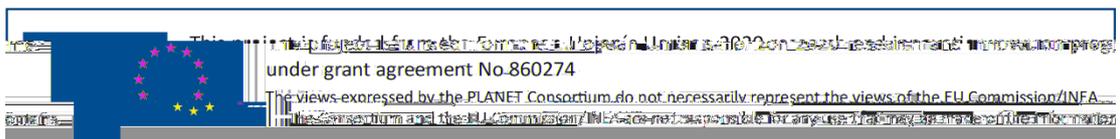






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Progress towards Federated Logistics through the Integration of TEN-T into A Global Trade Network (PLANET)





ABOUT PLANET PROJECT

PLANET project aims at boosting the EU's leadership in global logistics flows

, as well as

, enabling an EU-Global network that ensures equitable inclusivity of all participants, increase the prosperity of nations, preserve the environment and enhance citizen's quality of life.

The realization of this vision in PLANET is branded as the **EGTN** (Integrated Green EU-Global T&L Network).

Physical Internet concepts in combination with disruptive technologies such as and will be used by PLANET to move towards more optimal and efficient transport and logistics (T&L).

Accelerating the collaborative transition towards the Physical Internet in the context of the new emerging trade routes

OBJECTIVES

Project Start

EU Budget

Instrument

Duration

Consortium

1.

Generate a **Simulation Capability** for the assessment of the expected impact of new trade routes, national strategies and innovations on the TEN-T corridors and European logistics operations.

2.

Built an **Open cloud-based ICT Infrastructure** facilitating the implementation of EGTNs.

3.

Employ **3 Living Labs** to facilitate experimentation and testbeds for project's solutions.

4.

Formalize an **EU Roadmap** along with a **Capacity Building** effort purposed to accelerate EGTN realisation, closely aligned with prominent T&L blockchain initiatives and the ALICE Physical Internet working groups.

5.

Ensure wide **Dissemination** supported by a clear **Commercialisation Strategy** and **Policy recommendations**.









The business model



Figure 1



UIRR CT Operators carried 144.000 consignments on transcontinental relations in 2020, which represented a 31% increase compared to 2019. Transcontinental intermodal rail is the most dynamically expanding segment of Combined Transport, which currently makes up about 5% of total annual Combined Transport performance.

Figure 1: Growth of transcontinental transport Asia-Europe



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Figure 2



Figure 2: Scoped logistics and data connections, projected on a map of the EU

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Table 1

User web interface	Entry point for users where they can view, and manage shipments and the documents associated to them.
System backend	Backend that supports and links the web interface functionalities with the blockchain components and the off-chain components, such as a document vault. The vault stores original documents and simultaneously generates cryptographic document hashes to provide proof of integrity. The backend also contains the identity framework that manages the authentication and authorization of each user based on their role and organization.
External integrations	Integrations with external systems such as UK customs system to perform fully digitalized customs declarations. The platform is also integrated in a digital infrastructure for sharing logistic events in the EU.
Public blockchain	On the accessible, censorship-resistant, public blockchain the shipment creation and document attachment events are immutably and transparently recorded. Two smart contracts are also deployed on the blockchain. The Notary contract notarizes the document hash, document type, submitter, shipment reference and relevant logistics data. It provides proof of existence, proof of origin and proof of ownership over the document and data. The Shipment Registry contract aggregates the notarized data linked to a specific shipment and allows for real-time tracking of shipment progress.

Table 1. List of platform subsystems and their descriptions

Figure 3

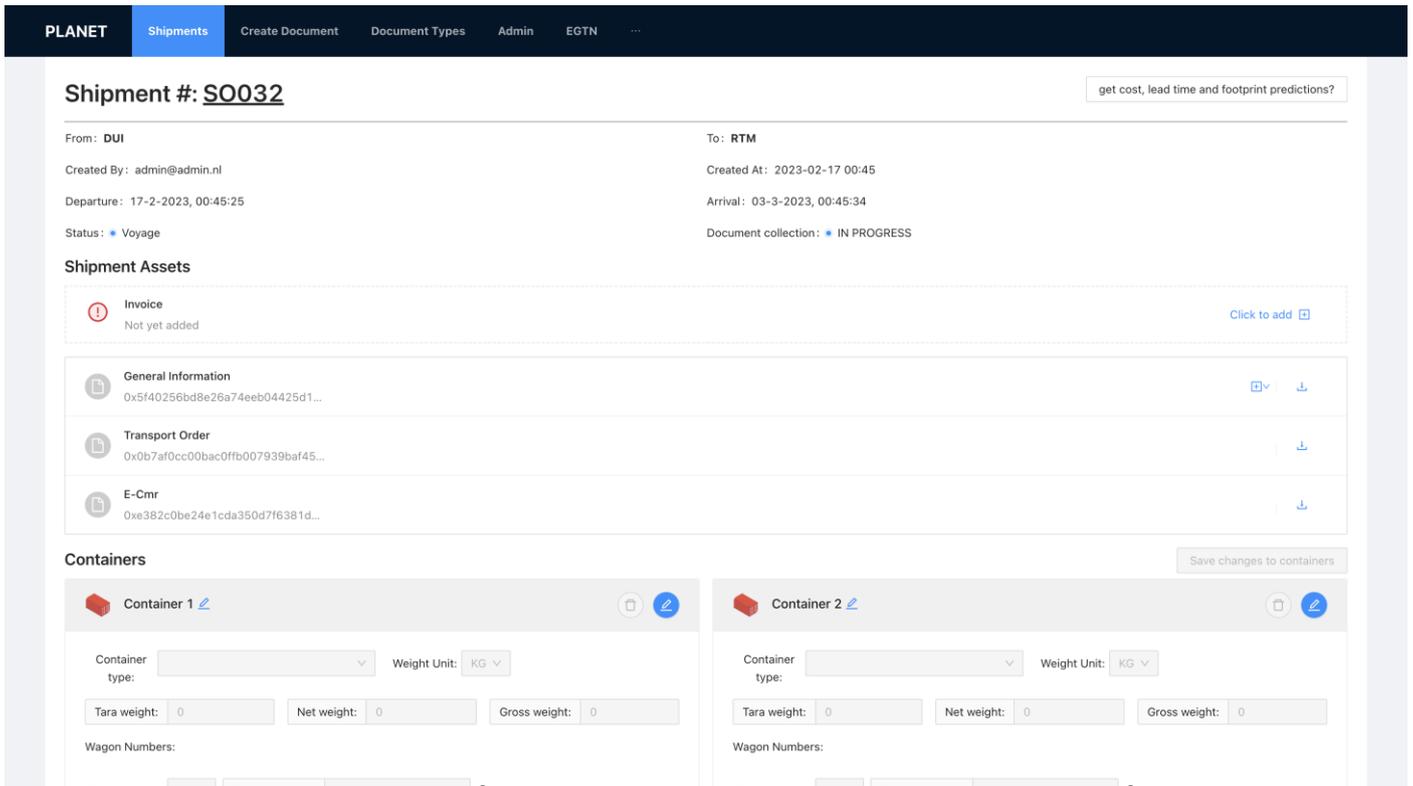


Figure 3: Screenshot of the user web interface of the platform, displaying an opened shipment object

Figure 4

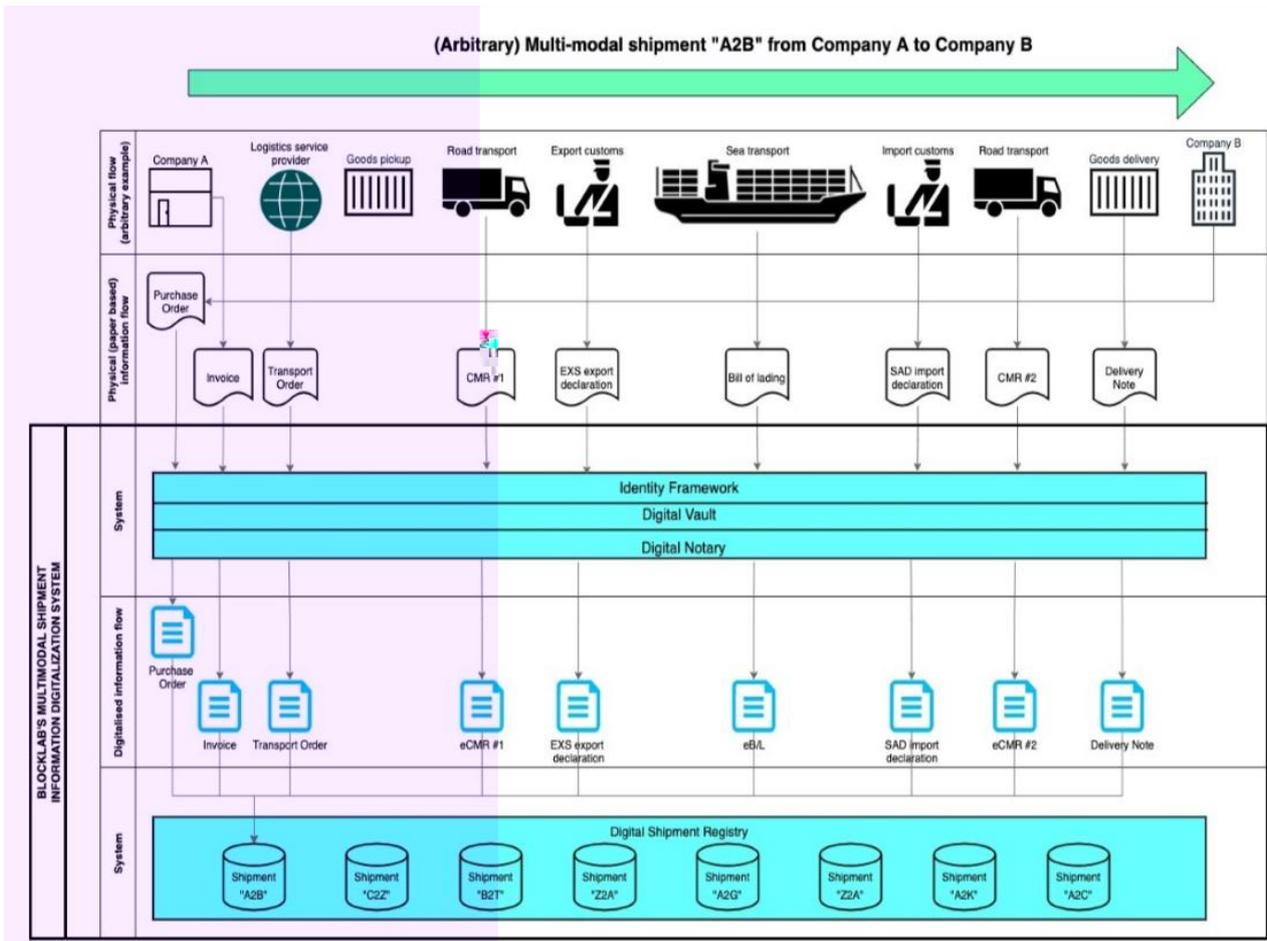


Figure 4: Shipment document collection and digitalisation

Figure 5

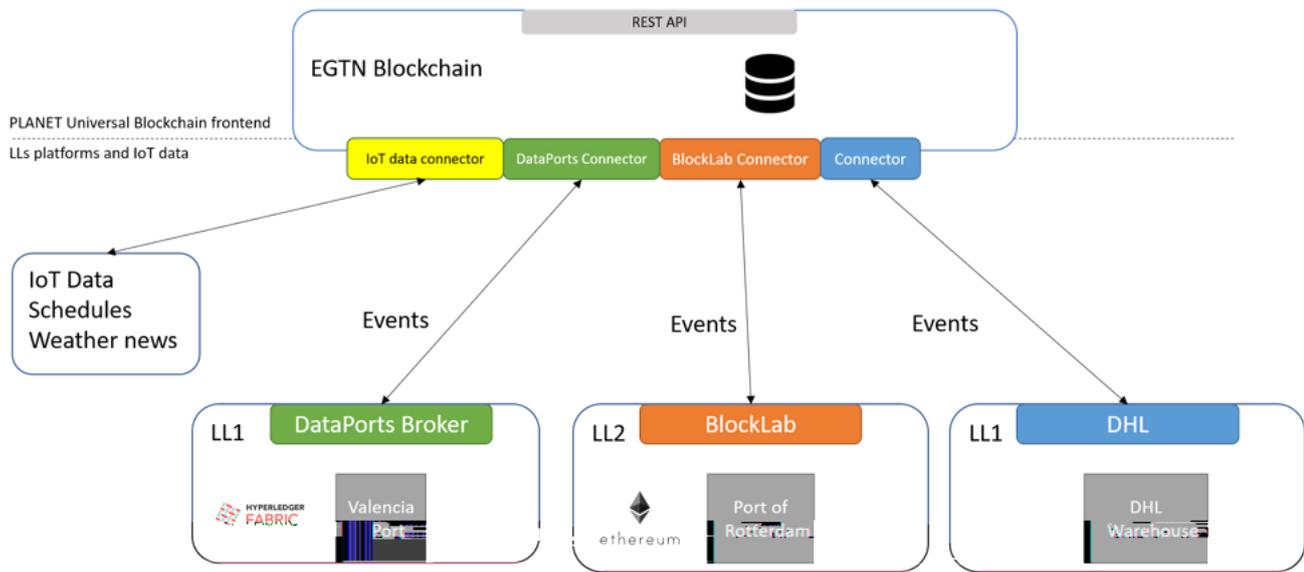


Figure 5: Architecture of digital infrastructure for logistics, sharing logistic events between platforms validated by IoT devices



Figure 6)

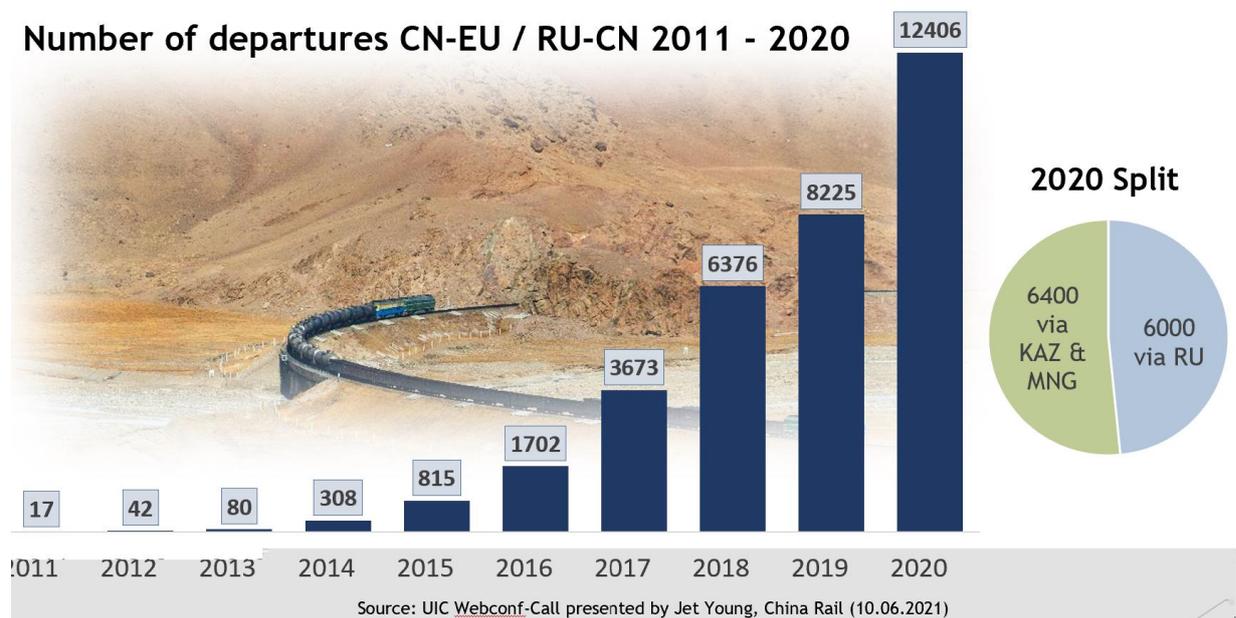


Figure 6: Growth of train traffic EU / RU to CN

encuentra el origen de la referencia.

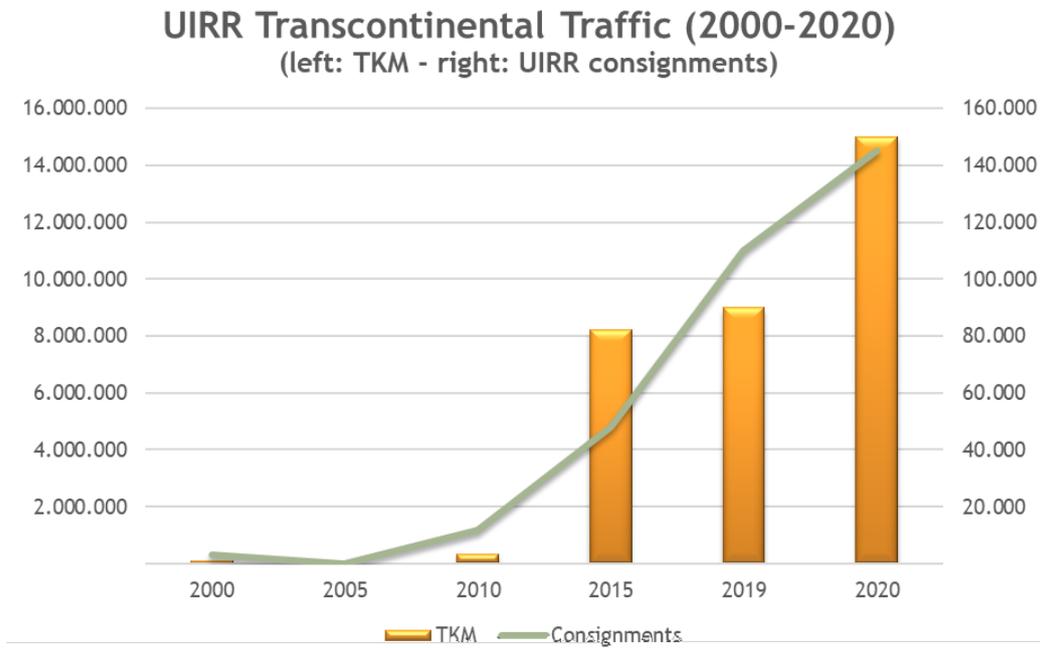


Figure 7: Growth in shipping volume⁷

Mode	Vehicle/Vessel	Type of freight	CO ₂ (g/tkm) (WTW)	PM _c (g/tkm) (TTW)*	NO _x (g/tkm) (TTW)*
Road	Tractor-semitrailer, heavy (2 TEU)	Med.-weight	121	0.003	0.30
Rail	Long train (electric 73%: diesel 27%)	Med.-weight	18	0.0018	0.08
Inland shipping	Rhine-Herne canal (RHC) vessel (96 TEU)	Med.-weight	52	0.019	0.55
	Large Rhine vessel (208 TEU)	Med.-weight	32	0.013	0.34
Deep-sea shipping	Deep-sea: 1,000-4,999 TEU container ship	Med.-weight	32	0.013	0.57
	Deep-sea: 8,000-11,999 TEU container ship	Med.-weight	12	0.005	0.23

emission factors for air pollutants provide no indication of the potential health damage associated with the various modes, which depends on where the emissions occur. * The vari

Figure 8: Comparison of pollution impact¹⁰

Figure 9

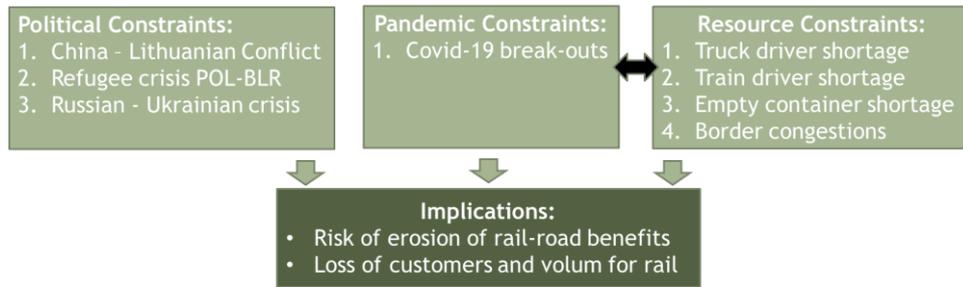


Figure 9: Recently political and pandemic constraints

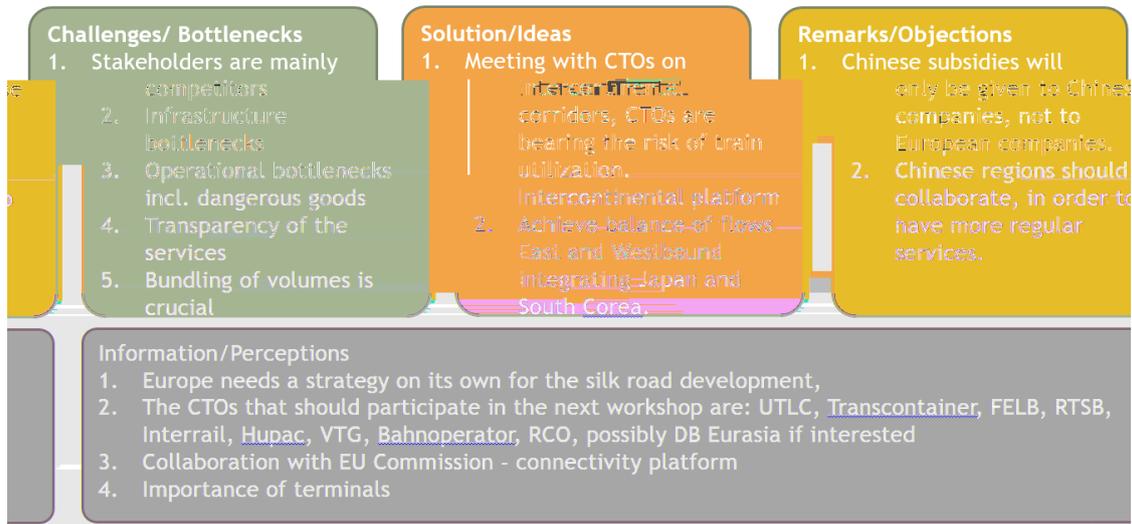


Figure 10: Workshop Result (1/2)

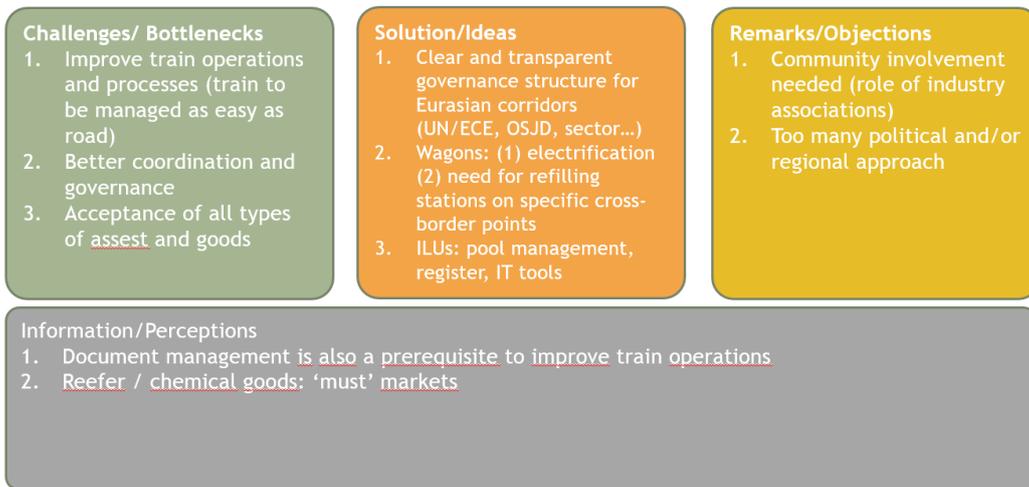


Figure 11: Workshop result (2/2)

