



The Project has received funding from the European's Union Horizon 2020 research innovation program under GA No. 769355 Project Overview Carlos E. Palau (UPV)

**Project Coordinator** 

# **WHY?** Context and origins

Huge gap between small/medium and big ports regarding environmental monitoring and operations efficiency



Source: Eurostat.

An effective integration of operational data is **sub-optimal** in the maje y of ports **Unfeasibility** to measure, analyse and manage heterogeneous data in Ports **prevented** from optimize ses pro



Environmental import increasing



- "PIXEL is the first flexible IoT solution to reduce environmental impact and optimize operations of small and medium-sized ports "
- H2020 Project "Mobility for growth" call
- 36 months duration RIA
  - 1<sup>st</sup> May 2018
  - 30<sup>th</sup> April 2021
  - EXTENDED!! till 30th September 2021
- Use-cases centric





# WHAT are the PIXEL objectives ?

- Enable the **IoT-based connection of port** resources, transport agents and city sensor networks
- Integration of multi-source heterogeneous data from different internal and external actors
- Enable a quicker, more accurate and in-depth knowledge of **port operations**
- **Model and simulate** port-operations processes for automated optimization
- Develop predictive algorithms
- Develop a single metric the Port Environmental Index (PEI)





#### WHO are the partners ?

































#### HOW? - PIXEL Concept

- PIXEL proposes a new conceptual and technology development relying on information sharing and IoT to achieve objectives and ambitions
- Innovation concept: bringing every port a step closer to the Port of the Future
- Plan:





#### HOW? - PIXEL Approach





#### **HOW** is implemented? - Technological solution







#### **WHERE** are the use-cases happening?

• Different environmental scenarios





# **WHICH** are PIXEL Expected impacts?



Reduction of environmental impact of port activities

Reduction of operational and infrastructural co





Improvement of logistics efficiency in multimodal hubs

Better Port-City integration

Large scale adoption of the PIXEL solution and approach



### PIXEL SUMMARY









# www.pixel-ports.eu



Carlos Palau (UPV) – PIXEL Coordinator





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Miguel A. Llorente (Prodevelop)

**Technical Coordinator** 

**Future** 

# A data platform? Is that a need?



### Why a data platform? Data-driven ports





#### Why a data platform? A single source of truth





#### Why a data platform? Towards ports of the future







#### In conclusion







# How do we do it in PIXEL?



# The PIXEL cycle: pillars for continuous improvement





Data fed from an **IoT** integration platform

**Models** of relevant port operations



# The PIXEL cycle: pillars for continuous improvement





#### Models for the future



### Language/technology and platform agnostic



# Automated data – leveraging IoT



# **Measuring what matters: PEI**

**Today's environmental challenges** must fit real global needs, enhanced by legislation and standards - Ports need clear understanding of their **overall environmental performance** 

Ports can **optimise their use of resources** to include the appropriate monitor of environmental-related activity and act on it

PEI is a global indicator of the impact in ports that permits the ports to have a **real-time measure of their environmental footprint and to plan actions** to reduce it to desired levels





# Yes but... what makes you different?



#### **PIXEL Uniqueness**



First IoT integrated platform focused on optimization of operations w/ reduction of environmental impact



Port Environmental Index (PEI) as a quantitative composite indicator of the overall environmental performance of a port



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



Information hub and optimization operations through smart models (energy, transportation, pollution and port-city integration)





# **Technological differentiation**



PIXEL



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**Miguel A. Llorente (Prodevelop)** – Technical Coordinator

PIXEL