Technology Plan Working Group (TPWG) - Terms of Reference

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1. Background, Rationale, and Link with EuroGOOS Strategic Priorities

At the present time, EuroGOOS identifies the following immediate priorities for aligning its ongoing activities with Europe's current policy and developmental goals and strategies relating to the marine environment (EuroGOOS Policy Brief, 2016):

- **the establishment of an operational ecology service for ecosystem-based management** that includes a strong network for biogeochemical observations, advanced basic research to fill in knowledge gaps, and the facility to integrate existing and new information into ecological models capable of informing management decisions.
- **greater integration of coastal oceanography** to ensure a more efficient uptake of relevant observations and data products, better knowledge of the coastal ocean and fresh water inputs, and stronger cooperation between the public and private domains in expanding services in this sector.
- **improvement of modelling and forecasting capabilities** by enabling the integration of a broad range of parameters and resolving the many inconsistencies of the estuary-coast-ocean continuum, advancing accuracy and uncertainty estimation, and harmonizing a European framework allowing the production of tailor-made products for diverse users that sustains the uptake of the CMEMS.
- **the establishment of an European Ocean Observing System (EOOS)** that will provide a focal point and the framework for cooperation and engagement in European operational oceanography and research, and promote Europe's leadership in ocean observing and technology, through targeted activities such as the EOOS Technologies Forum Pilot Action (see below).

Addressing the first three priorities in a pan-European operational oceanography perspective will require greater knowledge of the effectiveness of the technology implemented to gather observations, particularly under actual field conditions, a certain degree of technical and operational standardization amongst data producers, sharing of expertise, and common methodologies for assessing measuring capabilities and evaluating the comparability of acquired measurements. This is especially true for many biogeochemical observations where ground-truthing is often a serious issue.

Furthermore, in the above context, an overarching platform for pursuing technological compatibility will prove indispensable. Obviously, such a platform can also be a useful tool for building and running the future EOOS coordination framework. In this context, one such initiative where a similar platform could prove extremely useful would be **Pilot project 3.4.1: EOOS Technologies Forum**, as specified in the EOOS implementation plan: "A Technologies forum will be established as part of EOOS to enable new and old observing technologies be compared, to share data from these new technologies, and to provide guidance to technology developers to ensure a strong understanding of the user requirements for such technologies.]. This forum will build upon the database of technology readiness with respect to known sensors compiled in the AtlantOS project and other relevant activities being conducted by established Research Infrastructures such as EMSO, EuroArgo and Eurofleets, among others. Maritime clusters will be invited to participate in this Forum to share expertise and to ascertain user requirements for manufacturers and service providers."

2. Target Audience and Expected Impact

The target audience can be identified as:

- the observational component of EuroGOOS, specifically its monitoring networks;
- institutional operators of ocean observing systems active within the framework of projects or programmes funded, or otherwise supported, by the European Union;
- GOOS, JCOMM, IOC, WMO, and other international bodies coordinating global ocean observing activities;
- ocean observing infrastructure operators and technical staff;
- national metrological institutions and international bodies dealing with measurement (e.g. BIPM);
- manufacturers of marine instrumentation (industry).

The key messages to pass on to these audiences are that:

- EuroGOOS provides Europe's Operational Oceanography community with a flexible well-established institutional framework for cooperation and sharing of expertise on technology and related issues;
- EuroGOOS is acting as a motor for advancing technological integration and harmonization of ocean observing infrastructure on the regional (European) scale;
- EuroGOOS constitutes a convenient platform for technical training and capacity-building at the transnational level in the Operational Oceanography sector in Europe.

The expected impact of the working group's activity is the following:

- contributions to the definition of specifications for EOVs, and relative observing infrastructure and instrumentation;
- alignment of observing practices within EuroGOOS with relevant global benchmarks (IOC, JCOMM);
- contribution to Best Practice repositories and/or guidelines for the use of specific marine technologies;
- influence on future technological development in the field of Operational Oceanography through closer cooperation with manufacturers of marine instrumentation, particularly in Europe.

3. Aim, Objectives and Actions

The working group aims to optimize collaboration and integration on technology and technical issues within EuroGOOS ROOSs, Task Teams and other Working Groups to:

- improve readiness levels for observed variables;
- work on metadata and calibration issues;
- identify and align observing elements with EOV requirements;
- develop a strategy to articulate and document Best Practices;
- improve technological literacy (capacity-building);
- balance the sustained measurement needs of the observing system with the need for

innovation and research;
- link with other international initiatives/industry involved with similar or impacting topics; strong collaboration with the national and international metrology communities is highly desirable.

A first set of actions, directed towards realizing their objectives, is listed below:

1. identifying contacts for the technical teams running EuroGOOS' observing system elements;
2. mapping of the current state of technology within EuroGOOS for observations of EOVs and MSFD Descriptors;
3. assessment of EuroGOOS' readiness levels for observations of EOVs and MSFD Descriptors;
4. mapping of the availability of technology-related documentation (operating protocols, Best Practice, etc.) for EOVs and MSFD Descriptors within EuroGOOS;
5. Link with the AtlantOS/NSF/IODE/IOC Working Group on "Evolving and Sustaining Ocean Best Practices".

The following outputs are envisaged, based on these actions:

- a register of contacts (experts) for the technological component of EuroGOOS forming the basis of a technological forum;
- A report on 'Technologies underpinning Operational Oceanography' that could serve as a booklet document for Policy makers;
- a report on EuroGOOS' current technological capabilities for monitoring EOVs and MSFD Descriptors;
- identification of material for populating an in-house repository for Best Practice documentation relating to the operational aspects of observing activity and relevant technologies.

4. Composition and Operation

The Technology Plan Working Group will be composed of a chair, a co-chair(s), and members. The chair will be supported by a dedicated officer at the EuroGOOS office.

4.1 Chair's nomination process, mandate, responsibilities

The chair must be a representative of a EuroGOOS member organization[1]. The chair will be supported by a co-chair(s). The role of the co-chair is to assist the chair in the regular exercise of his/her duties. The co-chair will also take on the responsibilities of the chair if the latter is indisposed or otherwise incapacitated and is unable to fulfil his/her role. The chair will be proposed by the Board of Executive Directors of EuroGOOS, and the appointment will be discussed and approved by the EuroGOOS General Assembly. The chair's mandate will extend for three years, renewable once for an additional two-year term. The mandate of the co-chair will be of the same duration.

The chair will be responsible for:

[1] http://eurogoos.eu/about-eurogoos/members

- the oversight of the working group;
- the alignment of the working group's efforts with its terms of reference and with EuroGOOS strategy;
- developing the working group's yearly implementation plan in relation to the above strategy;
- reporting on the working group's activities to the Executive Directors Board and the General Assembly of EuroGOOS (both in writing and at physical or virtual meetings);
- regularly reviewing the membership of the working group (e.g. once a year);
- regularly liaising with the EuroGOOS Office to follow up on the working group's alignment with the other EuroGOOS activities (at least monthly);
- represent the working group at external meetings upon agreement with the EuroGOOS Secretary General.

4.2 Members nomination and selection process, mandates, responsibilities

Members will be selected based on a call for nominations to the EuroGOOS members. If additional expertise is needed, additional working group members will be selected through an external call for expressions of interest or direct invitation.

Members will be selected from the pool of nominations by the Chair and the EuroGOOS Executive Board and the Office, keeping in mind the representativeness in expertise, geographical representation, and the gender balance on the group.

Membership is reviewed by the chair, co-chair and the EuroGOOS Executive Board and Office yearly and can be terminated if the member does not fulfil the responsibilities described below.

Members' responsibilities are to:

- participate in the working group activities;
- deliver outputs as required, orally or in writing, in a timely manner;
- represent the activity at external meetings, upon agreement with the chair and the EuroGOOS Office;
- attend working group meetings;
- follow-up on the developments related to the working group's activity, to ensure the working group's work is timely and topical;
- assist in the identification of sources of funding (calls, etc.) to support the WG.

5. Deliverables

A first list of envisaged deliverables is the following:

- a register of experts and contacts for the technical component of EuroGOOS, that will also support the EOOS Pilot 3.4.1 (technologies forum);
- a printable booklet on 'Technologies underpinning Operational Oceanography', to serve as an informational tool for decision and/or policy makers and the public;
- a report on EuroGOOS' current technological capabilities for monitoring EOVs and MSFD Descriptors;
- material for populating an in-house repository for Best Practice documentation relating to the operational aspects of observing activity and relevant technologies;

- an online forum for the technical community of EuroGOOS, aimed at delivering critical technological content, information, insight, and tools across disciplines and monitoring realities.

6. Indicative Timetable

	Estimated deadline (Month/Year)	Main responsible
Terms of Reference.	Jan-Feb, 2019.	WG.
Selection of Chair / co-Chair.	TBD.	Exec. Board.
Approval by Exec. Board.	Jan, 2019.	Exec. Board.
Approval by General Assembly.	May, 2019.	All.
Call for member nominations, and reinvigorating the membership.	TBD.	WG.
Kick-off meeting.	TBD.	WG.
Activity 1 - preparation of a register of experts and contacts for the technical component of EuroGOOS, that will also support the EOOS Pilot Action 3.4.1 (technologies forum).	December 2019.	WG, with support from the Office.
Activity 2 - preparation of a printable booklet on 'Technologies underpinning Operational Oceanography', to serve as an informational tool for decision and/or policy makers and the public.	December 2019.	WG, with support from the Office.
Activity 3 - preparation of a report on EuroGOOS' current technological capabilities for monitoring EOVs and MSFD Descriptors.	January 2021.	WG, with support from the Office.
Activity 4 - identification and collection of material for populating an in-house repository for Best Practice documentation relating to the operational side of observing activity and relevant technologies.	Continuous.	WG, with support from the Office.
Activity 5 - development of an online forum for the technical community of EuroGOOS, aimed at delivering critical technological content, information, insight, and tools across disciplines and monitoring realities.	Start: January 2020, then, continuous.	WG, with support from the Office.
Activity 6 - identify sources of funding (calls, etc.) to support the WG.	Continuous.	All.