ERVO
EUROPEAN RESEARCH VESSELS OPERATORS

17° ERVO MEETING
GALWAY, 10-11 JUNE 2015

THE PARFAMAR PROJECT: NEW INTEGRATED TECHNOLOGY FOR SHALLOW WATER SURVEYS

Lorenza Evangelista

IAMC - Institute for Coastal Marine Environment

CNR- Research Institution

The "Parfamar" constellation

Strengthening of the Research and Training on the marine environment in Southern Italy

MIUR - PROGRAMMA OPERATIVO NAZIONALE "RICERCA E COMPETITIVITÀ" (R&C) 2007-2013

Project n° 1 "Technological Platform for Geophysical and Environmental Marine Surveys" - PITAM

Project n° 2 "Integrated Systems and Technologies for geophysical and environmental monitoring in coastal-marine areas"- STIGEAC

Project n° 3 "TEchnology for the *Situational Sea Awareness*" - *TESSA*

Project n° 4 " Study for the environmental protection and the mitigation Anthropogenic Pollution in the Coastal environment of selected areas of Calabria" - AMICUS

Project n° 5 "Integrated management system for Coastal erosion" - SIGIEC

Project n° 6 "**S**ubmar**I**ne **MU**ltidisciplinary monitoring **S**ystems" - SIMUS

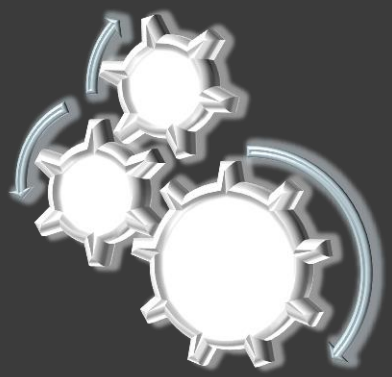
Total = 67 M€

PiTAM and STiGEAC Projects

PON Ricerca e Competitività 2007-2013

Project Partners:

- So.Pro.Mar. S.p.A. (leader)
- CNR-IAMC

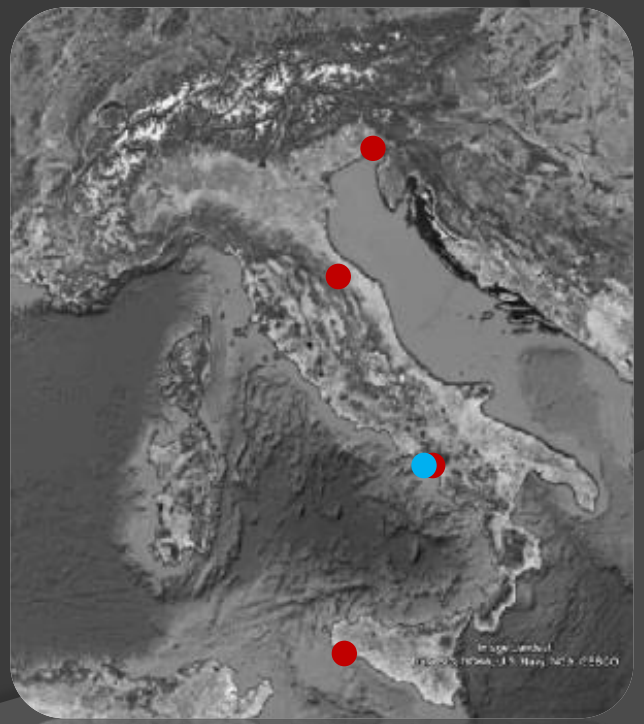


Sub-Contractors:

- Nuovo Arsenale Cartubi
- Giacalone Shipyard
- Desà Engineering
- Baruzzi Geophy

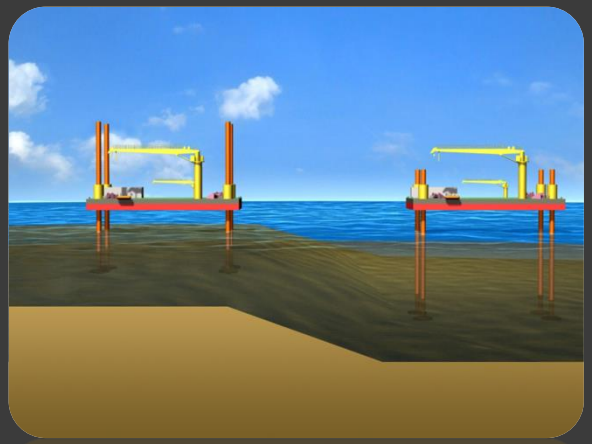
Requirements:

- Innovative & functional Hardware
- Innovative integration of hardware and software systems
- Multidisciplinary prototypes systems
- Modularity and portability features
- High Competitiveness for the execution of scientific and technological research



Development area
Main Convergence Area: Campania (Naples)

The Jack-up barge technology

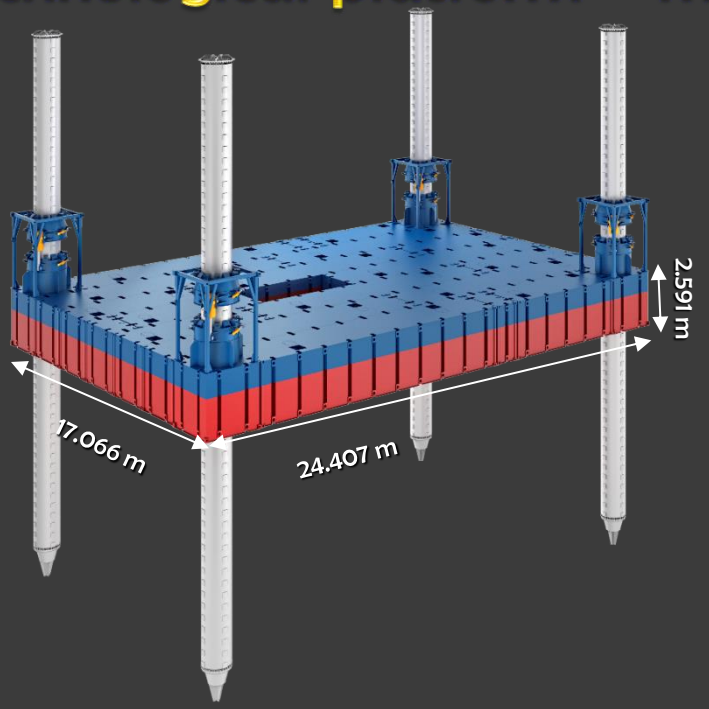


- Indipendent legs or mat supported
- Some are self-propelled to location, but must be moved by tugs
- Legs jacked down to seafloor
- Hull picked-up above water

PON Ricerca e Competitività 2007-2013

New technological platform developed by IAMC-CNR

Technological platform – modular system



Surface: 417 meters^2
Min draft: 1.064 m abt.
Max draft: 1.245 m abt.
Length overall: 36 m
Max operating depth: 25 m
Lifting capacity: 4 x 250 mT
Autonomous drive
Power: 1000 kW abt

Design parameter
Wind: 10 m/s
Speed Wave: 1 m/s
Wave Heigth: 1.5m

Container Module

#7 Modules IsoContainer T20 - 20 feet high cube
#9 Modules IsoContainer T40 - 40 feet high cube
#3 Modules Tamponamento
#4 Modules leg 250 mT
#4 legs

Lift module

Module the lift is performed by hydraulic cylinder pair

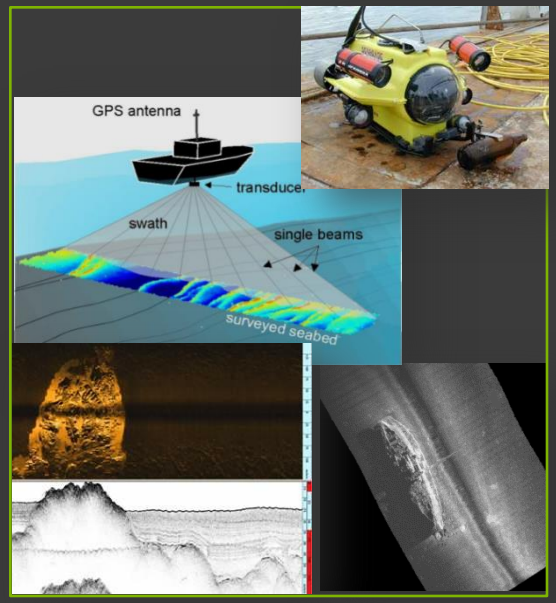
Developed a patented semiautomatic/automatic system based on 46 input signal data (30 analog + 16 digital) monitored by Control System's PLC that let jack-up exceed the lifting speed of 0,4m/min during deployment: certified as "fastest in the world" officially

Technological Platform - Capabilities

- 12-20 scientific and technical operators;
- Endurance: 7 days

Integrated research laboratories for the acquisition of multidisciplinary data with high operational performances

Geophysical Lab



- 3D microbathymetry
- Lase scanning survey
- Termocamera survey
- Seismic reflection survey
- 3D velocity current profiling
- Magnetometric survey

Geochemical Lab

- Sampling water
- Sea-bird profiling CTDs
- Photometric analysis
- Trace metal analysis
- Black-carbon analysis concentration

Geotechnical Lab

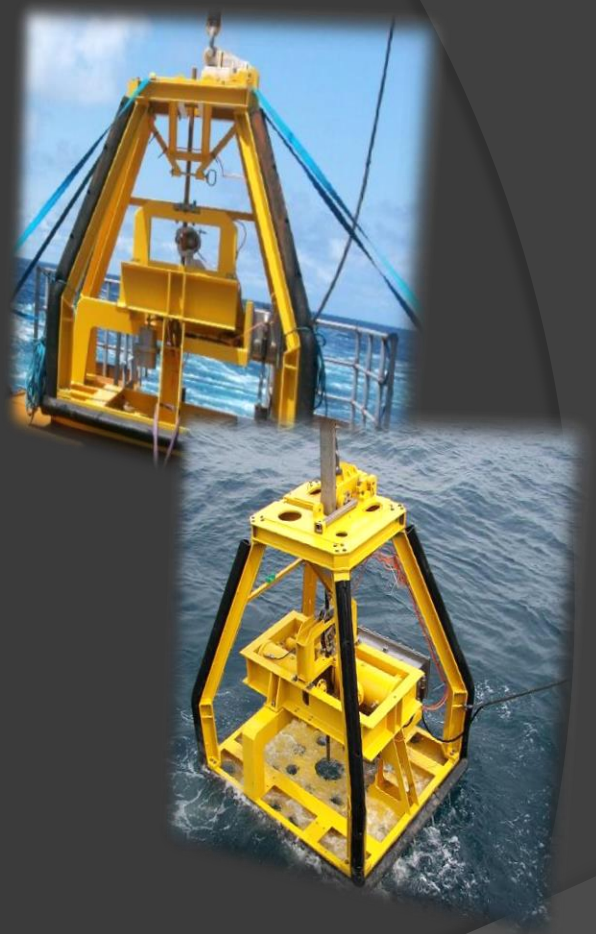
- Sampling core (6m)
- Sea-bed CPT profile up to 50-1500m depth
- Mechanical characterization of soils under static and dynamic stress conditions

Geotechnical lab - sediment coring and sampling

Box-corer 30 Liters

Vibrocore

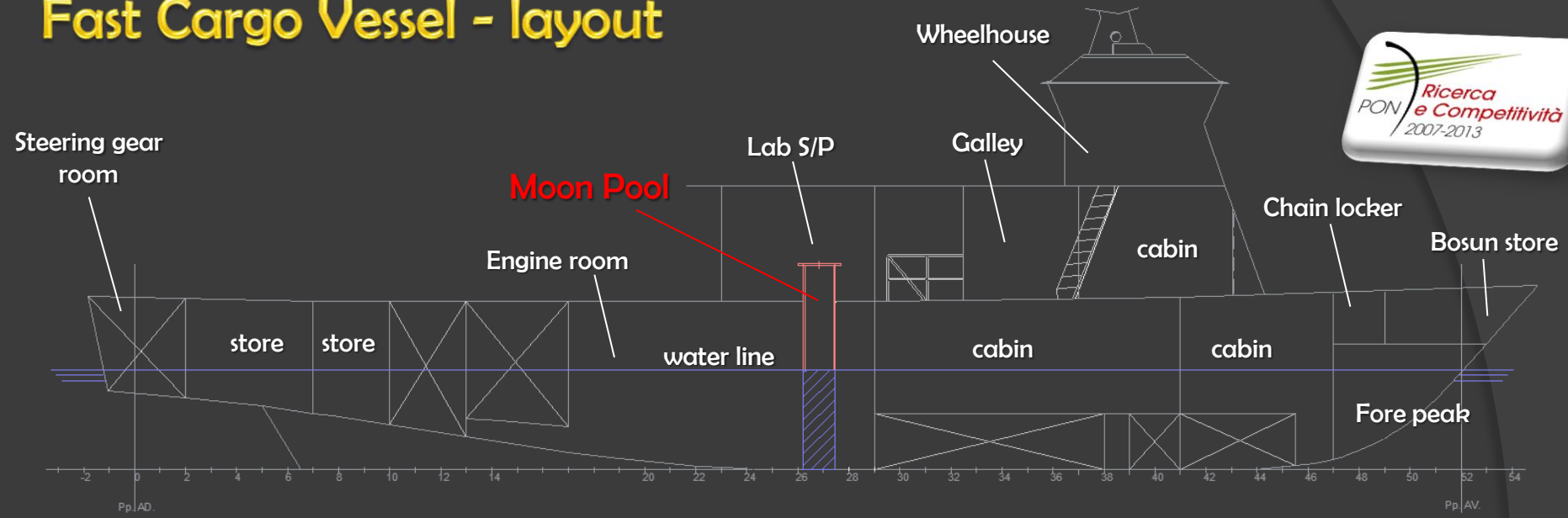
Diameter: ID/OD: 96/101 mm
Length: 3m, 4.5 m, 6 m
Material: Fe320
Core Catcher : stainless steel
Depth rating: 140 meter



ROSON-seabed CPT system

Depth rating : Max. 1500 meter
Driving speed: 20 mm/sec
Electrical motors: 2 x 1.1 kW
Max. Push/pulling force: 50 kN with 10cm² (36mm OD)
Wheel diameter: Ø 350 mm
Mast: 5 meter

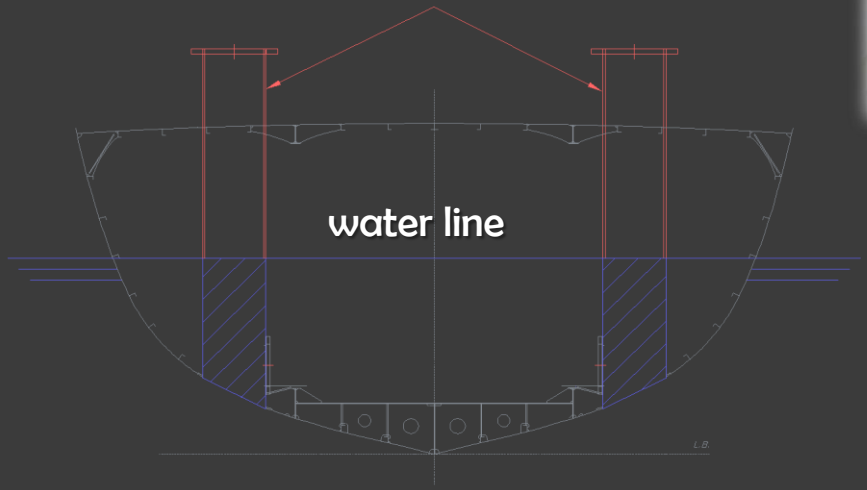
Fast Cargo Vessel - layout



Length: 28.45m
Breadth: 7.00m
Heigth: 3.20m
Draught: 1.90m
Payload: 40t
Main engine power: 2x735 kW
Auxiliary engine power: 1x200kW + 1x50kW
Speed: 16 kn
technical operators: 5 people
scientific operators: 8 people
A-frame: 5t SWL

Fast Cargo Vessel

Fast Cargo Vessel – moon pool

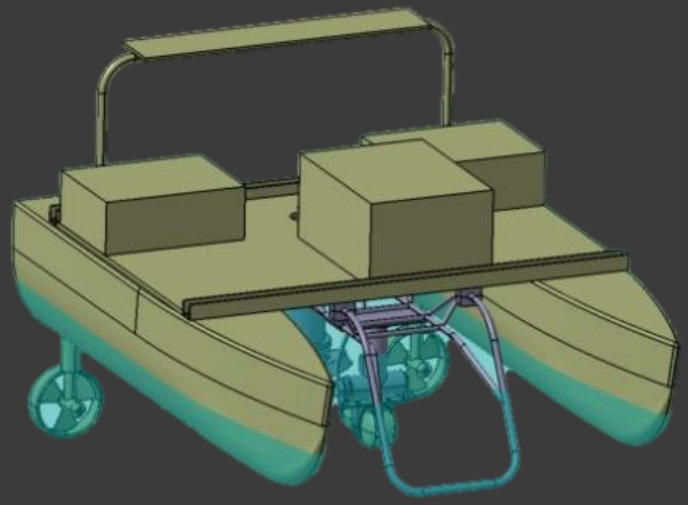


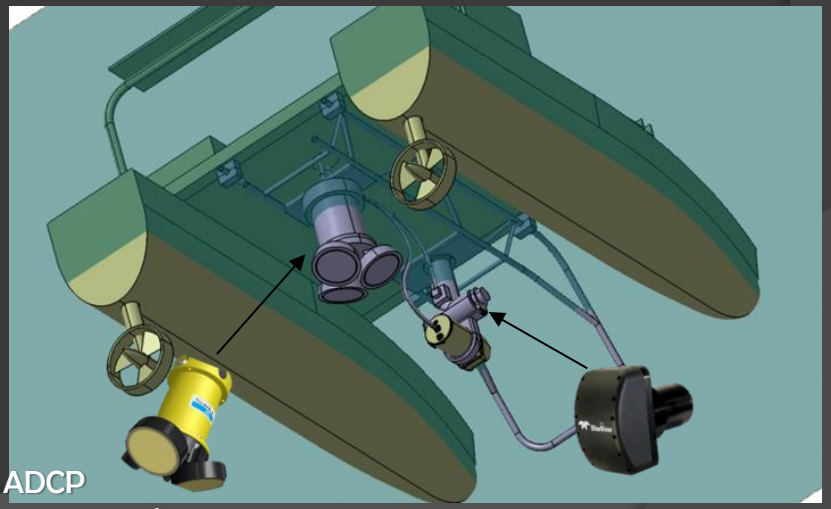
Frame 27-28

Innovative semi-autonomous systems developed by IAMC

Unmanned Marine Surface Vehicles technical specification and layout

LENGTH	2m
BEAM	1.5m
DRAUGTH	0.4 m @ 120 Kg
HEIGTH (WITH ROLL BAR)	1.2 m
HULL	35 Kg
THRUSTERS	10 Kg
BOX CONTROL	10 Kg
BATTERY BOX	30 Kg
MAX PAYLOAD (INCLUDING BOX PAYLOAD)	35 Kg
POWER ENGINES	300 W (x 2)
ENGINES PUSH FORWARD	13 Kgf (x 2)
THRUST ENGINES IN REVERSE	12.8 Kgf (x 2)
SUPPLY VOLTAGE (MIN-MAX)	35-55 V
SUPPLY VOLTAGE (NOMINALE)	46.8 V
CAPACITY	69.6 Ah
CHARGING TIME	12 ore





ADCP
Velocity current profiler

3D microbathymetry

Innovative semi-autonomous systems developed by IAMC

ALENTO DAM

June 4th 2015

New technologies...."Ideas & Innovation"...

Thank you for your attention!

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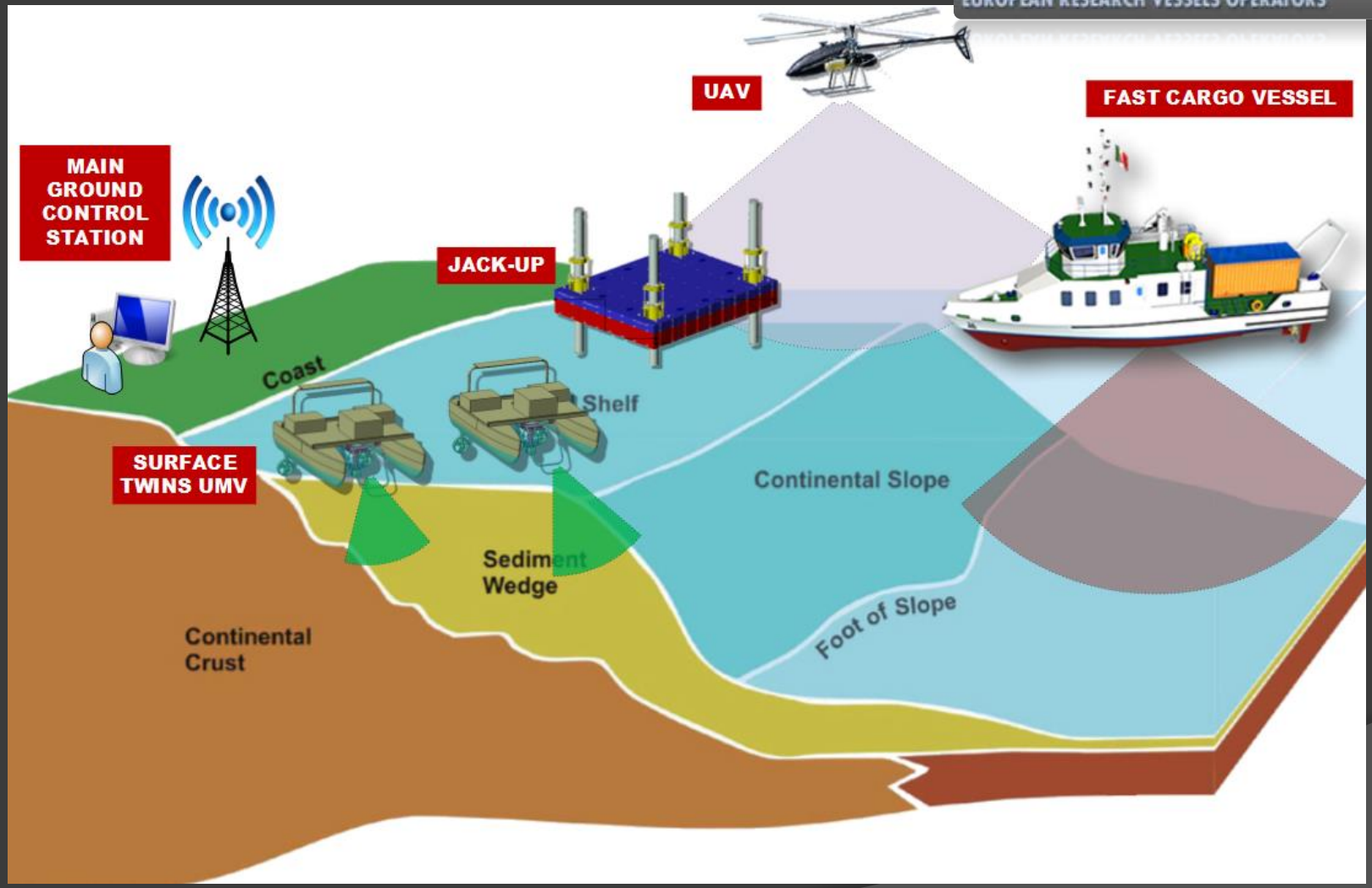

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