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TRACE

Towards the integration and harmonization of logistics operations

Motivation, Mission, Impact, Insights

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Current needs & trends in Logistics

Trends

- Adoption of **intelligent services** for increasing the performance of the provided systems.
- **Synchromodal operations** and the **integration of homogeneous logistics** services that will significantly:
  - reduce the carbon footprint;
  - secure the uninterrupted deliveries and the resilience to any disruptive event.
- A **systemic synergic approach** in logistics, hinterland and transport that could significantly promote the environmental performance of freight transport.

Motivation for TRACE

Drivers

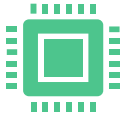
Of synchromodal operations

Unstable price of fuel and requirements for cost-saving transport

Rise in road infrastructure costs

Increasing complexity of the supply chain

Increased environment-conscious and public awareness



Challenges

For the adoption of shared logistics

Building trust along the stakeholders

Planning complexity for shared logistics networks

Monitoring and Forecasting

ICT system connectivity and secure data sharing

Barriers

For synchromodal applications

Operational related issues

Organisation, cooperation and coordination among partners

Economic and cost efficiency concerns

Lack of novel business models

Lack of legal and governance frameworks

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Why TRACE

Concept, Innovations & High Objectives

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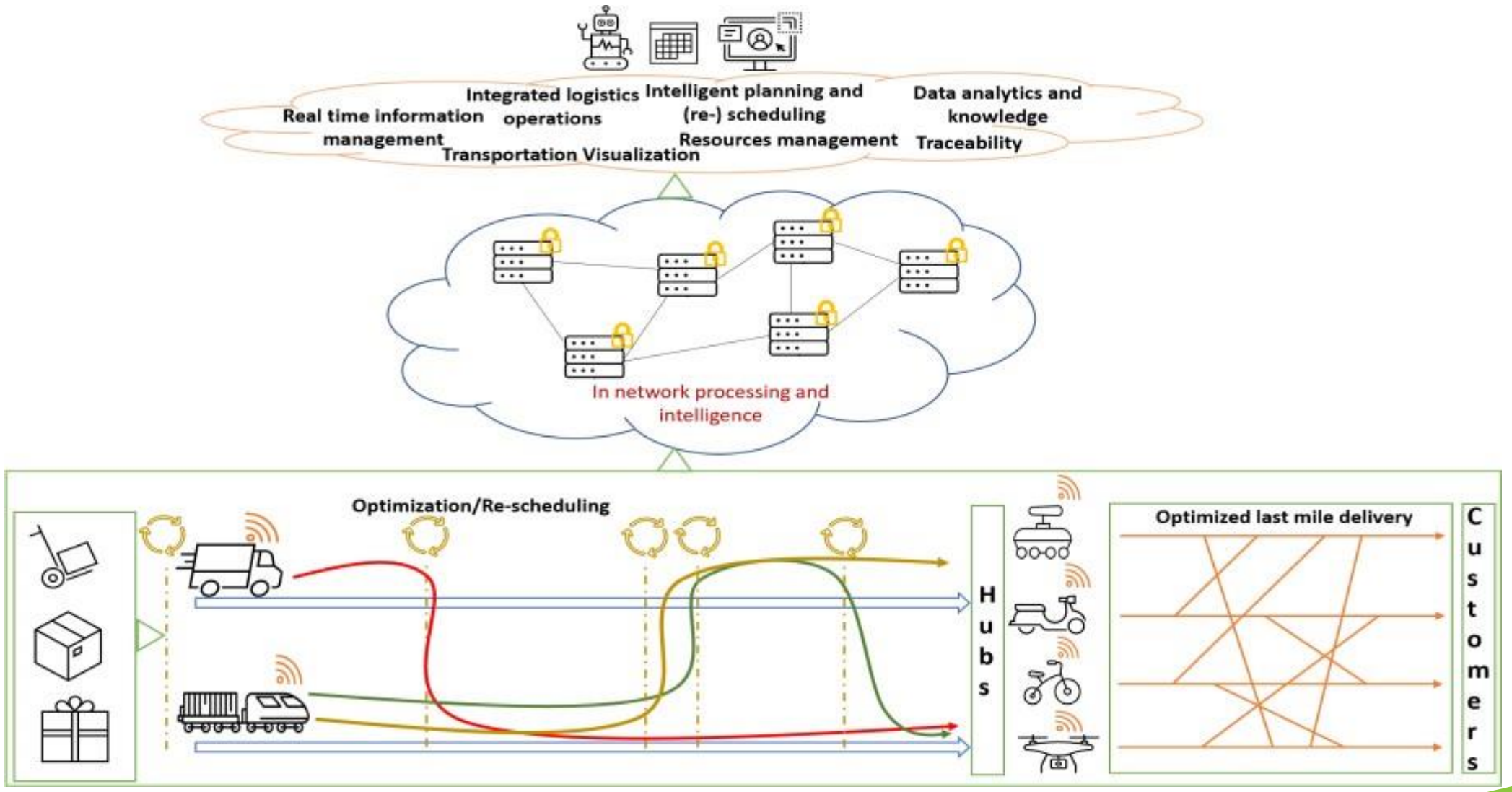
Concept

TRACE is a 3-year project, funded under the Horizon Europe Research and Innovation Program, that provides an integrated solution that supports the synchro-modal logistics paradigm.

TRACE designs & implements a smart new integrated platform that enables stakeholders to optimize shared logistic operations in terms of costs, emissions, time & fuel requirements.

It is expected to enhance the “interoperability” of logistics operations and create new pathways for innovative business models upon the current infrastructure.


Integrated logistics operations
Intelligent planning and (re-) scheduling
Data analytics and knowledge
Real time information management
Resources management
Traceability
Transportation Visualization
In network processing and intelligence
Optimization/Re-scheduling
Hubs
Optimized last mile delivery
Customers

TRACE – Innovations (1/2)

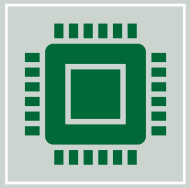
- ✓Integrates, harmonizes, and orchestrates independent logistics operations with heterogeneous processes.
- ✓Designs and implements an intelligent platform for combining open and shared logistics services for enhancing transparent collaboration activities.
- ✓Designs and implements the appropriate AI modules for supporting the automated synchro-modal services in the logistics domain.
- ✓Implements the appropriate infrastructure for supporting dynamic flows towards the optimization of logistics services.

TRACE – Innovations (2/2)

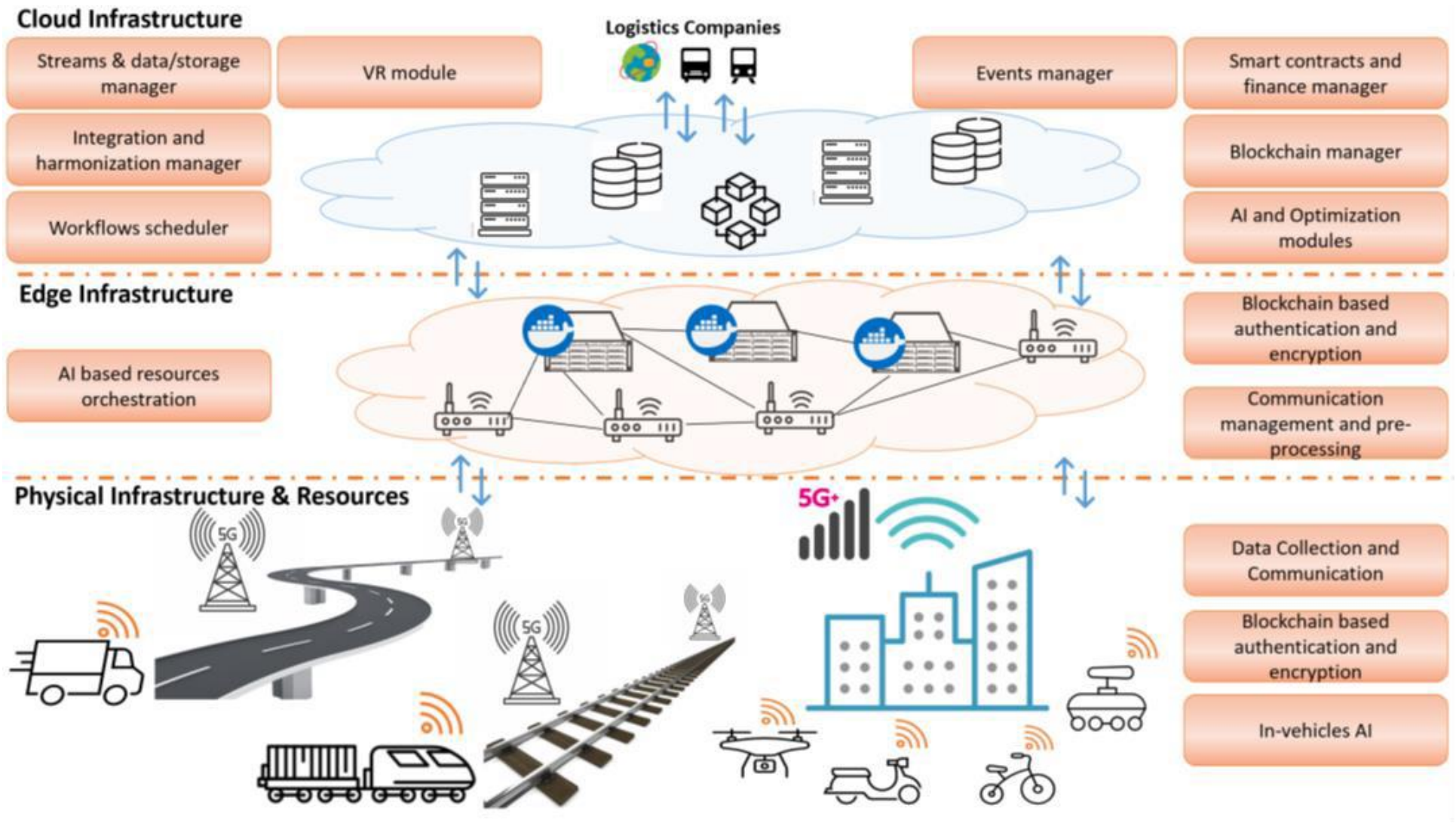
- ✓ Implements a set of European demonstrators adopting intelligent logistics operations in real traffic conditions.
- ✓ Performs a study on barriers and opportunities for realizing a logistics network.
- ✓ Performs a study on novel business models for future logistics operations.
- ✓ Studies the governance of logistics networks and regulations around Europe and worldwide.
- ✓ Performs the necessary outreach activities to raise the attractiveness and visibility of the platform while enhancing the collaboration with external actors and stakeholders.

TRACE – High Objective

To provide an **integrated solution** to support the **synchro-modal logistics paradigm** that enables stakeholders to optimize shared logistic operations in terms of costs, emissions, time and fuel requirements.



To achieve this, **innovative AI-driven practices** along **with blockchain technology** and **specialized infrastructure** will be employed to setup the basis for a higher level of **trust, security, automation, transport productivity and efficiency**.


Cloud Infrastructure
Streams & data/storage manager
VR module
Logistics Companies
Events manager
Smart contracts and finance manager
Integration and harmonization manager
Blockchain manager
Workflows scheduler
AI and Optimization modules
Edge Infrastructure
AI based resources orchestration
Blockchain based authentication and encryption
Communication management and pre-processing
Physical Infrastructure & Resources
5G
5G
5G
Data Collection and Communication
Blockchain based authentication and encryption
In-vehicles AI

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Three Demos

- Large scale demonstrators in **Greece, Italy and Slovenia** with different needs and mobility patterns.
- In these demonstrators, different logistics networks will interact and collaborate with each other and fulfill the goals of the stakeholders while minimizing the costs, fuel and energy consumption.

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Outcomes & wider impact

TRACE – Expected Outcomes

- **Freight transport and logistics companies**, including SMEs, evolve to operate seamlessly engaging with nodes, partners and customers in an efficient way, thus achieving a **better utilization of the assets** and **other resources** in the freight transport and logistics chain within Europe.
- **Energy** and **emissions** reduction potentials **higher than 20%**, based on the operative gains without needing to renew the assets, are demonstrated by the shared logistics networks.

TRACE – Wider Impact

- Upgraded and resilient physical and digital infrastructure for **clean, accessible, affordable, connected, and automated multimodal mobility**.
- Sustainable and smart long haul, regional and urban freight transport and logistics, through **increased efficiency**, **improved interconnectivity** and **smart enforcement**.
- **Reduced external costs** (e.g. congestion, traffic jams, emissions, air and noise pollution, road collisions) of urban, peri-urban (regional) and long distance freight transport as well as optimised system-wide network efficiency and resilience.
- Enhanced **local** and/or **regional** capacity for **governance** and **innovation** in urban mobility and logistics.

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TRACE stakeholders

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Stakeholders

- Application Developers
- Service End Users (Logistics Industries)
- Manufacturers/Suppliers
- Carriers & Agents
- Infrastructure Providers
- ICT Providers, Systems Integrators & Vehicles Vendors
- SMEs being active in the logistics domain
- SMEs with ICT targets
- Governmental Agencies, Policy Makers & Public Authorities
- Citizens / Customers / Wider Public
- Academia, Research & other projects
- Open source Associations, Technology Clusters

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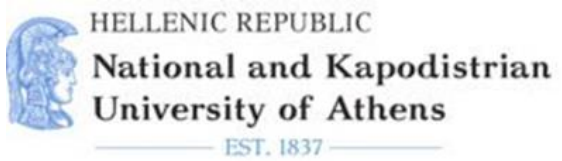
Partners & Funding

Our Partners

- The TRACE consortium is formed by **7 SMEs, 4 large industrial - technology providers** partners, **10 Research Institutes** and **Universities, 6 logistic operators/experts** and **one policy maker.**
- Partners from **11 EU countries:** Greece, Luxemburg, Spain, Austria, Estonia, UK, Cyprus, Italy, Malta, Slovenia and Switzerland, exhibiting a wide European coverage and international reach.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University of Maribor


ISIG


Comune
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TRACE at a glance

Budget: 9.531.486,25 Euros (Grant: 7.743.673,25 Euros)

Project Duration: 3 years (Start Date: 1 June 2023)

Project Coordinator: National Kapodistrian University of Athens, Greece

Consortium: 28 partners, 11 countries

Funded by the European Union under the Horizon Europe Research and Innovation Program

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Thank you all!

Let’s stay in touch!