IOC Ocean Best Practices System

a sustained system
for promoting and supporting ocean best practices
across observation, data management and applications
communities

Project Implementation Plan

2019-2021

Working Draft

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Executive Summary

The IOC Ocean Best Practices System (OBPS) provides the ocean research, observing and application communities with a mechanism to publish, discover, review, agree upon, adopt and support the widest possible dissemination of ocean best practices.

Through the development and adoption of standards and best practices, the ocean community must develop an early and sustained focus on interoperability across the value chain from observations to user applications. The ocean observation community and observing infrastructures - with regionally diverse members and disciplines - is looking toward a dynamic consensus-building approach for the development of best practices.

The IOC Ocean Best Practices System (OBPS) has been implemented to support this. The system allows the archiving and interlinking of documents describing ocean methods and catalyzes the creation of best practices. The OBPS was adopted by the Intergovernmental Oceanographic Commission (IOC) of UNESCO as an international project under IOC/GOOS and IOC/IODE sponsorship in June/July 2019. The OBPS includes a permanent repository, hosted by IODE, enhanced with natural-language processing capabilities coupled with semantic interoperability solutions and metadata indexing. Together, these capacities are improving the discoverability of ocean methods and best practices and will, eventually, link them to the data and information they generate. Other components include a peer review journal, a newsletter and forum as elements in a strong Communication engagement strategy and a training offer based on the IODE OceanTeacher Global Academy and other organizations.

Building on the OceanDataPractices of IODE and acknowledging the lead work of the AtlantOS Project Work Package 6.4. Best Practices that developed the 'System' concept as well as the NSF RCN:OceanObs Network Project. This project plan proposes ways forward for evolving and sustaining ocean best practices across infrastructures and communities; it identifies the further development of the IOC Ocean Best Practices System including governance as an IOC Project. The Work Packages and proposed strategic plan will articulate future directions for OBPS.

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Definition of a community Ocean Best Practice in the context of the Ocean Best Practices System - as developed at the BP Workshop Paris 2017 [1]

A community best practice is a methodology that has repeatedly produced superior results relative to other methodologies with the same objective.

To be fully elevated to a best practice, a promising method will have been adopted and employed by multiple organizations. Best Practices may come in any of a number of formats types – standard operating procedures, manuals, guides, etc. – with the understanding that the document content is put forth by the provider as a community best practice.

1. BACKGROUND: DEVELOPMENT OF THE OCEAN BEST PRACTICES SYSTEM

A growing need for global and sustainable ocean best practice management has been recognized by many national and international organizations and projects. The AtlantOS Project (whose partners included: EuroGOOS/GOOS, GEOMAR, Ifremer, IO PAS, Marum, PML, UPMC, NERSC, IEEE etc) had a Best Practices Work Package 6.4 working in diverse ocean disciplines to create and populate a Best Practice repository and to address the utility of the BP process for their communities. This work was supported by ODIP (Ocean Data Interoperability Platform) and the NSF Ocean Observation Research Coordination Network.

An existing OceanDataPractices repository (main partners IODE/WMO/JCOMM/ICES) established through Recommendation IODE-XXII.19 as a deliverable of the IODE Steering Group for Ocean Data Standards and Best Practices Project (ODSBP) http://www.oceandatastandards.org/ was identified as a permanent, sustainable repository option and IODE agreed (2017) to join with the AtlantOS/ODIP/RCN Best Practices Working Group (BPWG) to work towards an enhanced global best practices repository. The name of the repository was changed to **OceanBestPractices** to reflect the 'all ocean-related' best practices broader remit.

From Repository to System

The AtlantOS BPWG commenced its work in 2017 and held the first Best Practices Workshop in Paris in Nov 2017. From the workshop recommendations the OceanBestPractices Repository has been tailored to articulated community needs and forms the hub of an evolving system that addresses many of the issues that underlie the propagation and use of best practices. It includes: 1. a permanent repository (OBPS-R) offering the scientific community a platform to publish their ocean-related best practices and find practices of others using innovative search and access technology; 2. a peer review journal publishing outlet; 3. a strong community engagement strategy; and 4. a training resource leveraging community capability.

[1] Simpson, P., Pearlman, F. and Pearlman J. (eds) (2017) Evolving and Sustaining Ocean Best Practices Workshop, 15 – 17 November 2017, Intergovernmental Oceanographic Commission, Paris, France: Proceedings. AtlantOS/ODIP/OORCN Ocean Best Practices Working Group, 74pp. DOI: http://dx.doi.org/10.25607/OBP-3

A recommendation from the 2018 Best Practices Workshop was to propose the Ocean Best Practices System as an approved Intergovernmental Oceanographic Commission product jointly funded by the IODE and GOOS programmes. Approvals were obtained from the IODE-XXV Committee February 2019 and the GOOS Steering Committee, April 2019. In June/July 2019 the IOC Assembly formally adopted the Ocean Best Practices System as an IOC (IODE/GOOS) Project (Decision IOC-XXX/7.2.1)

Building on the OceanBestPractices of IODE and acknowledging the lead work of the AtlantOS ODIP and OceanObs RCN Projects that developed the 'System' concept, this project plan proposes ways forward for evolving and sustaining ocean best practices across infrastructures and communities; it identifies the further development of the Ocean Best Practices System (OBPS) including governance as an IOC Project. The Work Packages and proposed strategic plan will articulate future directions for OBPS,

2. VISION, MISSION AND STRATEGIC OBJECTIVES

Vision

To have agreed methods for every activity in ocean observing research, operations and applications that are broadly adopted : a **cross-cutting vision that will serve the needs for broad interoperability and sustainable observations complemented with modelling and applications capabilities.**

Thus, with the above statement, the vision is to increase efficiency, reproducibility, and interoperability of the entire ocean observing value chain by providing the ocean observing community with a unified, sustained, and readily accessible knowledge base of interdisciplinary best practices. We will accomplish this vision by engaging ocean observing communities in a joint and coordinated effort for producing, reviewing, adopting and sustaining BP documents.

Mission

To provide a sustained system which fosters collaboration, consensus building, and innovation by providing coordinated and global access to best practices across ocean sciences and applications.

Consistent with this mission, our objective is to provide coordinated and sustained global access to best practices in the end-to-end value chain to foster innovation and excellence.

Project Deliverable

The IOC Ocean Best Practices System will deliver its vision and mission by centering on: the IOC Ocean Best Practices System repository; a strong community engagement strategy; the peer-reviewed BP journal and the IODE OceanTeacher Global Academy leading the BP training support, which are integrated into a system that provides increased discoverability and access to BP documents. This promotes community dialogue, consensus and agreement of BPs.

Strategic Objectives

Ocean Best Practices System has the following strategic objectives:

1. To promote the use of recommended standards and practices in the relevant communities.
2. Enhance the functionality and search capabilities of the existing IODE OceanBestPractices repository and provide tools to promote and increase the BP content, including advanced user interfaces and easy means to submit best practices.
3. Establish the *Frontiers in Marine Science "Best Practices in Ocean Observing"* research topic as the medium to describe and understand robust and high quality methodologies over the entire range of ocean observing considering interoperability and linked/references to the OBPS repository.
4. Ensure visibility and relevance of the system through community engagement activities.
5. Provide a framework for training of best practices and facilitate such training
6. Sustain funding of the OBP system by the global and regional ocean observation and information organizations as well as community practitioners.

An IOC OBPS Strategic Plan may be recommended by SG-OBPS-1 (2019) and will be written by an Intersessional Working Group (IWG) as a WP1 project deliverable.

3. STAKEHOLDERS

3.1 The IODE/GOOS Partnership for OBPS

Following the initial GOOS and IODE agreement to fund support for the development of the OBPS at the Ocean Best Practice Workshop (Paris, 2017), the two organizations will continue to support the development of this system through the joint IOC (GOOS/IODE) project approved at IOC Assembly 26 Jun - 04 Jul 2019 (Decision IOC-XXX/7.2.1)

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3.2 User Communities

The User Communities for OBPS :

Research communities: practitioners from all fields of ocean science, including governments, clustered in groups around disciplinary interests, data types or cross-cutting grand challenges.
Research funders: governments, national research funders, charitable organisations and foundations, and other funders of research activity.
Policymakers : : governments, international entities like OECD, institutions, publishers and others defining policy.
Standards bodies: formal organisations and consortia coordinating standards and governing procedures.
Institutions : : universities and research performing organisations
Manufacturing Industries: sensors, platforms, instrumentation
Cooperative Private Sector entities: NGOs …
Publishers: commercial and not-for-profit, paywall and Open Access publishers of research papers and data

Digital services : domain repositories, research infrastructures (ESFRIs) and e-Infrastructures, institutional provision, community and commercial tools and services.
Data Information stewards : : support staff from research communities and research libraries, and those managing digital repositories
Global coordination : Research Data Alliance, CODATA, WDS Communities of Excellence, FORCE11, GO FAIR and other similar initiatives.
Software contractors/Open source
Organizations addressing societal applications

4. GOVERNANCE

The IOC Ocean Best Practices System is managed by a Steering Group that will report to the IODE and GOOS governing bodies (IODE Committee and GOOS Steering Committee - OBPS Task Team respectively).

Steering Group

The IOC Steering Group for the Ocean Best Practices System **Terms of Reference** are:

- Propose the vision, strategy, work plan and timetable for the Ocean Best Practices System, for submission to, and approval by the relevant IOC bodies;
- Oversee and provide guidance to the project manager/chief editor and technical manager
- Establish Work Package teams to deal with specific tasks and advise on WP progress
- Report to the relevant IOC bodies and to other partners on the progress of the project;
- Identify funding sources to further develop the OBPS

Membership of Steering Group

The IOC Steering Group for the Ocean Best Practices System shall have the following initial membership:

(i) Representatives from IOC Programmes
(ii) Project Manager/Chief Editor;
(iii) Project Technical Manager;
(iv) Invited Experts from the full value chain of the ocean observing community;
(v) Representatives of IODE and GOOS Secretariats

A Chair or co-Chair(s) is/are expected to Chair sessions of the Steering Group and assist the Project Manager in implementing the work plan adopted by the Steering Group. This may include assisting with the organization of relevant meetings such as workshops; contributing to online discussions; drafting of documents or other activities in support of OBPS.

The Chair or Co-Chairs will be elected by the Steering group and will serve for one inter-sessional period. The Chair or co-Chairs can be re-elected for a continuous second term with the approval of the Steering Group.

"***Guidelines for the Structure and Responsibilities of the Subsidiary Bodies of the Commission***" published as Document IOC/INF-1192:

> *Unless nominated by the parent body, the Chairperson and a Vice-Chairperson* [co-chair] *shall be elected by the subsidiary body itself. Both shall normally serve for one intersessional period and the next session, if any, of the subsidiary body; if there is no such session (e.g., in the case of a Task Team working by correspondence), the intersessional period shall be that of the parent body. The IOC/IODE-OBPS Chairperson and/or co-Chairs shall be eligible for re-election for only one more intersessional period and subsequent session as just defined; however, on an exceptional basis and in the interest of the Commission, both may be eligible for re-election for one further term.*

Project Manager (PM)

The Project Manager will manage the day-to-day workings of the IOC OBPS. The main tasks of the Project Manager are as follows:

1. Support and monitor the implementation of the OBPS project, based upon work plans proposed by the Steering Group (under work packages) and approved by IODE and GOOS governing bodies, and in consultation with members of the Steering Group. Invite reports on progress of all working areas (work packages) from WP leads.
2. Organize sessions (at least one per calendar year) of the IOC Steering Group for the Ocean Best Practices System project, in close consultation with SG Chair/Co-Chairs,
3. Manage and administer, on a daily basis the OBPS Repository
4. Report technical issues to the repository technical manager at the IOC Project Office for IODE, Oostende, Belgium
5. Manage and update the web page(s) on the OBPS project in the IODE and/or GOOS web sites
6. As directed by the Steering Group, carry out other duties as needed

Project Technical Manager (TM)

Infrastructure and IT support for the IOC Ocean Best Practices System will be provided and managed by the UNESCO/IOC Project Office for IODE, Oostende, Belgium, under the direction of the Project Steering Group and as agreed in the annually reviewed Project Plan.
Technology development beyond those within the repository software and already provided functionality of the AWS interface will be outsourced and funded by external project partnerships.

Currently, the repository http://oceanbestractices.org, utilizes Amazon Web Services (AWS) technologies to support document indexing, text-mining, semantic tagging, and semantic search provided by managed Elasticsearch capabilities and is underpinned by DSpace software, https://duraspace.org/dspace/ an internationally recognized digital repository software. The new customised User Interface (UI) was initially hosted on an Amazon Web Services (AWS) instance owned by E84 and is now transferred to an AWS instance owned by IODE.

Steering Group Working Practices

Meetings:
Annual Meetings of the Steering Group will be held either at IODE Project Office Oostende or a venue to be determined. It will be planned to coincide with the annual BP Workshop if that is organized or another OBPS relevant meeting
Monthly virtual meetings will be held via Skype or similar medium. SG will agree a regular day and time for a virtual meeting (eg 2nd Thursday each month) and discuss a mechanism to enable maximum SG participation across time zones.

Operational Decision Making: operational decisions of the Steering Group will occur throughout the project: 1. at monthly virtual meetings; 2. by email; 3. by discussion at annual SG meetings.

Document Management: all documents: administrative, journal or conference papers, abstracts, presentations, reports etc will be stored on Google Drive, or another agreed globally accessible permanent storage location.. A structure will be setup under WP designations. Previous BPWG Google Drive folders will be included in this structure for retrospective reference.

Reporting: the SG will decide on what metrics are needed for reporting purposes under each WP. Each WP lead will maintain these metrics in Google Drive and provide them and a short report when required for annual or progress reporting.

5. WORK PACKAGES

The work of the IOC Ocean Best Practices System will be structured and implemented through Work Packages (WP). The work packages have been designed as separate activity areas but are not viewed as silos.; interaction between all WPs is essential. Each WP will have a **lead** (bold) and *co-lead* (italics) agreed by the SG, with additional SG members contributing to the activities. Brief descriptions of the WP follow:

WP1: Project Management
This work package will oversee the system administration, reporting and progress of the IOC OBPS project and be the responsibility of the IOC OBPS Project Manager.
The management structure of the project, defined by an agreed project plan, will be managed under this WP. A Strategic Plan if proposed will be drafted by an IWG within this WP. Working with WP6, this work package will also include an OBPS evaluation exercise on reach, accessibility and usability..

	DELIVERABLES: WP 1 - Project Management	**Due Date**	Pauline Simpson (lead)
1.	Project Implementation Plan submitted and agreed by SG	Dec 2019	co-chair/s
2	Strategic Plan (IWG)		

3.	Progress Report to IODE Management Group	Dec 2019 Dec 2020	
4.	Progress Report to GOOS Steering Committee - OBPS Task Team	Apr 2020?	
5.	Evaluation/Survey (with WP6)	Dec2020	
6.	Maintain OBPS website obpsystem.org (with WP6)	ongoing	
7.	Metrics		

WP2: Resource Development

The IODE/GOOS funding provides only an IOC OBPS operational budget. To introduce new technology developments and resource enhancements it is necessary to obtain additional funding from external sources outside of the IOC. This may take the form of additional funding for a specific enhancement/or activity in OBPS or additional funding to OBPS from being a work partner in other externally funded projects from the NSF; EU etc. This WP will engage with external organizations to address funding to support the development and implementation of advanced technologies; and identify new project proposals where OBPS inclusion will enhance or expand OBPS planned functionality. This WP will monitor and support the OBPS contribution to external funded projects and provide reports to the SG and maintain metrics and provide them and a short report when required for annual or progress reporting.

	DELIVERABLES : WP 2 - Resource Development	**Due Date**	**Jay Pearlman (lead)** *Peter Pissierssens Emma Heslop*
1.	Address additional funding (1 x proposal submitted)	Dec 2020	Pier L. Buttigieg Pauline Simpson
2.	EUROSEAS		
3.	JERICO3		
4.	CAPARDUS		
5.	Metrics		

WP3: Repository

The repository must have a comprehensive collection of best practices and the WP will provide the content support and metrics to promote and increase the BP content. The repository https://www.oceanbestpractices.org/ utilizes Amazon Web Services (AWS) technologies to support document indexing and search provided by a managed Elasticsearch and is underpinned by DSpace software at https:/repository.oceanbestpractices.org/ The Repository Manager/Chief Editor will lead the efficient day-to-day management, administration and development of the Repository. The day to day technical support for the Search User Interface and Repository will be the responsibility of the Project Technical Manager who will be the prime liaison with any technology contractor/s. Development IT

tasks and advanced technology deliverables for the Repository will be the responsibility of WP4.

	DELIVERABLES: WP 3 - Repository	**Due Date**	**Pauline Simpson (lead)** *Arno Lambert*
1.	Increase BP content to 1200	Aug 2020	Pier L. Buttigieg Mark Bushnell Emma Heslop Peter Pissierssens Nicholas Roden
2.	Ensure all user guides, FAQ etc are updated	Aug 2020	
3.	Maintain user support capabilities	ongoing	
4.	The 3 existing Document templates finalised and create new ones for elements of value chain and assessment methods	Dec 2020	
5.	Obtain repository certification	2021	
6.	Metrics		

WP4: Technology Development

This work package covers the introduction of new user-facing and back end supporting functionality based on the Search User Interface as well as technology enhancements of the underlying Repository system. These technology developments will rely on additional external funding being obtained (WP2). Working with the E84 Technology Contractor, or another as appropriate, new technology developments will build on the present service and introduce automated processes to enhance the best practice creator and user experience. This work package will also involve creating or obtaining complete technical documentation of the advanced technology introduced to the system.

	DELIVERABLES: WP 4 - Technology Development	**Due Date**	**Pier L. Buttigieg** *Adam Leadbetter Arno Lambert*
1.	June 2019 IT task list completed		
2.	Version Control		Cristian Munoz Jay Pearlman Peter Pissierssens Pauline Simpson
3.	GOOS Expert Panels Endorsement Process		
4.	Community Review on Interface		
5.	Additional ontologies uploaded		
6.	Linked data/methods		
6.	schema.org compatibility		
7.	Metrics		

WP5: Peer Reviewed Journal

Under this WP the *Frontiers* journal will be supported as the main vehicle for BP peer review publications. It will support the *Frontiers in Marine Science "Best Practices in Ocean Observing"* Research Topic by providing members of the Editorial Board and will be the recognized place for ocean research, operations and applications to describe and understand robust and high quality methodologies over the entire range of ocean observing. The papers should include methodologies and address the challenges and solutions for improving observing capabilities,

reproducibility and interoperability and provide links and references to the IOC OBPS repository.

	DELIVERABLES: WP 5 - Journal	Due Date	Johannes Karstensen *Jay Pearlman*
1	Achieve XX published papers	?	Pier L. Buttigieg Juliet Hermes
2.	In conjunction with *Frontiers* run a call for papers twice per year	Jun/Dec	
3.			
4.	Metrics		

WP6: Communication and Outreach

This Work Package is key to the success of the IOC OBPS which needs Community commitment to sustain it. It will ensure visibility and relevance of the system through community engagement activities. It will be the responsibility of the WP leads, with extensive support from the whole SG. Activities will include the production of promotional material and dynamic dissemination of the OBPS to the community via the website and workshops, webinars, conference papers/presentations and journal articles, a community newsletter and community forum.

	DELIVERABLES: WP 6 -Communication and Outreach	Due Date	Francoise Pearlman *Rachel Przeslawski*
1.	Write a Communication Strategy	Feb 2020	Mark Bushnell Pier L. Buttigieg Juliet Hermes Emma Heslop Kirsten Isensee Johannes Karstensen Ana Lara Lopez Adam Leadbetter Frank Muller Karger Cristian Munoz Peter Pissierssens Nicholas Roden Pauline Simpson
2.	Maintain the OBPS monthly newsletter	monthly	
3.	Create OBPS standard slide presentations		
4.	Create OBPS Poster and Flyer (generic)		
5.	Evaluation survey (with WP1)		
6.	Update website content (with WP1) particularly OBPS published outputs and maintain Events calendar on website		
7.	WP6 - C & O folder/spreadsheet on Google Drive listing all outputs: abstracts. papers, presentations etc with file text uploaded		
8.	Support the OBPS team in producing journal articles, conference papers etc - target 3 papers per year		
9.	Organize OBP Workshop in coordination with WP1	Dec 2020?	
10.	Metrics		

WP7: User Communities

This Work Package will build and develop the interfaces between the IOC OBPS and global Ocean Developer and User Communities. By agreement, WP members will take responsibility to represent specific domain interests and to co-op domain experts as OBPS advocates ...

	DELIVERABLES: WP 7 - User Communities	Due Date	Frank/Rachel/ Mark
1.	Build the Community Forum by adding new communities		Frank (bio) Rachel (geo) Mark (instruments) Juliet Hermes Kerstin Isensee (Science) Emma Heslop
2.	Provide presentations to various discipline focused communities		
3.	Support the introduction and adoption of best practices in various communities		
4			
5.			
6.	Metrics		

WP8: Training and Capacity Building

This Work Package will develop relationships between all ocean training organizations, building on the significant network of the Ocean Teacher Global Academy (OTGA). OTGA will be the foundation for this task. It will use a variety of tools to assess user training needs and recommend training course priorities and work to organize training courses each year.

It will target to move beyond traditional classroom and video methods with a range of new tools: visual immersion techniques; three-dimensional computer-aided-design (CAD) drawings.There are also training opportunities to use hands-on sensor "models" created by 3D Printing

	DELIVERABLES: WP 8 - Training and Capacity Building	Due Date	Claudia Delgado *Juliet Hermes*
1.	X nr of course/s per year		Cristian Munoz Ana Lara Lopez Peter Pissierssens
2.	Introduction of new training methods using social media and virtual training methods		
3.	Identify and engage discipline training sessions		
4.	Expand the cadre of experts for teaching		
5.	Metrics		

6. DELIVERABLES SUMMARY TABLE UPDATE AFTER WP DESCRIPTIONS ETC AGREED

A list of deliverables from each WP and timeline

	DELIVERABLES	Due Date	Respon sibility
	WP 1: Project Management		WP lead
	Metrics		

	WP 2: Resource Development		WP lead
	Metrics		
	WP 3: Repository		WP lead
	Metrics		
	WP4: Technology Development		WP lead
	Metrics		
	WP 5: Peer reviewed Journal		WP lead
	Metrics		
	WP 6: Communication & Outreach		WP lead
	Metrics		
	WP 7: User Communities		WP lead
	Metrics		
	WP 8: Training & Capacity Building		
	Metrics		

Constraints

Some of the constraints which need to be managed during the implementation of the project include time and manpower.

Budget (operations only)

The following table displays the projected IODE/GOOS **operational** budget to Dec 2020 (new budget to be agreed Mar 2021 (IODE-XXVI)

		Activity	**Jun-Dec 2019**	**2019 & 2020 (in-kind)**	**Dec 2020**
1	WP1	SG Meeting	??		10000
2.	WP1	Project Manager Travel	3000 spent		1000
3.	WP3	OBPS Repository Manager/Chief Editor	6250 committed		20000
4.	WP3	IT person at IOC/IODE Secretariat to maintain the current system		(3500)	
5.	WP3	Software optimization and enhancements from feedback (IODE and outsourced)	10000 still to be committed		10000
6.	WP6	Advocacy material (poster, newsletter etc)	2000 committed		2000
7.	WP1	Repository Certification			1000
8.		Contingency	2000		1000
		TOTAL	**23250**	**(3500)**	**45000** (22.5k x 2 = IODE and GOOS)