

# PIXEL

# PORTS

Where IoT meets the Port of the Future



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**GreenTech 2021**



The Project has received funding  
from the European's Union  
Horizon 2020 research innovation  
program under GA No. 769355

# ADDRESSING TOMORROW'S CHALLENGES

## The Limitation

Small and medium ports have **limited budget, infrastructure and staff**, the digital transformation of the maritime industry should consider all its hubs and provide them with tools to successfully achieve the established objectives

## The Performance

The Climate Crisis awareness and Green Deal common aims push forward requirements for a more **efficient environmental performance** by all actors in the maritime industry. This transformation is difficult for much of the stakeholders

## The Cost

The competitiveness of the port and the cost of the improvement of its sensor and server infrastructure for a **baseline digital transformation** that can also help in reducing costs of the major port operations



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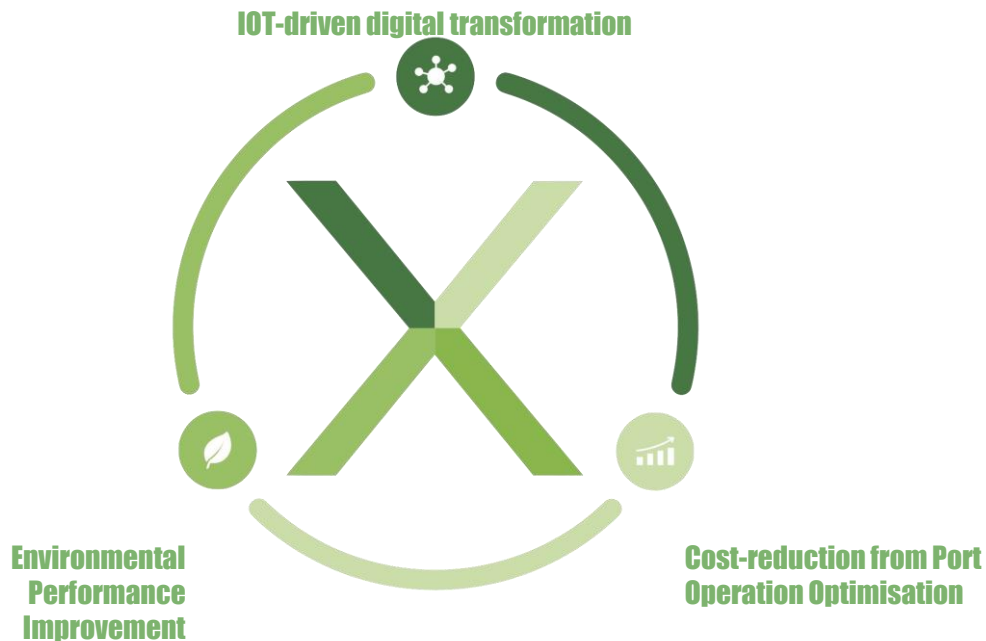


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# PIXEL IS IMPROVING THE ENVIRONMENTAL PERFORMANCE BASED ON THE OPTIMISATION OF PORT OPERATIONS FROM THE IoT-DRIVEN DIGITALISATION



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# PIXEL BRINGS OPPORTUNITY ACROSS TRENDS



**First IoT integrated platform** focused on the real needs and limitations of small and medium ports, scalable to large ports



**Monitored Real-time Environmental Performance** as a quantitative composite indicator computed from the IoT infrastructure



**Secured dashboard** with **useful tools** for decision support (real time monitoring and predictive analysis)



**Data-driven** optimization of operations through **smart models** (energy, pollution, port calls and multimodal transport)



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# PORT ENVIRONMENTAL INDEX (PEI)



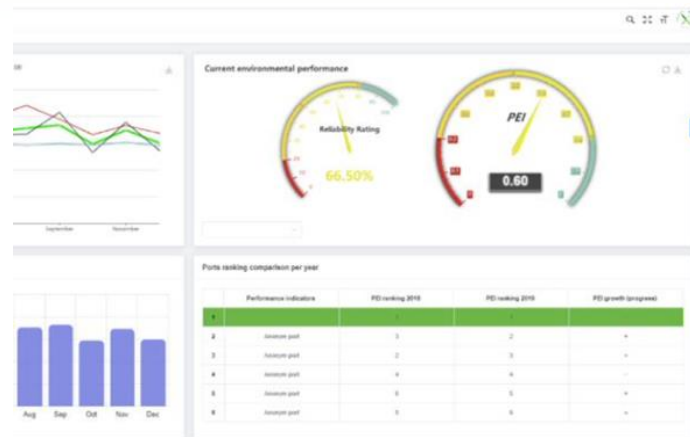
Real-time measure of the Ports and Terminals' environmental footprint including **recommendations** based on best practices to reduce it to desired levels



Built on the latest environmental science and designed for **comprehensive environmental performance assessment**



IoT-based technology designed to **optimise the use of existing resources** and include the appropriate interactive data visualisation tools to access and act on it



*Emissions to the atmosphere*

*Emissions of wastewater*

*Noise emissions*

*Production of waste*

*Light pollution*

*Odour emissions*



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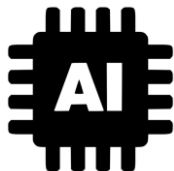
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# ONE SOLUTION, MANY BENEFITS



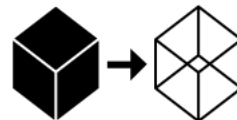
## PORT ENVIRONMENTAL INDEX

Quantitative real-time measure of the **port environmental performance** using the existing sensor infrastructure



## MARITIME DATA ANALYTICS

Powerful AI algorithms improving business intelligence from **Maritime Data Analytics** from vessel calls and AIS



## PORT ACTIVITY SCENARIO

Digital transformation of the port supporting **Energy, Pollution and COVID19 Simulation**



## BIG DATA ENGINE

Comprehensive and flexible **Big Data Information Hub** with APIs



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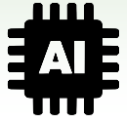


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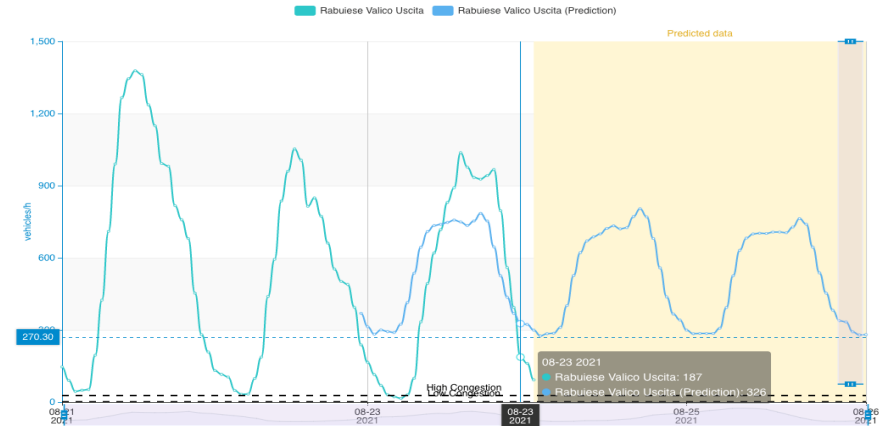
# MARITIME DATA ANALYTICS (MDA)



Intelligent road  
traffic modelling  
and predictions  
for a **greener and  
more efficient**  
port-city relation



Powerful AI  
algorithms  
improving  
business  
intelligence from  
**Maritime Data  
Analytics** from  
vessel calls and  
AIS



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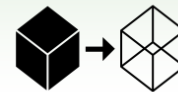


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# PORT ACTIVITY SCENARIO (PAS)



Advanced simulation tools for **energy balance** between demand and production



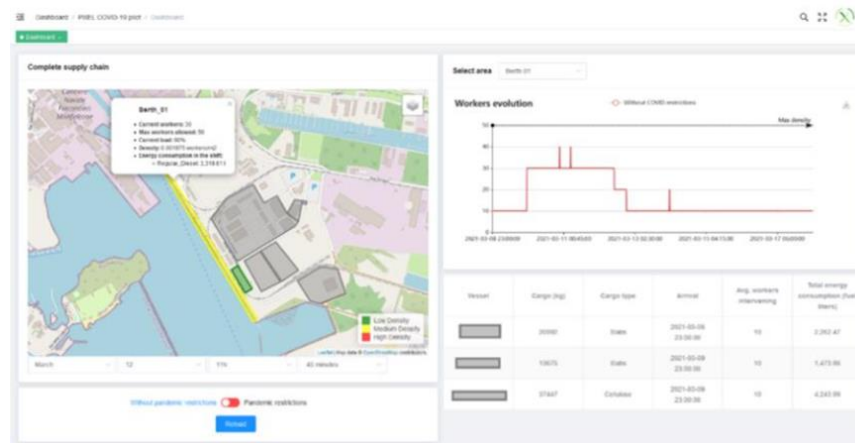
Insightful computational models for **environmental pollution** from sensing data



Planning tools to address **COVID19 regulations** at the port in real-time



Potential to add new models with a **Maritime Model Orchestrator**



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# BIG DATA ENGINE (BDE)



Comprehensive and flexible **Big Data Information Hub** with APIs



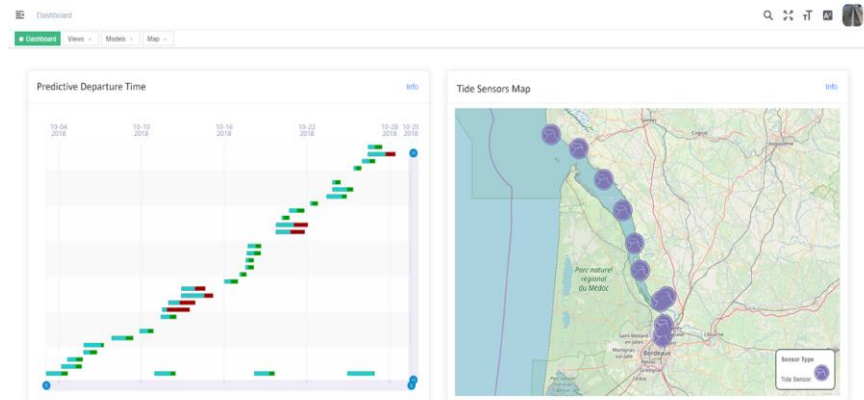
Open source **IoT Data Acquisition Agents** based on smart city technology



Potential for new functionality with a **Maritime Model Orchestrator**



Easy **dashboard, & alerts** with potential to PCS integration



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# PIXEL OFFER TO BEST FIT YOUR NEEDS & BUDGET

|   | Cloud-based SaaS |              |             |            | On-premise   |             |
|---|------------------|--------------|-------------|------------|--------------|-------------|
|   | Basic            | Advanced     |             | High-End   | Basic        | High-End    |
|   | Cloud Basic      | Cloud Energy | Cloud Green | Cloud Gold | Server Basic | Server Gold |
|   | €                | €€           | €€          | €€€        | €€           | €€€         |
| Port Environmental Index                | ✓                | ✓            | ✓           | ✓          | ✓            | ✓           |
| Energy Simulation Toolset               | ✗                | ✓            | ✗           | ✓          | ✓            | ✓           |
| Pollution Simulation Toolset            | ✗                | ✗            | ✓           | ✓          | ✓            | ✓           |
| New Data Acquisition Agents Development | €                | €            | €           | ✓          | €            | ✓           |
| Premium Customer Support & Training     | €                | €            | €           | ✓          | €            | ✓           |
| PCS Integration                         | €                | €            | €           | €          | €            | ✓           |
| Premium Maritime AI Services            |                  |              |             |            |              | €           |



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# PIXEL TECHNOLOGY IS ALREADY BEING ADOPTED



Reduction of **environmental performance** of port activities



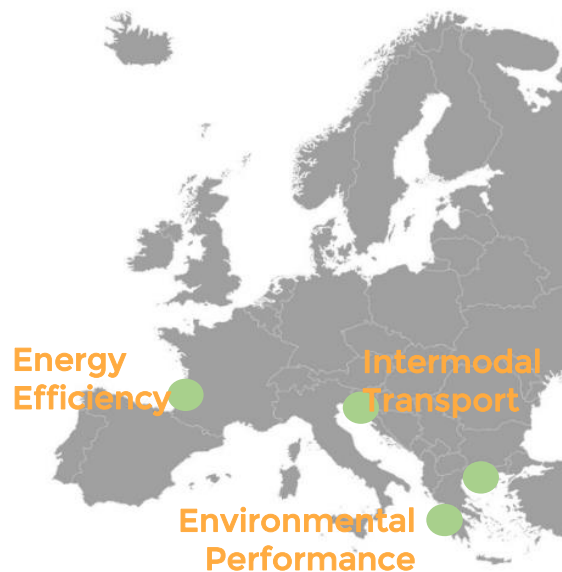
Increase of **renewables energy uptake** in use-cases at small, medium and large ports



Reduction of **operational and infrastructural costs** with better Port-City integration



Improvement of logistics through data analytics over waiting time for vessels, on-time performance



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# WHAT ARE THEY SAYING ABOUT PIXEL



**Lucija Kolar**

*Complementarium*

“The PEI is indeed very challenging representing a huge progress in combining diverse sciences to achieve the results”



**Rafael Socorro**

*ACCIONA Construcción S.A.*

“Each port is a complex environment and having such a replicable IoT solution easily integratable in the port infrastructure is a key aspect.”



**Charalampos Platias**

*Greek Ministry of Maritime Affairs*

“I mostly like the data-drive approach leveraging the IoT and its potential impact to decision-makers”



**José M. P. Sánchez**

*AIVP (International Association Cities and Ports)*

“Port and cities must learn to work together on smart technology and data-driven approaches., like the PEI, making this cooperation much easier and transparent.”



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# A CONNECTED SEA OF OPPORTUNITIES



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