Blockchain Service Infrastructure (EBSI), LINK
[73] Once-Only Initiative, LINK
[74] The European Interoperability Framework (EIF), LINK
[75] The CEF IT building blocks, LINK

4.2. ARCHITECTURE OF THE NAP

The internal architecture of the NAP is focussed on the module of indexing metadata or the metadata registry, the inquiry module, and the data exchange module designed for creating connections with other NAPs and inquiring data. The module of access rights and the trust service module (X-road in Estonia; local solutions in other countries) are also NAP modules.

The information exchange between **competent authorities and the NAP** usually occurs via X-road or the API network by using files in an agreed format, in Estonia and the EU, preferably in the XML format.

The information exchange between **eFTI platforms and the NAP** usually occurs via X-road or APIs depending on the preferences of the company.

The information exchange between **the NAPs of different countries** generally occurs via a connection interface or a public key infrastructure. The respective data exchange structure and, if possible, the technology selection(s) used in the first stage of implementation of the eFTI will be agreed on by further eFTI legislation and will probably become components of the EU e-governance interoperability framework and the CEF.

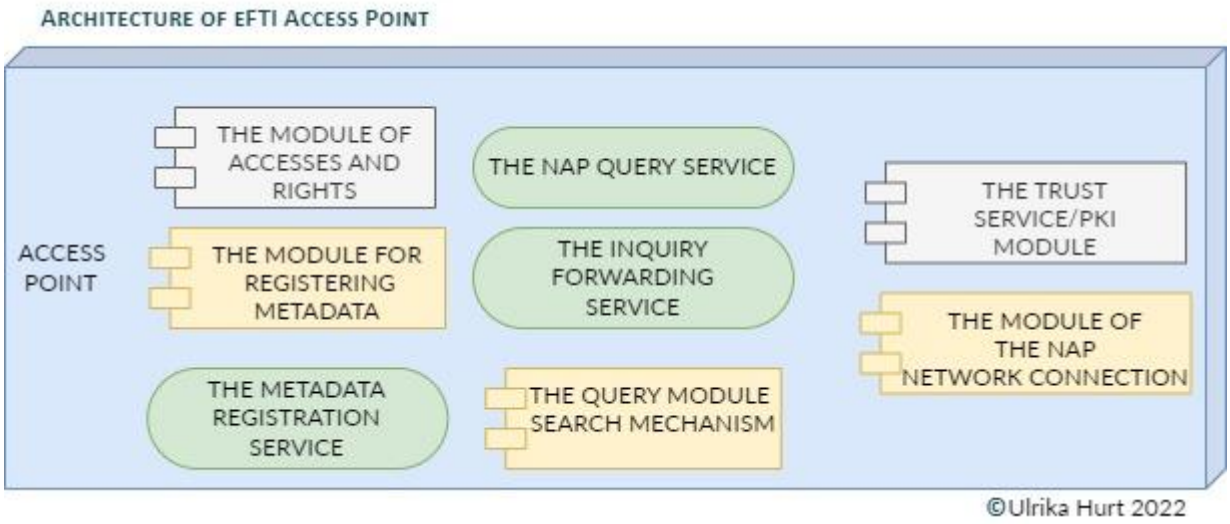


FIGURE 8. THE ARCHIDECTURE OF THE NAP WITH THE MODULES (MODEL)

The metadata registration service and module specified in the NAP system are a service and module with a very low load based on the functionality, but are critically important in verifying the validity of the documents used in transport, as well as moderating inquiries. They also enable sending and mediating confirmation about the time and place of disclosing datasets to third parties, for example.

The aforementioned module also supports collection of statistical data about the number of consignment notes in the market, which is not currently being collected, even though the respective decision and procedure should be agreed on.

4.3. DATA PROCESSED IN THE NAP

The information and documents which can be inquired and exchanged over the eFTI NAP are, however, initially limited to the 'information prescribed by legal provisions' (in the extent of the notification requirements established in the standards referred to in Article 2 (1) of the regulation).

Based on the above, it is important to keep in mind that the eFTI platforms also include other information which is not involved in the data exchange based on the eFTI regulation, such as information about orders for goods, the schedule and planning of freight transportation operations, the location of the vehicle, the

contact details of the driver, etc. **The analysis is focussed on the data inquiries made based on the eFTI regulation** via the NAP, leaving aside the exchange of other datasets.

It is important to keep in mind that for the purposes of eFTI, only the data which must be submitted to a competent authority within the framework of legislation are treated as eFTI data and this does not include the data used as business data in freight transport in the same current documents. One example of this is the CMR data in the case of which some of the information and the entire existence of the document are subject to inspection, but the entire dataset is not yet clearly defined as an eFTI dataset at the time of drawing up this analysis. Thus, it should be kept in mind that the substantial area of application of the eFTI regulation is limited and the eFTI dataset in road transport does not fully overlap the eCMR data composition, for example.

The NAP data exchange is focussed on the initial compositions of freight transport documents (incl. eCMR) and the eFTI datasets and data volumes which competent authorities can inquire via the eFTI NAP.

As each competent authority has its own data to be inspected and it is rarely necessary to submit/inquire the entire documentation to perform supervision, the full eCMR data and the eFTI data (which do not overlap) must be differentiated in information exchange. Companies also keep in the eFTI platforms other data which are not related to freight transportation operations, goods, orders, or services and are not subject to submission to authorities. Furthermore, in the future, there will be data on the eFTI platforms which may be exchanged with other eFTI platforms directly, not through the NAP.

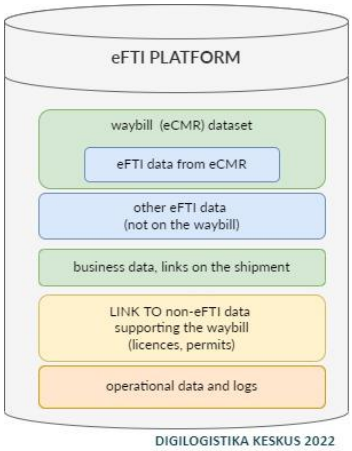


FIGURE 9. THE GENERAL MODEL OF THE DATA OF THE EFTI PLATFORM AS A CLOSE-UP LOOK AT THE ECMR DATA

The eFTI data are part of the eCMR dataset. The environment also includes other eFTI data in addition to the eCMR data, as well as other non-eFTI data, incl. data from the databases which are connected to national registries or the data inquired from them, other transport, freight transportation, and consignment data, and information about services.

The information exchange architecture in the data exchange between eFTI platforms, NAPs, and competent authorities only works in the context of the eFTI data. The NAP does not exchange or inquire data other than the eFTI data neither on the national nor on the international level.

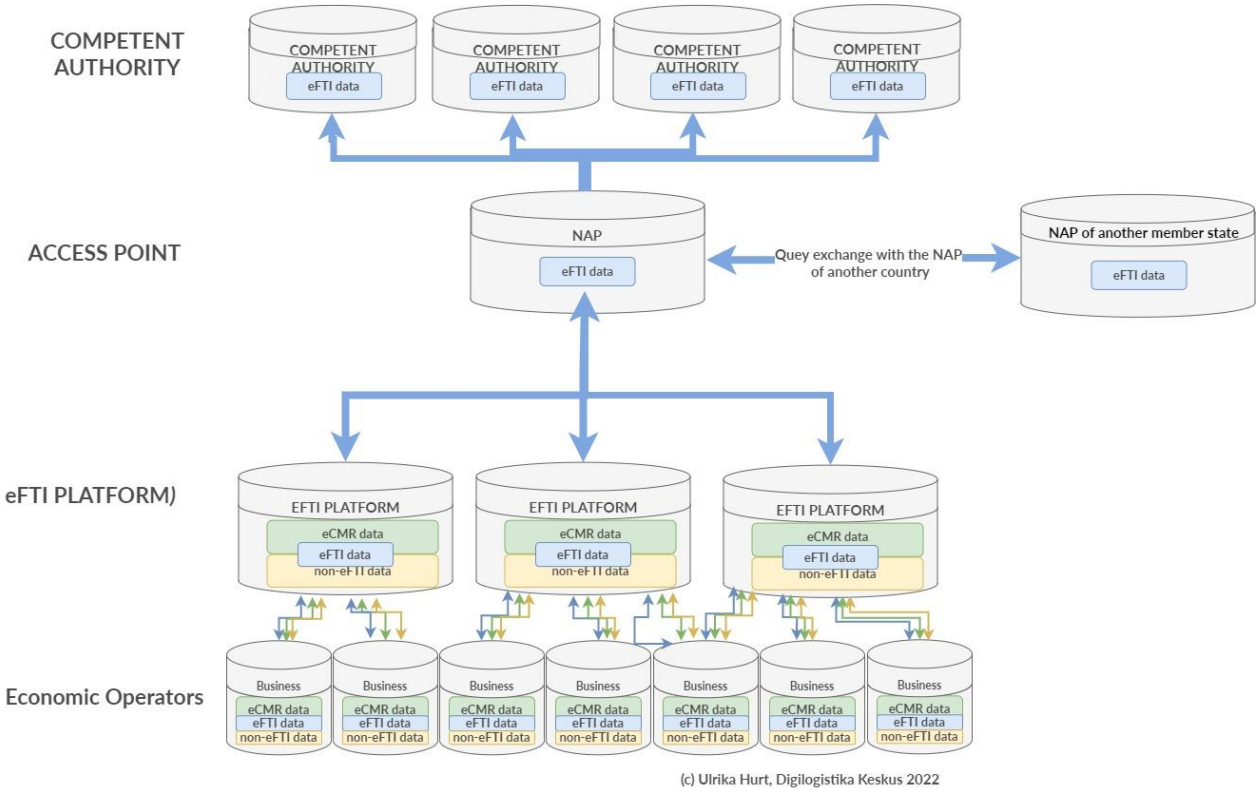


FIGURE 10. THE AVAILABILITY OF THE ECMR DATA IN THE CONTEXT OF IMPLEMENTING THE EFTI NAP

The set of metadata required for indexing which includes the IDs for connecting datasets and transport vehicles (truck and trailer) and adds a unique link to the dataset created with a reference to the location of the dataset, as well as a unique documentation ID, also has an important place in data exchange. The documentation ID is required for later inquiries.

This dataset participates in the functionality of registering the metadata of the freight transportation operation and consignment note, i.e. in indexing the consignment note) and in closing the index and supports competent authorities in making inquiries through the NAP.

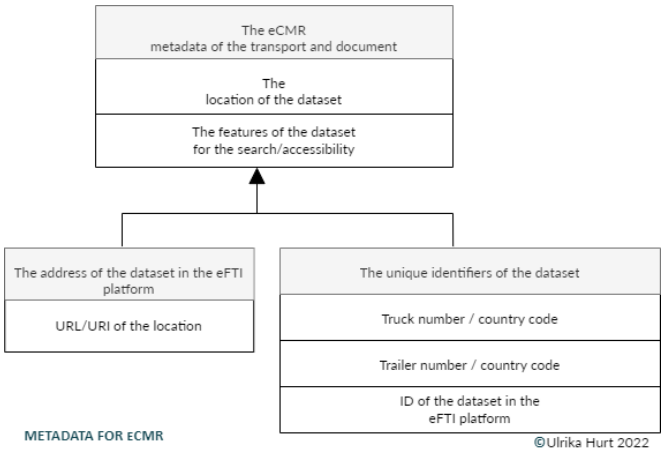


FIGURE 11. THE GENERAL MODEL OF THE METADATA INDEXED FOR THE ECMR AND TRANSPORT

It had not been decided by the time of drawing up the analysis which technology or process would be used to generate the IDs, how their information would be exchanged between the eFTI platform and the NAP, or which time stamp or trust service framework would be preferably used to label them.

From the technological perspective, it is known that the volume of the indexing procedure in the NAP is very low and only includes information on very few unique identifiers (URL/URI, truck number, trailer number). Such indexing of the metadata can be performed in the NAP or CAP and the eFTI platform can 'prepare' as much data as possible. Establishing a separate service or operating a service outside of eFTI platforms or the NAP would not be appropriate.

As electronic datasets also reflect legal operations, e.g. the transactions, decisions, and events, incl. signings related to the freight transportation contract in the case of a CMR, the NAP must be able to verify whether the documents/datasets are signed properly. The exact nature of the respective technological solution or the appropriate interoperable frameworks has not yet been decided, but the need has been acknowledged and the potential solutions are being mapped.

4.4. FUNCTIONAL REQUIREMENTS FOR THE NAP

The description of the likeliest NAP functionality is provided below, in which the NAP registers (i.e. indexes) an activated consignment note, mediates inquiries, and registers the closing/deactivation of a consignment note. The process described is not part of the official eFTI documentation, but partly overlaps DIGINNO-Proto and partly the process described in the analysis of the implementation of eCMR consignment notes[12].

TABLE 1. FUNCTIONAL REQUIREMENTS FOR THE NAP

REQUIREMENT	CONTENT
F1	Registration of the metadata of a consignment note or indexing in the process of activating a consignment note[76]
F2	Deactivation of the index of the consignment note in the consignment note deactivation process after the completion of a freight transportation operation
F3	Processing of inquiries from competent authorities to inquire data from the eFTI platform
F4	Processing of inquiries from competent authorities to send the inquiries to another NAPs (network of NAPs)
F5	Processing of inquiries from other NAPs for directing the inquiries sent to the eFTI platform and the responses
F6	Logging of the inquiry flow
F7	Administration of the roles of the users and organising of access
F8	Authorisation of delegated inquiries

F1. The process of activating a consignment note:

- In the event of an e-consignment note or an eCMR being created for a freight transportation operation, the eFTI service provider registers all details of the freight transportation operation and the goods and connects the information flows of the parties;
- when an eCMR has been initiated or drawn up in the eFTI platform, a unique ID or an international eCMR number is allocated to the dataset[13];
- a unique URL/URI address is also allocated, i.e. a link to the location of the documentation/dataset;

[76] The detailed process and nature of an indexing operation are still being specified in the context of the eFTI regulation

- if the eCMR is equipped with the signatures of the sender and the hauler, the consignment note is approved and the initiated freight transportation operation is activated for the parties;
- in parallel, activation of the eCMR is initiated, for which the metadata of the eCMR and the freight transportation operation are required (truck and trailer number, unique ID[14] of the dataset, and the URL/URI address of the dataset formed), as well as the technical data about the document being drawn up;
- next, the eFTI platform sends an inquiry for the registration of the document and for indexing the document in the index register or in the access point/CAP/NAP. This operation may conditionally be referred to as 'publishing metadata'. Thereat, it is important to highlight that the document is registered as activated, but the document itself is not sent to the access point or other systems from the eFTI platform, based on the requirements of the eFTI regulation;
- if necessary, information about access or rights are added to the document.
- The NAP, verifying the validity of the link to the location of the data submitted and the unique ID, approves the indexing of the document by adding its own digital and time stamps, may issue a unique indexing number/verification, and register it in its log.

F2. The process of deactivating a consignment note:

- In a situation where a freight transportation operation has been completed and the eCMR is due to be closed in the eFTI platform, the NAP participates in the deactivation of the consignment note;
- after closing the consignment note, a comment is left in the NAP archive with the registration history of the respective eCMR, while the URL/URI link is deactivated; the link to the website may have to remain active for supervision operations for a certain period of time;
- the statistical data about the number of registered freight transportation operations, the number of inquiries, etc. is recorded;
- the NAP is probably not used for collecting statistical data about freight transportation operations.

F3. Mediation of inquiries from competent authorities, inquiring of data from the eFTI platform, and sending/displaying the data to public authorities:

- The NAP validates an inquiry received which may be from the national competent authorities, the competent authorities of other countries, or other NAPs/CAPs;
- When the inquirer (authority) has been identified and authorised and they are entitled to request eCMR data, a link is sent to them via an index which indicates the original source of the data at the owner of the eCMR service;
- The NAP is also the delegating party of access rights in the direction of the eFTI platform.

F4. Mediation of inquiries from competent authorities and referring the inquiries to other NAPs

- If the NAP determines based on the index registry that the consignment note is not registered nationally, the NAP refers the inquiry to other NAPs or the NAP network;
- For this purpose, the NAP equips the inquiry with features which confirm the origin of the inquiry and the right of representation;
- Having received a response from another NAP on the location of the dataset, the NAP mediates it to the competent authority which sent the inquiry;
- The NAP also returns to the NAP of another country the log data about the inquiry.

F5. Transfer of an inquiry to other NAPs and mediation of the response to the inquiry from other NAPs:

- An inquiry from the competent authorities of another country can presumably only arrive through the NAP of the other country;
- The NAP must process incoming inquiries;
- The NAP uses the index registry to determine whether the consignment note sought is indexed by the same NAP;
- If it is, the NAP mediates the order to the NAP of another country.

F6. Logging of the inquiry flow

- Each data inquiry (its origin, time, and other relevant log information[19]) is registered in the data log as an event, but the content of the freight transportation document mediated is not stored in the NAP.

F7. Administration of the roles of the users and organising of access

- The user groups in the NAP and related to the NAP are role-based users which use the NAP environment through their information systems on the machine-machine basis.
- It is, however, possible to create a special service-UI on the indexing platform (for example, a service used via eesti.ee, if necessary).
- Another user group involves programmed users, such as the inquiries arriving from the X-road service or potential external parties which do not enable X-road connections.
- Inquiries are made and datasets are created and updated in the information systems of each participant or through a public online environment established for this purpose.
- From the perspective of inspecting freight transportation documents or making inquiries, the data exchange occurs in two stages – the first inquiry is validated by the inquirer who identifies the source of the data (eFTI service provider) and sends the index of the consignment document which is used to refer the inquiry to the party providing the eFTI service to the source of the data, which will send the details of the consignment.

F8. Authorisation of delegated inquiries

- From the technical perspective, the NAP uses delegated rights to make inquiries, which is done in the name of a competent authority and by authorising the inquiries to the eFTI platforms and the NAPs of other countries through such authority.
- The NAP also makes inquiries from the national eFTI platforms in the name of the NAPs of other countries, as this way, it is not required to authorise all different NAPs in the eFTI platforms.

The NAP can allow the representatives of a competent authority to conduct checks of the electronic freight transport information displayed via the eFTI platforms remotely or in a situation where the vehicle has already been stopped. If the vehicle has been stopped, it must be possible to check the data of the eCMR and eFTI through information systems and the truck driver must be able to submit the data electronically through their device.

If a unique electronic identifying connection/link has been prescribed to the eCMR or another dataset (a unique identifying link, URL/URI or a unique ID)[77], the issue of providing national as well as international unique ID numbers to the eCMR consignment notes and datasets, as well as the issue of activating and registering those numbers are also relevant.

The extent to which the NAP will be creating IDs or stamps for the index registry in the process of drawing up/activating eCMR consignment notes upon registration (i.e. indexing) thereof and closing the eCMR consignment notes or deactivating them upon expiry of their activation period has not yet been conclusively decided or approved by the time of drawing up this analysis. Thus, from the perspective of Estonia, one of the functions of the NAP could involve generating unique serial numbers for datasets or registering them or approving and activating a number generated in the eFTI platform if the unique numbers and unique links are generated by eFTI platforms. In both cases, the NAP will be operating an index registry with a proper digital time stamp system.

The NAPs of other countries can use the NAP to inquire about the existence of documents and the existence can be verified through a lower number of steps than in the case of direct inquiries from eFTI platforms. The NAP enables checking the information about the existence of a document without requesting the entire documentation from the eFTI platform and receive confirmation of the existence of the documents even if the eFTI platform is temporarily technically not accessible.

[77] See article 4 (3) of the eFTI regulation

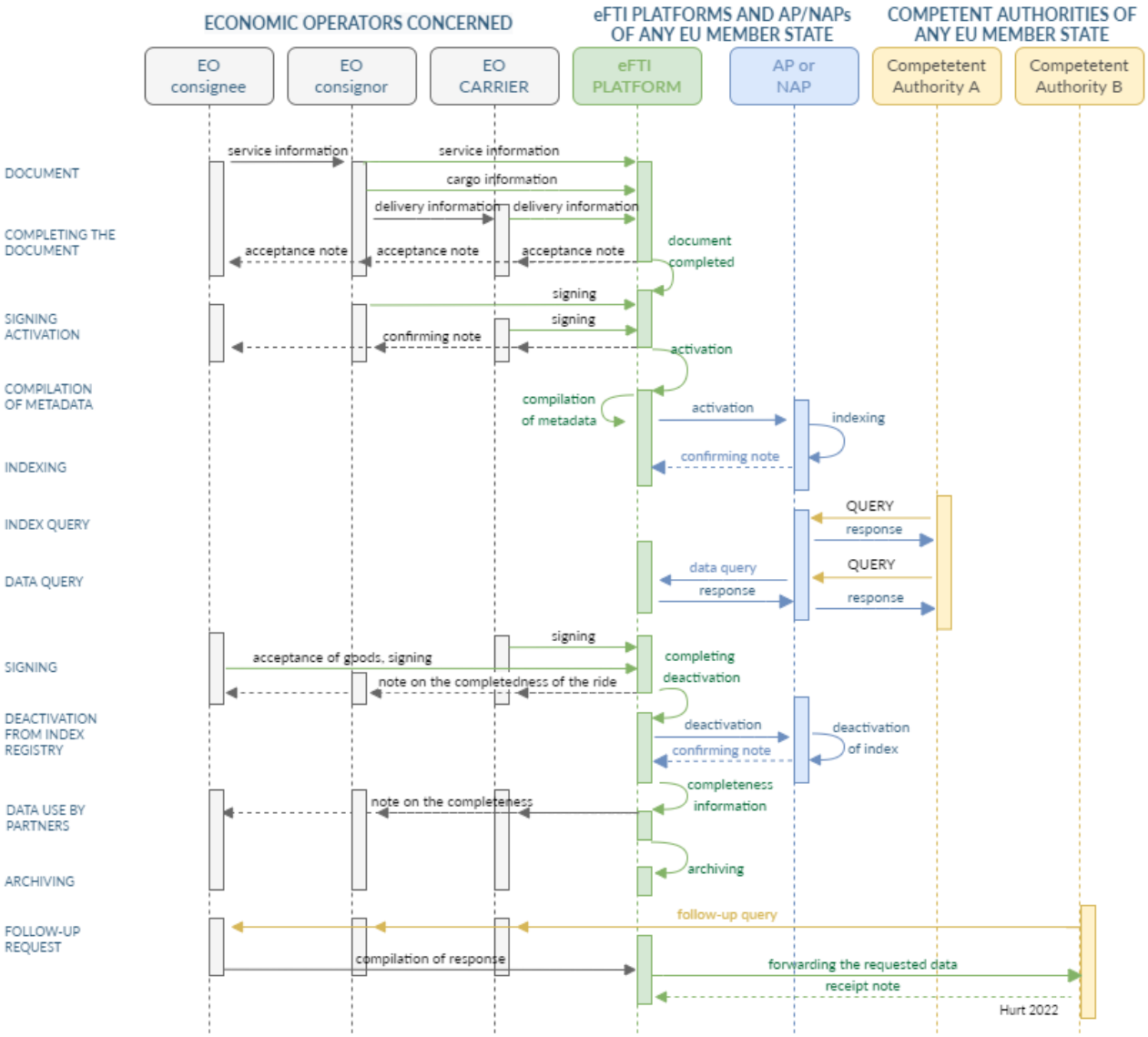


FIGURE 12. THE FUNCTIONALITY OF THE NAP IN THE CONTEXT OF THE ENTIRE LIFE CYCLE OF THE ECMR (SOURCE: DIGITAL LOGISTICS CENTRE)

4.5. CROSS-FUNCTIONAL (NON-FUNCTIONAL) REQUIREMENTS OF THE NAP

As the NAP is an inquiry exchange environment between eFTI platforms, the information systems of competent authorities and other NAPs, it is also subject to the architectural requirements for a wider eFTI data exchange environment, in addition to the functional requirements.

The **cross-functional (non-functional)** requirements specified include the key requirements which would apply to the NAP to be established. Depending on which authority or organisation would become the 'owner' of the NAP, the authority will establish the requirements for the development and handing of the NAP in the extent possible outside of the context of the requirements of a digital government and eFTI. The most critical of the non-functional requirements of the NAP are the requirements for the interoperability, usability, and security.

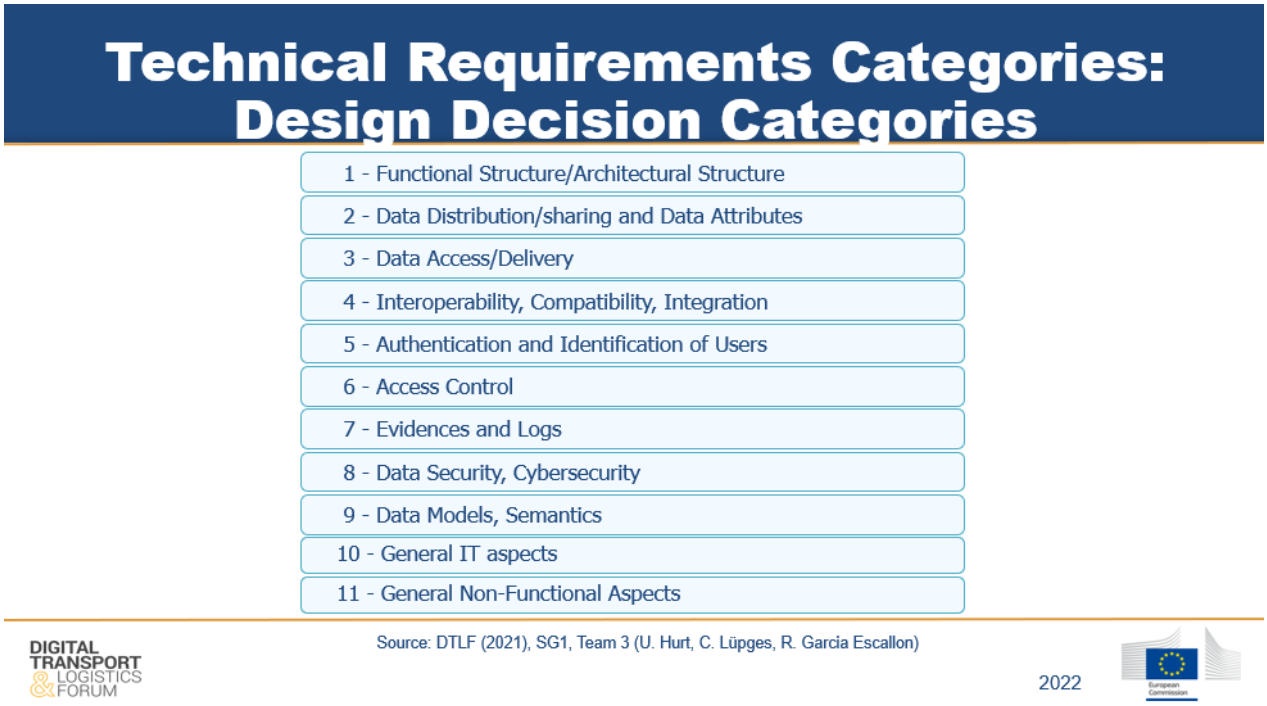


FIGURE 13. THE CATEGORIES OF THE EFTI ARCHITECTURE AND CROSS-FUNCTIONAL (NON-FUNCTIONAL) REQUIREMENTS (SOURCE: DTLF)[78]

TABLE 2. THE CROSS-FUNCTIONAL OR NON-FUNCTIONAL REQUIREMENTS OF THE NAP

REQUIREMENT	CONTENT
MF1. The architectural structure	• The NAP is technologically connected and interfaced with competent authorities over X-road. • The NAP is technologically connected to eFTI platforms over X-road (the X-road solution in Estonia, another public key PKI solution elsewhere) or API connection, or via blockchain interfacing if necessary and agreed on
MF2. The structure of data exchange	• The NAP is built on the principle of the structure of the eFTI data exchange being diffused, i.e. no central data exchange models being generated, and based on the principle that the data are constantly available in the eFTI platforms. • The NAP is connected to eFTI platforms in a manner which enables receiving information on indexing freight transportation documents from them. • The NAP is connected to eFTI platforms in a manner which enables opening indexed links and sending them to the information systems of other competent authorities or displaying them on the screen of a device/tool. • The NAP is connected to a network of other NAPs via agreed international interoperability mechanisms.
MF3. Access to the data	• The NAP mediates the delegated inquiries from competent authorities through approved authentication mechanisms.
MF4. Interoperability, compatibility	• The NAP must ensure an interoperable architecture with other systems.

[78] The DTLF, the eFTI architecture, the design categories of the solutions

MF5. Identification and authentication of users	• The NAP only authorises different information systems. • The NAP is presumably not equipped with a user interface and is thus not used for the identification or authorisation of private users.
MF6. Accesses	• The machine-machine accesses are organised by using the oAuth[79] solution.
MF7. Certificates and logs	• The NAP must be capable of logging the inquiries processed and the origins thereof.
MF8. Data security, cyber security	• The NAP data exchange must be ensured in a manner which prevents unauthenticated access to the inquiries or logs.
MF9. Data model, semantics	• The NAP must function with the eFTI data models and be capable of processing them. • The UNCEFACT standards must also be taken into consideration for the mediation of the eCMR data.
MF10. General other IT requirements	• From the perspective of information technology requirements, the NAP must be compliant with the national requirements for the service or the requirements for the information system providing the service to the government.
MF11. Other cross-functional requirements	• The NAP must be built as sustainably as possible. • It must be possible to extend the NAP to several functionalities programmed for it for the mediation of inquiries.

The most important requirements for the functionality of a digital government[80] based on the aspect of the NAP are specified in the table below.

TABLE 3. MOST IMPORTANT CROSS-FUNCTIONAL REQUIREMENTS FOR A DIGITAL GOVERNMENT

REQUIREMENT	CONTENT
Development	• No programming languages which are not included in the Top 25 TIOBE index are used in the development of the application. • The end-of-life (EOL) of all components included in the development (the application, database, third party) must be at least five years.
Implementation	• Depending on the nature of the application and the risk analysis, measures should be taken to observe the advice given in the risk rankings[81] (Top 10).
Architecture: data exchange	• The service of a diffuse information system can communicate with the components of other services without creating own user sessions. • The technical components of the application log or generate a correlation ID. The correlation ID is sent along with each following inquiry. • The use of JWT and oAuth in user sessions should be considered.

[79] The oAuth 2.0. solution, https://oauth.net/2/
[80] The requirements for the cross-functionality of a digital state, LINK and LINK
[81] The OWASP risk rankings, LINK

	• The session ID should be of an appropriate length, random and unique for the entire duration of an active session. • The functionality of the user interface and the service are logically separated layers which communicate over API. The business technology components are used by different user interfaces.
Architecture: authentication	• The technical components of the application protect themselves and validate the rights of the users or technical service which have approached them. • Users are identified via the RIA TARA[82]. • While identification should be centralised, authorisation must be ensured by applications themselves. • An application may not create a new identity system. The existing national (ID-card) identity systems or those of the main operation systems must be used.
Quality	• The functional extent of the system has been defined and documented by clear stories of use. • The afore-mentioned stories of use must be included in the business documentation of the product.
Security: log	• The work of the software of the application is logged and the audit-log is saved separately from the application and its base.
Security	• The URL may not include personal data or session keys. • Unless specified otherwise, the application must be usable in creating systems which are compliant with ISKE class K2T2S2. • The input of the user or applications (including own) is checked and cleaned on the side of the application based on the internal expectations of the application. • The advice and principles provided in the newest version of the life cycle study of cryptological algorithms published on the website of the RIA must be observed in using encryption algorithms and hash functions. • The technical components of the application communicate with one another over TLS/SSL.
Data	• Deleting data may not involve the deletion of actual entries from the database, unless the entries are non-functional, i.e. with no business connection.

The technical requirements should also comply with the requirements of ISO/EIC 25020:2011[83] for the product and data quality to ensure the final product quality of the NAP.

These requirements are:

- Functionality-required requirements (suitable, appropriate, compatible, secure, functional appropriateness)
- Reliability (mature, fault tolerant, recoverable, compliance of the reliability)
- Usability (comprehensible, learnable, manageable; attractive, compliance of the usability)
- Efficiency (behaviour in time, resource use, compliance of the efficiency)

[82] National identification service, RIA TARA, LINK
[83] ISO/EIC 2501:2011 standard

- Maintainability (analysable, changeable, stable, testable, compliance of the maintainability)
- Portability (adjustable, installable, compatible, replaceable, compliance of the portability)

4.6. POTENTIAL DIFFERENCES IN THE ARCHITECTURE OF THE NAP INFORMATION EXCHANGE DEPENDING ON THE OWNER

The NAP functions on the same grounds, including the freight transportation and freight transportation document metadata indexing service and search service, irrespective of the owner of the service (private or public sector) or the authority in which the service is located in the case of a service provided by the state.

Differences in the connections with eFTI platforms may only occur if there is also a CAP operating in the market for connecting businesses and eFTI platforms, in addition to the NAP.

Connecting eFTI platforms with the NAP does not rule out other connections of eFTI platforms, incl. connections between platforms. The NAP does not organise or mediate data exchange between eFTI platforms.

In this case, the eFTI platforms may be connected directly to the NAP or CAP. If the eFTI platforms (some or all of them) are connected to the CAP, inquiries are made to them via the CAP, but the interface is uniform for the NAP in this case.

Architecture 1: If there is a national access point (NAP), the eFTI platforms are connected to the NAP for the transmission of data.

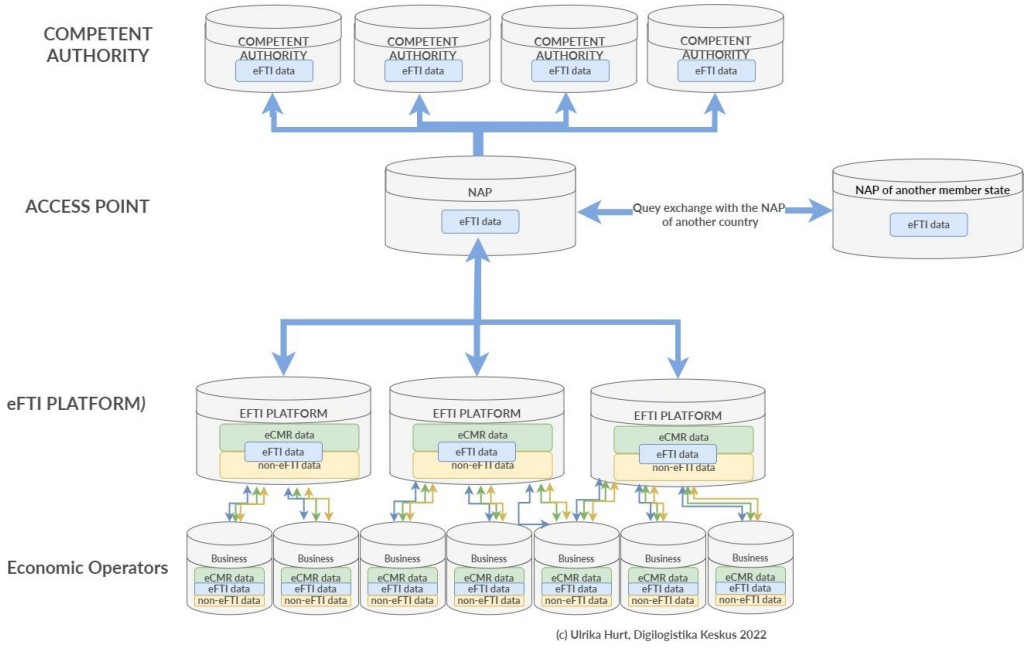


FIGURE 14. CLASSICAL ARCHITECTURE OF THE NAP

Architecture 2: If there is a national access point (NAP) and there is also a common access point (CAP) in the market/established, some of the environments are connected to the CAP and an inquiry moving through the NAP may be made directly to the eFTI platform or to the CAP, which in turn forwards the data from the eFTI platform.
The CAP does not fulfil the role of the NAP, i.e. an inquiry sent to other countries always occurs through the NAP.

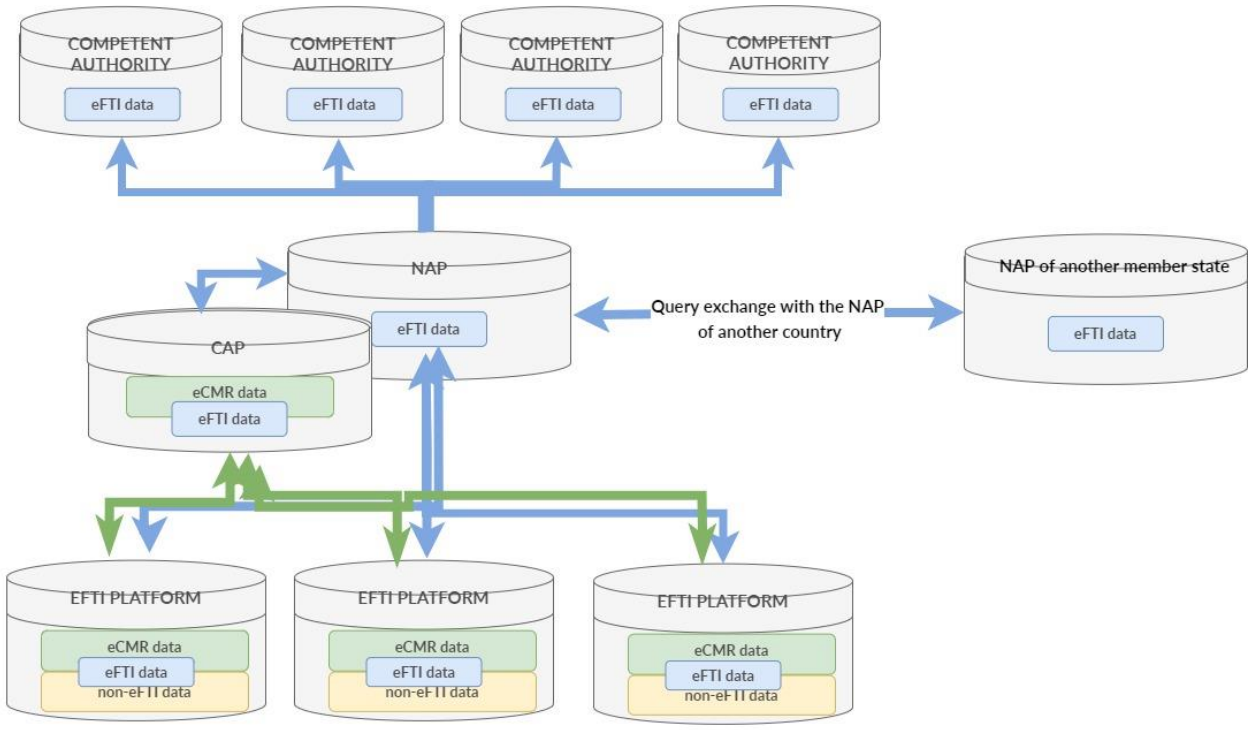


FIGURE 15. THE ARCHITECTURE OF THE NAP IF THE NAP IS PRIVATELY OWNED AND CAP SUPPORTS THE NAP

4.7. USE OF THE X-ROAD OR THE ESTONIAN E-GOVERNMENT STRUCTURE

The Estonian X-road enables best implementing the functionality of the NAP and the non-functional requirements via X-tee. As the X-tee provides a PKI (public key infrastructure)[84] structure, it is also structurally similar to the potential structure for the functioning of the NAP in other countries.

Within Estonia, the relevant services or information systems of all competent authorities, as well as some of the eFTI platforms would be connected to the NAP via X-road. The locations of the X-road servers and services are specified in the figures below (marked with the X-road icon):

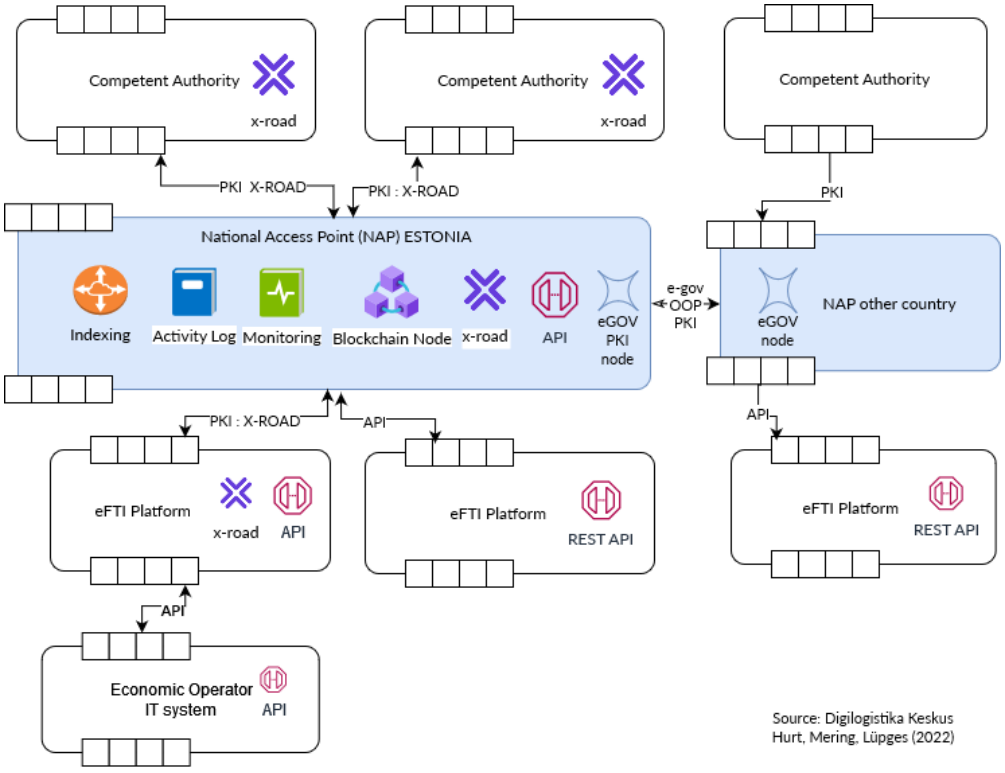


FIGURE 16. IMPLEMENTATION OF X-ROAD IN THE ARCHITECTURE OF THE EFTI AND NAP INFORMATION EXCHANGE

4.8. EIDAS AND THE AUTHENTICATION SERVICE IN THE STRUCTURE OF THE NAP

Pursuant to the eIDAS Regulation, an EU member state which uses identification means having a higher and/or a remarkable identity assurance level in the public network for identifying its residents, must, as of 29 September 2018, allow the residents of other EU Members States to identify themselves in their application information systems with identification means of those countries having an at least as high identity assurance level, depending on the identity assurance level required by the application information system in which the identification occurs.

[84] The SCOOP project, LINK

The Members States can decide on acknowledging identification means with a low identity assurance level on a voluntary basis. If such means are acknowledged, they may only be used in the application information systems which require this specific level.

The regulation does not regulate the use of authentication means with an undetermined identity assurance level and the Members States may decide on the use thereof.

In general, the identity assurance levels described in the eIDAS regulation (910/2014) must be used as the identity assurance level of the identification solution used for identifying external users: 'high' and 'remarkable'. If there is a justified need, identification means with a 'low' or 'undetermined' identity assurance level may also be used for identification.

In the NAP environment, identification and authentication of users (which eIDAS is used for) will only occur in the information systems of competent authorities and on eFTI platforms.

Estonia is, however, not using eIDAS for the NAP, but only the national TARA application. TARA is part of the pan-European eIDAS authentication network, but it is not necessary to have an international level to launch an inquiry of a competent authority.

eIDAS does not directly concern the work of the NAP, as the level of the NAP only involves machine-machine connections. The NAP must, however, be able to ensure via identification that inquiries are made by authorised information systems and persons. eIDAS is relevant in this mechanism, unless a user interface was built for the NAP for some reason, which is not foreseen by the authors of the analysis in the current phase (see also figure 7).

5. INTERNATIONAL CONTEXT OF THE NAP AND EFTI

Several EU-funded projects have been initiated to develop the best functioning architecture and information exchange solutions, as well as cooperation networks which work consistently on those projects.

No European country has developed the access point required in the context of the eFTI regulation by the time of drawing up this analysis, even though an increasing number of countries have started to think more about this issue in connection with the work of the DTLF in the field.

5.1. GENERAL TRENDS

Several European countries have started making preparations for an environment that would comply with the eFTI regulation, but they are still expecting the more specific delegated and implementing acts of the eFTI regulation before making any decisions. An increasing number of countries are also considering the possibility of using an access point, as all alternatives for organising cross-border information exchange without a NAP are proving more complicated than first thought or the development of the respective good solution is not sufficiently advanced from the technological or market preparedness perspective to be implemented immediately for data exchange over all eFTI partners.

As the specified requirements of the European Commission for the eFTI services are still being drawn up and decisions should currently be made based on the assumption that the NAP is voluntary, not mandatory, the Members States can focus on analysing the situation and assessing the potential options for implementing the NAP, as well as the alternatives. Furthermore, preparations can be made for choosing the organisations responsible which will be tasked with organising information exchange between countries and ensuring the access of the eFTI service providers operating in the country and the competent authorities in charge for national supervision to electronic freight transport information. Financial means can also be planned for potential developments in 2024 and 2025.

Thus, in the European Union Members States, an analysing position prevails in the planning of the respective national developments and decisions, as well as the NAP developments, while the Members States remain non-committal from the technological perspective. The decisions and discussion are based on the activities related to the stage of completion of the eFTI regulation, the work of the DTLF working groups, and the useful analytical material, researches, and analyses collected and shared in the course of the preparations made for them.

In the legal environment, no countries have established their national law for establishing the NAP yet, with the delegated and implementing acts of the eFTI awaited. On the other hand, the members states are prepared to find the resources and competence required for maximum joint planning and developing the cross-border organisation of eFTI data exchange, even though the plans will probably be implemented locally in all countries at a later stage.

It is very unlikely that there will be larger common cross-border access points, even though different discussions and projects have attempted to provide an input for this or prototype solutions. There may, however, be smaller, regional, or transport mode-focussed services created which will be serving the competent authorities of different countries. Cross-border connection of public sector authorities with private sector services still needs technological progress and a legal environment to function smoothly.

5.2. DIGINNO, DIGINNO-PROTO, AND DINNOCAP: ECMR INDEXING PROTOTYPE OF THE BALTIC STATES, POLAND, AND SCANDINAVIA

The sectoral cooperation projects in the Baltic States and Scandinavia are DIGINNO[85] and DINNOCAP[86] and the related development project DIGINNO-Proto[87].

A cooperation project of the Baltic and Northern countries has attempted to model the functioning of a network of NAPs based on the goal and the principle of the eFTI of the consignment note and other transport information being stored and mediated by eFTI platforms.

In 2019–2020, a cross-border eCMR indexing prototype was planned, developed, and tested in Estonia, Latvia, Lithuania, and Poland, which is a NAP network (network of access points) by nature and architecture. The platform was developed further in 2021, with more analyses also conducted on the potential developments[88].

The solution involved planning and testing an architecture of information exchange and data exchange between the parties, testing the functioning of the movement of data, and cooperation between the parties.

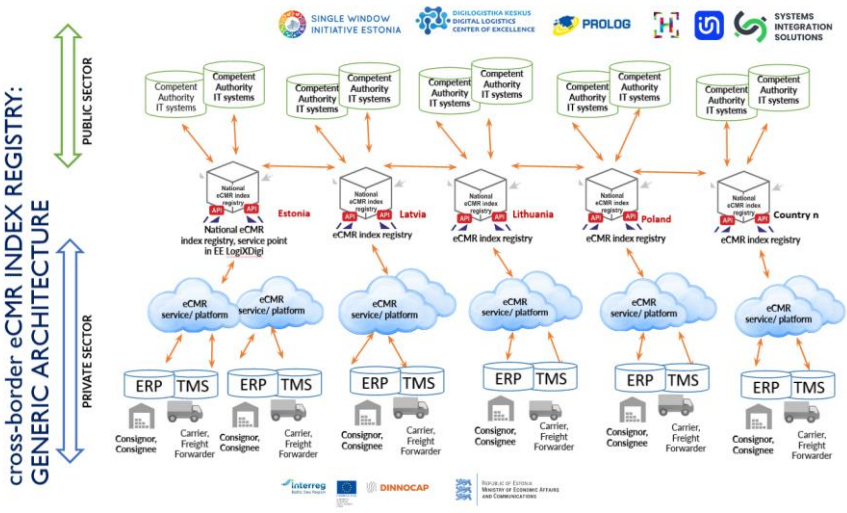


FIGURE 17. THE MODEL OF THE ARCHITECTURE OF THE CROSS-BORDER NETWORK OF ECMR INDEX REGISTRIES (SOURCE: DOCUMENTATION OF THE DINNOCAP PROJECT)

5.3. LARGEST EU PROJECTS: FEDERATED AND FENIX

Different European countries have initiated joint projects to prepare for the implementation of eFTI, incl. for digitalisation of road freight transport documents. Two of the most significant of those cooperation projects are FEDeRATED[89] and FENIX[90] conduced with the funding of the Connecting Europe Facility (CEF).

The FEDeRATED and FENIX projects are both based on the preliminary work for transferring to eFTI. The current solutions, missing elements, the currently used dataset of transport documents, and the eFTI

[85] The DIGINNO project, LINK
[86] The DINNOCAP project, LINK
[87] The DIGINNO-Proto project, LINK
[88] The testing report of the DINNOCAP eCMR indexing prototype, LINK
[89] FEDeRATED project, LINK
[90] The FENIX project, LINK

dataset are under observation. The requirements for the services and future platforms are examined on a wider scale, at the extent of the entire data exchange, which is required for the replacement of paper-based logistics with the digital one. Both projects provide an input for the work of the DTLF and support the planning of the implementing acts of the eFTI and the development of technological interoperability solutions in a substantial discussion. The leading partners of the projects are also involved in the work of the DTLF committees.

The aim of the FEDeRATED project is to come to a conclusion via cooperation on how to implement a network of different platforms with a network of interfaces (APIs) created for the user (company or authority) in which each party can choose their desired platform and share data with other users without knowing which platform is used by the other party. Data exchange and compatibility call for making different choices and reaching agreements. One of the expected outcomes of the project is an input for potential cross-border data exchange and for mediating inquiries from different countries, incl. finding how the network of service which provides access points or a similar solution could function in the future. The project partners are fifteen companies from six European countries, incl. Finland, the Netherlands, and Luxembourg, who are also cooperating more actively with Estonia. Estonia has the status of an observer in the project.

The FEDeRATED project involves 23 sub-activities (so-called living-labs) for testing and connecting the solutions of different partners. The activities will be carried out in 2022–2023 and the lessons learned should provide an input for the implementation of the eFTI regulation through the experience and best practices collected.

The project has several targets in connection with suggestions for the potential implementation of the eFTI, incl. the role of testing some data exchange solutions.

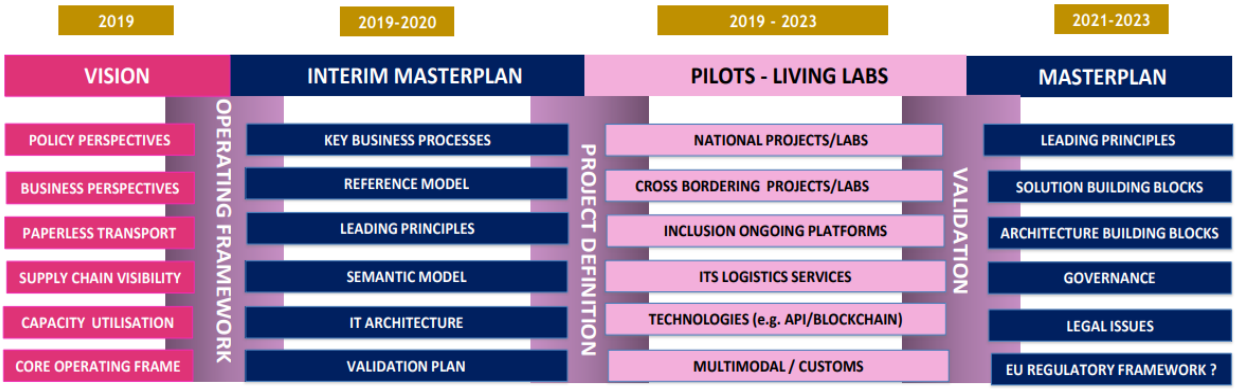


FIGURE 18. THE DEVELOPMENT PLAN OF FEDeRATED 2019–2023 (SOURCE: FEDERATED PROJECT)

FENIX is another CEF-funded project which is also focussed on the digitalisation of transport documents and interconnection of platforms in the pan-European network of transport corridors (TEN-T). The duration of this project is shorter and it will end in March 2022.

The aim of FENIX is to develop a concept and connections for connecting a pan-European network of service providers and for sharing data between senders of goods, providers of logistics services, freight transportation companies, local municipalities, and public authorities, as well as for ensuring compatibility between any individual current and future platforms, connecting the platforms by a so-called connector solution.

The idea of the FENIX comes from the work and proposals of the Digital Transport and Logistics Forum (DTLF) of the European Commission to establish a viable network of platforms for business-to-administration (B2A) and business-to-business (B2B) data exchange.

The websites of the projects and the conclusions of the different stages of the projects which have already been published can be used to get an overview of the most important opinions and activities of the FENIX

and FEDeRATED projects. The important report of the projects discussing the content of the projects in the first two years was the so-called 2019–2020 milestone report[91] published in the spring of 2021 which includes, among other things, an overview of the input of the project to the DTLF and the European Commission for drawing up delegated and implementing acts of the eFTI regulation.

5.4. ECMR PROJECT OF THE BENELUX UNION

The Netherlands, Belgium, and Luxembourg have initiated a cooperation project together[92] and extended its initial completion date to 2025[93]; the preliminary work is done and an analysis has been complied on whether and how inquiries could be made from eCMR platforms. The Benelux project was based on the need to make inquiries from all services in the different countries of the region and the aim is to build a basis for a solution for creating a uniform channel for national supervision for controlling the trucks in traffic. The project was initiated with a goal to develop a solution which would enable forwarding inquiries from public authorities to the eCMR service providers in the three countries to obtain information.

5.5. NATIONAL DEVELOPMENTS IN THE NETHERLANDS, THE BENELUX COUNTRIES

In the period of drawing up this research, the main leaders of the eFTI data exchange in the Benelux countries are the Netherlands and Luxembourg.

The Netherlands is standing for its positions and for enforcing those positions in the FEDeRATED project as well as in SubGroup 2 of the DTLF quite strongly. Thereat, they have a lot of experience in organising information exchange between businesses and in receiving information for the country, but are less experienced when it comes to cross-border information exchange or the tools of e-governance, incl. the eIDAS solution.
On the other hand, the Netherlands is using a novel and unique identification solution, iShare, which serves as the local eIDAS node with added functions, as the government does not offer the eID in the Netherlands.

The significant solution proposed in Luxembourg is the Authority OneApp, which is focussed on testing a central access interface for competent authorities. The project has clear architectural and technical similarities with the functionality of the national use of the NAP.

On the initiative of the Netherlands, however, a discussion has been launched for implementing a blockchain-based solution and the Netherlands intends to pilot this option in the Benelux eCMR project.

Belgium has taken steps to coordinate the cooperation of Benelux and create balance. However, the country remains on a non-committal position when it comes to the complemented eFTI requirements and is thus the main decelerator of local pilot projects with an aim of gathering more information to test the likeliest solutions more efficiently.

5.6. SCANDINAVIA: FINLAND

Scandinavian countries have approached the eFTI regulation quite differently so far. Finland has gone farthest (see below). Sweden, Norway, and Denmark have not yet taken steps at the national level when it comes to the NAP and have stated that they need further information on the expected functionality and role of the NAPs and will assess the implementing acts of the eFTI regulation of the European Commission

[91] The peer-review milestone report of the FEDeRATED project, LINK
[92] The decision to initiate the project, LINK
[93] The Committee of Ministers of Benelux, LINK

in making the decisions. On the other hand, there are also projects ongoing in these countries aimed at the development of paperless freight transport.

Finland has carried out sectoral research commissioned by the Ministry of Transport and Communication and drawn up 'The Strategy for the Digitalisation of Logistics[94]', which establishes the directions and goals of the country until 2032. The strategy was drawn up in the period from August 2019 to October 2020, with a working group also drawn up for mapping the measures required for the implementation of the eFTI regulation and submitting proposals on the national access point to the government. It has been proposed to hand over the development of the NAP[95] to the area of administration of the nationwide traffic management centre FinTraffic[96].

The working group[97] consists of the representatives of the Ministry of Transport and Communication, the Ministry of the Interior, the Ministry of Justice, the Ministry of Social Affairs, the Ministry of Health, the Ministry of Foreign Affairs, the Ministry of Defence, and other public authorities and is aimed at:

- developing a national plan for the implementation of eFTI;
- support the activity of the Ministry of Transport and Communication in making changes in the information systems;
- supporting the Ministry of Transport and Communication in the development of the required national legislative acts;
- drawing up an overview and supporting the needs of the stakeholders based on the implementation of the eFTI regulation.

The working group in question was active in the period of 2020–2022 and have now submitted proposals to the Finnish government based on which the NAP (national access point) to be established would be in the area of administration of Finntraffic with Traficom organising the procurements for the solutions required. The architecture of the eFTI-NAP has not yet been approved, with the complementation of the European Commission regulation awaited.

Based on initial estimations, 1–5 million euros will be required for the development of the NAP to be established in Finland. In the course of joint discussions with the Finnish working group, the issue of whether Estonia and Finland could establish a national access point together based on the eFTI regulation, and the attitude of Finland towards this is positive. Thus, more attention should now be paid to the cooperation between the ministries of the two countries, considering the establishment of a joint working group and co-funding of the activity thereof from the funds of both countries. Finland mainly drew up their estimated budget based on the data of the documentation of international road transport (eCMR) and the five-fold gap between the minimum and maximum assessments arises from the fact that detailed requirements are only now being drawn up for the eFTI services, and thus, the volume of the development cannot yet be accurately assessed.

There are several cooperation projects already ongoing with Finland and hence, it would probably be good for the ministry to continue this practice.

5.7. SCANDINAVIA: SWEDEN

Sweden remains non-committal, even though the Swedish government has expressed an increased interest in planning the implementation of the eFTI since the beginning of 2022. On the other hand, the Swedish businesses, professional associations, and the community of research institutions have already

[94] Ministry of Transport and Communication (2020), Strategy for the Digitalisation of Logistics, LINK
[95] eFTI-asetuksen tilennekatsaus, LINK
[96] FinnTrafic - LINK
[97] The working group: LINK

done the preliminary work and participated actively in the work of the DTLF. Public authorities have initiated active discussions on the potential establishment of the NAP.

5.8. SCANDINAVIA: DENMARK

Denmark remains passive, although they were rather active in the period of planning the eFTI regulation and preparing the act of law. On the other hand, the representatives and businesses of Denmark are already integrated in the implementation of the national eCMR, which has been implemented in a limited extent, but efficiently.

5.9. OTHER BALTIC STATES: LATVIA AND LITHUANIA

Lithuania has been practising a procedure based on which all road freight transport consignment notes must be submitted to the tax authority via an online environment established for this purpose for year. Thus, they have decided to carry on with the current practice and the NAP will also be established in the information system of the customs authority as an additional development, with 2 million euros allocated for this purpose.

The Lithuanian organisation bringing together the leading information companies in the field of eCMR consignment notes is Infobalt[98], which cooperates actively with third countries such as Ukraine, Armenia, and Azerbaijan, in addition to the European Union. There are also tight connections with Russia (Kaliningrad) and Belarus, but the current tense political situation is strongly limiting this cooperation.

Latvia is the most passive of the neighbouring countries and remains non-committal for now. In Latvia, the private sector leader of the discussion on the digitalisation of the eCMR logistics is Latvian Information and Communications Technology (LIKTA)[99], but it has been decided at the governmental level that electronic information exchange will be ensured by the Latvia State Radio and Television Centre[100], which manages the national data centre (similar to the RIA in Estonia). Thereat, no decisions have been made when it comes to the development of the NAP, but the Ministry of Transport is actively mapping the need and possibilities for the potential NAP, as well as the potential cost.

5.10. POLAND

Poland has participated in the DIGINNO, DIGINNO-Proto, and DINNOCAP projects to make preparations for the eCMR and NAP and their position is non-committal when it comes to preparing for the eFTI requirements. On the other hand, the public and private sector community has supported the blockchain technology, including primarily in the national data exchange.

5.11. GERMANY

Germany has enforced the additional protocol to the CMR Convention[101] in the period of this research and is thereby closer to the digitalisation of eCMR consignment notes and to the implementation of the eFTI than ever before.

[98] Infobalt, LINK
[99] LIKTA, LINK
[100] Latvian State Radio and Television Center, LINK
[101] Website of the additional protocol to the UN Convention and implementation thereof, LINK

Based on the requirements of the UN[102], Germany has implemented an additional access point to the documentation of the haulage of hazardous goods which enables using electronic documentation if they are aligned with the physical documents. For this purpose, the DGTINA network[103] has been created, which supports standardisation and networking between the different subscribed countries.

Germany has also updated the structure of the ministry in charge for the transport sector[104] to be better prepared for the digitalisation of transport.

5.12. FRANCE

France, like several other large countries, remains in a non-committal position when it comes to the specific requirements of the eFTI. On the other hand, the representatives of France were very actively involved in drawing up the data models and rules of data exchange during the period of this research.

5.13. EASTERN NEIGHBOURS OF THE EU

The EU policy in the digitalisation of freight transport is mainly focussed on increasing the efficiency of the transport corridors and reducing the environmental impact, but the digital logistics also provides a lot of opportunities for increasing the efficiency of national and customs supervision and ensuring public security. The European Union has a lot of influence on the nearby countries and thus the Balkan and Middle Asian countries, as well as Ukraine, Norway, and Russia and Belarus through joint projects are also involved in the eFTI initiative, in addition to the European Union Members States.

Some Western Balkan countries which are not in the EU have started to implement the requirements arising from the eFTI requirements with an aim of ensuring distribution of the information of multi-modal freight transportation operations on the same grounds with the European Union. On the initiative of a joint organisation, **Transport Community**[105], the European Union has concluded an agreement with the Republic of Albania, Bosnia and Herzegovina, North Macedonia, Kosovo, Montenegro, and the Republic of Serbia, based on which those countries are required to ensure the development of the general and main networks of TEN-T in the Western Balkan countries and gradually integrate them with the European Union. The Sustainable and Smart Mobility Strategy has been drawn up which sets the targets for the use and development of environment-friendly modes of transport in the Western Balkan region, such as the railway, inland waterways transport, and short sea shipping to achieve climate-neutral transport. The strategy drawn up is based on decisions of short or medium impact and the main measures prescribed include digitalisation of transport and increasing the share of multi-modal freight transportation operations by paperless freight transport which would hopefully be achieved by 2030.

The developments in the Eastern Partnership countries of the EU differ. The most important regional cooperation was done through the EU4Digital project[106], which was focussed on the implementation of the eCMR in the Eastern Partnership countries. The project also involved drawing up an analysis on digital organisation of freight transport and distribution of data between countries in a standardised form[107]. The analysis describes the preparedness of the countries and the process in the transfer from paper-based freight transport to digital freight transportation documents. This focusses on customs procedures, payment options in the exchange of goods, and multi-modal freight transportation operations, among other things.

[102] UNECE, LINK
[103] The Dangerous Goods Transport Information Network Association, LINK
[104] Federal Ministry for Digital and Transport, LINK
[105] Transport Community: LINK
[106] Eu4Digital, LINK
[107] Analysis of the EU For Digital project, LINK

The biggest interest and practical involvement have come from **Ukraine**, which also participated in the testing of the 2020 DIGINNO-Proto project. **Armenia, Azerbaijan, Georgia, and Moldova** have expressed interest in the implementation of the cross-border use of eCMR and visibility solutions, if possible, within the framework of UNECE or eFTI across the external border of the EU.

Belarus and Russia have been actively involved as stakeholders. The Russian partners from the Kaliningrad region were also observers and associated partners in the DINNOCAP project, but the ambitions of those countries and their involvement in the projects or in planning cooperation developments were suspended at the time of drawing up and submitting this report.

6. POTENTIAL ALTERNATIVES IN THE FORM OF OWNERSHIP OF THE CENTRAL NATIONAL NAP OF ESTONIA

This chapter discusses the six scenarios specified in the terms of reference and analysis thereof. At the time of performing the work, the European Commission still has not published detailed instructions and the eFTI implementing acts have not been adopted; there are no final requirements for the functionality of the NAP. It is also unclear which terms and conditions and obligations arising from the eFTI regulation would be set for the Members States. To the knowledge of the author of the work, however, the aforementioned does not have an impact on the analysis below on the forms of ownership of the NAP (alternatives).

The potential alternatives of the NAP examined in this analysis include the following scenarios:

- Alternative 1: the NAP is privately owned;
- Alternative 2: the NAP is procured by the state as a private sector service;
- Alternative 3: the NAP is owned by a public authority;
- Alternative 4: the NAP is owned by a public enterprise;
- Alternative 5: The NAP is in the joint ownership of the private and public sectors (PPP option);
- Alternative 6: no central NAP.

The chapter below examines the aspects accompanying the implementation of each scenario in detail based on the SWOT analysis. SWOT is an analysis method which helps to describe the current situation of a company/product/service, etc. by examining the following four aspects:

- Strengths – internal supporting factors;
- Weaknesses – internal damaging factors;
- Opportunities – external supporting factors;
- Threats – external damaging factors.

Thereat, the strengths, weaknesses, opportunities, and threats are presented **from the perspective of the owner of the NAP service and the service provider/operator.**

If the NAP is privately owned, the internal environment consists of the internal issues of the company operating the NAP. In this case, the national and international legal environment and international cooperation in connection with establishing/operating the NAP are treated as the external environment.

If the NAP is owned by the public sector, the internal environment primarily consists of the organisational peculiarities of the authority operating the NAP, the national law, and international cooperation (if the NAP is established in cooperation with other countries). The international and EU law, functioning of the private sector, the developments related to the eFTI platforms, and the general developments in other countries in connection with establishing the NAP are treated as the external environment.

The SWOT analysis discusses the economic, legal, technological, and operational factors, as well as those concerning cooperation with stakeholders for all scenarios to give an initial assessment to the potential of the alternatives. All alternatives may not have strengths, weaknesses, threats, or opportunities under all of the aforementioned criteria and this is not the target. The important factors of each alternative which differentiate it from other alternatives are highlighted.

In the case of the economic components (a further financial analysis is provided in a separate platform) the analysis is based on the assumption that revenues from the NAP service may arise from eFTI platforms; the service would be free for the government. The government can also use Waybiller and other similar platforms free of charge today.

As eFTI platforms are required to grant access to the data, using the NAP for this purpose would rather help the eFTI platforms cut down their costs. Otherwise, the eFTI platform should ensure access to the data for all competent authorities, which may mean providing different technological developments, which will end up a more expensive solution. As it is mandatory to make the data accessible for competent authorities and no fees are currently charged for similar services, there is no reason to believe that it would be possible to charge the government for fulfilling this obligation.

It is important to highlight that some of the threats and opportunities seen by the author of the work are applicable to all alternatives. The following threats may apply to all alternatives:

a) **The risk of data security**. Security of the data must be ensured irrespective of the ownership of the NAP. It may be predicted that certain requirements for security will be established for the entire Europe and must be complied with under any circumstances.

b) **When it comes to security and other potential requirements/standards** which may be established for the NAP, it should be kept in mind that if requirements are established which the provider of the NAP service must comply with, the supervision mechanisms used to inspect compliance with those requirements must also be specified. The task of supervision will most likely fall on the government.

c) **The risk of a lack of replacement operations** (the plan B should the service cease to function). As the NAP is primarily needed for fulfilling the obligation to electronically inspect consignment documents from the perspective of the government, this is not a functionality which may be unavailable in certain periods. This means that the government must think of alleviation measures for the risk of technological failures occurring in the functioning of the NAP which may prevent inquiring documents through the NAP in the case of each alternative.

d) **The risk of businesses being charged for part of the functionality**. As the entire transport sector is only taking the first steps towards digitalisation, it should be kept in mind that investment funds may be required for this purpose. It is therefore necessary to consider a situation in which the use of eFTI platforms is, for example, too expensive for businesses and they decide to forego digitalising the data. Even though the eFTI regulation places the eFTI service providers under the obligation to ensure competent authorities 'immediate access to regulatory information concerning a freight transport operation processed by means of their eFTI platforms, free of any charges or fees'[108], this does not prevent establishing access fees or licence fees to other market participants and/or other information.

e) **The risk of legal regulation**: unless using the NAP is made mandatory at least to a certain extent, some market participants, incl. larger eFTI service providers, may continue to provide 'closed' eFTI services (comparable to the floods of different mobile phone chargers which could only be eliminated if the EU required all such devices to be chargeable by using standard Micro-USB cables).

f) **The risk of legal over-regulation**: if the requirements set for the NAP service or service provider or the accessibility of the service are too high, it may significantly influence the realisation of the opportunity to establish a well-functioning and diverse NAP.

The opportunities which are present in the case of all scenarios:

a) Irrespective of the form of ownership of the NAP, it is possible to involve end users and representatives of the government to achieve a complete overview of the functionality and the input required for development. We can see that those solutions which have been developed in cooperation help to better take into consideration all circumstances.

b) Development of the NAP is the prerequisite for the entire transport sector to move faster towards digitalisation.

[108] The eFTI regulation, Article 10 (1) (c)

c) The possibility to create a multifunctional NAP: if the risk of legal over-regulation will not materialise, it may be possible to involve different eFTI NAPs under one service or at least in the portfolio of one service provider (incl. the NAP prescribed by the eFTI regulation and the voluntary eCMR NAP). This would enable reducing the cost of providing each individual service (as the overhead costs of the service provider would be spread over a wide service portfolio) and facilitate a wider use of the eFTI services (as each party subscribing to the service would also gain access to all other services included in the portfolio). At this point, this opportunity is supported by the fact that the eCMR protocol leaves the right to agree on procedures to the individuals interested in performing a freight transportation contract, as well as the fact that the substantial area of application of the eFTI regulation is limited to making the information required by legislation available to competent authorities.

In the case of any of the scenarios specified, it should be presumed that the consignment note NAP service is **one** service in a larger portfolio of services. This analysis is only focussed on the inquiries of road transport consignment notes and thus, the results of the analysis may not be the same in the case of observing the service package from a wider perspective, e.g. by all modes of transport and additional services which may be provided by the NAP.

6.1. ALTERNATIVE 1: THE NAP IS PRIVATELY OWNED

Based on this alternative, the NAP is a private service provider who must ensure equal treatment, transparency, and neutrality in the provision of the services in the market. The service is developed by using the means obtained by the company and the sustainability thereof is ensured by service fees. The government does not contribute to the development of the NAP financially. The government is not required to but may support eFTI platforms and deployment thereof through funding (e.g. support measures). No support is currently planned for establishing the NAP, as far as known, but it is possible if the private form of ownership is selected for the NAP.

The role of the government is to establish a national legislation based on the EU regulations. The government may be required to convert the data from the eFTI platform into a format suitable for the government. Therefore, the government would be required to create (and develop) an exchange standard for the conversion of the data if this is not achieved by the delegated and implementing acts of the eFTI regulation.

Data exchange is mainly organised through X-road in Estonia and thus, it would be in the interests of the government for the NAP to support the X-road functionality even in the case of a privately owned NAP and in the data exchange between competent authorities and the NAP.

The NAP service may be provided to the eFTI platforms for a charge. The government may, however, establish thresholds for the charge[109]. Thereat, the eFTI regulation does not allow establishing a fee per inquiry for public authorities. An alternative option for earning a revenue would be using licence fees[110]. In the case of this alternative, one of the key issues for the interviewees is how to make the use of the NAP mandatory. One of the possibilities for the alleviation of the risk of the continuity of the service is a contractual penalty, but using the penalty will not ensure the availability of the data for the parties of a freight transportation operation if the service ceases to exist.

Assessments to this scenario collected in the course of interviews and consolidated:

TABLE 4. ALTERNATIVE 1: 'THE NAP IS OWNED BY A PUBLIC AUTHORITY', SWOT ANALYSIS

STRENGTHS	WEAKNESSES

[109] estimation
[110] estimation

The main strengths of a private service provider are the speed of development and responding and the flexibility and adaptability in making changes. The economic model can be more flexible (different sources of funding, incl. service fees and project funds). The cooperation with other companies is more flexible. Economic: • The private sector provides the service more cost-efficiently (the feeling of using own money) • The owner of the service is more motivated to develop the service further (and thereby earn a higher revenue) • There are more human resources and/or human resources which can be involved more flexibly in the private sector for launching the service • No need for organising public procurements (the process of organising and conducting a public procurement is long) Technological: • Adjustment of the technology or development direction 'on the go' • Faster developments compared to the public sector (agility) Operational: • Speed of decision-making flexibility in organising the activities required for the development • Potential faster development and better quality of the services compared to those provided by the public sector (based on similar experience) Cooperation with stakeholders: • It is easier for a private service provider to cooperate with other private service providers (incl. international cooperation) • Opportunity to flexibly involve several development partners	The greatest weakness seen today is the lack of clear profitability. Commercial undertakings provide services if it is beneficial for them, which means that the market must be prepared to pay for the service. Economic: • The service must be profitable; otherwise, there is no motivation for providing the service • Use of the service would probably come with a fee for the parties. If the service becomes a paid service, however, businesses may not be interested in using it (especially if the service fails to provide the expected added value) • eFTI platforms may be charged for the NAP, which is why the eFTI platforms may not wish to display their data (they can choose a NAP which they are not charged for) • It is not certain that funding from the government will be available for the development of the service (support can be applied for based on competition) • A successful business model probably calls for attractive additional functionalities provided to the private sector[111] and a revenue from the foreign market (based on similar experiences) • The costs arising from national supervision should probably be taken into consideration (audits, reports)
THREATS	**OPPORTUNITIES**
Economic: • Additional functionalities[112] may be limited (the party requiring a development must pay for the desired functionality)	Economic: • Earning a revenue or providing to an additional service with added value which complies with the expectations of the users

[111] For example, automatic reporting for submitting reports to competent authorities, inspection of special permits, registration of haulage permits, CO_2 calculations, traffic register data, etc.

[112] This means a situation in which a so-called 'basic package' is established (directly based on the requirements of the eFTI regulation) which may not always cover the functionalities desired by all parties involved, as well as the 'additional functionalities' which can be provided through the NAP service.

• The investment may not pay off, turning the service into an unsustainable business model • Lack of funding due to the low margin of the service provided (an unsustainable business plan) • In order to ensure reliability, the government may establish a parallel system (which means doubling certain costs) • The risk of a monopolistic status (nationally; there would be guaranteed competition at the European level) • May lose out to foreign service providers in the competition Legal: • The requirements of the government may not be realised (e.g. the service may not be developed by August 2025) • It may be more complicated to obtain data from a foreign country (compared to a publicly owned service), although this risk may not realise based on the rules of alignment of services • The service provider may not comply with the requirements of the government • The compliance rule (large market participants) – sharing the data with private service providers may be complicated Technological: • A great business risk arising from the volume (incapacity to serve a large volume) Operational: • A private service provider may discontinue its operations (sustainability is not ensured) • Uncertainty of the users concerning the security of the service • May not ensure the equal treatment of end users and the transparency of the service • The service may start travelling between different countries (data security) • The interests of a service provider may sway towards other companies (own business interests) • The fear of a private business lacking de facto responsibility and development of the solutions in case of potential issues	• Flexible involvement of project funds for own funding or funding the development • Flexible price formation: the private sector looks for further sources of financing (offers additional services to the private sector) Legal: • The government can regulate the fees of using the service • The government can establish regulations to ensure the equal treatment of the users • The government can also establish standards if the service is provided by the private sector Operational: • An opportunity to learn from the experience of other sectors (e.g. banking and private medicine) • Prerequisites for the stable development of an efficient service (the interest of the private sector in constantly increasing the quality of the service and thereby earning more) • Potential for the development of an international cross-border service (possibility) Cooperation with stakeholders: • In the case of this scenario, it is possible to involve private stakeholders more directly

An important implementation-related comment highlighted concerns the special requirements applicable to the government in the event of the provision of a key service to the government[113] and the procurement obligation, which must be taken into consideration in the case of this scenario.

6.2. ALTERNATIVE 2: THE NAP IS PROCURED BY THE STATE AS A PRIVATE SECTOR SERVICE

Based on this alternative, the NAP is a private service provider who must ensure equal treatment, transparency, and neutrality in the provision of the services in the market. One option for providing the service and/or marketing the service would be by the government via public procurement in this case.

This alternative has two potential sub-scenarios:

- The government will presumably organise a public procurement for the development and/or management and/or operating the service during a certain period of time.
- The government will delegate a public task to private businesses, paying for the service in a certain extent.

The important factor in the case of this alternative is that the owner of the service is not the government but the private sector and the government pays for the provision of the service by the private sector. The weaknesses of the content of the service and the terms and conditions mainly depend on the capability of the contracting authority. A similar operating model has been used in the case of the following services, for example: provision of the eID certification services by SK ID Solutions; the administration service bought for the schools of the city of Tallinn as a public procurement for a public service; construction of bus stop pavilions.

Assessments to this scenario collected in the course of interviews and consolidated:

TABLE 5. ALTERNATIVE 2: SWOT ANALYSIS OF 'THE NAP IS PROCURED BY THE STATE AS A PRIVATE SECTOR SERVICE'

STRENGTHS	WEAKNESSES
Economic: • Secure funding model • The optimum price will be found in the course of a public procurement and other important requirements can be established • Stable provision of the service, incl. funding Legal: • Certain, agreed-on conditions • The government gains certain control over the activity, can establish technical requirements, etc. (security, administration, etc.) • Strong and direct representation of the interests of the government in the form of requirements Technological: • Innovation can be procured and the newest technological solutions demanded	Economic: • The sustainable business model would probably call for providing attractive additional functionalities to the private sector and earning a revenue from foreign markets (based on the example of a similar experience) • The costs arising from national supervision should probably be taken into consideration (audits, reports) • Finding resources for the developments is problematic (slowness of the state budget strategy process) • Lack of competition, the service may prove expensive Legal:

[113] Estonian Chamber of Commerce and Industry, LINK

• Development and technical requirements are fixed at a level required by the government • Quick and flexible developments (compared to the ownership of a public authority) Operational: • Supported by the current experience: The government has the experience of a similar model (e.g. SK ID) • Justified interests of service providers in high-quality provision of the service • Ensuring the quality of the service through supervision	• The winner of the procurement may not provide the highest-quality service and it may not be possible to terminate the contract (capability of the suppliers)[114] Technological: • The procurement conditions may be insufficient or poorly prepared in the context of rapid developments • The procurement conditions may prevent the use of the most modern technology (if the cheapest price is the assessment criterion) Operational: • The content of the terms of reference may not be aligned with the actual needs (capability of supplier) • Long development process (the time required for the public procurement compared to the private sector)
THREATS	**OPPORTUNITIES**
Economic: • All the factors required are not foreseen in describing the procurement conditions and the winner of the public procurement charges extra fees for the additional conditions (capability of the contracting authority) • The risk to lose out in the competition with the foreign service providers who may take part in the public procurement (the needs of the local businesses may not be represented in the best possible manner). Legal: • Risk of over-regulation (compared to private service providers) • Complicated product development for the supplier due to the national restrictions and financial limits established (increase in prices or remaining with thresholds) Technological:	Economic: • Possibility to charge a service fee. Legal: • Regulation of the fees by the state • Establishing a threshold for price formation to protect the market participants (an opportunity for the government) Operational: • Ensuring the development of the service for the government (not dependent on the initiative of the private sector; the service is developed compliantly) • Opportunity to learn from similar experiences (see the examples below) • The opportunity to provide additional services in addition to the scope procured in order to provide further, related convenience or quality services in addition to the services guaranteed by the government, for more flexible use of the service, etc.[116]

[114] This is not a NAP-specific issue but a general issue accompanying organising public procurements.
[116] If the criteria established for the development/management of the product of the procurement enable the private sector (incl. the service provider) to develop additional services. There is also the issue of state aid: if the government pays for the development of something and the development is performed by a company, this company would have an advantage in adding further developments.

• The government hesitates to order the newest technology and thereby take potential risks Operational: • A private service provider may discontinue its operations (lack on sustainability)[115] • Potential accompanying cyber security threats if the selection of the developer/operator only depends on the price (all developers/operators may not be allowed to qualify) • The risks arising from the organisation of the service provider (restructuring, ownership structure, sale of ownership, etc.) • Delays and the risk of the procurement being disputed • The risk to remain dependent on the winner of the public procurement (peculiarities in the development) Cooperation with stakeholders: • The terms and conditions are agreed on in the public procurement; if no private sector parties are involved, the perspective may remain incomplete; excessive focus on the government in drawing up the conditions (the risk of the service not including the functionalities required for businesses)	Cooperation with stakeholders: • A comprehensive perspective is achieved by involving end users and representatives of the government • It is easier for public authorities to communicate with one another in the issues related to the service (organisation of administration, agreeing on the need of the contracting authority of the service)

[115] It is important to develop the system in a manner which allows to potentially hand it over to another service provider in the next procurement period.

6.3. ALTERNATIVE 3: THE NAP IS OWNED BY A PUBLIC AUTHORITY

In the case of this scenario, the NAP is owned by a public authority / available as a public service. The alternatives here:

- the state is the owner, in charge for the development, management, and maintenance;
- the state is the owner, development is purchased, managed by the state;
- the state is the owner, development and management partly purchased (e.g. the user support service).

In the event of purchasing different parts of providing the service, the sustainability of the provision of the service must be ensured, i.e. the government must have sufficient administrative capability to announce a new public procurement in good time and ensure the transfer from one service provider to another, incl. ensure the sustainability of the service, should be procurement procedure fail.

It is currently unclear how many NAPs would be established, in total[117], but the interviewees do not deem it realistic (it is not deemed necessary) that more than one NAP would be established. Most interviewees believe that a state-owned NAP is the most sustainable and also the likeliest alternative. As the eFTI regulation places Members States under the obligation to accept electronic consignment notes, the government would have more levers to ensure the sustainability of the service in the case of the form of ownership of a public relationship.

The interviewees believe that political decisions in interfering in entrepreneurship may prove important if the service is provided by the public sector. Another fact that was highlighted is that the government should only provide those services which help serve public interests primarily in the sectors where market failures occur.[118] This means that the government should take the responsibility for establishing the service if there is no interest in providing the service in the public sector. It was also highlighted that the government cannot place the private sector under the obligation to submit data through a service which may be available for the private businesses for a charge. There is a similarity here with e-invoices – yes, the government may request the issuing of e-invoices which comply with certain standards, but the government cannot demand businesses to use the services of a specific e-invoice environment to submit e-invoices. This means that the government cannot force eFTI platforms to subscribe to a specific NAP service provider. eFTI platforms will be able to choose which NAP to subscribe to (if any) and how to make the data in its environment available to the competent authorities of the state.

Assessments to this scenario collected in the course of interviews and consolidated:

TABLE 6. ALTERNATIVE 3: SWOT ANALYSIS OF 'THE NAP IS OWNED BY A PUBLIC AUTHORITY'

STRENGTHS	WEAKNESSES
Economic: • The service does not have to be profitable • Stable budgeted funding Operational: • Reliability and security • Control over the inquiry process • More reliable from the perspective of businesses (compared to private service providers)	Economic: • Finding resources for the developments is problematic (slowness of the state budget strategy process) • The resource is competing with other activities and needs of the state (the government will have to forego doing something else due to providing the service)

[117] The implementing acts of the eFTI have not yet been adopted at the time of performing the work.
[118] The database of fuel handling operations of the Tax and Customs Board was highlighted as a similar service

• Probably only one NAP • Experience in providing a public service (similar services) (e.g. the TARA model) • Ensuring sustainability (it may be an obligation) • Stability of the service • Ensuring a reliable service for the state from the perspective of the state • Justified interests of service providers in the high-quality provision of the service Cooperation with stakeholders: • Inquiries are mainly made by the government (in the context of eFTI NAP) and thus, the cooperation between public authorities is the easiest (e.g. in using databases) • The government can steer paper-free economy in the transport sector. A signal is sent to the market that the government solves many issues accompanying the use of paper documents for businesses.	• Lack of competition, the service may prove expensive Technological: • The technological development is faster than the capability of the government to plan Operational: • Service providers change, there is no continuity with respect to the code • More time-consuming (public procurements; budgeting) Cooperation with stakeholders: • Involvement of private partners in the development stage may prove difficult
THREATS	**OPPORTUNITIES**
Economic: • Steady and continuous funding may not be ensured: the risk of once-only investment • Potential insufficient funding and rigid budgeting Technological: • Lack of interest from the NAP service provider in the development and modernisation of the service (the government will not receive enough input in the developments) Operational: • Potential interruptions in the service between two procurement cycles (the periodic nature) • Potential warning sign for the hauler (excessive control: see chapter 4.7) • The motivation of the government may not be sufficient to ensure the compliance of the NAP with the needs of private businesses • Officials are not owners: no personal resources involved Cooperation with stakeholders:	Economic: • Fees can be charged (public services are usually free, with state fees applied to some services) • Additional funding from funds designed for EU countries • Possibility to provide the service to other countries (it is easier for the government to communicate with other governments, compared to other alternatives) • Potential to sell the service to the private market (e.g. upon changing of the government) Operational: • A similar experience from the maritime sector, which could be used in road transport (potential for alignment) Cooperation with stakeholders: • Public and private sector services could be cross-usable (e.g. the government is developing the NAP, the private sector the CAP, and the two are made to function together)

• Operating of the service may not be business-focussed; customer service and customer friendliness, user convenience	• If the NAPs of other countries are also state-owned, it is possible to form better cooperation relationships.

6.4. ALTERNATIVE 4: THE NAP IS OWNED BY A PUBLICLY OWNED ENTERPRISE

In this alternative, the NAP is owned by a state-owned company, such as Omniva, and provides the service via a neutral or monopolistic status. The state does not interfere with the daily management and provision of the service. Compared to the first alternative, the government must take into consideration the costs which arise from the management by the provider of the administration service, coordination of the service by the government, and governmental supervision of the service.

The interviewees believed that the functioning logic of the NAP would not differ greatly in the case of this alternative from that in the case of the NAP being owned by a public authority. One important issue highlighted in the interviews was whether a public enterprise would be able to charge a fee from the government for establishing the service and what would be the motivation of the government to take part in the undertaking. The analysis team believes that a state-owned company is equivalent to a regular private business in charging a fee for their service and thus, this alternative would have the same opportunities for earning a revenue that are present in the case of alternative 1. However, based on the principles of participatory policy of the government[119], it is the general direction and goal of the government to only participate in the commercial undertakings in the case of which it is necessary based on strategic considerations or due to a reason arising from the public interest which are based on the strategic development plans of the sector. Earning revenues through taking part in business is not a target of its own for the government but an additional principle accompanying working in public interests.

Assessments to this scenario collected in the course of interviews and consolidated:

TABLE 7. ALTERNATIVE 4: 'THE NAP IS OWNED BY A PUBLIC AUTHORITY', SWOT ANALYSIS

STRENGTHS	WEAKNESSES
Operational: • Once there is a sufficiently strong state-owned company (e.g. Operail), it is a strength • The government can set strategic goals through its participation and steer the service (compared to a private business where there is no such option; in the case of a public service, the conditions are the same) • A state enterprise is probably trusted more than a private business • More motivation for developing the service compared to the previous scenario	Economic: • Lack of competition, the service may prove expensive • Such company also expects to earn a profit, the motivation of profit from operating the service • It is not clear today whether provision of the service via a state-owned company would be justified enough, based on the principle of participatory policy of the government.
THREATS	**OPPORTUNITIES**

[119] The principles of participatory policy: LINK

Economic: • The government may restrict the funding or the development and the enterprise may not be able to find opportunities for additional funding. Technological: • Lack of interest of the service provider in developing the service and in modernisation (compared to a private sector service provider) Operational: • May not be the principal activity of the specific company • From the perspective of businesses, questions about the presence of market failures in this sector (whether the government should interfere)	Economic: • An opportunity for the state to earn a revenue (dividends) • A possibility to earn an income from selling the service on foreign markets • The sometimes-limited resources of public authorities: the opportunity to use a state-owned enterprise to provide the service • Additional funding from funds designed for EU countries Operational: • Increasing the visibility of the state via flexible provision of a service • Establishing an appropriate state enterprise which only provides this service • Better steering of the requirements of the government

6.5. ALTERNATIVE 5: THE NAP IS IN THE JOINT OWNERSHIP OF THE PRIVATE AND PUBLIC SECTORS (PPP)

In the case of this alternative, the NAP is a service funded and established jointly by the private and public sectors in which both parties contribute with financial as well as other resources. Cooperation with different countries, development companies, investors, and e-service providers is possible in the case of this alternative. Similar examples involve public foundations, as well as private limited companies and public limited companies.

According to the interviewees, the advantage of the alternative compared to the service provided by the private sector is that as the government has an obligation arising from the regulations of the EU to offer a solution, the government would be able to directly control compliance with the requirements in the case of joint ownership. The lack of functioning examples was the main criticism for this alternative. The interviewees also believe that the general trend of the government is to be the owner of the solutions which it funds. In the case of this scenario, a sequence scenario to reduce the participation of the government can also be foreseen, when such participation is no longer necessary and precluding interest would be sufficient to achieve the aims of the government.[120]

The PPP to be established may be in the form of a commercial undertaking or an NGO (e.g. an association established in cooperation with businesses). It is difficult to highlight in the current phase which form of the PPP would be most reasonable and it primarily depends on the needs of the government (e.g. whether the government aims to earn an additional revenue).

Assessments to this scenario collected in the course of interviews and consolidated:

TABLE 8. ALTERNATIVE 5: SWOT ANALYSIS 'THE NAP IS IN THE JOINT OWNERSHIP OF THE PRIVATE AND PUBLIC SECTORS'

STRENGTHS	WEAKNESSES

[120] Principles of the participatory policy LINK

Economic: • A higher financial capability compared to other alternatives, as there are several parties (sustainability) Legal: • More operational freedom compared to a fully state-owned enterprise Operational: • Higher flexibility • The procurement can be used to establish specific requirements and should ensure the competition required for developing the services, as well as the most optimum solution (provided that the PPP is required to organise a public procurement and the development of the service is purchased to a certain extent) • Balanced public and private interests Cooperation with stakeholders: • The needs of both parties are satisfied, the parties are aware of one another's expectations, and thus, the solution could be more efficient • Tasks can be divided based on the strengths of the parties (e.g. the government is in charge for organising the cooperation between the government and the private sector)	Legal: • A lot of bureaucracy due to governmental control. Private sector + the rules of the state • Obligation to organise a public procurement • Low flexibility of public procurements (pieces are usually purchased, not hours) Operational: • The initial cost and the procurement contract may not ensure the best result[121] Cooperation with stakeholders: • The interests of the state vs the interests of the private sector – a change of no common ground being found • Different interests of the investors and service providers
THREATS	**OPPORTUNITIES**
Legal: • Conflict of interests • Potential bureaucratic management Operational: • The flexibility of a private enterprise is lost due to the lack of decisiveness, slowness of the government Cooperation with stakeholders: • Dissatisfaction of the private sector competitors (who is the partner of the government?) • The more parties involved, the more complicated it may be to organise the cooperation	Economic: • Involving funding from the private sector • Great development and export potential in the case of a good cooperation between the investor and the government • Possibility to earn a revenue Operational: • The clients of the service may also be the owners of the service, which promotes development Cooperation with stakeholders: • Involving a union, a union bringing together private enterprises. Joint enterprise. For example, the NAP is functioning by a professional association and is managed by a professional

[121] This means the option in the case of which the government procures a partner who will create the basic architecture with the funds of the government and will thereby earn a revenue for providing a service; or the development is carried out with private sector funds from the very beginning and the government pays on an annual basis (or collects dividends if the activity is profitable).

	association. Inspects, supervises, allows access – steering group as the PPP.

6.6. ALTERNATIVE 6: NO CENTRAL NAP IN ESTONIA

This alternative includes the option of not having a NAP in Estonia or not having any NAPs at all.

- Calls for the service being provided by a foreign partner which covers the territory of Estonia. The solution calls for connections with the public registries of Estonia via X-road.
- Public authorities request data directly through eFTI platforms or in another manner (blockchain).

The main issued highlighted in the interviews was that the alternative may turn out to be more expensive than those described above for the government, as connecting with many different service providers would require a lot of resources and 'simply' creating X-road connections would not be sufficient to enable cross-border data exchange, as all Members States may not be capable or interested in subscribing to the X-road. The government will also not be able to ensure the sustainability of the service, which may result in the continuation of the current situation in which inspection of paper-based consignment notes will remain the only functioning solution[122]. The interviewees also believe that inquiring data from foreign service providers may prove problematic, which is why it would be very important to have the information available in the local server.

In the field of customs, where the trend of the last few years has been towards pan-European, centralised datasets, functioning solutions were highlighted as an opposite experience (without a specific state-owned access point).

Assessments to this scenario collected in the course of interviews and consolidated:

TABLE 9. ALTERNATIVE 6: SWOT ANALYSIS OF 'NO CENTRAL NAP IN ESTONIA'

STRENGTHS	WEAKNESSES
Economic: • The state is not required to develop the NAP (saving on direct costs) Cooperation with stakeholders: • Functioning experience in the field of customs (pan-European solutions) • Cross-border connectivity	Economic: • May turn out to be more expensive in the end (the development of different X-road connections) • (if there is no NAP in Estonia, all justified parties must develop their own connections to the NAP) Legal: • Difficult to get an overview of the rules Technological: • Does not promote the digitalisation of consignment notes Operational: • May not provide an input to the development

[122] This means that if the service would not be functional during an inspection (and there would also be no back-up), submitting the data on paper would be the only alternative.

	• No guarantees when it comes to sustainability of the services • No levers for steering or influencing the service • Uncertainty of which (NAP or eFTI) service to choose or from where • The supervising party does not know where to inquire • The perspective of the Estonian government is not represented • The border between Estonia (and the EU) and Russia, which serves a lot of freight transportation operations. Thus, it would be important to have the information in Estonia (the possibility control the freight transportation operations of third parties) • No overview of the service (quality, security of the information, targeted use) • No control over the service provider • No national central responsible party
THREATS	OPPORTUNITIES
Economic: • It may be more expensive to purchase the service from another country Operational: • The needs of Estonia have not been taken into consideration sufficiently • The solution remains remote • Access to the data if the system ceases to function • The service is not used by businesses • The government does not have access to the data required	Economic: • Resource savings from joint developments in the context of the EU Operational: • Service providers get to choose which NAP to use • As there is no need to create a NAP, there is also no supervision obligation

Deciding not to establish the NAP will not facilitate the switch to eCMR consignment notes nationally. The NAP should, in general, provide an opportunity for quicker/simpler submission of documents, simplifying the accounting, responding to inquiries, etc.

This scenario may likelier than the others remain remote for the local users: what should a service which takes into consideration of the needs of businesses, which has functionalities required by the potential users, etc. be like?

The analysis team believes that the risks of switching to digitalisation would be most apparent in the case of this scenario, as the government lacks the levers for involving potential users and for developing a service which is compliant with the local needs.

As the eFTI regulation does not directly place governments under the obligation to establish a NAP service, one of the alternatives is not having a central NAP in Estonia.

This would potentially mean two alternatives:

- **Estonia subscribes to the NAP of another country.** Even though that would mean saving on some costs from the perspective of NAP for the government, not having a NAP may turn out more expensive in the end, as it may be costlier to purchase the service form another country and there would be no control over the sustainability of the service.
- **Competent authorities will find the ways for inquiring data from eFTI platforms.** There is no clear idea of how many eFTI platforms may be established over time, but the figure may be expected to reach hundreds, the majority of which would be located in foreign countries. This would mean that competent authorities will have to develop and inquiry system which is capable of inquiring data from hundreds of platforms or connections to hundreds of platforms would be required. In the latter case, there is always the question of how would the official performing a data inquiry know which platform to inquire freight transportation operation-related documents from. There is also the risk of not having operative access to the data in a foreign country in the event of the service ceasing to function.

In cooperation with the Ministry of Economic Affairs and Communication, some opportunities have already been mapped which aim to find cooperation options for planning the NAP with other countries (primarily Latvia, Lithuania, and Finland).

One important argument to highlight is that the lack of a NAP would not promote the digitalisation of consignment notes, which is extremely important from the perspective of the development of the transport sector.

6.7. FURTHER EXPECTATIONS AND NEEDS CONCERNING THE GENERAL IMPACT OF CREATING THE NAP

The main expectations and needs of the parties when it comes to the NAP which are applicable to all scenarios are described below. The interviewees found that awareness-raising is extremely important in the digitalisation of consignment notes, as this would highlight the advantages of digital consignment notes compared to the current situation. It was found that **establishing the NAP may be one of the development accelerators of the digitalisation of the transport sector in itself**, but if the specific benefits involved are not communicated and digital consignment notes are not made mandatory at the national level, the current situation may continue in which the majority of the consignment documents are submitted on paper.[123] Even though the interviewees claimed that the digitalisation of consignment notes is a significant motivator for the drivers of the younger generation, a wider awareness-raising would help to prevent a situation in which the activation of the solution established would be postponed due to the lack of digitalised data.

One of the greatest expectations of businesses when it comes to establishing of the NAP is the **potential time-saving**. Real-time and retrospective access to standardised documents would simplify reporting and **enable automatising mandatory operations** (e.g. the submission of reports to Statistics Estonia or the Tax and Customs Board). Digital entry of the data would enable introducing the so-called once-only principle[124] and thereby accelerate the pace of mandatory operations. Businesses are only interested in using the NAP if it simplifies their work.

The expectations of competent authorities (EMTA, PPA, Transport Administration) when it comes to the NAP is mainly concerned with the digitalisation of data which would enable ensuring the **authenticity of the data** and thereby reduce the risk of fraud. Even though physical inspection of drivers, vehicles, and

[123] As long as using the eFTI service is not mandatory for the market participants (it is not today) or there is not common standard for identification of 'fully electronic loads' applicable at least in the entire EU (compared to TIR), there is always a chance that the entire load or a part thereof would remain covered with paper documents – and fully electronic inspection is not possible so far.
[124] *once-only principle*

consignments would still be necessary in the case of digital consignment notes, digitalisation would help to monitor the movement of vehicles and consignments in real time and thus **increase the speed and efficiency of the inspection process**. As selecting the objects is largely based on the risk analysis of mass data, a larger amount of information ensures more accurate and targeted choices for the physical inspection. As the interviewees believe that the reliability of the information submitted on paper documents is currently very problematic, the control bodies expect digital stamps on the documents rule out the chance of the data being amended (or leave a mark thereof) or falsified during or before a physical inspection. Inspection of special permits which cannot currently be conducted digitally was highlighted as an additional functionality.

Statistics Estonia expects the NAP to **simplify the data transmission flow**. Even though the providers of transport services are required to submit their data to Statistics Estonia within the framework of reporting, many currently fail to submit the data, as drawing up the report means extra work for businesses. Statistics Estonia is not interested in requesting the data, but would like businesses to have datasets of an appropriate taxonomy which would allow submitting data to Statistics Estonia more easily than today. The potential benefit from using the NAP would arise from timely receipt of standardised data.

As the documents must currently travel a long way before the payments related to consignments are made, the owners and haulers of goods expect a reliable background system which would enable monitoring in real time the movement of the goods and would guarantee **secure payment transactions** for the owners of the goods. Many parties ordering freight transport currently refuse to accept an invoice before a CMR has been submitted: drivers always carry consignment notes, which means that many have access to the data. eFTI, however, provides an opportunity for the **protection of business secrets**. The expectation of preventing overburdening of haulers was also highlighted: if the solution established was used by other haulers, consignments could be divided, which would increase efficiency.

One important expectation that was mentioned in the interviews is that the digitalisation of consignment notes would help to **increase the transparency of the market**. From the perspective of the motivation of the private sector, it is important for the implementation of digital solutions to provide a competitive advantage to private companies, making the process of freight transport faster and more transparent compared to paper documents. According to the interviewees, it is important to avoid a situation in which the companies using paper documents would have an advantage due to the limited transparency of the data.

The interviewees also highlighted some **obstacles**, which should be taken into consideration in the context of establishing the NAP in their opinion. First, the **digital competence of drivers**: haulers use the solutions which the drivers can use. The parties to freight transportation operations are used to paper documents and many drivers also lack the devices required for displaying or processing digital documents. Therefore, businesses must take into consideration the **costs arising from re-training the employees, acquiring the equipment, as well as connecting to the eFTI platforms**. If digitalisation will not be accompanied by significant gains for businesses, the motivation for making investments and changing habits will remain low. The interviews also pointed out that the most common platforms and environment used by businesses should be taken into consideration in establishing the NAP in order to prevent unnecessary additional investments. The issue of **reliability** was also highlighted as a significant obstacle: businesses are not interested in submitting data to a platform which can be accessed by their competitors or through which the government can use the data against the companies.

The expectation of legal certainty, i.e. the justified expectation of not only the government but also businesses that the service will function also comes up in the case of all scenarios.

6.8. CONCLUSIONS BASED ON THE SWOT ANALYSIS

The SWOT analysis shows that the main benefits of the form of ownership of the private sector were the higher cost-efficiency and agility of the service, as well as the motivation to develop the service and to offer potential additional functionalities (external to the eFTI). In the case of the service being provided by a

private enterprise, attempts would probably be made to involve funds from foreign markets and foreign service providers would be competing with national service providers. The service is provided to the users for a fee, as the owner of the NAP expect to earn a revenue from the service. The main threats of a service operated by the private sector is the low trust of the users towards the service provider, as commercial undertakings are not prepared to take the risk of disclosing their business secrets. There is also the risk of the investments in the development and operating of the service not paying off, which would make the business model unsustainable.

From the perspective of the government, it should be kept in mind that even though it is possible to subject the operator of the NAP to a contractual penalty as a preventive measure, there is a risk of the service provider going out of business. The risks arising from fully using the private form of ownership can be alleviated by organising a public procurement, which means that the interests of the government are represented as procurement conditions and the government will retain more control over the service. This alternative would also ensure a more stable funding for the service, as well as a better quality due to governmental supervision. In this case, however, it should be kept in mind that the quality of the service largely depends on the capability of the contracting authority: the procurement conditions may not take into consideration the actual needs, the development process is too long due to the public procurement, and finding resources for regular development may prove problematic. There is also the risk of over-regulation which would reduce the flexibility of the service provider in decision-making. It should also be kept in mind that the service may be too expensive for the users due to the lack of competition for the service provider.

A service which is fully owned by the public sector may not be profit-focussed. It is possible that the NAP service will (at least initially) be limited to the exchange of eFTI data. The sustainability and security of the service, which would ensure the trust of the users for the service, may also be deemed the advantages. The weaknesses of the alternative are the low flexibility in decision-making and finding the resources for the development, as the resource is competing with other needs and activities of the state. The motivation of the service provider to develop and modernise the NAP is low, especially in the case of those additional services which may be interesting for the private customer but are not mandatory data from the perspective of the government. As operating the service is not focussed on earning a profit, there is a risk of the user convenience of the service remaining low, while the structure of the service may not match the wishes and needs of the businesses.

One option would be to provide the NAP by a public enterprise which would aim to earn a profit from maintaining the service like a commercial undertaking. The government could also earn a revenue from foreign markets. Thus, the motivation for the development of the service may be higher than in the case of a public authority. On the other hand, the government may restrict the funding or the development and the enterprise may not be able to find opportunities for additional funding. Compared to a private service provider, the trust of the users for the service would presumably be higher. From the perspective of businesses, however, questions may arise concerning the presence of marker failures in this sector, as the provision of the service via a state-owned enterprise is currently not justified, based on the principle of participation policy.

The advantage of the service which is in the joint ownership of the private and public sectors (PPP) is the balance of the government and businesses. In the case of PPP, the financial capability is probably higher compared to other alternatives, as there are several involved parties. For example, an association of private businesses may be involved: in the case of good cooperation, the service would probably have a higher development and export potential, compared to other alternatives. The tasks can be assigned based on the strengths of the parties (e.g. the government is in charge for organising the cooperation between the government and the private sector). On the other hand, there is also the risk of a conflict of interests and it may be more difficult to organise cooperation between several parties. The flexibility of the private sector may be neutralised due to the little flexibility and bureaucracy of the private sector, as the service is subjected to governmental control mechanisms. **The greatest risk of the PPP lies in the fact that there are no very good examples from Estonia (or Europe as a whole in a way) of a private and public sector cooperation model functioning without any significant issues.** This means that selecting this alternative

would be quite risky and a risk of the test failing or the management model of the service turning out to be too complicated must be taken into consideration (the more parties involved, the more complicated the management).

As the eFTI regulation does not directly place governments under the obligation to establish a NAP service, one of the alternatives is not having a central NAP in Estonia. This would potentially mean two sub-alternatives:

- **Estonia subscribes to the NAP of another country.** Even though that would mean saving on some costs from the perspective of NAP for the government, not having an NAP may turn out more expensive in the end, as it may be costlier to purchase the service form another country and there would be no control over the sustainability of the service.
- **Competent authorities will find the ways for inquiring data from eFTI platforms.** There is no clear idea of how many eFTI platforms may be established over time, but the figure may be expected to reach hundreds, the majority of which would be located in foreign countries. This would mean that competent authorities will have to develop an inquiry system which is capable of inquiring data from hundreds of platforms or connections to hundreds of platforms would be required. In the latter case, there is always the question of how would the official performing a data inquiry know from which platform to inquire freight transportation operation-related documents. There is also the risk of not having operative access to the data in a foreign country in the event of the service ceasing to function.

One important argument to highlight is that the lack of a NAP would not promote the digitalisation of consignment notes, which is extremely important from the perspective of the development of the transport sector.

7. FINANCIAL ANALYSIS OF ALL ALTERNATIVES

Below, the potential expenditure and revenues arising from creating the service are described in a five-year perspective. The scenarios include:

- Alternative 1: the NAP is privately owned;
- Alternative 2: the NAP is procured by the state as a private sector service;
- Alternative 3: the NAP is owned by a public authority;
- Alternative 4: the NAP is owned by a public enterprise;
- Alternative 5: The NAP is in the joint ownership of the private and public sectors, the so-called PPP option;
- Alternative 6: no central NAP.

The financial analysis of creating the NAP is provided in

Annex 2: Financial analysis.

The analysis was drawn up for all six alternatives. All costs set out are based on a situation in which the owner of the NAP lacks the competence/resources for implementing the activity. For example, the cost of organising a procurement procedure. If the authority already has procurement specialists, they will probably be tasked with the activity and no further costs are incurred (their remuneration is included in the budget of the authority). This means that the potential costs are highlighted, but the need for additional resources to cover the cost may not realise.

7.1. MODEL OF THE FINANCIAL ANALYSIS

There is currently no clear comparable experience for the assessment of the economic impact of the NAP compliant with the goals of the eFTI which could be taken into consideration, as there is no data exchange environment yet in Europe which would function as such a large-scale cross-sectoral network and would enable the exchange of so many combined documents/datasets. As the service is critical for businesses, high operability and compliance with extremely high security requirements must be ensured, bringing together the datasets of private businesses and state authorities based on uniform standards all over Europe. This analysis is focussed on the possibilities of Estonia to establish an NAP appropriate for this network.

From the perspective of the economic context, the potential risks, the speed of decision-making, and the flexibility of the process must be taken into consideration, as well as the following accompanying establishing the NAP and providing/maintaining the service:

- the development costs;
- the operating expenditure required for functioning;
- the extent of the market and the expected revenue from the service.

A financial model was developed within the framework of the project which describes the types of expenditure/revenue and explains which alternatives the expenditure or revenue would come with.

One important aspect in the case of the public sector as the service provider is that it would probably not be appropriate to charge a fee for connections from the NAP eFTI platforms or for data exchange, as the NAP would be part of the information system of the state in this case and charging a fee is generally not appropriate in the case of the services which are concerned with a reporting obligation.

TABLE 10. MODEL FOR THE FINANCIAL ANALYSIS OF THE ALTERNATIVES, COMPARATIVE TABLE

	ALTERNATIVES					
COSTS	**1**	**2**	**3**	**4**	**5**	**6**
DEVELOPMENT OF THE IT ENVIRONMENT						
PREPARATION FOR THE DEVELOPMENT						
Preparation for the development (further analyses)	YES	YES	YES	YES	YES	NO
Organising the procurement, project management of the procurements for the analysis and development (responding to the procurement)	NO	NO/YES	YES	YES/NO	YES	NO
DEVELOPMENT COST (INITIAL DEVELOPMENT)						
Development cost	YES	YES	YES	YES	YES	NO
Costs of the competent authorities on connections to the NAP	YES	YES	YES	YES	YES	NO
FURTHER DEVELOPMENT COSTS						
Further development cost	YES	YES	YES	YES	YES	NO
Connections to competent authorities from the perspective of eFTI	YES	YES	YES	YES	YES	NO
Connections to eFTI platforms	YES	YES	YES	YES	YES	NO
Configuration of cyber security mechanisms	YES	YES	YES	YES	YES	NO
MANAGEMENT AND ADMINISTRATION COSTS						
ADMINISTRATION COSTS						
Server and data back-up	YES	YES	YES	YES	YES	NO
Ensuring of the service if the main service is not available (back-up or replacement)	YES	YES	YES	YES	YES	NO
MANAGEMENT COSTS						
User support	YES	YES	YES	YES	YES	NO
Management by the service	YES	YES	YES	YES	YES	NO
Management/coordination by the state	NO	NO	YES	NO	YES	NO
Supervision	NO	NO	YES	NO	YES	NO
	ALTERNATIVES					
REVENUE	**1**	**2**	**3**	**4**	**5**	**6**
SOURCES OF REVENUE						
Revenue from the consignment notes and users of the service from the Estonian market	YES	YES	YES/NO	YES	YES	NO
Revenue from the foreign market	YES	YES	NO	YES	YES/NO	NO
Foreign air (project funds)	NO	NO	NO	NO	NO	NO
Licence fees or selling of the NAP competence to other countries	NO	NO	NO	NO	NO	NO
Contribution from the state	YES	YES	NO	NO	NO	NO

Expected profit	YES	YES	NO	YES	YES	NO

7.2. COST STRUCTURE

Development cost. In addition to the development costs, it is important to make sure in the course of developing the NAP that all parties are guaranteed free access through the API (or another similar reason), thereby preventing the abuse of a monopoly situation or manipulation of the market.

Irrespective of the form of ownership of the NAP, the costs of the development of the software are mainly formed of the time required for the technical analysis, programming, testing, and management of the work, plus the costs of the hosting environment for the software and potential use of licenses for operation systems or other software tools.

With respect to software management, it should also be kept in mind that public authorities usually do not have their own development resources and must organise public procurements to find resources for development or a development partner, which makes the process more expensive and time-consuming. In this case, the cost of the development service includes the direct costs of the tenderer, as well as the profit margin and also coordination and process manager on the side of the contracting authority. In order to alleviate this risk, a framework contract, dynamic procurement (contracts with several tenderers who can be requested to provide the resources for the works as and when required), or a longer-term development contract covering the need for development more extensively should be considered.

Private undertakings have a theoretical advantage here, as the decisions can be made quickly and flexibly, avoiding administrative costs, but only if the government decides to authorise the company to take care of handling the obligations arising from the eFTI requirements which are placed on the government by the regulation. This advantage is theoretical, as a public procurement must be organised to provide this authorisation. If the company providing the NAP service uses its own development resources to develop the service, the costs include the direct labour costs plus taxes and a certain share of the overhead costs. Based on the principle of equal treatment arising from the eFTI regulation, the company operating the NAP cannot simultaneously be an eFTI service provider.[125]

The development team of the NAP could consist of at least 3–5 members, covering the roles of the analyst, architect, developer, and tester. In addition to those individuals, a full- or part-time project manager or team leader is also needed.

Taking into consideration the critical nature of the NAP from the perspective of business, a methodology which rules out potential technological downtimes when the service is not available to the user should be used in the development. In the case of such a highly used solution, it would be reasonable to use automatic testing which helps to prevent interruptions arising from code errors, but also doubles or triples the volume of the development.

The financial budget for establishing the NAP is difficult to assess without the technical specifications. Based on the current preliminary information, Lithuania has budgeted 2 million euros for establishing the NAP, while Finland has been discussing 1–5 million, as well as even up to 8 million euros. Both of the examples are based on general assessments, not on technical specifications, as those are still being developed by the European Commission. The Lithuanian decision is based on the procedure applied in this country, based on which all freight transport operations must be registered at the Tax Board of Lithuania and thus the decision on the location of the NAP is also related to the continuity of the current national legislation of Lithuania. Finland has made a principal decision to establish the NAP of freight transport e-documents under Fintrafic as the national traffic management centre, road freight transportation operations are currently not registered in Finland and a consignment note is mostly a receipt of a freight

[125] As long as the eFTI NAP (or the operator thereof) may not simultaneously be an eFTI platform (or the operator thereof), the business potential of operating the NAP is very low.

transportation operation for the driver. Their estimated budget of 8 million euros is based on the experience of developing the current datasets.

The expected volume of the development works (initial development) is 37–45 man-months. Based on the assumption that the work costs 8,000 euros per month in the private as well as the public sector, incl. the wage cost (60–70%) and general costs (30–40%). The costs of preparing for development (incl. drawing up a detailed analysis, for example) in the amount of approx. 100,000 euros will be added to the costs, as well as the annual development cost of approx. 24,000 euros per year, but also the costs of connecting eFTI platforms and competent authorities and the costs of ensuring cyber security.

Management and administration costs. In the implementation of the NAP, the 100% accessibility of the service is of critical importance, i.e. there may not be any technical or technological breaks arising from maintenance of developments.

As the providers of the eFTI service, businesses with their own capability of drawing up digital freight transport documents, as well as competent authorities via the X-road will subscribe to the service, the service must be equipped with strong technical support which will help the developers of the service in connecting the APIs, testing data exchange, and authorising users.

In addition to the technical surveillance, user support must also be ensured for the NAP, which is expected to be available 24/7, as a considerable share of international road transport happens at night when the traffic load on the roads is lower. The user support will probably primarily be used by the developers of the eFTI platforms and the IT department employees/representatives of the eFTI service providers, developers, employees/representatives of the IT development of the governmental services to be connected, and the technical IT support for the NAP from other countries. Taking into consideration the potential number of eFTI service providers in Estonia (national as well as international companies), the expected volume of the work is the work of 2–3 man-months, the cost of the work is 5,000 euros.

The costs of organising supervision and coordination of the service by the state will also be added.

7.3. REVENUE STRUCTURE

The financial analysis is based on the assumption that the revenue of the NAP service may only arise from the fee for connections or registration of consignment notes from the platforms, the NAP service must be free of charge for the competent authorities, and thus, the service would be used for free from the perspective of the government.

As FTI platforms are required to grant access to the data, using the NAP for this purpose would rather help the eFTI platforms cut down their costs. Otherwise, the eFTI platform should ensure access to the data for all competent authorities, which may mean providing different technological developments, which will end up a more expensive solution. The use of eFTI platforms is currently free for the Police and Border Guard, for example, i.e. using those platforms to obtain data does not come with permanent costs for the authority. Thus, earning additional revenues from the government cannot be counted on in the case of the NAP.

The profitability of the service, the sources for covering the costs, and the value of the service for the users can be discussed irrespective of the form of ownership of the NAP or the method of development selected. This is significantly affected by the volume of the data which must be kept in mind in the case of the NAP, as if possibilities are sought for making the service profitable by establishing a document-based, user-based, or another fee, the cost per one consignment document may not exceed the cost of drawing up one current paper-based document (the difference of €4–5 per document[126]).

An estimated 3.5 million consignment notes are drawn up in Estonia per year, of which approx. 10% are electronic. The revenue model of this analysis is based on the perspective that all international

[126] *https://www.dinnocapbsr.eu/ecmr*

consignment notes could become electronic within five years after entry into force of the eFTI (i.e. in 2029/2030). Based on the conversations with representatives of the private sector and expert assessment on the possibilities of the market, we deem it likely that the revenue from one consignment note from the perspective of the NAP could be up to 10 cents.

The analysis above includes a revenue in the extent of the aforementioned fee in the case of all alternatives, but it is important to stress that earning this revenue cannot be deemed likely in the case of alternative 3, that is state-owned NAP service (i.e. a fee charged by the government in the eFTI platforms). This is due to the fact of the service being mostly required by the state, which means that charging a fee by the state would not be appropriate based on the practice so far.

Further revenue may be obtained from foreign markets, for example, in the case of the eFTI platforms of foreign countries subscribing to the Estonian NAP. This revenue should be deemed relatively unlikely, at least in the first years and thus, the data provided in the financial assessment does not include the revenue from foreign markets. The amount and extent of the potential revenue correspond to the Estonian market. As the opportunity to earn a revenue from foreign countries is only seen as an option once a national solution has been fully developed, this revenue is only potentially expected to grow from the second year in operation. **However, the analysis team deems taking into consideration a revenue from foreign countries in the economic model relatively risky, which is why the forecasts include a financial plan with and without revenue from foreign countries.**

7.4. CONCLUSIONS BASED ON THE FINANCIAL ANALYSIS

Comparing the different alternatives from the perspective of the government, the financial contribution of the government in the case of all alternatives is:

TABLE 11. CONTRIBUTION OF THE STATE IN THE CASE OF EACH ALTERNATIVE

		1 year	2 years	3 years	4 years	5 years	TOTAL
Alternative 1	The NAP is privately owned	90,000	60,000	60,000	60,000	60,000	330,000
Alternative 2	The NAP is procured by the state as a private sector service	584,000	270,000	270,000	270,000	270,000	1,664,000
Alternative 3	The NAP is owned by a public authority	834,375	396,000	396,000	396,000	396,000	2,418,375
Alternative 4	The NAP is owned by a public enterprise	834,375	396,000	396,000	396,000	396,000	2,418,375
Alternative 5	The NAP is in the joint ownership of the private and public sectors	439,688	220,500	220,500	220,500	220,500	1,321,688
Alternative 6	No central NAP in Estonia	0	0	0	0	0	0

Taking into consideration the financial burden on the government, alternatives 1 and 6 would be the most optimal solution, as the governmental costs would be almost six times lower compared to alternatives 3 and 4. This cannot, however, be the main argument for making the decision. The business potential of the alternatives must also be examined to assess the motivation of the private sector to develop the service.

TABLE 12. PROFIT/LOSS FROM THE PERSPECTIVE OF THE OWNER OF THE NAP (WITH THE REVENUE FROM FOREIGN MARKETS)

		1 year	2 years	3 years	4 years	5 years	TOTAL
Alternative 1	The NAP is privately owned	–717,000	–154,000	–14,000	143,500	318,500	–423,000

Alternative 2	The NAP is procured by the state as a private sector service	–401,375	–154,000	–14,000	143,500	318,500	–107,375
Alternative 3, option 1	The NAP is owned by a public authority	–799,375	–291,000	–221,000	–133,500	–46,000	–1,490,875
Alternative 3, option 2	The NAP is owned by a public authority (without revenue)	–834,375	–396,000	–396,000	–396,000	–396,000	–2,418,375
Alternative 4	The NAP is owned by a public enterprise	–799,375	–256,000	–116,000	41,500	216,500	–913,375
Alternative 5	The NAP is in the joint ownership of the private and public sectors	–802,375	–259,000	–119,000	38,500	213,500	–928,375
Alternative 6	No central NAP in Estonia	0	0	0	0	0	0

The loss with and without the revenue is highlighted separately in the case of Alternative 3 in the analysis. **As a result of the analysis, it is assessed that earning profit from providing a public service is probably not likely**, as this practice is not used extensively in the country, charging a fee for the eFTI platforms would send a controversial signal and would not facilitate the digitalisation of freight documents. It should also be kept in mind that the data on the eFTI platforms must be made available to the competent authorities, but the manner of doing so has not been specified, thus, the government also lacks the direct leverage for requiring the connections between the eFTI platforms and the national NAP.

The revenue from foreign markets is also taken into consideration in the table above (Table 12). As the conclusion drawn based on the analysis is that taking the above into consideration may prove risky, the profit/loss of the owner of the NAP without the income earned from foreign markets is highlighted below (see Table 13).

TABLE 13. PROFIT/LOSS FROM THE PERSPECTIVE OF THE OWNER OF THE NAP (WITHOUT FOREIGN MARKETS)

		1 year	2 years	3 years	4 years	5 years	TOTAL
Alternative 1	The NAP is privately owned	–717,000	–189,000	–119,000	–31,500	56,000	–1,000,500
Alternative 2	The NAP is procured by the state as a private sector service	–401,375	–189,000	–119,000	–31,500	56,000	–684,875
Alternative 3, option 1	The NAP is owned by a public authority	–799,375	–291,000	–221,000	–133,500	–46,000	–1,490,875
Alternative 3, option 2	The NAP is owned by a public authority (without revenue)	–834,375	–396,000	–396,000	–396,000	–396,000	–2,418,375
Alternative 4	The NAP is owned by a public enterprise	–799,375	–291,000	–221,000	–133,500	–46,000	–1,490,875
Alternative 5	The NAP is in the joint ownership of the private and public sectors	–802,375	–294,000	–224,000	–136,500	–49,000	–1,505,875
Alternative 6	No central NAP in Estonia	0[127]	0	0	0	0	0

[127] The lack of those costs on this line indicates that the government will not have to incur the cost of developing the NAP.

The solution of the NAP of the consignment note is earning a loss in the case of all alternatives in the first year, amounting to almost 800 thousand euros (in the case of alternatives 3, 4, and 5). From the perspective of the private sector, the service may only start earning a profit in the fifth year (without foreign markets), but it should be kept in mind that the previous loss must also be eliminated, which is not specified in the model. Taking into consideration the revenue from foreign markets, the company may start earning profits in the fourth year in operation.

Based on the results of the financial analysis, it is clear that a relatively extensive initial investment is required for establishing the service which may prove an insurmountable hurdle for a private sector service provider. Thus, and taking into consideration the maximum amount of the income earned, it is likelier that the service could be developed by an already existing company with sufficiently profitable other business lines to support the development of a new service.

7.5. ASPECTS RELATED TO THE ANALYSIS OF SOCIO-ECONOMIC IMPACTS

Even though the eFTI regulation provides the general guidelines on how the movement of electronic freight information must be organised, there are currently no specific instructions for a national system. However, we can say that the NAP should be built as cost-efficiently, sustainably, and securely as possible and double operations should be avoided.

Based on the study commissioned by the European Commission in 2018, the haulage of goods in the EU will increase by approximately 51% by 2050 based on the current EU trends and the expectations discussed in the policy documents of the EU[128], while approx. 99% of the freight transport in the EU is still performed based on paper documents[129]. The digitalisation of this process is seen to come with significant economic benefits and the digitalisation of the transport sector also reduces the environmental impact, which helps to achieve the targets established by the Paris Climate Agreement.

For the aforementioned digitalisation to create a higher impact, harmonisation of the legislation on the electronic communication of freight transport information must be discussed, as – as it often happens – if only one business or authority in the delivery chain refuses to accept electronic fright transport information (eFTI), the paper documentation must still be used, even though the competent authorities would accept electronic documents. Electronic data communication to other members of the delivery chain would be accompanied to additional costs in addition to cost-effectiveness, and universal use of paper documents would continue. Finding a solution to this problem would help to reduce the costs (e.g. working time, paper), especially in the case of a freight transportation operation involving several types of transport or service providers who are required to provide and update information about the freight transportation during the operation.

The following components may be deemed the likely socio-economic impacts associated with establishing the NAP:

- the environmental protection ensured by foregoing paper documents;
- less bureaucracy;
- time-saving (from the perspective of competent authorities, the parties to the freight transportation operation, as well as the different eFTI environments);
- less fraud, corruption, and crime.

[128] Impact analysis of the proposal for the eFTI regulation
[129] Feasibility Study of Cross-Border eCMR in the Baltic-Nordic region

It would be necessary to conduct a further analysis at least of the latter to get an overview of the wider impacts of establishing the NAP.

8. SELECTION OF THE THREE ALTERNATIVES OF THE HIGHEST POTENTIAL

The SWOT analysis drawn up in the first part of the work revealed that the main benefits of the form of ownership of the private sector were the higher cost-efficiency and agility of the service, as well as the motivation to develop the service and to offer potential additional functionalities (external to the eFTI). The main threats of a service operated by the private sector is the low trust of the users towards the service provider, as commercial undertakings are not prepared to take the risk of disclosing their business secrets. There is also the risk of the investments in the development and operating of the service not paying off, which would make the business model unsustainable.

In the case of a service owned by the public sector, the NAP serviced is likely to (at least initially) only be limited to the exchange of eFTI data. On the other hand, the sustainability and security of the service, which would ensure the trust of the users for the service, may be deemed the advantages of the model. The weaknesses of the alternative are the low flexibility in decision-making and finding the resources for the development, as the resource is competing with other needs and activities of the state. The motivation of the service provider to develop and modernise the NAP is low, especially in the case of those additional services which may be interesting for the private customer but are not mandatory data from the perspective of the government.

Below, the criteria and the methodology developed for selecting the three scenarios of the highest potential and the sequence scenarios for combining the different scenarios selected at a later date are presented and the three scenarios to be analysed in depth in the next stage of the analysis are suggested. The assessments are made, among other things, based on the strength, weaknesses, threats, and opportunities of each alternative mapped in the course of the SWOT analysis described in the chapter above, as well as the financial analysis.

Based on the three most potential alternatives, the owner of the NAP service can be a private enterprise or a public authority. An overview of the potential service owners is provided below.

If the scenario of the management of the NAP service being left solely in the hands of a **private business** is realised, the service provider must comply with the national requirements in performing the public task and take into consideration the costs arising from national supervision. A private service provider must also keep in mind that it may be difficult for large market participants to share data with a private service provider (the compliance rule). As the NAP is a cross-border service, it may be more difficult to obtain data from a foreign country, compared to a service owned by the public sector.

At the time of drawing up the analysis:

- there are no solutions the example of which could be directly followed in drawing up the business model of the service;
- the delegated and implementing acts of the eFTI have not been disclosed (may impact the structure of the business model);
- there is no good business perspective for the private sector based on the financial analysis.

Thus, the authors of the analysis do not deem it likely for the provision of the NAP service being the principal activity of the company, but the service may be one of several in a large service portfolio. This is especially the case if the NAP service may not be provided by the eFTI service providers who do, however, have the required competence, experience in the transport sector, and probably also interest in the NAP service. This rule has not been established at this point, but the issue has been discussed at the DTLF.

All arguments concerning the potential selection have been drawn up based on the current knowledge, but the assessment may be specified once detailed circumstances have become known. Therefore, the arguments below should be approached as initial arguments.

8.1. SELECTION OF THREE SCENARIOS OF THE HIGHEST POTENTIAL: THE CRITERIA AND METHODOLOGY

A new combined and case-specific set of selection criteria and methodology were created for the project and involve using two-stage assessment:

1) all alternatives are assessed:
    a) in the light of the critical factors. The critical factors may include the categories or requirements in the case of which a failure to meet the criterion would rule out bringing further the alternative in question. Such exclusion method is used in the practice of the law, for example.
    b) All alternatives are assessed based on the result of the financial analysis, i.e. those of the highest potential are selected and the ones which would be difficult to realise from the perspective of the financial analysis are excluded.
2) In the second stage, the remaining alternatives are assessed based on the information analysed and a suggestion is made based on the results of the analysis.

The following critical factors were selected in cooperation with the steering committee to carry out the first stage of assessment:

a) **sustainability of the service** – is the provision of the NAP service ensured and can the state feel secure about this? Does the state have any levers which could be used to ensure sustainability?
b) The possibility of complying with the national obligation (**functionality of the service**) – as the government will be under the obligation to verify electronic consignment notes, is it always ensured when implementing the alternative that the government can comply with its obligation?

TABLE 14. CRITICAL FACTORS AS THE BASIS OF THE SELECTION OF THE ALTERNATIVES

ALTERNATIVE	SUSTAINABILITY OF THE SERVICE (IS THERE A RISK YES/NO)	FUNCTIONALITY OF THE SERVICE (IS THERE A RISK YES/NO)	COMMENT
Alternative 1. The NAP is privately owned	YES	YES	In the case of a private sector service, the government may not be able to ensure the sustainability and functionality of the service; as the service required by the public sector is not under the control of the public sector, there are no levers for steering the service or ensuring sustainability. There is a risk of the service provider discontinuing the service or selling the company and its services to new owners, as the service is not sufficiently profitable.
Alternative 2. The NAP is ordered by the state as a private sector service	NO/YES	NO/YES	In the case of private ownership (even if the service was ordered by the public sector), the government will not be able to fully ensure the sustainability and functionality of the service; as the service required by the public sector is not under the control of the public sector, there are no levers for steering the service or ensuring sustainability. There is a risk of the service

			provider discontinuing the service, as the service is not sufficiently profitable. A further risk arises from the fact that the government has made an investment (the cost of the procurement) to establish the initial service and there is a risk of the expected profit form the investment not being received if the service is discontinued. One of the possibilities for the alleviation of the risk of the continuity of the service is a contractual penalty being defined by the state, but using the penalty will not ensure the availability of the data for the parties if the service ceases to exist.
Alternative 3. The NAP is owned by a public authority	NO	NO	The NAP is primarily needed to comply with the obligation of state authorities; the sustainability and functionality can be ensured by providing a public service.
Alternative 4. The NAP is owned by a public enterprise	NO	NO	The NAP is primarily required to comply with the obligations of public authorities; through a state-owned company, it is possible to ensure the sustainability and functionality of the service even if the service may not prove profitable (via subsidising).
Alternative 5. The NAP is in the joint ownership of the public and private sectors (PPP)	NO	NO	If the NAP is at least partly owned by the government, it is possible to ensure that the service is not discontinued and the functionality is guaranteed. In the case of partly state-owned companies, the government can increase or reduce its participation based on the need.
Alternative 6. No NAP	YES	YES	Estonia will not have any control over the sustainability or functionality of a private or public sector NAP of a foreign country.

8.2. PROPOSAL FOR THE THREE SCENARIOS OF THE HIGHEST POTENTIAL

As a result of conducting an assessment with the help of the exclusion method applied and described above, the research team who drew up the analysis suggested the following alternatives as the three with the highest potential which could be applied with the lowest risk for further analysing:

1) Scenario 3: The NAP is owned by a public authority
2) Scenario 4: The NAP is owned by a public enterprise
3) Scenario 5: The NAP is in the joint ownership of the public and private sectors (PPP)

Taking into consideration the results of the comparative financial analysis of the six scenarios, the following are the alternatives with the highest potential:

1) Scenario 2: The NAP is procured by the state as a private sector service
2) Scenario 3: The NAP is owned by a public authority
3) Scenario 5: The NAP is in the joint ownership of the private and public sectors (PPP)

In order to make the final selection, validation seminars were organised with the steering group, as a result of which it was decided that alternatives 1, 2, and 3 would be selected for the phase of drawing up a more detailed analysis.

The SWOT analysis, the exclusion method, and the financial analysis all also showed the important bases for the decision-making in the case of each alternative which were taken into consideration in making the selection. **As a result of the discussion, another important criterion highlighted was that the alternatives included in the further analysis should be as different as possible: so that there would be operating models for the NAP being owned by the private sector, as well as the private and public sector coordinating, and the government taking the responsibility for the development of the NAP.** We also found that operating models provided by alternatives 1, 2, and 3 are as different as possible and thus, it would be important to continue the analysis with those alternatives.

Even though alternatives 1 and 4 are similar (the owner is a for-profit company in both cases), the steering group was still interested in in-depth examination of Alternative 1, i.e. the possibility of the NAP being a private sector service.

Based on the principles of participatory policy of the government[130], it is the general direction and goal of the government to only participate in the commercial undertakings in the case of which it is necessary based on strategic considerations or due to a reason arising from the public interest which are based on the strategic development plans of the sector. It has not been unambiguously defined in the current phase which would be strategic considerations or a wider public interest due to which it would be feasible to realise the provision of the NAP service through a state-owned company. Thus, this alternative was left aside in the second stage of this analysis.

Alternative 5 (the PPP version) was also ruled out, as it is similar to Alternative 2 and the further analysing of both would have meant double analysis, especially in the national perspective.

In choosing one of the two, Alternative 2 is supported by the fact that the management structure of the organisation would be significantly more complicated in the case of the PPP.

Alternative 6, i.e. not establishing an NAP, was left aside, as it does not ensure benefits for all parties and the alternative remains last in the order of preferences, irrespective of the order of the other alternatives.

8.3. SPECIFIED FINANCIAL ANALYSES FOR THE THREE SELECTED SCENARIOS

The financial analyses of the three selected scenarios are described below (Alt 1: The NAP is privately owned, Alt 2: The NAP is procured as a private sector service by the government and Alt 3: the NAP is owned by a public authority). The analysis was specified compared to the financial analysis including all scenarios, which is why the results differ from those described in chapter 7. [131]

8.3.1. THE NAP IS PRIVATELY OWNED (ALTERNATIVE 1)

As the obligation of competent authorities to process digital consignment arising from the eFTI regulation lies on the government, a request for a detailed analysis required for establishing the NAP as a private service and setting special requirements may be set up despite the private ownership. In case NAP would be privately owned, no costs of a procurement procedures arise for the government. The costs of the development are fully covered by the private service provider, but aid can be applied for from a foreign foundation.

The government is not likely to support the development of a service created fully on the initiative of the private sector and the development of the service therefore depends on the NAP business model. It is

[130] Ministry of the Finance, LINK
[131] Detailed analyses can be found in Annex 3: Specified economic analysis (three most potential alternatives)

possible to consider subsidising the development and operating of the service, if appropriate and possible. With this scenario, it is probably possible and appropriate for the government to cover the costs arising from connecting the competent authorities within the meaning of the eFTI and the provider of the NAP service and the costs of the governmental supervision.

As is the case with the following alternatives, the costs of connecting a privately owned NAP and the eFTI service provider must probably be covered by the operator of the eFTI platform.

The potential national revenue base is formed by all digital consignment notes moving via the eFTI platforms which are connected to the NAP in Estonia. The data exchange between the NAPs will presumably not generate a revenue for the service provider. Based on expert assessments, the volumes of the companies included in the sample, and the opinion of the market participants, the number of digital consignment notes moving in Estonia every year is estimated to reach approximately 3.5 million. Based on the preparedness of the market participants to pay for digital consignment notes, the estimated cost of a consignment note for the consumer of the service could be €0.05–0.1. This means that in the case of the cost of a consignment note of €0.1, the national revenue base of the service provider is €350,000. Revenue may be earned from the foreign market if the eFTI platforms of the foreign countries subscribe to the Estonian NAP (for example, if the country in question does not have a NAP). It is difficult to forecast the income available from the foreign markets in the current situation, but if ten eFIT platforms processing an equal number of consignment notes to Estonia subscribed to the NAP to be established in Estonia, for example, this would double the revenue base compared to only the revenue earned in the national market.

The government can also establish standards to the service provided by the private sector. In the case of the private form of ownership, the state must establish the regulations to ensure equal treatment of the users, if necessary. The state may also use a contractual penalty in the case of the delegated service to sanction the service provider for ceasing their activities. This, however, calls for a respective contract for delegating the service with the government to ensure the functioning of the mandatory service through NAP.

8.3.2. THE NAP IS PROCURED AS A PRIVATE SECTOR SERVICE BY THE GOVERNMENT (ALTERNATIVE 2)

In this alternative, the private owner of the NAP provides the service as a service delegated or purchased by the government. Compared to the service purely provided by the private sector, the government must take into consideration the costs accompanying organising a procurement procedure and managing the service.

The role of the government is primarily establishing different requirements in the procurement conditions (e.g. security, administration of the service, etc.). The government can also establish the limits for the fee. The state must also exercise supervision to ensure the quality of the service. It is important to involve the private sector parties in fixing the agreed terms and conditions in the public procurement, as it enables preventing the NAP service becoming too government-focussed.

The structure of the revenues and expenditure is similar to the private sector service, but the revenue of the service provider also includes the income from the public procurement. The public procurement would probably be preceded by the process of applying for foreign funding. As the financial analysis indicates that it would not be possible to start earning a profit before the fourth or fifth year even considering the revenue from foreign markets, the cost of the public procurement should probably cover the profit expectation of the service provider from the first year of operation (10% in the model). The model also includes the presumption that the amount of the further annual fee from the state (from year 2) should at least cover the costs of the development.

8.3.3. THE NAP IS OWNED BY THE PUBLIC SECTOR (ALTERNATIVE 3)

The aim of the publicly owned NAP service is not to earn a revenue, but primarily to make the data of the eFTI available to the competent authorities. The government will incur similar costs as a public enterprise

would; nothing indicates that creating the service would be significantly more expensive for the government than for a private service provider. Even though no direct revenues arise from operating the NAP, the government will save on the costs which would be incurred if no NAP was established. Such costs may include single development costs or annual costs of connection/licence fees. The costs arising from no NAP being established arise from the need to organise the connection between all competent authorities and all eFTI platforms or foreign NAPs possible, the number of which cannot be predicted at this point. Development of the additional functionalities not related to the eFTI is probably not included in the scope of the NAP service developed by the public authority.

TABLE 15. PROFIT/LOSS FROM THE PERSPECTIVE OF THE OWNER OF THE NAP

		1 year	2 years	3 years	4 years	5 years	TOTAL
Alternative 1	The NAP is privately owned	–621,000	–82,000	58,000	215,500	390,500	–39,000
Alternative 2	The NAP is procured by the state as a private sector service	66,037	–58,000	82,000	239,500	414,500	744,037
Alternative 3	The NAP is owned by a public authority	–762,375	–324,000	–324,000	–324,000	–324,000	–2,058,375

TABLE 16. PROFIT/LOSS FROM THE PERSPECTIVE OF THE OWNER OF THE NAP (WITHOUT FOREIGN MARKETS)

		1 year	2 years	3 years	4 years	5 years	TOTAL
Alternative 1	The NAP is privately owned	–621,000	–117,000	–47,000	40,500	128,000	–616,500
Alternative 2	The NAP is procured by the state as a private sector service	66,037	–93,000	–23,000	64,500	152,000	166,537
Alternative 3	The NAP is owned by a public authority	–762,375	–324,000	–324,000	–324,000	–324,000	–2,058,375

8.3.4. CONCLUSIONS BASED ON THE SPECIFIED FINANCIAL ANALYSIS

As establishing the NAP service will come with remarkable administrative and management costs in addition to the extensive initial investment (€600,000), the authors of the analysis deem it very unlikely that a private company would be interested in providing the service without the support of the government. Even though the motivation of a private company to provide the service may not only arise from earning profit but also from avoiding certain costs (for example, if the owner of the NAP service were the eFTI service provider), it is unlikely for a private business to create a service which cannot become profitable in the five-year perspective.

If the government is procuring the service from the private sector, the profit expectation of the private business must also be taken into consideration, which means that the state must probably also cover the annual development costs, in addition to the initial investment (see Annex 3: Specified economic analysis (three most potential alternatives)). The advantage of this service ahead of a service provided by the public authority is that the contribution of the government in the five-year perspective is 50% smaller. Even though the total costs are almost 50% higher based on the financial analysis and there is probably no possibility to earn a revenue, the motivation to create the service comes from the wish to fulfil the obligations arising from the eFTI obligation.

9. ROADMAP UNTIL 2025

9.1. ROADMAP

The roadmap includes the activities for creating the NAP service and providing the service until 2025.

The roadmap is based on the dates on which the delegated and implementing acts of the eFTI regulation enter into force, with the uniform procedures and detailed standards, technical specifications for the access of the competent authorities to the eFTI environments, incl. the procedures for the processing of the information prescribed by legislation and exchange of such data with competent authorities and between the relevant companies being among the most important in the context of the NAP.

Delegated acts:

- Based on article 2, the notification obligations arising from the delegated and implementing acts and the legislation of the Members States; thereat, those acts are listed in annex I to the regulation.
- Based on article 7 (in compliance with article 14 of the processing process) – a joint data set of eFTI, the sub sets of the eFTI data, with the first of the kind adopted not later than by 21 February 2023.
- Based on article 12 on certifying the eFTI platforms and the use of the certification mark, renewal, suspending and cancelling of the certificates (if necessary), as the acts are adopted 'if there is a need for supplementation'.
- Based on article 13, the legal provisions on the certification of eFTI service providers, renewal, suspension, or cancelling of certificates, the acts are adopted 'if there is a need for supplementation'.

Implementation acts:

- Based on article 8 – uniform processes and detailed standards, technical descriptions for the access of competent authorities to the eFTI platforms, incl. the processes for the processing of the information prescribed by the law and exchange of such data between competent authorities and relevant businesses. The first such act will be adopted by 21 February 2023 at the latest.

Requirements are established for the eFTI platforms and service providers as follows:

- Based on article 9, the functional requirements for the eFTI platforms with the first such implementing act adopted by 21 August 2023.
- Article based on the requirements for eFTI service providers (subsection 9 (2)) with the first such act adopted by 21 August 2023 at the latest.

Entry into force of the delegated and implementing acts. Based on article 5 (1), the delegated acts adopted by 21 February 2023 will enter into force 30 months after adopting thereof, i.e. not later than on 21 August 2025.

Below, the potential roadmap of the three alternatives is described, highlighting the most important activities and the schedule.

TABLE 17. ALTERNATIVE 1. 'THE NAP IS PRIVATELY OWNED', ROADMAP FOR FIVE YEARS

ROADMAP: Alternative 1 the NAP is privately owned																			
ACTIVITY	**2022**			**2023**				**2024**				**2025**				**2026**			
	Q2	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
PREPARATION																			
The first delegated acts of eFTI are adopted																			
The first implementing acts of eFTI are adopted																			
Decision to establish the NAP (when all the requirements are known)																			
Applying for EU or other external funding																			
Involvement of related parties and collecting the input																			
Concluding agreements with the government																			
DEVELOPMENT OF THE SERVICE																			
Detailed analysis of the terms of reference for development																			
Putting together a team for the development of the service, recruiting new employees, if necessary																			
Procurement of servers																			
Development work																			
Creation of connections to the competent authorities of eFTI																			
Creation of connections to eFTI platforms																			
Creation of connections to the NAPs/NAP networks of other Members States																			
Testing of the service																			
PROVISION OF THE SERVICE																			
Provision of the service																			

From the perspective of the private sector, it is likely that the private sector is not prepared to take the risk of developing the service before the detailed requirements are clear. Based on what is currently known, the delegated and implementing acts of the eFTI will be adopted in Q1 and Q3 2023 and thus the private sector may be expected to make the decision about the establishment of the NAP in Q1 2024. Following this schedule, it should be kept in mind that the service will be ready for use from Q2 2026.

TABLE 18. ALTERNATIVE 2: 'THE NAP IS PROCURED BY THE STATE AS A PRIVATE SECTOR SERVICE', ROADMAP FOR FIVE YEARS

ROADMAP: Alternative 2: The NAP is procured by the state as a private sector service																			
ACTIVITY	**2022**			**2023**				**2024**				**2025**				**2026**			
	Q2	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
ACTIVITIES OF THE PRIVATE SECTOR																			
PREPARATION																			
Decision to take part in the procurement																			
Drawing up the tender																			
DEVELOPMENT OF THE SERVICE																			
Detailed analysis of the terms of reference for development																			
Putting together a team for the development of the service, recruiting new employees, if necessary																			
Procurement of servers																			
Development work																			
Creation of connections to the competent authorities of eFTI																			
Creation of connections to eFTI platforms																			
Creation of connections to the NAPs/NAP networks of other Members States																			
Testing of the service																			
PROVISION OF THE SERVICE																			
Provision of the service																			
ACTIVITIES OF THE GOVERNMENT																			
PREPARATION																			
Decision to establish the NAP, incl. determining the responsible party																			
The first delegated acts of eFTI are adopted																			
The first implementing acts of eFTI are adopted																			
Applying for funding (foreign funding, if possible) (RES/RE process, budget of 2024)																			
Involvement of related parties and collecting the input																			

Preparation and conducting the procurement procedure																			
DEVELOPMENT OF THE SERVICE																			
Detailed analysis of the terms of reference for development																			
Development work																			
Creation of connections to the competent authorities of eFTI																			
Creation of connections to eFTI platforms																			
Creation of connections to the NAPs/NAP networks of other Members States																			
Testing of the service																			
USE OF THE SERVICE																			
Use of the service																			

In the case of Alternative 2, the government can dictate when the establishing of the service begins, announcing a public procurement for finding a partner at an appropriate time. This way, it is possible to ensure that it will be possible to start using the service from Q3 2025. In the case of Alternative 2, the action plan must be examined from the perspectives of the private sector and the government, as both parties have their own responsibilities and activities. While in the case of Alternative 1, the decision to provide the service mainly depended on all of the requirements becoming clear, a further activity from the perspective of the state must be kept in mind in the case of the next two alternatives – finding the funding. For the NAP service to be ready by Q3 2025, a further application must be filed in the RES/RE process at the beginning of 2023 to guarantee the funding by 2024.

TABLE 19. ALTERNATIVE 3: 'THE NAP IS STATE-OWNED', ROADMAP FOR FIVE YEARS

ROADMAP: Alternative 3: The NAP is state-owned																			
ACTIVITY	**2022**			**2023**				**2024**				**2025**				**2026**			
	Q2	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
PREPARATION																			
Specifying the terms of reference of the NAP																			
Decision to establish the NAP, incl. determining the responsible party																			
The first delegated acts of eFTI are adopted																			
The first implementing acts of eFTI are adopted																			
Applying for funding (foreign funding, if possible) (RES/RE process, budget of 2024)																			
Involvement of related parties and collecting the input																			
Preparation and conducting of the procurement procedure to order the development works																			
DEVELOPMENT OF THE SERVICE																			

Detailed analysis of the terms of reference for development																		
Development work																		
Creation of connections to the competent authorities of eFTI																		
Creation of connections to eFTI platforms																		
Creation of connections to the NAPs/NAP networks of other Members States																		
Testing of the service																		
PROVISION OF THE SERVICE																		
Provision of the service																		

9.2. SCHEDULE OF BUDGETING BY THE GOVERNMENT

The finances of the government are mainly coordinated through two governmental documents: the budget strategy of the state and the state budget. The budget strategy of the state (RES) is a central strategic document of the government, which connects the needs and priorities of the government with the financial possibilities, i.e. the fiscal framework. The purpose of drawing up the RES is to ensure the sustainability of the budget policy in the medium perspective (4 years) and increase the efficiency of the activity of the government in determining the direction of the governmental and sectoral developments. The RES is implemented through the implementation plans of the development plans and the state budget. The state budget (RE) is the plan of the cash and other financial assets of the government for one year, based on which the constitutional institutions and the government use the money received by the state to implement different policies. The state budget consists of all revenues, expenditure, and funding transactions of the budget year which are specified in the State Budget Act by public authorities.

The RES and RE are drawn up once a year at least three months before the beginning of the new financial year. The process of drawing up the RES and RE begins sooner, however, which is why the work to determine the funding needs within the areas of government must begin at the beginning of the year to submit the input to the Ministry of Finance in June.

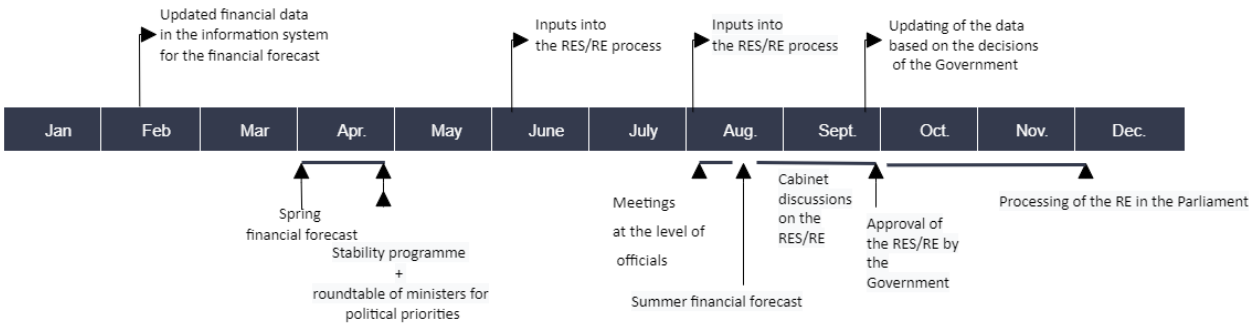


FIGURE 19. THE RES/RE PLANNING PROCESS (SOURCE: MINISTRY OF FINANCE) [132]

New and additional costs are planned in the RES/RE in the form of additional applications. The process of the additional ICT applications is primarily coordinated by the Ministry of Economic Affairs and Communications. Pursuant to subsection 5 (4) of Regulation of the Government of the Republic 'The conditions and procedure for drawing up the state budget strategy, draft state budget, and spending review and transfer of the state budget funds and the procedure for the submission of the reports arising

from the State Budget Act', the Ministry of Economic Affairs and Communications gives an expert assessment to the additional ICT applications and consolidates the ICT projects of the structural funds to alleviate the administrative burden and for better planning of the structural funds. The ICT applications and the project for tidying the field of the structural funds and the development leaps must be submitted on the prescribed form signed by the minister (head of the institution) and with explanatory background information to the Ministry of Finance not later than by 1 June and the Ministry of Finance will send the materials to the Ministry of Economic Affairs and Communication for a proposal. This is, however, preceded by a consultation and negotiations with the Ministry of Economic Affairs and Communication (February-May). [133]

9.3. CONCLUSIONS ON THE ROADMAP

Examining the roadmaps described and being aware of the restrictions arising from the planning process of the state budget, the following most significant conclusions can be drawn:

- In the case of alternative 1, it is very likely that the government will not have a central service by August 2025 for complying with its obligation (verifying the electronic freight transport information).
- Timely completion of alternatives 2 and 3 is in the hands of the government and thus, implementation of those alternatives would enable ensuring timely preparedness.
- One of the options (which is not directly described in the roadmap, but may be considered) is to apply for the costs in the state budget strategy process stage-by-stage. For example, the first application for funding may be submitted to the state budget strategy in 2023–2026 and it should at least include the costs of preparing for the development. This would enable bringing forward the development phase of the process by six months, which ensures a longer testing period.

[133] Ministry of the Finance, LINK

10. ANALYSIS OF THE PUBLIC SECTOR OWNER OF THE NAP SERVICE

If the owner of the NAP is a **public authority**, it should be kept in mind that different authorities may be competent for the establishment of the service platform and further management of the service. The most logical owner of e-services is usually the government agency whose principal activity is most related to the daily functioning of the service. Thus, it would be reasonable for the owners to consider the competent authorities of eTFI to whom the NAP services must provide data.

Those authorities are the PPA, EMTA, and TRAM. As IT competence is important in the development of the service, the information technology centre included in the area of administration of the respective ministry will probably be responsible for the development of the platform. It is the SMIT in the case of the PPA, the RMIT in the case of the EMTA, and the RIA in the case of the TRAM.

10.1. ANALYSIS OF THE POTENTIAL PUBLIC SECTOR OWNER OF THE NAP SERVICE

One part of the analysis was the analysis of a potential public sector owner with the following criteria considered to assess the choices:

- the activity of using the NAP of competent authorities today and in the future perspective depending on the business need;
- whether the service is time-critical;
- the current experience of the authority in creating operative connections;
- are there any national or international information systems in the portfolio of the authority which are relevant from the perspective of the service and whether the experience of working with them or the corresponding data exchange could provide a competitive advantage or an advantage to the authority;
- previous experience with creating a similar or other cross-border data exchange structure (NAP);
- the current personnel of the authority (is there enough structural competence for the creation and administration of the service).

Considering the suitable authorities from the perspective of those criteria, all of the authorities have strengths and weaknesses.

For example, from the perspective of the time-critical nature of the service, the NAP would fit the area of administration of the Police and Border Guard Board, as the PPA requires immediate information in the course of checks. The EMTA and especially the TRAM, however, primarily use the consignment note data for follow-up checks. On the other hand, the Tax and Customs Board uses the consignment note data more than others from the future perspective.

The EMTA with the RMIT and the PPA with the SMIT as well as the TRAM have experience in creating such services; the first two have several information systems of their own, the example of which could be followed to organise the administration of the NAP service from the perspective of user friendliness (e.g. The Apollo of the PPA) or comprehensive view of the data (the systems of the EMTA). Based on the assessment of the representatives of the RIA, their authority would not be the best owner of the service because the RIA have almost no contacts with providing a service and the (continued and current) funding of the service may thus prove problematic.

As several different authorities have clear strengths and all of them would be suitable for developing the NAP service (and cooperate with one another), the selection of the owner of the NAP service may be based on a political decision.

In order to make this decision, discussions should be held with the authorities with the greatest preparedness, wish, and need to undertake the leading role in the development of the service. The preparedness of the authorities is not mapped separately in this analysis and thus, no proposals can be made here based on this.

Furthermore, the choice of the owner may also depend on which authority can apply for foreign support for the development of the service and under which conditions. As establishing and developing the service comes with a significant cost for the government (and there are probably no direct sources of revenue for the state), it may be difficult to find the resources from the state budget. We also cannot presume that the budget of some authorities already includes this 'reserve', i.e. the funding is ensured.

Thirdly, the models of cooperation with other countries may be considered, as well as the strength or favourable conditions of different authorities for planning the development. The first alternative would be developing the NAP jointly in Estonia and Finland should be mapped. One good option for this is provided by the Nordic Smart Government organisation, for example, which focusses on the development of cross-border services based on the logic of X-road, among other things. Another potential alternative would be joint development of the NAP with Latvia and Lithuania, who have both started making preparations in their own way (the DIGINNO-Proto and DINNOCAP projects).

The creation of such cooperation models should initially be led by the Ministry of Economic Affairs and Communication as the ministry in charge for the transport sector, or the task could be delegated to the RIA.

11. CHALLENGES IN THE SELECTION OF THE FORM OF OWNERSHIP OF THE NAP AND IN ESTABLISHING THE NAP

11.1. CURRENT CHALLENGES IN ESTONIA

Further decisions should be made and executed based on previous experience and lessons learned to take into consideration as well as possible the success stories and avoid the mistakes made. Some of them are highlighted below.

11.1.1. SHORTCOMINGS AND LESSONS FROM IMPLEMENTING ECMR CONSIGNMENT NOTES IN ESTONIA

Even though eCMR consignment notes in fright transport can so far be discussed as a marginal part of the entire documentation, Estonia already has several experiences with the opening, availability, and changing of such services and it is appropriate to use those experiences to foresee and better manage those situations in the future.

MobiCarnet as an unused solution. The eCMR software for international freight transportation operations developed by ERAA may be deemed one of the lessons from the implementation of the eCMR service, which was very expensive to develop, but the system was never launched, as there were no opportunities for cross-use of the data and displaying the data to competent authorities outside of Estonia. That is, however, important to companies performing cross-border freight transportation operations to replace paper-based delivery notes with digital ones. The currently missing standardisation framework also prevents the implementation of the solution.

Wood hauling consignment note and the ELVIS environment. The largest setback concerning the eCMR products came when the EMPL decided to transfer the previous ELVIS users to the new software, EVR, at the beginning of 2021. This decision was somewhat rushed and the users were not notified sufficiently, which created an unexpected need for rearrangements for the forestry companies, of which almost 90% were using ELVIS. Thereat, the software switch prevented or made uncertain for some companies the access to the previous eCMR consignment notes, which are, however, the underlying books. The change has also come with the need for the competent authorities to develop new interfaces, as the short advance notice period of the change resulted in interruptions and made the switch difficult for the EMTA, PPA, and Transport Administration. The cost of the service also changes very abruptly. As it was a private information system and is not regulated by national law, it was difficult for the public sector to interfere in the situation.

The shortcomings in the preparedness of the market on the example of Waybiller. The eCMR services of Waybiller are intended for the parties ordering and delivering bulk material. Taking into consideration the peculiarity of the market in which many transport companies of different sizes cooperate, providing subcontracting to one another in fulfilling freight transportation orders, a number of larger haulers have assembled a network of smaller haulers under themselves. eCMR consignment notes are beneficial for big companies, as they can see the activity of the subcontractors and the mutual settling of accounts is also easy to manage in real time. However, the profit margin of the cost of a freight transportation service is often almost non-existent or the activity generates a loss, which is why any added cost on services is unlikely. It can also be presumed that unofficial wages and the desire to conceal the actual weight of the consignment are quite common in the international market, as this is often the only option for the provision of the freight transportation service at the prices and tariffs enabled by the contracting authority. This is often also the reason why freight transportation companies are not interested in the use of eCMR consignment notes and transparency of the freight transportation service.

11.2. INTERNATIONAL PRACTICE SO FAR

11.2.1. PRACTICES AND SHORTCOMINGS OF THE PROJECT OF HAZARDOUS GOODS

Project of a hazardous goods access point. For the mediation of digital transport documents of hazardous goods, the UNECE has enabled establishing of connection and access points since 2019 and regulated it in the form of guidelines[134].

Germany and France are the countries where it has been implemented. It has been implemented through the legal system in Germany and France is planning to implement it in 2022. Italy and the United Kingdom have considered it and started developing the access point. In the Netherlands, preparations are also being made, but the participants are not convinced by the system.

There are both privately and publicly owned access points. There are also two access points in Germany (in cooperation with TP1 DB Cargo BASF and TP1, which was marketed but then discontinued, as it failed to gain a sufficiently large market share and number of customers. There are two privately owned access points in Germany for this purpose, one of which has also gone out of business.

Based on the requirements, public authorities are not required to pay a fee for the use of the service. On the other hand, access points may charge the data exchange platforms connected.

Germany, which has the highest number of access points in private ownership, has managed to make the network work, but one contractual access point has already ceased its activities in the implementation period since 2019.

Therefore, it is believed that a private sector service may be profitable, but it calls for large volumes and a lot of effort, although it is possible. The expert of the field believes, however, that the eFTI NAP should be created by the government; otherwise, it will depend on whether a business model can be found and its profitability.

In the light of this practice, experts of the sector suggest that in the case of an eFTI NAP where the companies are not only operating voluntarily, but the governments are under the obligation to accept data, it would not be feasible for the government to risk testing whether the private sector is able to find a business model for the NAP.

[134] UNECE, LINK

12. CONCLUSIONS AND SUGGESTIONS

12.1. SUGGESTION FOR SELECTING AN ALTERNATIVE

Based on the analysis conducted, the analysis team suggests that alternative 3, 'the NAP is owned by a public authority', should be used, highlighting the following most important reasons:

Alternative 3, 'the NAP is owned by a public authority', may be deemed the best because:

- The regulation arising from the eFTI regulation is primarily the obligation of the government which only extends to the private sector in the extent to which the private sector requests the eFTI platforms to make their data available to them. Therefore, it is logical for the government to take steps to fulfil the obligation placed on it.
- Pursuant to the eFTI regulation, it is not mandatory to establish a NAP, but compared to the alternatives (e.g. waiting until another country establishes a NAP and allows the competent authorities of Estonia to subscribe to it; or competent authorities creating connections with all (potentially hundreds) eFTI platforms), a failure to establish the service may prove significantly more uncomfortable and expensive for the government;
- by developing the service, the government has the best control over the functioning, structure, etc. of the service, which allows them to respond to the needs of the competent authorities better than anyone else;
- Alternative 3 is the most expensive solution from the perspective of the government, but provides an additional opportunity to establish a NAP in cooperation with other countries, for example, which would help to cut costs.

Alternative 2, 'the NAP is procured by the state as a private sector service', should be deemed weaker than Alternative 3 due to the following reasons:

- the sustainability of the service will remain a great risk for the government. The private sector may (e.g. based on the poor economic results) discontinue the service, which would cause problems for the government in complying with its obligation;
- there is a risk of the government not finding a suitable partner for establishing the service by a procurement procedure and therefore failing to comply with the obligation placed on them in a timely manner.

The implementation of the alternative 1, 'the NAP is privately owned', should be deemed the riskiest and least likely of the three choices, as:

- the service may not guarantee compliance with its obligation for the government, i.e. the function of inquiring and verifying electronic consignment notes;
- in the case of the service, there is still a lot which remains unknown; the market has not developed;
- the legal framework and guidelines for this service will presumably only become available in the course of 2023, and thus, the analysis team believes that private businesses are not prepared to start developing the service or make investments. This, however, puts to risk the timely completion of the service, as a result of which the government lacks the preparedness to comply with the obligation placed on them;
- the potential revenue from the service is not sufficient to generate a clear business profit for companies. The number of consignment notes is not expected to increase in Estonia within the

next few years. This means that the business lacks the potential of growing in the course of the years, which reduces the motivation to provide the service;

- development of the service calls for a large-scale initial investment and, if the maximum revenue specified in the financial analysis is earned, the company will only manage to eliminate the loss of the first years by the eighth year. In our opinion, businesses are not motivated to provide the service in this light;
- it is not known at the time of drawing up the analysis whether and under which conditions it would be possible for a private undertaking to apply for support for the development of the service, which would reduce their financial risks;
- pursuant to the eFTI regulation, the obligation to acknowledge electronic freight documents will arise for the government, the private sector will not be under the obligation to switch to digital exchange of documents.

12.2. SUGGESTED POTENTIAL AUTHORITY

The selection of the authority is based on the Ministry of Economic Affairs and Communication being responsible for the development and launching of the NAP, as it is a development project in the transport sector and thus within the field of responsibility of the Ministry of Economic Affairs and Communication.

Even though the issues related to the sectors of information society and transport both fall within the area of administration of the Ministry of Economic Affairs and Communication, the obligations of the implementing party of the NAP as a policy may lie on an appropriate authority, which may be the Tax and Customs Board (EMTA), the Transport Administration (TRAM), or the Police and Border Guard Board (PPA). Thus, the development of the NAP as an information system may be coordinated by the RMIT, RIA, or SMIT.

The NAP must be developed in cooperation of all the afore-mentioned authorities and coordinated with other relevant competent authorities which exercise supervision over freight transport and are tasked with checking freight transport information.

This work was not focussed on assessing in detail the capability and preparedness for the development or management of the NAP services, but all three authorities referred to have this capability based on the initial assessment (either independently or in cooperation with others).

In the case of the public form of ownership, it is advised to consider the following alternatives as the authority managing the NAP:

1) The owner of the NAP is the **RIA** and the service is also provided by the **RIA**. This alternative ensures the highest international functioning and information technology independence.
2) The owner of the NAP is the **RIA** and the service is provided by the **TRAM**. This alternative ensures implementation of the service by one authority in the field of responsibility, with the owner being the RIA due to the information technology structure.
3) The **TRAM** is the public sector owner of the NAP and the service is developed by the **RIA** in the field of governance. As the NAP is a development project in the transport sector, the TRAM as a competent authority would be a logical choice for the owner of the service as it is included in the area of administration of the Ministry of Economic Affairs and Communication. The **TRAM** as the owner of the service would also have direct access to the supervision operations in the field of freight transportation.
4) The **EMTA** will be the public sector owner of the NAP and the service will be developed by the **RMIT** as the information technology centre in the field of governance. The EMTA uses the information in the consignment notes more than other competent authorities and thus, the authority has most intensive contacts with the actual provision of the service. The strategic targets of the authority also match with the expectations of the companies mapped in the interviews, which is ensuring fair competition in road transport.

5) The owner of the NAP as a public sector authority is **PPA** and the service is provided by **SMIT** as the IT-centre in the field of governance. Compared to other competent authorities, the PPA needs to consume the information in a consignment note faster. The experience of building a similar information system (Apollo) also speaks in the favour of the PPA. The targets of the NAP as a service also fit with the strategic targets and choices of the PPA, including reducing unnecessary bureaucracy and preventing unlawful activity.

12.3. POTENTIAL JOINT DEVELOPMENT OF THE NAP WITH OTHER COUNTRIES

- The opportunities for developing the NAP jointly in Estonia and Finland should be mapped.
- The opportunities to develop the NAP in cooperation with Latvia and Lithuania should be mapped. Both of those countries have already started making preparations in their own countries and a prototype for the indexing of a cross-border eCMR and for making inquiries has been developed and tested in cooperation with them.

12.4. SEQUENCE SCENARIOS

The analysis also concluded and it is advised to keep in mind in the selection of the three scenarios analysed in-depth that the selection made may not be final. This means that the state may decide to implement sequence scenarios in the establishing and implementation of the NAP depending on the development of the situation and the availability of funds, the cooperation possibilities or the advice for the technical architecture of the NAP to be determined.

It is foreseen that the form of ownership may change if the circumstances are specified and above all, if the market develops and before and after entry into force of the eFTI, in the feedback period, and in the following stage of further developments.

Depending on the role of the government and the structure of the market, the following scenarios may be implemented, for example:

- First, the NAP and the network of services required for the functioning thereof are developed with the backing and under the guidance of the government, with the government establishing the services which are needed by the competent authorities based on the obligations arising from the eFTI, but which may also become necessary for the private businesses, with private businesses being able to gradually, as the requirements are specified, the market grows, and the level of digitalisation increases, launch extensive provision of transport information services.
- The state encourages and supports the creation of the NAP as a private service (presumably based on the aspect of the speed and flexibility of the development) and will later systematically contribute to the development thereof. It is possible that the state will be providing the service itself in a later stage when the service has already been developed but serving its customers or sufficient additional services do not create a sufficient revenue base.

Possibilities for the implementation of sequence scenarios:

Sequence scenario 1:

- Stage 1. Establishing a publicly owned NAP, ensuring that the service is functioning for the state by the time of entry into force of the eFTI.
- Stage 2. In addition to the national NAP, private businesses will also be providing a NAP-like or another information exchange service or prove that it is possible to provide the NAP service next to another business model.
- Stage 3. The government procures the service from the private sector (handing over the management of the existing development to the private sector) and ceases to provide the service itself.

Sequence scenario 2:

- Stage 1. First, the NAP is established by the government as a private sector service and the government is the consumer of the private sector service. This could be done, for example, in a situation where there are external means of funding available for establishing the NAP and establishing the NAP as a private sector service is a faster and more flexible option by the time of entry into force of the eFTI. The service is set up based on respective contracts for the delegation of the service.
- Stage 2. The service is developed and improved by procurements to make it better and ensure the compliance thereof. The service is being provided based on a delegation or representation contract.
- Stage 3. The government takes over the service, as the maintenance of the service is not profitable for the private sector.

12.5. FURTHER ADVICE

This subchapter brings together other conclusions, observations, and advice which the research team has made in connection with planning and establishing the NAP.

Advice for the next steps of feasibility calculations

- Drawing a socio-economic analysis – the NAP alone is not profitable and thus, a more extensive digitalisation of the transport sector is the prerequisite.
- A wider analysis with an analysis of the implementation of eFTI platforms could give information about the profitability of the NAP and eFTI in general.
- Better statistical data would be needed, as it would provide better opportunities for price calculation (number of consignment notes, etc.).
- Detailed analysis for the assessment of the number of consignment notes and the size of the market in Estonia and in the region.

Further analysis of foregoing establishing the NAP in Estonia and establishing a joint NAP with other countries:

- Even though the government will not establish an NAP in an alternative situation, this may not actually be more profitable for the government, as it is necessary for competent authorities to make inquiries and a way must be found for organising data exchange and making of inquiries.
- Establishing the NAP in cooperation with other countries (in the nearby region) is one of the important alternatives to consider and should certainly be analysed further in the economic and financial conditions. It should also be done in the context of opening further opportunities for funding.

Legal system

- From the perspective of supervision and the companies included in the process of freight transport, the data specified in the eFTI are most likely not the only one which must be verified or stored and inquired electronically. On the other hand, we have to admit that if we wanted to see all eCMR data through the NAP, for example, a further legal basis would be required for this purpose. In the event of establishing this legal basis nationally, it cannot be applied to the freight operations of other EU Members States. In order to solve this problem, an eCMR inquiry environment may be created in addition to the national NAP (eCMR CAP). This potential and concept are not taken into consideration within the framework of this work, but it would be beneficial for the government to order such analysis, initialise a respective analysis, or collect information via the DTLF.
- When it comes to the delegated and implementation acts of the eFTI, the opportunities to make suggestions and contribute should certainly be taken to create a uniform description for the NAPs. This would accompany the description of the requirements for information exchange if the government establishes a NAP and a network of NAPs is created.

Projects

- The follow-up project of DIGINNO and DINNOCAP NDPTL, which has already been launched[135] in the cooperation of the Baltic states, Poland, and Finland, should be taken maximum advantage of to analyse the opportunities of the NAP and cooperation, incl. the technical functionalities

[135] The NDPTL project, LINK

- Within the real-time economy[136] (RTE) development projects of the Ministry of Economic Affairs and Communications, the opportunities concerning the goals of reducing the environmental impacts should be used and tied to the goals
- The funding rounds of the funding from the CEF and other funds opening should be used for connecting different European projects with one another and thereby better preparing for the implementation of the eFTI and planning and building the NAP.

[136] Ministry of Economic Affairs and Communications, Real-time economy, LINK

SUMMARY

In August 2020, the European Union Electronic Freight Information **(eFTI) Regulation 2020/1056** [137] **entered into force, which sets requirements on Member States to accept freight transport documents in electronic form from the entry into force of the regulation in 2025.**

The purpose of this 'Analysis of the operational model of the Estonian national access point for electronic road transport consignment notes' was to analyse the alternatives of establishing the NAP for the information exchange about consignment notes upon the implementation of the eFTI regulation, primarily based on the potential form of ownership. The document also discusses the eCMR information exchange platform, the experience, and the current requirements of the eFTI regulation, as well as those still to be adopted, to better determine the need for establishing the NAP, the background, and its role in the creation of a uniformly functioning digital delivery chain of goods based on the interests of Estonia.

The analysis is based on the situation in which Estonia will be subject to the requirement of the European Commission to accept and receive through data exchange mechanisms, as well as to inquire, electronic freight transport information and perform supervision on the basis of the above, assuming that such information exchange could be organised through access points in Estonia, as well as internationally.

The work is focussed on collecting and systematising, and analysing information on the technical, economic, and legal prerequisites and restrictions and consolidating the assessments within the framework of predetermined scenarios to collect an input for planning future action and for decision-making, which would ensure the use of eCMR consignment notes, as well as a smooth launch of eFTI data exchange and support **the creation of a jointly functioning infrastructure for a digital delivery chain of goods based on the interests of Estonia.**

The baseline situation for the work was formed by six alternative operating models, in the case of five of which the NAP would be involved **in the mediation of electronic information about goods between the competent authorities of the sector and the eFTI service providers.**

The scenarios analysed:

- Alternative 1: The NAP is privately owned
- Alternative 2: The NAP is procured by the state as a private sector service
- Alternative 3: The NAP is owned by a public authority
- Alternative 4: The NAP is owned by a public enterprise
- Alternative 5: The NAP is in the joint ownership of the private and public sectors, the so-called PPP option
- Alternative 6: No central NAP

Even though the eFTI regulation provides the general guidelines on how the movement of the information of electronic freight transport information must be organised, there are no detailed instructions for organising international or national information exchange yet in the period of drawing up this analysis. The delegated and implementing acts of the regulation are also being prepared and it is not yet known to which extent the functioning of access points or the requirements for the access points will be regulated in a situation in which **Members States will be able, but not under the obligation to establish access points.** As it would not be appropriate or feasible to connect all different competent authorities of the Members States with all the potential eFTI platforms to be established or to connect all parties to one technological infrastructure or create a central database, creating different access points (NAP) and connecting them with one another would be a potential situation.

[137] The electronic freight transport information (eFTI) regulation (EU) 2020/1056, LINK

The access to electronic freight transport information prescribed based on the eFTI regulation will be organised based on accurately regulated requirements, which establish the functional and technical rules for drawing up inquiries, configuring and enabling access, implementing data standards, and certifying service platforms. The respective practice exists in other sectors and enables creating a decentralised network compliant with the principles of e-governance of the EU.

At the time of drawing up the analysis, there are currently no eCMR or eFTI access points established in any of the European countries due to the lack of EU and national legislation. Discussions have, however, became more active and the preparations made by the public sector and the stakeholders, incl. the European Commission and expert groups, for the regulation of the potential NAPs have intensified.

As a result of the analysis, the state can make a well-considered and justified decision about the **functional and technical structure of the NAP service**, the related **expenditure and revenues, and the potential organisational location**. The analysis involves **mapping different possibilities for the location of the NAP, solutions, risks, and threats,** taking into consideration the **legal and economic peculiarities of different sectors.** The result of the work revealed three **scenarios of the highest potential** for establishing a central national electronic road transport consignment note access point (NAP).

Responses to the aforementioned questions were obtained by document analysis, interviews, data inquiries, work and validation seminars.

The general concept, purpose, and functionality of the NAP, the related parties and their interests, and the main legal aspects and challenges were described for all scenarios. **SWOT analyses** were drawn up to describe the scenarios based on the document analysis, analysis of the foreign practice, and interviews put together, in which the strengths, weaknesses, opportunities, and threats were presented from the position of the NAP service operator**. Financial analyses were also drawn up for all alternatives** in the form of a comparative table for five years for each alternative, describing the development costs, the operating expenditure required for the functioning, and the extent of the market and the expected revenue from the service arising from establishing the NAP.

In order to choose the **most potential alternatives** the scenarios were also viewed from two critical aspects in addition to the results of the legal and economic analysis: sustainability of the service (does the government have the levers for ensuring sustainability) and functionality of the service (as the government will be obligated to check the electronic freight documents, realisation of the alternative will guarantee that the government can always fulfil its duty). In order to make the final decision, a discussion seminar was conducted with the steering group as a result of which it was decided to proceed with alternatives 1 (the NAP is privately owned), 2 (the NAP is a private sector service procured by the state), and 3 (the NAP is owned by a public authority).

Further economic analyses, roadmaps, and analysis of owner of the service were conducted on the scenarios after choosing the three alternatives of the highest potential.

In the funding model, the potential solutions for funding the three scenarios, the main parties, their roles, and main duties were described. Thereat, it was taken into consideration that the government must keep in mind the expected profit of the service provider in the case of procuring the service from the private sector and the government does not have direct revenues in the case of the public ownership form, as the service would be provided without a service fee. The **schedule of budgeting by the government** which must be kept in mind when establishing the NAP in the opinion of the authors was also described under the funding model.

Based on the three most potential alternatives, the **owner of the NAP service** can be a private enterprise or a public authority. If the service will be provided by a **private business**, the authors of the analysis do not deem it likely for the provision of the NAP service being the principal activity of the company, but the service may be one of several in a large service portfolio. This is especially the case if the NAP service may not be provided by the eFTI service providers who do, however, have the required competence, experience in the transport sector, and probably also interest in the NAP service. At the time of drawing up the analysis, this rule has not been established, but the issue has been discussed at the DTLF. If the owner of the NAP is

a **public authority**, it should be kept in mind that different authorities may be competent for the establishment of the service platform and further management of the service. The most logical owner of e-services is usually the government agency whose principal activity is most related to the daily functioning of the service. Thus, it would be reasonable for the owners to consider the competent authorities of eTFI (PPA, EMTA, and TRAM) to whom the NAP services must provide data. As the aforementioned authorities have clear strengths and all of them would be suitable for fulfilling the NAP services (and cooperate with one another), the selection of the owner of the NAP service may be eased on a political decision. Furthermore, the choice of the owner may also depend on which authority can apply for foreign support for the development of the service and under which conditions.

The roadmap includes the activities for creating the NAP service and providing the service until 2025. The roadmap is based on the dates on which the delegated and implementing acts of the eFTI regulation enter into force, with the uniform procedures and detailed standards to be established pursuant to Article 8, technical specifications for the access of the competent authorities to the eFTI environments, incl. the procedures for the processing of the information prescribed by legislation and exchange of such data with competent authorities and between the relevant companies among the most important in the context of the NAP. From the perspective of the private sector, it is likely that the private sector is not prepared to take the risk of developing the service before the detailed requirements are clear. In the case of Alternative 2, the government can dictate when the establishing of the service begins, announcing a public procurement for finding a partner at an appropriate time. This way, it is possible to ensure that it will be possible to start using the service from Q3 2025. In the case of the second alternative, the action plan was drawn up from the perspectives of the private sector and the government. Alternative 3 is based on the fact that the state develops a solution to fulfil the obligation arising from the eFTI regulation.

As the delegated and implementation acts of the eFTI regulation have not been disclosed by the time of drawing the analysis, it was advised to keep in mind in the selection of the best scenario in the analysis that it may not be necessary to choose between one scenario or one form of ownership, but **several scenarios may be implemented together**, either initially in parallel or consequently depending on the funding, priorities, and the possibilities for the partners to cooperate. For example, it is possible that the service is first developed by the government, then provided by a private business, and the government will then find a partner from the private sector by a procurement procedure. The service may be initially provided by the private sector, but as there is no business perspective for a private company for providing the service, the provision of the service may be handed over to the government.

With respect to the **architectural perspective**, two perspectives can be distinguished based on the eFTI regulation. The first is to draw up a consignment note in the digital format and submit it for inspection in any format, incl. PDF, JPG, etc. The authors of the report, however, advise applying the second perspective based on the experience from the DIGINNO, DINNOCAP, and Diginno-Proto projects and the advice of the DTLF, which involves indexing the data sets based on the licence plate number, inspection without stopping the truck, and sending inquiries for identifying the correct eFTI service provider through different NAPs.

SUMMARY

The report '**Analysis of the operational model of the Estonian national access point of the electronic road transport consignment notes**' was performed between September 2021 and March 2022. The purpose of the analysis **to highlight technological, economic, and legislative preconditions and restrictions as well as to describe reasoned scenarios for creating a uniformly functioning digital goods supply chain infrastructure based on Estonia's interests.**

In August 2020, the **European Union Electronic Freight Information (eFTI) Regulation 2020/1056**[138] **entered into force, which sets requirements on Member States to accept freight transport documents in electronic form from the entry into force of the regulation in 2025.** Although the eFTI Regulation provides general guidance on how the movement of electronic freight information should be organised, there are no precise guidelines for the national systems nor the access points at the time of the analysis. The recitals of the Regulation suggest National Access Points (NAP) to be optional for Members States.

However, based on the experience gained from the **DIGINNO**[139]**, DIGINNO-Proto**[140] and **DINNOCAP**[141] **–** and considering the recommendations and discussions of **European Commission expert group DTLF (*Digital Transport and Logistics Forum*[142])**, Estonia has decided to consider the option of setting up a national access point for eFTI exchange. This analysis has been prepared with the aim of analysing and providing input to decide how the national access point of the road transport consignment note (as well as other eFTI data in the context of road transport) could work in Estonia regarding the operational model and the ownership model.

One way to mediate freight transport information across borders and competent authorities to get access to transport data on eFTI platforms is to create a well-functioning network of access points (NAPs and CAPs), which is, like said above, formulated in the eFTI Regulation as an option, but not as an obligation to Member States. At the time of the analysis, no European country has yet established such access point, but several have initiated discussions on having one. **The current analysis also discusses the environment, experience, and existing requirements of the eFTI Regulation, as well as the requirements that are still being enforced in general, to explain the need and background of the creation of NAP and the role in creating a uniformly functioning digital goods supply chain infrastructure based on Estonia's interests.**

The legal analysis describes the current legal framework, including national law, EU law and international law in the context of the creation of the NAP and highlighted legal challenges of creating the NAP as well as the possibilities for overcoming possible restrictions.

Different options for enabling access to freight documents and data to the competent national authorities are being analysed in European level working groups. During the analysis, **the following scenarios were described and compared:**

- Alternative 1: NAP is privately owned
- Alternative 2: NAP is privately owned, but the public sector has procured the service
- Alternative 3: NAP is owned and operated by the public sector and by a public authority entity
- Alternative 4: NAP is owned and operated by a public sector company
- Alternative 5: NAP is jointly owned by the private and public sectors, the so-called PPP option
- Alternative 6: There is no national central access point (NAP)

[138] Regulation (EU) 2020/1056 on electronic freight transport information (eFTI), LINK
[139] DIGINNO project, LINK
[140] DIGINNO-Proto project, LINK
[141] DINNOCAP project, LINK
[142] Digital Transport and Logistics Forum, LINK

The overall concept, purpose and functionality of the NAP, the current developments and challenges, the related parties and their interests, and the main legal aspects and challenges were described across the scenarios. As a combination of document analysis, analysis of foreign practices and interviews, **SWOT analyses** were compiled to describe these scenarios, where strengths, weaknesses, opportunities, and threats were presented from the service operator's point of view. **Legal considerations** towards the selected scenarios were carried out to select the three most potential alternatives. **Operational conditions** were mapped.

The economic analysis was prepared for each alternative in the form of a comparative table for a period of five years and described development costs involved in the creation of NAP, the operating costs necessary for its operation and the extent of the market and the revenue expected to be earned from the service.

As a result of legal, operational and economic analysis, the **most potential alternatives** were selected considering two critical aspects: the sustainability of the service (whether the state has the levers to ensure sustainability) and the performance of the service (since the obligation to check electronic cargo documents arises with the state, whether, if the alternative is implemented, it is always ensured that the state can fulfil its obligation). To make the final selection, a discussion seminar was held with the Steering Group, which resulted in the decision to proceed with alternatives 1 (NAP is privately owned), 2 (NAP is state procured as a private sector service) and 3 (NAP is owned by a public authority).

To specify the selected scenarios, a description of the general architectural view, a description of functional requirements and funding models were prepared for the most potential scenarios until 2025. In terms of **architectural view**, two possibilities can be distinguished according to the eFTI regulation. The authors of the analysis recommend that a second view be applied, which includes indexing data sets by car number, controls without stopping the car and data requests through different NAPs to identify the correct eFTI service provider. **The funding model** described possible financing solutions of the three most potential scenarios, the main parties, their roles, and main tasks. If the service is procured from the private sector, the state must consider the profit expectation of the service provider, and if the service is provided by a public authority, the state has no direct revenue, as the service is provided without a service fee. In addition, the **budgeting schedule of the state** was also described since it must be considered when establishing the NAP.

Considering the three most potential alternatives, **the ownership of the NAP** can belong either to a private company or to public authorities were compared and weighed. If the service will be provided by the **private company**, the authors of the analysis do not consider it likely that the provision of the NAP is the main activity of the company, but that the service can be one of several services in a larger portfolio. Especially if the NAP service may not be provided by eFTI service providers, who have the necessary competence, experience in the transport sector and probably also an interest in providing the NAP service. This rule has not been established at the time of the analysis, but this topic has been discussed in the DTLF.

If the NAP is owned by a **public authority**, it must be considered that the creation of a service platform and further management of the service may, in essence, fall within the competence of different authorities. The most logical owner of e-services is usually a state agency, which is closely related to day-to-day functioning of the service. Therefore, as service owners, it is reasonable to consider the competent authorities of eFTI (Police and Border Guard Board, Tax and Customs Board and Estonian Transport Administration) to whom the NAP service is obliged to share data. Considering that all the authorities have clear strengths and developing the NAP service would be suitable for all of them (also cooperating with each other), the choice of owner of the NAP service may be determined by other reasons, not by immediate operationally dominant domain. In addition, the owner may also be determined by which institution and under what conditions it is possible to apply for foreign financial support for the development of the service. The analysis concludes that for NAP, the key development party of NAP might as well also be the State Information System Agency having the widest technical experience in support such developments.

The roadmap outlines the necessary activities for creating the NAP and providing the service starting from August 2025. For that, the application dates of both eFTI delegated and implementing acts in the making, become of importance.

The dates on which the delegated and implementing acts of the eFTI Regulation enter into force are highlighted. The most important of which in the context of NAP are uniform procedures and detailed rules established under Article 8, technical specifications for the access of competent authorities to eFTI environments, including procedures for processing the information provided for by the legislation and exchanging information between the competent authorities and the undertakings concerned.

In Alternative 1, where the service is fully on the private market, and from a private sector perspective, it is likely that the service provider will not be prepared to take a risk to develop the service before the exact requirements become clear. In Alternative 2 where the private sector owns and runs the service, but the services are ran based on public procurement, the state can dictate the time of the creation of the service by announcing a public procurement for searching a partner at the appropriate time. As such, it is possible to ensure that the service can be used from the third quarter of 2025. For the second alternative, an action plan was drawn up from both a private and a national perspective. Alternative 3 where the public authority itself develops and holds the ownership and operations is considered the most favourable as such alternative guarantees the successful development of a solution for fulfilling the obligation under the eFTI Regulation by the time it is needed.

As the delegated and implementing acts of the eFTI Regulation have not been made public at the time of the analysis, the analysis recommended that when choosing the best scenario, it is recommended that it may not be necessary to choose between just one scenario, i.e., one form of ownership, the most risk-free scenario.

Also, options of later stage rearrangements in the operational model and ownership were suggested which might become of interest or application in later stages of eFTI application as later, **several scenarios may also be applied, either at the same time in the beginning or afterwards, depending on the funding, priorities and opportunities for cooperation between partners.** For example, it is possible that initially the service will be developed by the state, after which the service will also be provided by a private company, and the state will then find a partner from the private sector with the procurement. Or initially, the service will be provided by the private sector, but since there is no business perspective for a private company from providing the service, the state assumes the provision of the service.

The analysis is a milestone report in the work towards eFTI application.

ANNEXES

ANNEX 1: LIST OF INTERVIEWEES

TABLE 20. LIST OF INTERVIEWEES

AGENCY	PARTICIPANTS IN THE INTERVIEW
Police and Border Guard Board	Sirle Loigo; Toomas Korenev
Estonian Logistics and Freight Forwarding Association	Herkki Kitsing
Association of Estonian International Road Carriers	Sten Paal; Anu Viks
Ministry of Economic Affairs and Communications	Sirli Heinsoo; Priit Kreitzberg; Kristi Aruküla; Eva Killar; Juku Paulus
Omniva, FinBite	Deanna Vainoja; Kadri Puuraid; Rauno Riiner; Keir Veskiväli (Finbite)
Estonian Supply Chain Association	Tõnis Hintsov; Tom Annikve; Toivo Külaviir, Jaanus Krull
SK ID Solutions	Liisa Lukin
Estonian Tax and Customs Board	Andi Kingumets; Anni Uibu; Arvo Taar; Darja Ralkina; Hannes Umborg; Kalle Pärtlas; Katrin Punga; Külli Koidumäe
Transport Administration	Taavi Tõnts; Teet Eomäe
Union of Estonian Automobile Enterprises	Ivar Merilo; Villem Tori
Statistics Estonia	Piret Pukk; Brigitta Ojamaa; Tauno Tamm; Marika Korka; Frederik Bogdanovitš
Information System Authority	Helen Raamat, Raimo Reiman

Foreign interviews:

- Finland: Janne Huhtamäki (Traficom); Janne Lautanala (Fintraffic)
- Luxembourg/Benelux: Rudy Hemeleers (51Biz.lu)
- Germany: Christian Lüpges (Albrecht Consult)

ANNEX 2: FINANCIAL ANALYSIS

The financial analysis is provided as a separate document (Excel file):

Appendix. Financial analysis..xlsx

ANNEX 3: SPECIFIED ECONOMIC ANALYSIS (THREE MOST POTENTIAL ALTERNATIVES)

The specified economic analysis is provided as a separate document (Excel file):

Appendix. Detailed calculations..xlsx