GEOMAR

EuroSea

Kick-off Meeting

27th – 29th November 2019
Royal Belgian Institute of
Natural Sciences, Brussels

museum NATURALSCIENCES.BE

EuroGOOS
European Global Ocean Observing System

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 862626.

Coordinator´s Welcome

Welcome to the Kick-off Meeting of the EU Innovation Action EuroSea *"Improving and Integrating European Ocean Observing and Forecasting Systems for Sustainable Use of the Oceans"*. EuroSea is part of "The Future of Seas and Oceans Flagship Initiative" funded through the Horizon 2020 Blue Growth call (BG-07-2019-2020).

Our vision is a truly interdisciplinary ocean observing system that delivers the essential ocean information, exploitation and innovation needed for the wellbeing, blue growth and sustainable management of the ocean.

EuroSea brings together key European actors of ocean observation and forecasting with key end users of ocean observations. We are an interdisciplinary consortium of 55 partners working together for the next 4 years allocated with a budget of almost € 12.6M. The project is coordinated by GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany (Toste Tanhua).

The Kick-off Meeting offers a unique opportunity to set the scene for a successful start of the project. We aim to bring all partners and EuroSea supporters together to discuss and strategically, and practically, plan the implementation of the major project goal – a sustainable ocean observing system delivering information needed for society through ocean innovation and exploitation. We are convinced all attendees will benefit from the presentations and in particular from the break-out sessions and networking opportunities. We hope for engaged discussions that can guide the implementation of this Innovation Action project. I wish you all a successful meeting!

Toste Tanhua

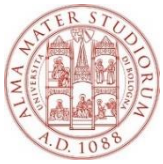
Project Summary

The ocean is a fundamental part of the global live-support system and provides a wealth of resources to humanity. Despite this paramount importance to society, there are fundamental gaps in ocean observing and forecasting systems, limiting our capacity to sustainably manage our activities in the ocean. Ocean observing is "big science" and cannot be solved by individual nations. EuroSea will support European integration for coordinated observations of the ocean that can be sustained in the long term.

EuroSea will strengthen the European and Global Ocean Observing System (EOOS and GOOS) and support its partners. The project will increase the Technology Readiness Levels (TRL) of critical components of ocean observations systems and tools, in particular of the integrated ocean observing system. EuroSea will improve: European and international coordination, design of the observing system adapted to European needs, in situ observing networks, FAIR data delivery, integration of remote and in-situ data, and forecasting capability. The Innovation Action will work towards integrating individual observing elements to an integrated observing system, and will connect end-users with the operators of the observing system and information providers.

EuroSea will demonstrate the utility of the European Ocean Observing System through three demonstration activities focused on operational services, ocean health, and climate, where a dialogue between actors in the ocean observing system will guide the development of the services, including market replication and innovation supporting the development of the blue economy.

EuroSea Partners

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Wednesday | 27 November 2019

09:00 – 10:00	Registration [Forum 0, RBINS entrance] & Coffee [VIP room]
10:00 – 12:00	Work Package Meetings [WP1: Cailliou, 14th floor; WP2: Dehoux, 10th floor; WP3: De Heinzelin, 12th floor; WP5: Lavalette, Knowledge Centre; WP6: Lebon, Knowledge Centre; WP7: Dhondt, Knowledge Centre; WP8: Gilson, 1st floor; WP9: Belgica, 10th floor]
12:00 – 13:00	*Lunch* [VIP room]
13:00 – 13:10	Welcome to Royal Belgian Institute of Natural Sciences [Auditorium] Patrick Roose [Operational Directorate Natural Environment, RBINS]
13:10 – 13:40	Welcome & Overview on EuroSea Toste Tanhua [GEOMAR]
13:40 – 14:00	EC Perspectives on EuroSea Marco Weydert [EC DG RTD Policy Officer]
14:00 – 14:20	Q&A: How to Accomplish a fruitful Innovation Action? Marco Weydert & Nicolas Segebarth [EC DG RTD Policy Officers] and Toste Tanhua [GEOMAR]
14:20 – 14:40	The Global Ocean Observing System Emma Heslop [IOC/UNESCO]
14:40 – 15:00	The European Global Ocean Observing System & the EOOS Framework Glenn Nolan [EuroGOOS] & Sheila Heymans [EMB]
15:00 – 15:30	*Coffee Break* [VIP room]
15:30 – 17:30	Presentations of Working Packages 1 – 8 [Auditorium] WP Leaders
19:00	*Evening Reception and Group Picture* [Mezzanine]

Thursday | 28 November 2019

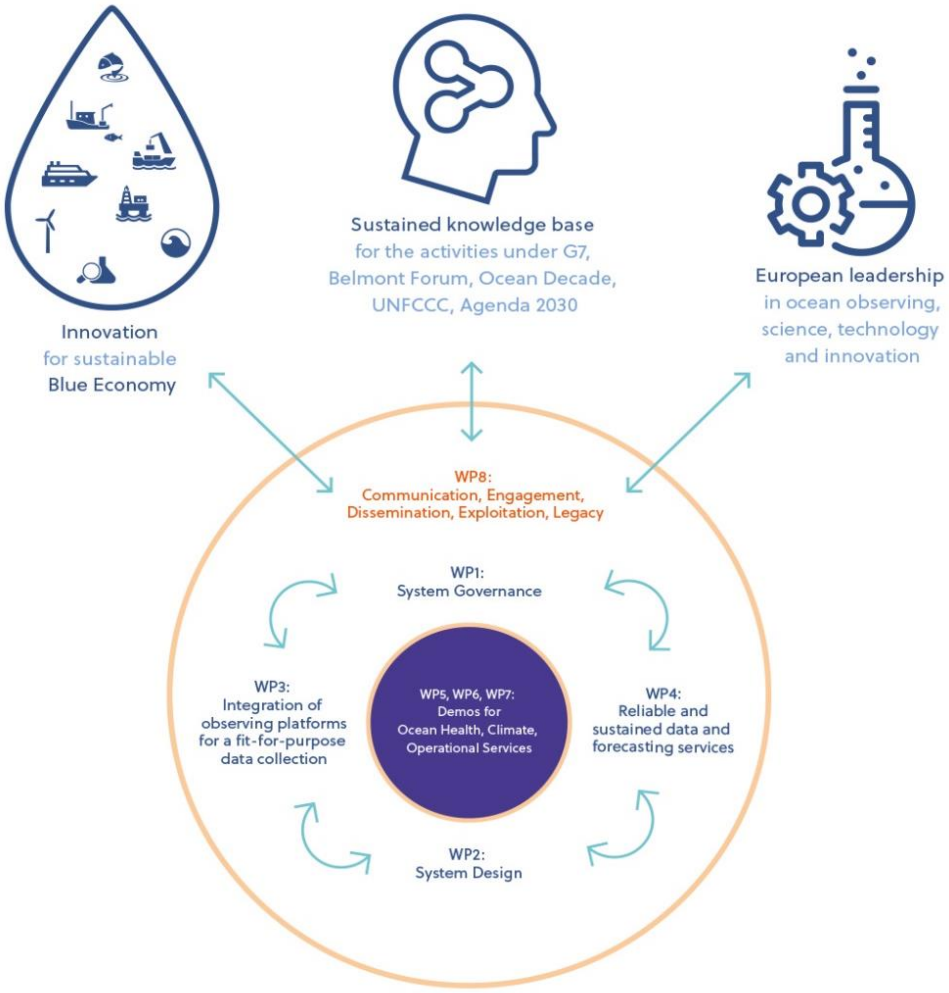
09:00 – 09:15	H2020 Project Management Guidelines [Auditorium] George Predoiu [EC Research Executive Agency]
09:15 – 09:45	General Assembly, EuroSea Governance Structure & Results of EB, GDB & ISTAB Elections Toste Tanhua [GEOMAR]
09:45 – 10:00	Introduction of the Gender and Diversity Board (GDB) Sheila Heymans [EMB]
10:00 – 10:20	Blue Cloud Presentation Peter Thijsse [MARIS BV]
10:20 – 10:50	*Coffee Break* [VIP room]

10:50 – 11:10	Creating Impact: The EuroSea Exploitation Strategy [Auditorium] Kieran Reilly [MI]
11:10 – 12:10	Panel Discussion: Ocean Observation – Creating Impact by Involving the Private Sector Moderation: Glenn Nolan [EuroGOOS] Panelists: Kevin Horsburgh [NOC], Sheila Heymans [EMB], Peer Fietzek [Kongsberg Maritime] & Charlotte O´Kelly [TechWorks Marine]
12:10 – 13:30	*Lunch* [VIP room]
13:30 – 15:30	Break-out Groups: EuroSea Demonstration Activities WP5 | Coastal Resilience & Operational Services Demonstrator [Lavalette, Knowledge Centre] Kevin Horsburgh [NOC] & Enrique Alvarez-Fanjul [EPPE] WP6 | Ocean Health Demonstrator [Lebon, Knowledge Centre] Caroline Cusack [MI] & Javier Ruiz [CSIC] WP7 | Ocean Climate Indicators Demonstrator [Dhondt, Knowledge Centre] Karina von Schuckmann [MOI] & Maciej Telszewski [IO PAN]
15:30 – 16:00	*Coffee Break* [VIP room]
16:00 – 17:30	Break-out Groups: Overarching Topics EuroSea Vision [Lavalette, Knowledge Centre] Emma Heslop [IOC/UNSCO) & Johannes Karstensen [GEOMAR] Creating Ocean Services and Products involving Stakeholders [Lebon & Dhont, Knowledge Centre] Jun She [DMI] & Inger Graves [Xylem Inc.] Creating a Sustainable Impact [Gilson, 1st floor] Kieran Reilly [MI] & Dina Eparkhina [EuroGOOS]

Friday | 29 November 2019

09:00 – 10:45	Presentations of Break-out Group Results [Auditorium]
10:45 – 11:15	*Coffee Break* [VIP room]
11:15 – 12:30	Final Discussion, Open Questions & Synergies with other Projects Toste Tanhua [GEOMAR]
13:00 – 14:30	Steering Committee Meeting [VIP room]
14:30 – 15:30	Executive Board Meeting

Work Packages



WP1 | Governance & Coordination of Ocean Observing & Forecasting Systems

Lead – Emma Heslop [IOC/UNESCO], Co-Lead – Glenn Nolan [EuroGOOS]

WP1 strengthens interactions between regional, national and international observing systems through supporting the implementation of the European Ocean Observing System (EOOS) and the European Global Ocean Observing System (EuroGOOS). WP1 delivers foresight on ocean observing, including drivers, capabilities and latest scientific knowledge and technological feasibility. This allows EuroSea to analyze how the governance of the observing systems can best respond to the relevant legal frameworks (e.g. UNCLOS, UNFCCC, CBD) and mechanisms (e.g. National Adaptation Plan process) focusing on sustained ocean observing and fit-for-purpose ocean information products and services. International coordination for biological and ecosystem ocean observations is supported to respond to the critical need for improved information delivery on biological, ecological and biogeochemical essential ocean variables. WP1 improves the Global Ocean Observing System's BioEco networks in the European seas, including data flow and best practices and sets requirements for ocean observing around existing and emerging Essential Ocean Variables for ecosystems, including human impacts and marine plastic litter. WP1 enhances discovery and access to ocean best practices and facilitates knowledge transfer in data assimilation and marine ecosystem analysis linking with OceanPredict.

WP2 |Ocean Observing System Design

Lead – Ananda Pascual [CSIC], Co-Lead – Sabrina Speich [ENS]

WP2 tests the Essential Ocean Variables indicators, analyzes gaps in the existing observing systems and proposes improvements. This WP works to deliver an integrated system design for European ocean observing and forecasting, creating synergies between the observing elements in a system thinking. WP2 applies the systems design processes of the Global Framework for Ocean Observing in support of connected and integrated European ocean observing. It builds on the Horizon 2020 AtlantOS achievements and takes its legacy further within the Galway and Belém agreements' objectives. WP2 also advances the design of multi-platform observations for validation of high-resolution satellite observations optimizing the utility of these observing platforms.

WP3 | Network Integration & Improvement

Lead – George Petihakis [HCMR], Co-Lead – Johannes Karstensen [GEOMAR]

WP3 improves and strengthens observing networks for their optimal use. WP3 targets observing network innovations and oversees key aspects of technological integration towards higher Technology Readiness Levels and efficient data delivery. WP3 increases integration between ocean observing networks, improves their coordination and supports data quality control and dissemination. WP3 targets the following networks: Argo (including DEEP ad BGC extensions), underwater gliders, research vessels, Eulerian observations, sea level platforms, high-frequency radars, and autonomous surface vehicles. WP3 improves the integration of data from different networks and ensures that EuroSea new or consolidated data sets (physics, biogeochemistry) are ingested in the Copernicus Marine Service and EMODnet portfolios. WP3 develops and implements a set of standard operating procedures for long-term -omic observation aligned with the GOOS Essential Ocean Variables (e.g. microbial biomass and diversity) to augmenting marine long-term ecological research.

WP4 | Data Integration, Assimilation & Forecasting

Lead – Pierre-Yves Le Traon [CNRS], Co-Lead – Nadia Piardi [UNIBO]

WP4 integrates all observational datasets from EuroSea into the European modelling and forecasting systems, from the global Copernicus Marine Service to the regional Northeast Atlantic and Mediterranean Sea systems. These consolidated in situ observation data sets are ingested in the European modelling and forecasting systems at different space and time scales. Ensemble forecasting at regional level is implemented specifically to extract extreme forecast indices. WP4 assesses the skill of ocean variables from the Copernicus Climate Change seasonal forecasting systems using essential climate variables to develop user-relevant indicators. All new products, observational and model data, will be integrated in the Copernicus Marine Service and the Copernicus Climate Change System thus reaching Technology Readiness Levels 7 and 8.

WP5 |Coastal Resilience & Operational Services Demonstrator

Lead – Kevin Horsburgh [NOC], Co-Lead – Enrique Alvarez-Fanjul [EPPE]

WP5 advances the collection, quality control, interpretation and use of sea level data. This will lead to new sea level and climate services. WP5 develops a consistent approach for combining sparse tide gauge data with satellite altimetry in order to deliver a spatially complete picture of sea level changes. WP5 creates an integrated set of tools and measuring instruments as an operational service to the city and the adjacent port in order to minimize risks and improve environmental management. High-resolution operational forecast systems for wave, sea level, sea surface temperature, and circulation are developed at all test sites. WP5 prototypes a multi-parametric monitoring station, models the interactions between sea level hazards, economic activity and risk (by developing prototype scenario planning and visualization tools), and implements these at pilot sites in Barcelona, Taranto and Alexandria.

WP6 | Ocean Health Demonstrator

Lead – Caroline Cusack [MI], Co-Lead – Javier Ruiz [CSIC]

WP6 works with users in aquaculture, fisheries, tourism, and environmental agencies to co-create products that help identify and foresee extreme marine events (e.g. low pH or oxygen levels and marine heat waves), supporting adaptive management decisions. Extreme marine events are threatening marine ecosystems, resources, food security and related businesses. WP6 demonstrates the value of ocean observing and forecasting at local to regional scales, developing downstream products and services to assess marine ecosystem health and provide early warnings for blue economy industries. WP6 facilitates science-stakeholder engagement focused on Atlantic Sargassum biohazard forecasting and monitoring and helps connect the Copernicus Marine Service and ICES communities to assess existing products. WP6 integrates the EuroGOOS Baltic Operational Oceanographic System and the Baltic Marine Environment Protection Commission (HELCOM) monitoring networks for a better operational oceanography system and enhanced environmental assessments in the Baltic Sea.

WP7 | Ocean Climate Indicators Demonstrator

Lead – Karina von Schuckmann [MOI], Co-Lead – Maciej Telszewski [IO PAN]

WP7 assesses the ocean role in climate through new ocean climate indicators determined in collaboration with EuroSea Work Packages 2 and 4. WP7 evaluates the economic value of the ocean carbon sink using a combined observing, integration, and dissemination approach. A dedicated task is focusing on carbon fluxes and uptake in the Northwest Atlantic and the Western Mediterranean, two important areas for carbon uptake. The observations are augmented by Deep-Argo floats from EuroSea to generate user-relevant ocean-climate indicators. WP7 develops information products linking ocean color data with in situ data from autonomous platforms, such as BGC-Argo, moored instrumentation and long-range autonomous surface vehicles (ASVs). ASVs equipped with instrumentation for high-quality carbon measurements will be sent out to integrate carbon measurements, using Time-Series stations in the North and South Atlantic for validation. An ocean color satellite-based bio-regionalization of the tropical Atlantic will be established. Biogeochemical linkages between surface physical and biogeochemical constraints and carbon surface fluxes will be established empirically through neural networks that will serve to estimate carbon fluxes for the tropical Atlantic.

WP8 | Communication: Engagement, Dissemination, Exploitation & Legacy

Lead – Dina Eparkhina [EuroGOOS]

WP8 delivers a critical support to the project and its demonstrators, assisting EuroSea in the delivery of viable and targeted outputs, displaying how EuroSea is improving the information provision to a range of users, and ensuring a lasting legacy. The EuroSea legacy is designed from the outset to ensure the outcomes inform relevant political agendas and best practice in knowledge and technology transfer. WP8 delivers input into the ocean observation strategies within the G7, Belmont Forum and the UN Ocean Decade. WP8 engages with the project partners and a broad range of public and private stakeholders in co-design of the project results and outputs and their active promotion. WP8 also supports capacity development to empower strategic partnerships and support business development for sustainable blue economy. WP8 explicitly considers governance, user and science-policy interfaces, inclusiveness, ethics, as well as gender and diversity in ocean observing and forecasting through the established set of European Responsible Research and Innovation Principles.

WP9 | Project Coordination, Management & Strategic Ocean Observing Alliance

Lead – Toste Tanhua [GEOMAR]

WP9 manages the project to ensure its objectives are met efficiently, on time, and within the allocated resources, as well as that knowledge and innovation are properly managed. WP9 provides effective reporting and communication within the project, between partners and stakeholders and between the consortium and the European Commission. WP9 also supports connections and interfaces with other relevant EU projects.

WP10 | Ethics Requirements

Lead – Toste Tanhua [GEOMAR]

WP10 ensures compliance with the EuroSea ethics requirements and supports collaboration with third countries.

Break-out Groups: EuroSea Demonstration Activities

28 November 2019 | 13:30 – 15:30

All work packages are interlinked and jointly contribute to the EuroSea vision of "a truly interdisciplinary ocean observing system that delivers the essential ocean information needed for the well-being, blue growth and sustainable management of the ocean". The three EuroSea demonstration activities addressing operational services, ocean health, and climate integrate the full value chain of ocean observing, data assembly and analysis, and customized downstream services. The demonstration activities are supported by all work packages ensuring crosscut integration within the project.

WP5 | Coastal Resilience & Operational Services Demonstrator

Lead – Kevin Horsburgh [NOC] and Enrique Alvarez-Fanjul [EPPE]

This breakout group will outline the goals of the two stakeholder-focused components of this work package and the interactions between them. The work package partners will briefly outline the two novel decision-making tools for policy and planning.

- The end-to-end demonstrator from climate quality sea level measurement to sea level services and a more effective use of sea level data. Geographically, this will focus on the Mediterranean then link with developing countries in Africa.
- The demonstrator that integrates observations and models supplying oceanographic services at the service of ports and cities. We will outline the results from stakeholder engagement with Barcelona, Taranto and Alexandria.

The session will provide an opportunity to discuss and modify the stakeholder needs and to agree all of the potential socio-economic impacts and benefits of our work. We will also use the meeting to maximize the coherence of the work package (i.e. working with the same multi-parameter measuring station to provide both sea level planning information, and also the control of port operations, water quality inside ports, beach management, and management of oil spills).

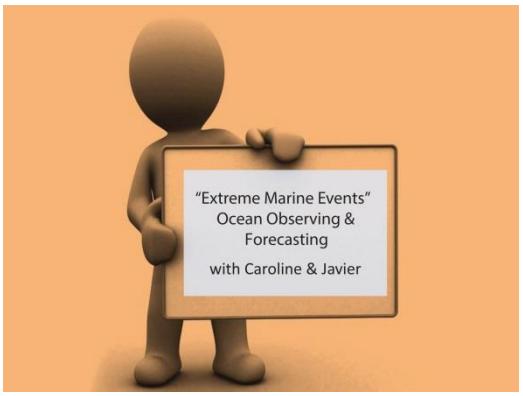
We will brainstorm the capacity building priorities and the specific deliverables, and consider the long term impact of the demonstrators (including potential commercial application).

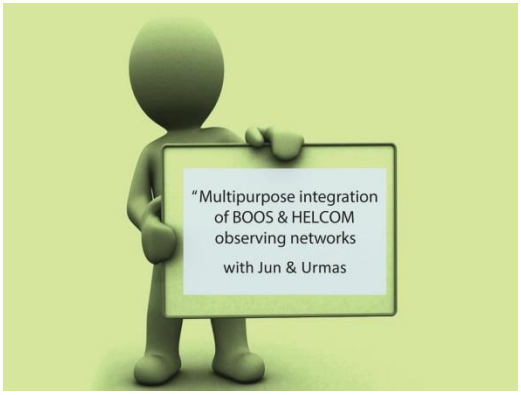
WP6 | Ocean Health Demonstrator

Lead – Caroline Cusack [MI] and Javier Ruiz [CSIC]

The specific objective of this interactive workshop is to *Identify and document links with other activities within (WPs and Tasks) and outside the EuroSea project.*

Would you like to find out the links between your work and the Ocean Heath demo?
If yes, then please drop into the WP6 breakout session. We look forward to meeting you and telling you all about our planned activities. We welcome inputs from all EuroSea WPs.





Expected output: Connections within and external to the project confirmed and documented, and an outline of the synergistic steps defined.

Workshop Format: The session will kick-off with mini-presentations from the WP Task Leaders (approx. 10 min. each) to provide back-ground, followed by Q&As. This will be followed by the interactive session: Four meeting points in the room will correspond to the WP6 tasks. Each task will have an A0 poster "WP6 Task relationships" that we will populate with post-it notes and together document the links. We need you to help us identify if your task can provide support or if we can support you; let's discuss how we can work together.

WP7 | Ocean Climate Indicators Demonstrator

Lead – Karina con Schuckmann [MOI] and Maciej Telszewski [IO PAN]

The EuroSea WP7 addresses innovative ways to assess the role of the oceans and seas in the Earth's climate through the development, evaluation – including uncertainties – and dissemination of ocean climate indicators and their value for key end-users in economic (e.g. blue economy), societal (e.g. policy) and environmental (e.g. climate science) sectors, i.e. the three pillars of sustainable development. The key objectives are:

- To generate a feedback loop between EuroSea, climate and ocean services, the economy sector, and decision makers by co-examining ocean climate indicators, assessing their uncertainties and quantifying their economic value.
- Provide user-relevant products for ocean climate monitoring and deliver seasonal forecasting indicators in support of improved ecosystem management, risk management and blue growth.
- Carry out AtlantOS (H2020) recommendations for observing system strategies and demonstrate the improvements though ocean climate indicator developments with decreased uncertainty.

The achievement of these objectives is embedded in three subtasks for the North Atlantic and North-western Mediterranean Sea (carbon audit), for the entire Atlantic and Mediterranean Sea (indicator development) and the tropical Atlantic (observing system strategies).

In this breakout session we aim to deliver an overview of each Task and trigger a dialogue with the audience on potential partnerships within and beyond EuroSea, which will hopefully enrich the delivery of specific proposed innovations.

The discussion part of this breakout session will be centered around (but not limited to) two specific questions:

1. How can we best establish close interaction of WP7 with the other WPs, in particular with the demonstrator WPs of EuroSea?
2. How can we foster a targeted development of EuroSea products and service and best practices for society and economy?

Break-out Groups: Overarching Topics

28 November 2019 | 16:00 – 17:30

EuroSea Vision

Lead – Emma Heslop [IOC/UNESCO] and Johannes Karstensen [GEOMAR]

This break-out will collect input on the multi facets that could encompass a EuroSea Vision, for example the project legacy or the execution of a coherent project. The group will prioritize EuroSea Vision components, also considering different time horizons and aspects of the project. Critical actions required to make the visions reality, will be identified, plus any risks.

Creating Ocean Services and Products Involving Stakeholders

Lead – Jun She [DMI] and Inger Graves [Xylem Inc.]

The purpose of this break-out session is to brain-storm how EuroSea technologies and products can be exploited to provide a better service for both public and private sectors. The workshop covers three components: i) service development based on public-public relations, ii) service development based on public-private relations and iii) stakeholder involvement for service development.

Public-public integration: Ocean observations from different public sectors (operational, environmental, fishery and research) should be integrated with models to fit for the purpose of the public stakeholders. Such integration reflects a win-win collaboration. The major challenge is to break the sectorial/institutional barriers. Participants in the session are expected to present their ideas, esp. related to the following questions:

- How can products from EuroSea demonstrators be explored for a better service? Who are the user groups? How to maximize them?
- Any suggestions to improve fitness-for-the-purpose of EuroSea products?
- How can EuroSea monitoring instruments (with raised TRL) be used for provide better products and service?
- How can optimized sampling strategies in EuroSea be used to improve the products and service?

- How can EuroSea monitoring-modelling integration (e.g. assimilation) improve the products and service?

Private-public integration: According to a report by The World Economic Forum, endeavors to find solutions to complex challenges have increasingly required collaboration between universities and industry, because only a few organizations have the internal capacity to delivery results on their own. These types of collaborations give universities an opportunity to see their research put into practice, and business to gain access to competence needed to push their solutions beyond their own capabilities. There are a number of opportunities and challenges to Product and Service development based on private and public relations. In this section, we will first look at some recent examples of this development, to inspire a dialogue in groups on how we can improve the product and services development in the interface between public and private sector.

Stakeholder involvement: Since EuroSea is an Innovation Action, we will have a strong focus on involving non-academic stakeholders. We would like to create some awareness about this inside of our consortium and give our partners information on how to involve stakeholders and build up public-private partnerships.

EuroSea wants to ensure:

- That regular co-development engagement activities with stakeholders are carried out
- A high level of industrial collaboration in the project
- Technology transfer (reinforce partnerships between research and industry)
- Appropriate identification and management of exploitable results to increase the impact of EuroSea.

During this section, we would like to further develop these ideas and come up with specific strategies how to reach our goals.

Creating a Sustainable Impact

Lead – Kieran Reilly [MI] and Dina Eparkhina [EuroGOOS]

Creating a sustainable impact beyond the lifetime of a project is a key aspect of all EU funded research and an important responsibility for all EuroSea consortium members. Impact refers to the transformative effect of the EuroSea results on their users.

To fully explore the project's results and achieve a lasting impact, EuroSea needs clear impact indicators early in the project. The Organization of Economic Cooperation and Development (OECD) have created a set of core impact indicators for evaluating research infrastructures, which can be adapted for the EuroSea project.

The main objectives of this workshop are to:

- Confirm the key expected results of EuroSea and their users;
- Define an impact evaluation methodology for EuroSea;
- Define EuroSea impact indicators;
- Discuss the internal training needs of the consortium.

The EuroSea impact indicators will be based on those developed by the OECD under five main categories: scientific, technological, economic, training and education, and social and societal impacts. The impact indicators are key to achieving the seven Innovation Action objectives of EuroSea set out in the grant agreement.

EuroSea

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