Vigo as a high-performance Hub in the construction of Research Vessels. Current status, opportunities and future perspectives for 21st century Research Vessel

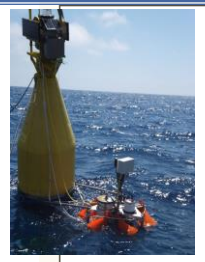
Juanjo Dañobeitia, Arturo Castellón, Luis Ansorena, Roberto González and Jordi Sorribas
UTM-CSIC, Barcelona, Spain

26-ERVO meeting
10th-13th June 2024
Vigo, Spain

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

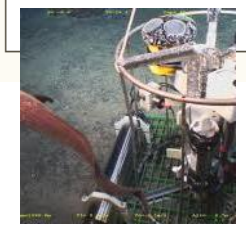
Research vessels and other marine platforms, key structures in Ocean Observation Systems. Benefits and opportunities for the Blue Economy

- 5 million jobs in EU
- Shipbuilding about 450 thousands jobs in EU
- Offshore wind now employs about half million related industries
- Fishery research more 400 thousands jobs
- New jobs related with Blue growth
- The ocean is the new Blue economic frontier
- Grand challenges
  - Climate change
  - Biodiversity & Ecosystems (Anthropogenic action-loss of diversity, limited resources)
  - Pollution (toxic algal, pesticides, plastic)
  - Geohazards (Earthquakes, Tsunamis, Submarine slides)
- We need knowledge, information and effective Management



Ocean buoy

Cabled observatories



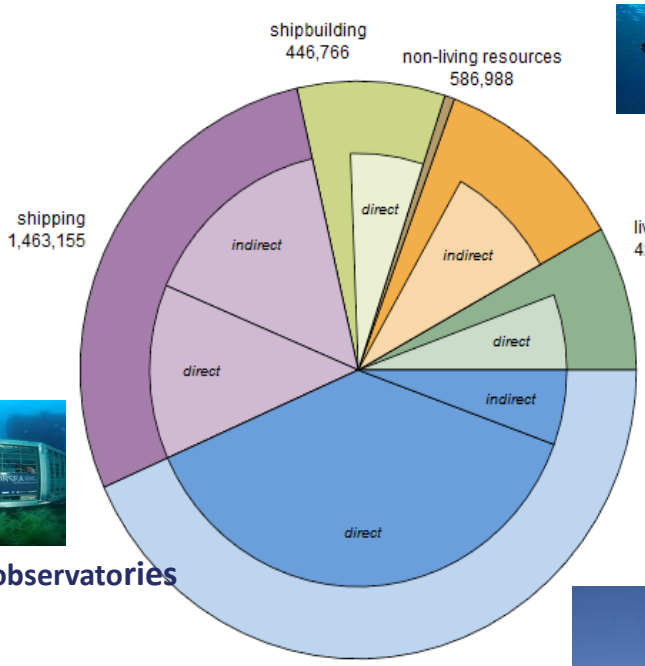
Deepsea floor observatories

Argo Floats

Gliders

ROVs

Research Vessels



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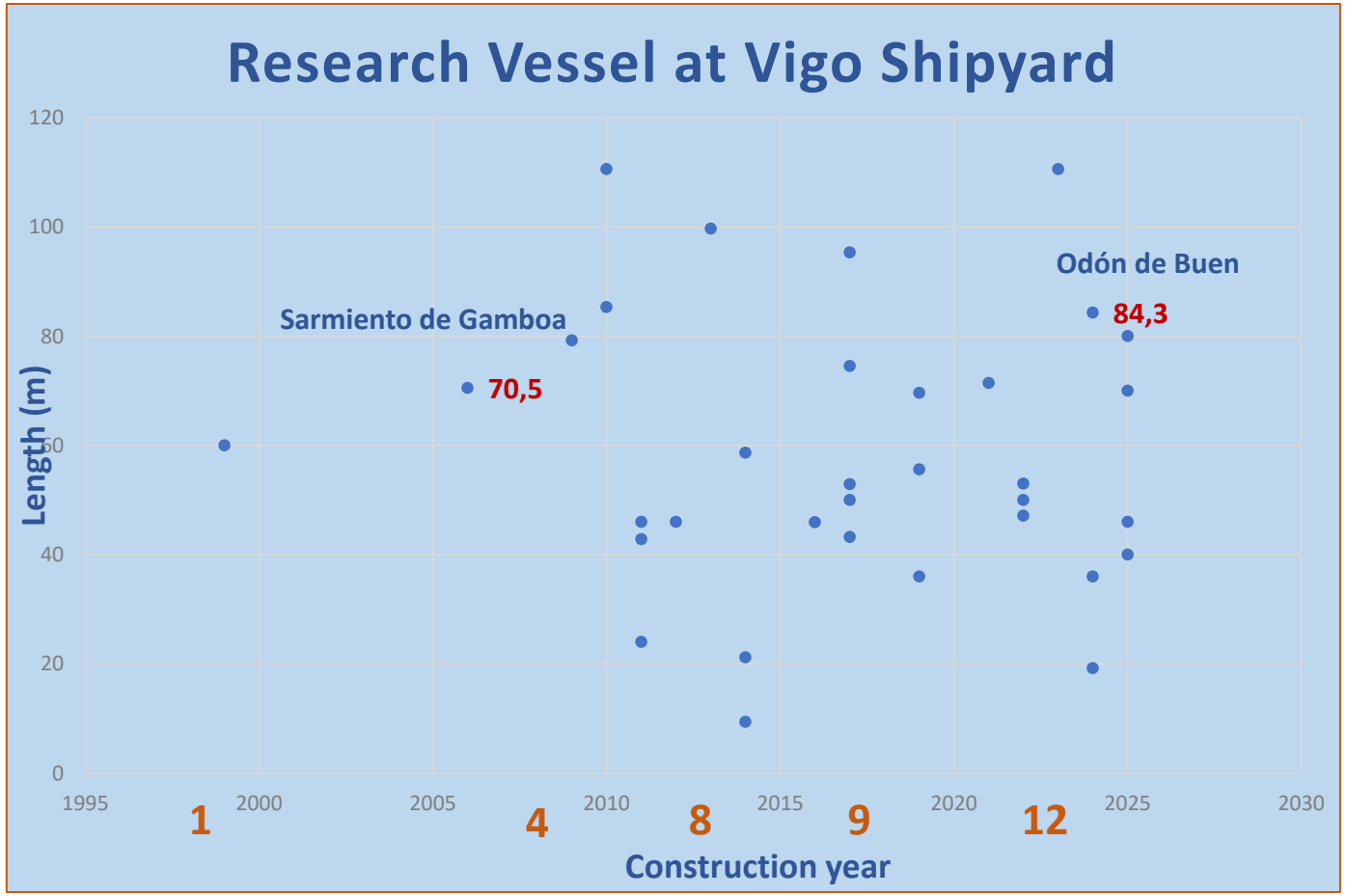


Research Vessel evolution construction in Vigo shipyards, **since 2006 Year RV Sarmiento de Gamboa**, versus length. Dots represent RVs, and red numbers display the constructions per five-year period

New concepts in RV design and construction

- Multidisciplinary
- Large decks for deployment of different underwater devices interoperable with other RVs of the same category
- silent and environmentally friendly
- energy efficiency, hydrodynamic designs, efficient blades (>90%)
- Large multipurpose laboratories
- Comfortable rest areas
- Acquisition and Data management almost in real time

14 LIFE BELOW WATER

THE GLOBAL GOALS

Research Vessel medium size for regional survey 35-60 m length

Angeles Alvariño, 46 m, IEO
2012

Kaharoa II, 36 m, NIWA
2024

V-149, 46 m, R A Azores
In construction

Tom Crean, 53 m, Marine Institute
2022

Almostakshi, 56 m, KISR,
2019

David Packard, 50 m MBARI
2022

Research Vessel large size for Oceanic survey > 60 m length

Thorunn Thordarttir, 70 m, MFWI
2024

SVEA, 69,5 m, SLU
2019

Anna Weber-Van Bosse, 80 m, NIOZ
2025

B.A.P. Carrasco, 95,3 m, Marine de Guerra del Perú
2017

Odón de Buen, 84,3 m, CSIC-IEO
2024

RRS Discovery, 99,7 m, NERC-NOC
2013

Innovation

New actors are incorporated into the ship's design: technicians and scientists define operations and infrastructure.

***Shipyards are incorporating this know-how**. The CSIC, in Spain, leads this new perspective due to its experience.*

- *Mobile equipment*
- *New working deck layout*

*The evolution from **fishing research vessels** to **fully oceanographic, multipurpose** vessels is a common step in different academic/research institutions.*

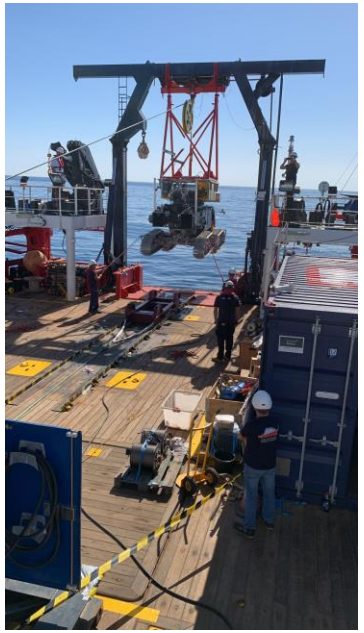
Name	***Main design***
R/V Ángeles Alvariño	Fisheries
R/V Ramón Margalef	Fisheries
R/V Sarmiento de Gamboa	Multipurpose
R/V Miguel Oliver	Fisheries
R/V Emma Bardán	Fisheries
R/V Vizconde de Eza	Fisheries
R/V Hespérides	Multipurpose
R/V García del Cid *	Multipurpose
R/V Cornide de Saavedra	Fisheries

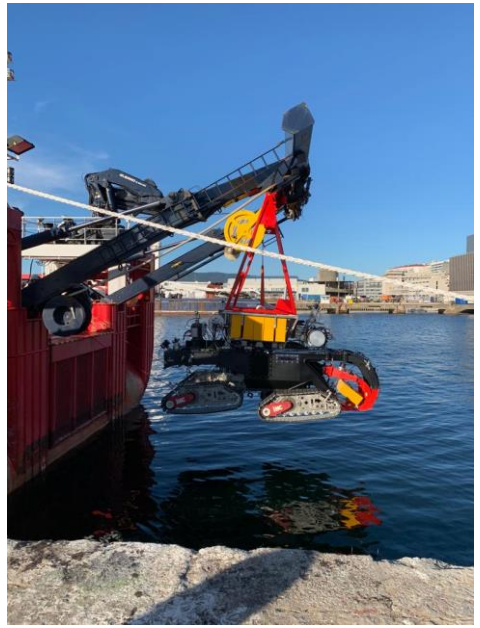
*Built as a fishing vessel, it was renovated in the 80s into a multipurpose vessel.

Innovation

*New equipment – **New operations**- New gears and cables*

- *Deep sea*
- *AUV*
- *ROV*
- *Submarines*

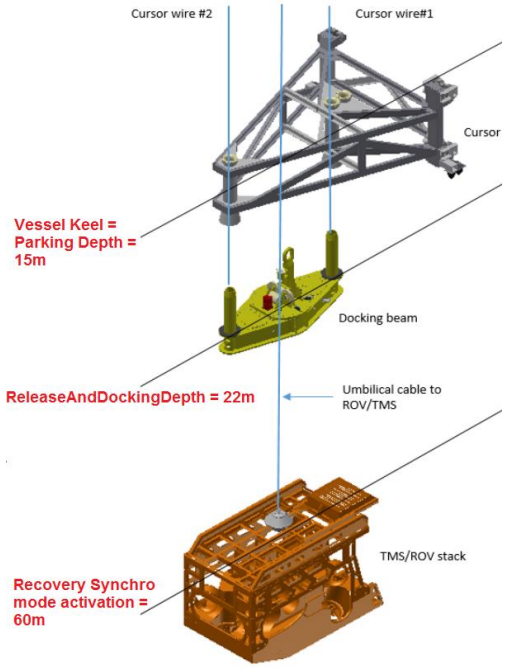




Innovation

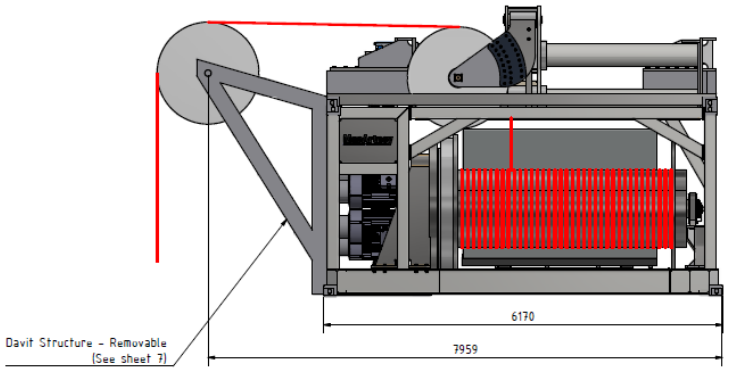
*New equipment – **New designs**-Eurofleets+*

Dual mode handling
Deployment-recovery systems
in hangar through moon-pools



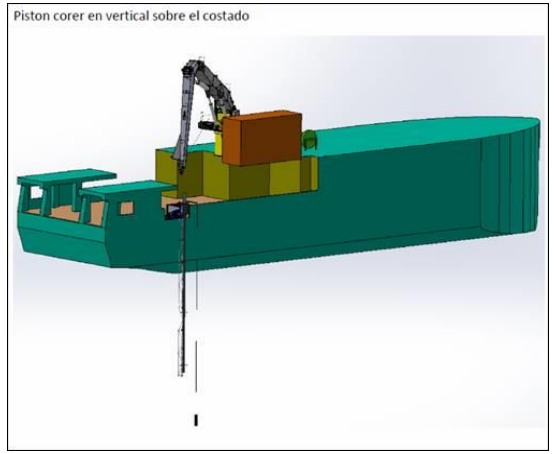
SEAONICS™

Deep-sea winch
electric, heave compensated,
interoperable (ISO 20´container)



MacArtney
UNDERWATER TECHNOLOGY

Multifunction crane for water corers, TV-Grabs, camera, and other deep-sea equipment



FERRI

Why is Ocean Observations so important ?

BACKGROUND

More than

80%

Of the Oceans remains

UNEXPLORED

Marine observations area essential to progress in our understanding of the ocean and its role in a changing environment, its has becoming urgent to increase coverage and resolution of different Essential Ocean Variables of physical, chemical and biological processes in space and time through high-quality observations and data. High-performance Research Vessels still a versatile tool to provide many of the in situ marine observations and sampling

Only about

7%

Of the World´s

Are designed as

Marine Protected Areas

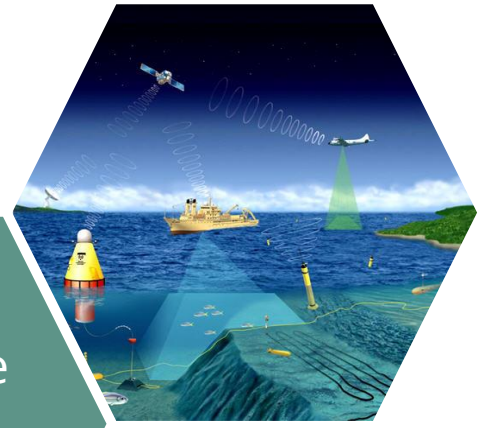
WORLD OCEAN COUNCIL

The International Business Alliance for Corporate Ocean Responsibility

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

Why collaboration is needed?

Enhance interoperability capacity



Best marine processes assessment

Improve data QC strategy

Plan for more HQ sustainable research

Develop and test new designs & technologies

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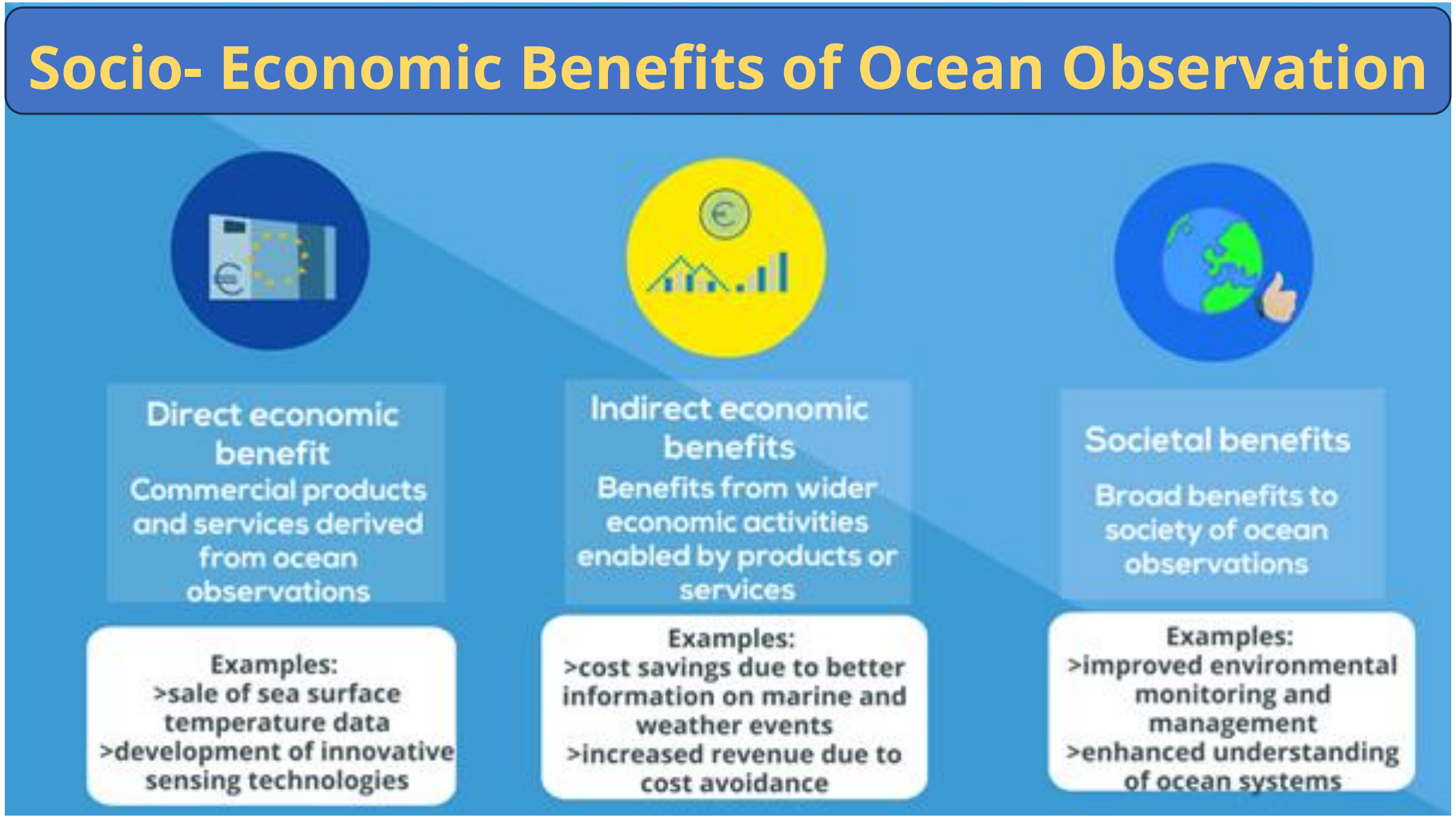
Benefits of Ocean Observations



Thank you

jjdanobeitia@utm.csic.es

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