

IoTWeek

Dublin — June 20-23, 2022

Data-driven Challenges, Opportunities in Seaports Transformation and DataPorts Project Overview

Carlos E. Palau (UPV)

GLOBAL VISION:

IoT TODAY AND BEYOND

IoTForum

The background is a high-angle, darkened photograph of a large exhibition hall. Numerous people are seen walking through the aisles, which are lined with various exhibition booths and displays. On the left side, there are large, colorful, semi-transparent circular and oval shapes in shades of orange, green, blue, and purple. The main title is centered over the image in a large, white, sans-serif font.

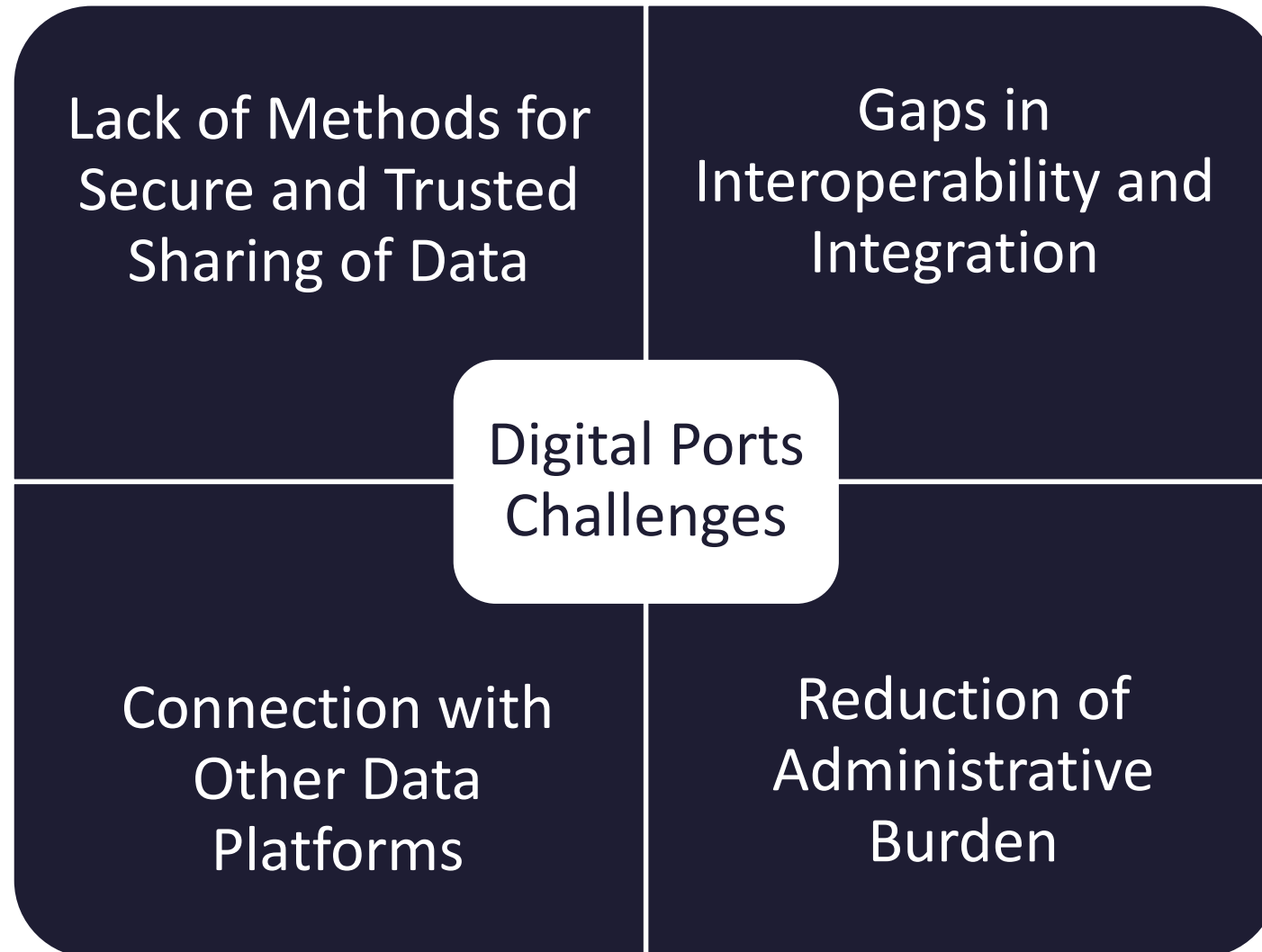
Data-driven Challenges, Opportunities in Seaports Transformation

European Seaports

- Stakeholders
 - Port authority
 - Shipping agency
 - Terminal Operator
 - Freight Forwarder
 - ...
- Assets
 - IIoT
 - Platforms
 - Cloud
 - Mobile and handled devices
 - ...



European Seaports – Data Challenges

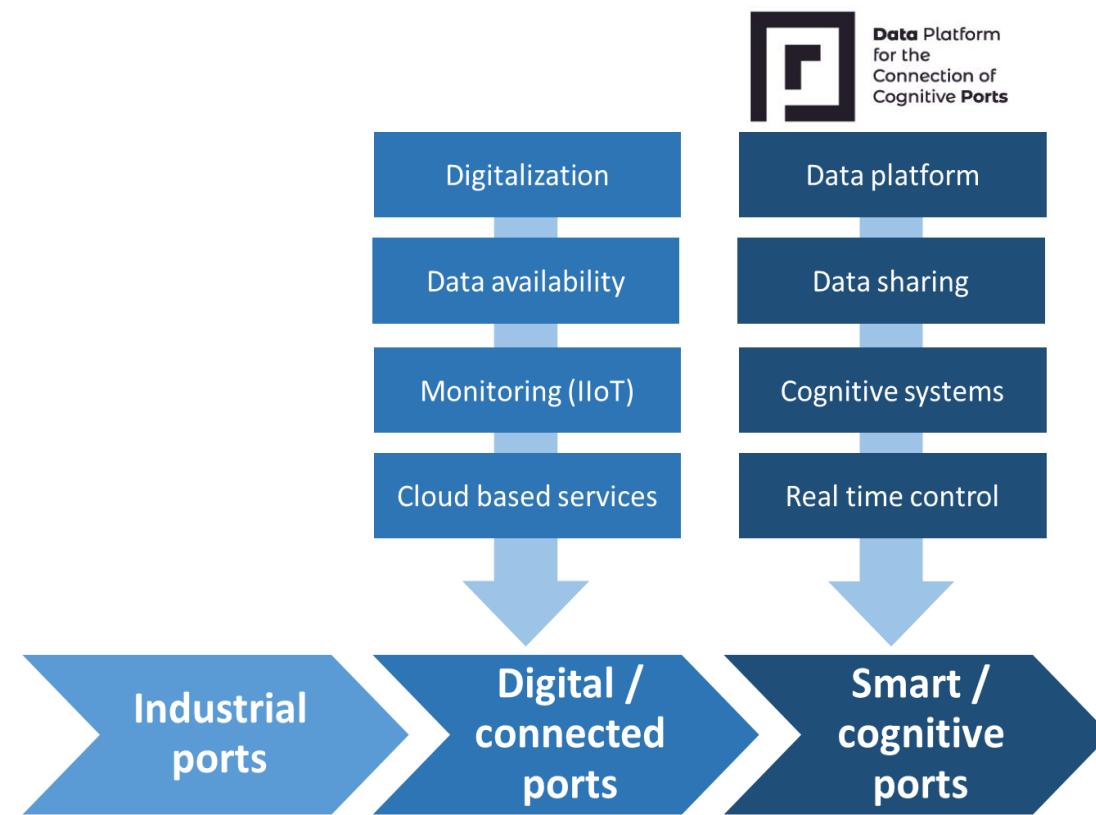


DataPorts: The Concept

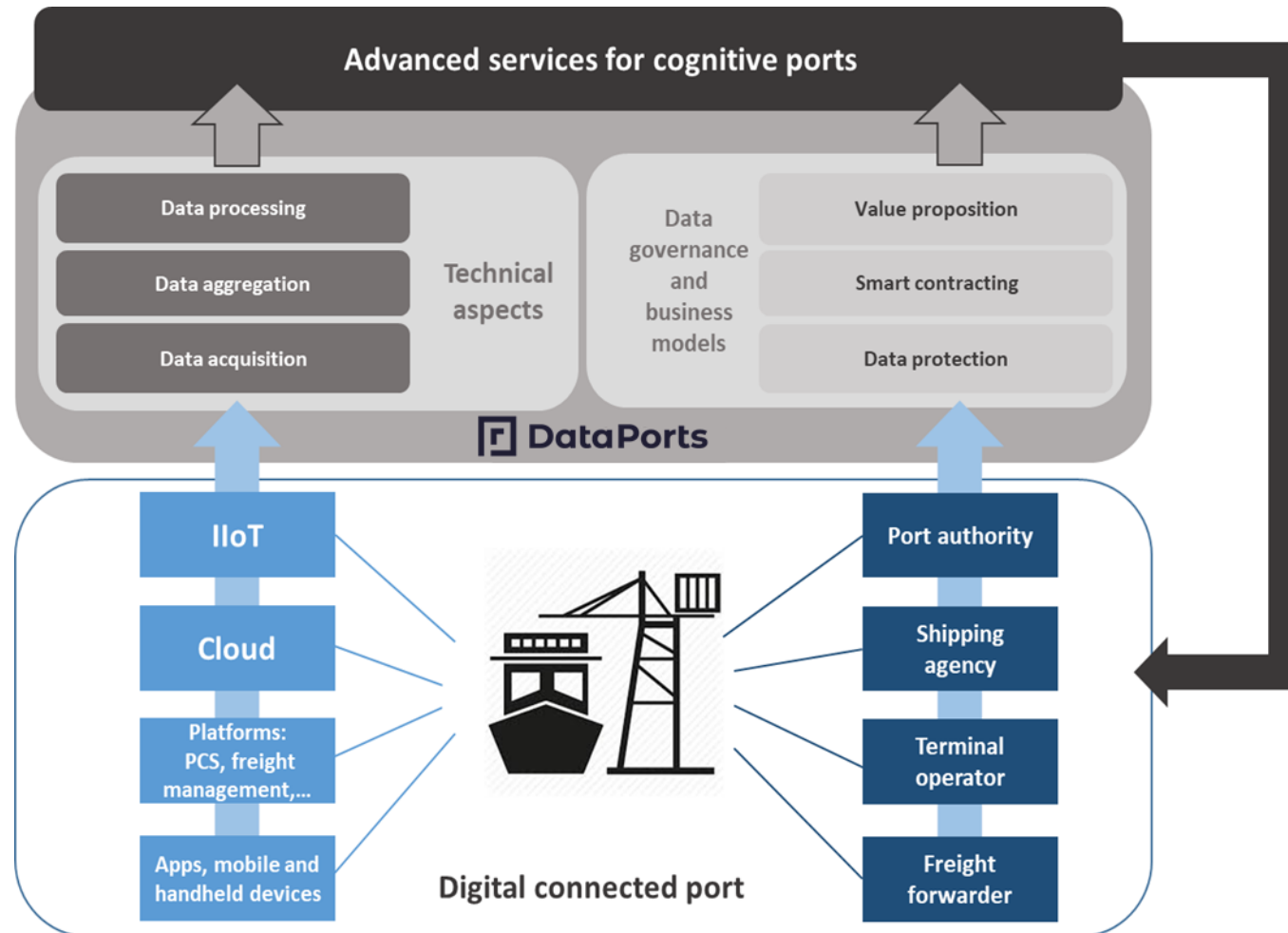
Supporting the emergence of data markets and the data economy

European Seaports

- From connected and digital to **smart and cognitive**
- By means of a **trusted platform**
 - Aggregation data from many stakeholders and sources
 - Sharing trading and exchange of data
- And providing a set of **advanced data based and AI related services**



DataPorts: The Challenge



The logo for IoT Week, featuring the letters 'IoT' in a stylized font with a blue-to-orange gradient, followed by the word 'Week' in white.

IoTWeek

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The title 'DataPorts Project Overview' is centered in a large, white, sans-serif font. To the left of the title are four overlapping circular shapes in orange, green, blue, and purple. The background is a dark, high-angle photograph of a busy exhibition hall with many people and booths.

DataPorts Project Overview

What is DataPorts?

- **Duration:** 3 years, starting 1st January 2020.
- **Partners:** 13 institutions from 5 different countries (FR, GR, IL, DE and ES).
- **Budget:** 6,75 M€
- **Main objective:** DataPorts aims to establish an industrial data platform where data coming from different stakeholders and external sources can be combined and processed to get real value from them, in order to improve existing processes, establish novel cognitive and AI-based applications, and allow new business models.
- **Pilot sites:** Valencia and Thessaloniki Ports and cross border use cases.



What is DataPorts?



- ✓ Take advantage of the **huge amount of data generated** around highly digitalized & connected seaports
- ✓ **Industrial data platform** where data coming from different sources can be combined to improve existing processes
- ✓ Establish novel cognitive and **AI-based applications**
- ✓ Enable **new business models**

What is DataPorts?

Two Relevant
Use Cases at Seaports

Semantic Approach
for Data Sharing

Novel AI-Based
Services

DataPorts Objectives

Data Governance
Framework

Engineering
Methodology,
Architecture and Tools

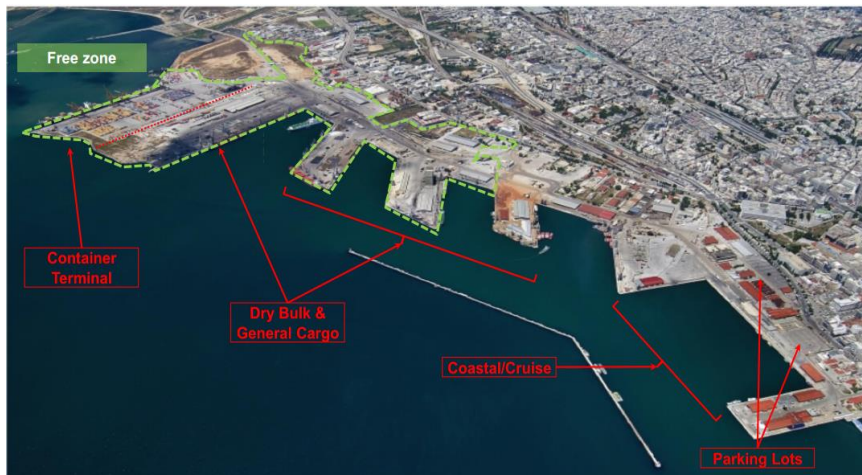
Impact Creation for
Seaports

New Cooperation and
Business Framework

DataPorts Main Ports

Valencia (Spain)

- Port authority that manages three state-owned ports along an 80km stretch of the Mediterranean coast in Eastern Spain: Valencia, Sagunto and Gandía.
- Highly specialized in the traffic of containerized merchandise (4th port at EU in 2021 with 5,6 million TEU)



Thessaloniki (Greece)

- Located on an advantageous position, lined to the maritime transportation network of the Balkans and Black Sea countries, and a direct access to the South-eastern European Countries, with a length of 3.5km
- It serves containers, bulk and general cargo as well as cruise vessels and passengers.

DataPorts Main Global Use Cases

Smart containers

- Containers will be fitted by IoT devices provided by Traxens. These devices will periodically inform about the position of the container.
- Enable stakeholders to have better visibility based on additional reliable physical data generated by IoT devices.



Port management system integration

- The use case will showcase the potential of the integration with existing IT solutions: Posidonia Port Solution.
- Set of applications for the management of activities that are carried out in the ports.

Use Cases

Valencia Port



Use cases

- Tracking of transport operations
- Port Authority Data Sharing and Analytics Services
- Sharing Verified Gross Mass
- Digital Consignment Note

Thessaloniki port



Use cases

- Data driven app for strategic and real time decisions
- Permit ID for Container Pick-up
- Statistics and Queues Predictions
- Facilitation of Passengers, Professionals, and visitors
- COVID-19 Statistics

Global Scenario



Use cases

- Smart Container
- Port management

ValenciaPort Use Case

Container and Goods Tracking

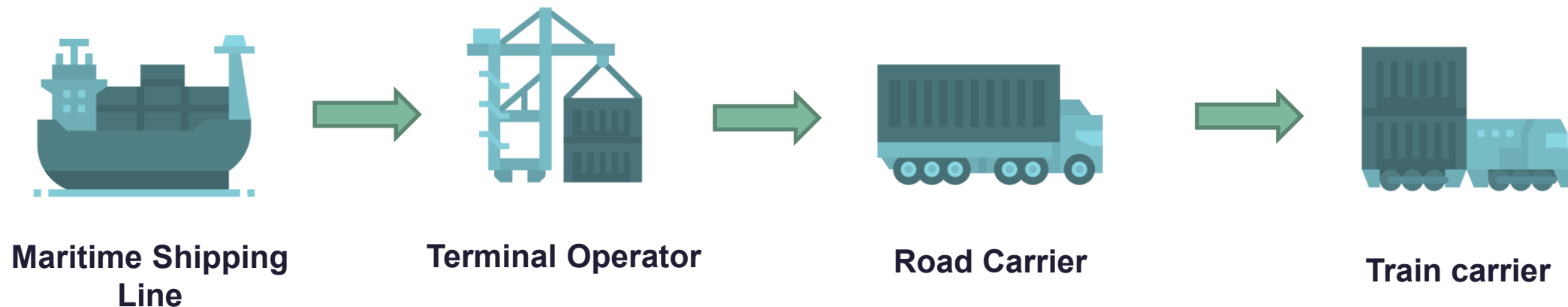
- Integrate data using the Port 4.0 platform: gate access control, container tracking devices, truck's tracking devices, etc.
- Get insights about the container arrival and goods status



Valencia Port Use Case

Transport Operations

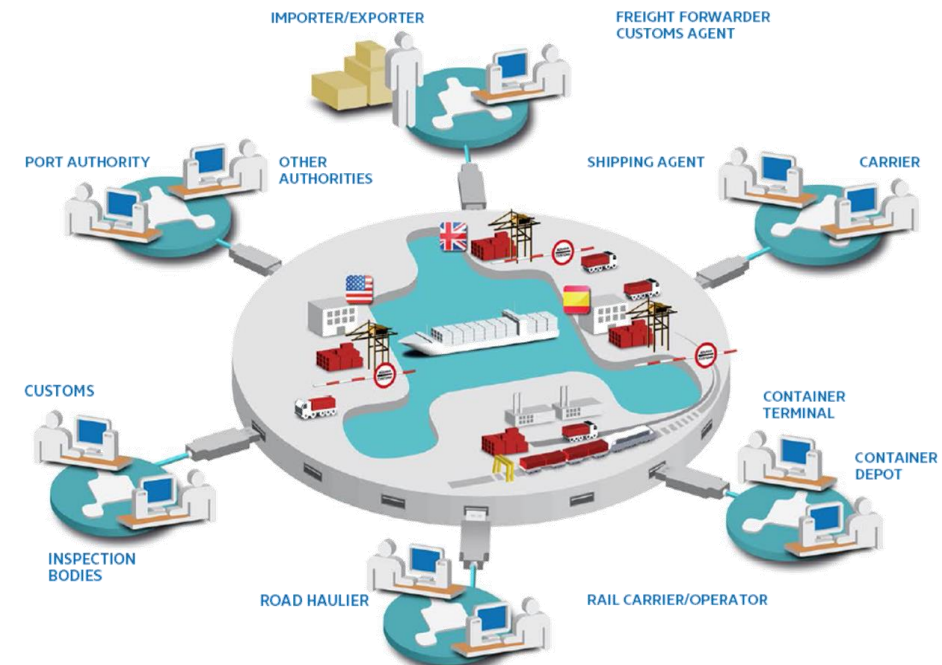
- DataPorts integrates data from transport suppliers involved in multimodal operations (truck, vessel, rail)
- Using AI services to improve the planning of these operations with data from Freight Forwarder's systems (vForwarder)



Valencia Port Use Case

Data Analytics Sharing Platform with the Port Authority

- Using ValenciaPort PCS, companies are exchanging transactions to organize the container transport
- Extend this PCS to include advanced analytics and KPI predictions
- Securely share data with authorized departments of the port authority or external stakeholders



valenciaportpcs.net offers over 20 transaction and information

services to over 600 companies and public bodies.

valenciaport  **PCS**
PORT COMMUNITY SYSTEM


Dataports is integrating existing systems and devices acting as a single point of reference for data exploitation

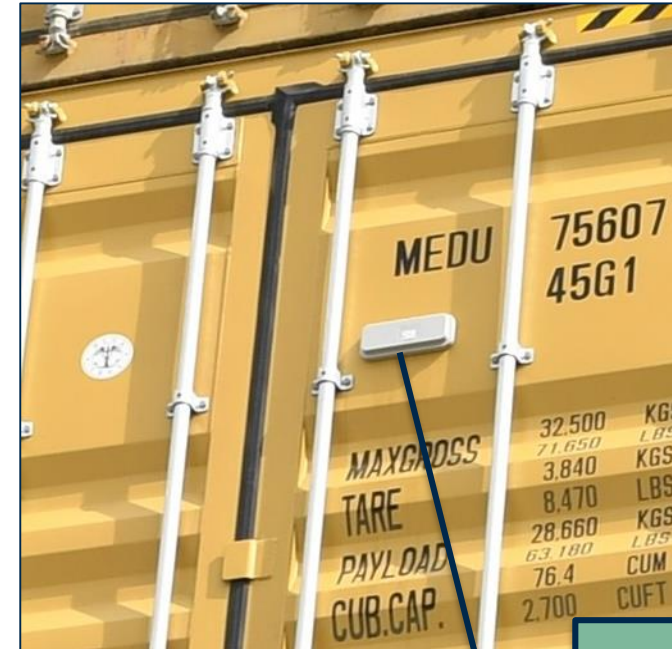
Datasources

- Data owned by TPHA, specifically, ship calls, traffic data, wind data, air quality data
- IoT sensors from the city's Traffic Management Centre
- OTE as mobile phone carrier will provide customer mobility data

- DataPorts is enabling **analytics** for the following apps:
 - **Data driven app for strategic and real time decisions:** how to optimize a set of parameters based on multiple criteria (e.g. traffic conditions, weather conditions, forthcoming arrivals and departures, CO2 and noise levels in the area, etc.)
 - **Mobile app for port users:** to instruct on how to better approach the ship for embarkation, where to wait if needed, what other points of interest might be relevant for him, etc.

Global Use Cases: Smart Container

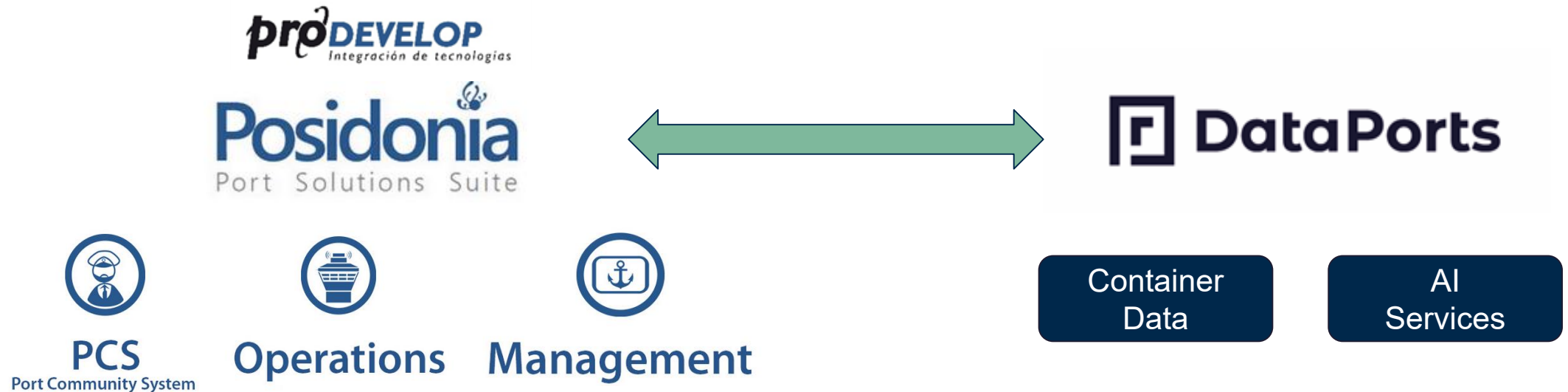
- Containers equipped with the **IOT  TRAXENS**
- Know exactly when, where and how many times the container doors were opened or the temperature variations
- Provide **position-based services**, i.e ETA, and anomalous **event notifications**



Position
Movement
Ambient Temperature
Door Opening
Shocks

Global Use Cases: Interoperability

- Integration of DataPorts with Posidonia Ports Solution Suite, at different locations, in order to demonstrate its potential interoperability with existing solutions.



Data Challenges



Data Heterogeneity

A wide array information systems and data infrastructures are used in Ports for regular business processes



Trust & Security in Data Sharing

To boost adoption, DataPorts must guarantee a secure information flow between port stakeholders



Data trading using Blockchain

Technology emerging in the transports and ports domain but still evolving



Accurate Cognitive Services

AI requires high amounts of quality data to provide precise predictions

Impact Challenges

A federated platform for creating a data space ecosystem and to improve operations in the shipping and maritime industry

Increase the transparency and trust level in the context of Industrial Data Spaces

Enabling new business models in which data from European Ports will be a tradable asset



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Thank you!

Find more:

<https://dataports-project.eu/>

iotweek.org