Intelligent Cargo in Efficient and Sustainable Global Logistics Operations

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Background

Freight transport and logistics will have a central role in EU's transformation into a smart, sustainable and inclusive economy. The Europe 2020 Strategy sets specific objectives in terms of:

- Energy efficiency and decarbonisation
- Economic growth

It is commonly acknowledged that Information and Communication Technologies will play a fundamental role in overcoming the above issues

Vision

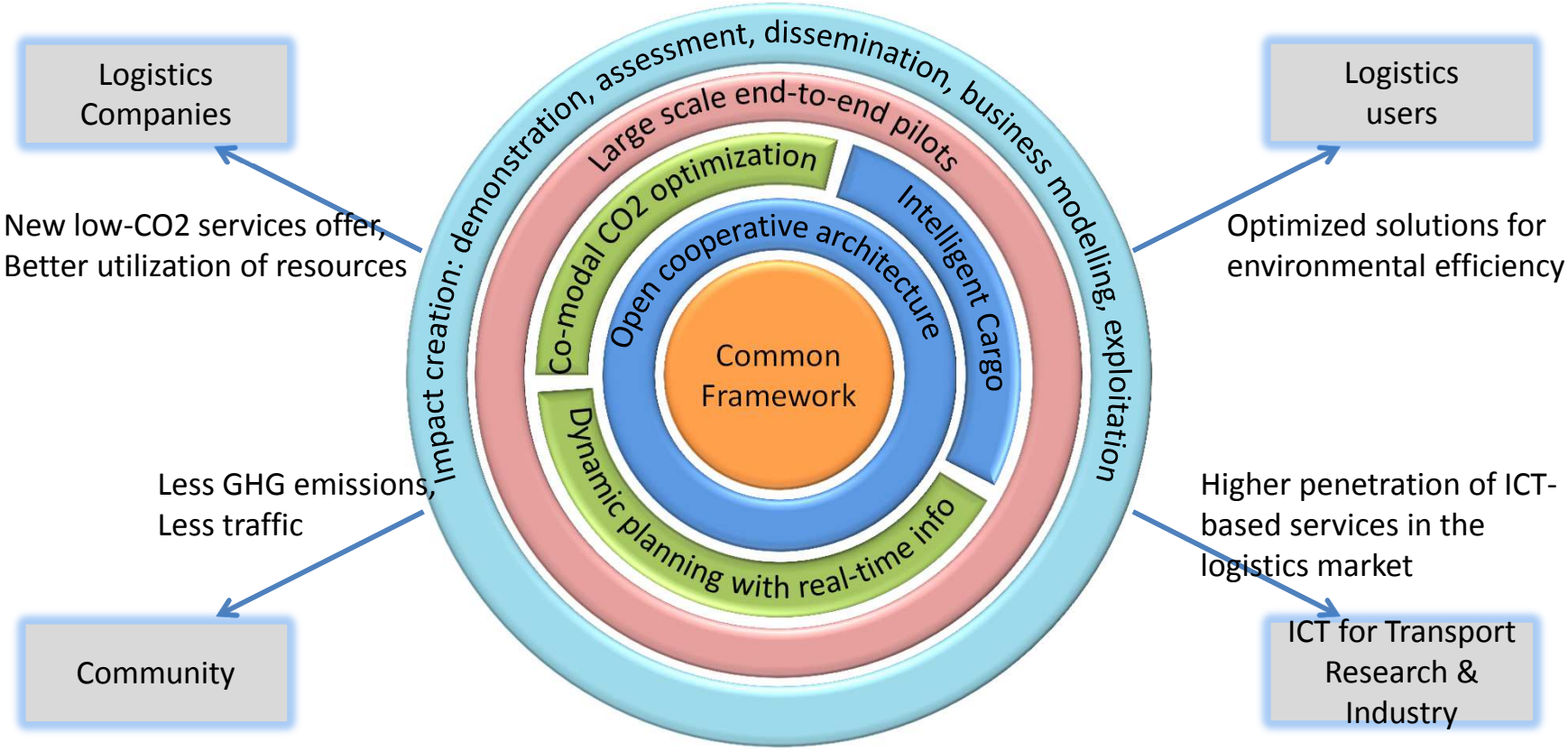
- Cargo will be intelligent and part of a **network of interoperable** vehicles, infrastructures and logistics management systems
- An **open platform** of freight management services providing access to information systems
- The flow of goods will be managed **cooperatively**
- **Real-time data collection and event management** to become part of logistics practices

iCargo: Objectives

The iCargo project aims at advancing and extending the use of ICT to support *new logistics services* that:

- synchronize vehicle movements and logistics operations to lower CO2 emissions,
- provide dynamic planning methods involving intelligent cargo, vehicle and infrastructure systems
- combine services, resources and information from different stakeholders, taking part in an open freight management ecosystem.

Approach (1)

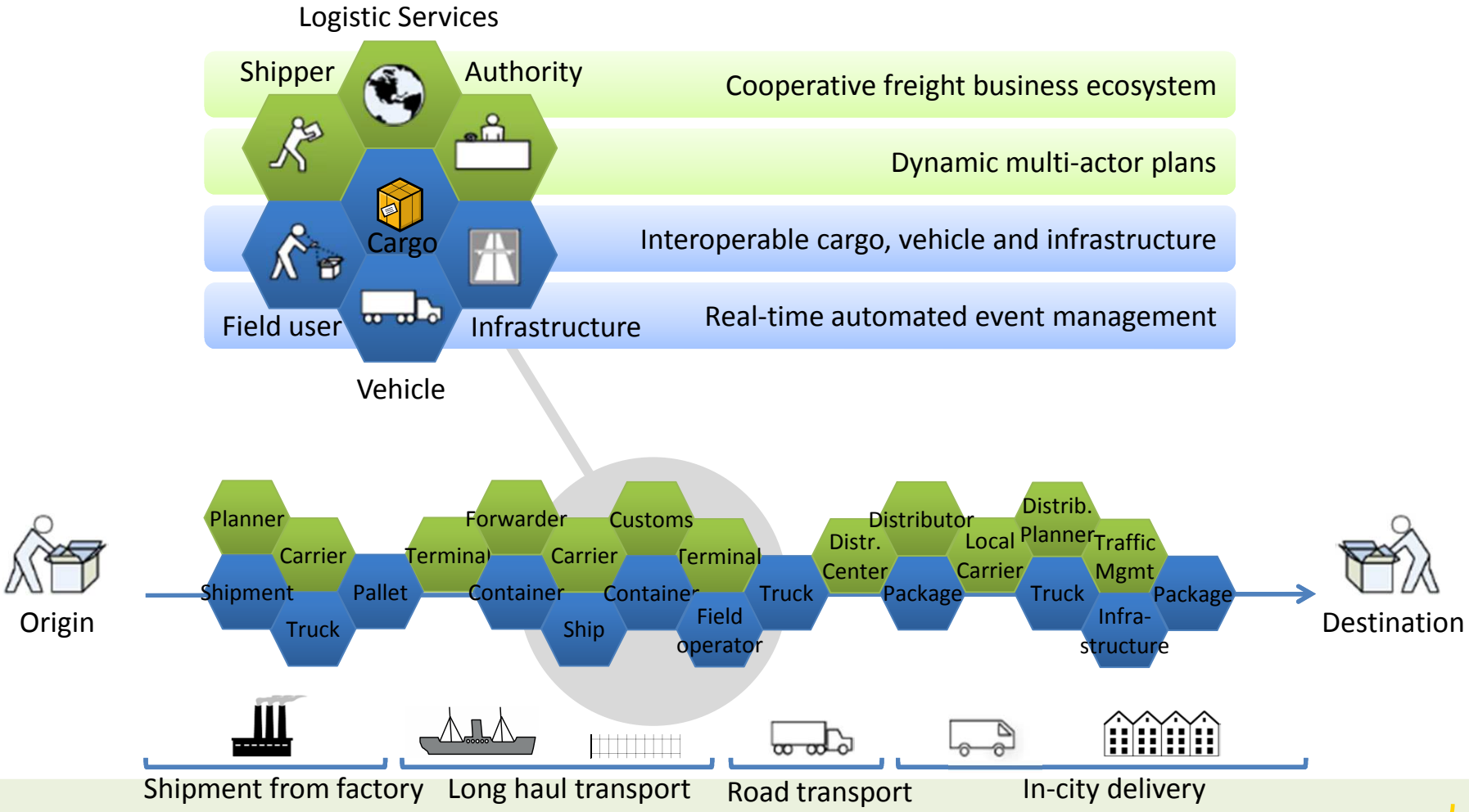

Logistics Companies
New low-CO2 services offer,
Better utilization of resources
Logistics users
Optimized solutions for environmental efficiency
Less GHG emissions,
Less traffic
Higher penetration of ICT-based services in the logistics market
Community
ICT for Transport Research & Industry
Impact creation: demonstration, assessment, dissemination, business modelling, exploitation
Large scale end-to-end pilots
Co-modal CO2 optimization
Intelligent Cargo
Open cooperative architecture
Common Framework
Dynamic planning with real-time info

Approach (2)

iCargo involves representatives of the main stakeholders in three main areas of activity:

- **leading ICT companies and institutes** to integrate in iCargo the necessary technology components to develop innovative approaches and business models for co-modal transport environmental optimization and dynamic planning;
- implementation, demonstration and validation of **three extensive pilots** in end-to-end multi-actor intermodal chains
- extensive **dissemination** of research results, demonstration and pilot cases validation activities, **aimed at transferring iCargo results to the international transport logistics community** and supporting take-up and extensive exploitation immediately after the project

The idea visualised



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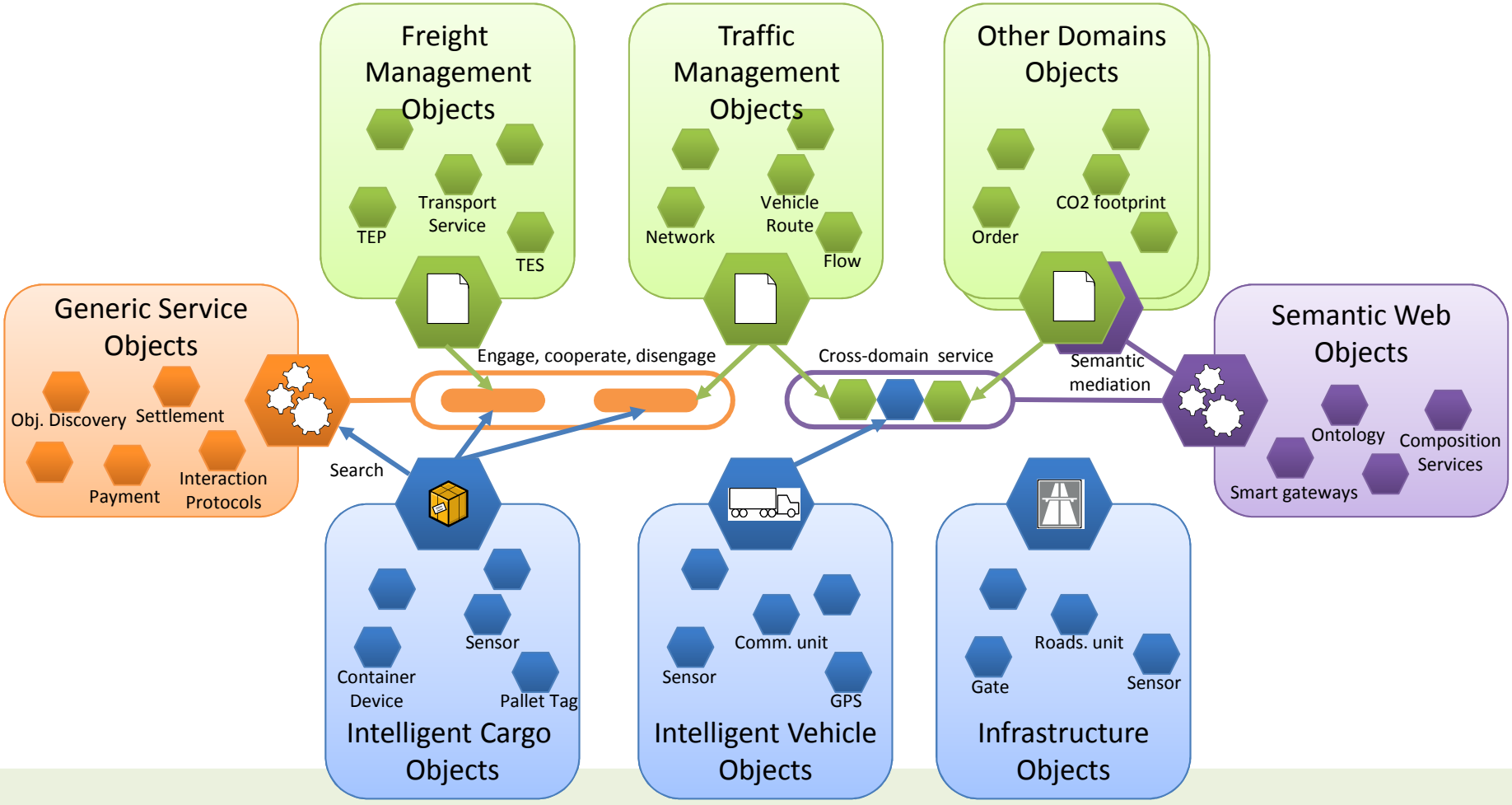
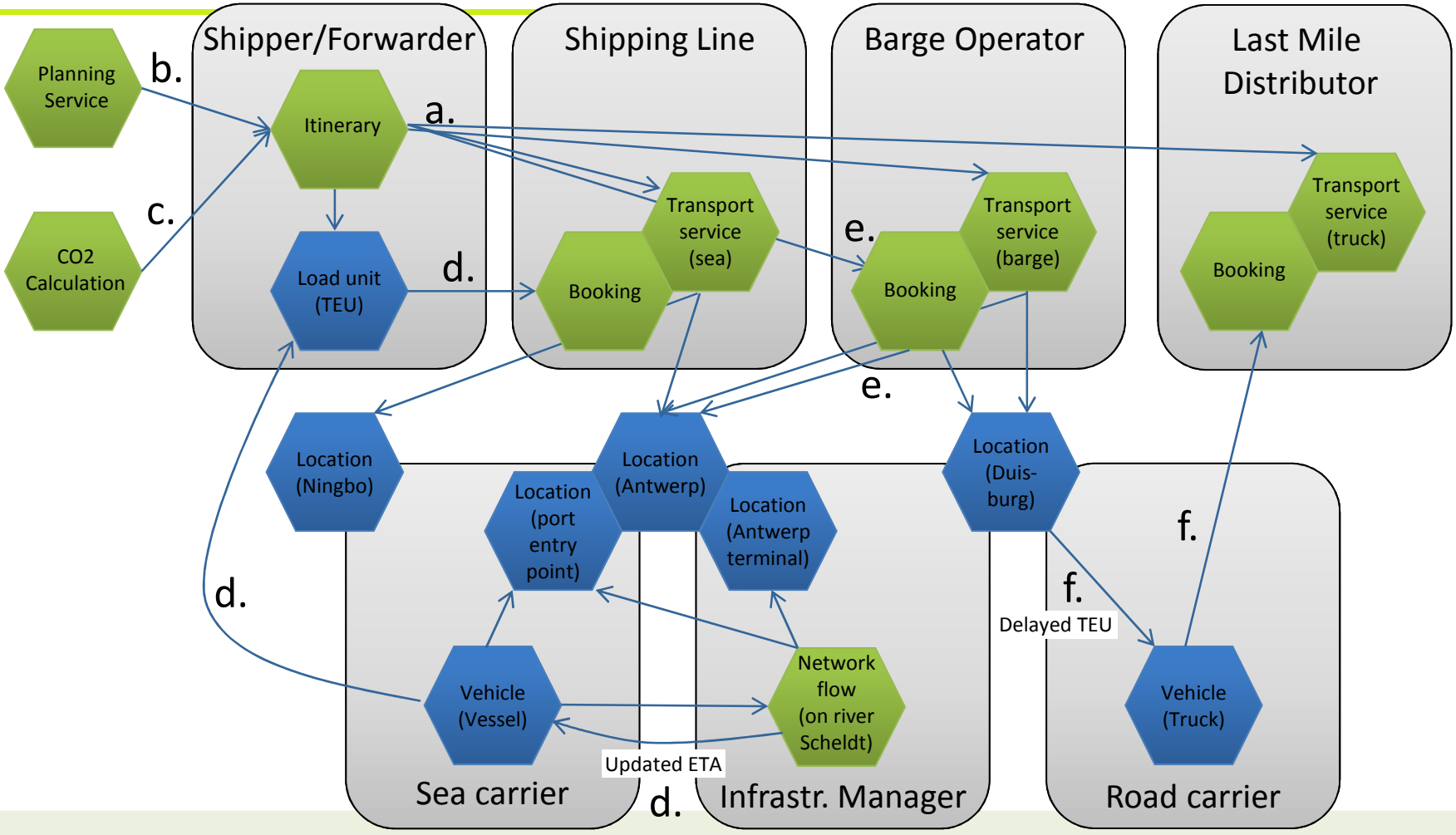
Technical concept (1)



Technical concept (2)



Pilot cases

The iCargo approach and technologies will be applied in **three open, large-scale pilots** to demonstrate and validate viable industrial implementations of low-carbon logistics services, *going beyond technological proofs of concept*. Each pilot will:

- Take a **systemic approach**, encompassing the **entire transport chain** and involving different transport modes as well as the main actors (shippers, transport operators, authorities and infrastructures) necessary to implement the service.
- Build a **logistics information value chain**, where services, resources and information from different stakeholders are exposed and combined in an open freight management ecosystem.
- Carry out **supply-chain wide tests**, covering the entire route of goods from source to destination, including logistic operations across modes. This will allow estimating impact on a systemic level as well as assessing feasibility from the viewpoint of multiple involved stakeholders.

Pilot 1: Sea-City-Air-Rail (SCAR) door-to-door service

The SCAR pilot will show simplified and more energy-efficient management of freight flows in transnational Rail/Multimodal corridors, by:

- **replacing complex business process interactions** of the partners with bottom-up adaptive interoperability of the first/last mile urban/interurban smart distribution with Rail, Air, Sea and Road freight traffic;
- introducing on-going **dynamic control for energy/emissions reduction** based on independent intelligent units ("iUnit") on both the cargo and vehicle.
- supplying a **corridor oriented ICT infrastructure for logistics/transport** service providers allowing the dynamic cargo/means management

Pilot 1: Sea-City-Air-Rail (SCAR) door-to-door service

MAIN PARTNERS / CUSTOMERS

INTERPORTO BOLOGNA spa

GTS

COBELFRET

FAST FREIGHT MARCONI

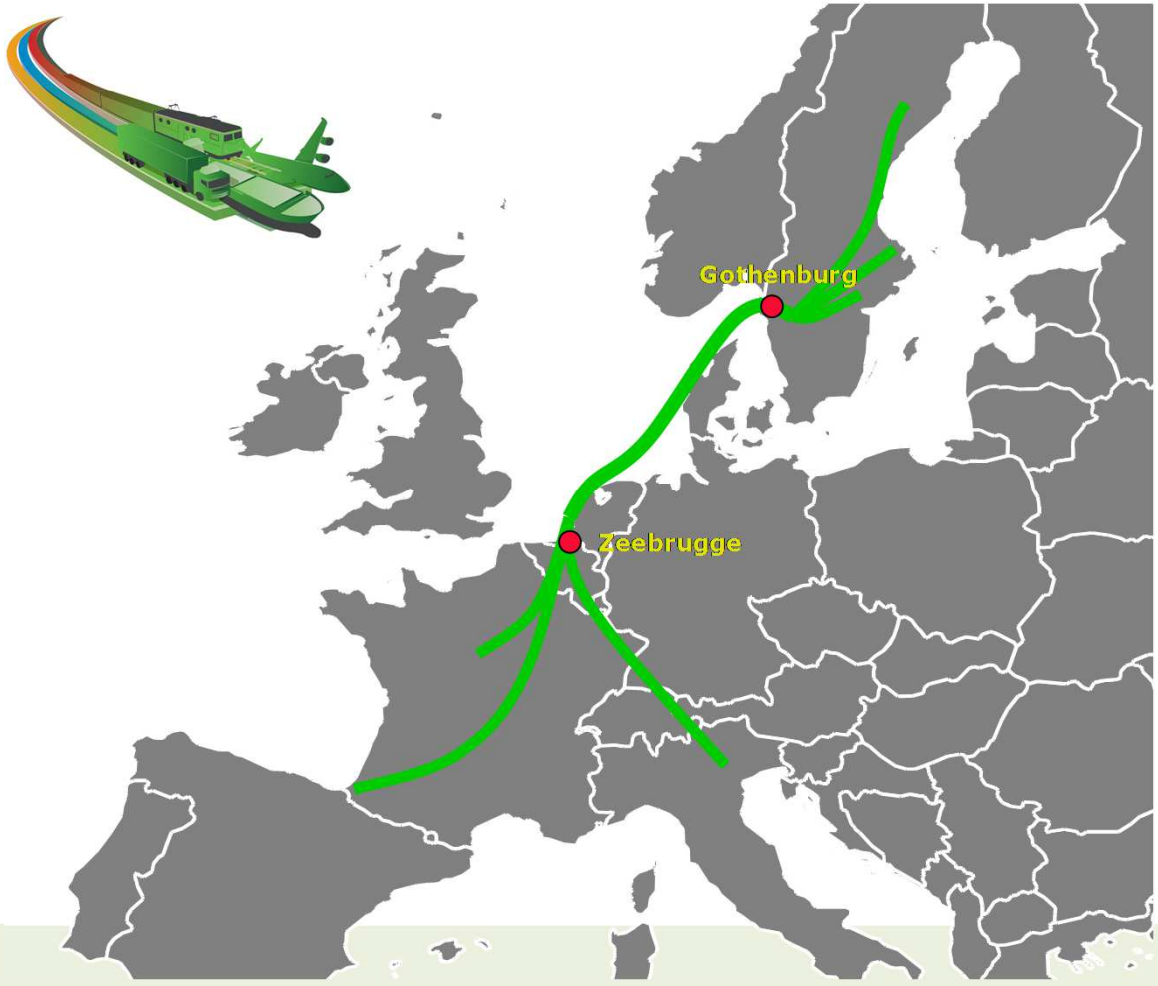
CROSSRAIL

Pilot 2: Green Corridor between Sweden and the European Continent

The “Green Corridor” pilot will demonstrate e-services to integrate motorways of the sea with competitive hinterland co-modal offerings, making these an attractive alternative to rail in terms of resources utilization and hence “greenness”, by:

- integrating information about, e.g., available services, booking, status reporting, and electronic mandatory reporting to authorities, to cover the combination of rail, sea, road;
- using on-cargo devices for communication between train and infrastructure, for real-time monitoring of key performance indicators, e.g. the CO2-footprint.

Pilot 2: Green Corridor between Sweden and the European Continent

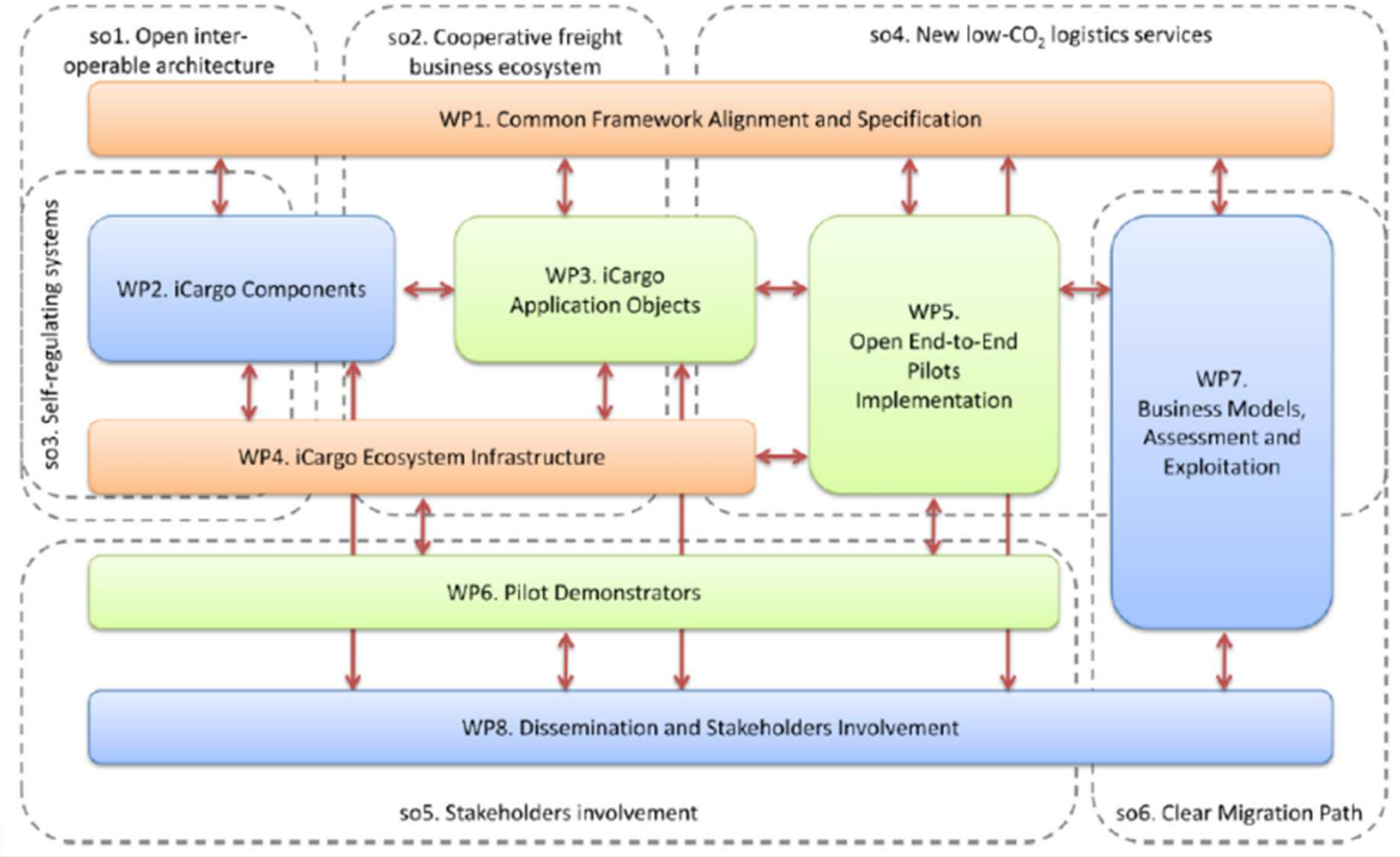


Pilot 3: Logistics Services Providers – Shippers cooperation

The Logistics Services Providers – Shippers cooperation pilot will show how to improve the sustainability profile of an entire, complex supply chain through cooperative planning and execution solutions, by:

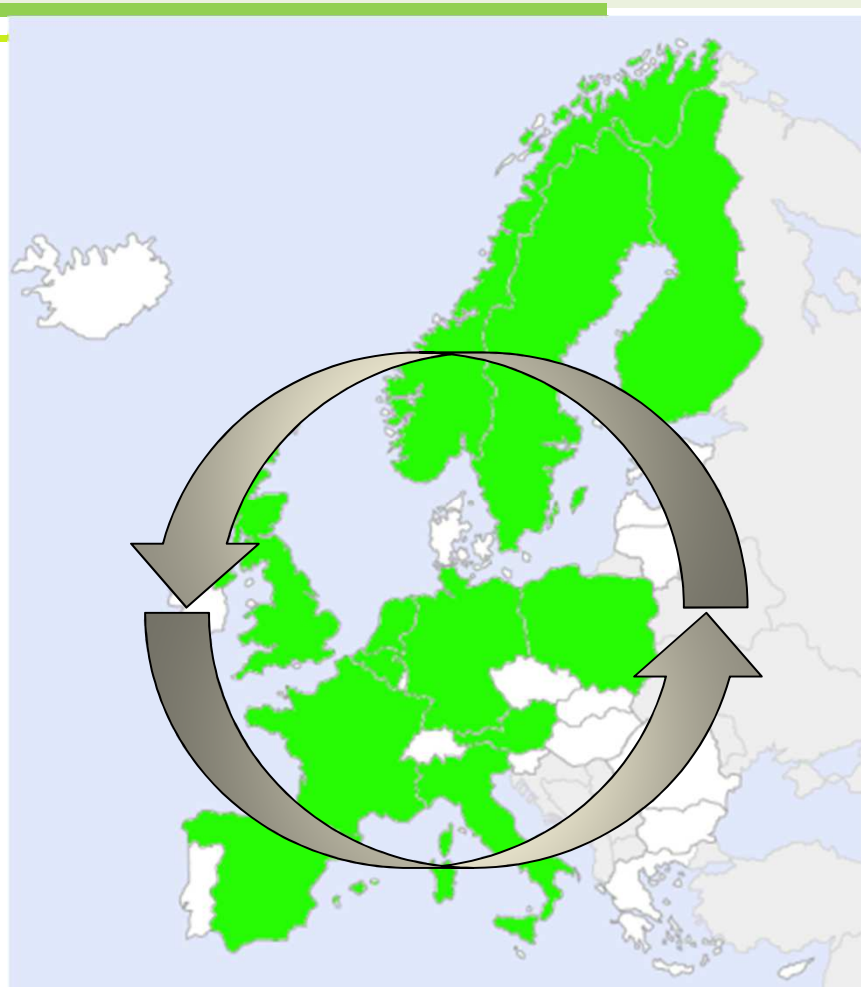
- providing new capabilities and standards for information exchange between all actors in transport as well as logistics operations, like warehousing, including the use of environmental attributes in supply chain optimization;
- monitoring cargo environment and quality even in presence of extremely large volumes, by replacing back-office systems connections with decentralized computing based on smart tags and distributed intelligence.

Implementation



Consortium description (1)

- Austria
- Belgium
- Finland
- France
- Germany
- Italy
- Norway
- Poland
- Spain
- Sweden
- The Netherlands
- United Kingdom



Consortium description (2)

THANK YOU!

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