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D8.1 – SWOT analysis report: first step towards a long-term sustainable coordination model for the European research vessels



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1 Executive Summary

Over the years, the European Commission has strongly supported the opening-up of existing national research infrastructures at a European Union level. Within research projects granted under EU funding programmes (e.g. FP7 and H2020), Transnational Access to key infrastructures is viewed as a key enabler of research and innovation to address global environmental, social and economic challenges.

In addition, long-term sustainability of research infrastructures has been repeatedly highlighted as one of the main challenges for the overall research and innovation system in Europe. Long-term sustainability of research infrastructures has been recognized mandatory to remain at the forefront of science and technology and to stay competitive in the global knowledge-based economy.

Based on this context, the EUROFLEETS+ project has the ambitious goal to promote a long-term sustainable model to ensure the coordination of the European research vessels (EUROFLEETS RI), ability to handle Transnational Access to research vessels and Large EXchangeable Instruments (LEXIs) in Europe, together with strengthening the sharing of knowledge, experience, best practice and collaboration among research vessels and/or LEXI operators and various stakeholders across Europe.

This objective will be implemented through three main steps:

- Step #1: the identification of the most suitable model for EUROFLEETS RI;
- Step #2: the development of management and funding mechanisms and long-term sustainable streams to establish, operate and grow EUROFLEETS RI beyond the project life-time;
- Step #3: the identification of pilot groups, at both pan-European and Regional dimensions or for thematic area, based on the spare vessel capacity, to be the test-bed for the developed operational and funding model.

First activity carried out to meet the goal has been a desktop study of existing legal entities adopted by European initiatives for the coordination of **research infrastructures**. Further inputs have been collected during debates with the European research vessels operators' community at European and international events.

Based on the analysis conducted and results reported in this deliverable, two options are proposed:

- EUROFLEETS RI as an AISBL (*Association internationale sans but lucratif*);
- EUROFLEETS RI as a Memorandum of Agreement-based model.

Next step towards a more comprehensive approach and long-term vision for the European Research Fleet will be the execution of a feasibility assessment of the two options proposed for EUROFLEETS RI. The assessment will take all relevant factors into account - including economic, technical, legal and scheduling considerations - to ascertain the likelihood of working these two options in practice. A draft version of a business plan will be also provided, encompassing all components needed to establish, operate and grow this pan-European distributed Research Infrastructure beyond the EUROFLEETS+ project life-time (e.g. strategic analysis and strategic plan, market analysis and strategy, legal and governance model, management and organization, finance model, timeline).

2 Introduction

2.1 Relevance of Research Vessels

Ocean science has become ‘big science’, involving sophisticated and costly equipment, such as research vessels, fixed-point platforms (e.g. seabed observatories, buoys or moorings) and mobile units (e.g. ROVs, AUVs, USVs, gliders, Argo floats), remote sensing tools (e.g. high-frequency radars, satellites, aeroplanes or drones), land-based facilities (e.g. marine stations) and e-infrastructure (UNESCO, 2017).

Research vessels are key Research Infrastructures (RIs) offering vital access to our Seas and global Oceans for conducting marine science and ocean observing (European Marine Board, 2013). Research vessels are essential in ocean observation as they are used to collect a wide variety of data and samples from the atmosphere, the ocean surface, the water column, the seabed, and the ground below it, as well as facilitating exploration of the vast expanses of relatively unexplored and unobserved ocean. Their work ranges from fisheries surveys to seafloor mapping, and from climate studies to deep-water/ocean observations. In addition, research vessels are critical for ocean observing stationary installations on the ocean floor, in the water column or on the surface as they deploy, recover and service them, as well as providing ground-truthing for satellites/AUV/gliders/etc. data.

Driven by the need to understand the inevitable impacts of climate and other global changes, based on ‘the best available scientific knowledge’ according to the **Paris Agreement on Climate Change**¹, the demand for sea and ocean data provided by research vessels is higher than ever. This demand for new data is not only for scientific needs, but also in response to current European Directives. In support of the **Marine Strategy Framework Directive**² (MSFD), the **Water Framework Directive**³ (WFD), the **INSPIRE Directive**⁴ and **Data Collection Framework**⁵ (DCF) Member States are required to conduct regular monitoring and observations in their own waters.

At a global level, the **UN Sustainable Development Goals**⁶ (SDG’s), and especially **SDG14** (Life below water) place added political pressure on countries to understand ocean health status within their national waters and to recognise the potential impacts of management decisions.

The demands from many stakeholder groups for data and information provided by research vessels will only continue to grow, as deduced from the increasing number of geographical and scientific research areas in which ocean data is of importance. As an example, most of the scientific priorities of the **UN Decade for Ocean Science for Sustainable Development (2021-2030)**⁷ will not be achievable without significant support from research vessels (*Table 1*).

Research vessels will also be vital in delivering data to support future marine science requirements, such as those outlined in EMB’s Position Paper 24 “Navigating the Future V” (European Marine Board, 2019). This same prediction of increasing demand for data from various stakeholders including science, applied science and industry is echoed in a similar report from the US (National Research Council of the National

¹ <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

² http://ec.europa.eu/environment/marine/eu-coast-and-marine-policy/marine-strategy-framework-directive/index_en.htm

³ http://ec.europa.eu/environment/water/water-framework/index_en.html

⁴ <http://ies-webarchive-ext.jrc.it/ies/inspire.html>

⁵ https://ec.europa.eu/fisheries/cfp/fishing_rules/data_collection_en

⁶ <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>

⁷ <https://www.oceandecade.org/>

Academies, 2009). While this report is now quite 10 years old, the messages it contains remain very relevant and further demonstrates not just the European but also the global need for more data.

Scientific priority	Research vessel relevance
1. Comprehensive digital atlas of the ocean	Provision of the means to acquire the data which will underpin the atlas
2. Comprehensive ocean observing system for all major basins	Enabling installation, maintenance and calibration of ocean observation infrastructures, and delivering the monitoring needed for a fully comprehensive ocean observing system
3. Quantitative understanding of ocean ecosystems and their functioning as the basis for their management and adaptation	Key provision of data to enable understanding and analysis
4. Data and information portal	Provision of data, including in real- and near-real time
5. Integrated multi-hazard warning system	Data collection and observation infrastructure support, especially in critical deep-sea and polar regions
6. Ocean in earth-system observation, research and prediction, supported by social and human sciences and economic valuation	Providing observations but also providing a research vessel operators perspective on social, human and economic valuation of fleet, equipment and infrastructures
7. Capacity-building and accelerated technology transfer, training and education, ocean literacy	Technological innovation to enable new science and research vessels as a great tool for outreach and ocean literacy promotion
8. Provide ocean science, data and information to inform policies for a well-functioning ocean in support of all sustainable development goals of 2030 Agenda	Provision of data conducted in a sustainable manner to the science community, in order to support policy- and decision-making

Table 1: Research vessel relevance to the scientific priorities of the UN Decade of Ocean Science for Sustainable Development (*Source:* EMB's Position Paper 25, 2019)

2.2 European Research Fleet

The recently published EMB's Position Paper 25 "Next Generation European Research Vessels – Current Status and Foreseeable Evolution" (Nieuwejaar *et al.*, 2019) provides an overview of the current European Research Fleet and its capabilities, and recommends ways in which it should evolve to meet future science needs.

The European Research Fleet⁸ consists of 99 research vessels (31 Local & Coastal Class, 36 Regional Class, 14 Ocean Class and 18 Global Class), run by 62 different research vessel operators, public and private, in 23 countries, with an uneven distribution of vessels in Europe (*Figure 1*).

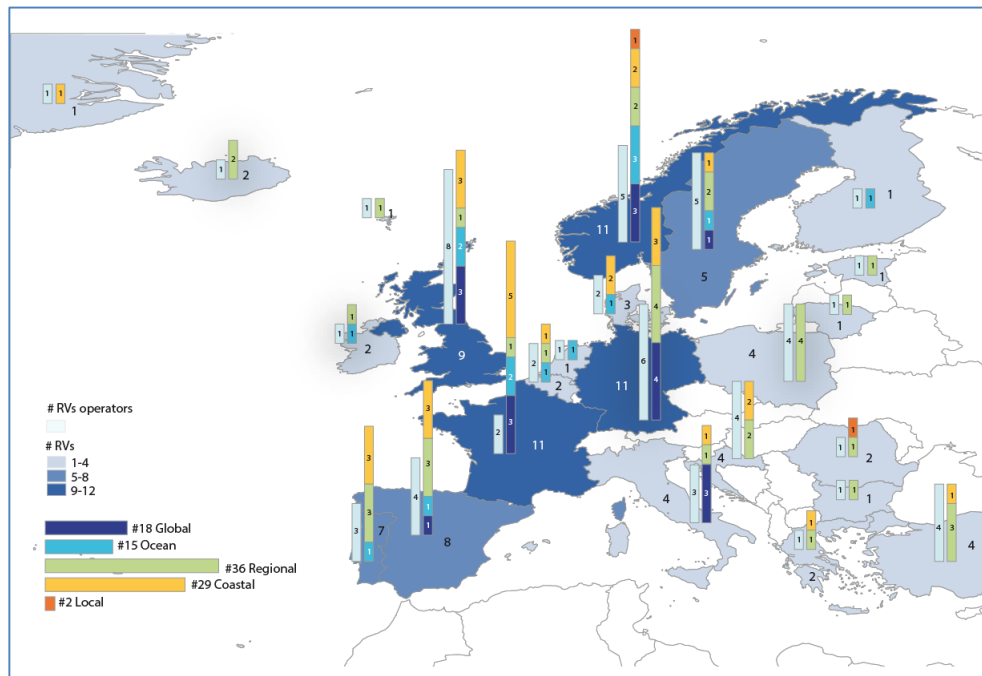


Figure 1: Geographical overview of the numbers and classes of European research vessels per country
(Source: EMB's Position Paper 25, 2019)

The current European Research Fleet is highly capable and provides excellent support to European and global marine science. However, there is a huge diversity across Europe in terms of:

- National capabilities and equipment;
- Ownership, management structures and processes, and operational procedures;
- Training possibilities (vessel crew, instruments technicians and land-based staff);
- Approaches for granting and funding vessel access and ship-time.

Therefore, it is not possible or appropriate to highlight one “correct” approach to vessel and resource management. A number of factors will dictate the most appropriate approach in a given country. However, options do exist for improving efficiency and collaboration in several aspects of research vessel use and management, such as:

- Pooling and sharing of equipment;
- Exploring possibilities in training and pooling of crew;
- Projects and/or initiatives for increasing ship access for all researchers.

⁸ **European Research Fleet** encompasses all the research vessels in European and related equipment pools whereas **European Research Fleets** gather all the fleets in Europe considered on a national base with their own management features and governance rules (Binot *et al.*, 2007)

Although highly capable, the European Research Fleet is ageing, with a current average age of 25⁹ years. Given that the expected functional lifetime of a research vessel is 30 years, this indicates a pressing need to renew and modernise the fleet. Further investment is therefore urgently needed to ensure that the fleet can continue to provide the same level of support into the future.

The overarching recommendations from the EMB's Position Paper 25 are:

- Publicly available data and information about European research vessels and scientific equipment should be collected and updated periodically, to keep funding agencies and decision-makers informed about status and trends on:
 - European Research Fleet and its capabilities;
 - Available Large EXchangeable Instruments (LEXIs) and other equipment;
 - Vessel operation and management trends;
- Funding agencies should engage in discussions with the research vessel operators and marine science communities as well as other relevant stakeholders to identify key funding needs (fleet renewal and development, training, transnational access for ship-time, and joint research programmes);
- Continued modernization and renewal of the ageing European research vessels, to support the science needs of today and in the foreseeable future in terms of both quantity and capabilities;
- The research vessel operators' community should continue to look to the next big science and technological developments (e.g. towards real-time data delivery, new autonomous systems, new science frontiers) and work together with relevant parties to ensure that the fleet is ready to support these;
- Use foresight and horizon-scanning approaches in collaboration with industry and the marine research community to identify future requirements, especially in relation to technological and digital capabilities, and in terms of future fleet size and capability requirements, and ensure these requirements are integrated into strategic plans for vessel development;
- Increase collaboration between the research vessel operators' community at regional, national and international level in order to exploit opportunities for greater efficiency such as sharing of resources and equipment;
- The research vessel operators' community should take an active role in promoting activities for training of marine technicians, crew and shore-based staff, and should seek partnerships to develop courses on all aspects of vessel operations;
- Transnational Access (TA) mechanisms, along with Virtual Access (VA) options, based on excellent science should be further developed to give access to European research vessels and enlarge the community of users, in particular for the limited number of deep-sea and Polar research vessels.

2.3 EU policy priorities: Transnational Access to and Long Term Sustainability of Research Infrastructures

Two issues are key policy priorities for the European Commission when it comes to RIs:

⁹ Investments for new buildings or replacements of research vessels are planned in Belgium, Faroe Island, Iceland, Greenland, Netherlands, Norway, Ireland, UK and Greece

- Actions to improve access and use of RIs;
- Long-term Sustainability of RIs and the services they provide.

2.3.1 *Transnational Access to Research Infrastructures*

European researchers need effective and convenient access to the best RIs in order to conduct research for the advancement of knowledge and technology. TA has been strongly recommended and supported by the European Commission through its funding programme for RIs and identified as pre-conditions/prerequisites to successfully setting the basis:

- To simplify and harmonise access by encouraging European RIs to put in place transparent access policies (i.e. European Charter for Access to RIs, released in 2016 by the Directorate-General for Research and Innovation);
- To enhance and maximise use of RIs;
- To facilitate cross-border skills development.

With particular reference to Marine Research Infrastructures (MRIs), the interests of a sustained TA activity are multiple (SEAS-ERA Deliverable 4.2.1, 2013):

- **Interest for marine scientists**
 - To access to the most adapted MRIs to perform their research (those facilities which do not necessarily exist in their country);
 - To be recognised as Principal Investigators (and not only “guest scientists”) working on unique MRIs such as e.g. Global/Ocean class research vessels, but also in situ fully equipped test sites (e.g. ocean renewable energy testing sites, mesocosms), fully equipped laboratories (e.g. marine “omics” equipment, aquaculture facilities);
- **Interest for engineers/technicians**
 - To develop common interfaces (e.g. instruments versus facilities), standards (e.g. test protocols) and inter-calibration methods (e.g. sensors);
 - To share best practices, e.g. on maintenance;
- **Interest for MRI operators involved in European consortia**
 - To develop joint calls, to conduct common peer review processes, to set up joint mobility and training schemes etc., and so to build up confidence between partners;
 - To learn more about and promote available resources (i.e. MRIs access units and planning), their optimal management and use at EU level;
 - To provide relevant information on MRIs in standardised formats and portals (RIs characteristics, access conditions and regulations, type of experiments performed, etc.);
 - To contribute to developing common standards and practices to improve shared use of MRIs (e.g. technical facilities, instrumentation, sensors and data);
 - To best estimate the future requirements in terms of new and upgraded installations and their optimal distribution in Europe (this activity can be seen as a useful prerequisite for a shared procurement strategy);

- **Interest for European countries and Governments to improve the cohesion, the coordination between themselves**
 - To foster the use by research communities of cutting-edge European MRIs;
 - To contribute to the so-called “Stairways to excellence”¹⁰, as a complement to the excellence criteria itself.

2.3.2 Long-term Sustainability of Research Infrastructures

RIs Long-term Sustainability (LTS) is the capacity for a research infrastructure to remain operative, effective and competitive over its lifetime (definition adopted by the Organisation for Economic Co-operation and Development – OECD, “Science Technology and Industry” Policy Paper No. 48, 2017).

Long-term sustainability of RIs has been repeatedly highlighted as one of the main challenges for the overall research and innovation system in Europe. It has been flagged as a policy priority since the Informal Competitiveness Council of July 2014, stressing that open access to RIs and data, avoid duplication of effort and coordination and rationalisation in the usage of these facilities, pooling resources, better links with industry and prioritisation based on a multi-level approach (national, European and international level) are key to ensure sustainability.

For the first time, the LTS has been recognized as mandatory for the EU to remain at the forefront of science and technology and to stay competitive in the global knowledge-based economy. As a result of the May 2016 Competitiveness Council Conclusions, the European Commission was invited to develop an RI long-term sustainability Action Plan, in close cooperation with ESFRI¹¹ and other relevant stakeholders. An *ad-hoc* Working Group and a consultation process had the aim to trigger the debate on potential actions to tackle the identified challenges on LTS:

- Ensuring scientific excellence;
- Attracting and training managers, operators and users of tomorrow;
- Unlocking the innovation potential of RIs;
- Measuring socio-economic impact of RIs;
- Exploiting better the data generated by the RIs;
- Establishing adequate framework conditions for effective governance and sustainable long-term funding for RIs at every stage in their life-cycle;
- Structuring the international outreach of RIs.

It is clear that overcoming this challenge will depend on a common understanding and agreement among policy-makers at all levels and research managers, as well as the industrial stakeholders.

In the document “Sustainable European Research Infrastructures – A call for Action” published in October 2017, six main recommendations and best practices/actions on LTS of RIs are explored and illustrated to foster sustainability and impact of European RIs on industry, policy and society. A synthesis is reported in Table 2.

Recommendation	Best-practices/actions
----------------	------------------------

¹⁰ <https://s3platform.jrc.ec.europa.eu/stairway-to-excellence>

¹¹ <https://www.esfri.eu/>

Ensuring excellence of the services provided by the RIs	Guidelines for scientific & technical reviewing processes
Ensuring that RIs have the right people in the right place at the right time	European curricula for RIs managers, fostering a job market for managers and operators
Exploiting the potential of RIs as innovation hubs	Supporting the development of ecosystems around RIs, facilitating the involvement with industry (co-creation, users)
Assessing the economic and wider societal value of RIs	Developing a standardised model to identify the socio-economic impact of RIs
Exploiting better the data generated by RIs	Reinforcing data management policy; federating e-services integrated in the EOSC
Establishing adequate framework conditions for effective governance and sustainable long-term funding of RIs	Synchronising national roadmaps; supporting newly established ESFRI and ERICs; increasing visibility of the services offered by pan-European RIs; establishing guidelines on decommissioning; facilitating RIs access to EU funds, encouraging new sources of funding including private funding
Strengthening the international dimension of pan-European RIs	Facilitating the international outreach of pan European RIs

Table 2: RIs Long-term Sustainability recommendations and best practices

3 EUROFLEETS+ “Foresight: Legacy and Roadmap” - Objectives and Work Plan

The European research vessel operators’ community is less well developed in comparison with European marine science communities that have evolved towards pan-European initiatives for the coordination of Research Infrastructures, such as ERICs **EMSO**¹², **EPOS**¹³, **EURO-ARGO**¹⁴, **ICOS**¹⁵, **LifeWatch**¹⁶, **EMBRc**¹⁷ and AISBLs **EUFAR**¹⁸, **EuroGOOS**¹⁹, **IAGOS**²⁰, **SeaDataNet**²¹ and **EOSC**²². Regular networking activities amongst the European research vessel operators exist mainly through the European Research Vessel Operators (**ERVO**²³) Group, which, however, has an informal nature, with no legal status or financial support.

The **H2020 EUROFLEETS+ project** has the ambitious goal to close this gap, promoting a long-term sustainable model to ensure the coordination of the European research vessels. This activity is implemented within **WP8 “Foresight: Legacy and Roadmap”**, which has been designed in response to the following requirements of the call “INFRAIA-01-2018-2019: Integrating Activities for Advanced Communities”:

- Creation of strategic roadmaps for future RI developments as well as the long-term sustainability;
- Preparation of a sustainability plan beyond the grant lifecycle, including the involvement of funders;
- Promotion of long-term sustainability and the preparation of a business plan beyond the end of the project.

It should be recalled that in the above-mentioned call, those requirements were addressed mainly to RI communities supported in the past under three or more integrated activities; at the proposal submission, EUROFLEETS community was funded only twice, with **EUROFLEETS** and **EUROFLEETS2 FP7-INFRASTRUCTURES projects**²⁴, but the consortium decided to anticipate and meet these requests, including the promotion of a long-term sustainability plan, involvement of funders and the preparation of a business plan.

In particular, WP8’s objectives are to identify and agree on a long-term sustainable coordination model for the European research vessels (hereinafter referred to also as **EUROFLEETS RI**), with a view to consolidate a strategic and coherent vision for the European Research Fleet and outlining the future research infrastructure developments. This means to maintain, capitalise, and further optimise the

¹² <http://emso.eu/>

¹³ <https://www.epos-ip.org/>

¹⁴ <https://www.euro-argo.eu/>

¹⁵ <https://www.icos-cp.eu/>

¹⁶ <https://www.lifewatch.eu/>

¹⁷ <https://www.embrc.eu/>

¹⁸ <https://www.eufar.net/>

¹⁹ <http://eurogoos.eu/>

²⁰ <https://www.iagos.org/>

²¹ <https://www.seadatanet.org/>

²² <https://www.eosc-portal.eu/>

²³ <http://www.ervo-group.eu/np4/home>

²⁴ EUROFLEETS2 (*New operational steps towards an alliance of European research fleets – Grant number 312762*), is a FP7-INFRASTRUCTURES project (2013-2017), which further consolidated the alliance built in the FP7-INFRASTRUCTURES EUROFLEETS project (*Towards an alliance of European research fleets - Grant number 228344*), which ran from 2009 to 2013, and extended the scope to include the Polar research vessel community.

legacy of EUROFLEETS, building on expertise, know-how and successes of previous EUROFLEETS projects, and to incorporate EUROFLEETS+ new and more extensive actions.

Notable **collaborative actions** have been undertaken during the eight years of activities funded by the European Commission (EC) with EUROFLEETS and EUROFLEETS2 projects. These actions have led to several documents, common standards, specifications, databases, technical reports, the development of interoperable software tools and a fleet wide interoperability assessment. Such co-ordination and joint development have increased the efficiency, effectiveness and innovative capability of the European Research Fleet.

WP8 also aims to recommend both an operational and a funding model for a long-term sustainable, advanced and user-oriented TA system of European research vessels, along with a future strategy for the coordination and optimisation of the European Research Fleet beyond the EUROFLEETS+ project lifetime.

EUROFLEETS TA experiences have proven to be an efficient mechanism to strengthen collaboration through enabling multidisciplinary groups of users with complementary skills to work together on projects for the greater good of the EU and providing access, on the basis of scientific excellence, to maritime resources for countries that do not have appropriate infrastructures or marine equipment available, such as deep-water systems, long coring equipment, etc. However, many research vessels in Europe are not used to their full potential and TA mechanisms can be beneficial for the operators, as well as for government agencies financially supporting these costly facilities to increase the efficiency of fleets through optimised/efficient scheduling and sharing of vessels.

Considering such a critical mass of resources and expertise consolidated during the EUROFLEETS projects, **WP8 objectives** will be implemented through three main steps:

- **Step #1:** the identification of the most suitable model for a long-term sustainable coordination for the European research vessels (**EUROFLEETS RI**), whose feasibility will be investigated in the following step;
- **Step #2:** the development of management and funding mechanisms and long-term sustainable streams to establish, operate and grow **EUROFLEETS RI** beyond the project life-time;
- **Step #3:** the identification of pilot groups, at both pan-European and Regional dimensions or for thematic area, based on the spare vessel capacity, to be the test-bed for the developed operational and funding model with the goal of stepping forward the ERA key priorities and supporting “scientific super idea/excellence science”.

A desktop study (**Step #1 of WP8**) of existing legal entities adopted by European initiatives for the coordination of RIs has been conducted in order to identify the most suitable one for a long-term coordination model for the European research vessels (**EUROFLEETS RI**).

Further inputs have been collected during debates with the European research vessels operators’ community at the following events:

- WP8 parallel session, organized back to back the EUROFLEETS+ Kick Off Meeting (5-7 March 2019, Galway, Ireland);
- WP8 workshop held at the 21st ERVO annual meeting (11-13 June 2019, Hamburg, Germany);

- “Strategic Development Programme for EUROFLEETS+” Workshop (30-31 January 2020, Milan, Italy), organised in the framework of a collaboration established between the EUROFLEETS+ project and the Executive Masters in Management of Research Infrastructures (**EMMRI**)²⁵, run by the University of Milano Bicocca;
- WP8 workshop, organized back to back the EUROFLEETS+ First General Assembly (4-5 March 2020, Lisbon, Portugal);
- “Long-term vision for the European Research Fleet” Webinar (19 October 2020), organized within the activities of WP8 and in collaboration with the ERVO Group.

WP8 objectives, work plan and first outcomes have been also presented and discussed at the following two international events:

- Joint **EMB**²⁶-**EurOcean**²⁷ Open Session “The Future of Europe’s Research Vessel Fleet” (6 November 2019, Berlin, Germany);
- **EMSO** Conference “Preparing for UN Decade of Ocean Science” (12-14 February 2020, Athens, Greece).

EUROFLEETS+ Deliverable D8.1 reports the outcomes of the above-mentioned activities, providing first proposals towards a long-term sustainable coordination model for the European research vessels (**EUROFLEETS RI**). The feasibility assessment of such proposals will be conducted (**Step #2 of WP8**) and reported in the **EUROFLEETS+ Deliverable D8.3** “Report on feasibility study for implementation of a transnational access system, including business plan”.

²⁵ <https://emmri.unimib.it/>

²⁶ <https://www.marineboard.eu/>

²⁷ <https://www.eurocean.org/np4/home>

4 Results of the desktop analysis of legal entities

A legal entity²⁸ is an individual or group that has legal rights and duties related to contracts, agreements, payments, transactions, obligations, penalties and suits. The term applies to any kind of organization formally constituted according to the particular set of laws governing the country.

4.1 Overview of current legal entities

For a legal entity model there are three main options: international organisation, entity under the European legislation or entity under national legislation.

4.1.1 International Organisations

International organisations, like for example CERN²⁹, ESO³⁰, EMBL³¹, ITER³², ESA³³ and ILL³⁴, are established by States through an intergovernmental agreement. The ratification and establishment process by states involved is often long lasting and legal documentation such as by-laws are required.

International Organisations have the following advantages:

- Privileges and immunities;
- Stable legal basis independent of member countries;
- Exemption of most taxes and duties;
- Internally created staff regulations ensuring equal treatment in salaries and taxation independent of nationality of staff;
- Immunity from legal procedures unless otherwise accepted by the international organisation.

4.1.2 Entities under the European legislation

Under the European legislation there are several options for a legal entity:

- **European Economic Interest Grouping (EEIG):**
 - Generally meant for facilitating and developing the economic activities of its members by pooling resources and improving or increasing the results of those activities, and therefore not so much intended for non-economic activities;
 - One important disadvantage is that the members have unlimited joint liability towards third parties for debts of the grouping which can make it impossible for some states or organisations, especially public bodies, to join;
- **European company:**

²⁸ Source: <https://www.myaccountingcourse.com/accounting-dictionary/legal-entity>

²⁹ <http://www.ervo-group.eu/np4/home>

²⁹ <https://home.cern/>

³⁰ <https://www.eso.org/public/>

³¹ <https://www.embl.org/>

³² <https://www.iter.org/>

³³ <https://www.esa.int/>

³⁴ <https://www.ill.eu/>

- Basically meant for commercial activities, not for RIs that mainly function on a non-commercial basis;
- **European Grouping of Territorial Cooperation (EGTC):**
 - A European cooperation structure with a legal personality defined by European law and designed to facilitate and promote territorial cooperation in the European Union;
 - Regional and local authorities of at least two Member States of the European Union can form an EGTC for carrying out actions of territorial cooperation with or without the contribution from EU funding sources;
 - Its purpose is very limited, and arguably does not fit with the requirements and objectives of a RI;
- **European Research Infrastructure Consortium (ERIC):**
 - Specific legal entity that facilitates the establishment and operation of RIs with European interest;
 - Mainly set up for non-economic purposes and can carry out only limited economic activities;
 - It gives a legal capacity, recognised in all EU countries, and the possibility also for non-European countries to join as members;
 - Exemption from VAT and excise duty as well as the possibility to adopt own procurement procedures, which have to respect the principles of transparency, non-discrimination and competition;
 - Its process of establishment is faster than creating an international organisation, but as in the case of an international organisation, several by-laws are usually needed in addition to the founding documents;
 - The ERIC regulation has been extensively tested since its adoption in 2009, and the EU member states are by now well acquainted with the procedures for setting up an ERIC and how to handle possible related issues (VAT, excise duty, procurement, staff employment and so on);
 - Most of the ESFRI RIs have adopted the ERIC as legal status or are in the process to establish an ERIC: at the moment 21 ERICs have been established³⁵, 6 of which (**EMSO, EPOS, EURO-ARGO, EMBRC, ICOS and LifeWatch**) are in the Environment thematic domain.

4.1.3 Entities under the national legislation

Under the national legislation there is the possibility to establish private companies either with limited liability or unlimited liability. Alternatively, one can choose a non-commercial and non-profit model such as for example an association (even international) or a foundation (private foundation or foundation of public interest).

Different countries have differing legislations but there are also a lot of similarities. All these models are likely available in all European countries in some form or other. Entities under the national legislation have the following advantages:

- Known (by the national administration) and proven legal structure;

³⁵ https://ec.europa.eu/info/research-and-innovation/strategy/european-research-infrastructures/eric/eric-landscape_en#espal

- Short lead time for establishment: the establishment of an entity under national law can be a rather quick and simple process, and the compulsory requirements are often rather small;
- Allows for membership from private and public entities, like Research Institutes or Universities, not only States;
- Flexibility in accordance with applicable national laws.

For example, Belgium knows two forms of association with a non-profit purpose: the non-profit association (ASBL - **Association sans but lucratif**) and the international non-profit association (AISBL - **Association internationale sans but lucratif**). Even though the ASBL is the more often used form of association, the AISBL has proved to be less burdensome than the ASBL. Indeed, the AISBL has many advantages, which are not reflected by the ASBL:

- The AISBL has an international character, carried by the international nature of its purpose, and then the achievement of its purpose must potentially be useful beyond the Belgian territory;
- The AISBL is recognised by Royal Decree, which strengthens its image in the minds of third parties; an ASBL cannot enjoy this kind of recognition;
- The AISBL is less constrained by legal rules, meaning that the founders have a greater liberty in setting up the content of the articles of association; practical examples would be:
 - The functioning of the bodies of the AISBL: while an ASBL has well-defined bodies, such as a general assembly and a board of directors with at least three directors (or two if there are only three members) and specific attributed powers, an AISBL has two mandatory bodies with only some specific powers and more flexibility in their functioning and organisation;
 - The membership rights and obligations are not defined for the AISBL;
- The AISBL incorporation requirements are more simplified, if compared to a non-profit association (ASBL): indeed, an AISBL only requires a minimum of two founding members in contrast to the three mandatory founding members for an ASBL;
- If an AISBL wants to change its registered office, it may, if provided by the articles of association, proceed by decision of the management and is not required to convene the general assembly.

However, some requirements are more cumbersome for an AISBL than for an ASBL:

- The incorporation for an AISBL has to be made by notarial deed: the notary will submit the purpose of the association to the Ministry of Justice for approval; by contrast, ASBL could choose to incorporate the association by private agreement, which can substantially reduce the costs of incorporation;
- The approval procedure and the publication of the Royal Decree may take some time: from a practical point of view, this can take up to three months;
- The legal entity of an AISBL is granted on the day of the Royal Decree, while for an ASBL, it is the day of the filing at the commercial court.

On balance, the AISBL has wider potential for founders who are keen on having a non-profit association with a flexible structure in international matters.

If we only refer to the **ENVRI Community**³⁶, community of Environmental RIs and other diverse stakeholders interested in environmental RI matters, the AISBL has been chosen and adopted as a legal status by the following European initiatives: **EUFAR**, **EuroGOOS**, **IAGOS** and **SeaDataNet**, along with two other relevant European Organisations which operate in the Marine and Environmental domain; **EMB**, the European Marine Board and **JPI Oceans**³⁷, the Joint Programming Initiative Healthy and Productive Seas and Oceans.

Finally, it is also worth mentioning two other existing entities under the national legislation:

- **International non-profit association under the Dutch law** (e.g. industries such as Airbus, NGOs such as Greenpeace, rock-bands such as U2, **EREA**³⁸):
 - This international association is similar to the AISBL, with a registration in the Netherlands instead of Belgium;
 - Many international organisations are registered in The Netherlands because of flexible and adaptable administrative as well as financial regulations;
- **Civil Society under French Law (Société Civile)** (e.g. **CERFACS**³⁹):
 - A civil society is a society subject to the French Law; the Law does not attribute any other characteristics regarding their form, nature or purpose;
 - Although similar to the AISBL, the establishment of a civil society under French Law would require social capital at its establishment, a manager 'gérant' (either physical or moral) and is subject to French fiscal policy contrary to the AISBL;
 - Furthermore, such a civil society would require that the statutory seat is based in France; the advantage of the AISBL is that the statutory seat is based in Brussels allowing for a more European dimension to the network;
 - In addition, a civil society under French Law would necessitate that all the documentation will need to be drawn up in French putting all the non-French partners at a disadvantage and requiring translation services every time a document is drawn up or modified.

Figure 2 shows an overview of the legal models adopted by existing European RIs, including both single-site and distributed ones, and Strategic pan-European fora relevant to EUROFLEETS+. Taking in to account only the European initiatives operating in the Environmental domain, pan-European RIs and Strategic fora as highlighted in Figure 2, they have chosen to be either an ERIC or an AISBL, when it came to adopt a legally recognised formal organisation.

For that reason, and in order to identify a legal model which best suits WP8 purposes, the ERIC and the AISBL legal structures have been further investigated.

³⁶ <https://envri.eu/>

³⁷ <https://www.jpi-oceans.eu/>

³⁸ <https://www.erea.org/>

³⁹ <https://cerfacs.fr/en/>

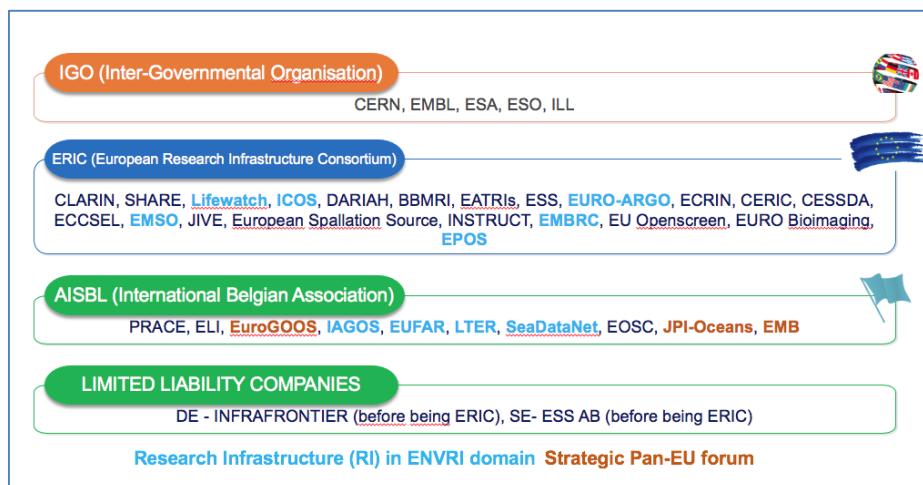


Figure 2: Overview of legal models adopted by existing European RIs and Strategic pan-European fora

4.2 A deeper look at the ERIC and AISBL models

In order to get more information on the ERIC and AISBL legal forms, the process to evolve into a more formal organisation of the following four Environmental Pan-European distributed RIs has been investigated:

- **EUFAR** (The European Facility for Airborne Research);
- **ACTRIS**⁴⁰ (Aerosols, Clouds Trace Gases Research Infrastructure);
- **MARINERG-i**⁴¹ (Marine Renewable Energy Research Infrastructure);
- **JERICO-RI**⁴² (Joint European Research Infrastructure Network for Coastal Observatories).

4.2.1 EUFAR

EUFAR brings together 13 European institutions representing 9 different countries involved in airborne environmental research. EUFAR was born out of the necessity to create a central network for the airborne research community in Europe with the principal aim of supporting scientists, by granting them access to research aircraft and instruments otherwise not accessible in their home countries. The objective in EUFAR is to coordinate the operators of existing distributed facilities for providing researchers with access at equal terms to these RIs, regardless of which country owns and operates the aircraft.

Report “Position paper towards the constitution of a sustainable legal structure for EUFAR”, publicly delivered in February 2015 by the H2020 EUFAR2 project (2014-2018), has been consulted. Two legal structures have been deeply investigated since identified as relevant for EUFAR: the AISBL and the ERIC. Table 3 summarises the pros and cons of an AISBL and an ERIC, as from the EUFAR Report (2015).

⁴⁰ <https://www.actris.eu/Home.aspx>

⁴¹ <http://www.marinerg-i.eu/>

⁴² <https://www.jerico-ri.eu/>

Criteria	AISBL	ERIC
Initial capital requirement	None	None
Form of membership	Membership at institutional level. At least 3 Members (people or legal entities).	High level membership - at least 3 Member States. Associated countries, third countries and intergovernmental organizations may also be Members.
Full legal personality	Yes, the AISBL becomes the holder of the rights and obligations arising from the recognition granted by royal decree (of which an extract is published in the Moniteur Belge).	Yes, an ERIC shall have legal personality as from the date on which the decision setting up the ERIC takes effect.
Governance structure	Made up of two bodies – the General Assembly (GA) and the Executive Board (EB). The GA is the highest decision making body of the Association. It determines the general policy of the Association and it has all the powers needed for the realization of the Association's objectives. The President and Vice President of the GA shall be citizens of two different countries. The EB shall manage and administer the Association in accordance with applicable laws, the Statutes of the AISBL, internal regulations and the decisions of the GA.	Members will define governance structure, which has to include 2 mandatory bodies – Members' assembly and a director/board of directors. The assembly of Members is the body having full decision making powers, including the adoption of the budget. At least three EU Member States shall hold the majority of the voting rights in the assembly of Members. The director/board of directors appointed by the assembly of Members, as the executive body and legal representative of the ERIC.
Duration of set up	Theoretically about 2 months after submission to Belgian Ministry. IAGOS AISBL took 3 years because of internal issues.	Theoretically, 3 to 9 months from time of submission of application to the EC to EC decision. Generally lengthy procedure. EMBRC ERIC took 8 years before becoming operational; EMSO ERIC and ICOS ERIC took 10 years before becoming operational.
International image and European character	Yes	Yes
Legal capacity to make procurement decisions independently	Limited as bound to public procurement directive making procurement difficult.	ERICs will not be bound by the procedures of the Public Procurement Directive but may set their own procurement rules based on transparency, non-discrimination and competition. This follows from Article 7.3 of the ERIC Regulation, according to which an ERIC is an international organisation within the meaning of the Public Procurement Directive.
Limited liability	Yes - liability of Members limited to their respective contributions.	Yes – liability of Members limited to their respective contributions.
Required administration	Light administration.	Heavy administration (finances, legal, purchasing, personnel).
Requirements relating to the RI	None	RI must be important for European research, excellent in its field at international level, provide effective access for European researchers, contribute to the mobility of knowledge and/or researchers within the ERA and contribute to dissemination/optimisation of the RTD results.
Location of statutory seat	Must be in Belgium.	In any EU Member State or associated State that is a Member.

Table 3: Pros and cons of an AISBL and an ERIC (Source: EUFAR Report, 2015)

As concluded in the report, after examining different legal forms relevant for EUFAR, the arguments were strongly in favour of establishing an International non-profit Association under the Belgian law (AISBL) rather than an ERIC. This is because the primary objective is to increase the coordination and integration of aircraft operators of a distributed fleet and the implementation of Open Access rather than acquiring, owning and operating any new facilities (joint ownership of a common asset).

4.2.2 ACTRIS

ACTRIS is a pan-European initiative consolidating actions amongst European partners producing high-quality observations of aerosols, clouds and trace gases. Different atmospheric processes are increasingly in the focus of many societal and environmental challenges, such as air quality, health, sustainability and climate change. ACTRIS aims to contribute in the resolving of such challenges by providing a platform for researchers to combine their efforts more effectively, and by providing observational data of aerosols, clouds and trace gases openly to anyone who might want to use them.

Deliverable 2.1 “Legal Entity Analysis”, publicly delivered in September 2017 by the H2020 ACTRIS PPP project (2017–2019), has been consulted. The purpose of the deliverable was to study what kind of (more permanent and sustainable) legal entity model would best suit the ACTRIS RI. The point was that ACTRIS RI is a large and complex RI and in order to function most efficiently it needs a strong management structure and legally binding commitments from countries. The approach used was not to study all existing legal forms, their benefits and disadvantages for a research infrastructure, but focus on ACTRIS RI and its needs.

As concluded in the deliverable, the scale of the ACTRIS services, size and distribution of the operations and number of member countries involved in the ACTRIS RI calls for a legal entity model that can deal with this level of participation and complexity. An ERIC as a model meets these requirement very well. Moreover, an ERIC automatically ensures the active involvement and commitments of the participating countries and not only research performing organisations, thus also safeguarding the long-term sustainability and funding that is absolutely essential for the ACTRIS RI. Adopting ERIC as a legal entity for the ACTRIS RI is a vital step towards firmly establishing the ACTRIS RI as a key atmospheric RI in the European RI landscape. With the ERIC as a legal entity, collaboration and alignment with other RIs in the environmental domain can be established and formalized.

4.2.3 MARINERG-i

MARINERG-I brings together all the European countries with significant testing capabilities in offshore renewable energy. The consortium is comprised of 13 partners from 12 countries (Germany, Belgium, Denmark, Spain, France, the Netherlands, Ireland, Italy, Norway, Portugal, the United Kingdom and Sweden).

Deliverable 5.2 “Final review and SWOT analysis of potential legal environment”, publicly delivered in June 2017 by the H2020 MARINERG-i project (2017–2019), has been consulted. This report is the updated and final report on the legal structure for the MARINERG-i RI and contains a recommendation on the choice of legal structure with the ERIC as the preferred option for the MARINERG-i RI. The SWOT analysis conducted on the AISBL and ERIC legal models are respectively reported in Table 4 and Table 5.

Strengths	Weaknesses
<p>A non-profit Association has legal personality.</p> <p>The founding members and the members who join the Association after its creation do not have to bring contributions to the Association.</p> <p>The creation of a non-profit Association takes a minimum of 15 to 20 days.</p> <p>There must be at least three founding members, irrespective of their nationality.</p> <p>The administration and corporate structure of an international non-profit Association are more flexible than in a regular non-profit Association, to facilitate the implementation of alternative governance schemes.</p>	<p>The registered office must be located in Belgium.</p>
Opportunities	Threats
<p>Non-profit organisations are usually exempt from corporate tax and only subject to the "tax on legal entities". A non-profit organisation is not considered to be a Belgian VAT taxpayer unless it carries out economic activities in Belgium.</p> <p>An international non-profit Association is largely the same as a non-profit Association, and the same conditions and basic requirements apply as in relation to non-profit Associations.</p>	<p>A non-profit Association is an association that does not conduct industrial or commercial operations, and does not aim to generate any tangible profit for its members.</p>

Table 4: SWOT analysis of the AISBL legal model (*Source:* MARINERG-i Deliverable 5.2, 2017)

Strengths	Weaknesses
<p>An ERIC has a legal personality and full legal capacity recognised in all EU MSs</p> <p>ERICs have been tailored to EU research infrastructures</p> <p>Unlike international organisations, an ERIC does not need any ratification at EU or national level (other than the Commission decision setting up the ERIC) at any stage of its establishment</p> <p>Possible membership of non-EU MSs (associated countries and third countries).</p>	<p>Private entities wishing to be a member of an ERIC will need to be explicitly granted such a mission through a decision by a public sector body</p> <p>An ERIC is EU focused and could therefore discourage non-EU MSs involvement because: (1) underlying role of the Commission; (2) application of EU law; (3) application of the jurisdiction of the ECJ; and (4) non-EU MSs need to ensure that the ERIC is granted the same benefits in their legal system as it is in the EU.</p>
Opportunities	Threats
<p>Liability is limited for members to their contributions (financial or in-kind)</p> <p>Flexible liability regime for members</p> <p>It is not wholly restricted to purely non-economic activities</p> <p>ERICs benefit from the same treatment as international organisations in relation to VAT, excise duty and compliance with public procurement rules</p> <p>An ERIC can have operations and sites in any country in the world (although the HQ/statutory seat has to be in the EU)</p> <p>There are no prescribed "Statutes" (i.e. articles of association) therefore the members have freedom to draft these, provided that they cover as a minimum those points listed in Article 10 of the ERIC Regulation</p>	<p>There is a need for involvement from the host MSs as they will need to make a declaration recognising the ERIC</p> <p>There is a risk that the ERIC will not be recognised as a legal personality by a non-EU MS</p> <p>An ERIC requires the approval of the Commission (although the Commission will not be involved in the ERIC after approval has been given)</p> <p>High level of political buy-in is required</p> <p>The Commission needs to approve the Statutes of the ERIC</p>

Table 5: SWOT analysis of the ERIC legal model (*Source:* MARINERG-i Deliverable 5.2, 2017)

4.2.4 JERICO-RI

The JERICO-RI is a long-term framework providing high-quality marine data, expertise and infrastructures for Europe's coastal seas. The data are multidisciplinary, standardised, quality controlled, sustained, interoperable and free to access and use. JERICO-RI currently operates as a distributed Research Infrastructure consortium consisting of a central hub and interlinked national nodes.

The Deliverable 1.3 "A sustainable legal, governance and financial structure for JERICO-RI", delivered (*consortium only*) in January 2019 by the H2020 JERICO-NEXT project (2015–2019), has been consulted. The document summarises the key outputs of an extensive Cost Benefit Analysis exercise carried out by Grant Thornton in association with the Marine Institute and integrates these outputs with the present level of reflection by the JERICO-RI community in elaborating a future sustainable strategy for the monitoring of the European coastal Ocean. Table 6 reports the main Strategic elements of long-term sustainability when comparing an ERIC and an AISBL.

ERIC/AISBL	Greater internationalisation & international research collaboration
	Permanence of key personnel
	Establishment of centralised secretariat
	Enhanced visibility
ERIC	Secure longer-term financial commitment by members
	Advanced governance structures & coordination of operations
	Demonstrate European and global scientific leadership
	Greater capacity to work in association with industry
	Close connection with EU research and industrial policy frameworks

Table 6: Strategic elements of long-term sustainability (*Source:* JERICO-NEXT Deliverable 1.3, 2019)

As concluded in the deliverable, the permanent establishment of the JERICO-RI under the ERIC legal form would result in the most advanced form of centralised research coordination, management and administration among all options under consideration in this analysis. As compared to an AISBL, the ERIC legal form enables the achievement of greater economies of scale and more advanced forms of resource allocation and research coordination. By acting as a single-point access system for users and a vector for integration tailored to EU RIs, ERICs provide a more comprehensive common reference strategic framework, greater international visibility, greater interoperability of service protocols and data collection, and a closer connection to the EU's research and industrial policy frameworks.

As the AISBL option is no more efficient in purely financial terms, while also being less functionally effective, there is no basis for recommending the AISBL option as preferable. Also, many of the key benefits associated with the permanent establishment of JERICO are not readily quantifiable. As an ERIC is a more advanced form of organisational structure than an AISBL, it is reasonable to expect that the

JERICO ERIC option would result in more comprehensive outcomes when coordinating scientific research, collaborating with industry, environmental protection endeavours, climate change research and providing financial support to members. If these superior outcomes can be achieved without significant additional costs being incurred as compared to the JERICO AISBL option, then the permanent establishment of JERICO as an ERIC is the preferred investment option.

5 Towards a distributed Research Infrastructure for EUROFLEETS RI

Distributed Research Infrastructures draw on resources from a number of locations, each funded and/or owned by a different operator, each of which has agreed to implement joint governance of these distributed resources. Most of the distributed RIs emerge from existing networks and therefore emerge from the integration and upgrade of existing capabilities owned and managed by different institutions with different legal basis.

The decision-making process for deciding whether to become a distributed RI or continue to exist as a network of RIs requires considering a number of keystone focal points on the governance scheme, funding sources and business plan, access policies, communities of users, data management, impacts and so on. The series of elements to analyse are critical and have to demonstrate that the consolidated form of the distributed RI will provide an added value and will be more cost effective.

On the other hand, building a distributed RI also means that no single party is required to have a complete range of facilities or equipment. This would provide some further encouragement for national funding authorities to commit to multi-year funding of this multinational agreement, thereby providing somewhat better stability for operator budgets and in turn, of the activity made available to the scientific community. It would also lead to a renewal plan being considered jointly, ultimately with a view to optimising an increasingly integrated set of resources, with the possible appearance of co-funding in the long term.

5.1 Peculiarities of Research Vessel Operational Models

European Research Fleet is a substantial fleet, with 99 vessels available for science, operated by 23 countries, as reported in EMB PP25 described in paragraph 2.2. The majority of research vessels covered in EMB PP25 are owned by research institutions, followed by government bodies, universities and other public institutions, e.g. environmental protection agencies.

Co-ownership at an international level is not a common management model for European research vessels. This is mainly due to issues that arise concerning the legal status of the vessel. A vessel can only fly one unique national flag, generally the national flag of the owner, hence if it is jointly owned by several countries, it is not obvious which flag it should fly. The national flag also makes research vessels highly visible at a national level and hence they are considered as national assets.

Management of research vessels is usually not centralized per country, but rather by institutions, universities or government bodies focusing on environmental monitoring and/or marine research. The most striking and recent example of centralized fleet management is in France, where the French Research Fleet has been managed by one single operator, IFREMER, since 2018. In Spain, an agreement for the creation of a joint management unit called FLOTPOL65 was signed between CSIC and IEO in 2013 in order to strengthen collaboration and optimize the operation of the research vessels and equipment owned and operated by these two institutions. In other countries where several research vessels are operated, three and even up to eight operators can be identified, such as three different operators managing five (Italy) or seven (Portugal) research vessels. In Norway, the Institute of Marine Research (IMR) operates seven research vessels that are owned and co-owned by five different public institutions belonging to four different ministries.

Funds to operate research vessels mainly come from the national governments although the funding schemes differ between countries. Some countries have a fully funded RI, where all costs associated with the vessel(s) and the science conducted on board are covered. In other countries, part or all of the costs other than the vessel's fixed operating costs, such as transportation of equipment to be used on the cruise, travel for the science party to/from the vessel etc. have to be covered by the scientific users.

Other significant characteristics with regards to research vessels are the high investment cost in the order of 10 -15 M€ for a coastal research vessel, 20-40 M€ for a regional research vessel and 50-150 M€ for an ocean class or global class research vessel, and the high annual running cost which can be in the order of 0,5-1 M€ for a coastal vessel, 3-4 M€ for a regional vessel and 5-10 M€ for a ocean/global vessel. Given a lifetime of 30-40 years, the decision to invest in a research vessel is substantial, requires a long-term financial commitment from the owner(s) and must be based on a solid user need analysis and a sustainable scientific strategy.

Many of the European RI consortiums like EMSO, JERICO-RI, EURO-ARGO, **GROOM II**⁴³ for gliders and others are pooling relatively "low cost" instruments and more importantly with **annual running costs that are minor when compared to those of a research vessel**, and the instruments are working in a network for collection of similar datasets that can be used to gather synoptic coverage of an extended area over time etc. Such instruments are also unmanned and only require external support when they are deployed, serviced or recovered. It is therefore reasonable to think that such instruments benefit from networks with some level of central coordination and management. These instruments are not required to adhere to laws, rules and regulations to the same extent as vessels and they are not manned so there are no employer responsibilities involved which makes it much easier to manage and operate such RI compared to research vessels.

Another obvious difference is that autonomous instruments and vehicles collect a single or a few types of data while research vessels usually cover a large spectrum of science tasks, both in monitoring, sampling and support of other marine research instruments based on a work program that is evolving and changing from one year to the next. Therefore, it is much more complicated to plan and coordinate the actual use of research vessels than autonomous instruments that may stay in the same location for years or move around the oceans without any outside support or "man in the loop".

All these peculiarities must be taken into account when studying European RI management models for other marine research infrastructures.

5.2 Previous attempts towards a more formal structure for the European research vessel operators' community

Few previous discussions and works have been carried out within the European research vessel operators' community in order to define and agree on a more formal structure for their network.

⁴³ <http://www.groom-fp7.eu/doku.php>

5.2.1 Ad-hoc Working Group on ERVO's future

At the 2014 ERVO meeting in Barcelona, it was decided to set up an “ad hoc” working group (WG) to initiate a strategic discussion about ERVO aspirations, goals and opportunities. Seven topics were proposed at that time and then discussed among WG members:

- ERVO legal framework/structure;
- EUROFLEETS1+2 legacy;
- ERVO/IRSO⁴⁴ relationship;
- Collaboration with **EurOcean**;
- ERVO/OFEG⁴⁵ relationship;
- ERVO versus European Ocean Observing System (**EOOS**⁴⁶);
- Proposal for a new organisation of ERVO.

With specific reference to the issue of ERVO as the envisaged heir of EUROFLEETS1+2 network and its potential role in the legacy of those projects by protecting and maintaining all tools and knowledge produced so far, the consensus was that ERVO cannot take on the task of being the “TA agency” of the future since it is not a legal entity, and does not have the necessary financial resources and manpower.

A TA management option, proposed by the WG, could be that one institution in Europe, preferably one that is represented in ERVO, takes on the formal task of being the “TA agency” for a period of time (e.g. 3-5 years), and is the legal partner versus the EC, as well as the “project office” for the TA involving vessels and heavy instruments. The same institution should then be responsible for the management of the calls, to recruit members to the “Cruise application review panel” and the “Logistics panel”. The individuals involved in the panels should then be compensated for their travel cost and man-hours involved in the work in the same manner as in the EUROFLEETS projects. The host agency will also of course be economically compensated by the EC TA budget for the costs of running the “TA office”. After the 3-5 years period the task of hosting the “TA office” could then be transferred to another interested institution or the same institution could be signed up for another 3-5 years.

5.2.2 EUROFLEETS2 project

In a dedicated Work Package entitled “Initiatives towards integrated and cost-efficient operational activities”, EUROFLEETS2 has paved the way towards an increased and cost-effective marine Regional research vessels integration through keystone initiatives that result in a progressive Regional “Virtual Fleet”⁴⁷ scheme for transnational cooperation. In this context, it is worth mentioning what was pointed out in the following three EUROFLEETS2 Deliverables:

- **Deliverable 4.1 “Definition of a multifaceted scheme for Regional virtual fleet trans-national cooperation, including identification of pioneering groups” (2014)**

⁴⁴ <https://irso.info/>

⁴⁵ <http://www.ofeg.org/np4/home.html>

⁴⁶ <http://www.eoos-ocean.eu/>

⁴⁷ The “**Virtual Fleet**” concept is defined as a group of RVs and/or embarked equipment, to which a funding scheme and shared assessment organization of research projects gives access (EUROFLEETS2 Deliverable 4.2, 2017).

A brief recommendation is given in this deliverable to set up a permanent European TA system for research vessels and large exchangeable instruments, based on the experience from EUROFLEETS and EUROFLEETS2 projects.

A dedicated organization/agency with the task to manage the TA calls, including the publication of the calls, scientific and logistical panels, money transfer from the EC to the Principal Investigators (PIs) and the research vessels operators, collection and publication of results etc. should be established, or these tasks could be executed by an existing institution, e.g. a marine research institute, university or similar under a service contract with the EC. The TA funding (shiptime, transportation cost for instruments and equipment and travel cost for cruise participants) could come from EC common funds or through cash and/or in-kind contribution from the individual EU member states.

- **Deliverable 4.2 “Reporting and evaluation of initiatives with pioneering groups” (2017)**

This deliverable sets out avenues of progress towards the construction of a European Research Fleet, established on the basis of national fleets, optimised, and made more accessible with regard to a given region or Europe as a whole.

The deliverable suggests to further develop the “Virtual Fleet” concept and to build on the EUROFLEETS TA experience. This has proven to be an efficient mechanism to strengthen collaboration through multidisciplinary groups of users with complementary skills and expertise. TA also allows access to maritime resources for countries that do not have appropriate infrastructures or marine equipment, such as deep-water systems, long coring equipment and so on.

The vision for a jointly operated and shared fleet of European research vessels is shared by a large number of European ship operators and marine scientists. Yet, the obstacles for the establishment of an integrated European research fleet appear cumbersome in the short and medium term. The linked deliverable 4.6 (see below) concludes likewise. There are two main reasons for this.

In almost all countries, fleet management is very often shared between a number of different bodies and universities, with weak or very weak operational coordination. Some countries have set up a single point of contact for submitting and evaluating requests, sometimes accompanied by coordination of operators’ maritime resource schedules. This means that fleet management is often fragmented within each country. In addition, despite the financial crisis, the notion of which flag a vessel carries remains important in the eyes of national policymakers when it comes to investing several million or several tens of millions of euros.

Long-term infrastructure funding mechanisms do not exist at EU level, even though these would constitute a concrete financial incentive to move towards more integration as well as help with funding to allow countries with limited or without infrastructures to gain access to the RIs owned by the other countries.

Following on from EUROFLEETS projects, one way forward might be to create a “European Fleet Infrastructure Coordination System”, which, encouraging knowledge-sharing and the emergence of joint projects, would be based around a permanent office financed by its members.

- **Deliverable 4.6 “Draft of documentation to place a pan-European regional research fleet project on the ESFRI roadmap” (2017)**

A European distributed RI, as recognised by **ESFRI** (European Strategy Forum on Research Infrastructures) and comprising several regional research vessels, is a concept that has been evaluated, analysed and reported in this deliverable.

ESFRI provides concrete guidance and steps that can be taken with the aim of achieving a gradual implementation of an integrated European regional research vessel fleet. This could lead to the creation of a unitary legal entity at the European level (such as the ERIC), which in turn would provide a unitary set of procedures and recommendations applicable throughout the European Seas, to optimize the use of research vessels and associated equipment.

However, in its conclusion, the deliverable points out that although the vision for a jointly operated and shared fleet of European research vessels is shared by a large number of European ship operators and marine scientists, the obstacles ahead on the ESFRI “path” appear cumbersome. A materialised shared European effort on these matters is not anticipated within the next decade. The deliverable therefore advocates focusing in the near future on less all-embracing collaborative schemes. These might stand a chance to become successfully established and in turn pave the way towards more comprehensive collaborative schemes.

6 Possible options for a long-term sustainable coordination model for the European research vessels (EUROFLEETS RI)

The identification of a long-term sustainable coordination model for European research vessels (EUROFLEETS RI) would constitute a fundamental strategic achievement for the EUROFLEETS+ project.

Objectives of this model are suggested as follows:

- To provide researchers transnational access to research vessels and associated equipment/instruments that are not available in their home countries or that are not supported by national funding already available to the researcher;
- To promote the use of the European research vessels and improve the scientific expertise in the field of marine science/research by providing education and training courses, activities, opportunities, programs, summer schools (both theoretical and practical) not only for young scientists from countries where such facilities are lacking, but also for vessel crew, marine technicians, vessel operators, and other shore-based staff, who are vital to research vessel activities;
- To strengthen the European culture of cooperation between research vessel operators, their parent institutions, experts in marine scientific instruments and equipment, scientific users of the facilities, and industry players, enabling the sharing of new developments and best practices and common standards/protocols in the fields of instrumentation development and data analysis and promoting the wider dissemination of such knowledge to new users of research vessels;
- To act as a “think tank” in order to evaluate and continually monitor the performance of the existing European Research Fleets, identify gaps and provide solutions for the long-term development and harmonisation of the fleets with the mission to reduce redundancy and optimise the use of European research vessels and associated equipment/instruments;
- To provide independent strategic recommendations on objectives, scientific priorities and long-term developments, contributing to the consolidation and strengthening of EU positioning in international initiatives;
- To support both market pull and technology push driven innovation in marine research within the research vessels operators’ community and to foster a culture whereby research vessels operators/experts and industry will closely interact and develop partnerships to transfer marine research instruments, methodologies and software to market and to facilitate the transfer of expert knowledge to users, operators and funding agencies;
- To maintain a dedicated on-line infobase, providing easy access to up-to-date information on the European Research Fleet, advertising education and training opportunities, improving the proposal-submission system, developing new interactive tools to support collaborative activities, and implementing new facilities based on gaps identified.

Figure 3 shows the **EUROFLEETS RI** concept under discussion within the consortium, i.e. a model for handling TA to research vessels and LEXIs in Europe and at the same time strengthen the sharing of knowledge, experience, best practice and collaboration among research vessels and/or LEXI operators and various stakeholders across Europe.

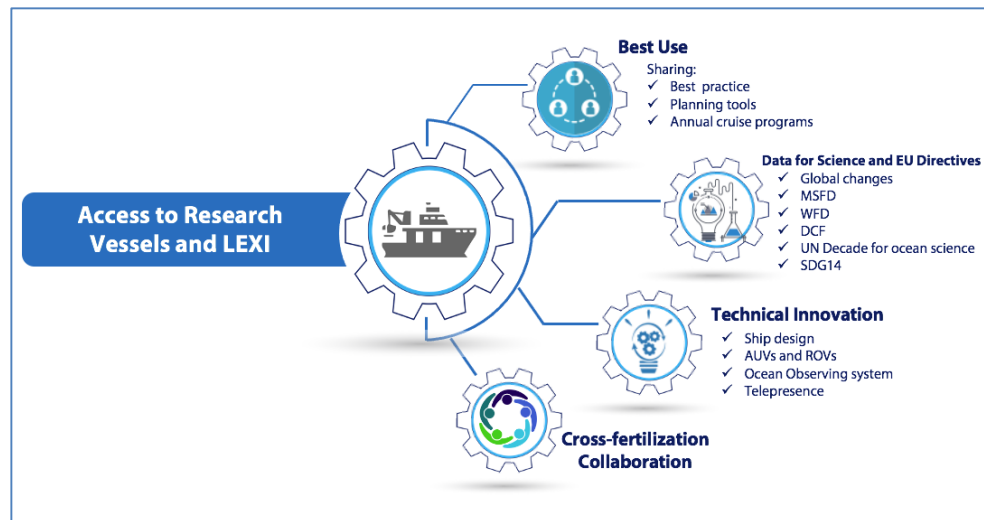


Figure 3: Concept of the EUROFLEETS RI objectives

EUROFLEETS RI would have the primary task to manage the TA calls, including the publication of the calls, recruitment of members for scientific and logistical panels, organising network meetings, money transfer from the EC to the Principal Investigators (PIs) and the research vessels operators, collection and publication of results, etc.

EUROFLEETS RI would also accommodate and nurture the following:

- Long-term coordination activities in liaison with the ERVO Group (with potential role as its permanent secretariat), the OFEG, the IRSO Group and the **UNOLS**⁴⁸;
- Coordination of fleets for JPI-style initiatives (**AORA – Atlantic Ocean Research Alliance**⁴⁹, deep sea mining, etc.), EU projects and pan-European distributed RIs such as EMSO, and so on;
- Technical groups for the exchange of best practices and shared developments, such as the operation of vessels and scientific instruments and equipment, software, acquisition standard coordination in liaison with SeaDataNet, EuroGOOS, etc.;
- Maintaining and validating the European vessel and equipment database, see www.rid.eurocean.org currently managed by EurOcean, and establishing a coordinated renewal plan for European Research Fleets by consolidating and optimising national renewal plans as much as possible;
- Temporary working groups on topics such as long coring, icebreakers, training for RV managers and instrument technicians, updates of EMB PP 10 and 25, etc.

EUROFLEETS RI would require a permanent secretariat to sustain the activities, helping **EUROFLEETS RI**'s public profile further advance and to sustain outreach activities like media reports, a dedicated website, brochures and educational materials to explain to the general public the importance of research vessels in dealing with climate change and other environmental issues.

⁴⁸ <https://www.unols.org/>

⁴⁹ <https://www.atlanticresource.org/aora>

In addition to these strategic elements, the permanent establishment of the **EUROFLEETS RI** would result in a centralised coordination of TA operations, further enhance the efficiency and effectiveness, demonstrate European and global scientific leadership, further enhance visibility, allow for greater collaboration with industry, and make the consortium strategic direction more closely aligned with EU research and industrial policy.

International marine scientific and technological cooperation is instrumental in building dialogue and sharing knowledge between different scientific communities, cultures and societies. Permanent establishment of **EUROFLEETS RI** will better serve structured dialogues and collaboration between marine researchers and various stakeholders, allowing RI networks to develop long-term strategic partnerships with third-party stakeholders such as educational institutes, government or the private sector.

The EUROFLEETS+ project has researched and documented the requirement for ensuring a long-term sustainable coordination model for the European research vessels (**EUROFLEETS RI**). Two options are presented as follows.

6.1 EUROFLEETS RI as an AISBL

Considering all the available legal entity models already discussed and the choices made by other European Environmental initiatives for the coordination of RIs (i.e. EMSO, EPOS, EURO-ARGO, ICOS, LifeWatch, EUFAR, EuroGOOS, IAGOS and SeaDataNet), the legal model suitable for **EUROFLEETS RI** could be an AISBL or an ERIC.

Taking into account the peculiarities of the European research vessel operational models, an AISBL would seem to be the most suitable legal model for the following main reasons:

- The primary objective of **EUROFLEETS RI** is to increase the coordination and integration of the European research vessels operators of a distributed fleet rather than acquiring, owning and operating any new facilities (joint ownership of a common asset), and an AISBL seems to be sufficient to bring together partners to form a legal entity;
- The AISBL is easier and faster to establish than an ERIC in terms of implementation complexity and timeframe;
- The AISBL gives full legal entity with liability for members limited to their respective contributions, a simple governance structure, light administration, an international image and a European character;
- The AISBL is also eligible to apply for EU research and innovation funding, either on behalf of its members or as a partner in a project.

Specific characteristics of the AISBL legal model (e.g. location of statutory seat, legal capacity to make procurement decisions independently, tax treatment, volume of business and investments) will be further investigated and discussed within the EUROFLEETS+ consortium.

On the other hand, **the drawbacks of utilising the ESFRI “path” i.e. an ERIC are:**

- The procedure for setting up an ERIC involves an application to the Commission, which assesses whether or not the proposed RI meets the requirements of an ERIC as described in the ERIC Regulation. Applicants are then required to submit a formal request to the Commission, which

will allow the Commission to prepare its decision setting up the ERIC. The fact that an ERIC cannot be set up by its members autonomously means that the implementation time frame is harder to predict;

- Although the vision for a jointly operated and shared fleet of European research vessels is shared by a large number of European ship operators and marine scientists, the obstacles ahead on the ESFRI “path” (i.e. an ERIC, specific legal form that facilitates the establishment and operation of Research Infrastructures with European interest) appear cumbersome for the two main following reasons:
 - In almost all countries, fleet management is very often distributed between a number of different institutions and universities, with weak or very weak operational coordination;
 - The notion of which flag a vessel sails under remains important in the eyes of national policymakers when it comes to investing several million or several tens of millions of euros;
- A significant challenge in setting up an ERIC is the required high level of membership at national level, whereas in the AISBL the membership is required at institutional level.

6.2 EUROFLEETS RI as a MoA-based model

An alternative option to establishing a new legal entity such as an AISBL for EUROFLEETS RI could be a model as proposed by the ERVO ad hoc WG (*see paragraph 5.2.1*).

This option could be considered as a good alternative to start with since it only requires a **Memorandum of Agreement (MoA) between interested institutions**, binding enough to establish an office at the first hosting institution.

This proposed model can be implemented by an office residing within an established marine research institution, preferably one that is represented in ERVO, and hosted for a period of 3-5 years before it moves on to another institution or is renewed for a second term.

If this office is an integral part of an established marine research institution, the office can act under the legal entity of that institution and as such enter in to contracts with for example the EU for EU-projects, or solely for Transnational Access funding, providing a service to the EU. Moreover, to move office from one country to another, which probably means replacement of office staff, should not be too much of a problem since the TA “tool box” is already developed by the EUROFLEETS projects.

This option can also be seen as a first step before evolving in to a legal entity by first testing the cooperation model through a MoA to see how and if it works, before establishing an AISBL or similar organisation. Indeed, this model would be:

- Easier and faster to establish after the end of the EUROFLEETS+ project;
- More flexible in terms of governance structure and decision-making procedures;
- Easier to adapt to the peculiarities of RVs management in Europe;
- Sufficient to bring together partners, based on the network and “tool boxes” already developed by the EUROFLEETS projects and ERVO.

With the objective of establishing legacy and long-term sustainability, a feasibility assessment of the considered **AISBL** and **MoA-based** models for **EUROFLEETS RI** will be conducted (**Step #2 of WP8**). The assessment will take all relevant factors into account - including economic, technical, legal and scheduling considerations - to ascertain the likelihood of working these two options in practice. A draft version of a business plan will be also provided, encompassing all components needed to establish, operate and grow this pan-European distributed RI beyond the EUROFLEETS+ project life-time: strategic analysis and strategic plan, market (users) analysis and strategy, legal and governance model, management and organization, finance model, timeline, etc.

7 Conclusions

Although an “Advanced Community” the European research vessel operators’ community is less developed compared to other European marine science communities, which have evolved towards pan-European coordination of research infrastructures models. To this end the H2020 EUROFLEETS+ project aims to align and conform to these successful pan-European initiatives, by promoting a long-term sustainable coordination model for the European research vessels (**EUROFLEETS RI**), with a view to consolidating a strategic and coherent vision of the European Research Fleet and outlining future research infrastructure developments within the ERA key priorities.

The first step carried out to meet this objective has been the identification of suitable models. Based on the analysis conducted and results reported in this deliverable, two options are proposed:

- EUROFLEETS RI as an AISBL;
- EUROFLEETS RI as a MoA-based model.

Next step towards a more comprehensive approach and long-term vision for the European Research Fleet will be the execution of a feasibility assessment of the two options for **EUROFLEETS RI** as a long-term sustainable coordination model for the European research vessels. The study aims to identify a model of management and funding mechanisms to establish sustainable funding streams, and operate and grow this pan-European distributed research infrastructure beyond the EUROFLEETS+ project life-time.

To this aim, meetings back-to-back with international events and workshops, possible on-line consultation, interviews and tailored communication initiatives will foster a general dialogue with suitable political (Government Research Ministries and Associated Countries, EU representatives of Directorate General, Service Department and Executive Agency – CLIMA, ENV, ERCEA, JRC, MARE and RTD), European and International Funding Agencies and industrial subjects/ channels to create interest and capture commitment.

A preliminary business plan will be presented to external experts to provide an interim evaluation. Based on that and in close relation with the level of input received from the broad community, the business plan will be finalized and presented in the EUROFLEETS+ Deliverable 8.3 “Report on feasibility study for implementation of a transnational access system, including business plan”.

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