



RICS

Robotic & Industrial Complex Systems

W O R K S H O P

TECNOLOGIAS
MARINHAS 2019

Multirobot System for Marine Environments

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Some Background

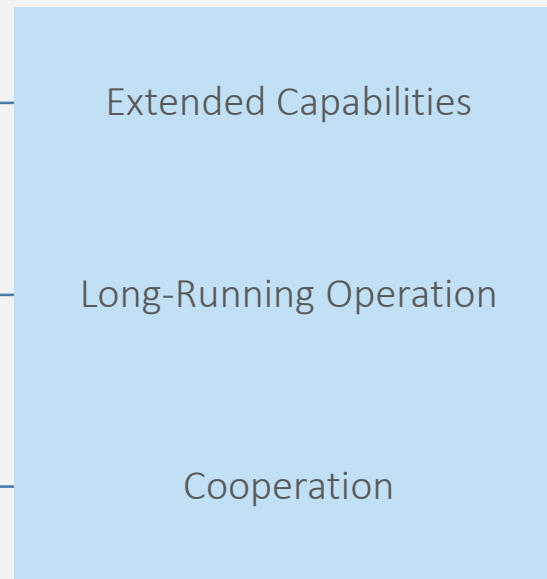


Concept

USV – Unmanned
Surface Vehicle



UAV – Unmanned
Aerial Vehicle



Concept



USV

This vehicle ensures long-range transport and in adverse weather conditions



UAV

Extends the team's perceptive capabilities. Able to land in the water



Long-Running Operations

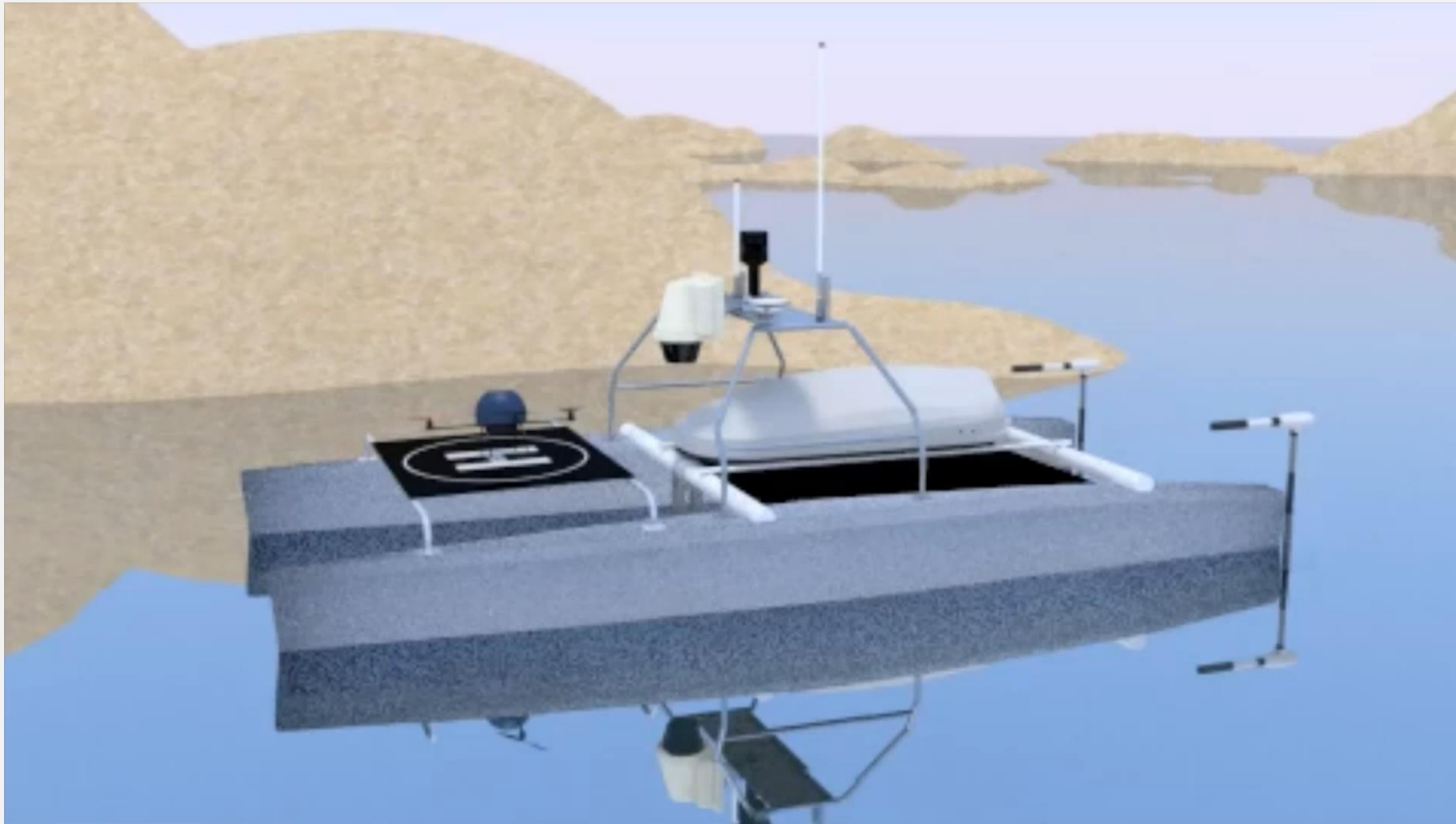
Exploring the greater energy autonomy of the Surface Vehicle the team can do longer missions



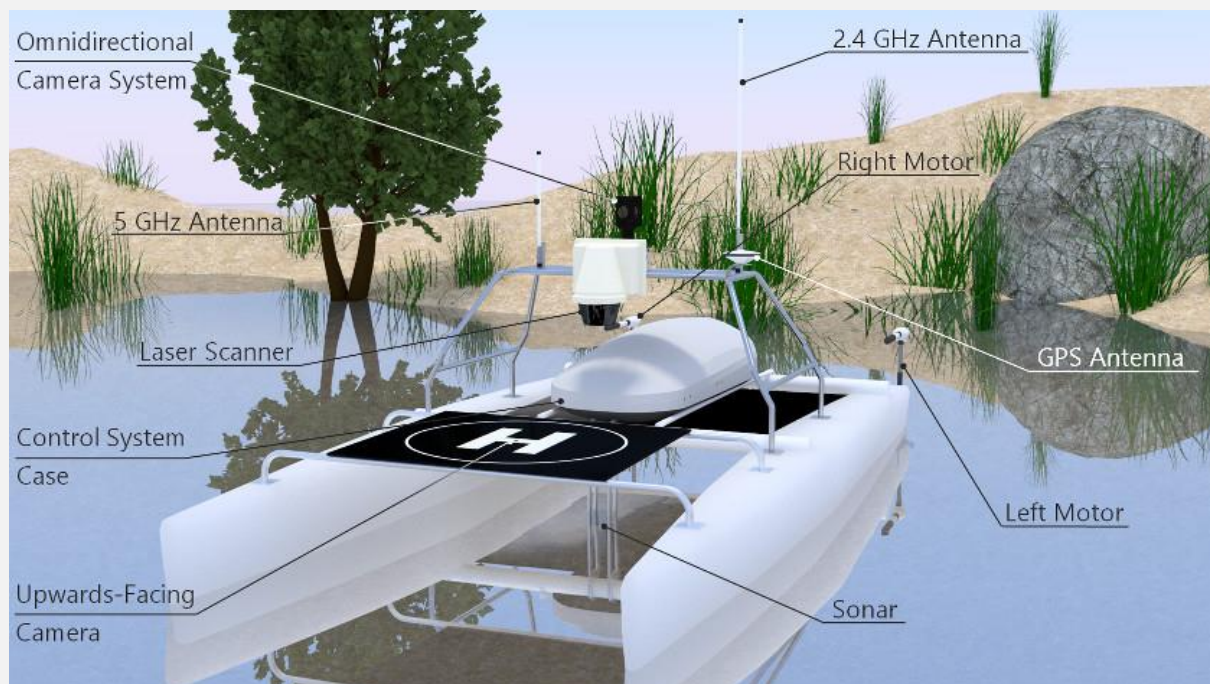
Extended Capabilities

Cooperation between vehicles provides better efficiency

Concept



USV



Locomotion

Diferential Propulsion

Perception

Several sensors able to detect obstacles and environmental parameters

Autonomy

Able to accomplish missions based on georeferenced points while avoiding obstacles

UAV



Locomotion

Multi-rotor VTOL able to land on water

Perception

Equipped with Multispectral Cameras

Autonomy

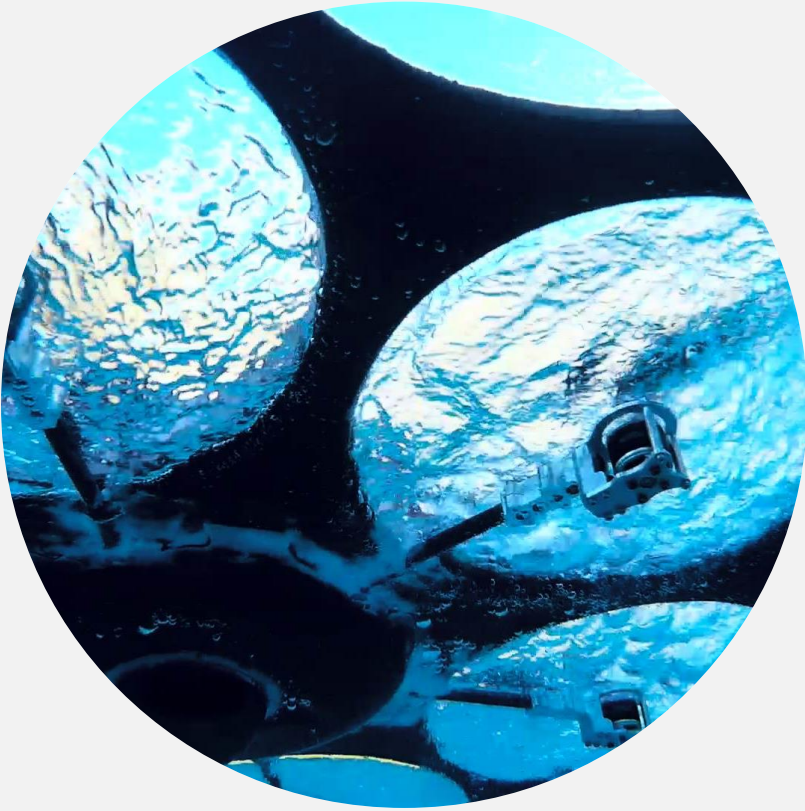
Able to follow geolocalised way points

The Team



A ROS-enabled catamaran-like
Autonomous Surface Vehicle with 4.5 m long

WVIGIL-R6 Development

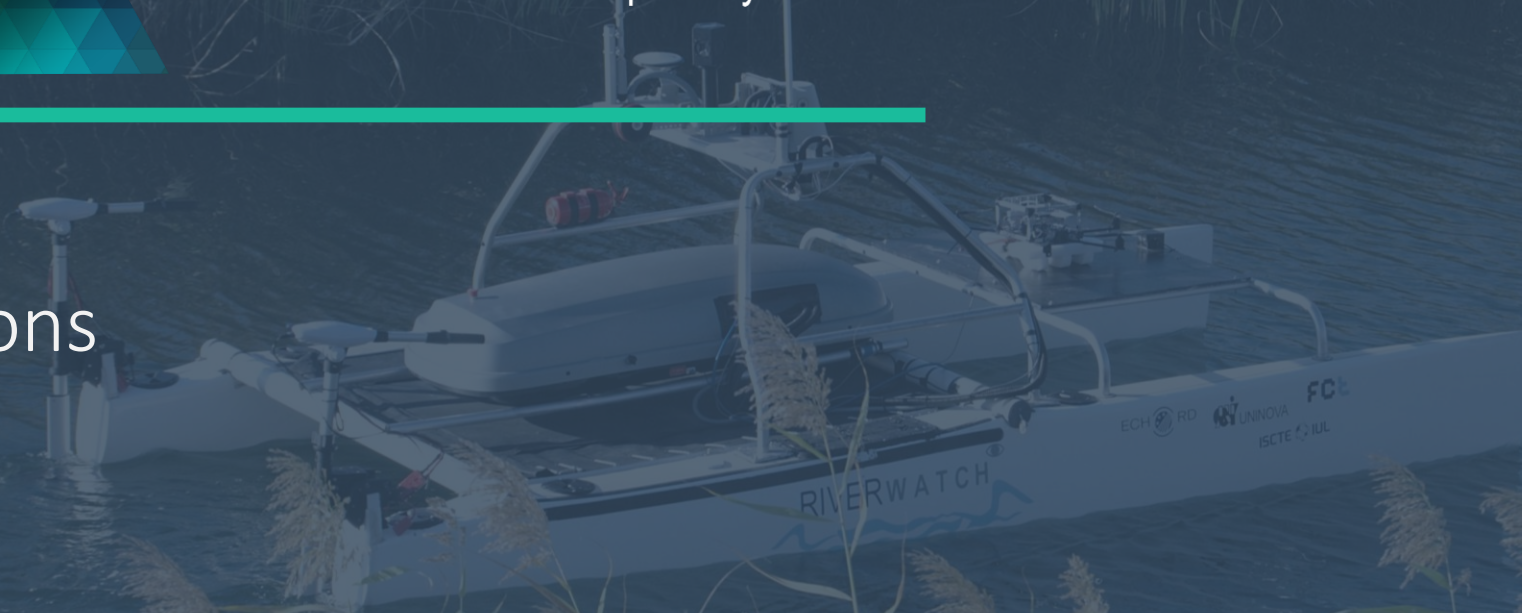




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Applications



Harbour Monitoring



Robotics Exercise with the Portuguese Navy



DRONES4GOOD – Migrants Detection



We participated in the 2017 Drones4good award as one of the 10 semi-finalists.

Drones4good is Mission Statement:

“The UAE Government invite the most innovative and creative minds to find solutions that will improve people’s lives and provide positive technological solutions to modern day issues.

This Award is designed to offer the people of the world an opportunity to really make a difference. With a commitment underlined by the significant prize fund”

In 2017 the Competition received 1000 applications from 57 countries.

DRONES4RIGHT2LIFE



DRONES4GOOD – Migrants Detection

جائزة الإمارات للطائرات
بدون طيار لخدمة الإنسان
THE UAE DRONES
FOR GOOD AWARD



DRONES4RIGHT2LIFE

جائزة الإمارات للطائرات
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THE UAE DRONES
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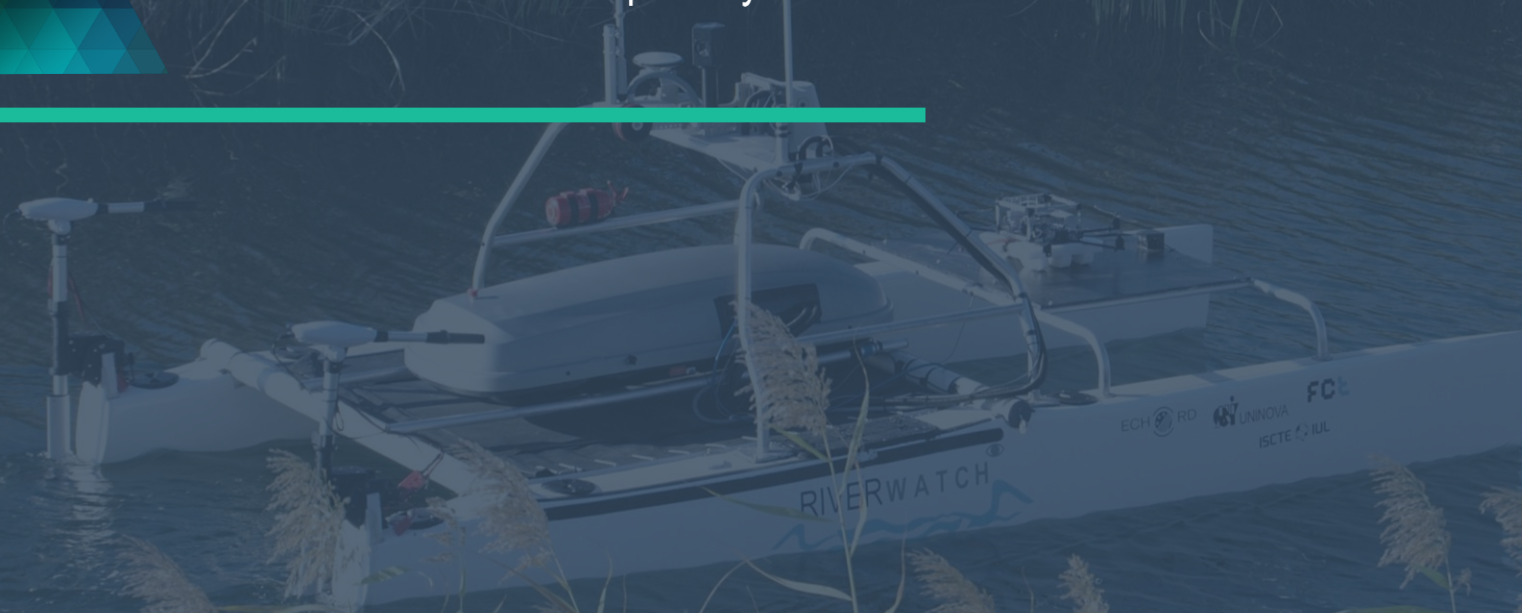




RICS

Robotic & Industrial Complex Systems

Team



About Us



Mobile Autonomous Robotic Systems

Main Research Areas:

- Multi-Robots Collaboration using Shared Perception and Visual Attention: Applying these Developments to Different Areas: Marine, Agriculture, Industry, ...
- Applying Field Robotics to Industry 4.0: eMerging the Two Different Research Areas Inside RICS.

MARS Team



Prof. José Barata
Coordinator



André Lourenço
3D Perception



Eduardo Pinto
Hardware



Ricardo Mendonça
2D Perception



Francisco Marques
Navigation



Manuel Silva
Technician



Carlos Simões
Hardware



Pedro Prates
UAV Development



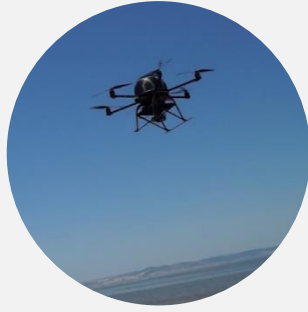
Luis do Ó
UAV Development

Developed Robots



Pelagi

ASV – Echord Riverwatch



Vigil R6

UAV, Echord Riverwatch, RoboSampler



Vigil WR6

Waterproof UAV



Vigil WR7

*UAV - Finalist UAE 2017 Award
Drone for Good*



Helius R2



Helius R3



Final Thoughts



Portugal has Human Resources enough qualified to become one leader in Marine Technologies, particularly in Field Robotics and Artificial Intelligence



But we need to make this goal an objective of the all Society



For that we need to do things, we need to build our own systems, making mistakes, and YES, in some cases REINVENTING the WHEEL, if this brings experience to build different types of locomotion.



Companies, Universities, Research Centers, the NAVY need to cooperate to create the Sea Oriented Thinking, generating knowledge, creating products, and showing the Portuguese society what we are able to do.

Final Thoughts

The most difficult thing is the decision to act, the rest is merely tenacity. The fears are paper tigers. **WE** can do anything **we** decide to do. **WE** can act to change and **make our dreams a reality**; and the procedure, the process is its own reward.

Adapted from Amelia Earhart



Thank You

The most difficult thing is the decision to act, the rest is merely tenacity. The fears are paper tigers. You can do anything you decide to do. You can act to change and control your life; and the procedure, the process is its own reward.

For More Details Please Check
rics.uninova.pt