RICS

Robotic & Industrial Complex Systems

RICS

Detection and Removal of Water Hyacinthin Alqueva

The problem

Water hyacinth is a free-floating perennial aquatic plant native to tropical and sub-tropical

- Rise above the surface of the water as much as 1 meter in height
- A colony of water hyacinths can double its size every 8 to 12 day
- Plants grow and reproduce to form dense mats that choke out native species

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The problem: Infestation of Alqueva

Hindrance to water transport

Access to harbours and docking areas can be seriously hindered by mats of water hyacinth

Clogging

Clogging of intakes of irrigation, hydropower and water supply systems.

Blockage of canals and rivers

Takes hold in rivers and canals it can become so dense it can cause damaging and dangerous flooding.

Micro-habitat

The diseases associated with the presence of aquatic weeds in tropical developing countries are among those that cause the major public health problems

Fishing

Access to sites becomes difficult when weed infestation is present,

Reduction of biodiversity

Here water hyacinth is prolific, other aquatic plants have difficulty in surviving.

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The problem: Current Control Methods

Biological control

Several insects and fungi have been identified as control agents for water hyacinth

Chemical control

The application of herbicides for controlling water hyacinth has been carried out for many years

Physical control

Mechanical removal of water hyacinth is seen as the best short-term solution to the proliferation of the plant

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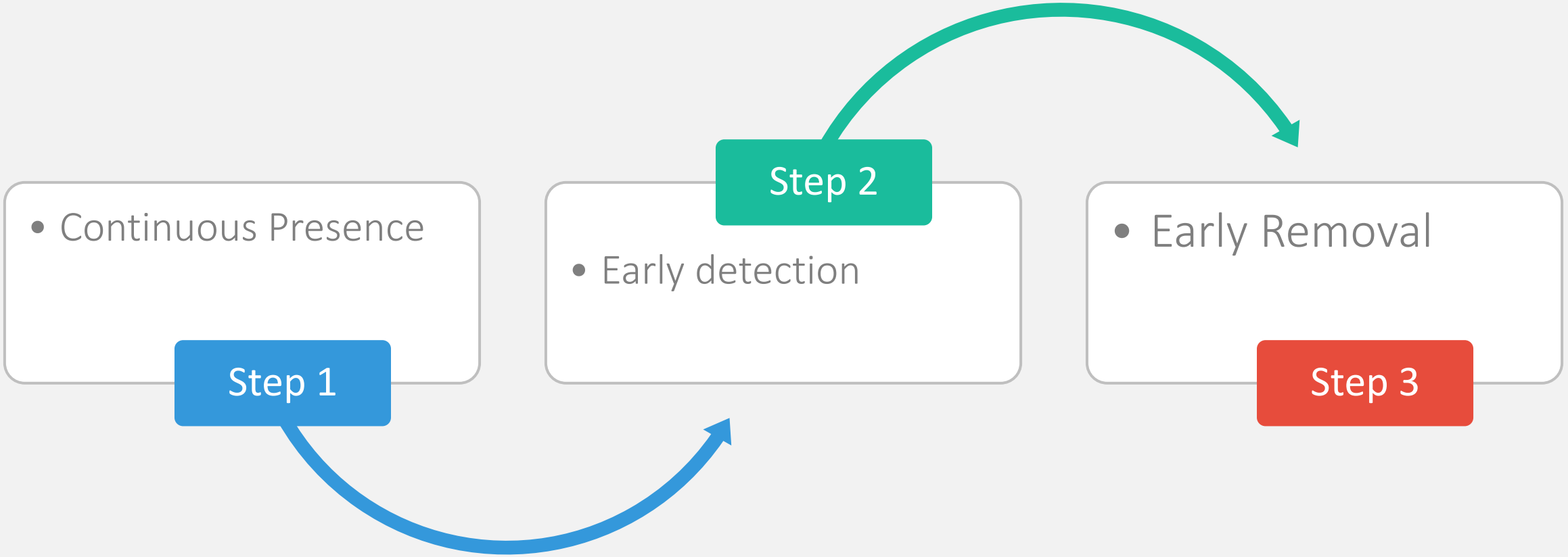
Our Solution



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Our Solution

Autonomous Surface Vehicle

Increase of the autonomy to 12hours by using flexible solar panels and strategic located charging stations

Unmanned Aerial Vehicles

Team of multirotor UAV (in study the use of a ominidirectional airship) capable of landing in water for bigger autonomy and reliability of the system.

Early Detection

Detection of the aquatic weeds using multiespectral image techniques with many literature reporting sucess rates near 100%..

Early Removal

Possibility to equip the ASV with a mechanical system to destroy the weeds immediately after detection.

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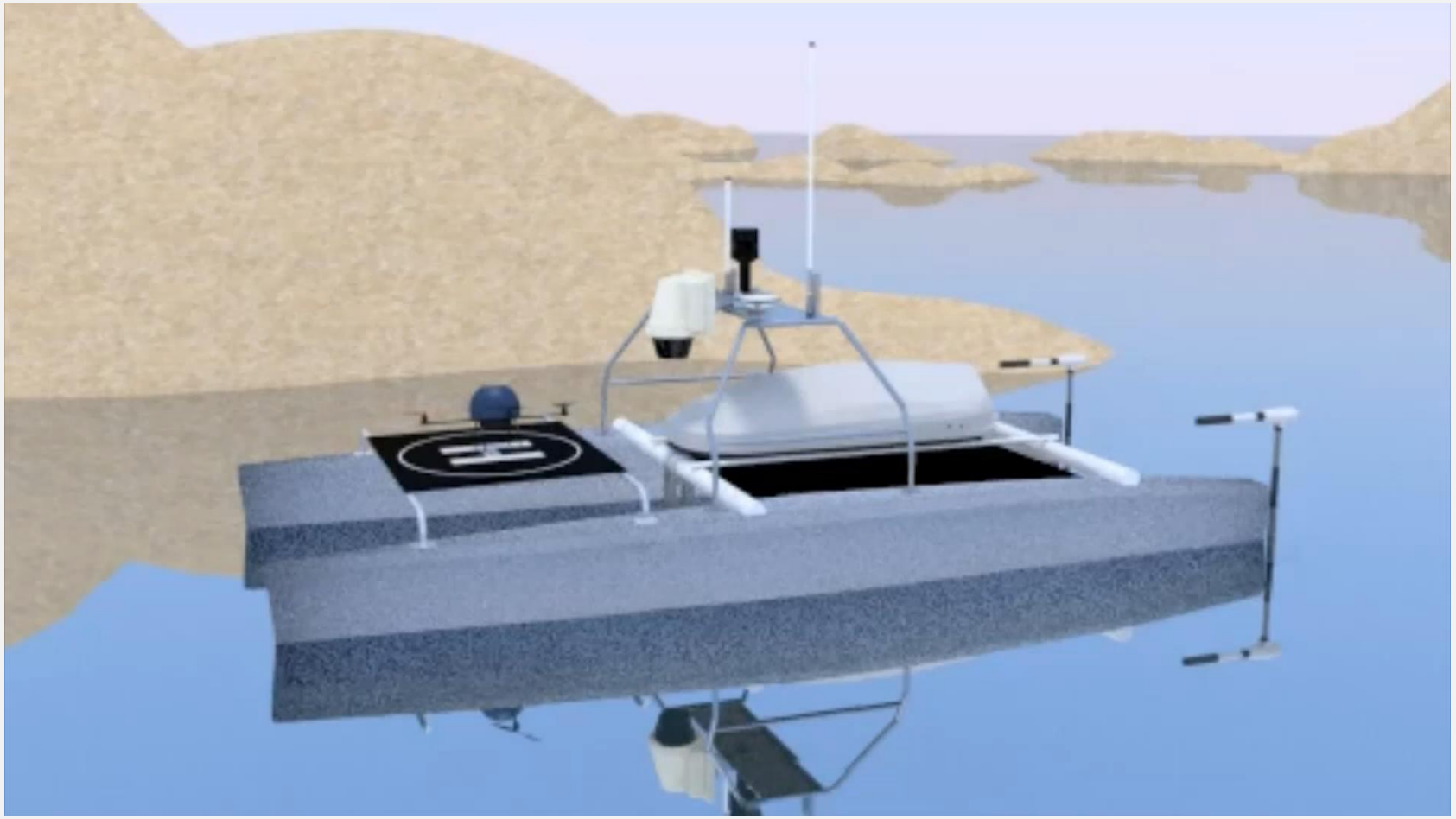
Our solution



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About Us

Mobile Autonomous Robotic Systems

Main research areas:

-Multi-robot cooperation and collaboration using shared perception and visual attention techniques. Developments that are subsequently applied to industrial applications, environmental, radiological monitoring, surveillance and, search and rescue operations.

-Mobile robotics techniques applied to manufacturing production systems leveraging on the groups experience on both subjects. Furthermore, in both areas the research team aims innovate by being tightly linked with real useful applications and industry partners.

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Related projects

Helios

Development of a omnidirectional airship with a lenticular shape.

2008-2011

Introbot

The project targeted the development of an all-terrain robot for surveillance tasks.

2010-2012

Echord Riverwatch

Development of a marsupial robotic team for environmental monitoring of riverine environments.

2011-2014

Introbot Sampler

The project addresses the development of a ground-aerial robotic team for environmental monitoring in estuarine environments.

2013-2016

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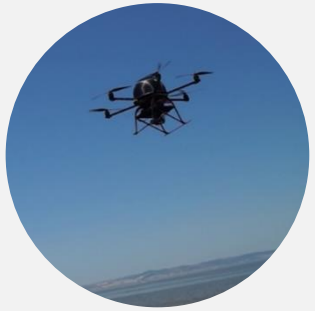
The robots

Pelagi

ASV – Echord Riverwatch



Vigil R6

UAV, Echord Riverwatch, RoboSampler

Vigil WR6A

Waterproof UAV

Vigil WR6B

UAV - Finalist UAE 2017 Award Drone for Good

Helius R2

Helius R3

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Thank you

Please check our website and other videos of our work at

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