



4th Euro-Mediterranean Conference & Exhibition 2020

COREALIS - Sustainable Innovative Footprints for Future Ports

Giannis Kanellopoulos, Unit Leader Logistics & Maritime, ICCS

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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





1. Antwerp Port, Belgium



2. Piraeus Port, Greece



3. Valencia Port, Spain



4. Livorno Port, Italy



5. HaminaKotka Port, Finland





RTPORT

(5G-enabled smart
terminal operations, IoT)

PORTMOD

(optimization planning tool
for CT operations)

Innovation
Incubator

PORTMOD &
RTPORT

IOT

5G

Brokerage Platform

(cloud based
marketplace for
leasing intra-CT trucks)

Green Truck Initiative:
Brokerage
platform

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

Port of the Future Serious Game

Green
Cookbook

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:
Asset
Management

Predictor for Asset Management

(machine learning
based Just in Time
inventory)

Predictor:
Cargo flow
optimiser

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



COREALIS
THE PORT OF THE FUTURE

Green Truck Initiative:
Truck Appointment System



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



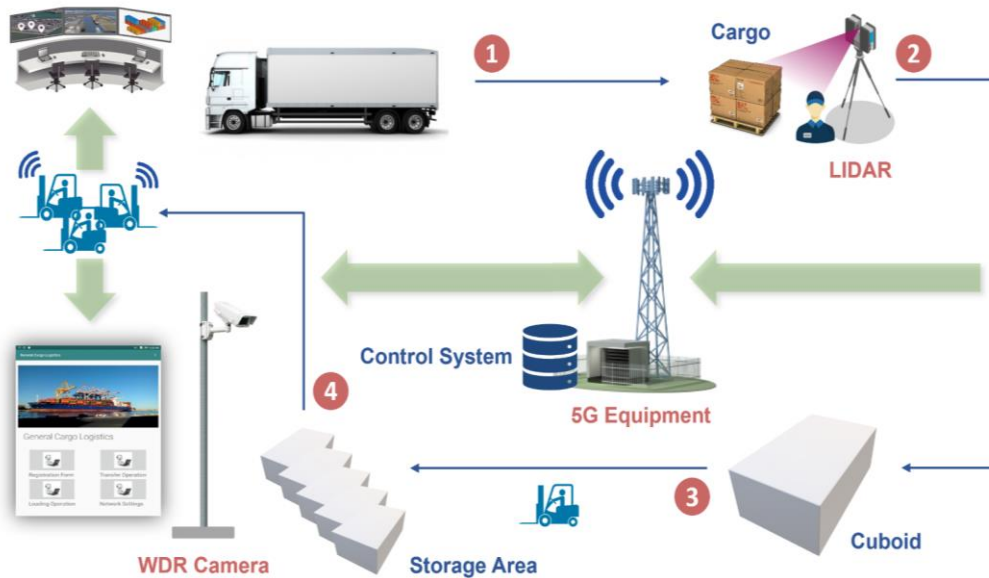
- Proposition of new transport shared services on-demand



- ✓ Data multiplexing for cargo flow optimization
- ✓ Multimodal delivery modes alternatives presented along with their total distance, time, cost and CO₂ 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

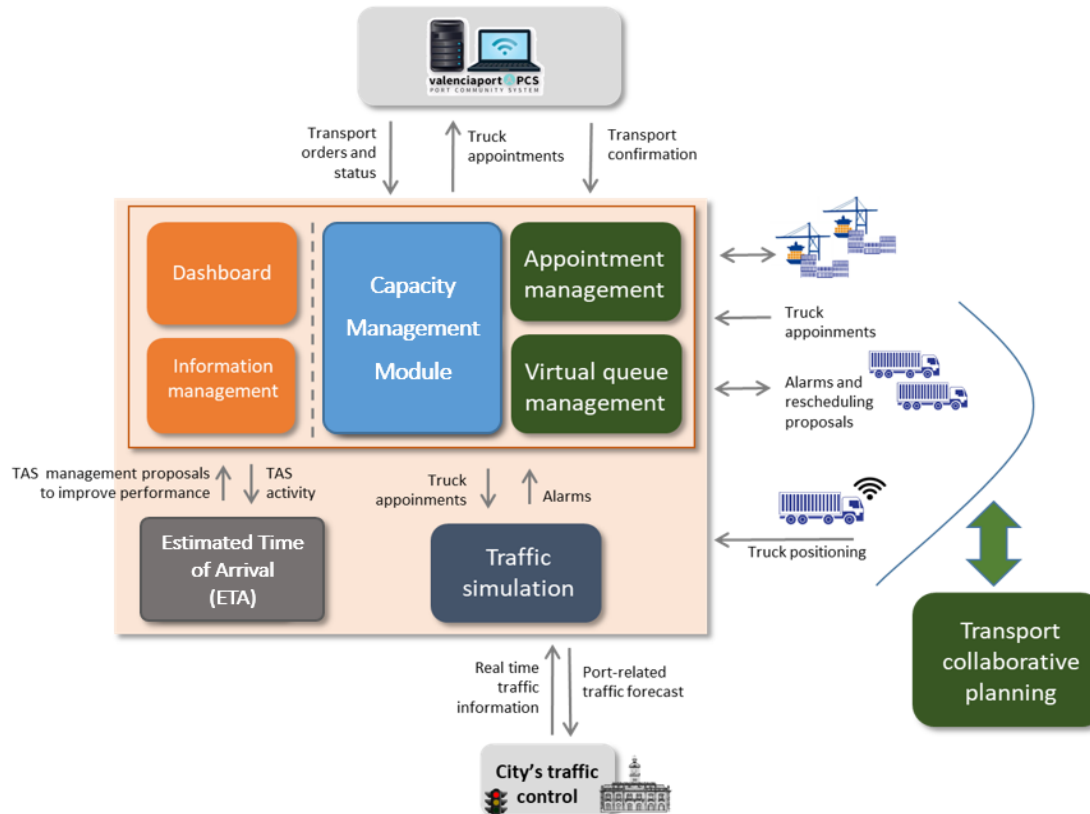
Livorno Port, Italy



- ✓ 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



PdM. Schedules



Overview of Assets



Optimizing Purchases

Piraeus Port, Greece



Collecting and
Transmitting Data

Preprocessing Data and
Training of AI Model

Predicting Breakdowns

Utilizing Predictions

- ✓ 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 PoF Serious Game

Government

Port authority

Financial investor

People



Employment

Recreation/culture

Safety

Planet



Ecosystems

Emissions

Climate vulnerability

Profit



Port profit

City-port benefits

Port operational efficiency

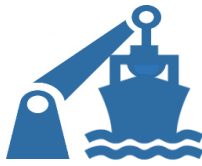


NGO

Terminal operator

- ✓ 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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info@corealis.eu

THANK YOU FOR YOUR ATTENTION



Giannis.Kanellopoulos@iccs.gr



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