

NEWSLETTER #4

December 2021

planet

PROGRESS TOWARDS FEDERATED LOGISTICS
THROUGH THE INTEGRATION OF TEN-T INTO A
GLOBAL TRADE NETWORK

COORDINATION

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EGTN Reference Specifications

In the context of the work performed during the first period of PLANET Project, the project advanced on the definition of the reference specifications for the future **PI¹-oriented Integrated Green EU-Global T&L² Networks [EGTN]** and provided an initial overview of the three interactive layers that will constitute it: the physical, the technological and the governance layer.

PLANET defines **the attributes of the future EGTN** as following:

- **Sustainable:** A T&L network that reduces its economic, environmental and social impact more than the existing TEN-T;
- **Innovation:** A European T&L network that takes advantage of the potential of innovative logistics concepts (e.g., PI) and enabling technological innovations (Industry 4.0, blockchain, IoT, 3D printing, etc.) in its operation;
- **Geo-economics aware:** A European T&L network that is aware of the geo-economics aspects driving the development of new trade routes and flows to/from Europe and their impact on the TEN-T;
- **Integrated:** An EU T&L network integrated with the global network both in terms of hard & soft infrastructure;
- **Inclusive:** Accessible to disadvantaged regions, supporting the development of workforce skills & knowledge.

The key attributes of the future EGTN are summarised in the following figure:



¹ PI: Physical Internet.

² T&L: Transport and Logistics.

Based on these attributes and the results of the work undertaken in the first period of the project, EGTN is envisaged to be a Physical network (TEN-T of the future) that will be globally connected, including the three new trade routes indicated in Figure 1 (Belt & Road Initiative, International North-South corridor, Arctic route) which are expected to have a significant impact on the TEN-T.

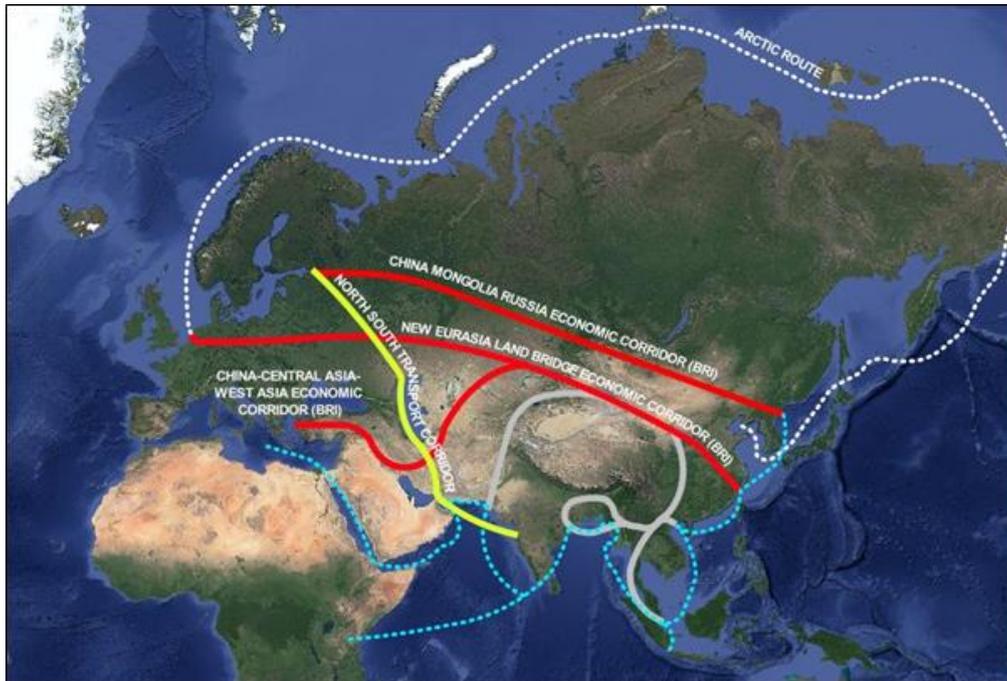


Figure 1: The new trade routes considered in the PLANET project.

Its profile was outlined to guide the reference specifications, as a **network that will be:**

- **Resilient**, through the development of the concept of Intelligent PI-enabled synchromodal nodes/hubs for achieving higher network resilience (both in terms of capacity availability & handling unexpected operations disruptions) and also enhanced economic, environmental & social efficiency of freight transport operations. The new node concept includes all the logistics infrastructure (warehouses, terminals, networks) within a specific area or along a corridor which will be strongly digitally & physically connected. Moreover, it includes the technological infrastructure that is required for the operationalization of the node under the PI paradigm and the ecosystem of stakeholders which are active in the node area. The stakeholders will be sharing interests and collaborating towards the increase of the node efficiency and attractiveness to freight flows.
- **Responsive to changes**, through enhanced modelling/simulation capability and monitoring which will allow for timely future predictions and will guide the EGTN development and operation. These predicted flows will emerge from incorporating into the strategic TEN-T simulation plans the logistics aspect, the innovative technology implementation and the main future uncertainties that may impact freight flows. Moreover, the simulation results will allow to define a prioritized sub-network for PI implementation in order to be able to realistically and gradually develop the PI concept on the TEN-T network.

- **Optimization ready**, providing the technological infrastructure to support stakeholders in implementing innovative technologies, collaborative & assets/resources optimization and develop logistics solutions under a PI paradigm. This will be facilitated by the supporting platform developed within PLANET which will support the operationalization of EGTN under the PI concept and also the planning and decision support of EGTN infrastructure development.
- **Oriented towards facilitating EU exports and support the achievement of trade balance with China**, through shifting focus from port-hinterland development to inland network perspective following the trend for regionalization of production identified by the project.
- **Bridging the industry/business view to the policy view in decision making** regarding operations and infrastructure planning and development, through the assessment of technology enabled operations and feeding the results to the strategic EGTN development decisions.
- **Supporting social cohesion & inclusiveness**, though enhancing the regional dimension of logistics & the development of infrastructure, increasing regional attractiveness and development.

Finally, with respect to its governance, EGTN will be a PI-enabled network and thus its governance is envisaged to be an adaptation of the different possible PI governance models. These levels of PI governance are pictured in Figure 2. The identified need for wide stakeholder participation & collaboration in regional level, led to the selection of a bottom-up approach for EGTN governance. Through this approach, the different stakeholders will agree among themselves to develop parts of the network as independent supply networks built on the PI model, thus forming different "islands" with their own rules. The key point is that in order to bring these "islands" together, the help of a central body will be needed to establish common standards for the PI.

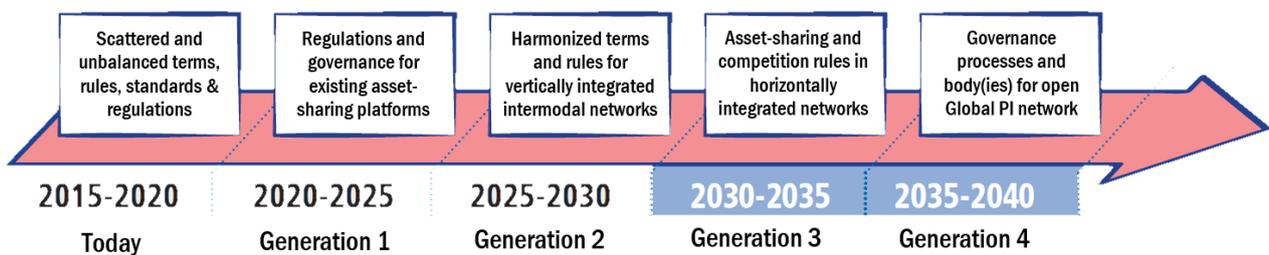


Figure 2: Levels of PI governance (source: ALICE, SENSE project).

An acceptable estimate for the EGTN network is considered to be a PI governance level in which the governance framework will support collaboration and asset sharing in horizontally integrated supply networks. In addition, the boundaries between established vertically integrated supply chains will be removed as different agreements are made between key logistics players, allowing asset sharing and opportunistic routing and re-planning of shipments across PI nodes belonging to different networks. Organizational models and rules for asset sharing in horizontal networks, defining a governance framework and defining the business model for the flow of PI data will be necessary.

EGTN infrastructure and EGTN services

PLANET projects aim to change the way that T&L actors interact, share information, optimize their performance under PI principles, where the EGTN platform is a key-enabling element of this vision.

T&L networks have been seeking to resolve several challenges such as traceability of shipments, trust and transparency between different stakeholders, manage the complexity of trade and customs processes. Several solutions have been introduced aiming at the digitisation of the supply chain process (Tilkal, Transparency-One, IBM Food Trust, Trust Your Supplier). In that context, the PLANET project and the EGTN Platform aims to **empower T&L stakeholders** by offering them tools, services and guidelines for shipping, routing and PI node optimization as well as to collaborate with other actors of the supply chain, within and across borders in a self-determined and secure way. Through this lens, the PLANET project does not aim to develop another “platform” but instead, its ambition is to develop an **original blueprint** accompanied with best practices for helping T&L actors to define and implement clear digital strategies and to support them in their physical operations.

The **open cloud-based infrastructure** that is developed is the cornerstone of the PLANET project, as it offers the foundation on top of which the EGTN Platform and the EGTN services are developed. The unique combination of technologies and models includes among others: blockchain services for interoperability of backend systems and intelligent forecasting algorithms for predictive analytics. More, specifically, the EGTN Platform blockchain interoperability service aims to break the silos of the different blockchain systems/partners to support critical interorganizational trade workflow, while the use of smart contracts facilitates automated and paperless negotiations. The EGTN users take advantage of the cutting-edge technologies and the **unique set of features** offered by the platform, as it:

- **Improves customs control** through the digitisation of the process.
- **Increases trust but also confidentiality** between different partners.
- **Ensures the authenticity and the integrity of the data shared** between partners.

One of the key technological enablers for increasing visibility in logistics is **the real-time data ingestion pipeline** which can accumulate data from a plethora of data sources, ranging from IoT sensors to weather and traffic data. In this way, critical information such as waiting times, order status, or even delays in vessel journeys can be fed into the platform and use them for offering to T&L actors, real-time automated decisions, such as dynamic contract activation. Moreover, the EGTN Platform provides T&L actors data-driven decision support services related to synchronomodality, based on optimisation models and predictive analytics. More precisely these services include corridor route optimisation, forecasting services for warehouses and ports and supplier collaboration analytics. Another key topic that PLANET project aims to address is the alignment of the EGTN platform to the PI roadmap, where it addresses key PI challenges by using intelligent forecasting such as predicting the use of resources in a PI node or rerouting cargo in the case of congestion in one of the corridor ports.

Other key features of the platform include its **modelling and simulation capabilities** of analysing T&L and ICT innovations that position emerging technologies (e.g., Blockchain and IoT) as contributors to the Physical Internet, while it’s Human Machine Interfaces sets a new standard for a more open and inclusive ecosystem where logistics partners share infrastructure and data and, in this way, overcome the silos of existing T&L systems and organisations.

The EGNT Platform aims to be an **inclusive and powerful platform** as it can be adopted by any size of T&L actor/firm and not just by large enterprises with expensive IT budgets, while aiming to take one step closer to the realization of the Physical Internet paradigm.

The initial version of the EGTN infrastructure is up and running offering a set of heterogeneous data, following the GS1 standard, together with an initial set of EGTN services such as predictive analytics for warehouses and a service for interconnecting backend blockchain systems. During 2022, **more datasets are expected** to be ingested in the platform unleashing the full potential of the technologies and enabling the integration of more sophisticated services for the decision support, the AI tools and the simulations.

New submitted deliverables

These are the new public deliverables you can find in our [website](#):

DELIVERABLE	WORK PACKAGE (WP)
D2.9 EGTN Support Services based on Big Data analytics models	WP2
D2.11 Multi-Actor Multi-Criteria Analysis DSS v1	WP2
D2.13 Intelligent PI Nodes and PI Network services v1	WP2
D2.15 Integration and Interoperability of proprietary Blockchain Systems for Seamless Global Trade Workflows v1	WP2
D2.17 EGTN smart contracts and associated PI motivated workflows in the context of SLA management v1	WP2
D5.2 Observations and Recommendations of the Advisory Board v1	WP5
D5.4 Communication and Dissemination Report v1	WP5

Publications



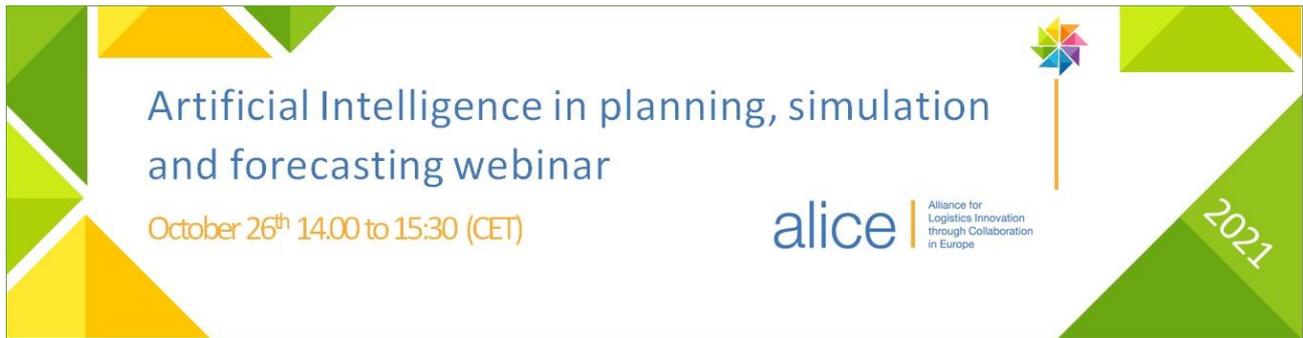
Il Giornale della Logistica is an Italian monthly magazine that shares news, business cases, sector news and best practices in the logistics organisation of companies and specialised operators, software, materials handling, automation systems, organisation of flows and transports, stock management, the best methods of organisation and management. Each issue - 10 per year - deals with technology, economics, management and technology, providing information to the operators and enterprises in the logistics world.

During November an article was developed and published for the Italian magazine in the framework of the topic *Innovazione logistica e nuove relazioni di traffico intercontinentale*, an action led by New Opera with the collaboration of FV, INLECOM, PANTEIA and UIRR. This article introduces the PLANET project and its living labs through some EU research topics. It is also accompanied by short testimonies from its collaborators.

You can read the full article [here!](#)



Attended events



David Cipres from ITAINNOVA presented PLANET in this webinar organized by ALICE. During its intervention on the topic *Demand forecasting and intelligent planning based on AI*, PLANET was presented as a project that visualises the applications of implementing the AI in T&L.

To that end, he introduced PLANET LL1 - PI and Blockchain for optimised door-to-door Asia-EU corridors, as it is the LL that will assess how new technologies (IoT, AI and blockchain) and concepts (PI) can improve processes, operations and efficiency along door-to-door transport chains connecting the Maritime Silk Road with internal EU corridors



**UIRR has the pleasure to announce the
2021 European Intermodal Summit,
which will be an online event
10:00-12:30 on Tuesday, 30 November 2021**

PLANET took part at the European Intermodal Summit 2021 on 30th November 2021, a high-level conference with more than 300 participants and constructed on three panel sections: Efficiency, Decarbonisation in intermodal transport and Digitalization and standardization.

The presentation was conducted by Maurice Jansen (Erasmus University in Rotterdam), who focused on the importance of analysing and improving interoperability between countries, with special emphasis on the Eurasian Corridor. He also stressed that the PLANET project will analyse the present and future connectivity between Europe and global trade and determine its efficiency and sustainability, mentioning the [4 Foundational Position Papers](#).

You can find more information and watch the online webinar on European Intermodal Summit 2021 [here!](#)

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