Living Lab 2: China-Rotterdam/ USA through rail, the contributions of EGTC Rhine-Alpine

16 June 2022, ePIcenter Annual Meeting

Noriko Otsuka (Rhine-Alpine Corridor EGTC),
Chris Wensink (Panteia)

Contents

- PLANET consortium and overview

- PLANET Living Labs

- Rhine-Alpine (R-ALP) Corridor EGTC workshop in March 2022

- Results from the EGTC workshop

Consortium

- Start: 01/06/2020
- Duration: 36 months
- Budget: 7,037,670 EUR
- 34 partners
- www.planetproject.eu

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

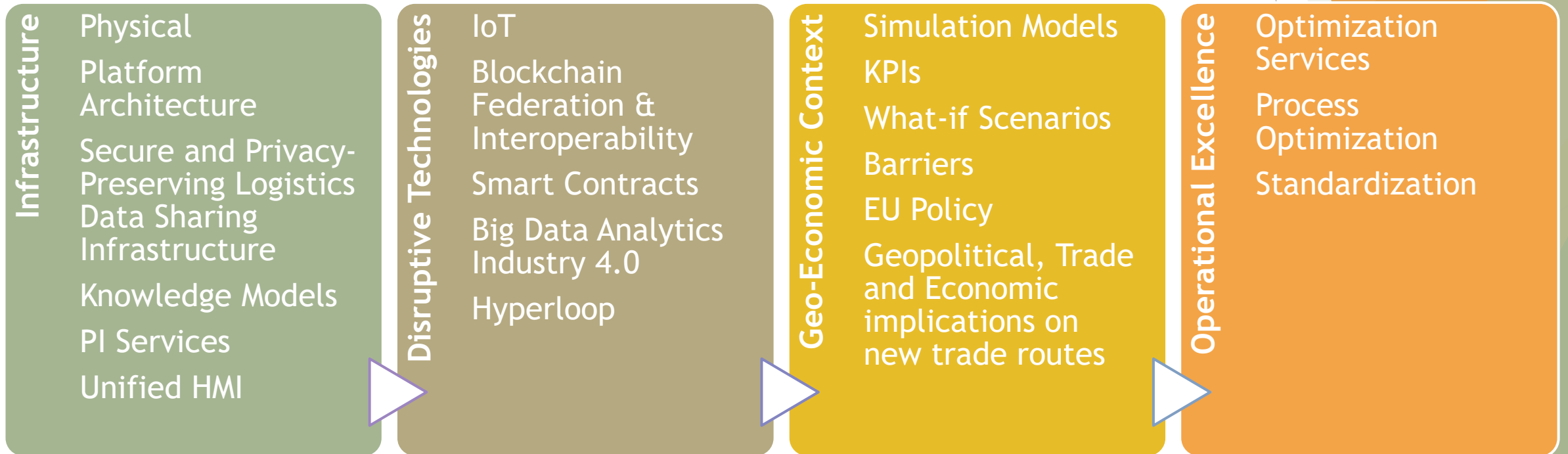|	
HARDT HYPERLOOP	NL
HUPAC	CH
IBM Ireland	IE
International Union for Road-Rail Combined Transport	BE
INSTITUTO TECNOLÓGICO DE ARAGON	ES
Instytut Logistyki i Magazynowania	PL
Jing Dong Logistics	CN
New Generation Sensors	IT
NEWOPERA AISBL	BE
SIRMA AI	BG
PANTEIA	NL
PNO Innovation	ES
Port of Rotterdam	NL
Polish National Post	PL
ROHLIG SUUS LOGISTICS S. A	PL
VLTN	BE
Wuppertal Institute	DE

PLANET Vision

Advance the European Commission's strategy for Smart, Green and Integrated Transport and Logistics by
- **efficiently interconnecting infrastructure** (TEN-T, Rail-Freight Corridors) with geopolitical developments (e.g. future New Silk Road and emerging trade routes),
- **optimising the use of current & emerging transport modes and technological solutions**,
- 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 what PLANET calls the **Integrated Green EU-Global T&L Network (EGTN).**

Green EU-Global Trade & Logistics Networks
(International Logistics Systems)

Infrastructure
- Physical
- 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 Living Labs

- LL1 - PI and AI Optimization for door-to-door Asia Europe Mediterranean Corridor
- LL2 – Blockchain based Synchromodal dynamic management of TEN-T & intercontinental flows promoting rail transport
- LL3 - IoT and standardization for Silk Road Route 0 reliable, transparent corridor from Chine to Europe
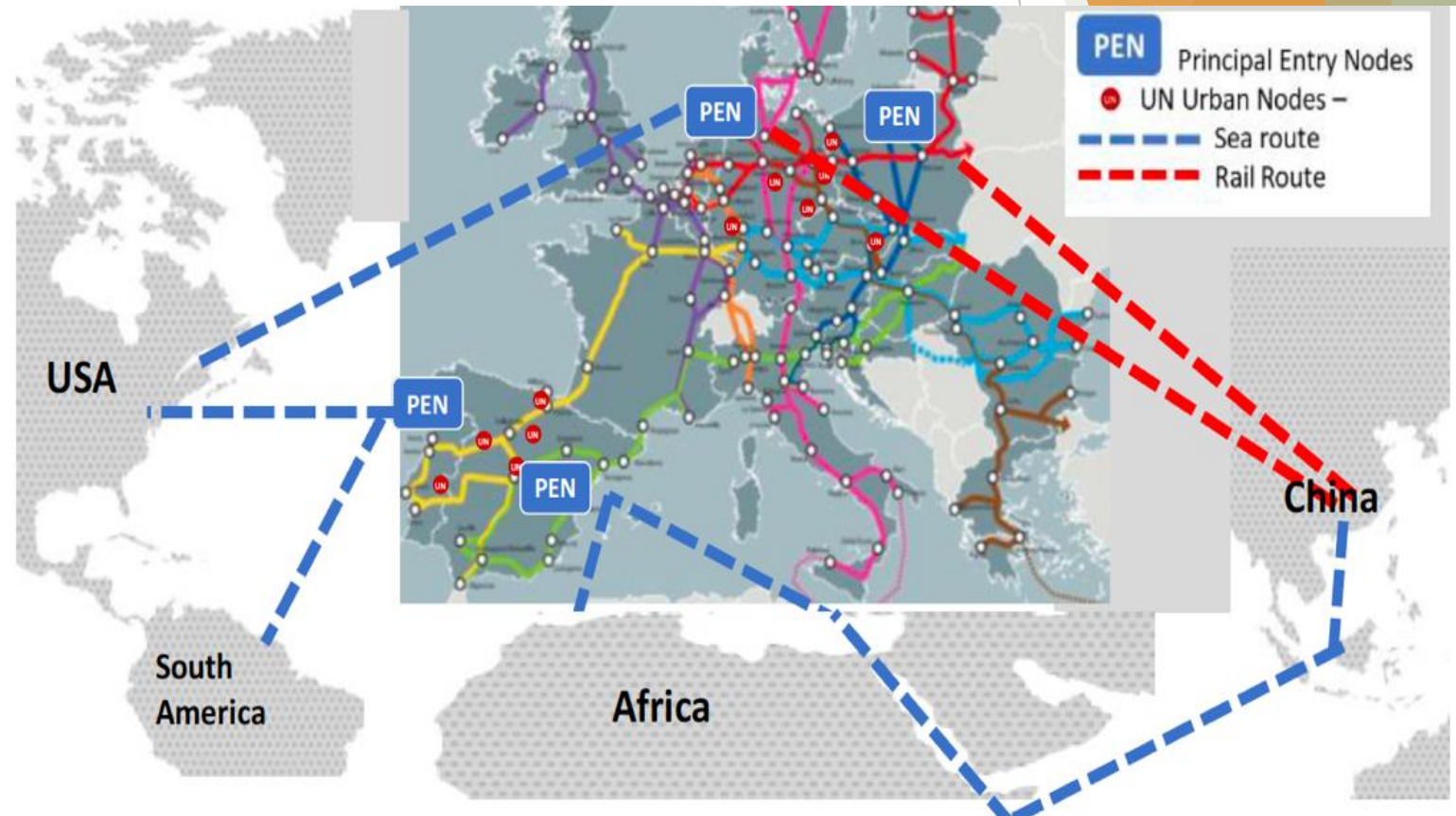
Living Lab 2 Scope

Focus on synchromodal management of TEN-T and intercontinental flows (Eurasian rail networks and maritime) cantered on the port of Rotterdam (PoR), Including through connections to the USA and R-ALP corridor flows:

- Three Key Objectives:

  - UC1: to improve the information flow through blockchain planform for synchromodal (document) management PoR-UK

  - UC2: to explore the potential of Eurasian rail freight expansion through streamlining information flows by the use of new technologies

  - **UC3: to assess implications for the Rhine-Alpine (R-ALP) corridor planning** in the face of the expansion of new trade routes, focusing on local effects of intercontinental rail on the R-ALP region

R-ALP EGTC workshop

- Analyze the corridor flows and assess the implications for the ports of Rotterdam, Hamburg, Duisburg, and (other) TEN-T infrastructure along the R-ALP Corridor, using simulation results from different time horizons.

- Two workshops to discuss simulation results of
  1) the baseline year 2019, held in March 2022, participated by 14 EGTC members
  2) future scenarios (year 2030 and 2050) to be held in Sep/Oct 2022

- Three key topics for the 1st workshop:
  - Key factors influencing the hinterlands partners (Eurasian rail & maritime)
  - The current status of Principal entry Points (PEPs) and future PEPs
  - The impacts of Ukraine conflict on Eurasian rail freight, perspectives for routes bypassing Russia
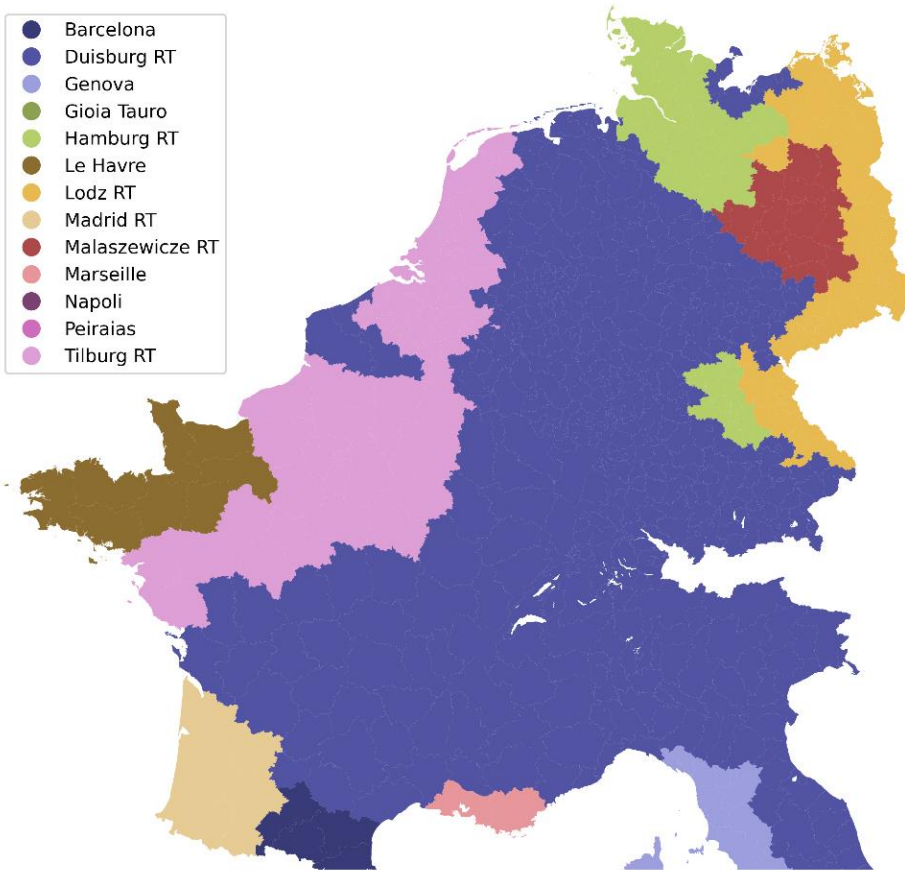
1. Key factors on the hinterland patterns

▶ Hinterland areas serviced by European PEPs (Principal Entry Points) change depending on the origin in China.

▶ Two cities (Chengdu and Shanghai) and one region (Shaanxi province) are examined as starting point of the connections to R-ALP region
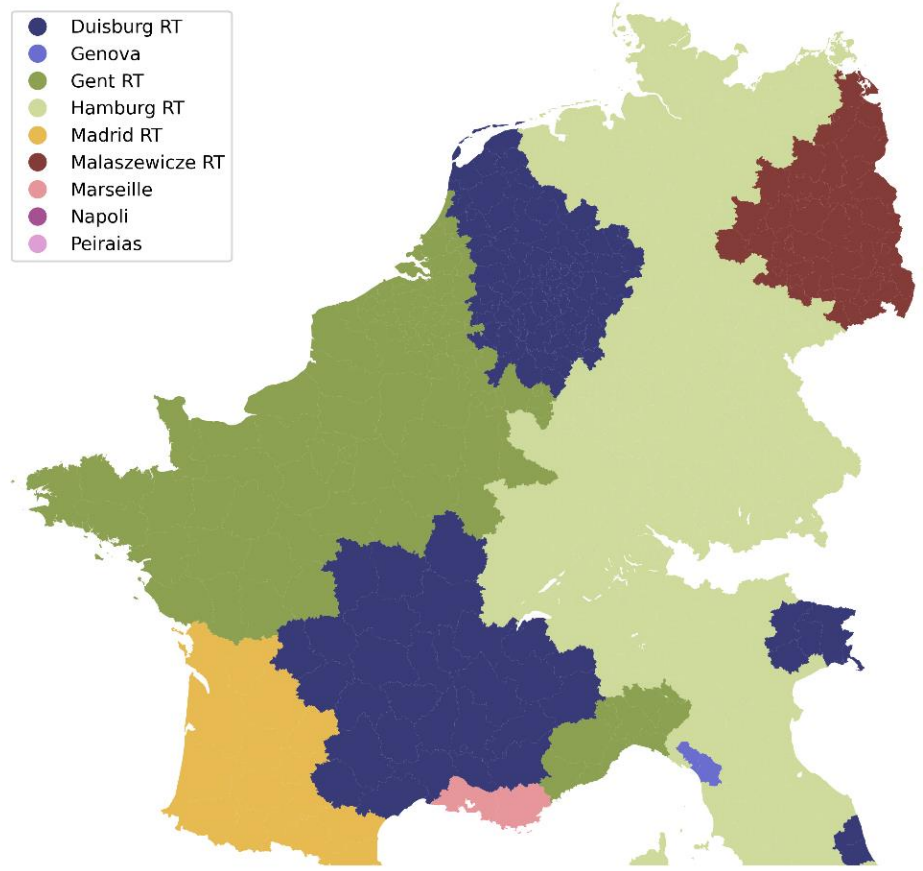

The main Europe-China railway corridor ©Panteia

1. Key factors on the hinterland patterns

Very high value goods from Chengdu (left) VS Shaanxi Province: Xian rail terminal (right)

Hinterland area per PEP for very-high value goods between Chengdu (left)/ Shaanxi (right) and the RPLA region ©Panteia

1. Key factors on the hinterland patterns

Low value goods from Shanghai (Maritime)

Factors may have led the simulation results for the hinterland patterns of PEPs:

- Location of rail terminals (RT) and rail networks;
- Intermodal networks for last miles;
- Political and stakeholders interests;
- Capability requirement for communicating with information control systems used by the Chinese intermodal operators (Wensink, et al, 2021, p.19)
- Difference in terminals' regulations;
- Infrastructure & operational bottlenecks

Legend:
- Antwerpen
- Barcelona
- Bilbao
- Bremerhaven
- Dunkerque
- Genova
- Gioia Tauro
- Hamburg
- Koper
- Le Havre
- Marseille
- Napoli
- Peiraias
- Rotterdam
- Venezia

Hinterland area per PEP for low-value goods between Shanghai and the RPLA region ©Panteia

2. The current status of PEPs

Seven PEPs are considered in the baseline year 2019 scenarios.
In total, 98% of container imports from China come via seaports, and only 2% come by rail to the R-ALP region.

	PEP	TEU (x 1.000)
Rail terminals	Tilburg RT	17
	Liege RT	6
	Duisburg RT	45
	Gent RT	9
Seaports	Antwerp	1.250
	Rotterdam	1.550
	Genova	750

Total imported containers (x 1.000) from China to Europe through the R-ALP PEP, baseline scenario (year 2019)

3. Perspectives for middle branch bypass routes

The impact of the Ukraine conflict on Eurasian rail freight

An alternative route bypassing Russia & Ukraine

Challenges:

- Poor rail infrastructure in southeast European countries
- Longer lead times
- Additional costs for rail ferries over the Caspian Sea
- Political stability along the route
- Seen as strategic route rather than commercial terms by China

The Southern or Middle Corridor. ©Trans-Caspian International Transport Route (cited in D1.4: Wensink, et al, 2021, p.19)

Results from the workshop

▶ Due to the Ukraine conflict, there is potential for the Mediterranean/Adriatic ports of RAPL Corridor in connection with southern and middle routes as well as the north-south route.

▶ The middle/southern route is very complex from geo-political perspectives, and all freight flows might go back to the maritime.

▶ Rail freight stays as a middle solution between air and sea transport.

▶ In addition to the 7 PEPs, opportunities for other PEPs (e.g. Mannheim RT; Liege RT) should be considered.

▶ The pandemic boosted online purchase and changed people's behaviours, impacting on the change in supply chains.

▶ Besides economic aspects (cost/volume calculation, lead time) combined with physical road and networks, carbon footprints based simulation should be included.

Interregional Alliance for the Rhine-Alpine Corridor EGTC

Dr. Noriko Otsuka

noriko.otsuka@egtc-rhine-alpine.eu