

Iceland 
Liechtenstein
Norway grants

Closing Event of the PT02 Programme

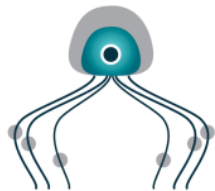
Integrated Marine and Coastal Waters Management “Achieved Outcomes”

December 6th - Lisbon

Motivation

www.medusadeepsea.com

Sep. 2015 - Apr. 2017



MEDUSA
DEEP SEA

OPENING THE DEEP-SEA FRONTIER

MOTIVATION

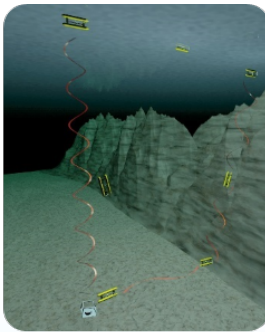
Reinforce the national capacity for mobile autonomous and extended range deep-sea exploration and monitoring, affording scientists and commercial operators means to open and explore the deep sea frontier and contribute for the Good Environmental Status in oceanic and coastal areas.

MISSION

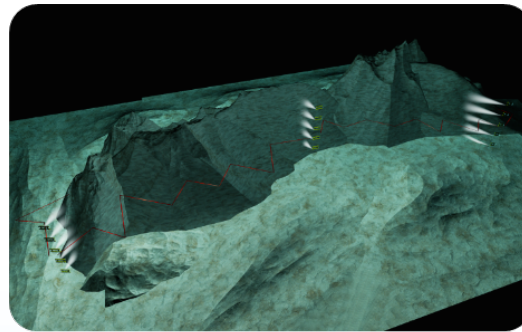
Develop a system of multiple autonomous vehicles for ocean exploration and monitoring, capable of operating at water depths of up to 3000 meters, with light logistic requirements.

Capabilities

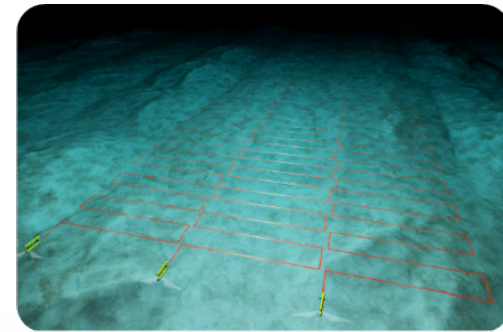
- MEDUSA_DS is a deep-sea AUV capable of covering deep-sea areas of the remote oceanic areas up to **3000 m depth**.
- MEDUSA_DS system was designed to comply with the requirements of **three typical scenario missions** (while leaving the flexibility for other future developments):
 - Scenario 1 - data download and water column profiling,
 - Scenario 2 - resource exploration and mapping, and
 - Scenario 3 - high resolution habitat mapping.



Scenario 1



Scenario 2



Scenario 3

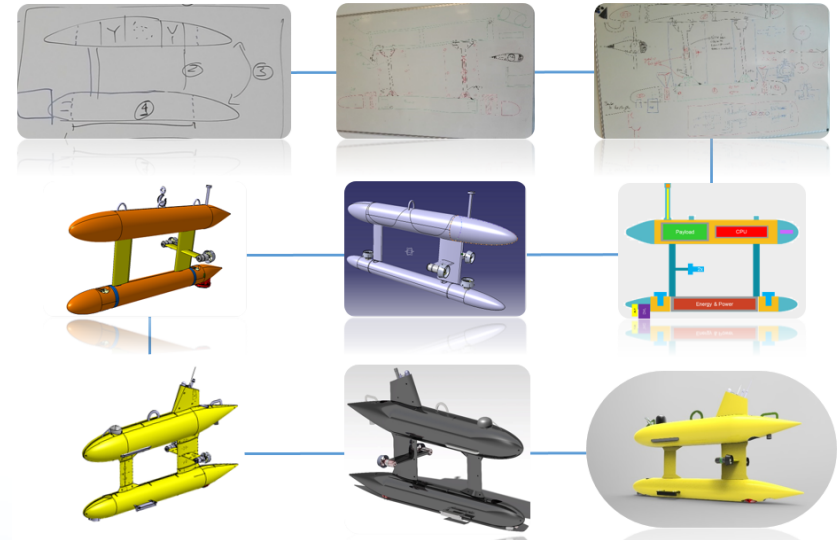
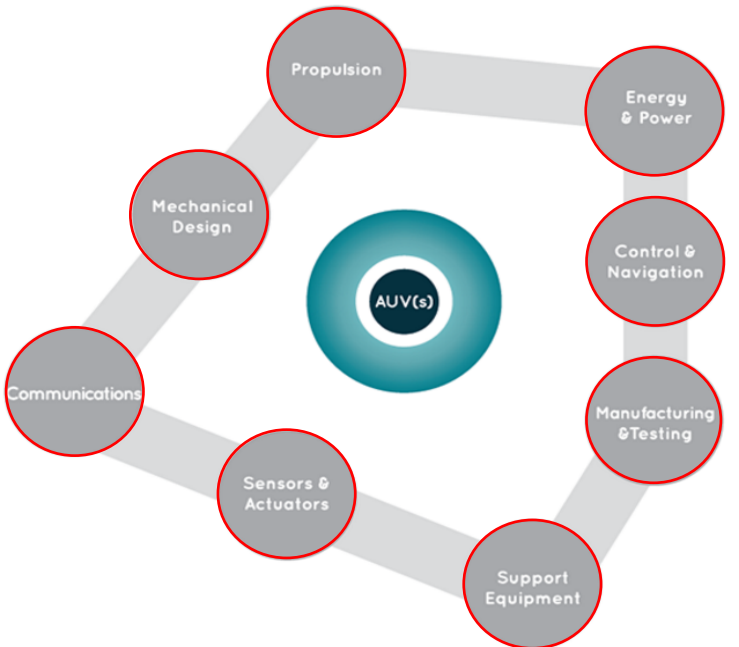
Project team & development

CONSORTIUM

PROJECT CO-FUNDED BY

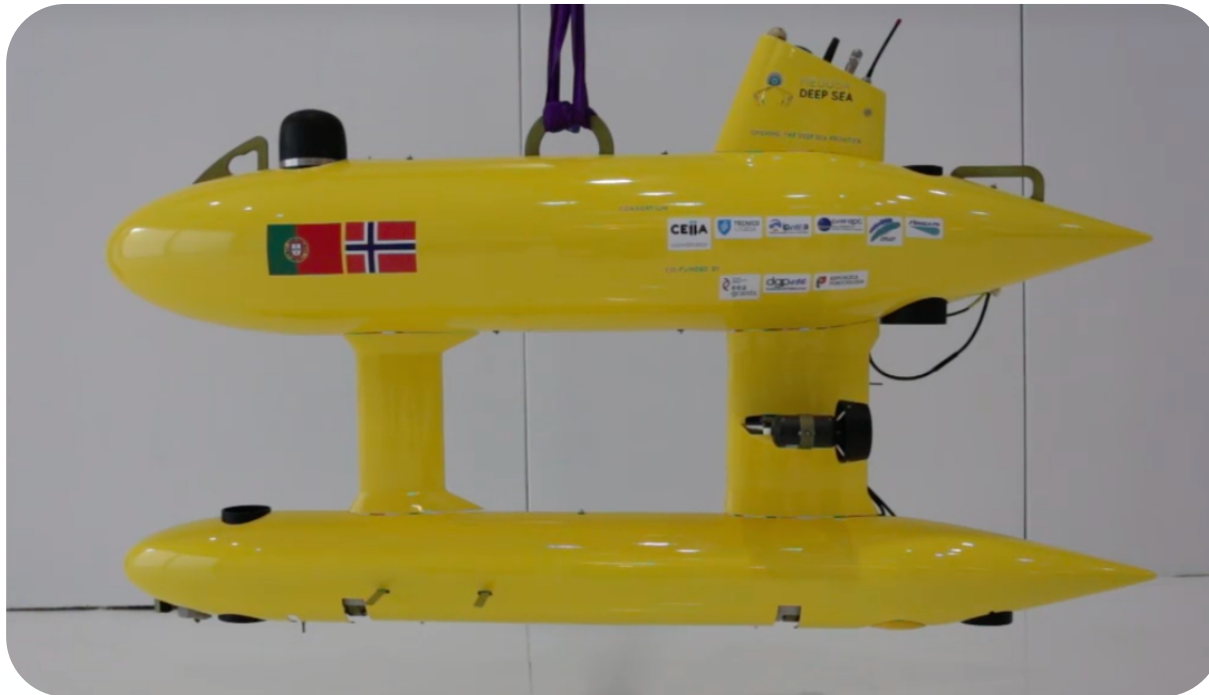


Coordinator



Main outcome

Medusa's characteristics & applications



MAIN CHARACTERISTICS

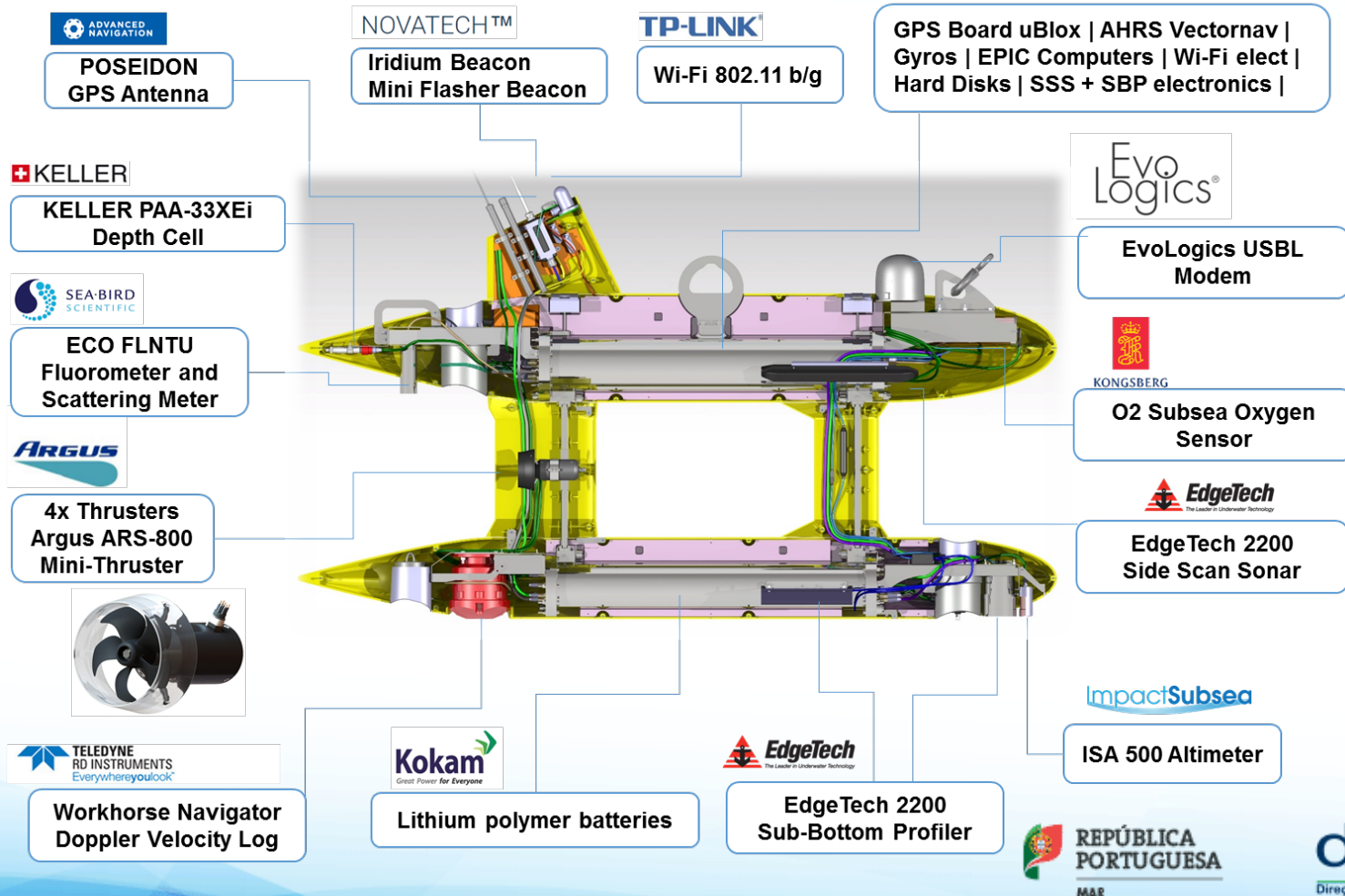
- Type: Double hull AUV
- Size: 2.8 m x 1.5 m x 0.7 m
- Weight: ~350 kg
- Endurance: ~7 hrs
- Range: ~30 km
- Maximum depth: 3000 meters
- Nominal speed: 1 m/s
- Launch and recovery: Crane/Cradle

APPLICATIONS

- Seabed Mapping
- Geophysical Survey
- Subsea Assets Inspection
- Oceanographic Survey
- Search and Recovery

<https://www.youtube.com/watch?v=6y5eLKGRJq8>

Systems Breakdown



Next episodes



Important outcome

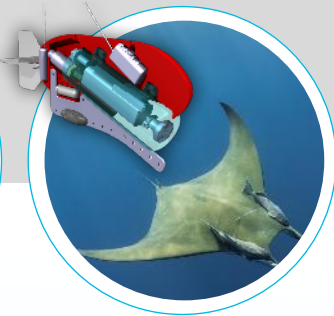
Science meets engineering

- Scientists, engineers, and operations staff working together in close collaboration;
- Scientists should pose the research questions, engineers devise instruments and equipment for the pursuit of scientific knowledge, and operations staff focus on effective operation of new products and technology;
- CEiiA's brings its experience in mechanical design, structural and hydrodynamic analysis, electronics and systems integration to conceive, develop and test new products and technologies

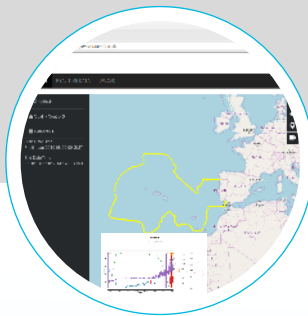
PRODUCT DEVELOPMENT



Deep Sea Autonomous Underwater Vehicle



Towed Tagging Devices for Sea Animals



Ocean Data Management System

TESTING & PROTOTYPING



Underwater Structures and Tools

Positive Externalities Bigger than "a vehicle".

Further projects

- The members of the Consortium have launched further and more ambitious projects on "submarine robotics";
- New projects have even more partners and wider scopes (different types of vehicles; *a system v.s one vehicle*).

Increasing capacity

- CEIIA ended up creating an "Ocean & Space Unit";
- We have now more than 20 young and talented engineers at the "O&S Unit"; Soon we will be 40.
- The O&S Unit benchmarks internally being presented as an example of pro-activity and effectiveness (*a better way to make things happen*);



Positive Externalities Bigger than “a vehicle”.

Different types of positive externalities

- We are working on new projects with other Norwegian partners (business initiatives that may fit in the next EEA Grants Programme);
- We have gained external visibility and now we have access to other opportunities (e.g. animal tags for BBC);
- We are bringing engineering students to our “*ocean team*” (master thesis; internships; summer school);
- Medusa_DS has contributed to augment the relative weight of the Ocean in today's *science & innovation agendas*;
- The coming missions at sea with MEDUSA_DS will provide us “maritime experience”.



... off course
MEDUSA_DS has
got its own selfie
with Marcelo!

