COREALIS - Sustainable Innovative Footprints for Future Ports

A strategic, innovative framework for cargo ports to handle upcoming and future capacity, traffic, efficiency and environmental challenges

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COREALIS Overview

- Call identifier: H2020-MG-7.3-2017: The Port of the Future
- Coordinator: ICCS
- EC funding requested: 5,150,540.00 €
- Duration: 01.05.2018 - 30.4.2021 (36 months)
- 17 partners from 9 European and associated countries
- 4 Research Institutes, 5 Port operators/ Port Institute/ Port Authority, 4 Industries, 3 SMEs, 1 ITS Association
- Demonstrations in Five European Port-Cities including 3 of the Top-10 in Europe

COREALIS Port-Cities

1. Antwerp Port, Belgium

2. Piraeus Port, Greece

3. Valencia Port, Spain

4. Livorno Port, Italy

5. HaminaKotka Port, Finland

COREALIS Innovations

RTPORT
(5G-enabled smart terminal operations, IoT)

PORTMOD
(optimization planning tool for CT operations)

Brokerage Platform
(cloud based marketplace for leasing intra-CT trucks)

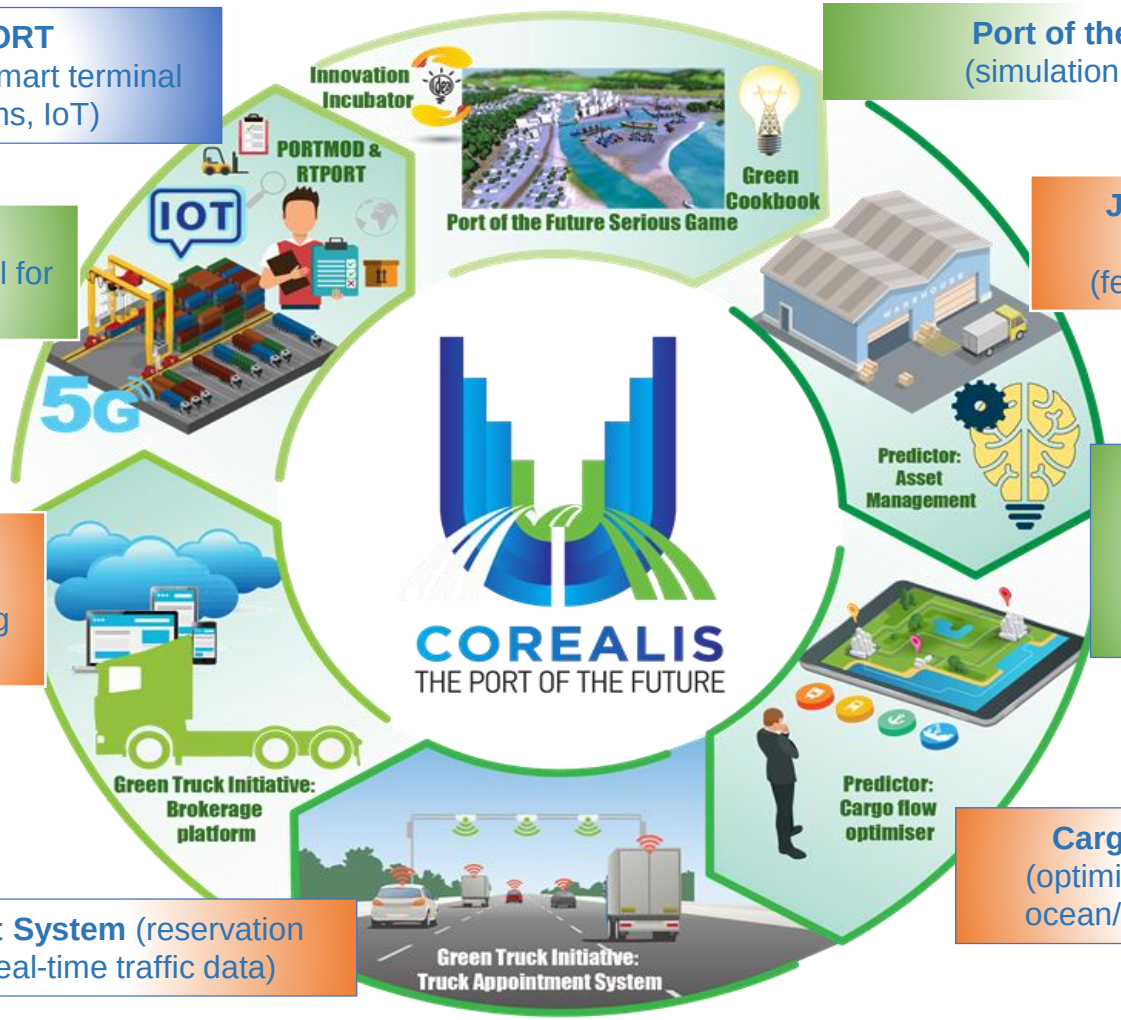
Truck Appointment System (reservation system including real-time traffic data)

Port of the Future Serious Game
(simulation tool for decision making)

Just-In-Time Rail Shuttle Service
(feasibility study for key port-hinterland corridors)

Predictor for Asset Management
(machine learning based Just in Time inventory)

Cargo Flow Optimiser
(optimization of cargo flows ocean/rail/inland-waterway)



COREALIS Cargo Flow Optimiser

Antwerp Port, Belgium

Terminal input

- Terminal occupancy
- Containers arriving / leaving time stamp
- Inland mode of transport expected

Current transportation environment

- Current inland connections
- Capacity of transport connections

- Prediction availability of inland transport routes according to:
  - -Transportation time
  - -Cost of the route

Optimization model

- **Proposition of new transport <u>shared</u> services on-demand**

- ✓ Data multiplexing for cargo flow optimization
- ✓ Multimodal delivery modes alternatives presented along with their total distance, time, cost and CO_2 emissions
- ✓ Container waiting times minimized, reducing cost and Turn-Around-Times

COREALIS RTPORT

Real time control of operations, collecting data from both yard vehicles and implanted sensors (including cameras).

On-Line analytical processing.

Taking operating decision.

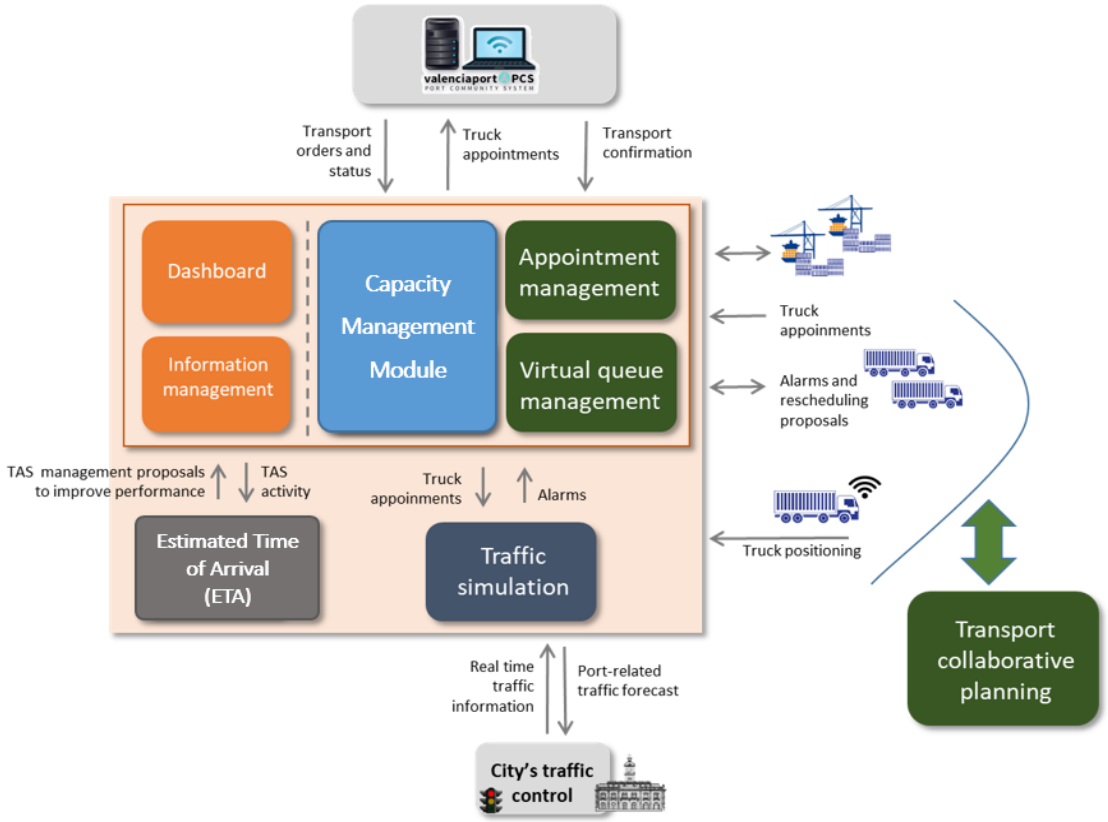
Snapshot Terminal Status

Livorno Port, Italy

5G

- ✓ High level of automation for the general cargo management process
- ✓ Increase of visibility of the cargo in the intra-terminal operations
- ✓ Reduction in number of moves required and total milage of yard equipment
- ✓ Safety improvement through the reduction of human presence in the port yard

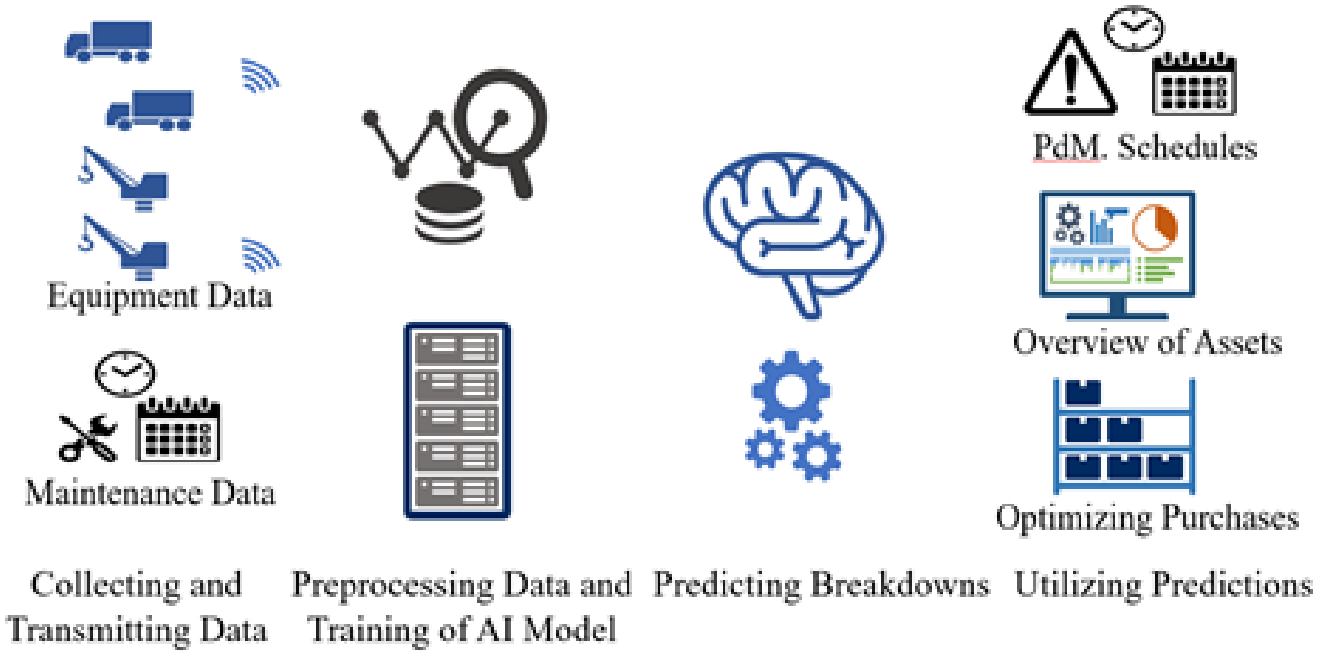
COREALIS Truck Appointment System



Valencia Port, Spain

- ✓ Dynamic ETA and Re-scheduling
- ✓ Port operational flow optimization
- ✓ Reduction of Gate queues, port-city traffic and total milage run

COREALIS PREDICTOR – Asset Management



Piraeus Port, Greece

- ✓ Operational efficiency and elongated yard equipment life-cycle
- ✓ Reduced use of spare-parts, lubricants and tyres
- ✓ JIT spare parts inventory
- ✓ Current level of True Positive Predictions: 85%

COREALIS Port of the Future Serious Game

Government

Port authority

Financial investor

NGO

Terminal operator

People

- Employment
- Recreation/culture
- Safety

Planet

- Ecosystems
- Emissions
- Climate vulnerability

Profit

- Port profit
- City-port benefits
- Port operational efficiency

- ✓ Decision Support for medium and long-term strategic decisions for sustainable port-city development
- ✓ Awareness of potential consequences of climate change and adaptation measures
- ✓ Awareness of measures for energy transition and its potential consequences

COREALIS Expected Impact

1. Embrace circular economy models in the port strategy and operations

2. Improve operational efficiency, optimise yard capacity and streamline cargo flows without additional infrastructure investments

3. Reduce the port's environmental footprint associated with intermodal connections and the surrounding urban environment for three major transport modes, road, rail and inland waterways

4. Enable the port to take informed medium-term and long-term strategic decisions and become an innovation hub of the local urban space

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COREALIS EU Project

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COREALIS
THE PORT OF THE FUTURE

THANK YOU FOR YOUR ATTENTION

i-SENSE GROUP

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