Blue Economy:

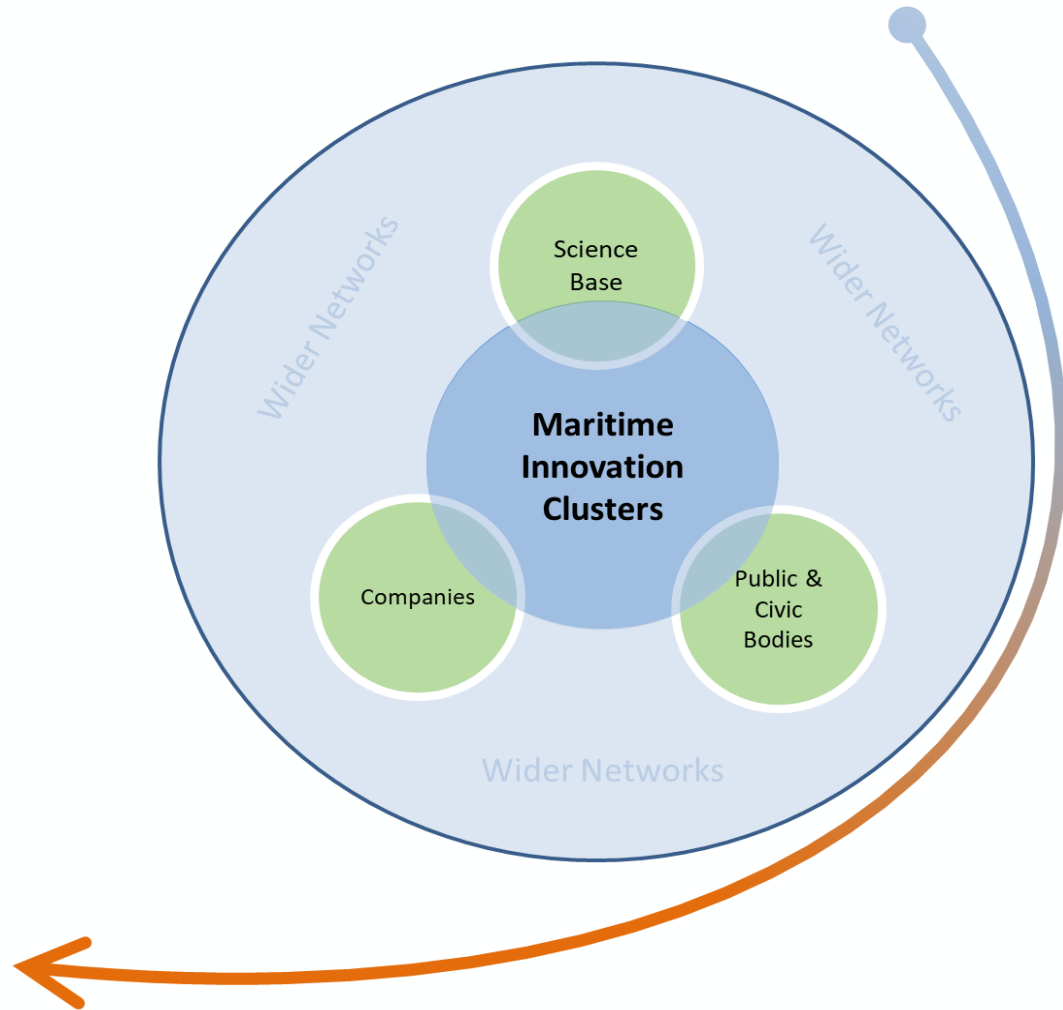## Findings from Innovation Clusters engagement (v1.0)

Rory Scarrott (UCC), Jessica Giannoumis (UCC) , Filipe Brandão (GMV), Fiona Fleming (UCC)

November 17th 2022

ESA Atlantic Regional Initiative

Final Review Meeting

BLUE ECONOMY: Innovation Clusters Roadmapping

1. **Overview**

2. **Approach**

3. **Findings**

   ➢ Opportunities

   ➢ Deep Dives:

   - Innovation Clusters
   - Opportunities with OSPAR
   - Opportunities with Argentina

   ➢ General Findings - ARI focus

4. **Summary**

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Blue Economy Innovation Clusters

1. Overview of the Activity

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BLUE ECONOMY – Innovation Clusters Activity

Innovation clusters – two interconnected objectives:

Objectives	Why
Technological development (Use Cases)	Needed for cutting-edge algorithms, processing capabilities and information extraction from multi-source data streams, to be combined and foster the implementation of sustainable service(s)
Animate technological development	Atlantic-focused recommendations developed from engaged stakeholders. These perspectives **will inform and enhance the roadmap being developed by ESA for the Atlantic Region**, and found a seed Community of Practice of maritime-EO technology innovators for the Atlantic, focused on **developing EO solutions to address Marine Stakeholders' needs**

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Forum Oceano

OSPAR   ICES-WG-MRE

EURISYInstituto HidrográficoNEREUS

ICES-WG-SPA (& SIMATLANTIC)

UK-EA - UK-Environment Agency

CMC - Canary Islands Maritime Cluster

TMA BlueTech / AARC

ESA Atlantic Regional Initiative Programme

CONAE - Space Agency of Argentina

Marine Institute of Plymouth

POL MERFuture Earth Coast Aquatera

EurOcean Marine South East
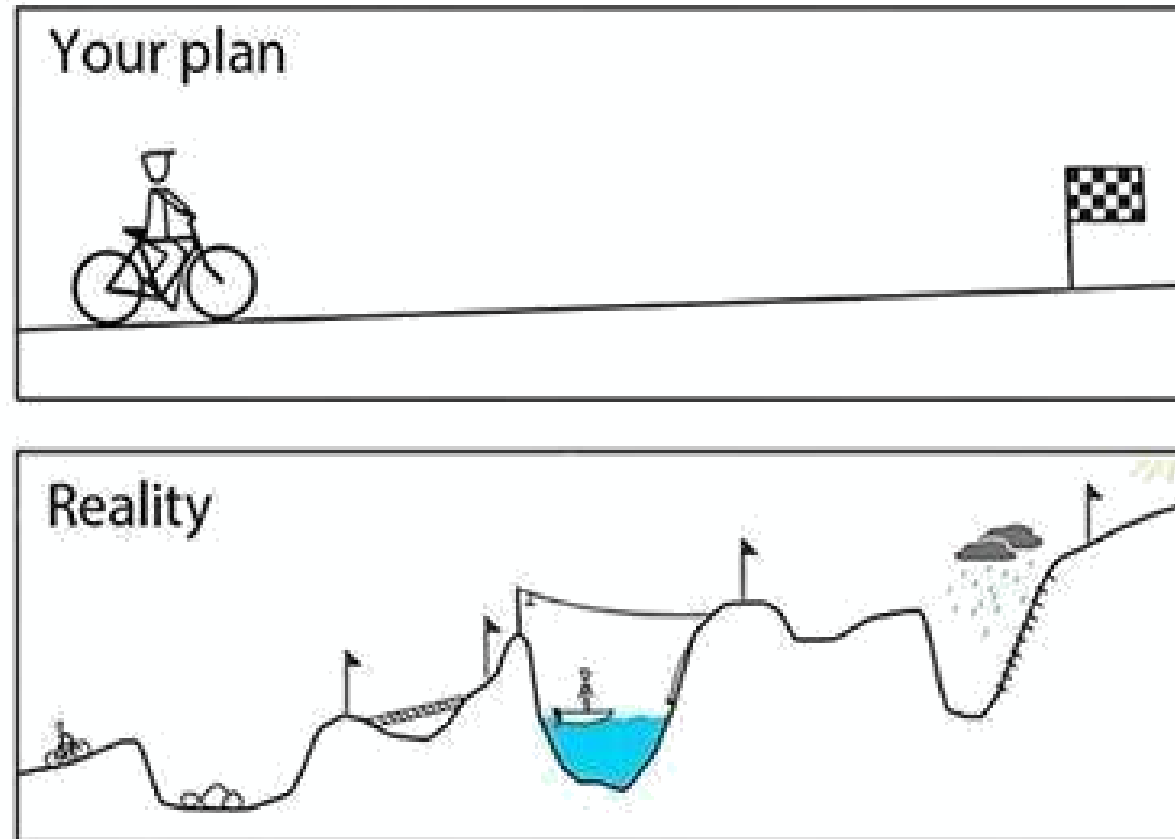
ESA ARI projects

ESA BIC Ireland

World Ocean Council

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Blue Economy Innovation Clusters
2. Approach

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The Approach

Engage, discover, interview, consult

Categorise, and Extract opportunities, characterisations, observations, needs, and obvious recommendations

Interpret & refine recommendations

Deep Dives

Combine

Interpret & refine recommendations

Deliver v1.0 recommended actions to stakeholders & ESA

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Caveats & Limitations

- Perspectives from **22 stakeholder groupings** for an All-Atlantic perspective

- Consultations conducted using **a semi-structured interview approach**

- **Deep dives** involved follow up discussions and were **more organic**

- No **African**, **Central American**, or **Caribbean,** or **polar** perspectives

- Perspectives are weighted towards **researchers**, **large institutions, international organisations** and **Innovation Clusters**

- Discussions have been **in English**

Unchanged image courtesy of Toby Hudson, available under a Creative Commons Attribution-Share Alike 3.0 Unported license

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Blue Economy Innovation Clusters
3. Findings

General Findings – in numbers

- **22 stakeholder groups** interviewed (30 stakeholders)

- **2 deep dives** (Innovation Clusters & OSPAR opportunities)

- **1 geographical expansion** explored (Argentina)
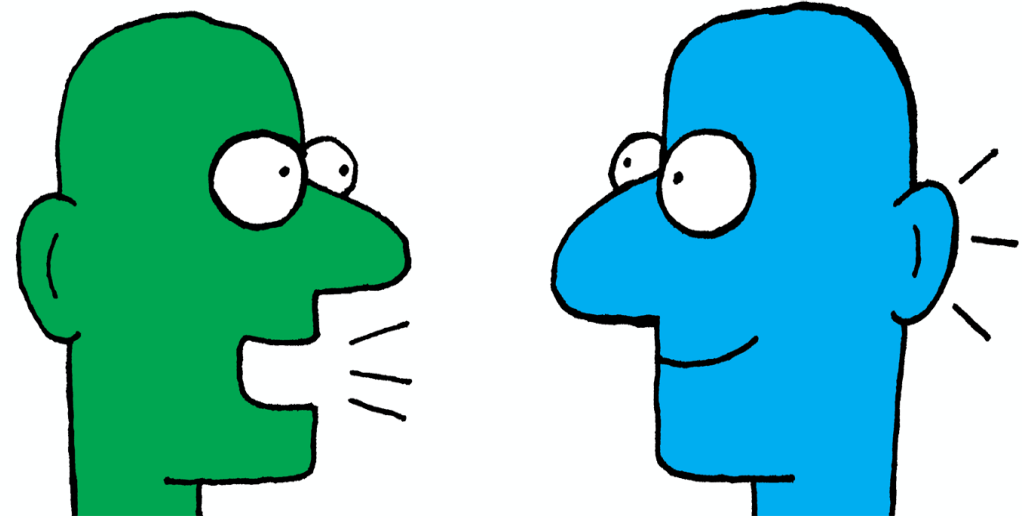
- **> 600** discrete data points extracted from interviews

- **>1100** data notes interpreted and analysed

- **101 recommendations** for the project

- **255 recommendations** on **how to better connect EO to the maritime realm**

- Support **resource prospecting**

- **Surveillance** & **monitoring**

- **Transboundary** monitoring and **ecosystem-based approaches**

- EO and **Digital synergies**

- **Coasts versus Oceans**

- **Environmental character**:Sediments, erosion, turbidity, habitats

- **ORE** expansion

- Information for **planning**

- **Climate Change** adaptation

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Blue Economy Innovation Clusters
A deep dive into Innovation Clusters

What can ESA do to synergise with maritime Innovation Clusters to enhance EO-uptake?

➢ Blue Economy, Marine Economy, Maritime Economy, Ocean Economy – a relatively new term in use, promising opportunities

➢ A Blue Economy can be defined by its **resources** (direct and indirect), **technologies** (both existing and future), **knowledge** and **expertise**

➢ A region's **Blue Economy is context dependent** (e.g. on regional resources)

"These are our sectors, and these are our technologies we can support, or would like the opportunity to uptake"

The Ocean Economy in 2030

OECD

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Innovation Clusters – "Technology Innovation Clusters"

➢ **Industry, Government, Academia**, and wider community

➢ Technology innovation clusters are **geographically confined** and **sector-focused**.

➢ **Typically policy-led (top down)** approaches with the **aim to foster regional economic development** through **stakeholder engagement**.

➢ A cluster's goal is **to create and nurture innovative technology development**, in support of **regional economic development**.

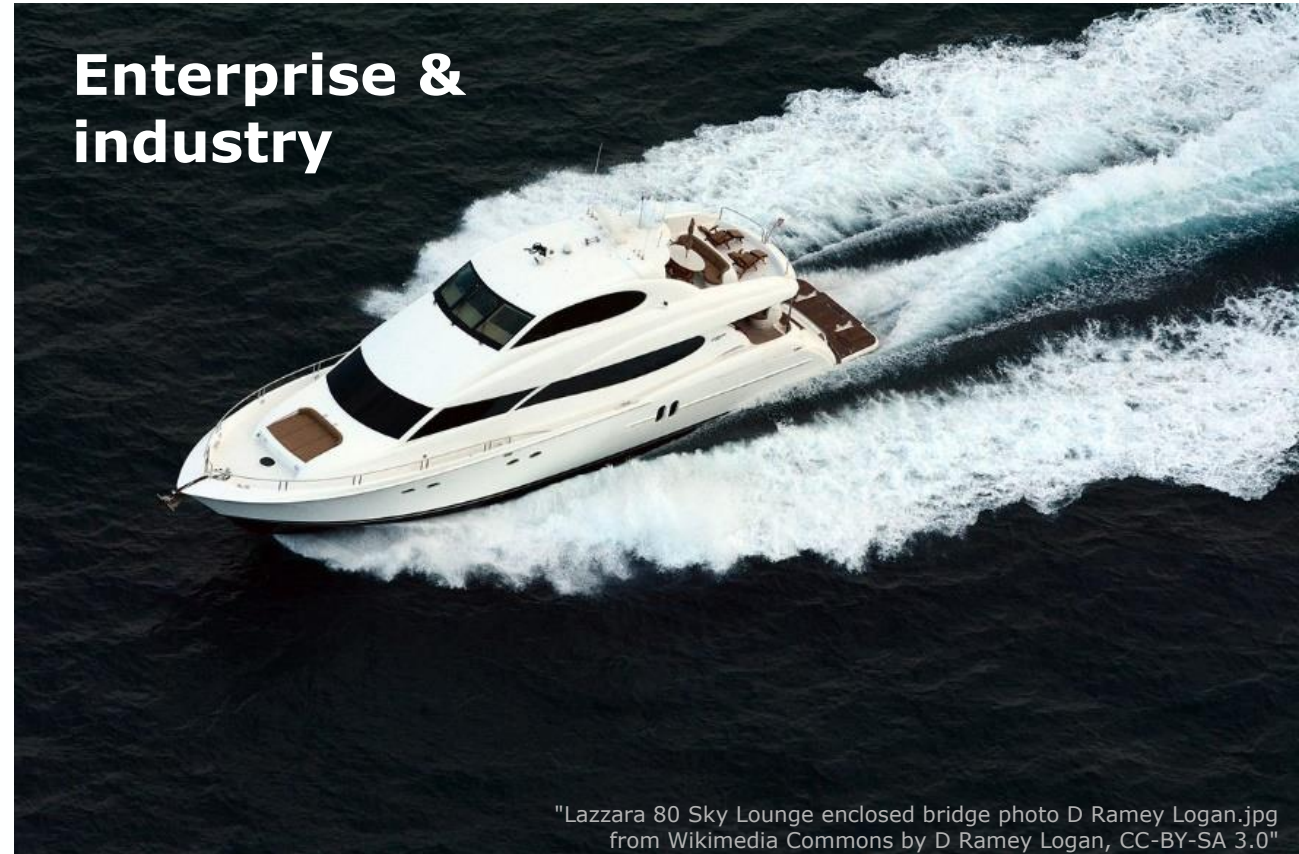➢ Each Cluster is **context-dependent and unique**.

"Bureaucracies do note move at the speed of entrepreneurs"

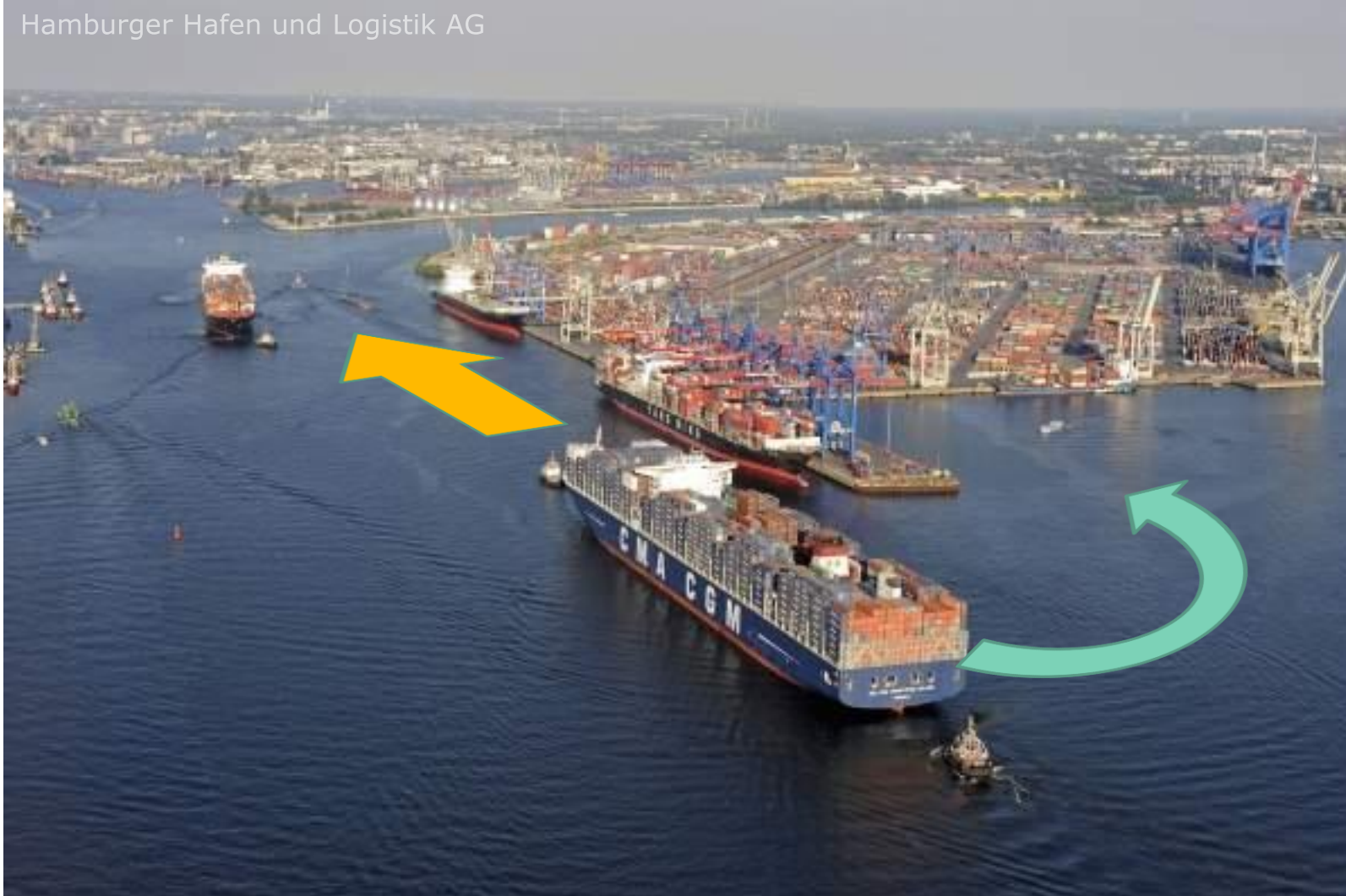**Governments, Agencies, Institutions, Int. organisations**

Nyk Aphrodite IMO 9247754 approaching Port of Rotterdam, Holland 09/04/2007 Author: AlfvanBeem, Image made available under Creative Commons CC0 1.0 Universal Public Domain Dedication.

Enterprise & industry

"Lazzara 80 Sky Lounge enclosed bridge photo D Ramey Logan.jpg from Wikimedia Commons by D Ramey Logan, CC-BY-SA 3.0"

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Hamburger Hafen und Logistik AG

Blue Economies

Key Maritime Clusters

Key Maritime Clusters

ESA & Space

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Hamburger Hafen und Logistik AG

Blue Economies

Key Maritime Clusters

Key Maritime Clusters

ESA & Space

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"You never know what the needs are until you begin the dialogue"

Education

Facilitation

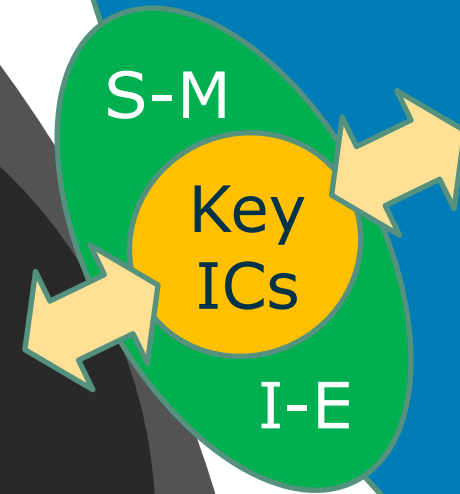Consultation

Connection

Guidance

Prioritisation

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Innovation Clusters – the great connectors
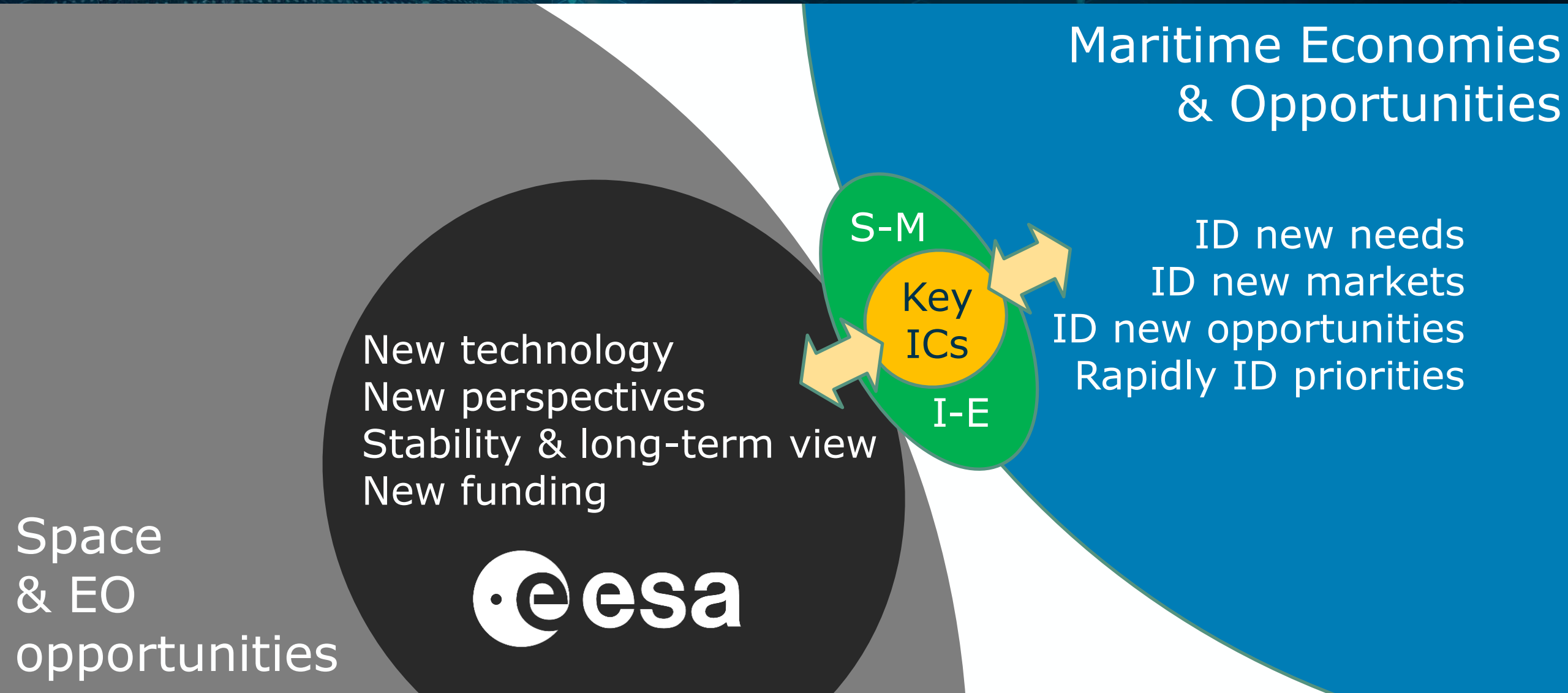
Maritime Economies & Opportunities

S-M

Key ICs

I-E

ID new needs
ID new markets
ID new opportunities
Rapidly ID priorities

New technology
New perspectives
Stability & long-term view
New funding

·eesa

Space
& EO
opportunities

Innovation Clusters – What's needed?

Funding mechanisms
to provision key ICs to work at
connecting, and providing guidance

Funding mechanisms which can quickly turn
guidance into seed collaborations taking Space-
Maritime innovative action

ESA-Cluster partnerships and dedicated
communications with key, recognisably sustainable
(e.g. certified) European maritime clusters
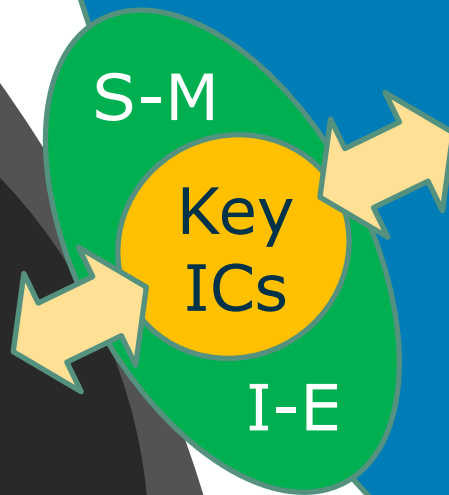
S-M

Key
ICs

I-E

62 Recommendations in total

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Innovation Clusters – What's needed?

S-M

Key ICs

I-E

Enable ICs to contribute to Maritime-Space education and EO promotion

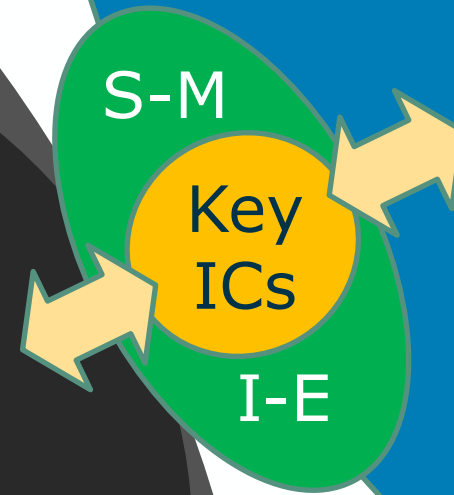Space attending and presenting at maritime events organised by maritime clusters

Prepare for Maritime -> Space innovation

Innovation Clusters – What's needed?

Funding mechanisms to **provision key ICs** to work at connecting, and providing guidance

Funding mechanisms which can quickly turn guidance into **seed collaborations** taking Space-Maritime innovative action

ESA-Cluster partnerships and dedicated communications with key, recognisably sustainable (certified?) European maritime clusters
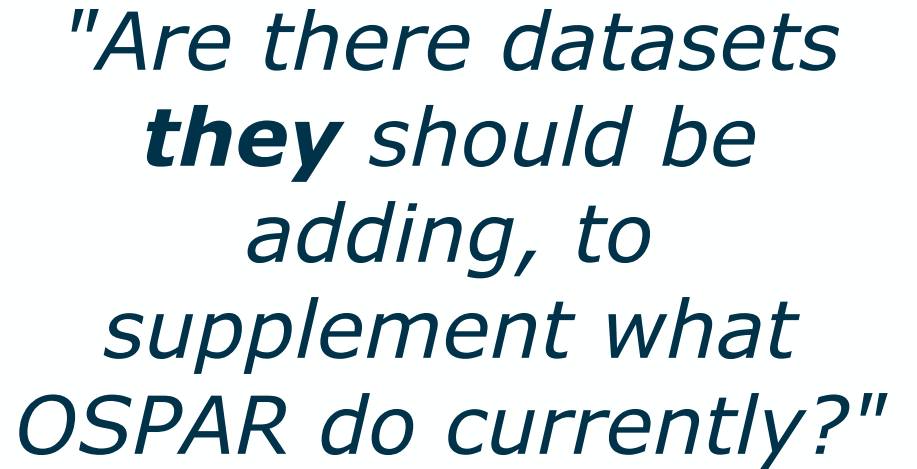
S-M

Key ICs

I-E

Enable ICs to contribute to **Maritime-Space education** and EO promotion

Space attending and presenting at **maritime events organised by maritime clusters**

Prepare for Maritime -> Space innovation

62 Recommendations in total

Blue Economy Innovation Clusters

Opportunities with OSPAR

*"Are there datasets **they** should be adding, to supplement what OSPAR do currently?"*

There is a knowledge gap that needs to be bridged

Wordcloud generated using www.wordart.com

16 Recommendations in total

Opportunities with OSPAR

- Propose a range of **single, keystone datasets** for environmental monitoring

- Satellite data **provider/expert support** for new OSPAR workstreams & EXPO groups (starting with biodiversity, renewables, marine litter and noise)

- Support **OSPAR strategy and data call** development.

- Align support efforts with the **internal procedures** of OSPAR which underpin OSPARs efforts to address data gaps

- Monitoring 10 **OSPAR MPA's** (**Areas Beyond National Jurisdiction** MPAs)

- End-user for a study of seagrass using EO data

- **Quick** follow-on from BE consultation, **iteratively deepening OSPAR-ESA activities**

16 Recommendations in total

Blue Economy Innovation Clusters

Opportunities with Argentina

Opportunities with Argentina

Initial consultation the basis for future conversations between ESA, and Argentinian stakeholders

Widen consultation with Argentinians, (networks of CONAE, INIDEP and the CFP)

Focus initial collaborations on: the **Pampa-Azul initiative**, the **ROMA** network, **SABIA-Mar** and **SAOCOM** data

Ensure that initial studies encompass the **whole continental shelf** of Argentina, e.g. using optical/radar imagery to monitor **squid fisheries** at night, addressing **IUU** fishing. Also note algal blooms (**red tides**)

Wordcloud generated using www.wordart.com

31 Recommendations in total

Opportunities with Argentina

Begin discussions with Argentinian agencies towards collaborations that
(i) co-promote both ESA, and Argentinean mission data, and
(ii) focus on the different **regional thematic and technological challenges and opportunities**.

Establish links at the **higher levels, develop MOUs** to drive collaborative development (n.b. need for **capacity building activities**, and regionally tailored **thematic platforms** for data access & analysis).

Financial resources available to embed cooperation priorities.

SABIA-Mar or SAOCOM as a **contributory mission** to COPERNICUS?

31 Recommendations in total

Blue Economy Innovation Clusters

General Recommendations

Other recommendations to animate EO-maritime activity

- Aligning with **regional policies** (e.g. Atlantic strategy, Smart Specialisation strategies, etc.)

- Linking with key regional innovation **policy developers** (e.g. DG-Regio, Mission Starfish, government agencies overseas etc.)

- Improve EO uptake with **INSPIRE compliancy**

- Space exposure at **maritime events**

- Space support for **maritime education** and **capacity building**

- **Funding**

- **Use Case** specific recommendations

- **ARI Roadmap** (10 recommendations)

146 recommendations in total (incl. 10 ARI)
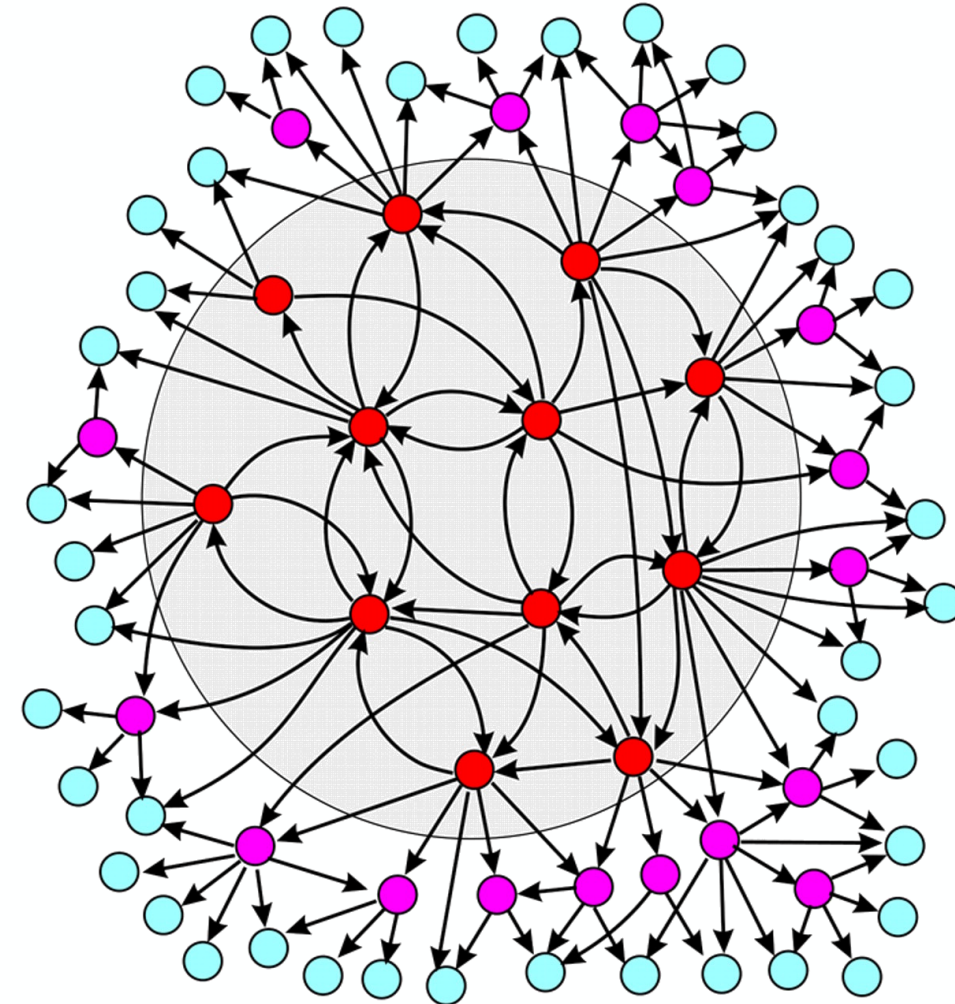
Deliver a path to foster a vibrant Atlantic Innovation Ecosystem harnessing EO data synergies.

- Enhance EO infiltration into **European programmes** beyond ESA

- Define the role of **ESA BICs**

- Explore **new, better, and more effective ways of delivering data**

- Specific actions to **maintain the momentum**

- Define **paths for existing networks** to become important components of the Atlantic Network of Networks

- Ensure **regionally-focused ARI activities** consider **regional Blue Economies**, and **Smart Specialisation strategies**

10 Recommendations specifically focused on ARI

Blue Economy Innovation Clusters

Summary & Next Steps

- **255 recommendations** to enhance EO uptake by maritime sector.

- **General systemic** recommendations, with deep dives into **innovation clusters**, **ESA-OSPAR** opportunities, and **ESA-Argentina** opportunities

- Opportunities remain to:

  ➢ Enhance **geographical coverage** and **actor representation**

  ➢ Further **analyse and iterate** with stakeholders

  ➢ Address **biases** and **refine** the recommendations

  ➢ **Other deep-dives** (e.g. highlight MSP & MSFD)

  ➢ Deliver recommendations and context in a **more policy/call-appropriate media,** suitable for **efficient ESA uptake**.

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