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

IPIC 2021 – Introduction

Physical Internet applications in global/European transport networks

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Agenda

1. **PLANET Introduction**
   - ▶ Project Fact Sheet & Consortium
   - ▶ Vision, Implementation Objectives
   - ▶ Unique Innovation Propositions
   - ▶ Position Papers
   - ▶ Living Labs Overview

2. **Planning for an Integrated Green EU Global Transport and Logistics Network (EGTN)**

3. **Use Case: IoT for the Silk Road Route to EU through Poland**

PLANET Fact Sheet

▶ Project start: 01/06/2020

▶ Duration: 36 months

▶ Budget: 7,037,670 EUR

▶ 32 partners

▶ GA no: 860274

▶ Coordinator: Inlecom Group

▶ Website: www.planetproject.eu

Consortium

INLE	INLECOM GROUP	BE
CERTH	Centre for Research and Technology Hellas	EL
CATS	China Academy of Transportation Sciences	CN
COS	COSCO Shipping Lines Spain	ES
COSTech	COSCO SHIPPING TECHNOLOGY	CN
CPSI	Comunidade Portuária de Sines	PT
KNT	Konnecta	IE
DHL	DHL Supply Chain Spain	ES
EBOS	EBOS Technologies	CY
EGTC	TEN-T Interregional Alliance for the Rhine-Alpine Corridor	DE
EUR	Erasmus University Rotterdam	NL
ESC	European Shippers Council	BE
CLN	CityLogin	ES
FV	Fundación Valenciaport	ES
ZLC	Fundación Zaragoza Logistics Center	ES
GS1 China	GS1 China	CN
GS1 Poland	GS1 Poland	PL

HARDT	HARDT HYPERLOOP	NL
IBM	IBM Ireland	IE
UIRR	International Union for Road-Rail Combined Transport	BE
ITA	INSTITUTO TECNOLÓGICO DE ARAGON	ES
ILIM	Instytut Logistyki i Magazynowania	PL
JD	Jing Dong Logistics	CN
NGS	New Generation Sensors	IT
NEWO	NEWOPERA AISBL	BE
SIR	SIRMA AI	BG
PAN	PANTEIA	NL
PNO	PNO Innovation	ES
PoR	Port of Rotterdam	NL
PP	Polish National Post	PL
RS	ROHLIG SUUS LOGISTICS S. A	PL
VLTN	VLTN	BE
WI	Wuppertal Institute	DE

PLANET Vision

Advance the European Commission's strategy for Smart, Green and Integrated Transport and Logistics

Efficiently interconnecting infrastructure with geopolitical developments

• **Optimising** the use of current & emerging transport modes and technological solutions

TEN-T, Rail-Freight **Corridors** Future New Silk Road & emerging trade routes

Ensuring equitable inclusivity of all participants

Increasing the prosperity of nations

Preserving the environment

Enhancing Citizens quality of life

The realization of this vision is PLANET's **Integrated Green EU-Global T&L Network (EGTN)**
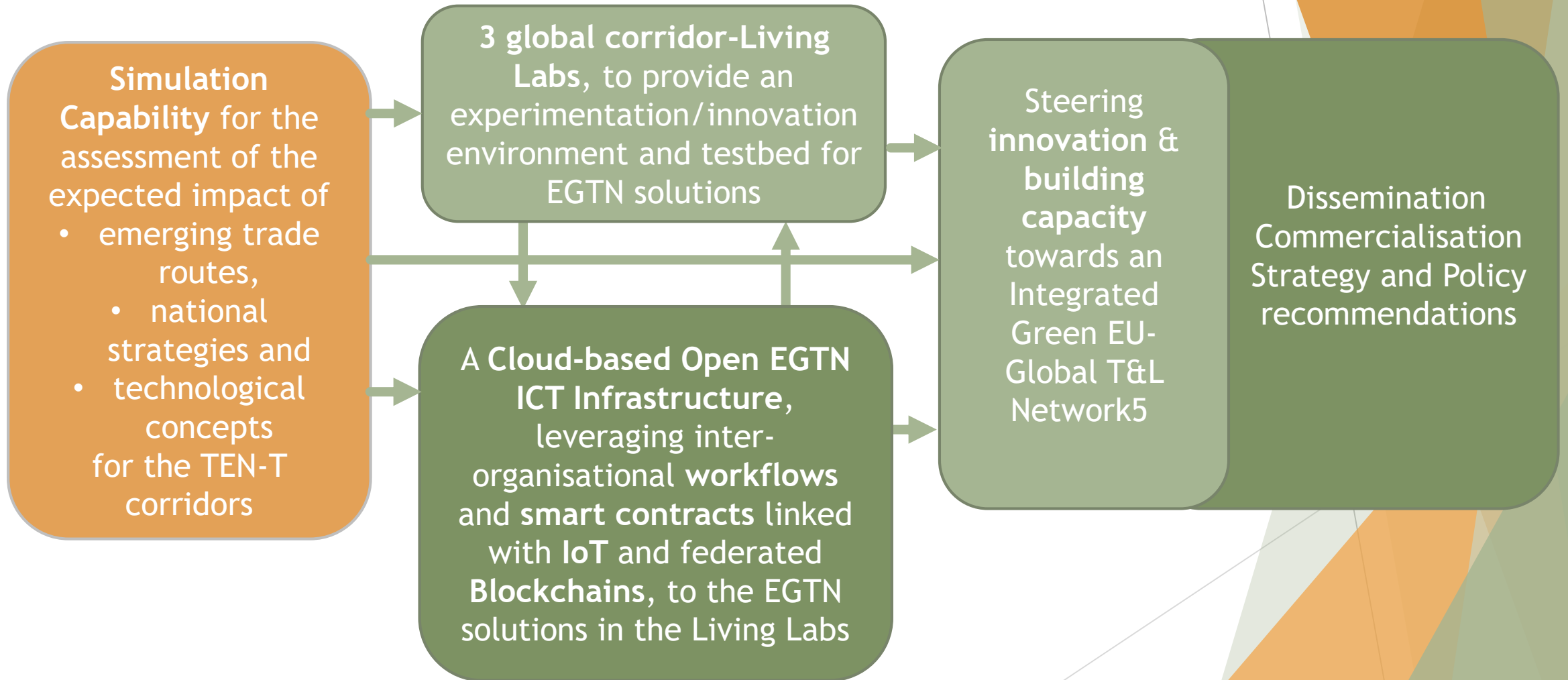
PLANET's R&D Pillars

Understanding and Supporting

- **Global, Geopolitical, Trade and Economic imperative implications of new trade routes** and how best to maximize the EU's economic prospects through steering best practices that align with EC regulatory and environmental policies;
- **EU's strategic cooperation with China and USA** and explore international cooperation, including peripheral regions and landlocked developing countries
- **Model multimodal transfer zones and global trade zones** under the **Assess** concept of EU's Principal Entry Nodes

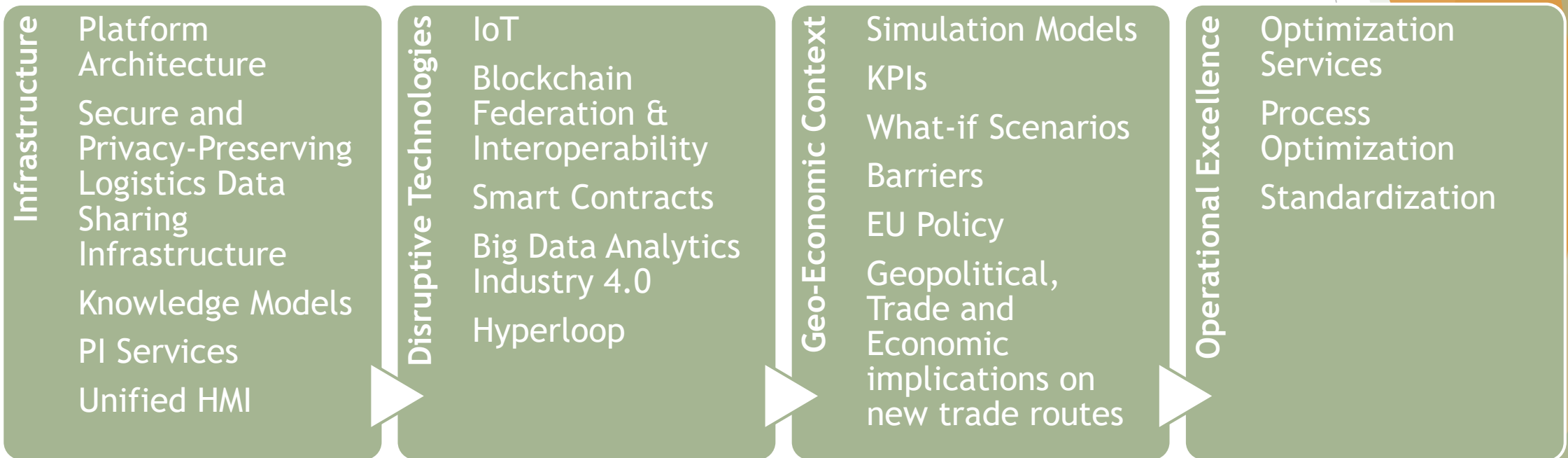## Leveraging Technological Advancements and New Logistics Concepts

- Leverage and advance current **state of the art towards the horizontal interoperability of T&L systems**, and promote the development of **European and Worldwide Standards**;
- **Demonstrate Secure and Privacy-Preserving Logistics Data Sharing Infrastructures** for Globally Interconnected Supply Chains,
- Leverage **Blockchain Federation and Interoperability for**
  - **Supply Chain (SC) governance, immutable auditability** in recording/reporting of Supply Chain transactions
  - supporting **smart contracts** and regulatory activities.

Implementation Objectives

Simulation Capability for the assessment of the expected impact of
- emerging trade routes,
- national strategies and
- technological concepts

for the TEN-T corridors

3 global corridor-Living Labs, to provide an experimentation/innovation environment and testbed for EGTN solutions

A **Cloud-based Open EGTN ICT Infrastructure**, leveraging inter-organisational **workflows** and **smart contracts** linked with **IoT** and federated **Blockchains**, to the EGTN solutions in the Living Labs

Steering **innovation** & **building capacity** towards an Integrated Green EU-Global T&L Network5

Dissemination Commercialisation Strategy and Policy recommendations

Green EU-Global Trade & Logistics Networks (EGTN)

International logistics systems

Infrastructure
- Platform Architecture
- Secure and Privacy-Preserving Logistics Data Sharing Infrastructure
- Knowledge Models
- PI Services
- Unified HMI

Disruptive Technologies
- IoT
- Blockchain Federation & Interoperability
- Smart Contracts
- Big Data Analytics Industry 4.0
- Hyperloop

Geo-Economic Context
- Simulation Models
- KPIs
- What-if Scenarios
- Barriers
- EU Policy
- Geopolitical, Trade and Economic implications on new trade routes

Operational Excellence
- Optimization Services
- Process Optimization
- Standardization

PLANET Unique Innovation Propositions

1. **Multimodal transport flows model** along global corridors and TEN-T and a comprehensive hybrid modelling and simulation capability tuned to **represent TEN-T integrated Green EU-Global T&L networks**
2. **End-to-end transport chain models** including last mile and ocean shipping underpinned by IoT, Blockchain and AI technologies and leveraging UIP1 related tools
3. **Synchromodality on Blockchain** enabled Platforms integrated with predictive and optimisation analytics enabling individual actors to find and manage the best transport solutions
4. Development of Ports/Hubs as **Smart EGTN Principal Nodes** making automated intelligent decisions required for a PI approach and associated smart warehousing nodes and smart city hubs
5. **Eurasian rail freight expansion and Integration** with European RFCs utilising UIP1-4
6. **e-commerce distribution through EGTN smart nodes** underpinned by Postal operators' innovative collaboration mode
7. **Multi criteria DSS specially to support strategic development** of TEN-T corridors: Intelligent PI Nodes and PI Network services

Position Papers

- **Geo-economic analysis of the dynamics and potential impact of new trade routes for EU** (RSM). At macro level: how changes in trade policies, trade flows, and investments are expected to influence trade/routes to from EU and EU businesses. At micro level, T&L network models that guide EGTN design will be investigated.

- **Impact analysis of New Trade Routes on TEN-T** corridors and multimodal transfer nodes from economic and environmental perspectives (PANTEIA)

- **Focused analysis on railway transport-corridors to/from the EU:** Interconnection problems relating to economic, information, scientific, technical and ecological aspects (UIRR)

- **Analysis of the transition towards the PI paradigm.** Analysis of the role of IoT, BC, smart contracts, participation incentives mechanisms, automation and autonomous technologies, 5G, 3D printing, UAVs and hyperloop; (2) providing initial models (INLECOM/FV)

PLANET Living Labs
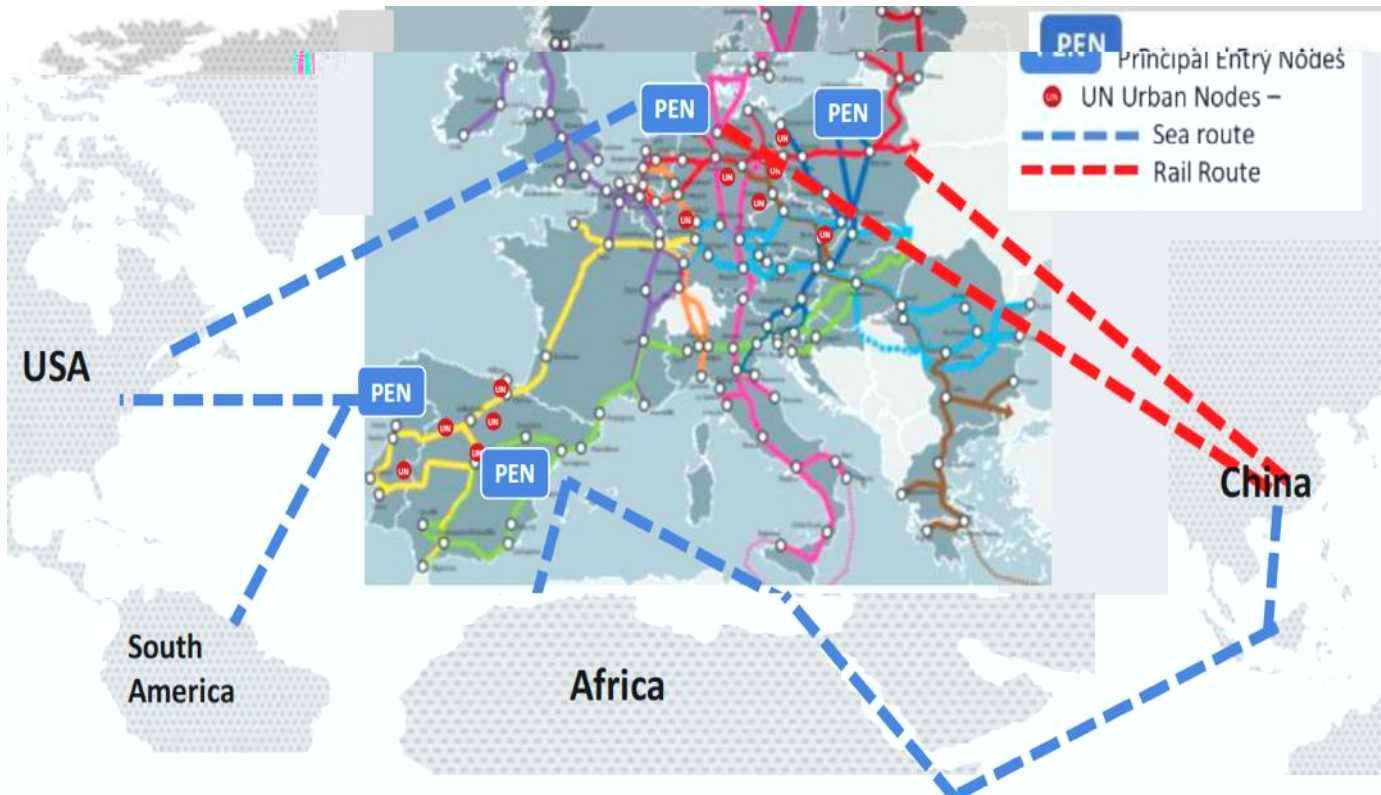
- **LL1 - PI and Blockchain** for optimised door-to-door Asia-Europe corridors - Mediterranean Corridor
- **LL2 - Synchromodal dynamic management** of TEN-T & intercontinental flows promoting rail transport
- **LL3 - IoT for Silk Road Route** – reliable, transparent and fully connected corridor from China to the EU

PLANET Living Labs

1. Physical Internet and Blockchain for optimised door-to-door Asia-Europe corridors - Mediterranean Corridor	2. Synchromodal dynamic management of TEN-T and intercontinental flows promoting rail transport	3. IoT for Silk Road Route – reliable, transparent and fully connected corridor from China to the EU

• Evaluate how new technologies (IoT, AI and blockchain) and concepts (Physical Internet) can improve processes, operations and efficiency along the door-to-door transport chains linking the Maritime Silk Road with EU internal corridors	• Focus on dynamic and Synchromodal management of TEN-T & intercontinental flows promoting rail transport and utilising the Port of Rotterdam as the principal smart EGTN Node coordinating the rail focused transport chains linking China through Rotterdam to/from USA, and the Rhine-Alpine Corridor destination	• Streamline logistic processes in flows from China to Europe along the Silk Road by implementing
		  • IoT technologies and
		  • GS1 standards that facilitate transmission of data between the partners involved in the e-commerce operations

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