AUTOSHIP-AEGIS-MOSES
Joint Workshop

MOSES is not just a biblical figure

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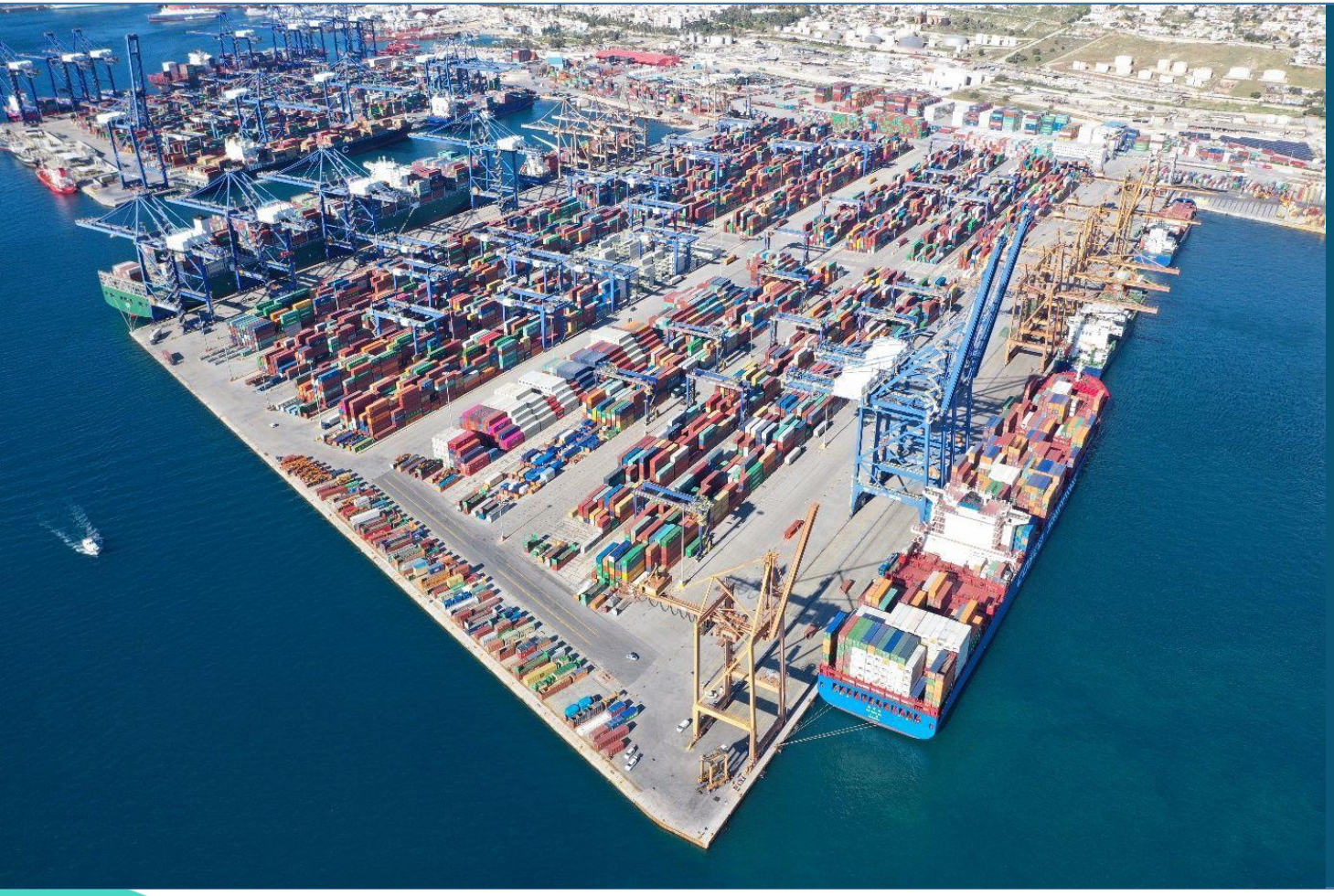
More containers globally need to be transported by larger ships (economies of scale)

* the total container throughput in the Mediterranean increased **from 20 m TEU (2000) to 51 m TEU (2015)**



Larger container ships bring more cargo to terminals that needs to be transshipped to the hinterland

This leads to congestion from heavy container truck traffic

Island ports with no infrastructure are usually serviced by trucks on Ro-Pax Ferries

Large and more container ships also lead to adverse consequences in terms of safety

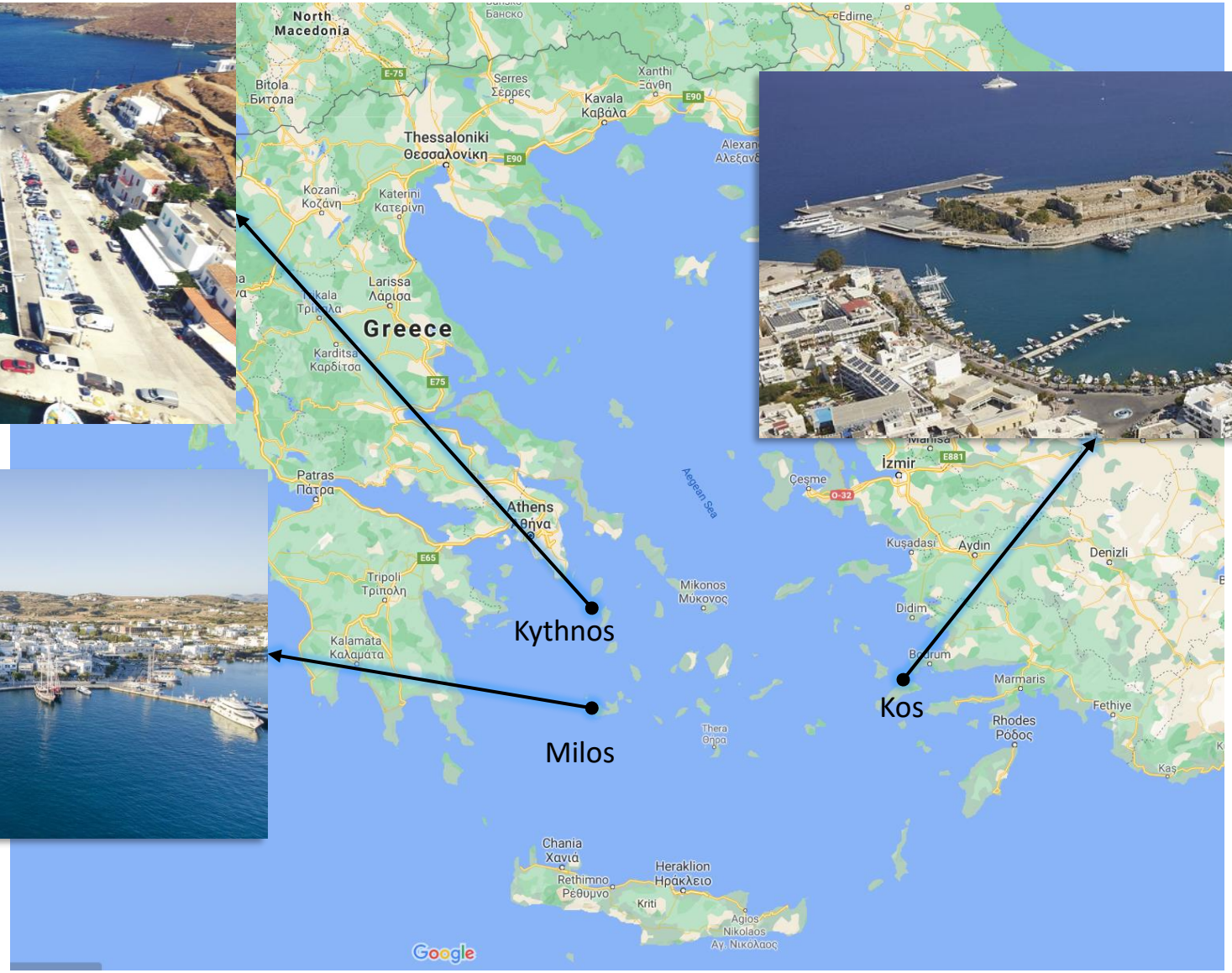
Short Sea Shipping to small ports with no cargo handling infrastructure could provide an alternative to land-based transshipment

Efficient **Green** **Safe**

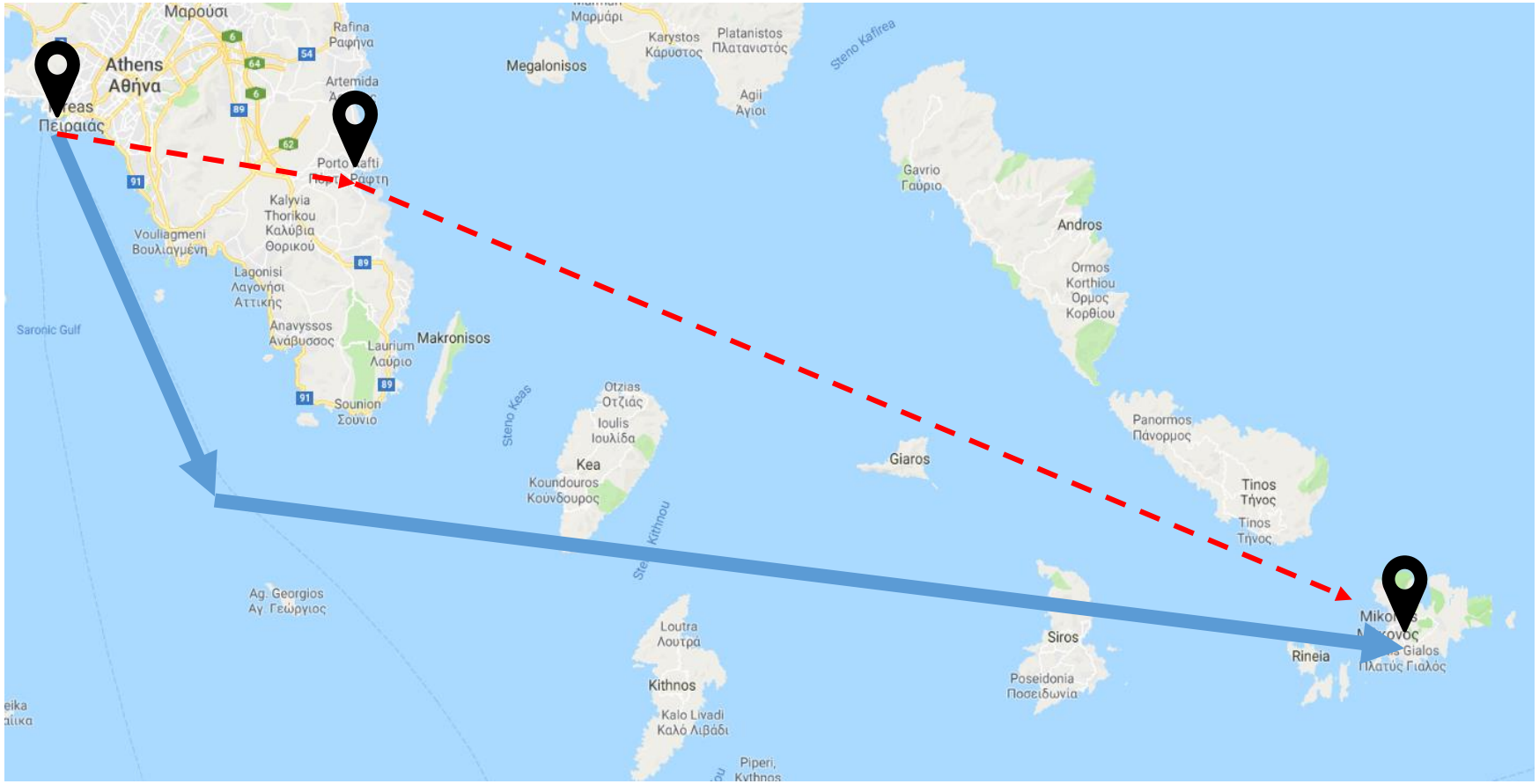
This potential is mostly untapped, because

- existing feeders cannot be served by small ports
- there is little incentive for carriers to choose maritime transport instead of road/rail modes.

The case of a European Archipelago

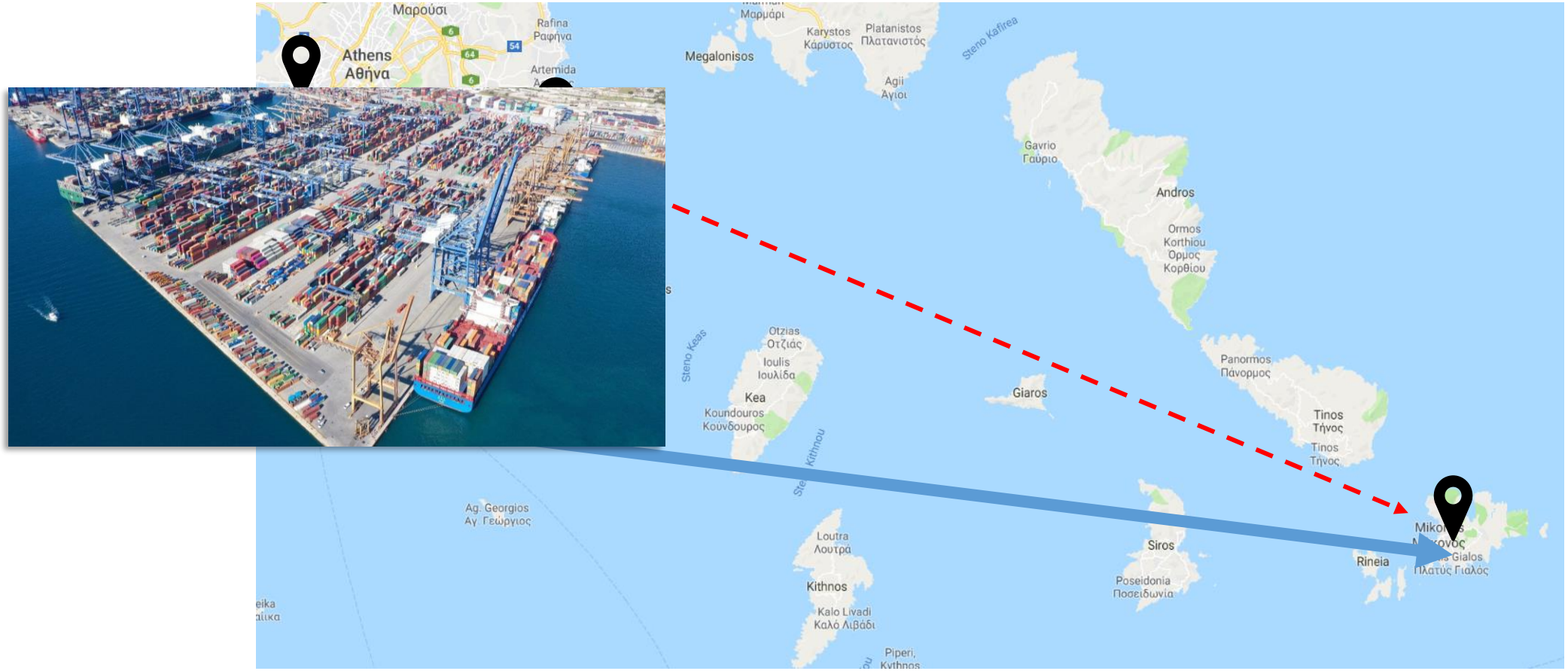


The case of a European Archipelago



MOSES will create **new pathways** in the EU container supply chain by **integrating small ports** with no infrastructure into the EU container supply chain

The case of a European Archipelago



MOSES wants to take container cargo directly from large container terminals…

The case of a European Archipelago

To small ports via Short Sea Shipping feeders

Current thinking on how to define autonomy

Automation:
the implementation of processes by automatic means – under specified conditions can function without human intervention

Autonomous ship:
the ship uses automation to operate without human intervention, related to one or more ship processes, for the full duration or in limited periods of the ship's operations or voyage

Crewless ship:
a ship with no crew on board

MSC 102/5/18 (2020)

Degrees of automation and human presence

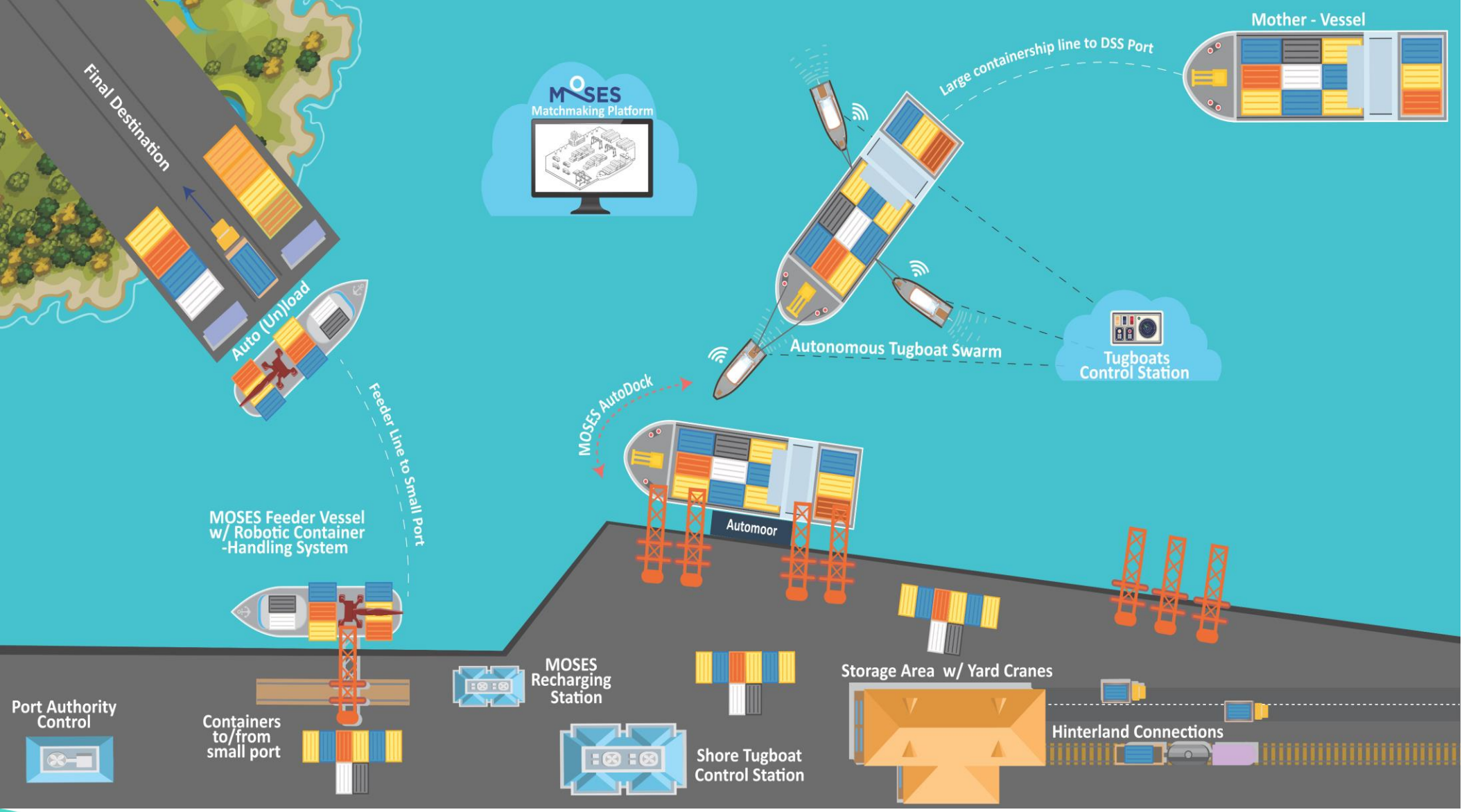
Degree one: Ship with automated processes and decision support

Degree two: Remotely controlled ship with seafarers on board

Degree three: Remotely controlled ship without seafarers on board

Degree four: Fully autonomous ship

MSC 101/5/4 (2019)



Processes

Software

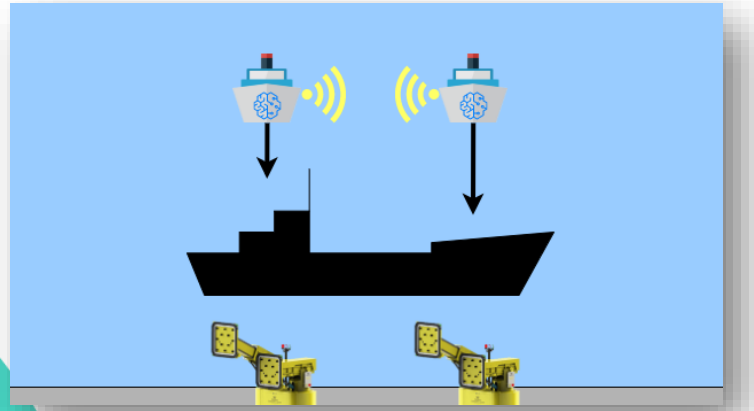
Ship design

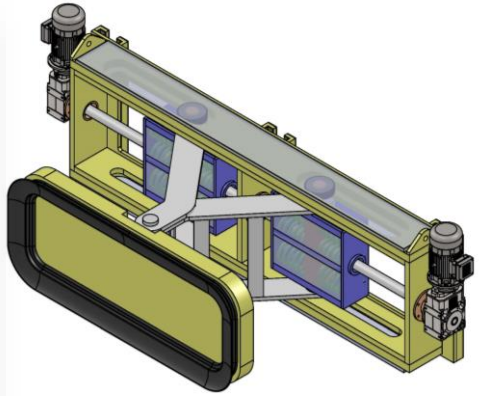
Technologies

Innovative Feeder
Concept design, feasibility for autonomous operation

Robotic Container Handling System
Automated infrastructure

AutoDock
Autonomous Tugboat swarm collaborating with automated mooring





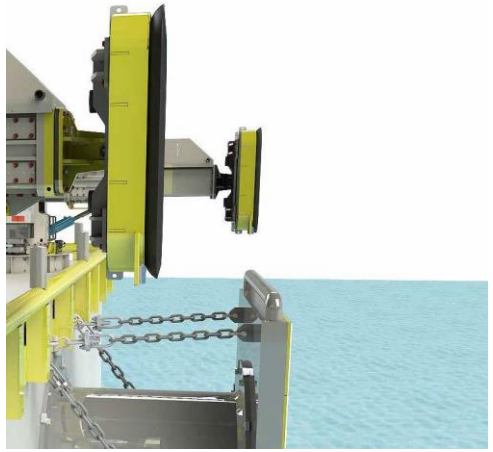
MOSES Demonstrations

Pilot #1: AutoDock

Demonstration and testing of:

1. The automated control infrastructure
2. Intelligent swarm operation
3. The collaboration of the autonomous tugboats with the automated mooring system

within the mooring process of a barge



Faaborg harbour, Denmark (TUCO's facilities)

Pilot #2: Feeder

Testing of propulsion, seakeeping and autonomous operation at representative operational conditions:

1. Transit
2. Port entrance/departure
3. Mooring capability

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

MOSES Demonstrations

Pilot #3: Robotic Container Handling System

Demonstrate and evaluate operational characteristics:

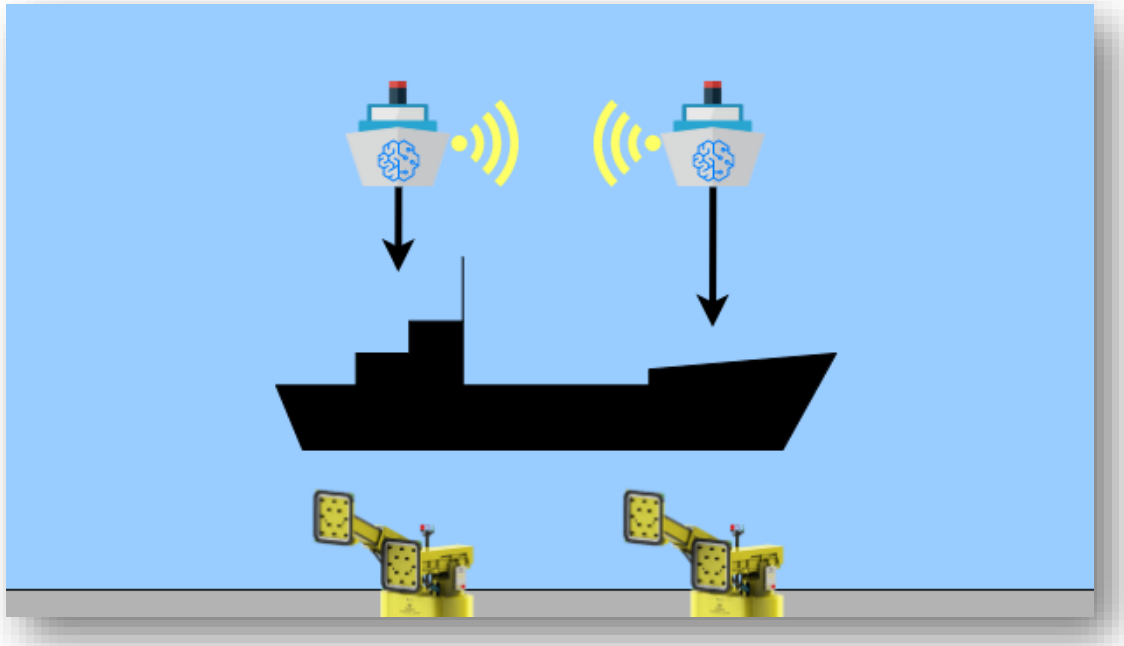
1. Variability in loading and offloading operations
2. Adaptation capabilities and human intervention
3. Remote operator supervision

Stage 1: MacGregor test facilities at Örnsköldsvik, Sweden

Stage 2: TNO test facilities at Soesterberg, the Netherlands

MOSES Impact on sustainable SSS cargo transport

Autonomous Tugboat swarm collaborating with automated mooring



Safety

Minimize human error in towing
Reduce accident during berthing

Environment

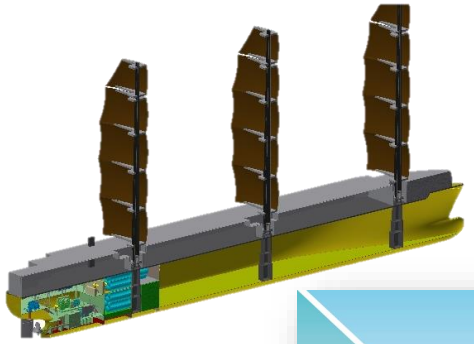
Reduce air emissions, tugs will use electric propulsion

Efficiency

Reduced time to berth
More reliable towing services
Increase service availability

MOSES Impact on sustainable SSS cargo transport

Innovative feeder with robotic container-handling system



Safety

Minimize risk in cargo handling

Environment

Green propulsion technologies
Reduce total emissions/TEU
Reduce road congestion in port areas

Efficiency

Delivering cargo where no infrastructure is available

MOSES Impact on sustainable SSS cargo transport

Matchmaking platform

Environment

Promote environmentally-friendlier alternative to land-based transshipment

Efficiency

Ensure viability of SSS services based on innovative feeder

Increase freight using SSS

MOSES Impact on sustainable SSS cargo transport

Automated technologies/processes
Autonomous operation

Safety + Efficiency

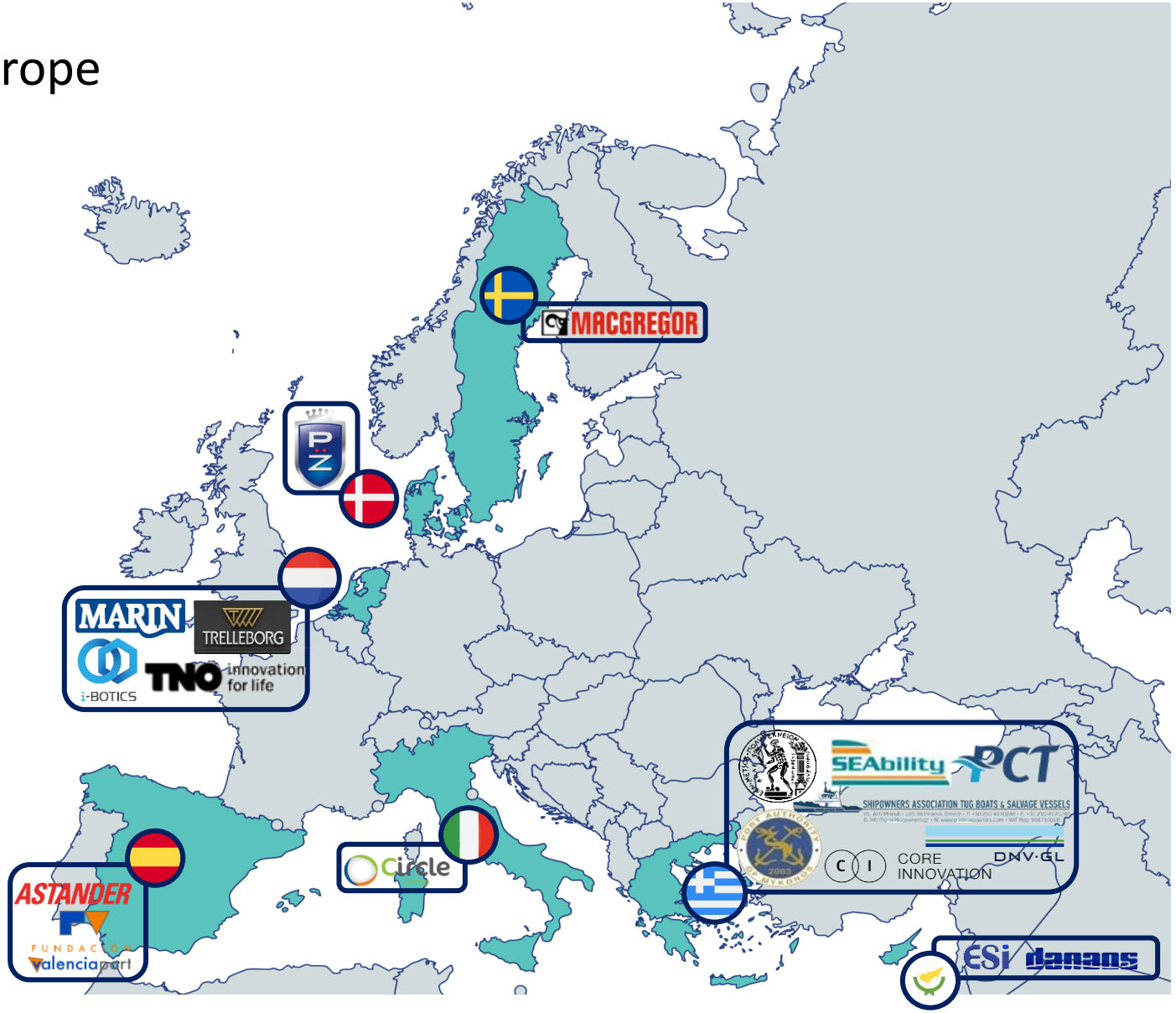
Sustainable SSS feeder services to small (and remote) ports without infrastructure

The National Technical University of Athens (NTUA) coordinates

17 expert partners throughout Europe

Budget: EUR 8,1m

36 months (2020 – 2023)



www. moses-h2020.eu

MOSES project2020

@mosesproject20

MOSES Project

Paving the way towards the future of Short Sea Shipping!

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

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