

# ALICE Recommendations Horizon Europe Work Programme 2023-2024

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This document includes ideas for topics recommendations by ALICE for the 2023-2024 Work Programmes within [Horizon Europe Programme](#). These recommendations are based on [ALICE Research & Innovation Roadmaps](#) input from ALICE members and stakeholders, results of BOOSTLOG project and discussions with partnerships ALICE is part of or closely following (2ZERO, CCAM, Europe's Rail, Clean Hydrogen Alliance) and with the European Commission services.

Note that recommendations are targeting specific calls following the structure of the Work Programmes 2021 & 2022. This structure may be different for Work Programmes 2023-2024

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## Cluster 5- Climate, Energy and Mobility

Destination 6: Safe, Resilient Transport and Smart Mobility services for passengers and goods

Multimodal and sustainable transport systems for passengers and goods

### 1. Physical Internet demonstrators including zero emission vehicles and rail/inland waterways applications

Achieving climate change objectives in freight transport and logistics requires implementing a variety of decarbonization solutions (See [ALICE roadmap towards zero emission Logistics](#)) including transitioning vehicles and using renewable energies but also making better use of transport modes. To accelerate this transition, transport system needs to be more efficient, transport modes interconnected, and vehicles used to the max. ALICE developed the [Physical Internet Roadmap](#) as an effective way to achieve this transition. The projects will advance and demonstrate the potential impact of:

- **Logistics nodes** are interconnected across networks:
  - Further standardization and interoperability of modular loading units, developing systems that can create this interoperability in a cost-effective way advancing in cost effective autonomous operations in nodes including modal transshipment.
  - At least 20 working standard processes, procedures and services are demonstrated across 10+ logistics nodes providing seamless access to users. Processes, procedures, and services must have an open access definition and scalability aspects need to be addressed.
- Achieving **scalable intermodal logistics networks** connectivity:
  - Demonstrate models and processes supported by Artificial Intelligence that can increase utilization of assets and resources in actual logistics service providers networks dynamically with the goal of increasing use of zero emission vehicles and intermodal solutions.
  - Demonstrate technologies and processes achieve different type of flows compatibility over the logistics service provider networks involving shippers and retailers to that end.
  - Demonstrate the benefit (GHGs reductions) of decentralised inventory positions in the pooled logistics network allowing low speed intermodal transport for (re)- positioning stock levels and answering short term lead times with closer to consumer inventory positions (e.g. full visibility of inventory positions in retail networks extended to suppliers and logistics service providers)
- **Collaborative and shared resources across logistics networks.**
  - Demonstrate protocols and services designed to ensure operational efficiency of freight movement irrespective of mode, nodal operations, and freight characteristics to increase the efficiency and effectiveness of the transport and logistics systems across logistics models with sound business and governance models.



- Develop and demonstrate scalability of the solutions providing open access mechanisms to the system of logistics networks.

These logistics concepts will aim to increase use of rail freight and inland waterways as well as making use of Zero Emission vehicles clearly assessing the benefits of such interconnectivity for example, including autonomous transport solutions.

Projects will need to build on digital interconnectivity protocols and governance models defined in the Digital Transport and Logistics Forum as well as FENIX and FEDERATED projects.

Projects will need to build on physical interconnectivity protocols (i.e. modular load units and transshipment technologies).

Projects will propose and demonstrate sound business and governance models as well as scale up solutions developed in previous projects and initiatives.

The focus will be on intra-European flows. Synergies with import and export maritime and other maritime containers flows could be addressed.

Projects will need to have a clear leadership and strong role of logistics companies (retailers, shippers, Logistics Service Providers, Freight Forwarders) to demonstrate these concepts. Special attention will need to be given to achieve combinations of different industries logistics flows (e.g. FMCG, automotive, electronics, textile, food) on top of the proposed solutions.

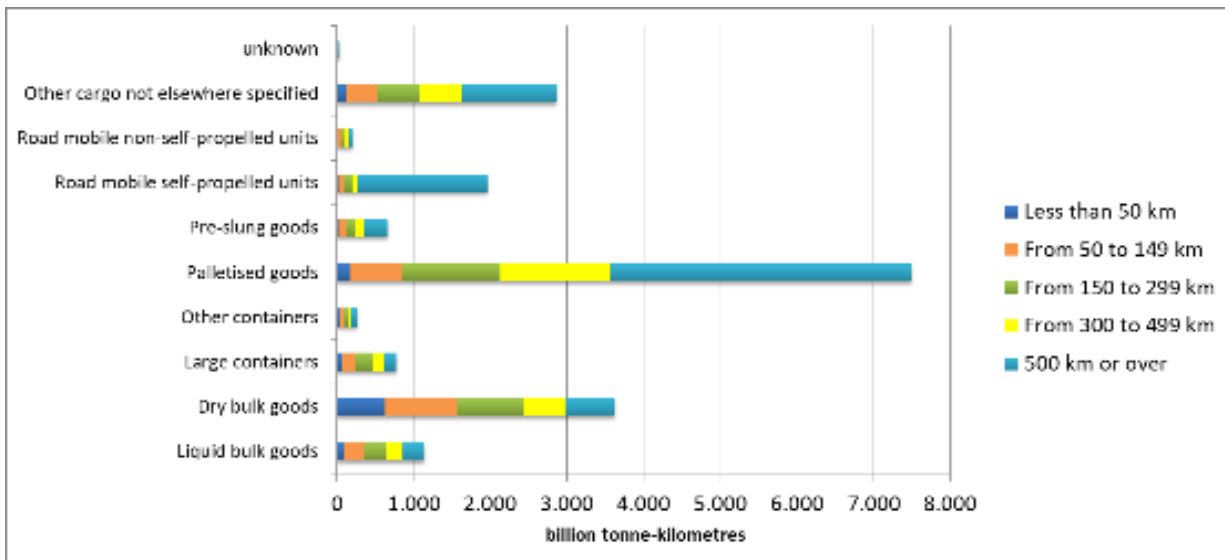
## 2. Regional Logistics Decarbonization

Strong focus has been rightly given to city logistics and long haul decarbonization. However, regional logistics (i.e. flows of less than 500 km and usually performed with medium and heavy duty trucks) are still major contributors of intra-European GHG emissions (see figure).

The focus of this action will be to assess in detail the current practices and flows across Europe of palletized goods and propose sound concepts and solutions to decarbonize those segments by 2030 increasing the use of intermodal solutions.

Concepts and solutions will need to be demonstrated and impact assessed and measured.





Source: AEROFLEX project

### 3. Technological and social innovation towards greener freight delivery choices and offering by retailers and consumers

*Note: this topic was proposed already in WP2021 and WP2022 and was postponed*

<b>Conditions related to this topic</b>	
<i>Expected EU contribution per project</i>	The EU estimates that an EU contribution of between EUR 3 and 5 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Type of action</i>	Research and Innovation Action

Expected Outcomes: Projects are expected to contribute to the following outcomes:

- Information on environmental impact of deliveries is provided transparently by the retailers.
- Customers' needs and motivations to choose more sustainable delivery options are better understood and inform the retailers' delivery strategies to reduce emissions and traffic congestion.
- Greener delivery options are chosen by customers (and local communities / cities), who are fully involved to co-design and co-implement the solutions.
- A wider range of sustainable delivery options (at least comparable to the existing ones e.g. in terms of price and convenience) are co-designed with customers and proposed by retailers, incentivised by customers' growing demand for greener choices and cities' regulations.
- Thanks to co-design and co-implementation of the delivery options, retailers and customers accelerate the adoption of ultralow or even zero-emissions delivery processes.

Scope:

To support changing retailers and customers' behaviours towards greener freight delivery choices and service offering, the actions will have to increase transparency of greenhouse gas emissions implications of the offers

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and other impacts of e-commerce and parcel delivery, as well as develop alternative greener delivery options and solutions to encourage customers to make sustainable choices, still in accordance with their preferences and in combination with competitive and sustainable retail value propositions.

Proposals will have to:

- Involving actively consumers (e.g. through consumer organisations) and retailers, develop guidelines and best practice for retailers to communicate transparently the greenhouse gas emission footprint of deliveries from origin to destination.
- Assess which conditions would make greener delivery options attractive to consumers and which motivations and options would incentivise consumers to change their behaviour towards greener choices.
- Co-designing with and engaging consumers and retailers, and taking into account the assessed motivations and incentives, develop a set of greener delivery practices and options. Identify which options would be more suitable to the customers' group or groups more motivated to change their behaviours and act as frontrunners, thus leading to a more rapid adoption.
- Define the process and requirements for the retailers to adopt the greener options in practice.
- Test and demonstrate through pilot actions with selected retailers and representative customers, and in collaboration with relevant city authorities, the proposed guidelines to visualize the advanced information on emissions and the greener delivery options towards consumers. Assess their attractiveness to consumers, the potential impact on consumers' behaviors (including e.g. same-day delivery and returns) and their possible buy-in into more sustainable offering. In an iterative process develop and implement recommendations for improvement.
- Assess the observed/potential reduction in greenhouse gas emissions and air pollution of the tested greener delivery choices.
- Propose recommendations and solutions to support and incentivize the uptake of greener choices by consumers and retailers.
- Develop recommendations with city authorities to support the adoption of greener delivery options and choices.
- Strengthen the coordination and collaboration between e-commerce companies, industrial logistics stakeholders and cities, companies, research and civil society, in Europe and internationally, to give input to the project as well as disseminate and exploit results.

#### [4. Implications of freight transport and logistics emission trading system \(road, air, maritime\) in freight transport and logistics operations](#)

The Green Deal, the Smart Mobility Strategy and the Fit-for-55 package foreseen the implementation of Emission Trading Systems for the road freight.

Readiness of systems to measure and report emissions will need to be assessed and the possible gaps addressed to seamlessly adopt these regulations.

The action will assess how ETS can/will positively impact in the reduction of emissions and the implications for freight transport and logistics chains.

New logistics concepts and solutions will need to be proposed to better Fit for 55.



## 5. *New technologies, concepts and solutions to achieve digital interconnectivity of logistics systems with minimal integration effort addressing SMEs needs and capabilities*

The efficient use of all transport modes, existing infrastructure and assets is crucial to make transition towards zero emissions logistics affordable. Still, fragmentation, lack of collaboration and visibility create inefficiencies in freight transport and logistics chain. It is still complex to collaborate with other companies seamlessly integrating systems or sharing data in a cost-effective way. eFTI is making it compulsory for governments to allow digital means to share information to address all Business to Government processes. However, the adoption is optional for companies and a dual system, paper and digital, may create more fragmentation as companies may need to combine digital and non -digital processes. It is critical then that eFTI/DTLF makes irresistible for all companies becoming the mainstream way of exchange information and run processes. It is critical that a broader perspective is addressed being the base for B2B data sharing, etc. as pursue in the DTLF. Many efforts are rightly done on creating open-source standards and APIs to enable easy participation and low threshold access however, these processes may be particularly not accessible for small companies and SMEs.

**The objective will be to develop concepts, technologies, solutions and tools for the easy adoption of digitalization/eFTI across freight transport and logistics companies in particular SMEs**

Cluster and call to be defined

## 6. *Demonstrating Fit for 55 scenarios in long distance road freight transport operations*

Long distance freight transport is critical to keep European supply chains working and Europe economy competitive in all sectors. Road transport will be kept as the most important transport mode at least within this decade. However, it is an important contributor to GHG emissions and is one of the more complex sectors to decarbonize. Many intensive road transport users are pledging climate change objectives having 50% emissions reduction targets by 2030 meaning they need to transition fast to low/zero emission solutions and doing it in an affordable/competitive way. There is a gap between the actual emissions reductions required and the pace at which availability of low emission fuels or competitive zero emission technologies (vehicles, infrastructures, supporting services) will be available and the market ready for take up at scale. It is not enough that vehicles are in the market and infrastructure is available, appropriate business and operational models are required to create market conditions for users take up of such solutions without hampering European competitiveness in a global world. For example, wide knowledge and visibility of current and future low and zero emissions refuelling/recharging infrastructure is not available which is a bottle neck for fleet owners investments in those operations.

### **Some potential ideas:**

- Identify and address key bottlenecks in the market conditions/regulations beyond vehicle technology and infrastructure availability that if addressed can accelerate road transport emission reductions.
- Define the minimum required infrastructure to efficiently and effectively serve the road freight transport demand that needs to be transferred to low/zero emission technologies.





- Define and demonstrate feasible deployment scenarios of low and zero emissions mix in road freight transport supporting achieving X% GHG emissions reduction by 2030.
- Assess the evolution of those scenarios as a function of price of GHG emissions in the to be created Road ETS.
- Generate a tool/platform to provide full visibility of the European Low/Zero Emissions refuelling and recharging stations.

### 7. Transparency and visibility of rail services in connected end to end logistics chains

This is complementary to the [Unique Train Prize](#) and aiming at create use cases targeting users and advancing in creating a **framework for end to end visibility in intermodal/rail freight transport services including last mile**.

The action should be directed to fund 1 or 2 projects (18 – 24 months) of 5 million € each (EU contribution of 2.5 million €) in which 1 or 2 vertical chains propose a solution and an open framework for future expansion.

The vertical should involve: Rail infrastructure manager(s), Train operator(s), intermodal/multimodal carrier, terminal(s), logistics service provider/freight forwarder and end users in a vertical chain.

Additionally, a CSA could be used (starting in the 2<sup>nd</sup> half of the project and 30 month duration) to raises and build consensus on possible expansion and broad take up of the developed open frameworks to support building of compliant solutions.

### 8. Develop VALUESTREAMMAPPING in a series of corridors with high potential in attraction of flows to identify and address the in-efficiency of the rail connection (TRL 7-9)

- Involving key stakeholders in each corridor.
- Identifying wastes and matching them with current technologies and new operations
- Mapping Technology Requirements and R&I recommendations

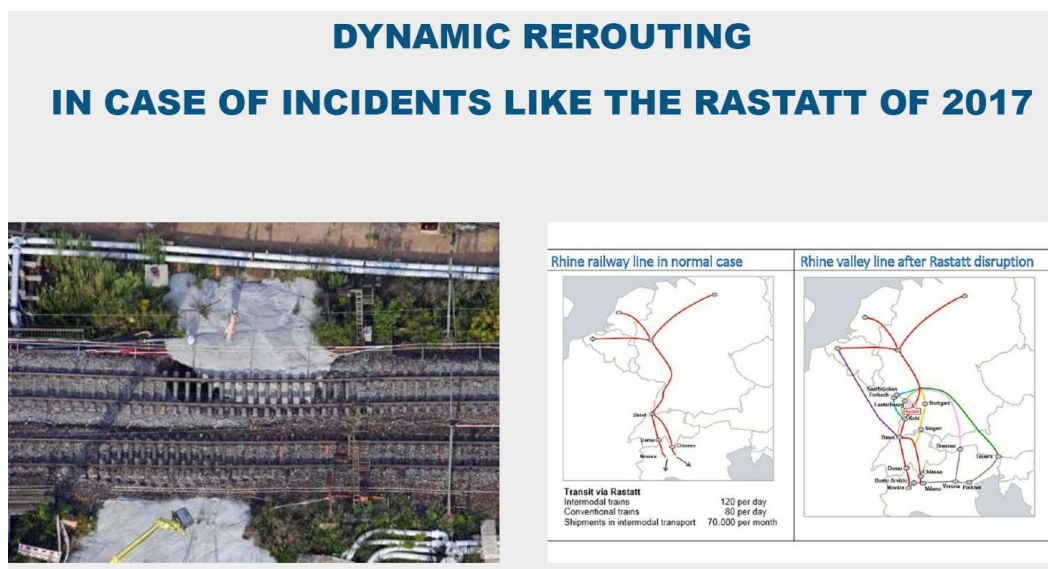
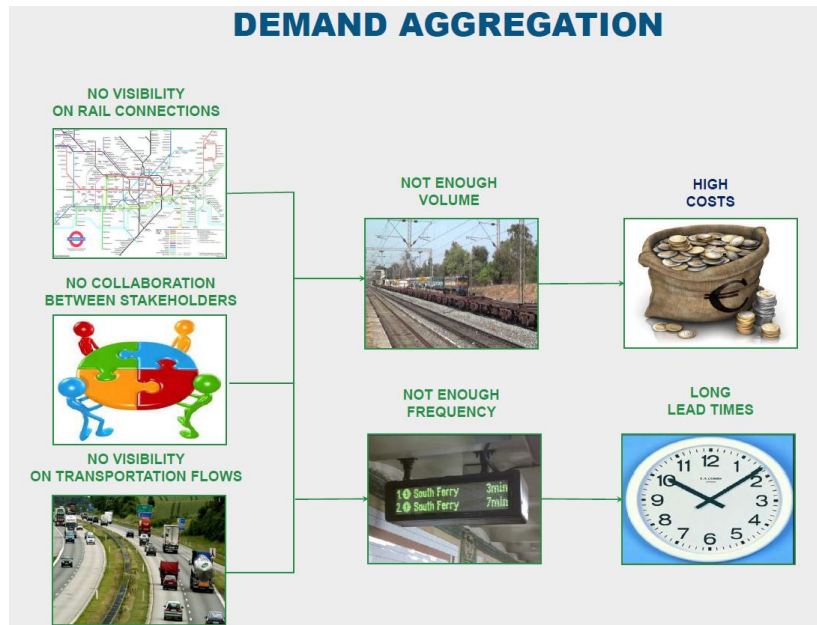
### 9. Integration of current (rail freight technologies) and solutions, and adapting supply chains to operate on rail (TRL 5-8)

- How available technologies and services can be integrated to offer a consolidated intermodal offering?
- Shipping booking systems ([INTTRA](#)) and Air. Would it be possible to apply similar concepts on rail?
- How can technologies and services reduce the hurdle to jump on rail?
- How to build structural market growth in heavily use (new) corridors?
- How users can adapt to take the best out of rail?
- Could block trains be converted into intermodal trains/ how to combine flows in flexible solutions? – avoiding empty returns
- Reducing the burden of transshipment loading and unloading



## 10. Exploring the Physical Internet Rail network creation (TRL 4-7)

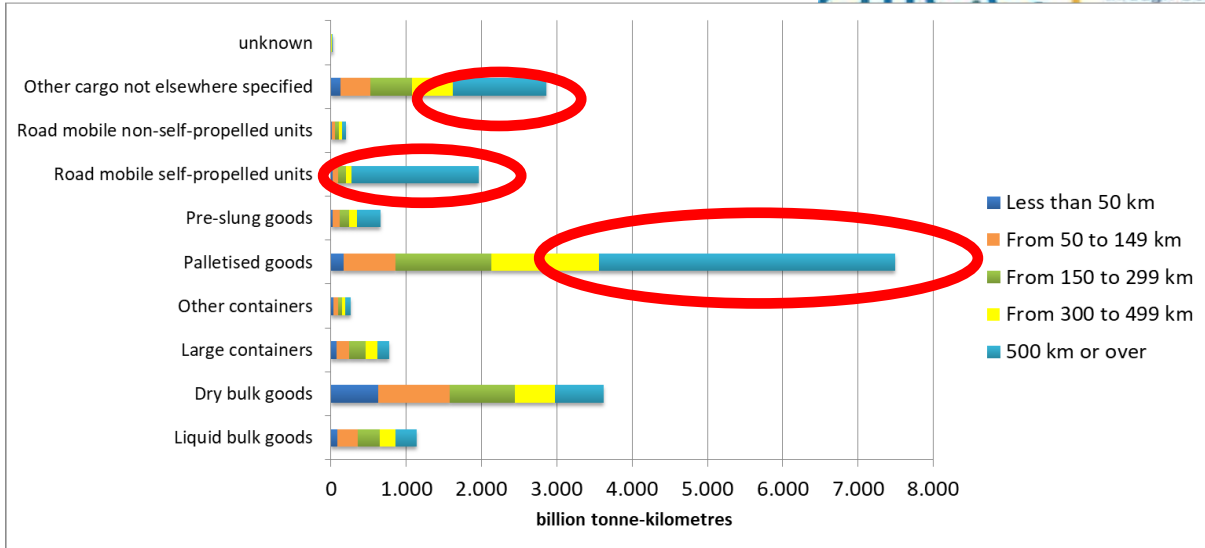
- Terminals and Rail Operators creating a seamless rail network: Standard operations and services
- Linking rail networks (e.g. X-RAIL, European Gateway Services, TX-LOGISTICS) through terminals
- Dynamic rerouting and resilience
- End to End services integration



## 11. Approaches and opportunities to address new rail markets and opportunities (TRL 4-7)

- From Road to Rail: Which type of flows and corridors can offer a step change in volumes?
- Synergies with Rail Flows from Asia?





## 12. Transshipment technology and efficient systems enabling intermodality: Fast terminals operations (TRL 5-8)

- Fast and cost effective set up of rail terminals in the network: standard processes and protocols
- Reducing the burden of transshipment loading and unloading
- Flexible assets and combination of flows (single wagon, intermodal, etc.) Multipurpose wagons, ERRAC SRIA?