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### D5.3 Map of user needs for research vessel infrastructure



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## Executive Summary

Deliverable 5.3 “Map of user needs for research vessel infrastructure”, catalogues a map of the stakeholders’ needs as gathered by the Eurofleets+ consortium.

The ultimate goal is to collect and assess the dynamic needs and perspectives of stakeholders and user communities to ensure that the relevant marine research infrastructures are coordinated, designed and operated optimally for user's challenging requirements. This implies identifying the needs of stakeholders and establishing a collaborative framework to better respond to social environmental needs, including, but not limited to, global change, ocean acidification and changes in geo-hazards and ecosystems.

In this report, the main results of the stakeholder’ engagement activity implemented between February 2019 to December 2021 have been documented and analyzed.

Deliverable 5.1 “Strategic Agenda for Stakeholder Engagement” outlined the methodology followed for the identification of the stakeholder categories and the approach adopted to engage them.

The methodology implemented two consecutive phases: the first implemented through the submission of on-line surveys from a sample of 22 stakeholders, while the second phase was developed through a set of bilateral interviews with 14 stakeholders, chosen from the questionnaire respondents to explore their needs more deeply.

The Stakeholders interviewed represented:

- Industry (particularly SMEs).
- Pan-European Research Infrastructures (particularly ERICs).
- Research Institutions & Education.

as these are likely to interact with the Research Vessel (RV) operators being the research vessels essential for the implementation of activity in their fields.

The needs identified have been grouped into six main topics/areas and have been duly illustrated with a dedicated paragraph each, where needs, barriers, solutions and project benefit have been listed and analyzed.

The structure of the on-line survey (Annex 1) and the interviews with an explanation of the six topics (Annex 2) are available at the end of the current document.

An extensive analysis has been conducted regarding the crosscutting needs raised by different stakeholders.

The main need emerged, as an area of greatest interest for the stakeholders, is related to JRA-Joint Research Activities, particularly those between them and the RV operators for the joint development of new technical solutions. The second most interesting need is related to Transnational Access (TA) activities. Other needs identified are mainly related to Training & Education, such as establishing common training activities, and to the communication among the different communities.

All these needs were accompanied by the cross topic of establishing a coordinated structure able to satisfy them: having a coordinated entity able to match the stakeholder and the RV operators needs was proposed as a solution. What the consortium supposed to be a need (Topic# 5 Foresight Roadmap and Legacy) was indeed presented by stakeholders themselves as potential solution.

Further activities scheduled to encourage, progress and support Eurofleets+ stakeholder dialogue, including the launch of the Stakeholders' Forum and the 1<sup>st</sup> Eurofleets+ International workshop, are also outlined.

## 1. Introduction

Eurofleets+ is "An alliance of European marine research infrastructure to meet the evolving needs of the research and industrial communities", funded by the European Commission's Horizon 2020 Research and Innovation programme. The project facilitates open free of charge access to an integrated and advanced research vessel fleet. The project includes 42 partners and involves the use of 13 global ocean research vessels, 14 regional vessels, 7 Remotely Operated Vehicles (ROVs), 5 Autonomous Underwater Vehicles (AUVs) and a telepresence unit.

One of the keys aims of the Eurofleets+ project is to involve a wide range of stakeholders to inform on the operation, development and strategic direction of the European research vessel fleet, and to get information of their specific needs. Eurofleets+ Work Package 5-Stakeholder Engagement is dedicated to this.

Stakeholder dialogue activities are planned throughout the duration of the project employing three principal approaches: semi-structured interviews; a web-based discussion forum; and two international workshops. Deliverable 5.1 (Strategic Agenda for Stakeholder Engagement) outlines in detail the planned methodology for the above activities.

To date the consortium has as a first set of activities, semi-structured interviews, gathering the stakeholder needs which are described and analyzed in this deliverable (D5.3).

## 2. Methodology

The stakeholder's needs listed in this deliverable were collected through conducting semi-structured interviews. This activity was divided in two main steps: an on-line survey and bilateral open interviews, as described in the D5.1.

At the beginning of the project, a 'Stakeholder' register was created, listing 358 contacts from 37 countries, and representing nine different stakeholder categories. In the context of the Eurofleets+ project, "stakeholders" are defined as "Any organization, group, entity or individuals with an interest or stake in the Eurofleets+ results and the success of Eurofleets Research Infrastructures ", as shown in the following table:

STAKEHOLDER	Any organization, group, entity or people with an interest or stake in the Eurofleets+ results and the success of an LTS_CS of Research Vessels.
INTEREST	How will the stakeholder benefit from the Eurofleets+ outputs? How will Eurofleets+ impact the stakeholder?
THEIR NEEDS	What are stakeholders' needs? What expectations do they have?
OUR NEEDS	What does Eurofleets+ need from this stakeholder? Input? Endorsement? Commitment? Resources? Visible public support?
FUTURE ROLE	Each stakeholder may assume one or more roles and may be a user of the LTS_CS
AGENDA	How will Eurofleets+ work with this stakeholder? How Eurofleets+ will communicate and how frequently?

Table 1. Stakeholder identification approach (Table 3.1 in D5.1)

The nine selected stakeholder categories are:

1. Pan-European Research Infrastructures (particularly ERICs)
2. Projects (EU, National, International)
3. Networks, Organizations and Frameworks
4. Research Institutions & Education
5. Industry
6. Governments
7. Media
8. Public
9. NGO's.

From these categories, it was decided to begin the process by engaging pan-European Research Infrastructures, Research Institutions & Education, Industry as these are likely to interact with the Research Vessel (RV) operators being the research vessels essential for the implementation of activity in their fields.

The remaining six categories will be analyzed as outlined below and reported on in Deliverable 5.5 at the end of the project.

- *“EU infrastructure projects” and “Networks, Organizations and Frameworks”* - representatives from these two categories are to be invited in future Eurofleets+ events or to be contacted when WP5 beneficiaries take part in other dedicated national or international events.
- *“Media, to include science writers, journalists, documentarists”, “The general public” and “Representatives of national and European non-governmental organizations; representatives of international non-governmental environmental organizations, for example WWF”* - these stakeholders will be contacted through Eurofleets+ communication and dissemination activities (WP9).
- *“Decision-makers, policy makers, public agencies, funders, planners”* - this will be the last category to be investigated with a tailored approach and engagement of Eurofleets+ beneficiaries with their national contacts; results from the initial stakeholder’s engagement activities will help to show stakeholder interest in the project activities as well as future developments (WP8).

From all stakeholders listed under Industry, pan-European Research Infrastructures, and Research Institutions & Education a total of 26 (12 industries, 6 ERICs, 8 Research Institutions and Education) were chosen to engage in detail.

For industry category, a total of 9 companies were chosen, 6 Small to Medium Enterprises (SMEs) and three large companies producing sensors or related systems. For the ERIC’s and pan-European Research Infrastructures the focus was on organizations engaged in marine activities such as EMSO ERIC. Finally, for Research Institutions & Education the choice was made on a geographical basis providing a balance of representatives from both northern and southern Europe.

As a first step, the project implemented an on-line survey in order to start collecting information on stakeholder’s offer and need (what the stakeholder organizations can provide or need in the context of technologies and services for marine research), on the potential overlaps between stakeholder activities and Eurofleets+ services, and in general on mutual collaboration opportunities that are being currently discussed among the consortium. This laid the foundation for a long-lasting communication channel between Eurofleets+ and stakeholders aiming to establish a direct and permanent contact and to identify a first preliminary list of specific needs that will be further investigated during the entire project duration.

The Eurofleets+ project aims at providing more valuable and targeted services for stakeholder activities, such as:

- access to a unique fleet of 27 research vessels, in different geographical areas (Mediterranean and the Black Sea; Baltic and North seas, North Atlantic - including Greenland and Norwegian seas - and Pacific Southern Ocean and Ross Sea);
- training sessions on technological and scientific matters;
- innovation management and exploitation tools for the technological transfer of scientific results;
- webinars;
- acting as cooperation platform between the various RIs and networks;
- web stakeholders' Forum;
- two international workshops.

The questionnaire was structured in eight sections:

1. Personal Details
2. Organization Details
3. Areas of Research/Activity
4. Research cruises and funding in the last 5 years
5. Awareness of funding programmes
6. Primary source of funding received to cover the cost of ship time between 2009 and 2019
7. Current Access
8. Collaboration with industry.

The on-line survey is available in **Annex 1**. The results from the on-line survey were preliminarily analyzed to better conduct the subsequent semi-structured interviews.

For each of these categories, the analysis focused mainly on sections;

- research cruises and funding in the last 5 years
- current access
- collaboration with industry
- awareness of funding programmes.

The objective of these sections was to identify stakeholders who were already aware of Eurofleets+ activities and/or with an interest in engaging in them, in order to be involved in future initiatives. Moreover, the information coming from these sections represented the basis of the definition of targeted services to be offered by the Eurofleets+ community.

To this aim, the following drivers were used in the analysis:

- stakeholder participation in the previous Eurofleets projects and / or in the ongoing one within Transnational Access (TA) or Joint Research Activities (JRA);
- stakeholders' participation in other initiatives in the field of marine science or RV operators' groups (i.e., ERVO and IRSO );
- stakeholders coming from countries with no or scarce facilities available;
- stakeholder area of activities (especially for Industry and RIs).

The sample for this first step consisted of 22 submissions (out of 26 requests) from various stakeholder categories, grouped as follows:

- 8 Industries (including either large companies or SMEs);
- 5 ERICs;

- 9 Research Institutions & Education.

Each stakeholder category was initially analyzed independently and then compared.

Step two of the process, **bilateral open interviews**, were conducted between October and December 2020 in order to deeply understand the needs of the stakeholders who engaged in the first step.

Eurofleets+ partners involved in this activity (EMSO ERIC, MI, CNR, HCMR, EurOcean) defined six priority topics to focus on during the interviews. These six topics were selected starting from the results and the analysis of the potential offers/services that Eurofleets+ could provide.

The topics areas are the following:

- TOPIC #1 - Access
- TOPIC #2 - JRA-Joint Research Activities
- TOPIC #3 - Education and Training
- TOPIC #4 - Innovation Management and Exploitation
- TOPIC #5 - Foresight Roadmap and Legacy
- TOPIC #6 - Communication and Outreach.

Invitations were issued to all participating stakeholders together with background information and preparatory material regarding the content of the interviews to ensure a smoother and faster approach. These materials included a file containing 6 questions for review, along with explanations of the 6 key focus areas of Eurofleets+ outlining the 'needs' of Research Vessels' operators and the Eurofleets+ 'offers' for each Topic. A link to a short promo video on Eurofleets+ Stakeholder Engagement Goals and Process, outlining the process, was also shared. The link is: <https://www.powtoon.com/s/g2czLghB4Su/1/m>.

The Stakeholder Engagement process continued with virtual bilateral interviews lasting in average 30 minutes. Interviewees were asked to select 1 or 2 Topics of interest from those outlined in the enclosed document, to be explored further during the interview process.

A total of 14 interviews were conducted along with the three selected categories (Ind-Industry, RIs-Research Infrastructures, RI&E-Research Institutions & Education). The results are shown in the following table (Table 2).

Category	Interviews	
	Performed	Dismissed
Ind	4	1
RIs (ERICs)	4	0
RI&E	6	1
<b>Total</b>	<b>14</b>	<b>2</b>

Table 2. Results of the interviews divided by categories

### 3. Main outcomes

The activities implemented so far in the frame of the stakeholder engagement allowed the project to discover the first needs shared by the RV Operator community and the other communities (Industry, ERICs, Research Institutions & Education).

Analysing the bilateral interviews, 24 topic discussions were conducted. The most selected topic was Topic #2 JRA-Joint Research Activities and Topic #1 Access. The figure below shows the distribution of the selected topics (Figure 1).



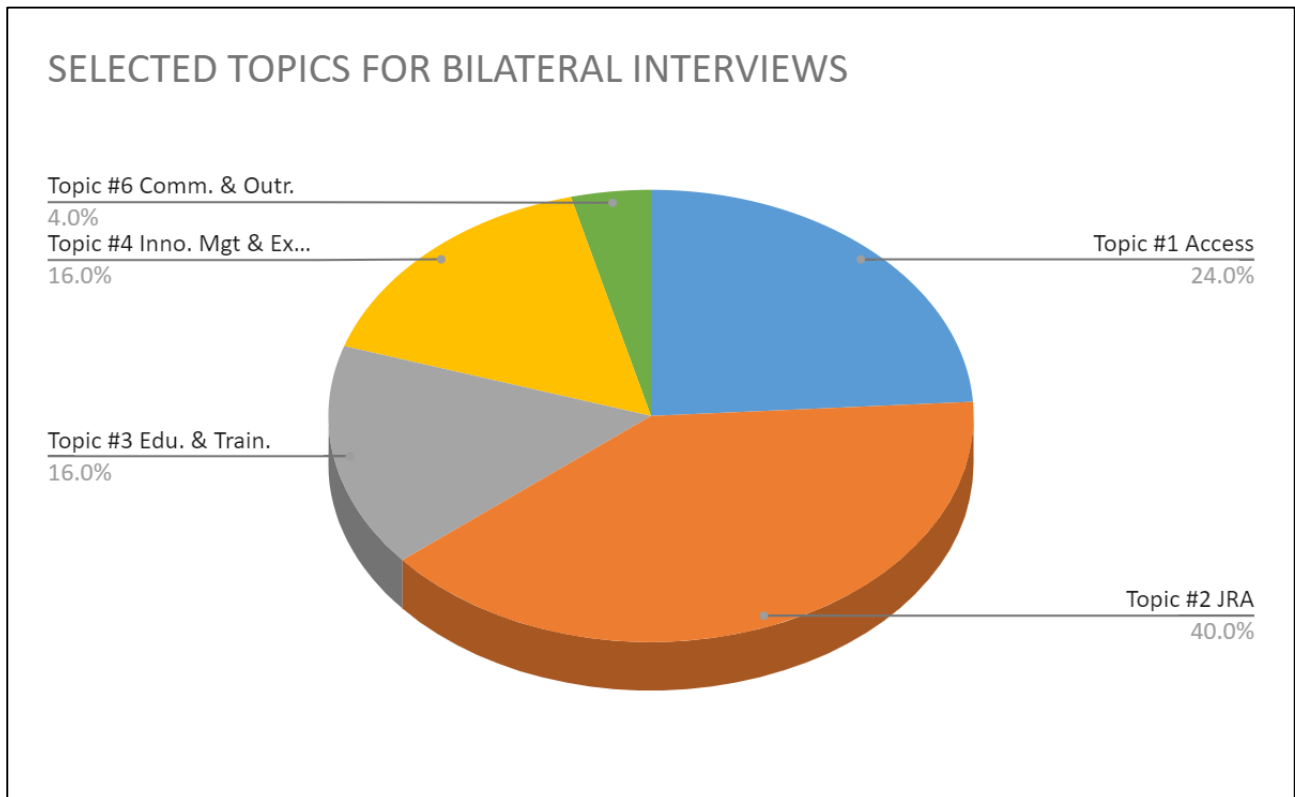


Figure 1. Selected topics for bilateral interviews

The needs expressed by many stakeholders of all the three categories were accompanied by the cross interest of having a coordination entity constituting an entry point to bridge the RV operators and the stakeholders to better fulfil their needs. This entity could favour an optimized use of shiptime and vessels in terms of geographical location limiting too long transits. This should consistently reduce the management costs. This coordinated entity capable of matching the needs of the stakeholder and the RV operators was envisaged as a solution to their requirements. What the consortium assumed was a need (Topic# 5) was presented by stakeholders themselves as a potential solution.

The main need emerged, as the area of highest interest for the stakeholders, is the topic of JRA-Joint Research Activities, particularly those in collaborating on the development of new technical solutions, such as data (e.g., real-time data transfer, artificial intelligence, satellite data acquisition), communications (e.g., underwater wireless communications), equipment (e.g., monitoring devices and systems, acoustic sensors), vessel facilities (e.g., dynamic positioning, moon pool). ERICs and industry emerged as the stakeholders primarily focused on these needs.

The second most interesting need is related to Transnational Access (TA) activities. Two areas were particularly highlighted: 1) technical needs, because there is often a gap between the demand for instrumentation and the capacity of the vessels in terms of handling; but also 2) organizational needs, due to the added value of having a shared calendar for the RV fleet. Both ERICs and Research Institutions & Education outlined their interest in several aspects of TA, while some industries highlighted specifically their needs for the use of vessels for sensor/equipment testing.

Other needs identified are mainly related to Training & Education, where useful suggestions regarding the possibility to establish common training activities (such as training programme, master programme) The improvement of communication among the different communities has been recognized as a useful tool to promote further cooperation.

The distribution of the needs among the categories is shown in the table below (Table 3).

	Ind	ERICs	RI&E	Total
Topic #1 Access	0	2	4	6
Topic #2 JRA-Joint Research Activities	3	4	3	10
Topic #3 Education and Training	1	1	2	4
Topic #4 Innovation Management and Exploitation	2	2	0	4
Topic #5 Foresight Roadmap and Legacy	0	0	0	0
Topic #6 Communication and Outreach	1	0	0	1
<b>Total</b>	<b>7</b>	<b>9</b>	<b>9</b>	<b>25</b>

Table 3. Distribution of needs among stakeholders’ categories

## 4. Users’ needs results

### 4.1 TOPIC #1 - ACCESS

<p><b>Topic description:</b>          Over the years, the European Commission (EC) has strongly supported the opening-up of the existing national research infrastructures (i.e. RVs-Research Vessels and AUVs-Autonomous Underwater Vehicles/ROVs-Remotely Operated Vehicles) at European Union level. The Eurofleets+ project is the third successive project funded by EC (2019-2023), and will build on the achievements of Eurofleets (2009-2013) and Eurofleets2 (2013-2017).          Within research projects granted under EU funding programmes (e.g., FP7 and H2020), Transnational Access (TA) to key infrastructures are viewed as key enablers of research and innovation to address global environmental, social and economic challenges.          The Eurofleets+ project provides open access for research, industry and technical teams to an integrated and advanced research vessel fleet, designed to meet the evolving and challenging needs of its user community. A key objective of the project is to facilitate interdisciplinary research groups to access European and global seas and oceans to conduct excellent research. Access is cross disciplinary and provided through multiple channels, both physical and remote, while implementing the Findable, Accessible, Interoperable, Reusable (FAIR) data principles to ensure optimized use while maximizing impact.</p>	
<b>RVs Operator Community’s NEEDS</b>	<b>EF+ OFFERS</b>
Maximizing the use of RVs and LEXI (Large EXchangeable Instruments <sup>1</sup> )	Open access to an integrated and advanced research fleet (27 state-of-the-art RVs from European and International partners)
	Open access to new 5 AUVs and 7 ROVs

<sup>1</sup> **Large EXchangeable Instruments** – These large and valuable items of equipment are typically not permanently installed on the vessel but are portable and can be deployed from different vessels (source: EMB Position Paper 25 glossary: [https://www.marineboard.eu/sites/marineboard.eu/files/public/publication/EMB\\_PP25\\_Research\\_Vessels\\_Web\\_v10\\_0.pdf](https://www.marineboard.eu/sites/marineboard.eu/files/public/publication/EMB_PP25_Research_Vessels_Web_v10_0.pdf))

	Remote access through a telepresence system (first application in Europe)
	Remote Transnational Access

With Regard to this first topic, the replies from the on-line survey underlined that the majority of stakeholders did not secure any access to a Research Vessel through Transnational Access (TA) funding programme. Indeed, just two out of 22 benefit from TA and both were universities and participants in previous Eurofleets TA initiatives. Nevertheless, 17 out of the 22 stakeholders, taking part in the first step considered access as an important enabler in the execution of their research activities.

This topic has been deeply investigated during the bilateral interviews with 6 out of the 14 interviewees.

It is interesting to note that the stakeholders who chose such a topic of discussion belonged to the categories of ERICs and Research Institution & Education, proving a major interest on these categories.

<p><b>The needs underlined by the RV operators, such as</b> Maximizing the use of RVs and LEXI are shared also by stakeholders. In particular:</p> <ul style="list-style-type: none"> <li>● Interoperability of the equipment and qualified technicians to operate LeXi (e.g., ROV, AUV),</li> <li>● RV suitable for extreme areas (i.e., deep open ocean and Arctic) and for investigations and mapping. Ship capable to operate in Arctic, video equipment, cable, range of physical equipment and biological equipment, possibly moon pool, and equipped with large equipment (i.e. ROV) in order to investigate the deep ocean.</li> <li>● Data transmission capability and telepresence system with high-quality video.</li> <li>● Effective management at regional level to maximize the use of vessels, to limit the transit and to increase the operational capacity in terms of equipment.</li> <li>● Importance to map industry and scientific teams from EU countries and outside to involve in TA cruises/experiments, in order to open the network for the best use of the fleet available in terms of shiptime and geographical coverage.</li> </ul>	<p><b>Other specific needs raised by the stakeholders in this topic are:</b></p> <ul style="list-style-type: none"> <li>● A stronger focus of Eurofleets activities on countries which do not have national fleets/facilities.</li> <li>● Easy availability of information on TA calls, as well as networking with other new initiatives.</li> <li>● Offshore areas for CO<sub>2</sub> storage are increasing even more importance also in view of the reluctance to accept CO<sub>2</sub> inland storage areas. Therefore, enhanced explorations and surveys particularly in deep seas in order to identify potential storage sites and monitoring of CO<sub>2</sub> level under the seabed (e.g., using acoustic sensors) are important.</li> <li>● TA in remote mode is interesting for industry that cannot afford to get technicians on board for long periods with respect the duration of the interested experiment, and also in view of the future activities within ongoing and future project activities (e.g., Green Deal call on energy storage).</li> <li>● Strong interest in ice-breaker vessels for the Arctic areas.</li> <li>● Need of enhanced capabilities of the vessels: deployment/recovery of large and heavy equipment in deep sea (2000-6000m), dynamic positioning.</li> <li>● Large AUV/ROVs are needed for mapping deep seafloor.</li> </ul>
<p><b>Barriers identified by the stakeholders around their needs:</b></p> <ul style="list-style-type: none"> <li>● Recommendations are related to the evaluation phase of transnational access: it would be good to have more transparency on results and evaluation process.</li> </ul>	<p><b>Similar or other solutions identified for stakeholders needs:</b></p> <ul style="list-style-type: none"> <li>● Exchange staff and training opportunities.</li> <li>● Try to extend the availability of vessels at a more global level.</li> </ul>

<ul style="list-style-type: none"> <li>• The cost for RV access is high and to explore the possibility of TA access to RVs also remotely could be the way to overcome this barrier.</li> <li>• A gap between large capacity of instrumentation and small boats was underlined: often there is not sufficient space on the deck of some vessels for using large equipment or for launching large ROVs and AUVs.</li> <li>• Arctic waters imply ice problems and lack of ship time in suitable seasons (April-September).</li> <li>• Difficulties are detected by stakeholders in getting involved with vessels. Coordinated access to research vessels is recommended. There is a wide interest in the sampling activities at sea.</li> <li>• The availability of ship time.</li> </ul>	<ul style="list-style-type: none"> <li>• The possibility to involve scientists from east European countries (also through the telepresence).</li> </ul>
<p><b>Benefits of Eurofleets+ activity area ‘offers’ related to stakeholders’ specific needs:</b></p> <ul style="list-style-type: none"> <li>• Extension of the range of activities and projects by accessing modern RVs operating in their regional areas.</li> <li>• Access to vessels that are not available at national/regional level. What the stakeholders can give back: in-kind time of PI and also time of PhDs/postdocs.</li> <li>• Dissemination of information about the TA programme in order to find occasions for better coordination and integration.</li> <li>• Possibility for Eurofleets+ to ensure access to a well-equipped ship at an appropriate time of the year with a reasonable number of days (e.g., 30/40 days). Deployment of heavy equipment.</li> <li>• AUV data and first interpretation of these data.</li> <li>• Possibility to transfer the data acquired on-board in real time (capability to enhance, at the moment it is not completely developed).</li> </ul>	
<p><b>Ongoing initiatives or successful experiences related to this issue/topic implemented by the stakeholders:</b></p> <ul style="list-style-type: none"> <li>• MAREANO Programme in Norway: Activities to be implemented in Norwegian seas and for mapping specific areas in the Arctic.</li> <li>• Digital Twin: discussion in the frame of digital twin is very interesting because of the idea of having a common agenda for the observation and digital ocean with all the RI interested. A project was recently submitted to the Digital Twin Ocean Green Deal call.</li> </ul>	

## 4.2 TOPIC #2 - JRA-Joint Research Activities

<p><b>Topic description:</b></p> <p>The EF+ JRA contributes to quantitative and qualitative improvements of the services provided by RVs and to develop new ones. The EF+ JRA contribute to quantitative and qualitative improvements of the services provided by RVs and to develop new ones. Eurofleets+ JRA are innovative and explore new fundamental technologies or techniques underpinning the efficient and joint use of the participating research infrastructures. They involve industry partners and Small Medium Enterprises (SMEs) to promote innovation and knowledge sharing through co-creation of needed technical solutions (explored further in Topic 4). Key focus areas include upgrade of the Eurofleets+ data management system (TRL 4-5) into a complete and qualified system (minimum TRL 7) for gathering, transmitting and publishing manual and automatic metadata and data from research vessels during cruises, study and conceptual development of equipment for deep sea operations from research vessels and develop innovative methods and strategies for intelligent exploration, mapping and control using cooperative navigation.</p>	
<p><b>RVs Operator Community’s NEEDS</b></p>	<p><b>EF+ OFFERS</b></p>

(Near)-real-time transfer of data to shore	Advance shipboard data management system and data access through the EVIOR <sup>2</sup> platform
Deployment of large heavy equipment	Investigate and develop innovative equipment for deep-sea operations
Improving the resolution of 3D mapping AUV-ASV cooperation	Develop innovative methods and strategies for intelligent exploration, mapping and control using cooperative navigation system

The Industry and Research institutions & Education categories proved to be very involved in JRA; indeed, 5 out of 8 companies were engaged in research cruises recently, and also 8 out of 9 research centres/universities. The number of research cruises in the last 5 years varies from 5 to 10 both for large industries and SMEs and from 1 to 12 for the Research institutions & Education. While the number of days is slightly different: for SMEs from 1 to 30 days, for big industries from 16 to 30 days, for research centres/universities around 30 days.

Two of the large companies outlined their experiences of research cruise with which they were recently engaged: 1) sea-trial for equipment supplied, and 2) indirectly engaged by providing standard and custom-made lander and water column equipment.

A different experience was underlined for ERICs: indeed, even if these RIs use vessels regularly in research cruises, having their own facility or participating in projects that provide the necessary funds, such use is managed more by single RI rather than having an integrated approach.

<p><b>The needs underlined by the RV operators in the area of JRA, such as</b> (Near)-real-time transfer of data to shore, Deployment of large heavy equipment, are shared by stakeholders. In particular:</p> <ul style="list-style-type: none"> <li>● Stakeholders dealing with marine observatories detected two types of needs: the first group of need is related to shallow water observatories, the second one is related to deep-sea operations indeed, the operations are very risky and complicated and the needs are related to sophisticated and extended capabilities. In addition, in such scenarios, remote vehicles are required.</li> <li>● Real-time data transfer to shore (the current tools are expensive and used only in emergency). A-frame and DPI system for the deployment of heavy equipment in deep water.</li> <li>● There is a need for better data and real time data, and other types of information like bathymetry from the bottom and potentially also the mapping.</li> <li>● There is interest to participate in the Eurofleets community from organizations involved in monitoring activities acting in the framework of the Marine Strategy.</li> <li>● Scientific equipment (i.e., monitoring and acoustic sensors) and vessel facilities (i.e.,</li> </ul>	<p><b>Other specific needs raised by the stakeholders in this topic are:</b></p> <ul style="list-style-type: none"> <li>● The additional needs are mostly related to improving the possibility of having large exchangeable equipment or equipment on board for research vessels in different countries. Specifically: dynamic positioning is useful depending on the type of operations; a moon pool has a large utility especially for deep-sea operations or for operations in extreme conditions; extensive use of robotics; satellite acquisition; artificial intelligence for integration of multiplatform systems; early warning system for research vessels.</li> <li>● Transfer of ship data in (near-)real time to land, at the moment the available systems have to be deeply implemented.</li> <li>● Multiple use of the vessels at regional level would be good.</li> <li>● Replace the vessels with new ones (the average age of the vessels is very high).</li> <li>● Development conjunctly of new equipment/tools.</li> <li>● Access to existing data.</li> <li>● Potential interest in having ROV performing at deeper floors.</li> </ul>
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<sup>2</sup> <https://evior.eurofleets.eu>

<p>dynamic positioning). Communication and in particular development of underwater wireless sensor networks also in real time. As regards JRA1, there is a need in the possibility to share metadata to increase information also for offshore activities; As regards JRA2, another identified need is the possibility to effectively and automatically launch and deploy components of underwater nodes and large vehicles; As regards JRA3 private stakeholders could provide the missing elements recognized in the communication in real-time. For stakeholders that are SME, the interest in the access to RVs could be addressed to pre-competitive activities, to test new technologies not yet in the marketplace for the industrial sector. The current trend for new technology: 1. miniaturization and heterogeneity to meet different needs; 2. low-energy consumption; 3. lower cost. The needs in the offshore activities will push towards change in the way of operating at sea.</p> <ul style="list-style-type: none"> <li>• There is a need of having a clear view and understanding the planning of the different RVs for the deployment - for instance - of floats. Acquiring data in real time for the calibration of the instruments. Minimize the environmental impact/logistic aspects for the recovering of the floats. Stakeholders can be interested also in historic data. A coordinated action could be useful to maximize and optimize the opportunity for the launch and recovery of the floats, but is it important to know where the RVs are going in order to plan joint activities together. It is easy to have info on global vessels, while it is difficult on coastal vessels. In the view of a coordinated system of RVs, it is considered important to communicate the service provided and the way to interact; currently joint actions are established within personal collaborations.</li> </ul>	<ul style="list-style-type: none"> <li>• Interest in coordinating bodies such as Eurofleets association, for coordinating the availability of ships at regional level, as a solution for lack or limited number of national vessels.</li> <li>• Defining standards for data format in order to improve collaboration between company's systems and research community. Interest in Cloud System in order to share the data.</li> </ul>
<p><b>Barriers identified by the stakeholders around their needs:</b></p> <ul style="list-style-type: none"> <li>• Calibration, standardization and quality control.</li> <li>• Absence of on-line tool/website providing ship position tracking and info on their activities.</li> <li>• Need of interoperability increasing the communication among communities. Example: during the LifeWatch science week there are no members of our community, no communication team and <i>vice versa</i>.</li> <li>• The data collected by research organizations are not integrated. For example, these data are not integrated at a geographical level.</li> </ul>	<p><b>Similar or other solutions identified for stakeholders needs:</b></p> <ul style="list-style-type: none"> <li>• Increase the work capacity of single scientists or groups through disseminating the opportunities of joining Research Vessels' cruise.</li> <li>• Enhance the collaborations for sharing vessels between groups of different countries, as already it happens between US and Canada.</li> <li>• Remote access to save costs that now - during COVID-19 pandemic - proved a very successful activity. The data are transferred to the office via satellite.</li> </ul>

**Benefits of Eurofleets+ activity area ‘offers’ related to stakeholders’ specific needs:**

- Eurofleets+ is considered able to support a lot in coordinating the activities of the national fleets. In addition, Eurofleets can promote the share of best practices among countries but also between researchers and operators’ crew, for instance:
  - Shared calendar, vessels at regional level; jointly development of equipment (for example unmanned vehicles).

**Ongoing initiatives or successful experiences related to this issue/topic implemented by the stakeholders:**

*No answers*

### 4.3 TOPIC #3 - Education and Training

**Topic description:**

Eurofleets+ aims to consolidate, advance and extend the successful education and training actions delivered in the previous Eurofleets projects, to prepare the next generation of European marine scientists and professionals, and open up the world-class marine infrastructures beyond research communities. Education and Training activities will bridge the gap between highly-developed and less-developed regions to facilitate collaboration and global interoperability. The project is providing comprehensive training and exchange programmes for user communities and professional staff, while increasing ocean literacy, inspiring emerging researchers, and attracting women to science through targeted educational activities. These activities are addressed both to building capacity in European ocean science research and to knowledge transfer.

<b>RVs Operator Community’s NEEDS</b>	<b>EF+ OFFERS</b>
Attracting young people to marine science and technology	Floating University Course
Training the next generation of marine research and offering novel perspectives for pioneering research	Blue skill labs (ROV, Seismic, ROBOT and Telepresence)
Pool of highly experienced RV operators	Research Infrastructure Management Workshop

This topic area has been deeply investigated only through the second step of the bilateral interviews.

**The needs underlined by the RV operators in the area of education and training, such as**

attracting young people to marine science and technology, Training the next generation of marine research and offering novel perspectives for pioneering research, pool of highly experienced RV operators, are shared with stakeholders. In particular:

- Collaboration to develop a joint training programme addressed mainly to the technological aspect of the fleet to attract the new generation of scientists.
- Stable collaboration for training and exchange of personnel.
- Participation in programmes of IOC-UNESCO (Intergovernmental Oceanographic Commission of United Nations Educational Scientific and Cultural Organization).
- Collaboration especially for the young generation.

**Other specific needs raised by the stakeholders in this topic are:**

- Master in Ocean exploration, data processing and acquisition. Eurofleets+ could contribute 1 week per year for master students (such initiative could be funded also with EC initiatives but also with industry sponsorships).
- To Involve people from East European countries in training activities and students in scientific cruise addressed to geology and not only engineering activities. It is important to involve the students in applications with industry.

<p><b>Barriers identified by the stakeholders around their needs:</b></p> <ul style="list-style-type: none"> <li>• Availability of ship time; good coordination; attract students from all EU countries (maybe there is a gap in some of the European countries).</li> <li>• Collaboration at the moment involves only one single organization.</li> <li>• The barriers could be the capacity and the space available on the RV to conduct training activities, e.g., on board the RV Marion Dufresne there is a lecture room to switch from the practical activities to theoretical lessons.</li> </ul>	<p><b>Similar or other solutions identified for stakeholders needs:</b></p> <ul style="list-style-type: none"> <li>• More dissemination of Eurofleets+ project.</li> <li>• Industry already has organized joint training programme with research organizations. The courses are now on-line.</li> </ul>
<p><b>Benefits of Eurofleets+ activity area 'offers' related to stakeholders' specific needs:</b></p> <ul style="list-style-type: none"> <li>• Eurofleets is fundamental for marine geology activities. It is important to attract also students from countries outside EU.</li> </ul>	
<p><b>Ongoing initiatives or successful experiences related to this issue/topic implemented by the stakeholders:</b> <i>No answers</i></p>	

#### 4.4 TOPIC #4 - Innovation Management and Exploitation

<p><b>Topic description:</b> EF+ will expand the role and impact of RVs in the innovation chain and maximize the exploitation of data produced and/or collected by research cruises and project results. This activity is aimed at providing guidelines on innovation management and to reinforce collaboration with industry. The project aims to enhance innovation capacity; create new market opportunities for potential innovations facilitated by Transnational Access and strengthen ties with industry partners and stakeholders. Expert guidance from industry partners will guide potential innovations through the product development lifecycle, potentially accelerating a route to market by sharing experience and industry know-how.</p>	
<b>RVs Operator Community's NEEDS</b>	<b>EF+ OFFERS</b>
Ensuring a strong focus on innovation potential	High level of industrial collaboration
Fostering successful exploitation	Understanding of market and technological problem

Following the path of the innovation and exploitation processes, the starting point is the established cooperation between industry and research communities. According to the results of the on-line survey, most of the stakeholders (14/22) recognized that there is already a close cooperation between researchers and industry and technology developers in developing new products and solutions.

The main areas considered as crucial areas of collaboration are:

##### AREAS for industries

- Cutting edge technologies, using autonomous systems, integrated use of vessels and novel technologies optimizing cost and effectiveness of integrated solutions.
- Marine robotics, underwater acoustic communications/networking.
- Development of improved research instrumentation.
- Development or customisation of existing marine survey equipment to increase accuracy or coverage so to improve data acquisition coverage and reliability.



- Exchange of information and exchange of data (not of strategic or commercial importance).

#### AREAS for Pan-European Research Infrastructures

- Robotics, Automation of measurements and recording, especially for biological variables and parameters, Open Data, Reproducible Analytics.
- Development and testing/calibration at sea of new sensors and platforms.
- Facilitating deployment and recovery tools for autonomous platforms for real time transmission of data to shore, for harmonisation of interfaces between sensors and platforms that can be vessels or autonomous platforms.
- Cutting-edge research areas, such as ocean observation systems, deep-sea mining, global changes, natural hazards and others.
- Marine technologies, such as underwater communications, increased sensor resolution and capacity, along with cost reductions in marine sensors.
- New concepts and procedures to manage sustainable marine resources, marine research and long-term monitoring.

#### AREAS for Research Institutions and Education

- AUVs and Acoustic systems (like Synthetic Aperture Sonar) for deep-sea exploration.
- Improving, automating and simplifying the in-situ data collection and transmission in real time.
- Remote sensing, modelling, data-assimilation for monitoring systems from space data on physical and chemical parameters for the whole marine ecosystem.
- Better solutions for the registration of shipboard activities.
- Testing and developing of new sensors for research vessels.
- Deep-sea optical cables and subsea mapping systems.
- Research and development of optimized acquisition techniques.

In the implementation of the innovation and exploitation processes, the possibility to use international funding programmes could be very useful. Such possibilities could be improved through a better knowledge of the existing opportunities regarding funding programmes and international initiatives, especially for:

- sea-going activities or technology development related to ocean research;
- sea-going research-based marine training;
- chartering, exchanging or sharing vessels/shiptime.

Indeed, according to the results of the on-line survey, there is still space for improving the awareness of such opportunities.

The topic of this fourth area, Innovation Management and Exploitation, was further deepened with the bilateral interviews.

<p><b>The needs underlined by the RV operators in the area of innovation management and exploitation, such as</b> Ensuring a strong focus on innovation potential, fostering successful exploitation, are shared with stakeholders. In particular, they underlined:</p> <ul style="list-style-type: none"> <li>● As an industry, the primary need of a big industry is basically to listen and learn, especially the needs of RV Operators (the requirement and what we can do). The best results are on board of the vessels, testing the</li> </ul>	<p><b>Other specific needs raised by the stakeholders in this topic are:</b></p> <ul style="list-style-type: none"> <li>● Operators should be integrated.</li> <li>● Development of links with industry. Integration of platforms.</li> <li>● Need to open the infrastructures to all users (not only to scientific users).</li> </ul>
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<p>equipment; the data of the trials are provided free of charge to the Institution that supports our activities.</p> <ul style="list-style-type: none"> <li>• Interest in participation in the interaction with industry that will develop within WP7. The use of Underwater and Surface Autonomous Vehicles are increased in order to multiply the effectiveness of RV monitoring at low-cost. with the combination of Robotics, new sensors and data, it is possible to cover monitoring activities. ecological aspects of data.</li> </ul>	
<p><b>Barriers identified by the stakeholders around their needs:</b> <i>No answers</i></p>	<p><b>Similar or other solutions identified for stakeholders needs:</b> <i>No answers</i></p>
<p><b>Benefits of Eurofleets+ activity area ‘offers’ related to stakeholders’ specific needs:</b></p> <ul style="list-style-type: none"> <li>• We would like to explore the opportunities of collaboration, to be part of the design of the equipment, but it is important to learn the requirements of RV operators (e.g., launch and recovery, bathymetry survey).</li> <li>• very interested in discussing the evolution of the Eurofleets+ initiative.</li> </ul>	
<p><b>Ongoing initiatives or successful experiences related to this issue/topic implemented by the stakeholders:</b> <i>No answers</i></p>	

#### 4.5 TOPIC #5 - Foresight Roadmap and Legacy

<p><b>Topic description:</b> The Eurofleets+ project has the ambitious goal to promote a model to ensure the integration of the European Research Fleets as well as the long-term sustainability of the integrated research infrastructure services provided at European level. A key aim for the project is to identify and agree on a long-term sustainable fleets coordination system, with a view to consolidating a strategic and coherent vision of the European Research Fleet and outlining the future research infrastructure developments within the ERA key priorities. A strategic roadmap, business case, and business plan will be developed for the coordination and integration of the European research fleet, and practical guidelines produced to ensure sustainability beyond the project lifetime.</p>	
<p><b>RVs Operator Community’s NEEDS</b></p>	<p><b>EF+ OFFERS</b></p>
<p>Maximizing the use of RVs and LEXI.</p>	<p>Defining strategic plan and roadmap for a long-term sustainable fleets coordination system</p> <p>TA pilot groups opening to spare-vessel capacity</p>
<p>Optimization use of RVs</p>	<p>Encouraging sharing of knowledge and best practice</p>

Stakeholders, even if they did not make the choice of this Topic, during the interviews expressed a clear interest in the specific legal framework or formal process that Eurofleets+ initiative is intended to follow. Particularly they underlined the added value to have only one entry point to have information of the RVs available in terms of timing and geographical distribution.

## 4.6 TOPIC #6 - Communication and Outreach

<b>Topic description:</b> Eurofleets+ promotes project results to raise awareness of the key role of the European Research Fleet and its benefit for the environmental and social challenges. It aims to raise awareness of the vital role of Research Vessels in relation to advancing our knowledge of marine processes and resources and thereby our management of the ocean. This will be achieved through the transfer of know-how, private and public engagement initiatives, dissemination and communication through various channels. All available tools will be utilised to reach all key users and stakeholders so that the aim of delivering an enhanced understanding of ocean processes, fostering sustainability & integration. Further effort will be dedicated to the role of RVs in marine science research.	
<b>RVs Operator Community's NEEDS</b>	<b>EF+ OFFERS</b>
Inform key stakeholders	Dissemination and Communication plan
Supporting capacity building and ocean literacy	Generation of dissemination material

Just one stakeholder during the bilateral interview expressed the interest for communication and outreach activities to be deployed in the frame of the cooperation with Eurofleets+ initiative. It is an important private society that declared its wish to take part in the ongoing research vessels association initiatives (like ERVO, IRSO). Indeed, it is recognized that broad successful communication means to work together with RV operators, researchers and industry communities beyond the national barriers.

## 5. Next Steps

As a step forward, Eurofleets+ consortium is establishing a discussion forum (<https://www.eurofleets.eu/forums/forum/stakeholder-forum/>) on the project website in order to enable interested parties to interact with project participants. This will gather all relevant stakeholders and RV operators in one virtual place, taking advantage of other stakeholder engagement activities, as the on-going interview process and the upcoming international workshops.

The consortium agreed to implement the Forum starting from the identification of the six macro areas of interest (Topics). Each topic is related to a specific project Work Package and will be the object of discussion in the forum for about 2 months (8 weeks). Each topic could be presented through the implementation of the following activities:

- Short introductory video/presentation to topic.
- Launch Polls on topics to promote discussions.
- Link to on-line tools which may be of interest to members.
- Invite members to share views and opinions on topics being discussed.
- Welcome members starting their own topics.
- Link with other relevant projects and events and ask them to use the forum to reach the Eurofleets+'s stakeholders.
- Use social media to drive interaction with the Forum.

The stakeholder forum will be launched officially in April 2021.

As said above, the stakeholder engagement activities will follow through the organization of two international workshops. The first is already planned and it will take place virtually on 13<sup>th</sup> April 2021 while the second one should be organized before May 2022.

**The 1<sup>st</sup> Eurofleets+ International workshop, on the 13<sup>th</sup> of April 2021,** will combine fixed and mobile ocean observing systems and their link with satellite observations. The interdisciplinary nature of the Earth System demands a much more coordinated and interconnected organization of research infrastructures and significant efforts for interoperability and harmonization of research infrastructure operations to meet the environmental challenges of today. The remote sensing community will benefit from fast, cheap and efficient satellite sensor calibrations for accurately measuring Essential Ocean Variables (EOVs). The fixed cabled and stand-alone submarine observation systems of EMSO ERIC with Euro-ARGO ERIC and other mobile observation systems including research vessels, are oceanic detection assets that together with the Earth Observation System's satellite sensors provide detection on a larger temporal and spatial scale, with better resolution and accuracy.

The workshop aims to connect the principal operators for the benefit of greater coordination and integration that will undoubtedly translate into efficiency and delivery of more and better data while connecting to public/societal concerns related to climate change for example. The Research Vessel operators represented by Eurofleets+ are central and fundamental, and it is essential they act in coordination and integration with all the other actors.

One of the crucial points to be presented and discussed is "to define the challenges for which an interdisciplinary and integrated approach can deliver benefits not reachable when working independently".

The communities involved in this workshop are:

- research vessels operators
- fixed-point observatories (coastal, deep-ocean, moorings)
- mobile systems (unmanned vehicles, ARGO floats)
- remote sensing (airborne, satellite).

Eurofleets+, representing the first community, is the organizer and will provide a short introductory presentation of the project. A European Commission representative from DG Research and Innovation is invited to outline the strategy, trends and priorities for Horizon Europe in the environmental-marine domain. An EUMETSAT representative is also invited to outline the strategy, trends and priorities for Horizon Europe in the space domain. There are three other invited speakers, representing the communities outlined above, who will each deliver a short presentation. These presentations will be prepared based on a template highlighting the crucial questions to address. Other attendees will be invited as significant representatives from the different communities defined above.

Following the presentations an open floor discussion focused on the key points highlighted in the presentations will take place, facilitated and chaired by an appointed moderator. In parallel, live polls will be launched to gather the opinions of the audience. A conclusion depicting the critical points will be outlined at the end of the workshop.

The final objective is to issue a document highlighting the main (tangible) results of the workshop. The key concepts towards a long-term sustainable and interdisciplinary framework of excellent science with fit-for-purpose technology, in line with UN Ocean Decade for the Sustainable Development and Horizon Europe objectives are:

1. cooperation
2. coordination
3. integration
4. simplification.

## 6. ANNEXES

6.1 Annex 1: Step 1 (on-line survey)

6.2 Annex 2: Step 2 (Interview Questions)

# Step 1 – Online Questions

Fields marked with an \* are required

Please complete the form below as the first of the 2 step application (Step 1-Online questions, Step 2-Remote interview).

We are contacting you as you or your organisation have been identified as potential stakeholders of the Eurofleets + Project, its partners and the greater European marine research community. Eurofleets+ is "An alliance of European marine research infrastructure to meet the evolving needs of the research and industrial communities." The project facilitates open free of charge access to an integrated and advanced research vessel fleet. The project includes 42 partners, and involves the use of 13 global ocean research vessels, 14 regional vessels, 7 Remotely Operated Vehicles (ROVs), 5 Autonomous Underwater Vehicles (AUVs) and a telepresence unit.

One of the key aims of the Eurofleets+ project is to involve a wide range of stakeholders to inform on the development, operation and strategic direction of the European research vessel fleet. The Eurofleets+ Work Package 5-Stakeholder Engagement is dedicated to this activity.

There are 8 sections, it will take you 10-15 minutes to complete, thank you for taking part, your input is important to us. We kindly invite you to take a look at the website, and please subscribe to the newsletter and our social media channels.

Please be assured that your details and survey responses will be treated as confidential, as detailed in our Privacy and Data Protection policy. All data reported on will be anonymized when published.

## General Information

Please complete sections 1-3 to provide general information relating to you, your organisation and your operations.

### Section 1. Personal Details

Please provide your personal details and contact information.

First Name\*

Last Name\*

Organisation Name\*

Department\*

Job Title\*

Role

Email\*

Phone

## Section 2. Organisation Details

Please provide the details of your organisation.

Address 1\*

Address 2

City\*

County/Province\*

Postcode/Zip\*

Country\*

Is this address your operational main base?\*

- Yes
- No

Please select your organisation type\*

Please select the number of employees at your organisation\*

On which level do you generally operate (please select all that apply)\*

- Local
- National
- Regional
- International

Which of the following stakeholder groups do you associate with (please select all that apply)\*

- Scientific Community (Higher Education, Research)
- Industry
- Civil Society
- General Public
- Policy Makers
- Media

- Investors
- Customers
- Other (please specify below)

Please specify the "Other" stakeholder groups that you associate with

### Section 3. Areas of Research/Activity

Please provide details of your areas of research/activities.

Please select your areas of research/activities from the list below (select all that apply)\*

- [Biogeosciences](#)§
- [Earth and Space Science Informatics](#)§
- [Education](#)§
- [Global Environmental Change](#)§
- [Natural Hazards](#)§
- [Ocean Sciences](#)§
- [Science and Society](#)§
- Technology
- Other

§ Categories from the [AGU](#). Follow the links for further information on each category.

## Current Status

Please provide further information about the current status of your engagement with research cruises and funding streams.

### Section 4. Research cruises and funding in the last 5 years

In the last 5 years, have you engaged in any research cruises?\*

- Yes (please enter the number and indicate the funding types in the fields below)
- No (Please explain why in the field below)

If yes, please enter the number of research cruises that you have engaged with in the last 5 years.

If yes, please indicate the estimation of number of days of duration in the past 5 years.

- 1-7
- 8-15
- 16-30



- >30

If yes, please indicate how the cruises were funded (please select all that apply).

- National
- European
- International
- Other

If no, please explain why you have not been engaged in any research cruises in the past 5 years.

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## Section 5. Awareness of funding programmes

There are possibilities to get funding for the use of research vessels for research activities or for training, such as in Europe Eurofleets+.

Can you identify any new National European or Global level funding instruments for research vessels, sea-going activities or technology development related to ocean research since 2009?\*

- Yes (please specify below)
- No (please go to the next question)

If yes, please specify

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Are you aware of any National, European or International funding instruments for research vessels or sea-going research-based marine training?\*

- Yes (please specify below)
- No (please go to the next question)

If yes, please specify.

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Are you aware of any National or International initiatives for chartering, exchanging or sharing vessels/ship time between European partners?\*

- Yes (please specify below)
- No (please go to the next question)

If yes, please specify.



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## **Section 6. Primary source of funding received to cover the cost of ship time between 2009 and 2019**

Please provide details of the primary source of funding to cover the cost of ship time in the period 2009-2019.

Have you received funding to cover the cost of your ship time during the period 2009 to 2019?\*

- Yes (please complete section 6)
- No (please continue to section 7)

Please indicate the type of funding from the list below:

- Regional
- National
- European
- International
- Private

## **Section 7. Current Access**

Over the years, the European Commission has strongly supported the opening-up of existing national facilities at a EU level. Within research projects granted under EU funding programmes (e.g., FP7 and H2020), Transnational Access (TA) activities have been implemented with the aim of providing transnational access free of charge to researchers or research teams, to one or more infrastructures operated by the Eurofleets+ project Partners.

Have you ever secured access to a Research Vessel (R/V) through a Transnational Access (TA) funding programme?\*

- Yes
- No

If yes, please specify.

An empty text input field with a vertical scrollbar on the right side and a horizontal scrollbar at the bottom. The field is currently empty.

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Is access to Research Vessels an important enabler in the execution of your research activities?\*

- Yes
- No

## Section 8. Collaboration

By coupling research and innovation, Horizon 2020 set a goal to ensure Europe produces world-class science, removes barriers to innovation and makes it easier for the public and private sectors to work together in delivering innovation. With that in mind:

Do you feel that there is close collaboration between researchers and industry & technology developers in developing new products and solutions (e.g., solving problems for RV operators to increase RV capability and/or for users to optimize acquisition techniques)?\*

- Yes
- No

In which areas do you feel the collaboration between Researchers and industry & technology developers is most important?\*

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Do you give you consent for your email address to be added to Eurofleets+ mailing list (if not already)?\*

- Yes
- No

Recaptcha

## Stakeholder Direct Interview

The questions below have been formulated and standardised to establish the interviewees knowledge, needs, offer and level of engagement with the Eurofleets+ Offer.

1. **Do you have the same needs?** *(present the needs of the project for each individual section and explore whether the interviewee has similar needs in their (sector, industry, network, community)).*
2. **Do you have other/specific needs?** *(Identify specific needs of the sector, industry, network, community; establish the current status of the interviewees sector, industry, network, community).*
3. **What barriers do you currently face around your needs?** *(Explore what are the barriers. Explore how can we better engage them).*
4. **Do you have identified similar or other solutions for your needs?** *(if the stakeholder has the same needs of the project, present the solutions/offers of the project for each individual section and explore whether the interviewee has similar or other solutions for their needs).*
5. **What are the benefits of Eurofleets+ activity area ‘offers’ related to your specific needs?** *(present the offers of the project for each individual section and explore what is the interviewees (sector, industry, network, community) motivation, perceived advantages/benefits for engaging with the Eurofleets+ offer)*
6. **Can you give me an example of ongoing initiatives or successful experiences related to this issue/topic?** *(Establish if the interviewee is already engaged with Eurofleets+ or other related offerings, what has been their experience, positive or negative, get examples from other funded projects, regional, national or international initiatives).*

### **Confirm General information**

Name of the interviewer:

Name of the interviewee:

Name of the interviewee Institution/Organisation/Public body/Agency etc.:

Department:

Role of the interviewee:

Country or Countries where the Organisation is operating:

Size of the organization (number of employees):

## Eurofleets+ Topics

(include the needs of the vessels' operators and the offers of the project)

### EF+ TOPIC #1 - ACCESS

**Topic description:**  
 Over the years, the European Commission (EC) has strongly supported the opening-up of the existing national research infrastructures (i.e. RVs-Research Vessels and AUVs-Autonomous Underwater Vehicles/ROVs-Remotely Operated Vehicles) at European Union level. The Eurofleets+ (EF+) project is the third successive project funded by EC (2019-2023), and will build on the achievements of Eurofleets (2009-2013) and Eurofleets2 (2013-2017). Within research projects granted under EU funding programmes (e.g., FP7 and H2020), Transnational Access (TA) to key infrastructures are viewed as key enablers of research and innovation to address global environmental, social and economic challenges.  
 The Eurofleets+ project provides open access for research, industry and technical teams to an integrated and advanced research vessel fleet, designed to meet the evolving and challenging needs of its user community. A key objective of the project is to facilitate interdisciplinary research groups to access European and global seas and oceans to conduct excellent research. Access is cross disciplinary and provided through multiple channels, both physical and remote, while implementing the Findable, Accessible, Interoperable, Reusable (FAIR) data principles to ensure optimized use while maximizing impact.

RVs Operator Community's NEEDS	EF+ OFFERS
Maximizing the use of RVs and LEXI (Large EXchangeable Instruments <sup>1</sup> )	Open access to an integrated and advanced research fleet (27 state-of-the-art RVs from European and International partners)
	Open access to new 5 AUVs and 7 ROVs
	Remote access through a telepresence system (first application in Europe)
	Remote Transnational Access

### EF+ TOPIC #2 - JRA-Joint Research Activities

**Topic description:**  
 The EF+ JRA contributes to quantitative and qualitative improvements of the services provided by RVs and to develop new ones. The EF+ JRA contribute to quantitative and qualitative improvements of the services provided by RVs and to develop new ones. Eurofleets+ JRA are innovative and explore new fundamental technologies or techniques underpinning the efficient and joint use of the participating research infrastructures. They involve industry partners and Small Medium Enterprises (SMEs) to promote innovation and knowledge sharing through co-creation of needed technical solutions (explored further in [Topic 4](#)). Key focus areas include upgrade of the Eurofleets+ data management system (TRL 4-5) into a complete and qualified system (minimum TRL 7) for gathering, transmitting and publishing manual and automatic metadata and data from research vessels during cruises, study and conceptual development of equipment for deep sea operations from research vessels and develop innovative methods and strategies for intelligent exploration, mapping and control using cooperative navigation.

RVs Operator Community's NEEDS	EF+ OFFERS
(Near)-real-time transfer of data to shore	Advance shipboard data management system and data access through the EVIOR <sup>2</sup> platform
Deployment of large heavy equipment	Investigate and develop innovative equipment for deep-sea operations

<sup>1</sup> **Large EXchangeable Instruments** – These large and valuable items of equipment are typically not permanently installed on the vessel but are portable and can be deployed from different vessels (source: EMB Position Paper 25 glossary : [https://www.marineboard.eu/sites/marineboard.eu/files/public/publication/EMB\\_PP25\\_Research\\_Vessels\\_Web\\_v10\\_0.pdf](https://www.marineboard.eu/sites/marineboard.eu/files/public/publication/EMB_PP25_Research_Vessels_Web_v10_0.pdf))

<sup>2</sup> <https://evior.eurofleets.eu>

Improving the resolution of 3D mapping AUV-ASV cooperation	Develop innovative methods and strategies for intelligent exploration, mapping and control using cooperative navigation system
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### EF+ TOPIC #3 - Education and Training

<b>Topic description:</b> EFs+ aims to consolidate, advance and extend the successful education and training actions delivered in the previous Eurofleets projects, to prepare the next generation of European marine scientists and professionals, and open up the world-class marine infrastructures beyond research communities. Education and Training activities will bridge the gap between highly-developed and less-developed regions to facilitate collaboration and global interoperability. The project is providing comprehensive training and exchange programmes for user communities and professional staff, while increasing ocean literacy, inspiring emerging researchers, and attracting women to science through targeted educational activities. These activities are addressed both to building capacity in European ocean science research and to knowledge transfer.	
<b>RVs Operator Community's NEEDS</b>	<b>EF+ OFFERS</b>
Attracting young people to marine science and technology	Floating University Course
Training the next generation of marine research and offering novel perspectives for pioneering research	Blue skill labs (ROV, Seismic, ROBOT and Telepresence)
Pool of highly experienced RV operators	Research Infrastructure Management Workshop

### EF+ TOPIC #4 - Innovation Management and Exploitation

<b>Topic description:</b> EF+ will expand the role and impact of RVs in the innovation chain and maximize the exploitation of data produced and/or collected by research cruises and project results. This activity is aimed at providing guidelines on innovation management and to reinforce collaboration with industry. The project aims to enhance innovation capacity; create new market opportunities for potential innovations facilitated by Translation Access and strengthen ties with industry partners and stakeholders. Expert guidance from industry partners will guide potential innovations through the product development lifecycle, potentially accelerating a route to market by sharing experience and industry know-how.	
<b>RVs Operator Community's NEEDS</b>	<b>EF+ OFFERS</b>
Ensuring a strong focus on innovation potential	High level of industrial collaboration
Fostering successful exploitation	Understanding of market and technological problem

### EF+ TOPIC #5 - Foresight Roadmap and Legacy

<b>Topic description:</b> The EF+ project has the ambitious goal to promote a model to ensure the integration of the European Research Fleets as well as the long-term sustainability of the integrated research infrastructure services provided at European level. A key aim for the project is to identify and agree on a long-term sustainable fleets coordination system, with a view to consolidating a strategic and coherent vision of the European Research Fleet and outlining the future research infrastructure developments within the ERA key priorities. A strategic roadmap, business case, and business plan will be developed for the coordination and integration of the European research fleet, and practical guidelines produced to ensure sustainability beyond the project lifetime.	
<b>RVs Operator Community's NEEDS</b>	<b>EF+ OFFERS</b>
Maximizing the use of RVs and LEXI	Defining strategic plan and roadmap for a long-term sustainable fleets coordination system
	TA pilot groups opening to spare vessel capacity
Optimization use of RVs	Encouraging sharing of knowledge and best practice

## EF+TOPIC #6 - Communication and Outreach

### Topic description:

EFs+ promotes project results to raise awareness of the key role of the European Research Fleet and the its benefit for the environmental and social challenges. It aims to raise awareness of the vital role of Research Vessels in relation to advancing our knowledge of marine processes and resources and thereby our management of the ocean. This will be achieved through the transfer of know-how, private and public engagement initiatives, dissemination and communication through various channels. All available tools will be utilised to reach all key users and stakeholders so that the aim of delivering an enhanced understanding of ocean processes, fostering sustainability & integration. Further effort will be dedicated to the role of RVs in marine science.

### RVs Operator Community's NEEDS

### EF+ OFFERS

Inform key stakeholders

Dissemination and Communication plan

Supporting capacity building and ocean literacy

Generation of dissemination material