



# NEXUS

# NEXUS INNOVATION AGENDA 2023

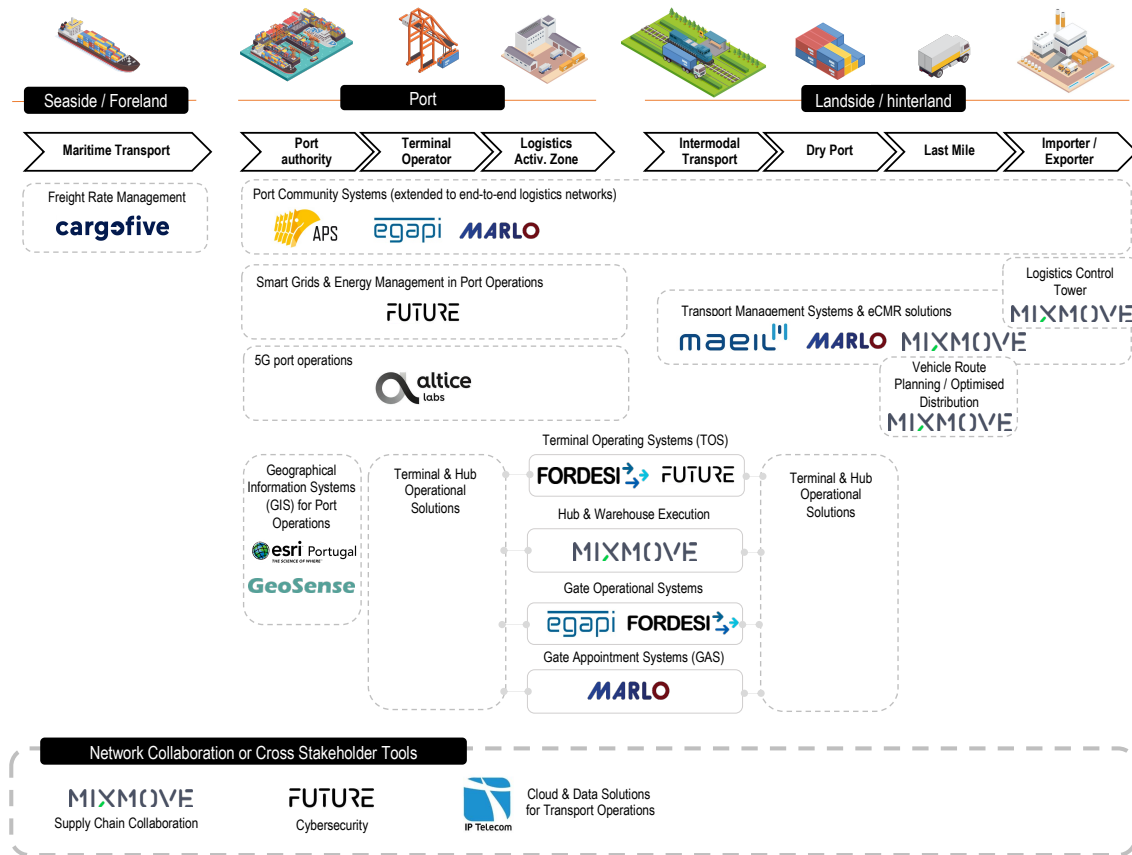
## NEXUS Agenda Overview

- **NEXUS is a Large-Scale Innovation Agenda for the Port, Multimodal and Transport Sector in Portugal**
  - **Focused in Digital and Green Transition, in particular**
    - **Multimodal Network Collaboration, promoted by Open Data Sharing, Federated Systems**
    - **Synchromodal Operations (aiming towards Physical Internet principles)**
    - **Big Data and Artificial Intelligence**
    - **Zero Emission Innovative Operations and Energy Transition technologies**
  - **Port of Sines as lead promotor**
  - **Presented to the Recovery and Resilience Plan for the Portuguese Economy**
  - **Total Investment of approx. 91 million Euros**
  - **Total PRR funding of approx. 57 million Euros**

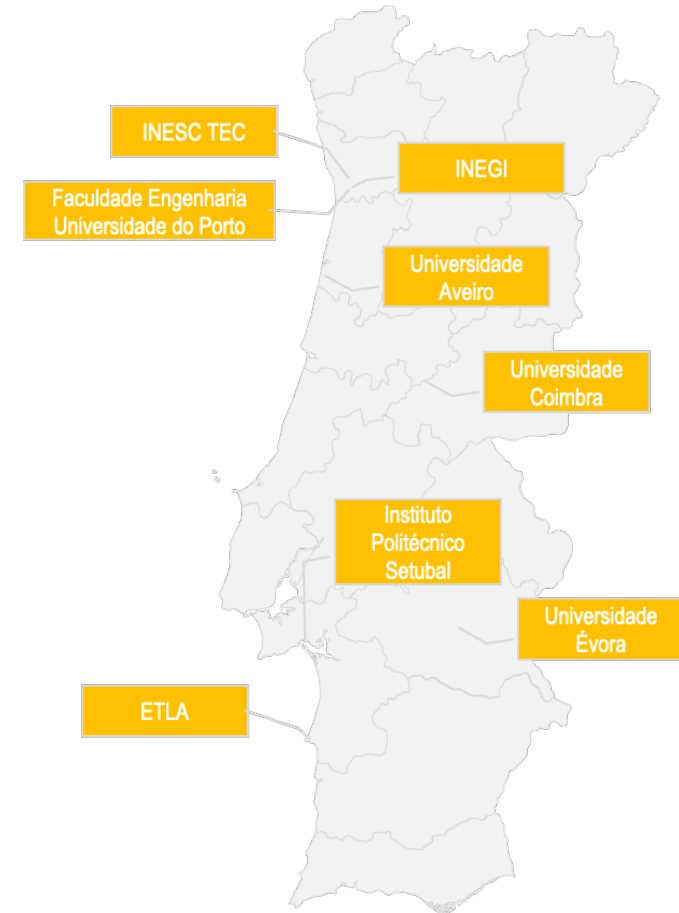


# The tech ecosystem for digital and green transition in ports and multimodal operations

An emerging Portuguese ecosystem of innovative companies dedicated to digital and green transition in ports, logistics and multimodal operations



... supported by major R&D&I centers in Portugal and advanced training schools



## The starting point

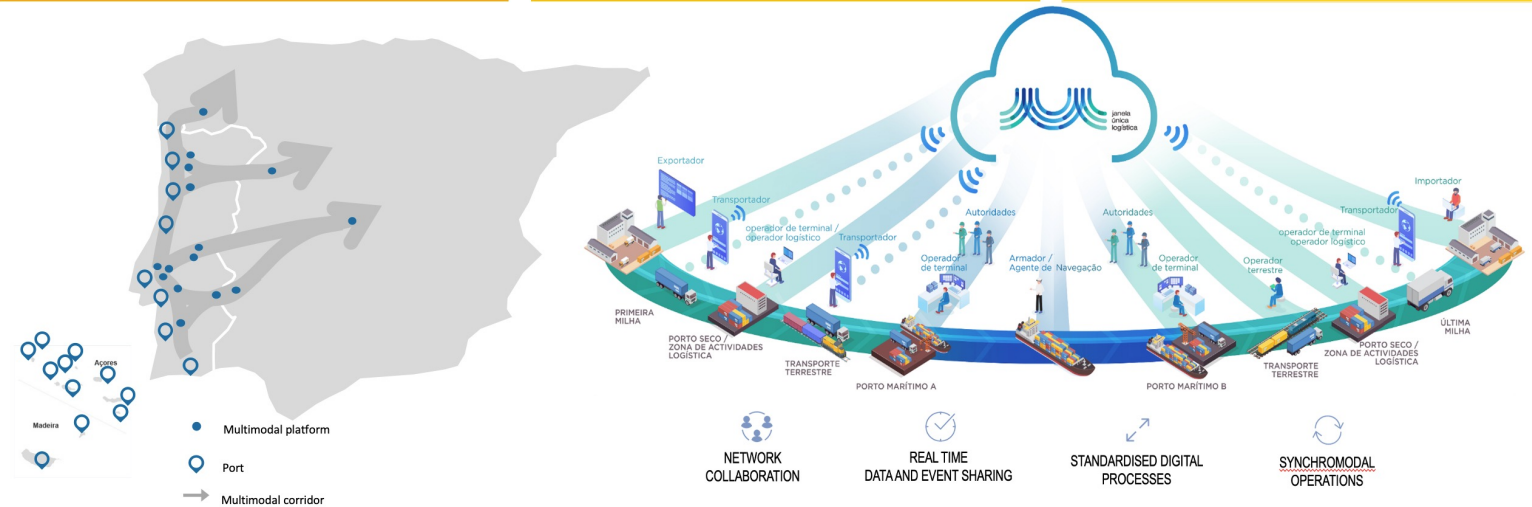
The NEXUS project intends to capitalize on all the work already carried and on the technological baseline provided by platforms such as JUL, that have established an end-to-end multimodal network collaboration ecosystem for all stakeholders in Portugal

A unique context and very robust technological baseline for innovation in Portugal. In port and multimodal operations

A standardised operational and data sharing model for all transport modes

One platform capturing data events from all transport modes (JUL)

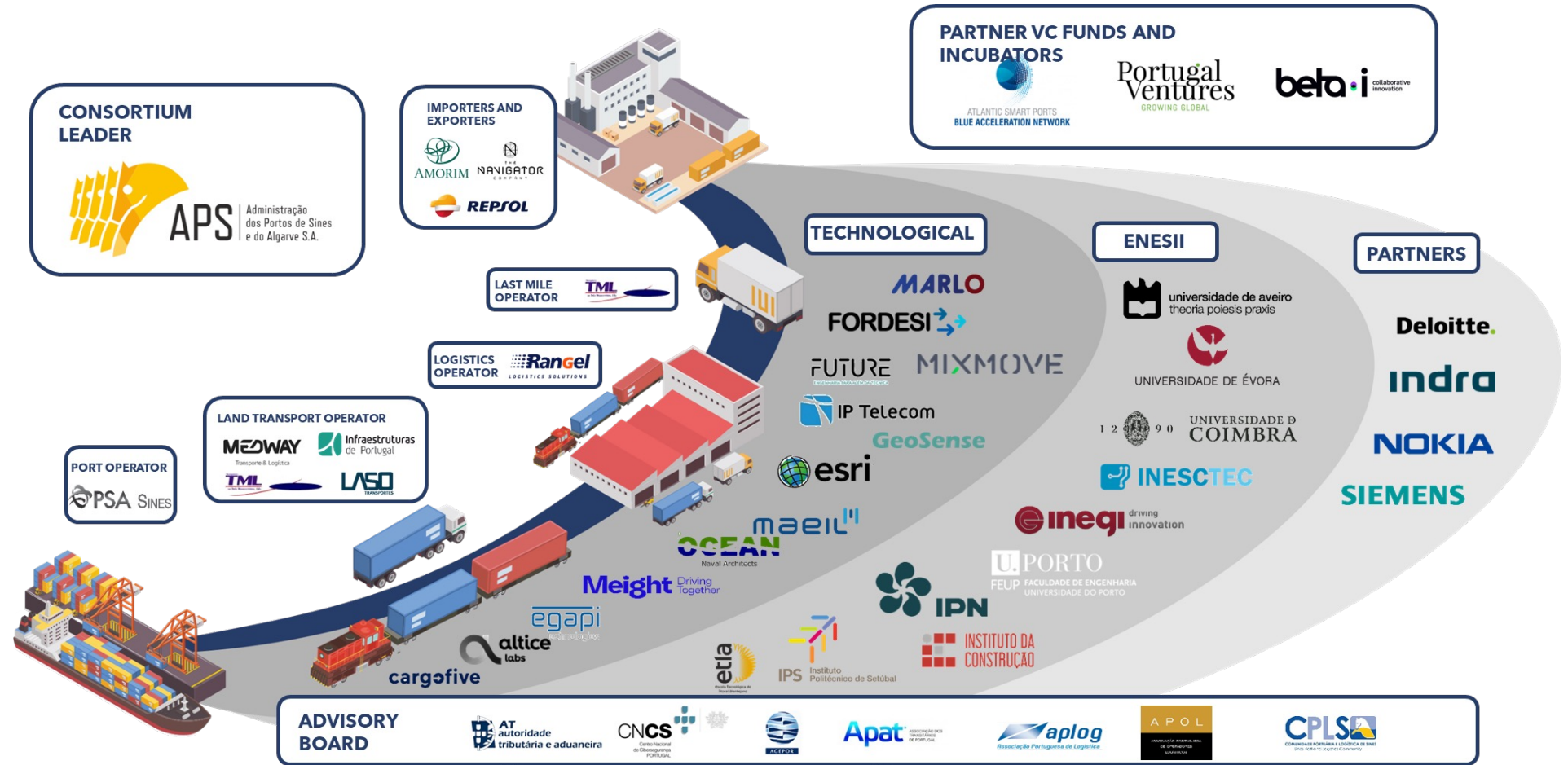
A culture of Federated Interoperable System





## 35 partners

- Technology companies
- End users – representing the complete value chain
- Research centers
- Authorities



# Consortium

DIGITAL SUSTAINABLE LOGISTICS

# NEXUS

# Globally recognized innovation

... this group of companies has also produced innovation work that has been recognized globally



**MARLO** received the Radar prize, for best innovation in Europe, in the area of ICT for society. This was awarded to its platform for logistics network orchestration [Mixmovematch.com](http://Mixmovematch.com)



The investments in innovation have allowed the **PORT OF SINES** to rank #2 in Europe in the Container Port Performance Index of the World Bank



**MIXMOVE** was appointed by Gartner in 2019 as one of the 10 global cool vendors in the area of logistics and supply chain management. A Cool Vendor is a small company offering a technology or service that is innovative, impactful or intriguing.



**MARLO** in 2017 and later **MIXMOVE** in 2019 won the Physical Internet Venture Award, by the International Physical Internet Conference



**MIXMOVE** won the 2021 Logistics Innovation Award, from the Alliance for Logistics Innovation through Collaboration in Europe



**MEIGHT** won the 2018 ALTICE innovation award

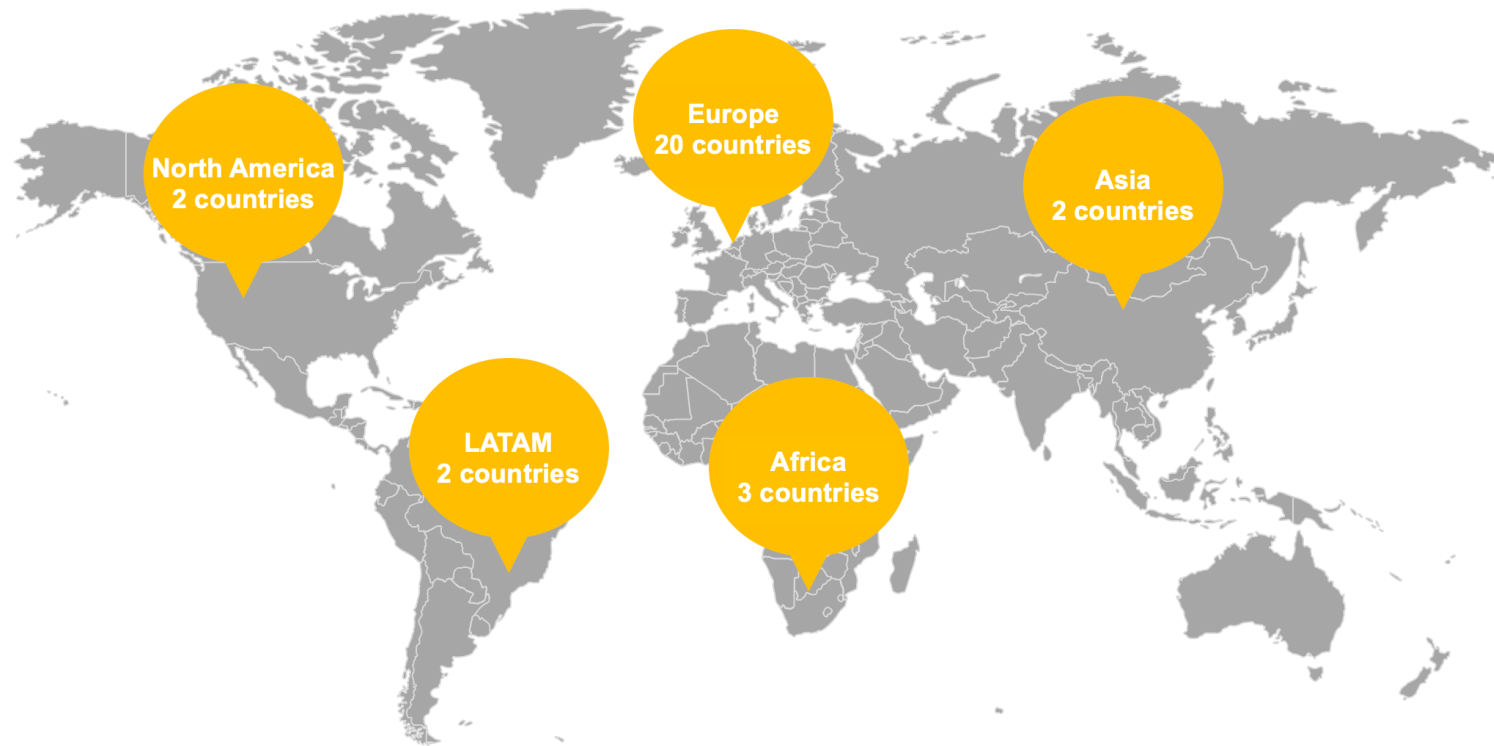


**MEIGHT** won the 2019 Repsol entrepreneurship award



**MEIGHT** won the 2019 Portugal Mobisummit Startup of the Year award

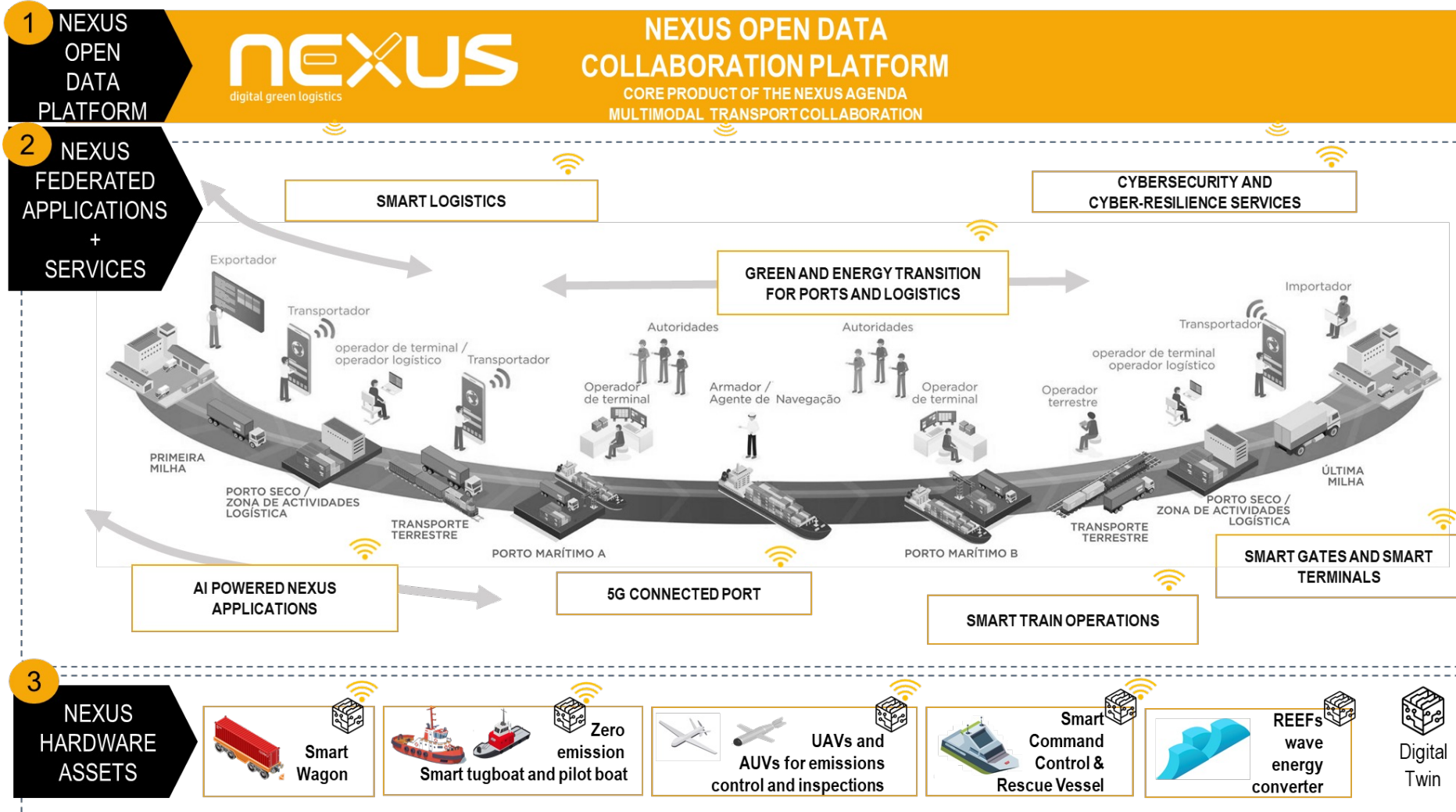
# Main Goals



The ecosystem of SMEs exports to more than 30 countries in 4 continents

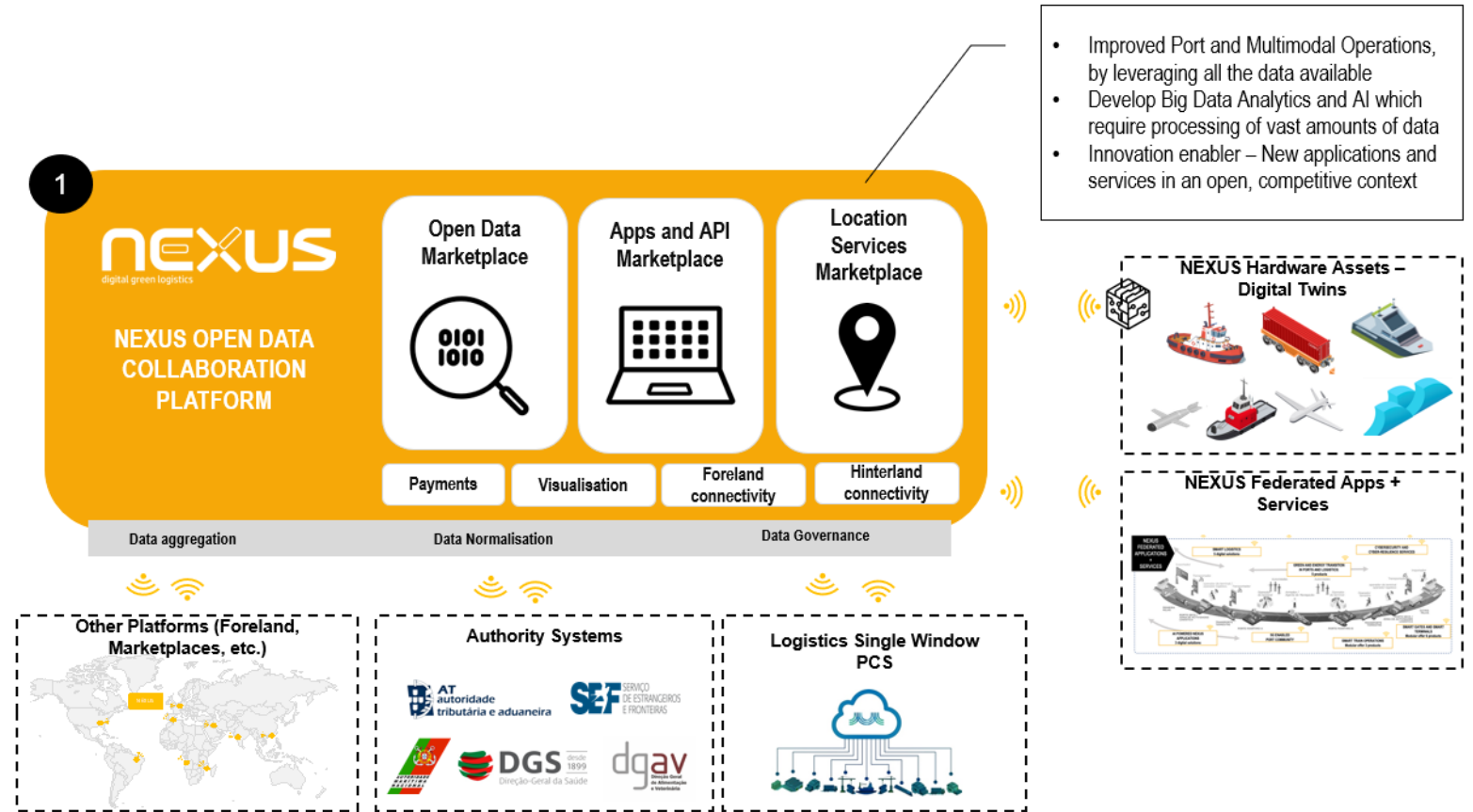


# NEXUS ecosystem

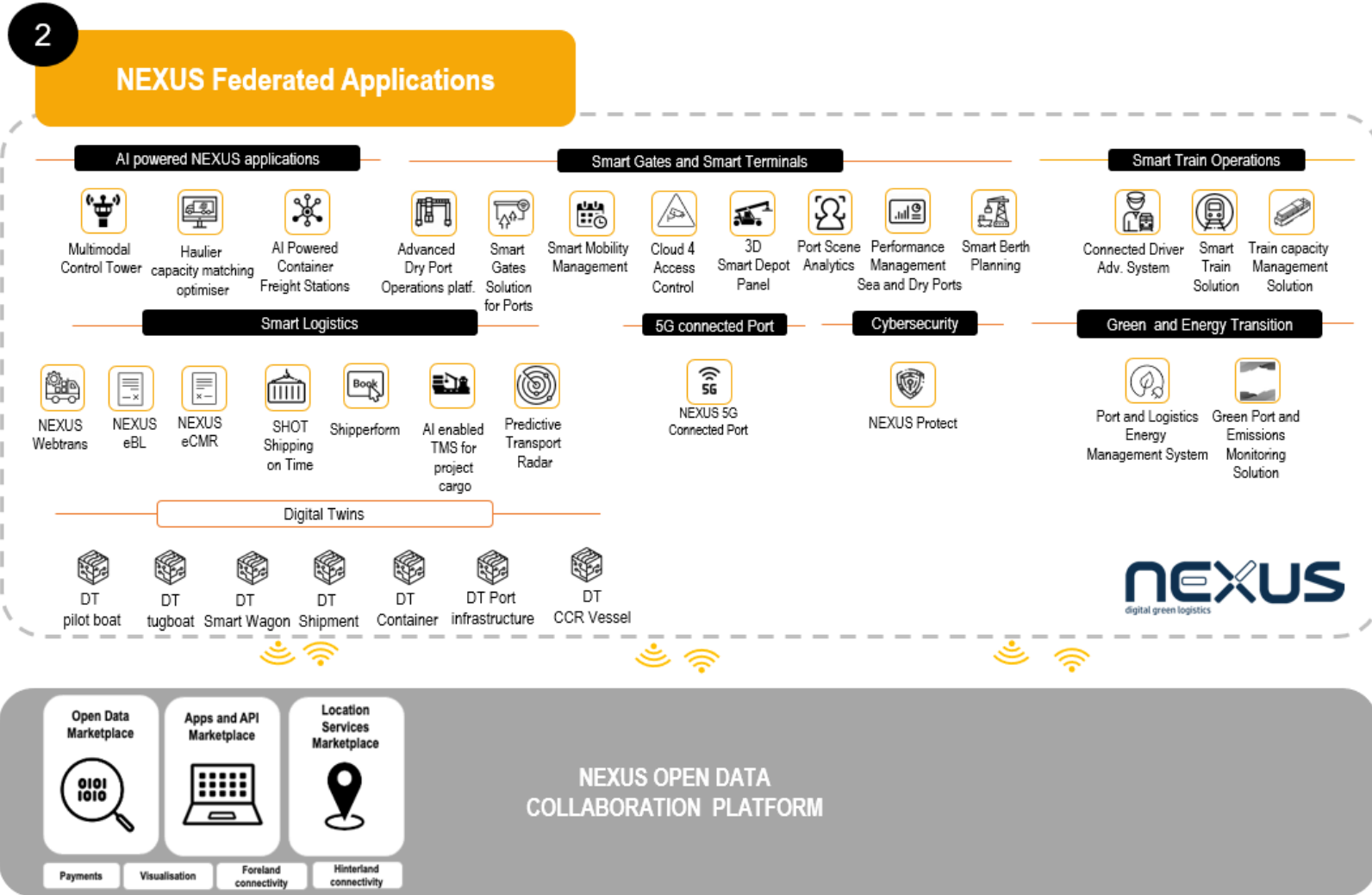


# The Open Data Context

The open data sharing context is core to the NEXUS agenda since it will collect vast amounts of high-quality data that will be used to develop Big Data and AI solutions. And it will also be used as an enabler for innovation, by opening possibilities for totally new applications and services.



# NEXUS federated Apps






# NEXUS hardware assets


3

Open Data Marketplace




Payments

Apps and API Marketplace



Visualisation



Location Services Marketplace




Foreland connectivity

Hinterland connectivity


NEXUS OPEN DATA COLLABORATION PLATFORM




**Zero emission smart Tugboat**  
NEXUS




**Zero emission smart pilot boat**  
NEXUS




**Emission Monitoring, Surveillance UAV**  
NEXUS




**Water Quality, surveillance AUV**  
NEXUS



**Smart Command Control & Rescue Vessel**  
NEXUS



**REEFs Ocean Power**  
NEXUS



**Inspections UAV**  
NEXUS



**Smart Wagon**

SMART WAGON INNOVATION AGENDA

# Workstructure

WP0 – Project Management

## R&D&I NEXUS Ecosystem of Products and Services for Digital and Green Transition

WP1 - NEXUS Open Data Platform

WP2 - Sychromodal Logistics  
Network

WP3 - Smart Gates and Smart  
Terminals

WP4 - Smart Train Operations

WP5 - Smart Logistics

WP6 - 5G Port of the Future

WP7 - Cybersecurity and Cyber-  
Resilience

WP8 - Green and Energy Transition  
in Ports and Logistics

WP9 – Exploitation, Dissemination and Internationalisation

WP10 – Advanced Training and HR Qualification

# International experts



**Jaco Voorspuij**

**Vice Chairman International  
Port Call Optimisation**

**Senior Manager Transports  
and Logistics Group GS1**



**Jan Tore Pedersen**

**Vice Chairman of the ALICE  
working group for Global  
Supply Network  
Coordination and  
Collaboration**



**Pascal Olivier**

**Chairman of Data  
Collaboration  
Committee International  
Association  
of Ports and Harbours**



**Theo Notteboom**

**Professor in Port and  
Maritime Economics  
Shangai Maritime  
University, Ghent  
University, Antwerp  
University**



**Wout Hofman**

**Senior Research Scientist,  
Data Science  
TNO, Netherlands  
Organisation for applied  
scientific research**



# Main Goals

## SECTORIAL IMPACTS

- **1147** NEW JOBS (until 2030)
  - **465** during project execution
  - **569** direct permanent jobs (until 2030) associated to technology exploitation
  - **113** indirect permanent jobs
- **31** new products and services with an average TAM\* above **300 million euros / year**

\*TAM = Total Addressable Market

## REDUCED CO2 EMISSIONS

- **25%** GHG target reduction in the multimodal networks demonstrating NEXUS Technologies
- **55%** reduction in the Logistics operations associated to the port of Sines (**854,6 ton CO2/year**)
- Indirect contribution to **434.644 ton CO2 savings over a 10 years**, by supporting modal transfer to train operations in multimodal corridors

## EXPORTS

- NEXUS high technology exports to reach **60 million euros / year by 2030**

## INCREMENT PORTUGUESE LOGISTICS PERFORMANCE

- Strong contribution to allow Portugal to rank in the **top 20** of countries in the World Bank's **Logistics Performance Index**, with a score above **3,75**

## INCREMENT R&D SPENDING

- Important contribution to reach the target of **11% average annual growth in R&D spending** in the Mobility, Space and Logistics sector, until 2025





Obrigado!