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Acronyms and Abbreviations

Acronym/Abbreviation	Meaning
AAP	Authority Access Point
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterway
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
BB	Building Blocks
CA	Competent Authority
CAB	Conformity Assessment Bodies
CEF	Connecting Europe Facility
CINEA	European Climate, Infrastructure and Environment Executive Agency
DA	Delegated Act
DTLF	Digital Transport and Logistics Forum
DTTF	Digital Transportation and Trade Facilitation Committee
DMZ	Demilitarized zone
eFTI	Electronic Freight Transportation Information
eID	Electronic Identification
eIDAS	Electronic Identification, Authentication and Trust Services
ERP	Enterprise Resource Planning
EO	Economic Operators
IA	Implementing Act
KPI	Key Performance Indicators
MS	Member State
OOP	Once and Only Principle
PoC	Proof of Concept
REST API	Representational State Transfer Application Programming Interface
RID	Regulation concerning the International Carriage of Dangerous goods by Rail
RRP	Recovery and Resilience Plan
TIS	Technical Implementation Specifications
TMS	Transportation Management Systems

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EXECUTIVE SUMMARY

This report provides a comprehensive analysis of the implementation of the national eFTI, drawing on the input from eight MSs (member states). The overarching objective of the report is to align the eFTI implementation across MSs with shared strategies, timelines, and methodologies to ensure efficient digital transformation in freight transport. The findings highlight the varied approaches and challenges each MS faces, along with the common goals that guide these efforts.

The report begins by outlining the collective strategies, visions, and goals set by MSs, emphasising the significance of international cooperation agreements. These agreements provide a framework for seamless digital integration across borders, aiming to achieve interoperability and efficiency in freight transport systems. National digitalisation strategies, which are tailored to the unique circumstances of each country, also play a crucial role. The importance of data strategies and real-time economy principles is underscored, as these are essential to the successful rollout of eFTI.

A thorough assessment of the current state of eFTI implementation highlights both the benefits and limitations. This gap analysis identifies areas where MSs are progressing well, such as system procurement and early testing phases, while also revealing significant challenges, including legal and technical obstacles. One prominent issue is the divergence in how MSs approach legal frameworks. Despite these challenges, the analysis stresses the potential of eFTI to streamline freight transport operations, reduce costs, and enhance data accuracy if properly implemented.

The report continues with an examination of the various initiatives and projects being undertaken to support eFTI implementation. These initiatives range from proof-of-concept projects to larger-scale testing and pilot programs. Collaboration among MSs is essential to the success of these efforts, particularly in areas like system interoperability and regulatory compliance. There is a shared understanding that learning from early pilot projects and leveraging best practices will be vital to ensuring the success of eFTI across the European Union.

Legislation and the role of competent authorities are also key themes in the report. Each MS faces its own set of legal challenges, particularly regarding data privacy and security, regulatory compliance, and the integration of national laws with EU-wide regulations. The report highlights the need for clear legal frameworks to guide the development and operation of eFTI systems, as well as the importance of regulatory bodies in ensuring compliance and fostering innovation.

A detailed timeline outlines the planned activities for eFTI implementation, with many MSs aiming to have critical systems in place by Mid-2027. The analysis reveals a phased approach, with public procurement, proof-of-concept testing, and national system implementations occurring at different stages. These activities are dependent on each other, and any delays in one area could affect the overall progress of the eFTI system rollout.

Resource allocation is another significant focus of the report, particularly financial aspects. MSs have adopted varying approaches to funding eFTI systems, with some focusing on public sector investment while others explore private sector partnerships. The costs associated with eFTI

implementation, including both initial development and ongoing operations, are substantial, and ensuring adequate funding is critical to the long-term success of the system.

Finally, the report addresses risk assessment and mitigation, highlighting the potential risks in the implementation process. These risks include high costs, cybersecurity threats, and potential regulatory hurdles. Mitigation strategies, such as strong financial planning, robust cybersecurity measures, and continuous legal compliance, are recommended to reduce the likelihood of these risks occurring. The importance of collaboration between MSs and the European Commission is also emphasised as a key factor in overcoming these challenges.

In summary, this report offers a detailed examination of the steps taken and challenges faced by MSs in implementing the national eFTI system. While there are clear hurdles to overcome, the potential benefits of a successful eFTI rollout, including increased efficiency, better data management, and enhanced cross-border cooperation, are significant. Through coordinated efforts, shared learning, and strategic investments, the vision of a fully integrated and digitalised freight transport system connected to the relevant authorities across the European Union is within reach.

INTRODUCTION

Within the framework of Task 1.1, the participating MSs identified requirements for national eFTI implementation, resource needs (financial and technical), pilots planned during the project and requirements for the long-term operation of the eFTI exchange environment to document these in national Roadmaps. In eFTI4EU, the term roadmap is used as a synonym for a project plan for the introduction of eFTI in the MSs. It is not necessarily a description of the implementation steps for eFTI, but rather an analysis of the strategic, organizational, technical, legal and financial framework conditions in the MS, which serve to develop eFTI gates specifically according to the requirements of the EU and the MSs. This should create a solid information basis for eFTI4EU to analyse the starting point for the implementation of the eFTI exchange environment.

For this purpose, a work plan has been developed. In addition, a corresponding roadmap structure has been developed in the form of 2 templates (1st and 2nd Level). This helped to collect the information in a harmonised way and facilitated the analysis. The overall MS summary of the individual country-specific roadmaps is collected and summarised in this Roadmap Status Report. Here, an analysis of the commonalities and differences in the MS is carried out, which represents a benchmark for the harmonisation range that will be available for the implementation of the eFTI exchange environment and thus for the provision of interoperability.

The MS Roadmaps followed the deliverable 'National eFTI Roadmaps' and were carried out as a 2-step approach. A 2-step approach consist of:

1. a brief description for quick information to get an overview of similarities and gaps (does a national strategy exist, where eFTI is embedded; authorities overview for each MS; what Use Cases are covered; what pilots are planned; financial analysis; etc) = **1st Level Road Map per MS**
2. afterwards a detailed description to get more info about the exact plans of the MSs (more details + additional subjects) = **2nd Level Road Map per MS**

The approach is shown in the following picture:

Roadmap Status Report

Analysis and consolidation

- Final common consolidation on similarities (hopefully no gaps)
- Overview on requirements for a harmonised development

Interim Status

Analysis and consolidation

- Early & quick identification of gaps and similarities
- Understanding of the diff. national statuses
- Proper arbitration of project management and WP1 & WP2

2nd Level Roadmaps (per MS)

Detailed description

- More detailed description of level 1 roadmaps
- Additional subjects not required on level one

1st Level Roadmaps (per MS)

Brief description

- Does a national strategy exist, where eFTI is embedded?
- Authorities overview for each MS - Which authorities are in charge?
- What Use Cases are covered?
- What pilots are planned?
- Financial Analysis (→ eFTI)
- …

In this Roadmap Status Report, Roadmaps from eight MSs have been analysed and it should give a consolidation of MS similarities, differences and requirements for a harmonised development. Roadmaps as living documents are planned to be developed further, while the Roadmap Status Report shows the differences and commonalities in the current timeline.

Eight MSs that are participants in eFTI4EU project and contributed their Roadmaps are: Austria, Estonia, Finland, France, Germany, Italy, Lithuania, and Portugal.[1]

This report has been structured according to the following sections:

Strategies, Visions and Goals: The report begins by stating the overall vision for IT development and the goals the MS aims to achieve through technology initiatives. This section sets the context and provides a high-level understanding of the roadmap's purpose.

Current State Assessment and Gap Analysis: This phase involves conducting a thorough assessment of the MS' existing key benefits and limitations regarding eFTI from the perspective of different domains. Based on the current state assessment, a gap analysis is performed to identify the gaps between the current state and the desired future state. This analysis has been done according to different aspects, which are: legal, economic, social and stakeholder, technological, interoperability, environmental, policy, financial and marketing aspects. This analysis helps prioritise the areas that need attention and forms the basis for defining specific initiatives.

Initiatives and Projects: This section outlines the individual initiatives and projects that will be undertaken to address the identified gaps and achieve the desired future state. Each initiative

[1] At the submission of the current version, one of the member state's final version could not be submitted (Belgium).

should be clearly defined, including its objectives, scope, expected outcomes, and key milestones.

Legislation and Competent Authorities: In this section the national legislation should be listed, which requires revision due to the introduction of the eFTI regulation. Additionally, the competent authorities (CA) which need to be involved in eFTI should be listed.

Timeline and Dependencies: The roadmap should include a timeline that outlines the planned sequence of initiatives. It should also identify any dependencies between projects or initiatives, highlighting how the success of one may impact or rely on the completion of another.

Resource Allocation: This section addresses the allocation of resources required for the successful implementation of each initiative. It includes considerations such as budgetary requirements, staffing needs, technology investments, and any external partnerships or vendor engagements.

Risk Assessment and Mitigation: The roadmap should identify potential risks and challenges that may arise during the development process. It should outline strategies for mitigating these risks and ensuring the smooth execution of initiatives. Contingency plans should also be included in case unexpected issues arise.

1 STRATEGIES, VISIONS, AND GOALS

The report begins by stating the overall vision for IT development and the goals the MSs aims to achieve through technology initiatives. This section sets the context and provides a high-level understanding of the roadmap's purpose.

1.1 INTERNATIONAL COOPERATIONS AGREEMENTS, STRATEGIES:

International organisations and conventions:

- UNECE: United Nations Economic Commission for Europe
- OSJD: Organisation for Cooperation between Railways
- IATA: International Air Transport Association
- IMO: International Maritime Organisation

Key conventions:

- CMR: Convention relative au contrat de transport international de merchandises par route
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road / RID: Regulation concerning the International Carriage of Dangerous Goods by Road / AND: European Agreement concerning of Dangerous Goods by Inland Waterway), UNECE Dangerous Goods Regulations
- COTIF: Convention concerning International Carriage by Rail
- Montreal convention
- IMDG: International Maritime Dangerous Goods
- SMGS: The Agreement on International Goods Transport by Rail
- CIM: Contrat de Transport International ferroviaire des Marchandises

International Memorandums of Understanding and international cooperations MSs have agreed to regarding eFTI Individual Collaborations:

- NDPTL: Northern Dimension Partnership on Transport and Logistics
- Memorandum of Understanding between Finland and Estonia
- Ready4eFTI is an initiative signed by Finland, Estonia, Latvia, Lithuania and Poland.
- eFTI4EU

Some MSs could not point out to any national memorandums or international cooperations.

1.2 NATIONAL DIGITALISATION STRATEGIES / REAL-TIME ECONOMY / DIGITAL STRATEGIES / DATA STRATEGY

This section outlines the national digitalisation strategies of MSs that incorporate eFTI, detailing planned measures and activities, as well as how eFTI is addressed within these strategies. All

eFTI4EU MSs have developed or are planning national digital strategies that integrate aspects of eFTI in various ways.

For example, some MSs integrate eFTI into broader strategies on intelligent transport systems and digital transformation, ensuring that the necessary infrastructure will be managed by the relevant authorities. Others have comprehensive digital strategies that promote cross-border data sharing and foster digital government solutions aligned with European interoperability frameworks. In some cases, eFTI is considered a core project within national logistics digitalisation strategies, with specific initiatives such as the development of eFTI gates to enhance logistics and data exchange.

Several MSs focus on innovation and sustainable logistics, with plans to develop eFTI-related infrastructure, including control applications for road transport, while others support eFTI indirectly through national digital strategies aimed at expanding fiber-optic coverage and digitising administrative services. These efforts facilitate efficient data exchange in freight transport. Other strategies include the development of national logistics platforms designed to be interoperable with eFTI gates, improving cooperation between governmental and non-governmental entities in the digitalisation of logistics.

Additionally, some MSs are integrating eFTI into long-term national development strategies focused on digitisation and public sector reform, while others are enhancing digital infrastructure through initiatives aimed at simplifying and digitalising transport and logistics processes, including the creation of working groups dedicated to eFTI.

These examples demonstrate the variety of approaches and levels of engagement among MSs concerning eFTI and the digitalisation of Freight Transport data. Some countries have detailed strategies and are actively implementing eFTI-related projects, while others are incorporating eFTI into broader digital and logistics initiatives. This diversity reflects the different pathways MSs are taking to align with international cooperation efforts and to promote innovation in the digital mobility sector.

Beyond eFTI, MSs are advancing their digital strategies to address various aspects of the real-time economy, such as e-invoices and e-receipts. Many are integrating eFTI into national initiatives focused on improving data sharing and cloud services, enhancing efficiency, and ensuring compliance with international standards. These trends highlight how digital transformation is being leveraged to support both eFTI and broader economic goals.

1.3 NATIONAL DIGITAL AND DATA BUILDING BLOCKS LIST

In this section, MSs outlined their specific digital building blocks, which are summarised below.

For example, some plans focus on integrating the mandatory parts of the OOP into the national framework, prioritising eDelivery for data exchange as required by the Implementing Act[2]. Other elements, such as "eID," are omitted due to the use of existing systems that already meet regulatory requirements. The mandatory building blocks from the DTLF BB Report are also being applied to ensure alignment with eFTI implementation.

[2]https://eur-lex.europa.eu/TodayOJ/fallbackOJ/ESEAL-L_202500322-sig-20250219024613434_immc/L_202500322EN.pdf

In other instances, there is a focus on implementing eDelivery for data exchange, including in dangerous goods systems aligned with UNECE guidelines. The potential use of the eIDAS Regulation framework [3]is being explored to facilitate secure and efficient electronic interactions between businesses and authorities, although further analysis is required to determine its role in the eFTI environment.

Additionally, existing systems that support eFTI, such as secure data exchange platforms used by both public and private sectors, are being utilised. These include real-time logistics information systems, police and customs platforms, all of which will contribute to the digital infrastructure necessary for eFTI implementation.

There are ongoing efforts within some MSs to publish the eFTI data model to support the harmonization of core data components across different actors. Additionally, a data exchange layer, built on widely used technology, has been developed to ensure secure and interoperable information exchange between public and private sector systems. While these initiatives align with eFTI requirements, they originate from national efforts rather than an EU-wide mandate.

Some MSs are developing eFTI platforms for dangerous goods and integrating e-invoicing systems to enhance data exchange in logistics processes. Identity federation systems are being developed to ensure secure access to platforms by appropriate authorities, while single-window solutions aim to simplify and digitise customs clearance processes.

There are also efforts to standardise national IT infrastructure to support eFTI by upgrading existing tools to meet eFTI gate requirements. This includes preparing for the certification of eFTI platforms and ensuring interoperability between these platforms and current information systems.

In addition, some digital transformation strategies leverage existing logistics and tax systems to facilitate seamless data exchange across the logistics network, integrating eFTI into broader national digital frameworks.

This diverse approach across MSs reflects varying stages of digital maturity and national priorities, contributing to the shared goal of enhancing the digitalisation of freight transport information through eFTI.

1.4 NATIONAL STEPS TO TAKE FOR eFTI

This section outlines the requirements and constraints for the national implementation of eFTI.

Requirements Overview

System Initialisation: The system initialisation phase involves developing eFTI system components and optional national components, alongside their setup and configuration. MS are progressing through procurement and testing while awaiting legal specifications. Initial steps include information system certification and the establishment of authentication systems. Some

[3] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0910

states are focusing on developing eFTI gate and AAP systems within national cloud infrastructures to comply with EU regulations.
Deployment: The deployment phase requires completing system initialisation and necessary testing before going live. Timely delivery of functionalities is crucial, along with ensuring system stability and fail-safety. The deployment process may involve requirements discovery and gap analysis, progressing to PoC and pilot phases. Early deployment studies are ongoing, with deliveries made to various platforms. Testing phases must be finalised prior to production deployment, and additional functionalities may be integrated into existing systems.

National Approach to Communicate with eFTI Platforms: The approach to communication with eFTI platforms involves integrating eDelivery systems and utilising REST APIs for efficient data exchange.

MSs are prioritising broad eDelivery integration, with the mandatory adoption of eDelivery solutions within the private sector due to the IA. Configurations may include DMZ and reverse proxy systems[4] [5], ensuring secure communication through eDelivery and REST APIs. Future implementations will incorporate REST APIs adhering to established standards.

First Tests: Initial testing for eFTI implementation encompasses various methods, including unit, functional, system, integration, security, and compliance testing. Many states are conducting cross-border tests to ensure system integration, with PoC expected to commence in the near future and additional cross-border testing planned. Testing strategies are based on specific use cases, with phases tailored to component availability.

Test and Operating Environments: The requirements for test and operating environments for eFTI implementation include evaluating hosting options, with some entities considering development and piloting in the cloud while maintaining production on-premises. Many MSs are currently examining their specific requirements.

Maintenance and Change Request Management: Requirements for maintenance and change request management highlight that specific guidelines are yet to be defined. System monitoring and test documentation will be crucial for ongoing compliance and performance. Coordination of maintenance and change requests will occur once specifications are established. Efforts will focus on increasing efficiency and transparency, supported by public procurement processes for any additional hours needed.

Helpdesk: Helpdesk requirements will be outlined within the upcoming months, aligning with operational frameworks. The helpdesk will focus on error reporting, troubleshooting, and user manual support. Leveraging existing infrastructure and providing training for support personnel will be essential for effective helpdesk service.

[4] https://httpd.apache.org/docs/current/mod/mod_proxy.html
[5] https://dl.acm.org/doi/fullHtml/10.5555/1412202.1412204

2 CURRENT STATE ASSESSMENT ON BENEFITS AND LIMITATIONS, GAP ANALYSIS

The current chapter explains the key benefits and limitations highlighted by the MSs on their 2nd Level Roadmaps. The first sections provide a comprehensive assessment of the key benefits and limitations of eFTI as identified by MSs across various domains.

2.1 LEGAL ASPECTS

This subsection highlights the benefits and limitations of eFTI from a legal perspective in the MSs, considering legislative barriers and enablers, including the legal framework, local legislation, and established practices in the use of transport documents. An analysis of the similarities and differences between the MSs in legal aspects is provided below.

Key legal benefits from the eFTI implementation gathered from the national roadmaps include:

- Logistics funding programmes provide support for the growth and development of the digital sector.
- Innovation in digital logistics is encouraged through targeted initiatives and policy backing.
- Federal support strengthens the adoption and implementation of digital logistics innovations.
- eFTI facilitates greater integration into the EU common market, aligning national regulations with EU standards.
- The review and modernisation of outdated national legislation are prompted by the shift towards digital logistics.

Similarities on Legal Aspects among the MSs:

- **Legislative Alignment:** Many MSs are updating or planning to update their national laws to align with the eFTI regulation. This shows a common effort to ensure compliance with EU standards and facilitate the integration of eFTI.

- **Support for Digital Transformation:** Most MSs are promoting digital solutions and have established or are establishing frameworks to support the implementation of eFTI. This includes integrating eFTI into existing digital government services and information systems.

- **Regulatory Challenges:** Several MSs face challenges related to the modification of existing legal texts and frameworks. The need to revise or update legal documents to fit in eFTI is a shared concern, highlighting the complexity of transitioning from paper-based to digital processes.

Differences:

- **Level of Preparedness:** There is a variation in readiness for eFTI implementation among MSs. Some have identified minimal legal obstacles, indicating a higher level of preparedness, while others face substantial legal adjustments that still need to be addressed.
- **Specific Legal Issues:** Each MS faces unique legal issues. Some are addressing uncertainties related to digital signatures and user identification, while others are focused on developing national laws to align with eFTI requirements. This highlights that although the overarching goal is consistent, the specific legal obstacles and strategies vary.
- **Implementation Phases:** The stage of eFTI implementation also differs. Some are still in the process of legislative adjustments, while others have already integrated digital practices into their transport operations, indicating different phases of adaptation and readiness.

In summary, while there is a common goal of aligning national legislation with the eFTI regulation and supporting digital transformation, MSs experience different challenges and progress at different rates. These differences come from varying levels of existing digital infrastructure, legislative frameworks, and specific national needs.

2.2 ECONOMIC ASPECTS

This subsection outlines the benefits and limitations related to the economic aspects that MSs associate with the implementation of eFTI for both governments and economic operators. MSs have also provided data on national trade volumes and transport delivery amounts, including known or estimated quantities of waybills or CMRs created nationally and internationally, as well as trade amounts (in number of shipments) in transit via road transport and key road trade partners. An analysis of the similarities and differences between the MSs in economic aspects is provided below.

Key economic benefits from the eFTI implementation gathered from the national roadmaps include:

- Enhanced compliance through streamlined processes helps economic operators reduce risks and avoid penalties.
- Improved efficiency and cost savings are achieved by digitising processes, leading to faster trade operations and lower administrative expenses for both economic operators and authorities.
- Increased transparency and better data accuracy contribute to more reliable decision-making and smoother trade operations.
- Faster and automated cross-border controls help speed up logistics, enhancing the efficiency of international trade.
- Standardised digital data exchange reduces errors and improves data quality across the entire supply chain.

- The adoption of eFTI supports digital transformation, modernising freight documentation and operational procedures.
- Streamlined processes and reduced processing time allow for quicker and more efficient handling of logistics and documentation.
- Improved traceability attracts new customers and opens up growth opportunities for eFTI in various transport sectors.
- Enhanced competitiveness and access to new markets are made possible by better efficiency, compliance, and transparency.
- Cost optimisation and a reduction in administrative burden result from digital solutions that cut down on manual tasks and paperwork, making trade more efficient overall.

Similarities on Economic Benefits among MSs:

- **Cost Reduction:** All MSs anticipate cost savings from reduced paperwork and administrative tasks.
- **Increased Efficiency:** Efficient processes and faster data handling are expected across all MSs.
    - For Governments: eFTI can simplify the processes and automate the tasks and cross-border trade controls. This would enable to process documents faster. The opportunity to collect and analyse more data would lead into better statistics and therefore further enhance the efficiency.
    - For Economic Operators: Same as for governments, the faster processing of documents would reduce the time required for administrative tasks.
    - The automation of the processes would enhance the overall efficiency for EOs, for example in trade operations and supply chain management.
- **Fraud Reduction:** Improved data integrity is expected to decrease fraud and improve compliance, for instance, the implementation of eFTI is expected to lower the risk of document forgery and unauthorised operations.

Enhanced Data Management:

- **Real-Time Data Access:** Better real-time data access and visibility are seen as common benefits.
    - This benefit would enhance data management, as the government would access to real-time data and greater transparency in cross-border trade controls.
- **Improved Data Quality:** Increased accuracy and completeness of data are common goals. Improved data quality would lead to better oversight and data collection.

Implementation Challenges:

- **High Initial Costs:** All MSs face significant investments in eFTI infrastructure and technology which are opposed to the following point.
- **Resistance to Change:** There seems to be a general resistance from economic operators due to the perceived complexity and initial investment costs.

- **Need for Training and Digital Skills:** All MSs need to address the skills gap and provide training for digital systems.
- **Examples include:**
  - Adapting to new technologies presents challenges for various transport operators and professionals, including drivers, who may struggle with these changes.
  - Economic operators are required to invest in staff training, leading to ongoing costs with minimal immediate benefits.
  - Significant investments in eFTI infrastructure and personnel training are necessary for successful implementation.

Differences:

Modal Split and Trade Dynamics:

- **Transport Modes:** The emphasis on different transport modes (e.g., road, rail) varies.
- **Trade Partners:** Each country has different key trade partners and volumes.

Regulatory and Compliance Issues:

- **National Frameworks:** The regulatory environment and readiness for eFTI implementation differ. Some MSs have established extensive regulations and structured approaches for eFTI implementation, while others are newer to the adoption process.

Public vs. Private Sector Challenges:

- **Public Administration Issues:** MSs encounter unique public sector challenges related to eFTI implementation. Some face difficulties in transforming eFTI into a sustainable investment, while others experience integration challenges with existing systems.
- **Private Sector Adaptation:** Economic operators in various MSs encounter adaptation costs and resistance to eFTI implementation, while some benefit from more advanced digital infrastructure, facilitating a smoother transition.

Data Management and Utilisation:

- **Integration with Existing Systems:** The extent of integration with existing systems varies between MSs.
- **Digitalisation of Processes:** Some MSs are more advanced in their digital transformation.

2.3 SOCIAL AND STAKEHOLDER ASPECTS

In this chapter, the MSs addressed the social and stakeholder aspects of eFTI, focusing on key topics such as stakeholders' positions, engagement, and status, as well as their needs. Individual details can be found in MSs' roadmaps. A detailed analysis is shared below.

Stakeholder: Carrier

Key Needs:

- **User-Friendly and Robust Platforms:** Carriers need platforms that are easy to use and contribute to increased productivity. The systems should ensure seamless integration with the eFTI exchange environment and remain stable and reliable over time, avoiding frequent changes in data models and interfaces.
- **Efficiency and Transparency:** eFTI should streamline document processes, improving transparency between drivers and backend systems, thus enhancing overall operational efficiency.
- **Compliance and Interoperability:** There is a need for certified eFTI platforms that ensure compliance with regulations, interoperability with existing systems, and secure integration, particularly for regulatory information sharing in a machine-readable format.
- **Support for Small Enterprises:** In MSs with many small carriers, there is a need for guidance and support to help these businesses afford and effectively use eFTI platforms. Associations and service providers are crucial in ensuring that eFTI is accessible and does not restrict competition.

Challenges:

- **Keeping Data Up-to-Date:** A major challenge for carriers is maintaining the accuracy and currency of eFTI data throughout the transportation process, which is essential for the system's success.
- **Economic Impact:** Carriers are concerned about the financial implications, including the costs of adopting and maintaining eFTI systems, especially for smaller companies. The impact on competition and the need for technical capacity building and human resources training are also significant considerations.

Stakeholder's Position and Engagement:

- **Economic Interests:** Carriers, particularly those with strong economic interests, prioritise the stability, reliability, and efficiency of the eFTI system. They seek a practical, well-maintained data model that meets their business needs.
- **Intermediaries' Role:** Transport associations and eFTI service providers play a critical role in facilitating access and ensuring that carriers, especially small ones, can effectively engage with the eFTI system.
- **Regulatory Compliance:** Carriers are focused on ensuring that the platforms they use are compliant with regulations and can securely manage the necessary data exchanges with competent authorities.

Stakeholder: Competent Authorities

Key Needs:

- **Access to Accurate and Reliable Data:** CAs need to ensure that data is accessible, accurate, and up-to-date for enforcement purposes. Reliable uptime of eFTI services is crucial for consistent enforcement across Europe.
- **Ease of Use and Integration:** The system's ease of use is a priority, particularly for its integration with other data sources like vehicle registration systems, which CAs use for inspections. Planning is necessary to connect different information sources effectively.

- **Secure Data Exchange:** There is a strong emphasis on the need for secure and reliable data exchanges between certified eFTI platforms and competent authorities, ensuring compliance with regulatory and technical specifications.
- **Technical Specifications and Support:** CAs require clear technical specifications for access points, guidelines for adopting new procedures, and support systems like helpdesks to facilitate the transition to eFTI.
- **Challenges: High Security Requirements:** There is a need for a high level of security to protect the data and ensure it remains current and reliable.
- **Adoption of New Procedures:** CAs face the challenge of adopting new procedures and require training and support systems to manage these changes effectively.

Stakeholder's Position and Engagement:

- **Awareness and Dissemination:** CAs need to be well-prepared for the implementation of eFTI, which requires extensive awareness-raising and dissemination efforts. Events like workshops and conferences are essential for educating and preparing CAs for this transition.
- **Integration with Existing Systems:** CAs are focused on how eFTI can be integrated with existing systems, like vehicle registers and other data sources, to ensure a seamless inspection and enforcement process.
- **Regulatory Compliance and Specifications:** CAs are positioned to ensure that the eFTI system complies with regulatory and technical specifications, which is critical for the system's overall success and acceptance.

Stakeholder: Conformity Assessment Bodies

Key Needs:

- **Operable Legal Acts for Accreditation:** There is a need for clear and operable legal frameworks for accreditation authorities to effectively manage the certification and accreditation of eFTI platforms and service providers.
- **Clear Certification Requirements:** CABs require well-defined mandatory requirements and content descriptions for the certification process, ensuring they can accurately assess and certify eFTI systems.
- **Guidelines and Training:** Detailed certification guidelines and comprehensive training programs are essential for CABs to perform inspections and manage the certification process effectively.
- **Technical and Resource Support:** CABs need funding, resources, and technical solutions to handle their new responsibilities under the eFTI framework, including issuing certificates.

Challenges:

- **Development of Application Frameworks:** CABs, particularly national accreditation bodies, need to develop robust application frameworks for organisations that wish to become certified as conformity assessment bodies for eFTI platforms.

- **Alignment with EU Provisions:** Cooperation between national accreditation authorities and CABs can only begin once the EU provisions regarding initial requirements and the certification process are finalised. This highlights the challenge of awaiting clear guidance from the EU before moving forward.

Stakeholder's Position and Engagement:

- **Preparation for New Responsibilities:** CABs are preparing to take on new responsibilities related to the accreditation and certification of eFTI platforms and service providers. This involves using certification schemes, guidelines, and developing training programs to ensure that they can meet these demands effectively.
- **Cooperation with National Authorities:** There is a focus on cooperation between national accreditation authorities and CABs, especially in understanding and implementing EU provisions related to eFTI certification.
- **Development of National Frameworks:** National bodies are actively engaged in developing frameworks to support organisations in becoming conformity assessment bodies, highlighting the proactive role of national accreditation entities in the eFTI landscape.

Stakeholder: Customs / Enforcement Bodies

Key Needs:

- **Reliable and Stable Data Sets:** Customs and enforcement bodies require reliable and stable data sets to ensure that the eFTI system operates smoothly without frequent changes to the model and interfaces, which could disrupt enforcement activities.
- **Integration of Multiple Data Sources:** Customs authorities often rely on multiple data sources for inspections. Therefore, it is crucial to plan for the integration of eFTI with these various sources to enhance the efficiency of inspections.
- **Secure and Reliable Data Exchange:** There is a strong emphasis on the need for secure and reliable data exchanges, particularly concerning data relevant to customs clearance and controls, ensuring that the information used for enforcement is accurate and trustworthy.

Challenges:

- **System Redundancy:** For enforcement bodies, particularly in remote areas, the redundancy of the eFTI system is essential. This redundancy ensures that controls can be effectively conducted even in locations without stable internet access, thus maintaining the effectiveness of enforcement.
- **Automation and Improvement of Enforcement Practices:** Customs and enforcement bodies are interested in the opportunities provided by eFTI to automate and improve enforcement practices, which could lead to more efficient and effective controls.

Stakeholder's Position and Engagement:

- **Focus on Stability and Reliability:** Customs and enforcement bodies prioritise the stability and reliability of the eFTI system, ensuring that it can support consistent and effective enforcement activities without the need for constant adjustments.
- **Enhancement of International Collaboration:** eFTI is expected to improve international collaboration among customs authorities, which is particularly important for cross-border enforcement and the harmonisation of customs procedures.
- **Automation and Modernisation:** There is a focus on leveraging eFTI to automate and modernise enforcement practices, making them more efficient and reducing the manual workload on customs and enforcement officers.

Stakeholder: Economic Operators

Key Needs:

- **Integration with In-House Systems:** Economic Operators require platforms that can directly integrate with their existing in-house systems (e.g., TMS/ERP) or allow for easy onboarding to external platforms. This integration is essential for seamless operations and improved productivity through efficient data exchange.
- **Enhanced Process Transparency and Sustainability Reporting:** EOs seek to improve their internal processes and transparency through the use of eFTI data. This includes gathering data for sustainability and responsibility reporting, which is increasingly important in today's business environment.
- **Efficiency and Cost Reduction:** The digitalisation of freight transport documents and data exchange is seen as a way to enhance efficiency, productivity, and cost reduction. This is particularly relevant in secure and reliable IT environments that support these operations.
- **Reducing Human Errors:** One of the major challenges for EOs is reducing human errors, which eFTI is expected to address through overall digitisation, thereby saving time and costs associated with error correction.

Challenges:

- **System Uptime and Support:** Reliable system uptime and adequate support are critical for EOs to ensure continuous operations without disruptions, which could otherwise lead to productivity losses.
- **Ecosystem-Wide Adoption:** For eFTI to be effective, there is a need for the entire logistics ecosystem to adopt eFTI. This includes carriers, forwarders, cargo owners, and retailers, highlighting the challenge of ensuring broad adoption across all stakeholders involved.

Stakeholder's Position and Engagement:

- **Focus on Digitisation and Automation:** Economic Operators are keen on the digitisation of freight transport documents and data exchange, as it promises to significantly improve reporting, accounting, and overall operational efficiency.

- **Reuse of Existing Systems:** EOs prefer to reuse their existing systems (such as TMS/ERP) to minimise disruption and reduce the costs associated with switching to new platforms.
- **Visibility and Coordination in Logistics:** Industry representatives are particularly interested in collecting and coordinating eFTI data, especially in multi-carrier cases, as it provides better visibility into logistics processes, enabling more informed decision-making.

Stakeholder: eFTI Platform Providers

Key Needs:

- **Clarity on Regulatory Requirements and Standards:** eFTI platform providers need clear guidance on regulatory requirements and standards to ensure they can develop and offer compliant services. This clarity is crucial for the successful design, implementation, and certification of their platforms.
- **Definition of Requirements and Standards:** There is a need for well-defined requirements and standards, particularly as outlined in the Implementing Act, which will specify what is expected of eFTI platform service providers. This will enable providers to develop certified and reliable eFTI platforms.

Challenges:

- **Uncertainty Due to Pending EU Regulations:** Many platform providers are currently in a state of anticipation, waiting for the finalisation of EU regulations before fully committing resources or developing their platforms. This uncertainty is a significant challenge, as it limits their ability to plan and execute effectively.
- **Interest vs. Uncertainty:** While there is interest in the potential business opportunities that eFTI platforms represent, this interest is tempered by the lack of released requirements and standards. Providers are hesitant to invest heavily until they have a clearer understanding of what will be required.
- **Binding Regulations and Consistent Data Models:** The need for binding regulations and a consistent, maintained data model is critical for ensuring that platforms can operate smoothly and in compliance with EU standards. Providers are particularly concerned about certification processes and the need for ongoing consistency.

Stakeholder's Position and Engagement:

- **Waiting for EU Regulation:** eFTI platform providers are generally in a holding pattern, waiting for the EU to finalise regulations that will dictate the requirements for eFTI platforms. This delay impacts their ability to move forward with development and certification processes.
- **Diverse Business Models:** The industry expects to see different business models, with some providers offering eFTI platforms as cloud-based solutions, while others may develop platforms for internal use and potentially offer them to other logistics service providers (LSPs).

- **Limited Current Engagement:** In some member countries, there has been limited engagement with potential eFTI platform providers, as the focus has primarily been on gathering generic information rather than addressing specific needs or requirements at this stage.

Stakeholder: Emergency Responders

Key Needs:

- **Legal Access to eFTI Data:** Emergency responders require a clear legal basis for accessing eFTI data to respond effectively and appropriately in emergency situations. This access is crucial for timely and informed interventions.
- **Inclusion as Competent Authorities:** There is a need to define emergency responders as Competent Authorities or at least grant them limited access to eFTI data. This inclusion would ensure they have the necessary data to perform their duties during emergencies.

Challenges:

- **Unexplored Potential and Limited Awareness:** The potential of eFTI in enhancing emergency response efforts has not yet been fully explored. In some countries, emergency responders are not informed about eFTI or its potential benefits, partly because they are not currently considered competent authorities.
- **Legal Limitations:** Emergency responders may face legal limitations in accessing eFTI data, particularly in countries where they are not recognised as competent authorities. This legal ambiguity could hinder their ability to respond effectively in emergencies.

Stakeholder's Position and Engagement:

- **Advanced Preparation and Coordination:** eFTI presents an opportunity for emergency responders to prepare in advance for incidents. By analysing eFTI data, responders could assess potential emergencies or accidents before they physically manifest, allowing for more effective interventions.
- **Necessity for Legal Clarification:** There is a pressing need for legal clarification regarding the role of emergency responders in the eFTI system. Specifically, the opinion of the European Commission's legal service is sought to determine if emergency responders can be officially recognised as authorities within the eFTI framework
- **Need for National Engagement:** To fully realise the benefits of eFTI, there needs to be greater engagement with national emergency response organisations. This would involve raising awareness about eFTI and exploring how the system can be integrated into emergency response protocols.

Stakeholder: Freight Forwarders

Key Needs:

- **Interoperability and Compliance:** Freight forwarders require certified eFTI platforms that ensure compliance with regulations, interoperability between different systems, and secure integration within the eFTI exchange environment. This allows them to provide necessary regulatory information in a standardised, machine-readable format to competent authorities.
- **Harmonisation and Transparency:** The eFTI system is expected to enhance harmonisation across the logistics sector, which in turn will improve interoperability. This harmonisation is crucial for freight forwarders to operate efficiently within a digital and interconnected logistics ecosystem.

Challenges:

- **Potential Threat to Traditional Roles:** The data-driven approach promoted by eFTI could be seen as a threat to the traditional role of freight forwarders. With better transparency and digital interoperability, the need for intermediaries like forwarders may decrease, potentially reducing their importance in the supply chain.
- **Similar Needs to Carriers:** In many cases, the needs of freight forwarders closely mirror those of carriers. This includes the need for reliable, user-friendly platforms that integrate seamlessly with existing systems, as well as ensuring compliance and security in data exchange.

Stakeholder's Position and Engagement:

- **Alignment with Carriers:** Freight forwarders generally share the same requirements and concerns as carriers, given their closely linked roles in the logistics chain. This includes the need for stable, compliant platforms that enhance efficiency and reduce operational costs.
- **Adaptation to a Digital Ecosystem:** Freight forwarders must adapt to the increasingly digital and transparent logistics ecosystem that eFTI supports. While this presents opportunities for greater efficiency, it also requires forwarders to redefine their roles to maintain relevance in a more transparent and data-driven environment.

Stakeholder: Member States

Key Needs:

- **Trustworthy Milestones and Timelines:** MSs require clear and trustworthy milestones regarding the project's progress at the European level. Binding timelines and well-defined regulations are crucial for coordinating efforts and ensuring that all MSs are aligned in their implementation of eFTI.
- **Active Cooperation and Coordination:** Effective cooperation between EU authorities is essential. This includes not only regional and national cooperation but also coordination among all MSs. MSs are involved in initiatives such as eFTI4EU, which aims to pilot projects and ensure the interoperability of the system. Coordination among all 27 EU MSs is vital for the success of eFTI.
- **Harmonisation of Legislation:** For eFTI to be successful, national legislations must be harmonised to align with the EU-wide transport information model. This harmonisation

is necessary to make it as seamless and cost-effective as possible for operators to integrate with eFTI.

Challenges:

- **Development of National Infrastructure:** MSs need to develop their national eFTI infrastructure, including national eFTI Gates and Application Access Points, in accordance with the specifications defined in the Implementing Act. This requires careful planning and alignment with the EU-wide framework.
- **Coordination Across Multiple MSs:** Effective implementation of eFTI requires coordination not just within a few MSs, but across all EU MSs. This broad coordination is necessary to ensure that the system functions uniformly and efficiently across the entire EU.

Stakeholder's Position and Engagement:

- **Focus on European-Level Coordination:** MSs are focused on ensuring that there is active coordination and cooperation at the European level. This includes developing a common understanding and approach to the eFTI system, as well as ensuring that all MSs are working towards the same goals and adhering to the same standards.
- **Need for Clear Regulations and Specifications:** There is a strong emphasis on having binding regulations and well-defined functional and technical specifications to guide the development and implementation of eFTI. This clarity is needed to facilitate smooth and consistent implementation across different MSs.

Stakeholder: Shippers

Key Needs:

- **Reliable and Stable Data:** Shippers need reliable and stable data sets to ensure that the information provided through the eFTI system is consistent and accurate. This stability helps to avoid frequent change requests and disruptions in the data model and interfaces.
- **Compliance and Interoperability:** Shippers require that eFTI platforms ensure compliance with relevant regulations, provide interoperability across different systems, and securely handle regulatory information related to shipments. This ensures that data is shared effectively and meets all regulatory requirements.
- **Reduction in Administrative Costs:** eFTI has the potential to reduce administrative costs for shippers by streamlining processes, facilitating better communication, and reducing errors and misuse of information. This reduction in administrative burden is a key benefit for shippers.

Challenges:

- **Ensuring Consistency and Accuracy:** Ensuring that the eFTI system consistently provides accurate data without frequent changes is a critical challenge. Shippers need to manage and adapt to these changes, which can affect their operations if not handled properly.

- **Need for Secure Information Sharing:** Maintaining the security of regulatory information while ensuring effective sharing and integration across different platforms is crucial. Shippers need to ensure that all data exchanged through eFTI is protected against misuse and errors.

Stakeholder's Position and Engagement:

- **Emphasis on Error Reduction and Communication:** Shippers are particularly focused on the benefits of eFTI in reducing errors and facilitating better communication, which in turn helps to streamline operations and reduce administrative costs.

2.4 TECHNOLOGICAL ASPECTS

This subsection outlines the benefits and limitations related to technological aspects, with a specific focus on the technologies involved in planning and implementing paperless processes, available technologies and identified gaps, and government technological platform tools related to digitalisation. An analysis of the similarities and differences between the MSs in technological aspects is provided below.

Key technological benefits from the eFTI implementation gathered from the national roadmaps include:

- eFTI could contribute to the "preselection" procedure of potentially suspicious vehicles, increasing the detection rate of violations regarding trucks, drivers, and cargo. Technological advancements such as the smart tachograph (due in 08/25) can enhance the effectiveness of eFTI.
- The use of public cloud technology brings cost effectiveness and reliability to the final solution.
- Digitalisation improves access to information, allowing remote access and inclusivity through features like screen readers and text-to-speech technologies for people with disabilities.
- Digital platforms provide advanced encryption and security measures, protecting sensitive information and reducing risks associated with physical document handling and storage.
- eFTI can enhance the planning process for police controls and improve dispatch efficiency for emergency vehicles and equipment during incidents.
- Future possible integration of eFTI with other institutional systems (e.g., Tax and Customs Authority) can facilitate the exchange of various documents.

<u>Similarities and Differences in Technological Aspects Among MSs</u>

Similarities:

- **Digitalisation Efforts:** Many MSs emphasise the transition to paperless processes. This shift supports efficiency, cost savings, and environmental benefits.

- **Data Security Concerns:** MSs express concerns regarding data security, highlighting the importance of robust encryption and cybersecurity measures to protect sensitive transport information.
- **Integration Challenges:** Most countries experience challenges in integrating eFTI with their existing IT systems, particularly in ensuring compatibility with various data formats, technologies, and legacy systems.

Differences:

- **Technological Readiness:** Some MSs exhibit advanced technological infrastructures, featuring widespread use of digital authentication methods and integration platforms that facilitate seamless connectivity. In contrast, other MSs are still addressing technical challenges, such as optimising systems for specific functions or tackling internet coverage issues in rural areas.
- **Focus on Data Standardisation:** Certain MSs place a strong emphasis on standardising data for both national and cross-border exchanges, reflecting a higher level of maturity in managing data interoperability compared to others, where this focus is less pronounced.
- **Approach to Implementation:** Some MSs have adopted a more hands-on approach by testing eFTI through PoC projects, while others are still addressing uncertainties around digital signatures and standardisation, which may hinder their progress.

2.5 INTEROPERABILITY ASPECTS

This subsection outlines the benefits and limitations related to interoperability using eFTI, focusing on the following aspects: between eFTI Gate – eFTI Gate, between eFTI Platform – eFTI Gate, between eFTI Gate – AAP. An analysis of the similarities and differences between the MSs in interoperability is provided below.

Key interoperability benefits from the EFTI implementation gathered from the national roadmaps include:

- Increased efficiency in cross-border operations.
- Enhanced compliance with regulatory requirements across different jurisdictions.
- Scalability
- Consistent monitoring and harmonisation of protocols and standards.
- Adoption of a standardised data model enabling seamless cross-border data exchange.
- Creation of a unified network for managing freight data.
- Seamless data exchange through interconnected eFTI gates.
- Similarities and Differences in Interoperability Aspects Among MSs

Similarities:

- **Focus on Standardisation**: Many MSs emphasise the importance of standardising data models and exchange protocols. This common approach ensures consistent and accurate data transmission across borders and systems, which is critical for the seamless operation of eFTI.

- **Interoperability as a Key Success Factor**: There is a consensus among MSs that interoperability is essential for the overall success of the eFTI project. Effective interoperability facilitates efficient communication between eFTI systems, enhancing compliance and operational efficiency.
- **Government Support**: Many MSs benefit from strong governmental support in developing and implementing eFTI interoperability solutions, reflecting a broader trend of state involvement in ensuring successful integration across platforms and systems.

Differences:

- **Approach to Integration:** Some MSs focus on creating a single, interconnected network for freight data, aiming to simplify data sharing and reduce complexity. Some MSs prefer the use of specific technologies, such as REST APIs, to ensure smooth communication between eFTI gates and platforms, highlighting various technological approaches to achieving interoperability.
- **Scalability and Flexibility:** Some MSs place a strong emphasis on the scalability and flexibility of their eFTI systems, ensuring they can grow and adapt to increasing demands. In contrast, others focus primarily on ensuring straightforward integration with existing systems, such as AAPs, reflecting different priorities in their implementation strategies.
- **Cross-Border Communication:** There is a strong emphasis on the necessity of interoperability for cross-border communication, ensuring that eFTI Gates across different MSs can exchange data effectively.

2.6 ENVIRONMENTAL ASPECTS

This subsection outlines the benefits and limitations related to sustainability associated with the implementation of eFTI. An analysis of the similarities and differences between the MSs in sustainability is provided below.

Key environmental benefits expected from the eFTI implementation gathered from the national roadmaps include:

- Significant reduction in paper usage and waste, aligning with carbon emission reduction and ecological objectives.
- Optimised logistics and routing, leading to reduced fuel consumption.
- Saving approximately 2,400 trees annually due to decreased paper use.
- Expected positive environmental impacts at the European level, including CO2 emission savings and reduced congestion costs.

Similarities:

- **Reduction in Paper Usage:** A common goal among MSs is to reduce paper consumption in the long term. This reduction aligns with broader environmental goals, including decreasing deforestation and lowering carbon emissions associated with paper production.
- **Optimisation of Logistics:** There is a strong emphasis on the environmental benefits of optimised logistics and route planning, which can lead to reduced fuel consumption and

lower carbon footprints. This focus on improving transport efficiency reflects a shared commitment to reducing environmental impacts through enhanced logistics management.

- **Energy Consumption Concerns:** Several countries express concerns about the increased energy consumption required for maintaining digital infrastructure. While digitalisation offers environmental benefits like reduced paper use, it also introduces new challenges, such as the potential for higher electricity usage, which could offset some of the environmental gains.

Differences:

- **Approach to Environmental Integration:** There is a notable emphasis on integrating environmental considerations into public procurement for eFTI in certain MSs. This approach ensures that sustainability is a key factor in the selection and implementation of eFTI systems, distinguishing these states from others that focus more on the operational aspects of environmental benefits.
- **Impact on the Broader European Environment:** There is a strong emphasis on the broader European impact of eFTI in certain MSs, highlighting significant CO2 emission savings and reduced congestion costs. In contrast, other states tend to focus more on national benefits, such as specific environmental metrics like trees saved or energy savings.
- **Limited Access to Technology and Inclusivity:** Some MSs highlight the potential environmental and social impacts of digital disparities, noting that limited access to technology could exclude certain stakeholders from participating in eFTI initiatives. This concern is less prominent in other states, where the focus tends to be more on the direct environmental benefits and challenges associated with digitalisation.

2.7 POLICY ASPECTS

This subsection outlines the benefits and limitations related to political aspect, including any existing policy measures or strategies that may be lacking in supporting eFTI. An analysis of the similarities and differences between the MSs in political is provided below.

Similarities and Differences in Political Aspects Among MSs

Similarities:

- **Alignment with National Digital Strategies:** In some MSs, eFTI is closely aligned with broader national digitalisation strategies, underscoring the importance of digital services in logistics. Various national plans highlight eFTI's role as a key component in advancing government service digitisation and overall digital infrastructure development.
- **Political Support for eFTI:** Strong political support for eFTI is evident in several MSs, where no significant barriers have been identified. Recognition of eFTI as a crucial initiative and alignment with strategic objectives create a favorable political environment for its adoption and implementation.

Differences:

- **Integration with existing Inspection Systems**: A distinctive approach is seen in the integration of eFTI with existing inspection systems, particularly smart tachograph systems that underpin vehicle inspections and preselection processes. This strategy aligns eFTI with established heavy goods vehicle inspection policies, demonstrating a tailored approach that supports effective implementation through the integration of existing frameworks.
- **Governmental Programs and Strategic Plans**: Governmental programs and strategic plans vary in their direct promotion of eFTI. In some cases, national initiatives explicitly highlight eFTI as a key component of logistics digitalisation, while in other instances, support for eFTI is more implicit.

2.8 FINANCIAL ASPECTS

This subsection outlines the benefits and limitations related to financial aspect, with a specific focus on financing measures to be employed.

Financing Options: Establishing financially viable Public-Private Partnerships (PPPs) can be challenging, often necessitating reliance on national government funding. In some cases, state funding is available to support projects.

Development and Operational Phases: While budgets may be allocated for development, operational phase planning is sometimes pending. Collaborative efforts to synchronise maintenance and support functions can enhance efficiency and cost savings.

Cost Structure: The financial landscape includes fixed costs (e.g., infrastructure development) and variable costs (e.g., maintenance and operational readiness). Long-term budget security tends to be more achievable with political support, as fixed costs are generally easier to fund.

Investment Initiatives: Significant investments may be directed toward digitalising logistics and enhancing interoperability. Public tenders can facilitate the development of specific systems.

Funding Needs: There is a recognised requirement for additional funds to raise awareness and develop eFTI platforms, as well as broader support schemes for stakeholders. Anticipated public or co-funding opportunities may arise through open calls.

Sustainability Concerns: Identifying public and private funding sources is crucial for ensuring that eFTI remains a sustainable investment. The initial investment and the optional nature of eFTI may affect its appeal to economic operators.

2.9 MARKETING ASPECTS

This subsection outlines the benefits and limitations related to marketing aspect, focusing on recommended marketing, awareness, and branding actions to support eFTI onboarding, the current image of eFTI within the MSs, including its general reputation and level of awareness. An analysis of the similarities and differences between the MSs in marketing is provided below.

Similarities in Marketing aspects among MSs:

- **Focus on Stakeholder Engagement and Awareness:** Many MSs prioritise stakeholder engagement through events, publications, and working groups. These efforts are aimed at raising awareness among economic operators, public authorities, and transport communities.
- **Challenges with Small and Medium-Sized Enterprises (SMEs):** Some MSs face difficulties in engaging smaller companies. These SMEs often have limited awareness of eFTI, which hinders marketing effectiveness. The economic pressures and uncertainties about the costs and benefits further complicate efforts to promote eFTI among these businesses.

Differences:

- **Use of High-Profile Projects and Collaborations:** Some MSs leverage lighthouse projects and collaborations with organisations that promote digitalisation to generate interest in eFTI. These prominent initiatives help foster industry partnerships and enhance the visibility of eFTI within the market.
- **Diverse Communication Tools and Platforms:** Some MSs adopt a multifaceted approach to marketing eFTI, utilising various communication tools, including the creation of informational materials, stakeholder engagement, and dedicated webpages with supporting videos. In contrast, other MSs may prioritise dedicated events, internal communication, and financial support to promote eFTI, reflecting different strategic focuses in their marketing efforts.
- **Emphasis on Environmental and Efficiency Benefits:** Some MSs uniquely emphasise the environmental and operational efficiencies of eFTI in their marketing efforts, highlighting its potential for emissions reduction, time savings, and system robustness. This targeted approach aims to generate interest by showcasing specific benefits, contrasting with the broader awareness-raising strategies employed by other MSs.

2.10 GAP ANALYSIS

In this section, MSs identified the key gaps that may arise in the domains listed below, specifying whether these are national responsibilities or if support from eFTI4EU is expected. Additionally, they outlined the general activities planned to address these gaps.

Detailed information on the key gaps and the planned actions are provided below.

Key Gaps for Member States to be addressed as National Tasks

Domain	Key Gaps	General Actions Planned
Economic	High initial setup costs, difficulty for smaller businesses affording the transition, lack of economic incentives, high investment and costs for service providers (especially SMEs), significant initial investments with low return.	Attend relevant meetings to gain insights and ensure adherence to timetables and necessary details for implementation. Implement regulations with an emphasis on economic benefits and communication. Assess business-related benefits and potential incentives. Evaluate and monitor the return on investments and set up financial incentives.
Political	Focus on specific technologies (e.g., smart tachographs), need for political commitment, development of a national freight and logistics strategy.	Ensure decision-making support at all necessary political levels. Advocate for eFTI through political discussions and engagements. Support national political enablers and draft relevant strategies.
Financial	Only budget financing available with no public-private partnerships (PPP), financing challenges post-project, difficulty in securing budget for variable costs, limited financial support for eFTI platform developers and adopters.	Provide necessary budget and funding programs for implementation. Negotiate national budgets and ensure adequate funding. Include funding in budget planning. Monitor and ensure timely implementation of RRP-funded missions and components.
Processes	Ensuring process efficiency after eFTI implementation, managing changes in data sets, communication of process changes and updated requirements.	Monitor project evolution and adapt processes as needed. Communicate new features and changes to processes clearly and timely.
Legal	Need for updated legislation on data processing and common rules, national decrees and regulations not fully aligned with eFTI requirements, revision needed to accept eFTI datasets instead of documents, adapting legal frameworks for electronic transport documents.	Adjust legislation to align with eFTI requirements. Publish necessary legal decrees. Revise regulations and legislative documents as required. Systematic review and adaptation of legal frameworks.

Key Gaps to be addressed by the eFTI4EU Project

Domain	Key Gaps	General Actions Planned
Economic	Business model and benefits of eFTI, complex and costly certification leading to low interest.	Conduct a study on eFTI benefits for the transport sector. Implement eFTI regulation with an emphasis on economic benefits and communication of economic incentives.
Social / Stakeholders	Use and benefits of eFTI for various sectors.	Communicate the benefits of eFTI for both private and public sectors.
Technological	Specifications and pilot projects.	Publish specifications and conduct pilot projects.
Interoperability	Communications between eFTI gates and certifications.	Plan certification activities at the national level and check communications between eFTI gates. Standardise data models and principles.
Environmental	Compliance with environmental and social technical criteria as defined in Regulation (EU) 2020/852.	Verify compliance with the European Taxonomy.
Marketing	eFTI as a potential marketing asset for economic operators.	Regularly hold dissemination events to promote eFTI.

Key Gaps for Member States and eFTI4EU

Domain	Key Gaps	General Actions Planned
Social / Stakeholders	Varied technological readiness among stakeholders, lack of stakeholder awareness and engagement, need for better dissemination of eFTI benefits, regular communication on upcoming changes.	Engage regularly with stakeholders to align expectations and gather requirements. Develop information materials and training guides. Organise events to promote eFTI benefits. Communicate about eFTI regulations and organize stakeholder events. Develop comprehensive user engagement strategies.
Technological	Interoperability challenges, lack of concrete specifications, cybersecurity and reliability concerns, untested data sets, need for better technical specifications and development approaches.	Develop national system guides and apply best practices for key management. Publish specifications and conduct pilot projects. Engage in national and international exchanges to develop specifications and promote acceptance. Develop technical components and collaborate on critical points.
Interoperability	Standardisation of protocols and data formats, compatibility issues, lack of clarity on certification and security protocols.	Engage in regular meetings for mutual understanding and interoperability decisions. Plan certification activities and check communications between eFTI gates. Conduct cross-border pilots and adapt system landscapes to future requirements. Collaborate on technical components and standards.
Marketing	Insufficient awareness of eFTI benefits,	Organise events and develop promotional materials to increase

Domain	Key Gaps	General Actions Planned
	underrepresentation of certain transport modes, need for better dissemination of benefits.	awareness. Make presentations and participate in logistics sector activities. Highlight eFTI benefits at congresses and other events. Regularly hold dissemination events and communicate benefits effectively.
Users	Need for comprehensive onboarding and training materials, certification processes, and support services.	Develop detailed onboarding and training materials for both economic operators and competent authorities. Offer consistent support through meetings, seminars, and stakeholder associations. Prepare user training and help desk activities.
Environmental	Emission counting and impact assessment of eFTI.	Study the use of eFTI data in emission counting and assess the environmental impact.
Processes	Rules, common procedures, governance, and maintenance of the eFTI system.	Cooperate with project partners to develop common procedures and standards. Implement comprehensive project and risk management for governance. Monitor project evolution and adapt processes as needed. Advance with pilot projects to define technical aspects.
Economic	Knowledge of costs, assessing benefits, financial capacity issues among smaller companies.	Develop a better understanding of eFTI costs and benefits for economic operators. Assess and communicate the benefits of eFTI adoption. Conduct economic assessments to evaluate the impacts on different company sizes.
Financial	Identifying available funding programs at national and international levels.	Identify and secure national and international funding programs to support eFTI implementation.

Key Gaps Requiring EU Commission Input

Domain	Key Gaps	General Actions Planned
Legal	Implementing/delegated act not published, need for national legal acts to ensure compliance with eFTI Regulation (EU) 2020/1056.	Attend regular EC meetings to extract insights and ensure adherence to timetables. Participate in DTTF meetings, contribute to documents, and manage work packages. Monitor and define national legal acts to ensure compliance with eFTI requirements.
Environmental	Increased energy consumption due to digital systems.	Adopt and use energy-efficient technologies, practices, and hardware. Implement paper-saving strategies and energy-saving technical solutions.

3 INITIATIVES AND PROJECTS

3.1 GENERAL ACTIONS PLANNED

The details of general actions planned are combined with the subsection 2.10 Gap Analysis.

3.2 WHICH ONGOING PROJECTS ARE PLANNED (aside eFTI4EU)

This subsection outlines the summary of the specific and relevant projects that will be undertaken in some MSs to address the identified gaps and achieve the desired future state. MSs provided details on their ongoing projects that are planned in addition to those associated with eFTI4EU.

- **Accession to eCMR Additional Protocol:** Efforts focus on enabling the legally secure use of digital transport documents in road transport, aiming for increased awareness and acceptance of digital transport data. Key milestones include discussions in national transport committees.
- **Digital Transport Document Campaign:** A campaign will be launched to introduce digital transport documents via eFTI platforms, promoting data exchange standardisation across economic sectors. Plans include integrating eFTI with existing maritime platforms and exploring the use of eFTI data for automatic verification of cross-border transactions to streamline processes for carriers.
- **Pilot of eCMR Data Exchange:** A pilot project aims to implement eCMR data exchange in real-world scenarios, focusing on generating eFTI data from economic operators. Key milestones include project kickoff and piloting phases, with expected outcomes of valuable insights on eFTI benefits for EOs.
- **B2B Data Exchange Implementation:** Initiatives are underway to study and pilot B2B data exchange through the eFTI system, focusing on integrating eCMR data and emission monitoring to support logistics' twin transition towards sustainability and digitisation.
- **Open Source eFTI Platform Development:** A reference implementation of an open-source eFTI platform is being developed to improve efficiency, transparency, and interoperability in road transport operations, with defined phases for planning, development, and evaluation.
- **Legal Adoption of Digital Documents:** Activities are focused on the legal adoption of digital documents for international road freight transport, with efforts aimed at facilitating the accession to relevant protocols and increasing the acceptance of digital freight transport documents.
- **National Commission for Digitalisation of Transport:** A national commission aims to harmonise and simplify digital procedures at the national level while monitoring the implementation of logistics initiatives. The work involves developing a Single Logistics Window and creating working groups to promote eFTI initiatives.

3.3 USE CASES WITHIN eFTI4EU

This subsection covers a summary of eFTI use cases (data subsets) that are planned within eFTI4EU.

- Cross-Border Interoperability Testing
- eCMR Implementation for International Transport
- Combined Transport Testing
- Cabotage Process Understanding
- Aviation Security and Dangerous Goods
- Waste Shipments Monitoring
- Policy and Regulation Analysis
- Registry of Identifiers Modeling
- National Competent Authority Initiatives
- Interoperability Emphasis in Multimodal Transport

The above use cases aim to enhance interoperability, improve data management, and support the overall goals of the eFTI4EU initiative.

4 LEGISLATION AND COMPETENT AUTHORITIES

4.1 WHICH LEGISLATION REQUIRES REVISION

In this subsection, MSs indicated the national legislations that would be touched upon regarding eFTI implementation.

- **Integration of Digital Documents:** Preparations are underway for the integration of digital transport documents in compliance with eFTI regulations. Existing national legislation permits the use of digital documents, but full compliance will not be recognised until the regulation becomes applicable. Delays in implementing Regulation 2020/1056 suggest that no legal amendments are expected before a specified deadline.
- **Legal Analysis:** A comprehensive legal analysis is being conducted to facilitate the implementation of eFTI regulations across multiple sectors. This analysis will inform necessary adjustments to various national laws, covering areas such as road transport, railways, waste management, road traffic, aviation, shipping, and customs.
- **Reform of Transport Services Act:** The reform of the National Transport Services Act is crucial for eFTI regulation implementation. This reform will empower the relevant transport agency to oversee eFTI compliance, centralising the process under a single regulatory authority.
- **Updating Legal Framework:** Ongoing updates to the legal framework aim to incorporate eFTI regulations, particularly in road transport. Key actions include revising existing orders to permit eFTI data for enforcement, designating control bodies with access to eFTI data, and mandating certification for eFTI platforms. Further consultations are necessary for additional transport modes.
- **Digitization of Documentation:** Significant progress has been made in advancing the digitisation of transport documentation, especially for hazardous materials. Key steps include the introduction of digital systems, the legalisation of protocols for electronic transport documents, and upcoming revisions to road transport laws to align with eFTI requirements. Additional examinations of waste shipment regulations will also ensure compliance.
- **Clarification of Digital Transport Documents:** Work is ongoing to clarify the use of digital transport documents under eFTI regulation. This process will involve defining requirements through delegated and implementing acts, potentially introducing national legislation for full compliance, and identifying the competent authority responsible for eFTI regulatory information.
- **Legal Revisions for Digital Documents:** Significant legal revisions are being undertaken to enable the use of digital transport documents in accordance with eFTI regulations. This effort includes identifying the need for revisions across multiple laws and regulatory documents, focusing on transitioning from physical documentation to allowing digital copies.
- **Review of National Legislation:** Several national legislative acts have been identified for review to align with eFTI regulations. Areas of focus include road transport laws, tax

laws related to goods in transit, and systematic legal analysis to identify additional gaps and necessary adjustments.

4.2 AUTHORITIES INVOLVED IN THE eFTI REGULATION

In this subsection, Competent Authorities which need to be involved in eFTI are listed and described by MSs. The summary can be found below.

National Ministry: This authority is responsible for coordinating the national implementation of the eFTI regulation. Their tasks include overseeing regulatory and strategic aspects, ensuring compliance with EU laws, developing policies for electronic transport document exchange, and engaging with stakeholders to promote eFTI initiatives.

Infrastructure Operators: These authorities manage the physical and network infrastructure necessary for the eFTI system's operation. Their roles ensure reliable data exchange, cyber-security, and compliance with relevant regulations.

Law Enforcement Agencies: This category includes various authorities responsible for conducting roadside checks and enforcing compliance with transport laws. They utilise the eFTI system for real-time access to information related to vehicles and freight.

Customs Authorities: These agencies play a crucial role in monitoring freight transport, ensuring adherence to customs legislation, and preventing illegal activities, such as tax evasion and smuggling.

Emergency Responders: First responders, such as paramedics and firefighters, utilise the eFTI system to quickly access vital information about transported goods during emergencies, particularly in incidents involving hazardous materials.

Technical Authorities: Various agencies are tasked with developing and testing technical specifications for eFTI applications, including those related to road transport, rail transport, and air security.

Regional and Local Authorities: These authorities manage and regulate specific aspects of transport within their jurisdictions, including inspection and oversight of transport operations, waste management, and environmental compliance.

National Accreditation Bodies (NAB): These organisations are responsible for accrediting conformity assessment bodies (CAB) which certify eFTI service providers and ensuring that all platforms meet required standards for interoperability and compliance with regulations.

Advisory Bodies: Various councils and committees provide guidance and oversight on the implementation and impact of eFTI regulations, facilitating collaboration among different authorities.

5 TIMELINE AND DEPENDENCIES

The roadmaps included a timeline that outlines the planned sequence of initiatives, along with estimated start and end dates for each project. They also identified any dependencies between projects or initiatives.

5.1 PLANNED ACTIVITIES

In this section, we have analysed the timelines provided by the MSs. The overall trends and summary table covering the main activities are presented below.

Overall Trends

- The period from 2024 to 2027 shows a strong concentration of activities related to procurement, testing, and implementation of eFTI systems.
- Activities are phased with procurement, PoC, testing, and implementation occurring at different stages.
- Each country has unique schedules for their activities.

Activity	2023	2024	2025	2026	2027	later
Public procurement of experts						
Public procurement of systems						
Proof of Concept (PoC)						
PoC Tests						
National implementation (eFTI Gate/AAP) (test system)						
National implementations tests (test system)						
National implementations (eFTI Gate/AAP) (operational system)						
National implementations tests (test system)						

Analysis

Public Procurement of Experts: Major procurement activities start primarily in 2023 and 2024.

Public Procurement of Systems: Major procurement activities are scheduled for 2024 and 2025.

Proof of Concept (PoC): Mainly occurs in 2024 and 2025.

PoC Tests: Mostly aligning with PoC phases.

National Implementation (eFTI Gate/AAP) (Test System): Focused on 2024-2026.

National Implementations (eFTI Gate/AAP) (Operational System): Begin predominantly in 2025 and extend into 2027.

National Implementations Tests (Test System): Focused primarily on 2025 and 2026.

6 RESOURCE ALLOCATION

6.1 FINANCIAL ASPECTS of eFTI GATE

This subsection examines whether TIS Annex 7 was applied in the national cost assessments conducted by the MSs.

Overall Summary:

MSs are exploring different funding and ownership models, with a tendency towards public authority ownership or public-sector procurement.

Some MSs have not yet finalised their cost assessments or are waiting for further specifications before providing detailed figures.

6.2 FINANCING MEASURES

This chapter outlines the planned financing measures related to the implementation of the eFTI system, including the programs and project support intended to fund critical components such as gates, platforms, and preparatory studies. These measures are essential for ensuring a smooth and effective transition to the eFTI system across different sectors.

- **Funding Status:** Some MSs have not yet finalised their funding details due to pending tendering procedures.
- **State Funding:** Several MSs have allocated state funding for the development of gates and preparation studies, alongside additional funding mechanisms such as economic operator support and relevant initiatives.
- **Total Budget Allocations:** Some MSs have specified total budgets for eFTI implementation, which encompass development costs, collaboration with national authorities, pilots, communication activities, and other related work.
- **Project Calls and Grants:** Various initiatives have been launched to support digitalisation and automation in logistics, with grants awarded to companies for eFTI-related projects.
- **Planned Financing Context:** Future financing is being considered in the context of upcoming tendering procedures to align with eFTI architecture requirements.
- **Additional Funding Sources:** Some MSs are leveraging Recovery and Resilience Facility allocations for the development and initial operation of national eFTI gates, while others are covering operational costs through national budgets and other mechanisms.

7 RISK ASSESSMENT AND MITIGATION

7.1 RISKS IN AUTHORITY DOMAIN IN eFTI IMPLEMENTATION

This subsection explores the risks associated with eFTI implementation within the authority domain.

Common Themes in Risk Factors

- **Cost and Budget Concerns**: Across several MSs high setup and operational costs are a significant concern. Initial financial investment and ongoing costs could impact the adoption rates among EOs and strain national budgets.
- **Cybersecurity and Data Privacy**: Ensuring the security and privacy of sensitive data is a common concern. Risks related to unauthorised access, data breaches, and cyber-attacks are highlighted by many MSs. The impact of such breaches could lead to legal consequences and loss of public trust.
- **Integration and Interoperability**: Integrating eFTI with existing systems and ensuring interoperability across different national systems pose challenges. This includes compatibility with legacy systems and ensuring uniform operation across EU MSs.
- **Regulatory and Compliance Issues**: Compliance with both national and EU regulations is a common concern. Several MSs are wary of the potential need for extensive legal adjustments and the risk of non-compliance.
- **Adoption and Acceptance**: The potential reluctance of EOs to adopt eFTI due to perceived complexity or lack of immediate benefits is noted. This could lead to lower than expected uptake and effectiveness of the eFTI system.

Specific Challenges and Mitigation Strategies

- **Challenges:** MSs face a range of challenges including high initial costs, integration with legacy systems, data privacy concerns, regulatory compliance issues, cybersecurity risks, and potential inefficiencies due to parallel processes.
- **Mitigation Strategies:**
  - **Cost Management:** MSs should implement comprehensive plans to manage costs and incentivise the adoption of eFTI systems, focusing on robust budget planning and exploring funding options.
  - **Cybersecurity Measures:** Developing strong cybersecurity frameworks and ensuring compliance with evolving regulations through continuous monitoring and audits are essential.
  - **Interoperability and Technical Standards:** Strengthening risk management and establishing clear technical standards can enhance system reliability and interoperability. Comprehensive testing and procedures should be prioritised to facilitate seamless integration.

- **Collaboration:** Enhancing collaboration with other MSs and stakeholders can help address delays and resource constraints, allowing for the exploration of synergies with existing IT systems.
- **Data Models and Business Models:** Developing new business models for funding eFTI and advocating for necessary changes in data models can encourage broader adoption. Creating compelling arguments for the benefits of eFTI will be vital in ensuring stakeholder buy-in.
- **Legal Compliance and Specification Development:** Active participation in legal and technical activities will minimise compliance issues and enhance interoperability. Early involvement of cybersecurity experts is recommended to address potential risks.
- **Incident Response and Audits:** Establishing strong incident response plans, along with regular audits and alignment with legal requirements, can address data privacy and compliance concerns effectively.
- **Proactive Engagement**: Collaborating with MSs facing similar timelines and proactively engaging with platform developers will help ensure timely development and testing of national eFTI solutions.

Comprehensive Mitigation Strategies

- **Enhanced Collaboration**: Effective collaboration between MSs and with the European Commission is essential to address common challenges such as regulation delays, budget constraints, and interoperability issues.
- **Financial Planning and Support**: Developing robust financial plans, exploring cost-sharing mechanisms, and securing political support are crucial for managing budget-related risks.
- **Strong Cybersecurity Measures**: Implementing strong cybersecurity protocols and incident response plans will help mitigate risks related to data breaches and cyber-attacks.
- **Continuous Monitoring and Compliance**: Regular audits and ongoing compliance checks will ensure that eFTI systems align with legal requirements and adapt to evolving regulations.
- **Stakeholder Engagement and Communication**: Engaging with both EOs and public sector stakeholders to demonstrate the benefits of eFTI and address concerns will be key to driving adoption and effective implementation.