COREALIS
THE PORT OF THE FUTURE

COREALIS Webinar

Port of Piraeus Living Lab

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Port of Piraeus

- 6th biggest port in Europe in terms of throughput
  - **4.9M TEU**
- Aiming to become 4th in Europe and biggest container port in the Mediterranean in 2020
- Port Hub: **20% I/E** and **80% transhipment**
- **Extensive feeder network**
- **16-18 trains/week**
- **31 QCs, 170 yard trucks, 22 RMGs & 40 ERTGs**

Scenarios in the LL of Piraeus

Scenario 1:

PREDICTOR: Asset Management
(PCT & NEC)

- ✓ **Sub-scenario 1.1**

  Predictive Maintenance Schedule for Yard equipment

- ✓ **Sub-scenario 1.2**

  Predictive Maintenance Spare Part Requirements

Scenario 2:

PoF: Energy Assessment
(PCT & DYNNIQ)

Analyse and **model energy consumption** of the port of Piraeus, through measuring and collecting power consumption data.

It will explore **novel and cost-effective solutions for reducing energy consumption** of the terminals, as well as for improving energy efficiency in the whole network of the port and the connected port city

Scenario 3:

PoF: Serious Game
(PCT & DELTARES)

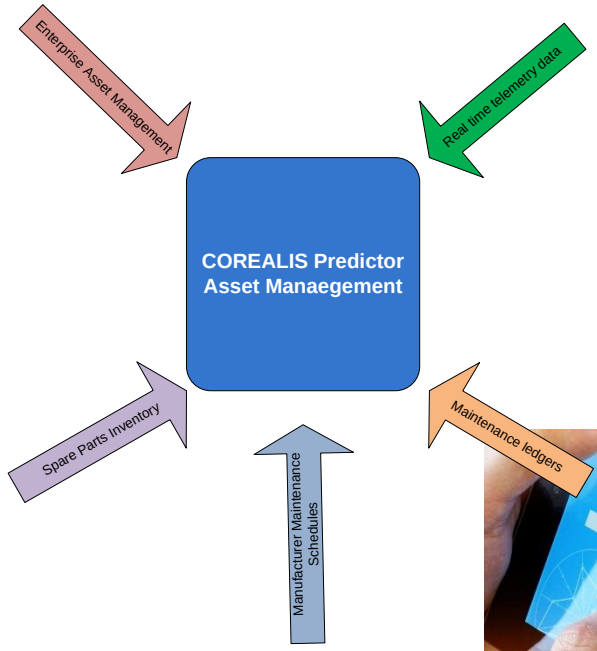
The PoFSG makes it possible **to interpret and compare sustainability in port-city mid-/long-term plans**.

PoFSG is **developed for port planners and stakeholders** that want to explore future port-city sustainable port development.

It provides **clarity on port-city stakeholders roles and responsibilities**, and how people work with and around in green port policy development

COREALIS Predictor: Asset Management

Predictor Asset Management:



Alpha version
Sep 19

Objective: extent yard equipment lifecycle, improve yard equipment availability, reduce spare parts inventory cost & size

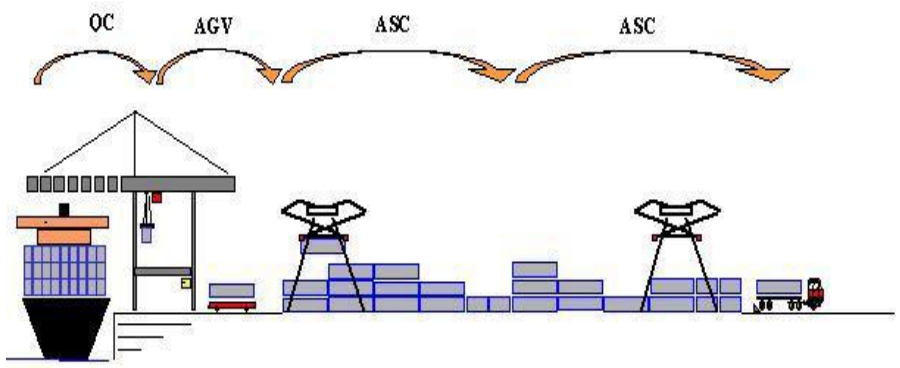
Predictor Asset Management in two steps:

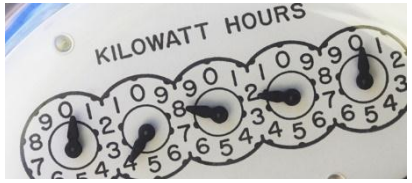
1. Predictive Maintenance:
   - Predictive Maintenance Equipment List
   - Predictive Maintenance Schedule
   - Learning Algorithm
2. Spare Parts Inventory:
   - Spare parts requirements based on Predictive Maintenance Schedule
   - JIT inventory

COREALIS PoF: Energy Assessment

Energy Assessment

Objective: Reduce energy consumption in the Port of Piraeus and investigate feasibility of use of renewable energy sources



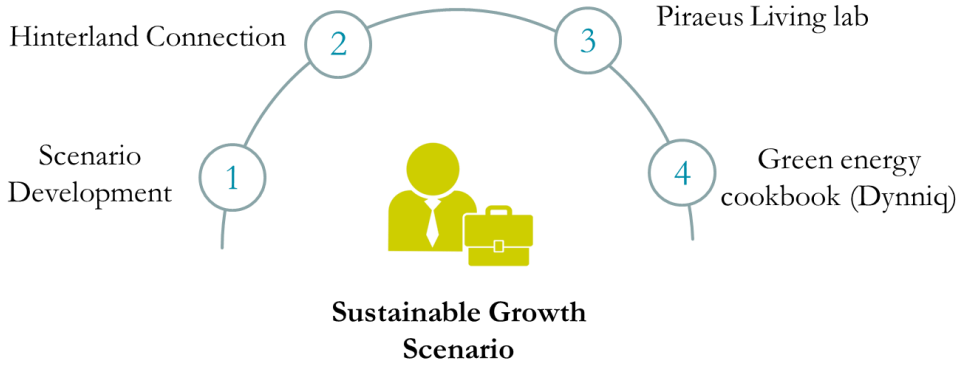


- **Isolate power fault sources and restore power to unaffected parts of the grid**
- **Long term planning of grid infrastructure**
- **Research and evaluate integration with renewable power sources**
- **Evaluate power storage feasibility at port premises**

COREALIS PoF: Serious Game

COREALIS PoF Serious Game

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



- Development of an advance user-friendly sandbox for decision making
- Simulation of complex sustainable growth scenarios
- Realization of progress in time of different measures and scenarios
- Digital version with visualization and port specific scenarios

Contribution of the LL to the COREALIS goals

COREALIS objectives

O1. Embrace circular economy models in its port strategy and operations.

→ **Predictor: Asset Management**
→ **PoF Energy Assessment**
→ **PoF: Serious Game**

O2. Reduce the port's total environmental footprint associated with intermodal connections and the surrounding urban environment for three major transport modes, road/truck, rail and inland waterways**.**

→ **PoF Energy Assessment**
→ **PoF: Serious Game**

O3. **Improve operational efficiency**, **optimise yard capacity** and streamline **cargo flows** without additional infrastructural investments**.**

→ **Predictor: Asset Management**

O4. Enable the port to take **informed medium-term and long-term strategic decisions** and become an **innovation hub of the local urban space.**

→ **PoF Energy Assessment**
→ **PoF: Serious Game**

Conclusions

Next steps:

1 Predictor: Asset Management:

- Complete data collection from various sources
- Begin the development of the learning algorithm

2 PoF: Energy Assessment:

- Complete data collection including data coming from the service provider
- Elaborate on current findings

3 PoF: Serious Game:

- Secure the supply of data from Piraeus port stakeholders

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THANK YOU FOR YOUR ATTENTION

PCT

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