



MOSES Project Overview



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MOSES Facts

- **Project Title:** AutoMated Vessels and Supply Chain Optimisation for Sustainable Short Sea Shipping
- **Call identifier:** H2020-MG-2.6-2019
- **Topic:** “Moving freight by Water: Sustainable infrastructure and Innovative Vessels”
- **Duration:** 01.07.2020 - 30.06.2023 (36 months)
- **Funding scheme:** RIA – Research and Innovation Action
- **EU contribution:** EUR 8 122 150
- **Coordinated by:** National Technical University of Athens (NTUA), Greece



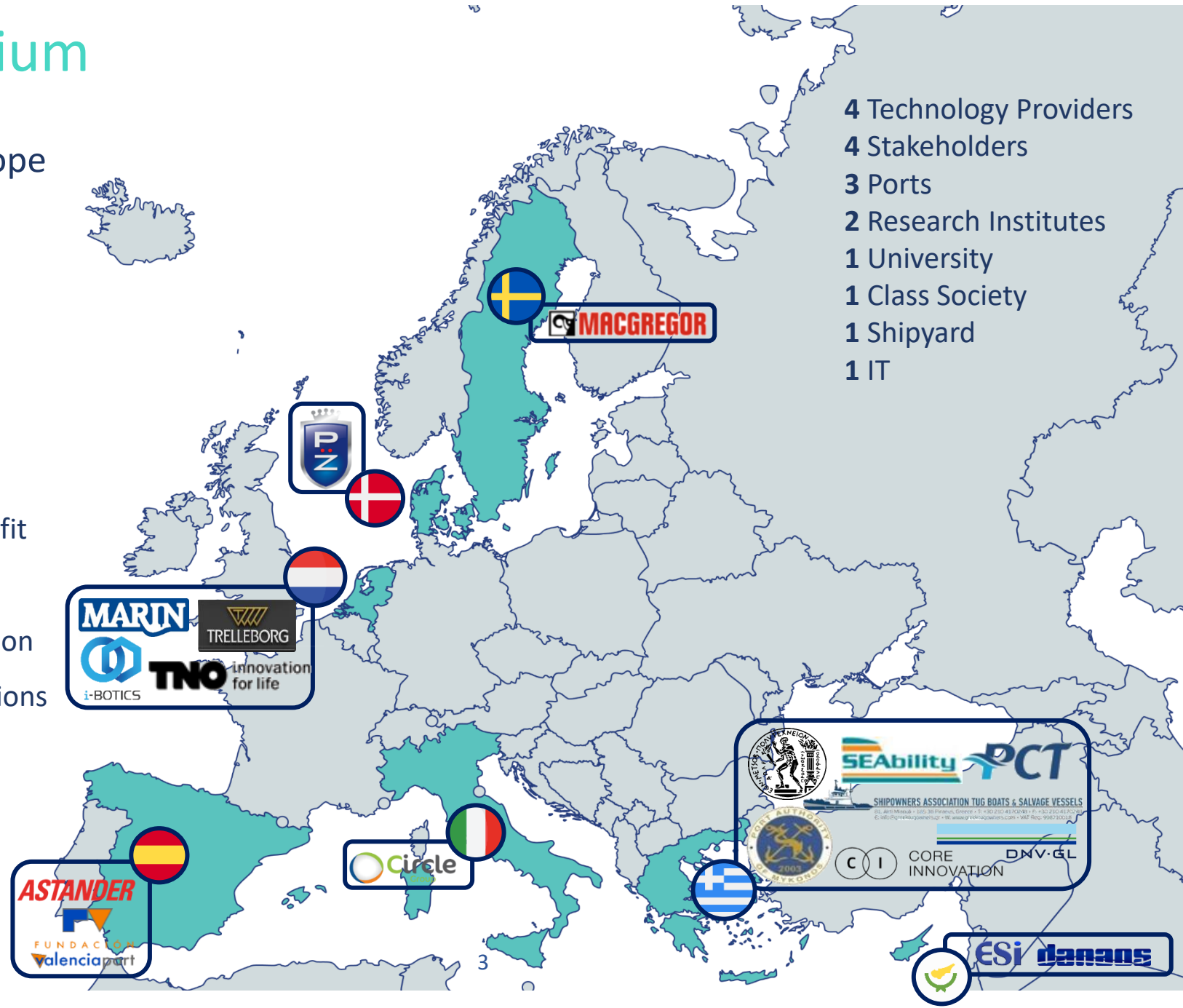
MOSES Consortium

17 Partners across Europe

Expertise in:

- Naval design
- Maritime Logistics
- Risk, Safety, Environmental Assessment
- Sustainability and Cost-benefit Analysis
- Autonomous System operation
- Port Infrastructure & operations
- Business Modelling
- Innovation Management

4 Technology Providers
4 Stakeholders
3 Ports
2 Research Institutes
1 University
1 Class Society
1 Shipyard
1 IT



MOSES Vision

The aim of MOSES project is to enhance the Short Sea Shipping (SSS) component of the European supply chain by addressing the vulnerabilities and strains related to the operation of large containerships.

A two-fold strategy

SSS feeder services

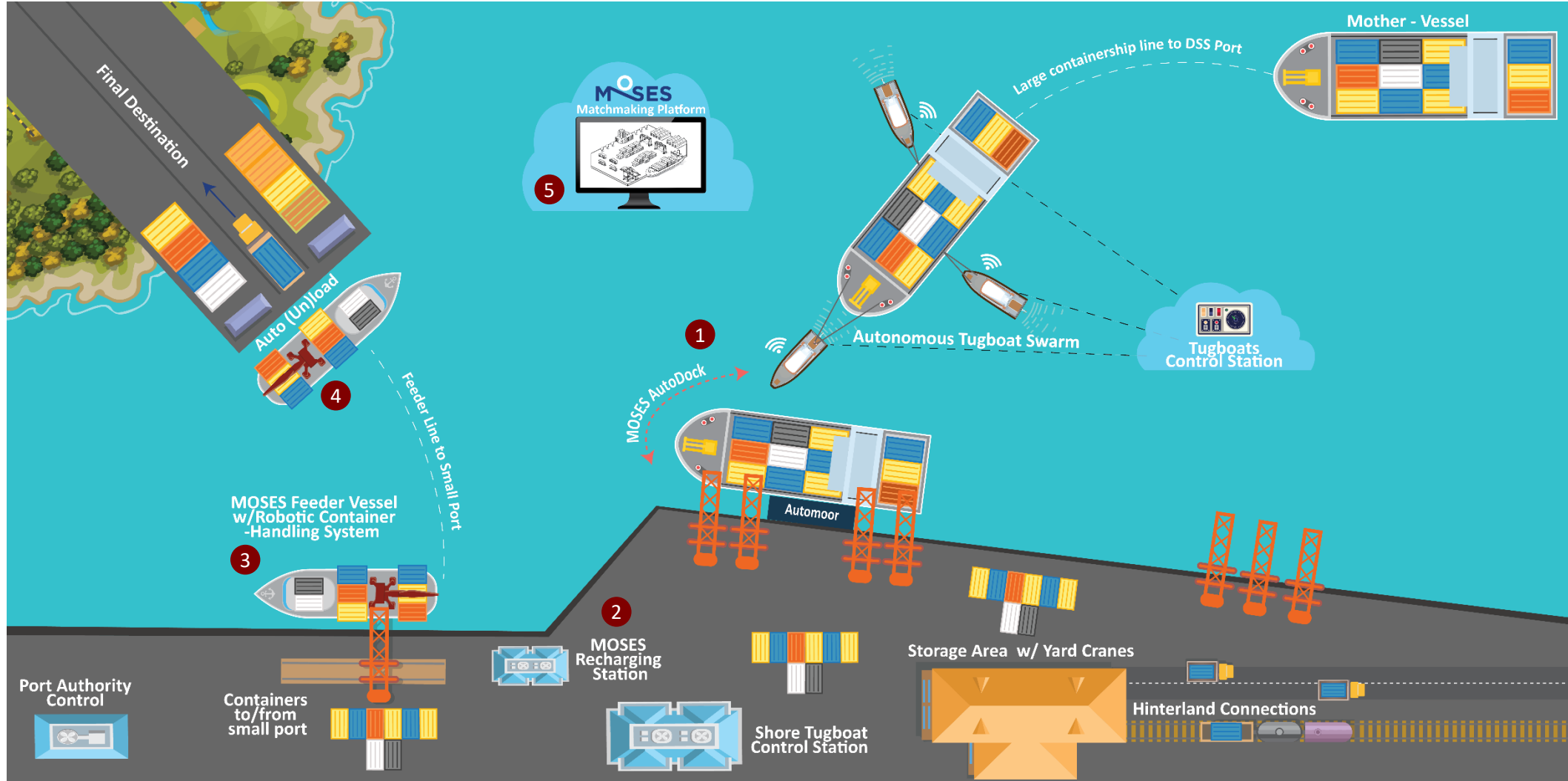
Ship design for sustainable services – no infrastructure required

Logistics solution for balancing demand-supply

DSS ports efficiency

Technological solutions for improving DSS ports inefficiencies – reduce berthing time, improve safety

MOSES Concept & Innovations



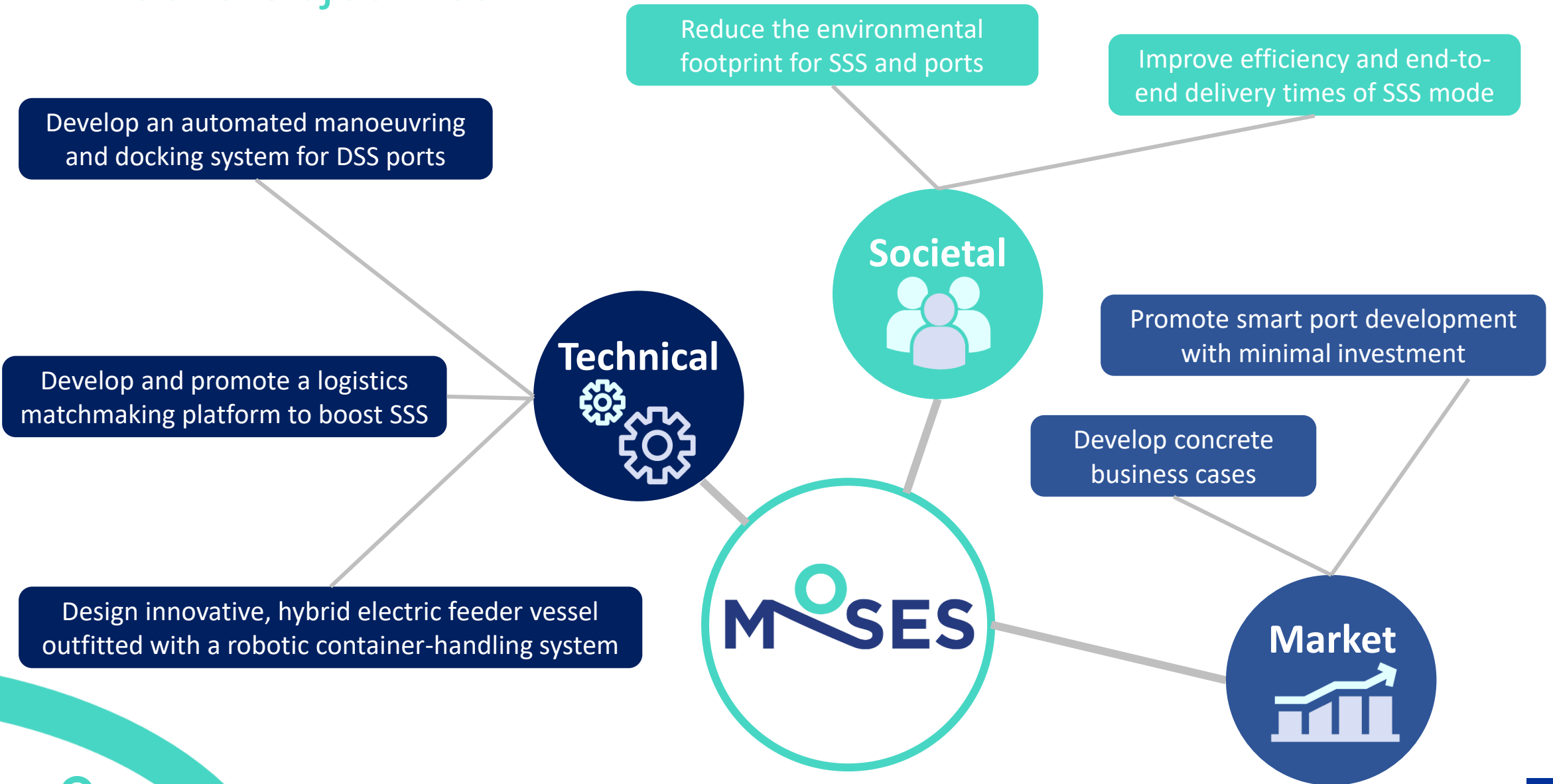
MOSES Innovations:

1. MOSES AutoDock (MOSES Autonomous tugboats + AutoMoor)
2. MOSES Recharging Station

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3. Innovative Feeder Vessel
4. Robotic container-handling system
5. MOSES matchmaking platform

MOSES Objectives



MOSES Business Cases (1/2)

BC #1 (Western MED-Spain)

Containers are trans-shipped from Valencia port using land-based transportation modalities



BC #2 (Eastern MED-Greece)

Cargo from Piraeus to the Aegean islands is picked up by truck, delivered to warehouses and then loaded on another truck that off-loads it on RoRo ferries that serve the islands from Attica ports



MOSES Business Cases (2/2)

MOSES Transferability Business Case for North Europe



Open call and dedicated reserved budget in the first project year.

State of the art criteria

- Underperforming SSS route for **domestic traffic competing with other modes**
- TEN-T corridor (besides MED, Orient/East-MED)

MOSES Pilot Demonstrations

Pilot 1:AutoDock

SCOPE: Intelligent cooperation of autonomous tugboat swarm to manoeuvre a large containership and dock it by collaborating with an automated mooring system.



Faaborg harbour, Denmark (TUCO's facilities)

METHOD: 2x TUCO's Pro:Zero workboats will be equipped with MOSES autonomy package. The workboats will cooperate to maneuver a floating vessel to the dock. TRELLEBORG will fabricate and install on the dock a 1-off small-scale automated mooring unit prototype, outfitted with MOSES intelligence to collaborate with the workboats.

Pilot 2:Feeder

SCOPE: Seakeeping and energy performance. Capability to be used for automated mooring.



MARIN's Seakeeping and Manoeuvring Basin (SMB), Netherlands

METHOD: A scaled ship model will be fabricated for 1 vessel design (out of the 3 evaluated in MOSES) and tested in seakeeping and manoeuvring basins.

Pilot 3:Robotic CHS

SCOPE: Autonomous container handling capability and shared control between human operator and system.



MacGregor test facility, Örnsköldsvik, Sweden

METHOD: A full-scale, operational MacGregor GLE Crane, outfitted with sensor package, will be controlled by an operator at the MOSES Shore Control Station (SCS) to handle a container. The demo will be implemented with the SCS onsite and at a remote location.

MOSES upcoming outcomes

conceptual designs for the innovative feeder vessel / robotic system and a **roadmap** to fully autonomous operation, designed on concrete business cases

beta version of a matchmaking logistics platform

a **concept design** of a recharging station for automated vessels

working architecture and interface for Autonomous Tugboat Swarms that cooperate with a **prototype** of an Automated Mooring system

Technologies that will enhance the role of SSS and small ports



Pilot
Demos

viable exploitation paths

MOSES impact



Decongestion of road and/or city infrastructure



Reduction of CO₂ and air pollutant emissions of intra-European freight transport



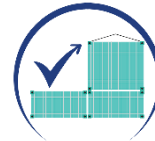
Enhancement of the performance of the CEF TEN-T network



Sustainability increase freight fed from intercontinental European ports using waterborne transport



Modernization and increase of the reliability and competitiveness of Intra European Waterborne transport



Demonstrate that the deployment of solutions can increase the quality of freight moved by SSS by at least 10% by 2039 compared to 2010 baseline data

Additional impact of MOSES project is on



The creation of new business opportunities for industry and SMEs in the EU



European policies for manufacturing and automation



Safety of port processes



Competitiveness of European ports and shipping companies



Thank you for your attention!

If you have any questions or require further information, please contact us:

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