Exploitation workshop on MOSES
the autonomous sailing of MOSES
Innovative Container Feeder Vessel

02 November 2023  10.00-12.00 CET
Online, via Zoom platform

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 861678. The content of this document reflects only the authors’ view, and the Agency is not responsible for any use that may be made of the information it contains.
Exploitation workshop on MOSES Innovative Feeder

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End of Day
Exploitation workshop on MOSES Innovative Feeder

How can MOSES sustain a roadmap for post-project exploitation?

- Show the “proof of concept” results
- Identify opportunities and challenges for exploitation
- Connect to and get feedback from relevant stakeholders
autoMated vessels and supply chain Optimisation for sustainable short SEa Shipping

Konstantinos Louzis
Researcher, PhD Candidate,
School of Naval Architecture & Marine Engineering

National Technical University of Athens

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Facts about the MOSES project

- **Duration:** 01.07.2020 - 30.06.2023 (36 months) – extension 31.12.2023 (42 months)
- **Budget:** 8 million €
- **Consortium:** 17 Partners
- **Coordinator:** NTUA
MOSES aims to...

Create sustainable feeder services from large container terminals to small ports with no infrastructure to replace trucks on Ro-Ro ships

Pax traffic slowed down by cargo traffic
The MOSES concept
The MOSES Use Cases

**Western MED-Spain**
Decongest truck transport traffic in Valencia port and connect it to Sagunto and Gandia satellite ports.

**Eastern MED-Greece**
Decongest Piraeus container terminal and integrate small Greek ports into the container supply chain.
MOSES AutoDock System

Autonomous tugboats

The “agents” have learned to manoeuvre the large vessel in a similar way as in a real tugboat operation!

Prototype innovations:
- Small-scale
- Surge motion control
- Energy harvesting
- Communication with tugboats

Automated Mooring

Shore Tugboat Control Station
MOSES Innovative Feeder

Greek concept I

- $L_{BP} = 80$ m
- 180 TEU
- 10 kn service speed

Innovations:

- Sustainable propulsion (Hybrid – methanol ICE + batteries, Full electric)
- Azimuth thrusters for enhanced manoeuvrability
- Automated cargo-handling, as first step towards higher autonomy

Greek concept II

- $L_{BP} = 71$ m
- 100 TEU
- 10kn service speed

Modular concept design for pax transport
MOSES Robotic Cargo Handling System

### Automated Crane
- Compensation of pendulation (ship motions, weather conditions)
- Identification of container to load

### Intelligent Operator Support System (IOSS)
- Enabling local situation awareness – anomaly detection
- Robot self awareness in problem detection
- Control Intelligence
- Dynamic task allocation (One-to-many)
- Risk assessment for problem solving
MOSES Matchmaking Platform

The platform will implement horizontal collaboration among logistics stakeholders and will match demand and supply of cargo volumes.

AI-based optimization of distribution routes and improvement of empty container management.
Pilot Demonstrations – Proof of Concepts

Pilot demonstration #1
Autonomous “tugboat swarm” and automated docking
Denmark

Pilot demonstration #2
Dock-to-dock, fully autonomous operation of the MOSES feeder
Netherlands

Pilot demonstration #3
Autonomous operation of the Robotic Container-Handling System and remote monitoring with the IOSS
Sweden, Netherlands

18 Oct 2023
14 Sep 2023
28 Sep 2023
Pilot Demonstration results

- The pilot demonstration results will provide input to the **sustainability framework** developed by MOSES.
- The objective is to evaluate the **sustainability and added value to SSS of the MOSES Innovations**, based on specific criteria (incl. cost, environment, safety etc.).
MOSES Exploitation Workshops

SAVE THE DATE

Exploitation workshop on

Robotic Container Handling System

15 November 2023 10.00-12.00 CET

Online, via Zoom platform

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One more thing... an interesting event

Navigating the Future of European Waters with Autonomous Innovation

7 November, Rotterdam
Europoort, Rotterdam Ahoy

EUROPORT 2023
17-18 Nov, Rotterdam Ahoy

ICMASS 2023
November 8 and 9, 2023
Thank you for your attention!

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

Konstantinos Louzis
(klouzis@mail.ntua.gr)

National and Technical University of Athens - NTUA

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End of Day
The workshop will be followed-up by sharing the insights and key results with all participants.