# Liaison activity AWARD + Multireload + FOR-FREIGHT

Presenter: Dr. Orestis Manos , 23/02/2024
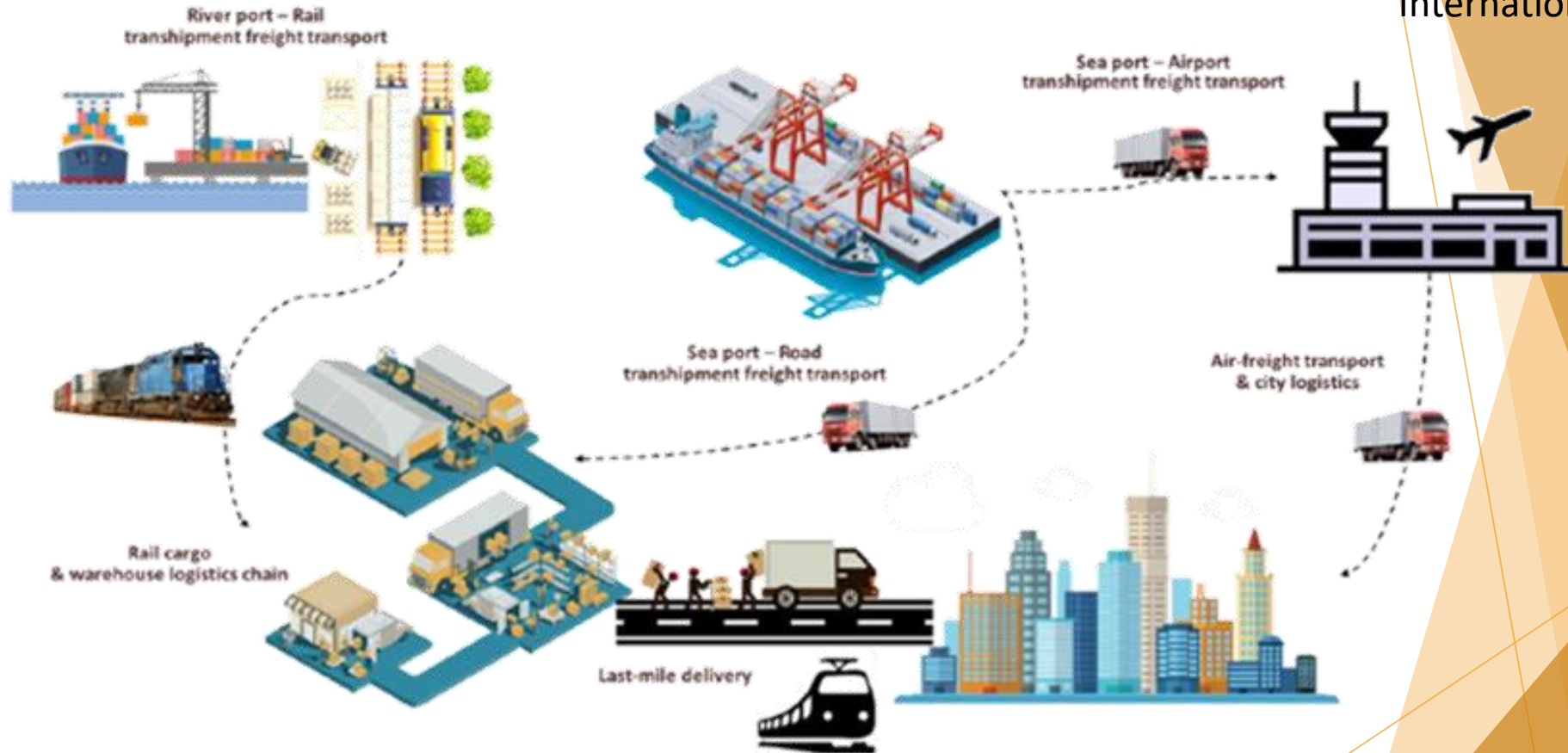
# Multimodal Freight Transportation



Port of Galati (RO)

Port of Piraeus – Athens International Airport (GR)

River port – Rail transhipment freight transport

Sea port – Airport transhipment freight transport

Sea port – Road transhipment freight transport

Air-freight transport & city logistics

Rail cargo & warehouse logistics chain

Last-mile delivery

Port of Valencia – Metro De Madrid (ES)

# Identified obstacles
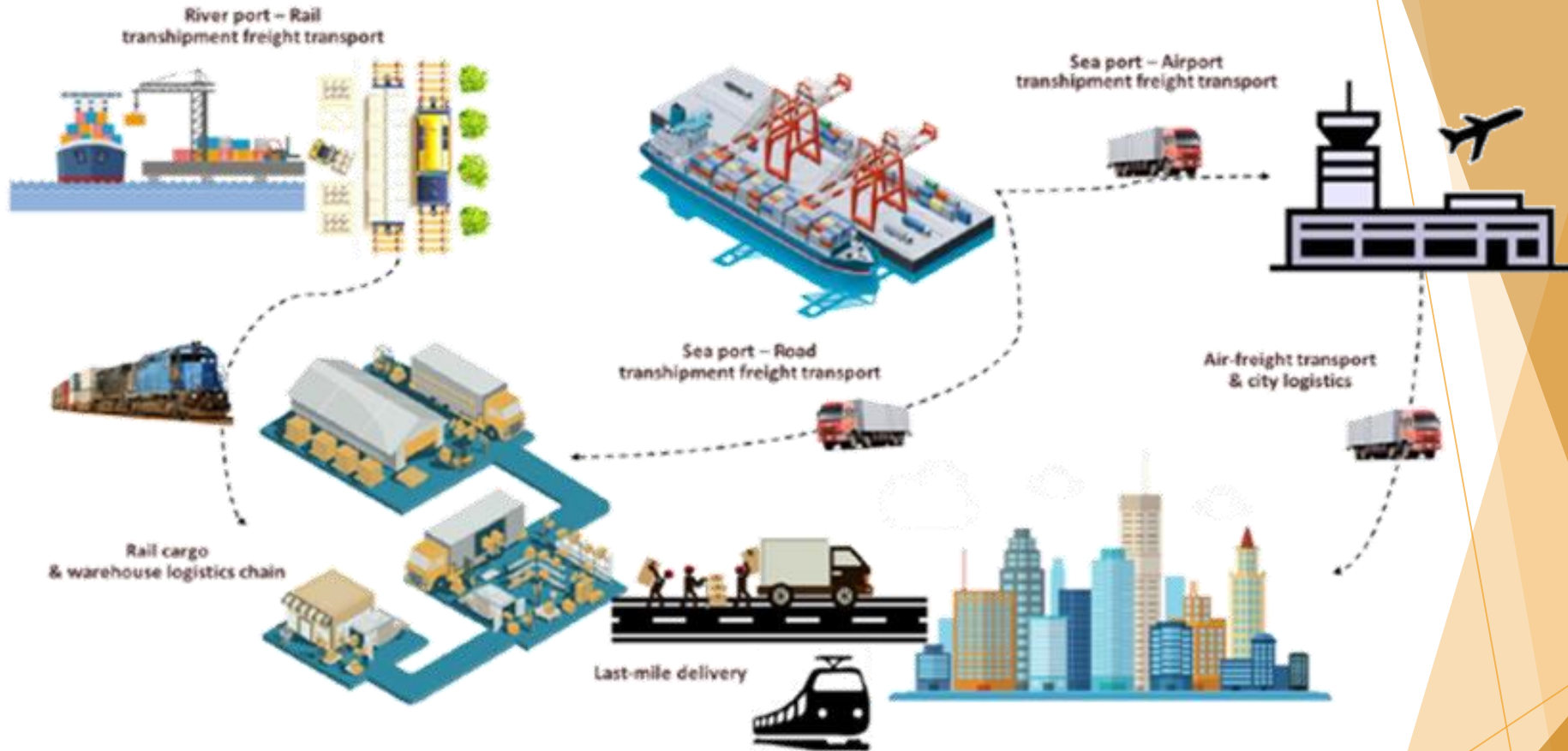


- Lack of unified management systems via common interfaces (low interoperability)
- Low digitalization/automation of the logistics processes
- Sub-optimal resource planning based on outdated information
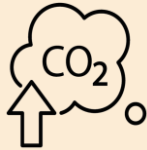
# Real-world problems generation

# FOR-FREIGHT's platform

| Sea -> Road | Sea -> Rail | Road -> Road | Road -> Rail | Sea -> Air | Road -> Air |
|---|---|---|---|---|---|

Localizer (Freight tracking) / Real-time routing recommenders

ETA predictors

Aircraft Automated Booking/ Next Aircraft Recommender

Tracking the T&L line performance

Resource Capacity Predictors

Per-sub-route Transport Time, Cost and Emission Predictors

Warehouse Planning Optimizer

Cargo's Dwelling Time/Duration Stay Predictors

| OBUs | Parking sensors | Legacy systems | Third party APPs |
|---|---|---|---|
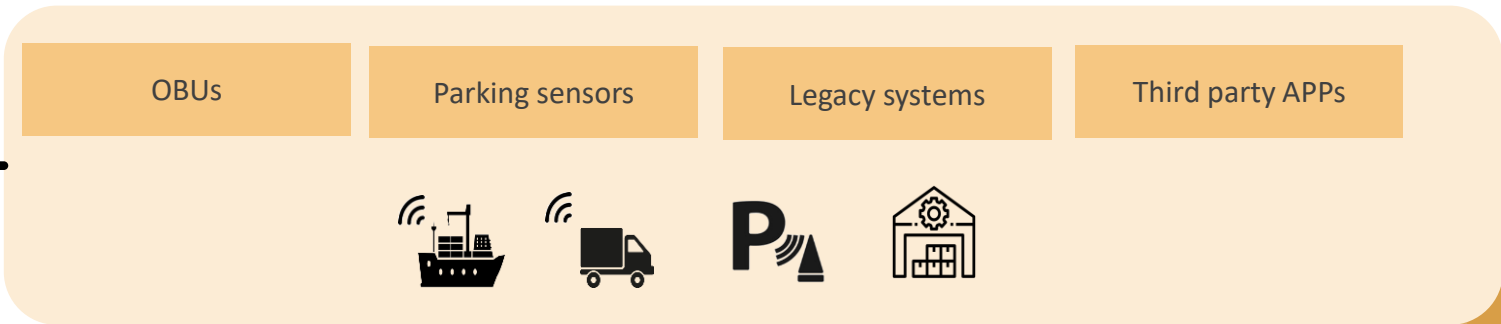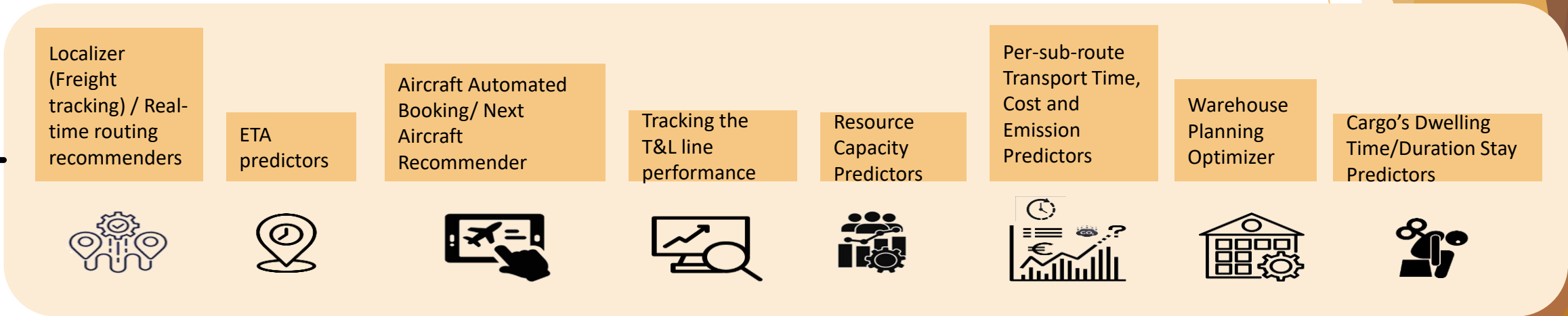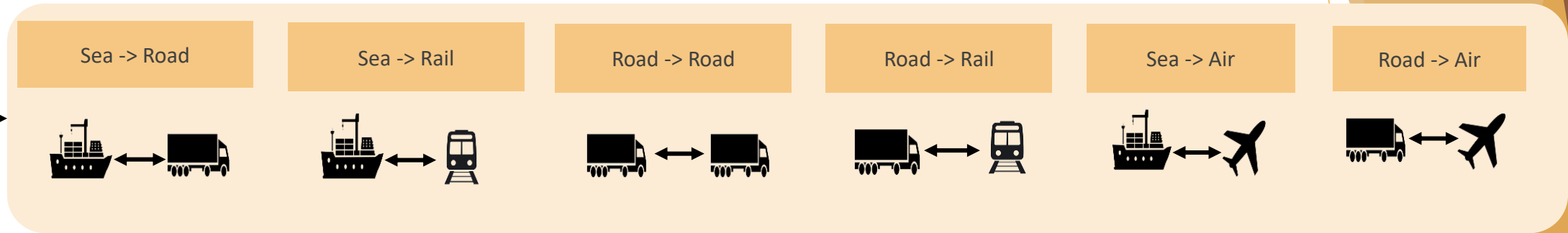
# Key advancements
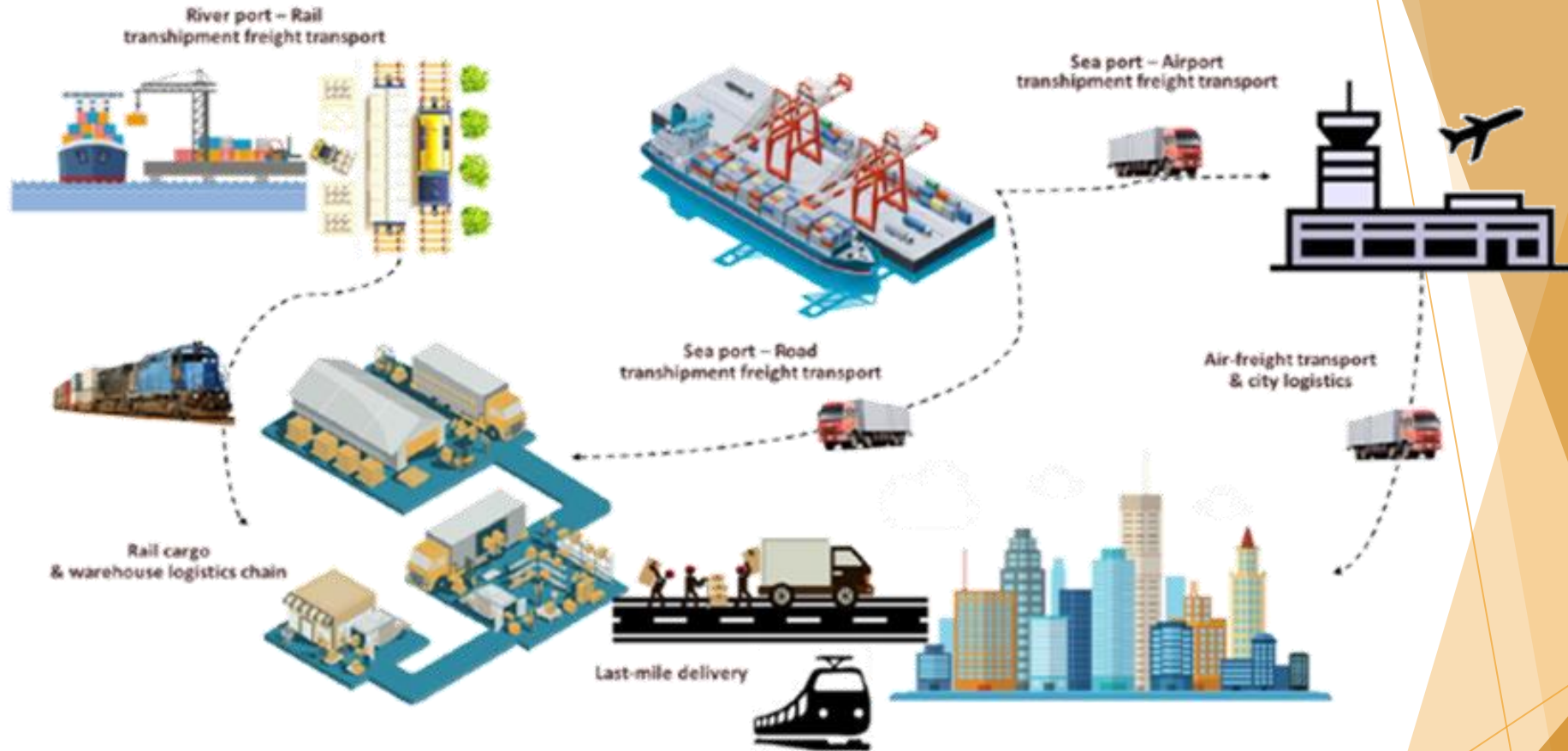


- Establishment of a scalable, sustainable multimodal logistics ecosystem

- Prioritization of interoperability, efficiency, and seamless connectivity.

- Introduce innovative features to enhance logistics operations.

- Optimization of multimodal logistics services for both stakeholders & customers

# Involved Technologies

## Big Data

Development of a (Big) Data database for handling all the necessary non & real time data of warehouse's status, arrivals predictions, truck/vessel/cargo location & conditions.

## Cloud Technology

Back-end Apps and APIs facilitating AI-based decision making, data processing & optimization.

## Digital Twins

Support flexible and dynamic E2E transport planning.

Simulating optimal situations based on real time data for support DSS to improve truck planning & staying at port/terminal and reduce traffic congestion.

Operational simulations could be exploited for supporting decision-making processes.

## AI

DSS on use of resources and end-to-end multimodal transport planning optimization.

Provide real-time door-to-door tracking, forecast of optimal routing and ETA, resource utilization and E2E multimodal transport planning, minimizing the cost function computed based on the defined KPI aspects (resource utilization, time, cost and GHG emissions).

## 4G/5G/Wi-Fi

E2E communication & interconnection of the diverse systems participating in the overall operations (port arrival notice, ERP, customs clearance, airflight booking etc.)

## Robotics

Build an automated/teleoperated semi-autonomous robotic manipulator for cargo/load picking-up and placing activities.

## Blockchain

SC governance based on BC for time reduction in the administrative and operational processes, provided by a Hyperledger Fabric blockchain platform.

Enhance transparency, traceability, security and fragmentation of the logistic processes and transactions between actors.

## IoT

Monitoring of roller cages in real-time, providing detailed information on:

- Moment when the van/truck leaves DHL warehouse loaded with the roller cages towards MDM Depot.
- Arrival of van/truck with roller cages at MDM Depot.
- Moment when roller cages are loaded into the MDM trains.
- Arrival of the roller cages at the final destination.

# Business Added Value related to the ports

## Platform

**FOR FREIGHT**

Localizers (Freight tracking)

ETA predictors

Aircraft Automated Booking/
Next Aircraft Recommender

Warehouse Planning Optimizer

Cargo's Dwelling Time/Duration
Stay Predictors

Per-sub-route Transport Time,
Cost and Emission Predictors

Resource Capacity Predictors

Tracking the T&L line performance

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## Real-world problem

The port entities require **to push large freight rates** to the T&L chain compared to the current status. FOR-FREIGHT's platform provides a set of solvers promoting this endeavor while reducing the Operational costs, make the operations more efficient and secure while reducing the handling errors.

Contact
Details

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