



# Waterborne Transport



# HORIZON EUROPE

## Workshop:

“Horizon 2020 Research and Innovation delivering smart, green, safe and competitive waterborne transport”

07/02/2022 | 09:30 – 16:15

Residence Palace (Brussels) and online

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*Safe and Secure Waterborne Transport*

# Lynceus2Market in a snapshot



- Title: An innovative people localisation system for safe evacuation of large passenger ships
- Funded under the Topic: Safer and more efficient waterborne operations through new technologies and smarter traffic management
- Duration: 1/6/2015-30/11/2018
- Total project budget: over 10 million EUR
- Continuation of an FP7 project (LYNCEUS) where the innovative technologies were tested in lab and in small scale pilots



# Need and challenge



## Maritime disasters

- Costa Concordia (2012): 34 deaths
- Sewol South Korean ferry (2014): 306 deaths
- Norman Atlantic (2014): 25 deaths

## Need

- Maximise the efficiency of safe rescue
- Minimize the loss of life making passenger ships safer





External Advisory Board (EAB)



Cyprus Flag State



Malta Flag State



Lynceus2Market Consortium



**AUTRONICA**

- Fire & Safety Systems, Smart Smoke Detectors
- Decision Support for on-board localisation



**CAMPi**

- Localisable Life Jackets
- Life Saving Maritime Equipment



**CSEM**

- Low power Lynceus2Market SoC
- Electronic Tagging



**TUD**

- Active reflector and Interrogator
- Overboard localisation



**MARINEM**

- Safe Evacuation processes and procedures
- Decision Support Systems



**FMV**

- Spanish Maritime Sector Association members
- Dissemination & Exploitation of Results

Lynceus2Market Innovations & Products

- Type Approval, Directives, Standardization
- Big Data Analysis and Risk Management

**LLOYDS**



- Wearable Devices & Signal processing
- WSN & Radar Hardware and embedded SW

**SG**



- Decision Support Systems
- Counting and Mustering Maritime IT

**OPTIONS**



- Unmanned Aerial Vehicles
- People Localisation Radar

**GGD**



- Smart Smoke Detectors
- Large Scale Demo Installations

**SFM**



- Dissemination & Exploitation
- Smart Fabric Association

**ATEVAL**



Lynceus2Market Large Scale Demonstrations

**LOUIS**

- Provision of Cruise Ship / Testing and Validation

**RCL**

- Provision of Cruise Ship / Testing and Validation



**JRCC**

- Execution of large scale SAR Exercise for systems evaluation



Royal Caribbean Cruises Ltd.

**TALOS**

- Overall Project Management and Coordination

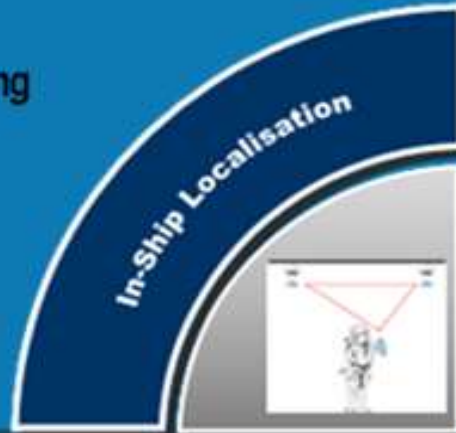


CONSORTIUM



## Onboard Localisation

- Localisation of passenger and crew during Emergency
- People tracking and counting
- Wearable locator devices (Smart Life-jackets, Bracelets)
- Hybrid wired/wireless localisation system (base-stations embedded in fire detection Infrastructure)



In-Ship Localisation



Behaviour and Health

## Passenger Behaviour and Health Monitoring

- Life-jacket and bracerlet embedded sensors to sent information about:
  - Passenger movement
  - Passenger temperature
  - Passenger dryness or wetness
  - Passenger health parameters



Disaster management

## Real-time Disaster Management

- Monitoring of disaster status
- Guide evacuation teams
- Prediction of disaster spreading
- Advanced disaster management based on ship sensor information
- Advanced evacuation management based on passenger location and behaviour



In-sea Localisation

## Overboard Localisation

- Life-jacket active reflector patch
- Enable localisation in extreme environmental conditions and during the night
- UAV mounted radar and on-board localisation
- Assistive search and rescue operations with localisation data from UAV

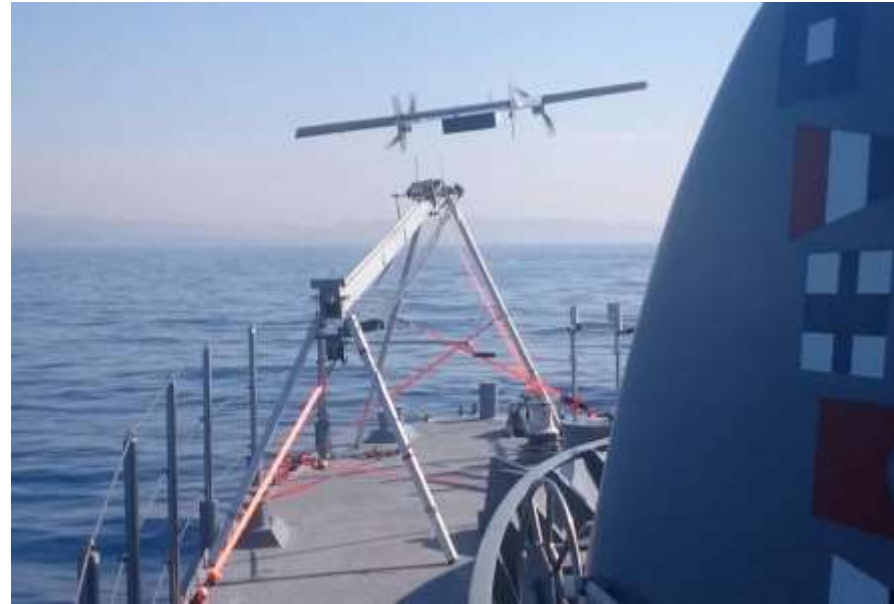
# Achievements – onboard system



Large-scale onboard system demonstration was successfully performed on 23/05/2018 onboard Royal Caribbean Cruises - Rhapsody of the Seas: a cruise ship with almost 300 meters length, 12 decks, capacity: 2500 passengers and 800 crew members



# Achievements – overboard system



Large-scale overboard system demonstration was successfully performed in Larnaca Bay on 25/5/2018 during ARGONAUT multinational exercises



# Standardisation activities



- Led by LLOYD's Register
- ISO Standard – Ships and marine technology – Life saving appliances and arrangements – Localisation system for the safe evacuation of persons from ships and offshore structures
- Provides specific performance and test requirements for people localisation devices in order to assist stakeholders when developing such systems for use on all ship types and offshore structures



International  
Organization for  
Standardization





# Exploitation of results



- Interest from AUTRONICA to supply the LYNCEUS technology to cruise ship manufacturers and operators – necessary agreements (Joint Ownership Agreement and Exploitation Agreement) are in place

BUT

- Challenges due to COVID-19 pandemic that severely affected the tourism sector and the cruise ship sector:
  - In the first half of 2020, the entire cruise industry was stopped and a prohibition on resuming this industry was imposed worldwide
  - The cruise tourism decreased sharply also in 2021 compared to 2019

# Thank you

For more information:

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