Intergovernmental Oceanographic Commission
Reports of Meetings of Experts and Equivalent Bodies

IODE Steering Group for the Ocean InfoHub Project

Report

Third Session (Hybrid)
23-25 August 2022

23-25 August 2022
English only

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1. Introduction

The Third Session of the IODE Steering Group for the Ocean InfoHub Project was convened on 23-25 August 2022. A hybrid format was chosen to facilitate maximum participation of Steering Group members. Background documents were prepared and shared with all Steering Group meeting participants in advance of the meeting.

OE event link: https://oceanexpert.org/event/3573

The purpose of the meeting was to provide a comprehensive overview of progress on the work plan over the past 11 months, and to get feedback on plans for the next 18 months of the project. All workshop materials will be permanently located at the Ocean Expert link provided above.

2. Opening of the meeting

Mr Vladimir Ryabinin, Executive Secretary of the IOC of UNESCO, welcomed participants to the meeting on behalf of the IOC, recognising the presence of the IOC Chair, Ariel Troisi.

We are witnessing significant changes in how the world treats the ocean. After the One Ocean Summit, and after the UN Ocean Conference, we see that the attention is on ocean matters and ocean science. The UN Decade of Ocean Science for Sustainable Development has been very successful in explaining to the leaders of the world – that ocean science and data are very important for the future of the ocean, and the future of the ocean is important for the future of humankind. We hope that this momentum can be turned into solutions for the ocean. We have the concepts on science-based sustainable ocean planning, and converting data into information for ocean management tools. I am currently attending the Intergovernmental Conference on Biodiversity Beyond National Jurisdiction which aims to create a mechanism to protect marine life in the open ocean. We also have the convention for Biological Diversity. I believe those conventions will result in significant decisions related to the ocean and climate and biodiversity. No matter how many mechanisms exist in the world, they all rely on data systems, and the Ocean InfoHub is the trampoline that takes us there – so I wish you every success. I also wish you encouragement in developing solutions that are independent of political decisions in the world. You are creating the fundamentals, so let us see how the Ocean Information InfoHub can create a foundation for managing the ocean. With that spirit we can move forward and achieve an interoperable Ocean InfoHub system.

Mr Ryabinin acknowledged the important support from the Government of Flanders for enabling this fundamental activity for the world; it is a huge contribution to sustainability. He thanked the participants and wished them all the best for the meeting.

Mr Gert Verreet, Policy Advisor in the Government of Flanders (Vlaamse Overheid - Departement Economie, Wetenschap & Innovatie, Afdeling Onderzoek), welcomed the participants on behalf of the Government of Flanders.

The IOC Ocean InfoHub project is one of four major projects that the Government of Flanders is funding through a trust fund agreement with UNESCO. It is a project that focuses on the delivery of data and information infrastructure. As Vladimir was saying, this is a fundamental need to have and to use. We can be very proud that the project entrusted by IOC to this group, in setting up this key infrastructure will have a big trampoline effect for the IOC. It is important from our perspective that the project meets user requirements, and I'm glad that this is a prominent aspect of the agenda of this meeting. I was glad to hear that the architects of the ODIS architecture had a fruitful meeting yesterday, and I hope we can advance on that good basis. This meeting is also

to take stock of where we are – approximately half way through the project duration. There were inevitable delays with COVID19, and we are not strictly bound to 36 months.

What is important is that we are responsive to needs. At the European level, I am involved in the European Strategy for Research Infrastructure, and environmental research infrastructures in general. Of course all of these infrastructures have to have data and information sharing components, and these are important criteria to judge the validity of these projects. It is not only the technical side but also governance of resources and sustainability.

I'm very happy that this project has been kickstarted by a trial in the LAC regional node which showcases what can be done in the regions. I'm also very happy to see colleagues from the wider Pacific region who have travelled very far to be here. So I look forward to sharing our experiences in this meeting to understand the challenges that we experience in our own settings, and so the project can help to overcome these as well. The UN Decade is a booster to ocean science cooperation so we will keep open to opportunities in this context. Thank you to all the staff who have made this meeting possible, as well as all the regional teams that have contributed. It is an historic moment as very soon the Project Office will be situated in a new building. The investment in the InnovOcean Campus is a vote of confidence by our Flanders Government in the future of marine sciences in Flanders.

He thanked the participants and wished them all the best for the meeting.

3. Administrative arrangements

Lucy Scott thanked Gert and Vladimir for the warm words of welcome. She thanked Peter, Arno, Sofie and Kristin for hosting us at the Project Office in the middle of the office move. She thanked those who have travelled from far to be with us physically at the meeting (New Caledonia, Fiji, Samoa, Canada, Argentina, Canada among others), as well as to those who are joining remotely at inconvenient times (like Colombia, 3:30AM)

She shared some logistical and administrative information.

- Recordings
- Zoom camera and microphone
- In person zoom connections and microphone

4. Adoption of the Agenda

Mr Harrison Ong'Anda (SG-OIH Chair) presented the draft agenda. One change was made, to change the User Engagement session from the morning to the afternoon. That change was accepted and the agenda was accepted. The agenda is presented in Annex 1.

A round of self-introductions was held.

5. Overview of the OIH work plan and deliverables

A presentation was made by Ms Lucy Scott and the OIH team, covering the deliverables to date and the upcoming work plans for the five work packages.

Lucy Scott gave an overview of the timeline to date and the current status of the implementation of OIH and ODIS.

The Ocean InfoHub (OIH) Project aims to improve global and equitable access to ocean information, (meta)data and knowledge products for management and sustainable development. The Ocean InfoHub demonstrates the linking of independent partners through the conventions of

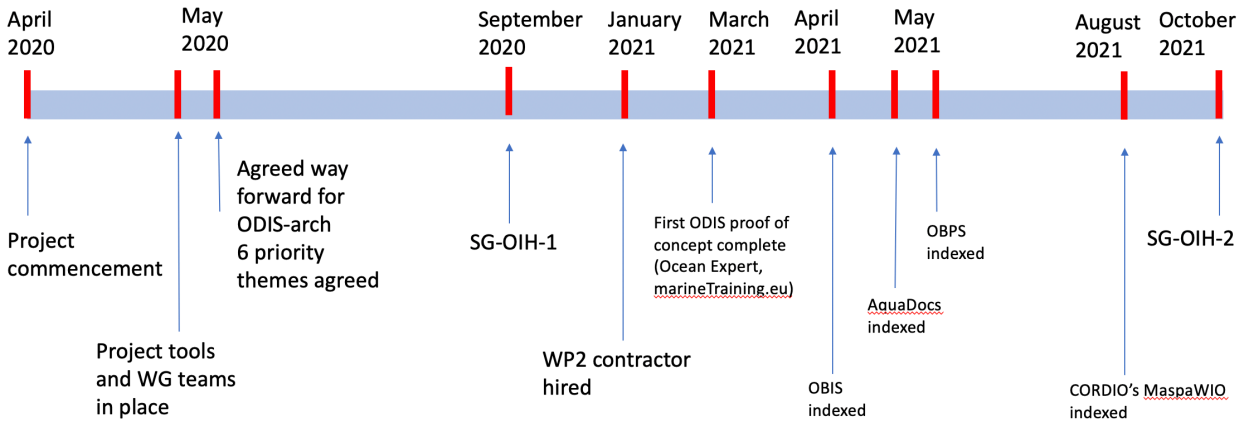
the Ocean Data and Information System (ODIS). The project is leveraging and extending a digital exchange architecture which is freely and openly available (ODIS) that supports communication and interoperability between distributed and independent digital systems. This has been co-designed with our core partners from the IOC, EU, and three communities of practice (Africa, LAC and PSIDS). OIH is supporting global and regional search hubs as a demonstration of this system.

The OIH Project has 5 work packages:

WP1: Project management, coordination and evaluation
WP2: Technology development
WP3: Establishment and initial support the global hub and regional nodes
WP4: Training and capacity development of regional nodes
WP5: Communication, user marketing and feedback

In reaching our milestones, grateful thanks are due to the IODE PO team, funder (Government of Flanders, Kingdom of Belgium), WP2 secretariat and contractors, WP2 working group, three regional coordination teams, implementation partners and other project partners.

The work plan is on track with no major technical delays. The project commenced in April 2020, initially planned for three years but a no-cost extension has been granted for the project to run until June 2024; this has been factored into the work programme.



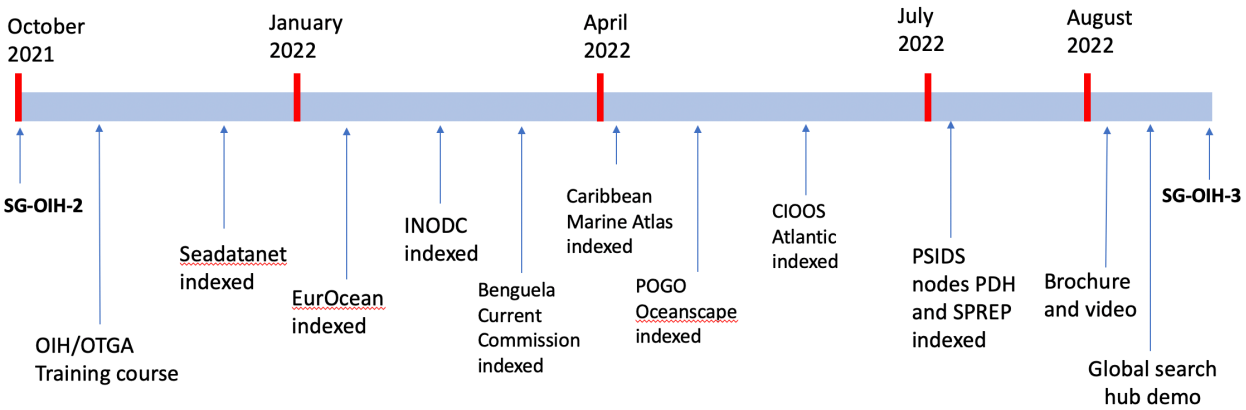


Figure 1. Overview of Project timeline to date

Table 1. Partners currently engaged in co-development (white) and indexed (green) by ODIS/OIH

International Coastal Atlas Network	El Salvador Ministry of Environment	NOAA / Open-GTS / GOOS Observations Coordination Group	MARISMA Project	Strait of Georgia Data Centre
Marinetraining.eu	Caribbean Marine Atlas	Ocean Best Practices system (OBPS)	University of California San Diego, SCRIPPS	Protected planet
OceanExpert	CORDIO / MASPAWIO	Ocean Biodiversity Information System (OBIS)	Anthropocene Institute	BCC data portal (Benguela Current Convention)
EMODnet	Nairobi Convention (clearinghouse)	AquaDocs	WIO Symphony project	CCLME Eco-viewer
EUROCEAN	MarCoSouth	SARGASSUM Hub	Marine Institute Data Catalogue	OBON (Ocean Biomolecular Observing Network)
INVEMAR	SPC Pacific Data Hub	CLME+ training portal	Tsunami programme	IUCN (International Union for Conservation of Nature)
Argentina, NODC	SPREP Pacific Environment Portal	SeaDatanet	Indonesian NODC	Canadian Integrated Ocean Observing System
Colombia DIMAR NODC	Blue Planet / BIOPAMA (RCMRD)	POGO / OceanScape	POLDER	ODINAFRICA (Ocean Data and Information Network for Africa)
Colombia National Natural Parks	UNEP (UN Environment Programme)	VLIZ Flanders Marine Institute	OpenOceanCloud	METS RCN - Marine Ecological Time Series RCN

Table 2. Ocean /InfoHub Project Monitoring and Indicators table

Performance indicator	Target	Baseline	July 2022
PI 1. Number of ocean products (e.g. policies, MSP, coastal zone management plan, legislation…) developed nationally that used the Ocean InfoHub data/information, disaggregated by country and type of product	10	0	Not measured yet
PI 1. Number of content items shared through the system	1000	0	Over 500,000 content items https://schema.org/Person 345127 https://schema.org/Organization 87007 https://schema.org/CreativeWork 41058 https://schema.org/Event 40393 https://schema.org/Dataset 8509 https://schema.org/ResearchProject 3354 https://schema.org/CourseInstance 1651 https://schema.org/Course 1282 https://schema.org/Vehicle 85
collaborative initiatives stimulated by their use of the system	10	0	Not measured yet

Performance indicator	Target	Baseline	July 2022
PI 1. Number of ODIS integrated products/services developed	**5**	0	18 nodes; 23 services INVEMAR has 5)
PI 2. Usage of the ODIS (volume of content downloaded, number of ODIS resources visited (e.g. redirect from ODIS) [Number of records: redirect from OIH]	**1000 items/year/node downloaded**	0	Not measured yet
PI 1. Number of nodes participating in the Ocean InfoHub	**4**	0	18 nodes active; 48 partner institutions engaged
PI 1. Number of trainees trained in content submission	**100**	0	Training course: 53 enrolled, 16 completed, bilateral capacity development ongoing with 48 partners.
PI 1. Number of data/information providers contributing content	**50**	0	18 nodes active; 48 partner institutions engaged
PI2. Number of unique users consulting the system	**1000/year**	0	Not measured yet
Additional targets			
Global and regional nodes OIH	**10,000 content items**	0	>500,000 content items

Ocean InfoHub highlights of the past 11 months

1. Three active communities of practice (Africa, PSIDS, LAC)
2. Technical working group active, and two subcontractors hired
3. A total of 48 organisations in the co-design process
4. 18 partner organisations currently indexed by ODIS/OIH
5. Documentation and resources continue to grow
6. Animated video and brochure recently completed
7. First version of the Global Search Hub developed
8. First training course held and materials translated (sp) + (fr, pt)
9. Plans in place for scaling up end-user engagement

This was followed by a detailed report on each of the work packages.

Work package 1: Project management, coordination and evaluation

This work package covers activities related to:

- overarching coordination and guidance
- planning and budget management
- monitoring and reporting
- risk and issue management
- project evaluation.

The role of the Steering Group is to:

- monitor and guide the implementation of the Ocean InfoHub
- propose remedial action where necessary
- advise the Project Manager
- ensure that the project serves user/region needs
- identify new opportunities and adjust the work plan according to changing needs and circumstances
- prepare annual progress reports

Table 3. Work Package 1 overview of timeline

Timeline and Activities	Year 1 (2020)			Year 2 (2021)				Year 3 (2022)				YEAR 4 (2023)				YEAR 5 (2024)	
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
	Apr-jun	Jul-Sep	Oct-Dec	Jan-mar	Apr-jun	Jul-sep	Oct-Dec	Jan-mar	Apr-jun	Jul-sep	Oct-Dec	Jan-mar	Apr-jun	Jul-sep	Oct-Dec	Jan-mar	Apr-jun
WP1: Project Management and Coordination																	
1.1 Project manager	X (1-apr))	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Monthly reports	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Annual report (D1.1)			X				X				X				X		
1.2 Admin assistant (50%)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.3 Steering Group meetings		X(v)					X(v)			X(h)				X			
Email the steering group, update	X			X	X	X		X	X				X				
Set a date for a virtual SG meeting, draft the agenda	X				X	X		X	X				X				
SG meeting report		X					X				X				X		
1.4 External evaluation												X					
Evaluation report (D1.2)																	
1.5 Project wrap-up meeting																X	
Final report (D1.3)																	

5.1.1 Deliverables October 2021 - August 2022

1. Tracking sheet for all project deliverables maintained and monthly reports written. (Reference doc 1. OIH Project Timeline and Deliverables).

2. Steering Group meeting convened

3. General administration tasks (project management tools, calendars integrated, dropbox, Gdrive, regular IODE staff meetings and ad hoc UNESCO meetings).

5.1.2 Objectives September 2022 – June 2024

1. Tracking sheet for all project deliverables maintained and monthly reports written

2. Fourth session of the SG planned

3. General administration tasks continued

Questions and discussion

Clarification was requested on the difference between nodes, partners and contributors

- Partners includes founding and new partners engaged in co-development (±48).
- Nodes are the 18 that are currently ODIS compliant and are indexed in the knowledge graph

Work package 2: Technology development

This work package covers the technical developments needed to support the implementation of Ocean InfoHub nodes and the proof-of-concept ODIS reference architecture which will allow the nodes to interoperate with each other and external systems.

In terms of Ocean InfoHub development, this work includes:

- development of a Global Hub
- development of Regional/Thematic Node application (Virtual nodes part of the Global Hub or as separate regional/thematic nodes)
- continued population of ODISCat

Table 4. Work Package 2 overview of timeline

Timeline and Activities	Year 1 (2020)			Year 2 (2021)				Year 3 (2022)				YEAR 4 (2023)				YEAR 5 (2024)	
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
	Apr-jun	Jul-Sep	Oct-Dec	Jan-mar	Apr-jun	Jul-sep	Oct-Dec	Jan-mar	Apr-jun	Jul-sep	Oct-Dec	Jan-mar	Apr-jun	Jul-sep	Oct-Dec	Jan-mar	Apr-jun
2.1 Global Hub Development		X	X														
Global hub technology framework developed (D2.1)		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Regional node technology developed (D2.2)		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.2 Further development of ODISCat		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Regional communities and global partners contribute to ODISCat		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.3 ODIS development		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Consultation with all pilot partners on ODIS development	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Platforms established for communications and exchange of content	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Action plan and way forward developed for ODIS architecture		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ToR for contractor (for ODIS-arch) finalised and advertised		X			X			X			X						
Publish ODIS reference architecture (principles and guidelines to link information systems) (D2.3)				X	X	X	X	X	X	X		X					
Specifications for automated validation published (D2.4)				X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cross reference capability in participating repository nodes that exposes the assets from other nodes in context for users (D2.5)				X													
Metrics reporting functionality from repository nodes (D2.6)				X	X	X	X	X	X	X	X	X	X	X	X	X	X
At least two working implementations with the ODIS Architecture of regional node information systems that assemble global and local resources (D2.7)				X													
Feedback mechanisms to collect, summarize and report on applications from the Infrastructure that can be shared in the ocean data and information community (D2.8)				X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.4 ODIS technical meetings	X (v)	X (v)	X (v)	X (v)	X (v)	X (v)	X (v)	X (v)	X (v)	X (v)	X (v)	X (v)	X (v)	X (v)	X (v)	X (v)	X (v)
ODIS technical meeting reports	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.5 EurOcean service integration				X	X	X	X	X	X	X							
2.6 MarineTraining.eu service integration				X	X	X	X	X	X	X							

5.2.1 Deliverables October 2021 - August 2022

Global Hub Development

5.2.1.1 Global hub technology framework developed (D2.1)

- We have the Ocean InfoHub website at https://oceaninfohub.org
- We have developed and tested a reference implementation of the global hub server side architecture https://oceans.collaborium.io/index.html that demonstrates the facility to search across the existing seven working implementations. This is available online.
- We have developed the first demonstrator of a global hub: the OIH Global Hub Search Portal as a demonstration of the ODIS. https://oih.staging.derilinx.com

5.2.1.2 Regional node technology developed (D2.2)

Regional nodes are currently online and indexed in the knowledge graph (discoverable via ODIS):

- INVEMAR CHM-TMT: http://portete.invemar.org.co/chm#/
- SPREP Pacific Environment Portal and SPC Pacific Data Hub: https://pacific-data.sprep.org/, https://pacificdata.org/, https://www.spc.int/, https://www.sprep.org/
- IOCAfrica: Database of Training Opportunities via Marinetraining.eu, and the Benguela Current Convention.

- The global hub search portal showcases the three regions.
- OIH-supported development work within each of the regions is actively bringing additional regional partners into the network.

5.2.1.3 Further development of ODISCat

Regional communities and global partners contribute to ODIScat

- This is ongoing; at every new opportunity, organisations are asked to add records to ODIScat, and the projects have a close working partnership.
- Mr Arno Lambert presented an update on ODIS-cat recent developments and future plans.

The ODIS **"Catalogue of Sources"** aims to be an online browsable and searchable catalogue of existing ocean related web-based sources/systems of data and information as well as products and services.

- currently 3087 sources
- 2176 are searchable
- > 71% Quality Controlled
- Very few African entries
- Asia underrepresented
- half of the records belong to 3 categories
  - Data systems/portal
  - Data products
  - Data catalogues

Datasource URL	https://www.oceanbestpractices.org/
Parent Project URL	https://iode.org/
ODIS-Arch URL	https://oih.oceanbestpractices.org/obps.json
ODIS-Arch Type	Sitegraph
English name	Ocean Best Practices System

Future of ODISCat

- better integration with OIH/ODIS-Arch
  - Graph representation of the db
  - Use ODISCat as source for OIH
- Automated QC
- Better **GLOBAL** scope
  - Africa and Asia
  - Interface language

Thank you and please **add your sources**!
https://catalogue.odis.org

Questions and discussion

Discussion on long terms access to sources within the system. ODIScat was the first element in the ODIS system and pre-existed the OIH and ODIS projects. The more entries we have, the better we can show sources and flow of information. The cost is low to nil, the costs are in QC. Nodes and contributors should update their own information which will also contribute to keeping costs low. We should consider getting the word out more widely, possibly through OIH, to have contributions and updates made to ODIScat, at every opportunity.

ODIS development

5.2.1.4 Consultation with all pilot partners on ODIS development

This is ongoing. We hold regular WP2 core secretariat and partner meetings:

- 53 meetings over 11 months
- GitHub repository: https://github.com/iodepo/odis-arch
- Slack: >3,600 posts in 33 channels. 120 Technical WG members.

5.2.1.5 Platforms established for communications and exchange of content

Completed

5.2.1.6 Action plan and way forward developed for ODIS architecture

Completed in the ToR for the ODIS-Arch contractor/s

5.2.1.7 ToR for contractor (for ODIS-arch) finalised and advertised

- A consultant (Doug Fils) was hired and an 8 month contract was completed in September 2021.
- Two further contracts are currently underway (Doug Fils, Jeff McKenna).
- ODIS specifications for six priority themes written and will be developed further on an ongoing basis.
- Documentation is available online at https://book.oceaninfohub.org
- Documentation is under continuous revision and improvement.

5.2.1.8 Publish ODIS reference architecture (principles and guidelines to link information systems) (D2.3)

Documentation for the Ocean InfoHub is located at https://book.oceaninfohub.org/. This documentation is structured to address the three primary personas expected in the OIH community. Those being Publisher, Aggregator and User. An introduction to these personas is found at https://book.oceaninfohub.org/personas/persona.html which links out to more specific documentation for each.

5.2.1.9 Specifications for automated validation published (D2.4)

Ocean InfoHub is leveraging and documenting the use of the W3C SHACL (https://www.w3.org/TR/shacl/) recommendation to address the issue of validation. Shape graphs for the OIH thematic types can be leveraged through existing tools to automate validation. The OIH documentation provides a reference implementation of such a validation.

5.2.1.10 Cross reference capability in participating repository nodes that exposes the assets from other nodes in context for users (D2.5)

The Ocean InfoHub Source and Provenance Approaches section (ref: https://book.oceaninfohub.org/thematics/identifier/id.html) describes some of the key approaches used to cross reference resources based on established identifiers. Specifically the documented identifier pattern (https://book.oceaninfohub.org/thematics/identifier/id.html#identifier) leverages an approach that allows both the expression of an ID value and the ID of the property itself. That is, the type of identifier it is, for example DOI and the value of that identifier. Once encoded into the graph, the cross referencing capacity is expressed through the use of the SPARQL query language for RDF graphs. Itself documented at https://book.oceaninfohub.org/users/query.html and https://book.oceaninfohub.org/users/sparql.html.

5.2.1.11 Metrics reporting functionality from repository nodes (D2.6)

Reporting is supported both based directly on the graph generated by the providers and assembled into the Ocean InfoHub graph and by the supporting PROV (https://www.w3.org/TR/prov-overview/) based provenance data generated during the indexing processes.

This can then be used to support reporting functions.

5.2.1.12 At least two working implementations with the ODIS Architecture of regional node information systems that assemble global and local resources (D2.7)

At present the following 18 sources/nodes are indexed into the Ocean InfoHub Knowledge Graph:

- Ocean Best Practices
- Ocean Biodiversity Information System
- AquaDocs
- Marine Training EU
- EDMERP SeaDataNet
- EDMO SeaDataNet
- OceanExpert UNESCO/IOC Project Office for IODE
- INVEMAR
- EurOcean
- MASPAWIO: Marine Spatial Atlas for the Western Indian Ocean
- Indonesia National Oceanic Data Center
- Benguela Current Convention (BCC) GeoData Portal
- Caribbean Marine Atlas catalogue
- Oceanscape project (POGO)
- CIOOS Atlantic
- Secretariat of the Pacific Regional Environment Programme catalogue
- Pacific Data Hub
- Flanders Marine Institute catalogue

We are currently working with a total of 48 partners to bring their holdings into the graph.

ODIS-architecture implementation by partners (living Gsheet):

https://docs.google.com/spreadsheets/d/13bn9IPL8mYOwwoIKtTfx1XgW4FJsvofLSivevGTG7UE/edit?pli=1#gid=0

5.2.1.13 Feedback mechanisms to collect, summarize and report on applications from the Infrastructure that can be shared in the ocean data and information community (D2.8)

Ocean InfoHub has leveraged a range of approaches to collect feedback. These include the Slack channel (>3,600 posts in 33 channels. 120 Technical WG members), email, video conferencing and the GitHub repository. Results of these interactions are then documented in the ODIS OIH GitHub repository using the Jupyter Book package (https://jupyterbook.org/intro.html) which is what generates the resources at https://book.oceaninfohub.org/index.html. All documentation is done in Markdown to ensure easy re-use.

5.2.1.14 ODIS technical meetings

ODIS technical meeting reports

Regular WP2 core secretariat and partner meetings: 53 meetings over 11 months
All meetings are documented and available.

5.2.1.15 EurOcean service integration

Four-month contract for development work is complete.

5.2.1.16 MarineTraining.eu service integration

Complete
Includes regional training course records from the CLME+ training portal

5.2.1.17 ODIS Project update

- Mr Arno Lambert provided a brief report on ODIS-SG-1 which was held on 22 August 2022
- A review of requirements and recommendations over the last few years, was made.
- The Partnership centre for ODIS will be revisited at IODE-27
- There were considerable discussions about funding and in-kind contributions.
- The role of the SG was discussed (strategic / technical roles)
- OIH and ODIS are closely linked through OIH WP2
- There is a need for clarification around the vision and purpose of OIH, ODIS and ODIScat.
- **Action**: We should develop a short text around these three projects to clarify their relationship.
- Pier Luigi Buttigieg was elected Chair
- Monthly online meetings and an annual physical meeting will be held.

The developers of the OIH Global Hub Search Portal (DERILINX) provided a brief demonstration.

Questions and discussion

There was discussion around the mention of tools ‘exchange of content’. This refers to the Slack platform and the Github system as means to exchange content between developers and project partners.

Will the front end also have an area to allow end users to collaborate on join activities, using the underlying data sources? Or will it be a sophisticated search engine and not more?
In terms of creating a collaborative front end environment, this has not been scoped in the current project plan. The system as a whole is open for collaborative development.

What are the features to incentivise users on the front end? Yes we have KPIs to showcase the performance of the system – but what are the incentives to use this new system and as a new user, to trust this system?
This is one of the first examples of cross-partner, cross-platform search. Many of these records were not available online previously, and it is also a curated list of providers (unlike the internet as a whole). Data are what partners want to share, and the overall system enables the sharing of these data in a new way. We can think about these concepts more carefully.
If we relate to brands – what is on the front end that encourages trust from users, and can convince people that this is a useful way of accessing information? This needs to be considered for the front end. (Eg for a car, not the efficiency of the engine entirely, but also the aesthetics and shiny appeal).
Without cluttering the interface, we can share a little more about our partners, who is sharing the data and the quality of those data (trusted partners) – that might add to the trust-building exercise with our end users. **(action for the Global Search Hub saved in the Github issue tracker https://github.com/iodepo/odis-arch)**

5.2.1.18 OIH WP2 contractor reports

Mr Jeff McKenna provided a brief overview of some of his work.

- Engaging with ~49 partners (NODCs and other organizations)
- Regular bi-weekly technical meetings with ~12 partners
- Partners leverage various infrastructure tools (CKAN, GeoNode, Esri, etc.) in various states of support for ODIS / schema.org standards
- Includes capacity development (eg. Indonesia NODC enabling licensing for all of their metadata catalogue layers)
- Developed an intermediate process to allow those partners that cannot fully adapt their metadata catalogue services to meet ODIS requirements
    - Allows 5+ partners to be part of the ODIS knowledge graph, including MASPAWIO
- Developing a Dashboard for ODIS partners
- He provided two case studies; one on the connection with CIOOS, the Canadian Integrated Ocean Observing System, and the other on OceanScape.

Mr Doug Fils provided a brief overview of some of his work

Architecture
The "provider" interface is via web architecture, so the ODIS/OIH Arch can be leveraged; using simple web servers with statically generated pages, groups using CKAN/DKAN (with plugins), ERDAP (DAP systems), etc

Properties of OIH Architecture

- Docker container deployment for local and cloud based implementation
- Compatible with multiple scheduling approaches
- No software lock-in, multiple solutions/options at all stages
- Web architecture based
- Standards body based (both standards and recommendations)

Expected Outcomes

- Multiple indexes can be leveraged
  (text, spatial, etc)
- Easy to implement or re-implement based on established patterns
- Validation approaches to the data resources

Provenance
Provenance provides temporal record of the activities. OIH uses complementary and unique provance provided by the provider & indexing activity.

Provider Prov:
- Authored by provider
- Based on Schema.org
- Provides information from the source on history of and relations between resources.

Indexer Prov:
- Authored by indexer
- Based on W3C PROV
- Potentially different or absent in other implementations of the OIH architecture
- Provides information on resource used in indexing

Expected Outcomes
- Richer query results (freshness, connections, etc)
- Exposing both capacity and gaps in graph relations
- Better credit/citation reporting

Patterns and Validation

Ocean InfoHub has developed and continues to refine as set of validation shapes.

These shapes allow us to provide partners feedback on how well their resources align to OIH guidance and how well they will respond to portal queries.

Through this approach, OIH can provide required, recommended and informational guidance on partner resources.

Expected Outcomes:

- Fit for use: Are partner resource aligned with query (Findable) or expected or potential use patterns (Accessible, Interoperable).
- Integration: Validation shapes can also help mediate connections between OIH and other sources.

Alignment and Interoperability

OIH maintains alignment with upstream works like Schema.org and ESIP Science on Schema.org.

A pattern for alignment with others like Bioschemas, EOV community, PID community etc.

Discussions with other groups (POLDER and NSF GeoCODES, etc) on how simple SHACL shapes could help facilitate federated queries between our respective graphs

Expected Outcomes:

- Further FAIR goals
- Leverage other community graphs
- Leverage PID graphs (DataCite, Orcid, ROR, others?)

5.2.2 Objectives September 2022 – June 2024

5.2.2.1 Global hub development

- Work on the OIH website is ongoing
- The first version of the Global Search Hub is live and will be further developed together with end-users.

5.2.2.2 Regional node development

We will continue to work closely with the regions on the three regional hubs and inclusion of additional partners.

5.2.2.3 Development of ODIScat

- Continued development work is planned

5.2.2.4 ODIS development

- Two contracts are underway for the ongoing development of the ODIS-architecture and documentation.

5.2.2.5 ODIS meetings

Regular meetings will be ongoing and partners are welcome to join.
Everything appears on the OIH google calendar which can be shared with any interested SG members.

Questions and discussion

Discussion followed around how do we market OIH to both end users and potential partners? For end users: how up to date is the information I can find in OIH and how good is the quality. The dashboard can contribute to this (how recently were the metadata harvested and who are the partners).

We are moving towards a QMF for OIH; what is the methodology that we use to select a partner, for example is there IODE accreditation or Core Trust Seal which represents the processes they use to assure the quality of their content and data that they provide. This needs to be better than a Google Search. For partners – how often did my content appear in a search. This would be essential to them, to sell to their managers, and how is their ranking compared to other partners. As a partner: what are the minimum requirements to become and stay a partner (and this comes back to the validation process). And then we need to make sure that this information is available through the portal as well so that partners and users can see this.

Perhaps consider a link to each partner with a scorecard: how were they identified, what is the contact information, find out more about partner services. This might separate us out a bit better – ODIScat could be like Google (anything in there) whereas we can give more reference to quality, and this would set us apart. **(action for the Global Search Hub saved in the Github issue tracker)**

For the Pacific, it is appreciated that there is always reference back to the original source – for the Pacific Island states, this is a big driver of trust. SPREP and SPC have a long relationship with national agencies, and there is a long history of trust built with member states. SPC and SPREP can perform the QC roles from that side up to the global level. At least in the Pacific there is some inbuilt trust within the system in the way information is pulled together and then shared.
It is important for Pacific stakeholders, to understand some actual impacts - so not just quantitative, but also qualitative stories about how data are used.

Gather qualitative stories about where data are from, provenance, but also impact stories and tracking end usage – how are data used to make a policy decision on SDG 14 for example. We

need to find the case studies to market the work we are doing and show how this is useful. **(action for the Global Search Hub saved in the Github issue tracker)**

We need to consider marketing and why is the end user coming to this platform (the authoritative source, and QC), but we must also consider from the providers' perspective, it is the value of the data, not the sophistication of the system. The data must be fit for purpose and related to the end user, and if OIH can be shown to provide this, it will bring users to the system (the authoritative source).

In the Pacific, data are available on various platforms, but for individual users, data accessibility is a big challenge. Most of the time when people are looking for data, they send emails eg to Zulfi. So having platforms available makes it easier for users and also easier for aggregators / organisers like SPC. Making global data sets more easily available to local users is a major benefit.

We should not see this as a competition with Google or others – the way that the backend system is designed, it allows for many different types of 'view' on the retrieval end. It should be equally easy to find OIH information via Google as it is via the OIH. We are building a system to allow competition and different nodes to appear to find information. If Google gives the wrong answers, it is probably because researchers are late at producing information in the right way for Google to pick it up and give a good answer. Research data must compete well in the data space and in the general arena where the public looks for information and answers. Trust can be dependent on our existing belief systems.

There was discussion around the continued development of the front end together with end users. There was clarification around interaction with POLDER and NSF, and intersection with other science communities. There will also be a process to engage end users from the three regions, as well as through the global project, to identify additional needs of the front end search hub, and work this into the project plan. Restructuring of the actual data (on the back end) is supporting a cultural change to facilitate the use of data to solve societal issues. SDG reporting systems are getting more web-native and automated, more and more. Development of the back end also increases our user base – users are not just communities who visit the front end website, they are also users who connect their graphs to ours (eg Polder), to make the whole digital enterprise more viable.

5.3 Work package 3: Establishment and support of the global hub and regional nodes

This work package addresses the establishment of the global hub and three regional nodes covering Latin America - LAC (IOCARIBE+), Africa and Pacific SIDS at the operational level.

The technical aspects are covered by work package 2.

This work package focuses on setting up procedures for the sourcing of content, submission of the content, developing of national and regional networking of content providers and users.

Table 5. Work Package 3 overview of timeline

Timeline and Activities	Year 1 (2020)			Year 2 (2021)				Year 3 (2022)				YEAR 4 (2023)				YEAR 5 (2024)	
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
	Apr-jun	Jul-Sep	Oct-Dec	Jan-mar	Apr-jun	Jul-sep	Oct-Dec	Jan-mar	Apr-jun	Jul-sep	Oct-Dec	Jan-mar	Apr-jun	Jul-sep	Oct-Dec	Jan-mar	Apr-jun
3.1 Global node establishment and operation																	
Contact existing global partners	X																
Engage new global partners	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Global hub system established (D3.1)					X												
Global hub system operational (D3.2)					X	X	X	X	X	X	X	X	X	X	X	X	X
3.2 LAC (IOCARIBE+) node																	
3.2.1 discuss stakeholder identification with Secretariat	X(v)																
3.3.2 create mailing list (OE) for regional stakeholders		X	X	X													
3.2.3 video meeting/webinar with regional stakeholders	X																
3.2.4 identify D&I needs/ content types/services	X																
Installation / startup of regional /thematic Ocean InfoHub portal (D3.3)		X															
Customisation of portal (D3.4)							X	X	X	X							
Performance testing and remediation of issues (D3.5)							X	X	X	X	X	X					
Technical and related support from PO until capacity is in place in node (D3.6)			X	X	X	X	X	X	X	X	X	X					
Establishment of national / regional networks of content providers (D3.7)			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Population of regional nodes with content (D3.8)			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Timeline and Activities	Year 1 (2020)			Year 2 (2021)				Year 3 (2022)				YEAR 4 (2023)				YEAR 5 (2024)	
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
	Apr-jun	Jul-Sep	Oct-Dec	Jan-mar	Apr-jun	Jul-sep	Oct-Dec	Jan-mar	Apr-jun	Jul-sep	Oct-Dec	Jan-mar	Apr-jun	Jul-sep	Oct-Dec	Jan-mar	Apr-jun
3.3 IOCAFRICA node																	
3.4.1 discuss stakeholder identification with Secretariat	X(v)																
3.4.2 create mailing list in OceanExpert (group) for regional stakeholders		X	X	X													
3.4.3 video meeting/webinar with regional stakeholders	X																
3.2.4 identify D&I needs/ content types/services	X																
Installation / startup of regional /thematic Ocean InfoHub portal (D3.3)		X															
Customisation of portal (D3.4)			X								X	X	X	X			
Performance testing and remediation of issues (D3.5)			X	X	X	X	X	X	X	X	X	X	X	X			
Technical and related support from PO until capacity is in place in node (D3.6)			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Establishment of national / regional networks of content providers (D3.7)			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Population of regional nodes with content (D3.8)			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3.4 Pacific SIDS node																	
3.4.1 discuss stakeholder identification with Secretariat	X(v)																
3.4.2 create mailing list in OceanExpert (group) for regional stakeholders		X	X	X													
3.4.3 video meeting/webinar with regional stakeholders	X																
3.2.4 identify D&I needs/ content types/services	X																
Installation / startup of regional /thematic Ocean InfoHub portal (D3.3)		X															
Customisation of portal (D3.4)			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Performance testing and remediation of issues (D3.5)			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Technical and related support from PO until capacity is in place in node (D3.6)			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Establishment of national / regional networks of content providers (D3.7)			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Population of regional nodes with content (D3.8)			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3.5 Thematic nodes establishment and operation			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3.6 Match-making service development and operation, assisting end users with CD queries			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

5.3.1 Deliverables October 2021 - August 2022 as well as objectives to June 2024

5.3.1.1 Global node establishment and operation

Technical aspects were reported under WP2

The project held 116 meetings during the last 11 months, under WP3, across the three regions, as well as with global partners. The project participated in numerous meetings and events (reported under WP5).

Each of the three regions reporting on their activities and progress.

5.3.1.2 Latin America and the Caribbean (Francisco Arias)

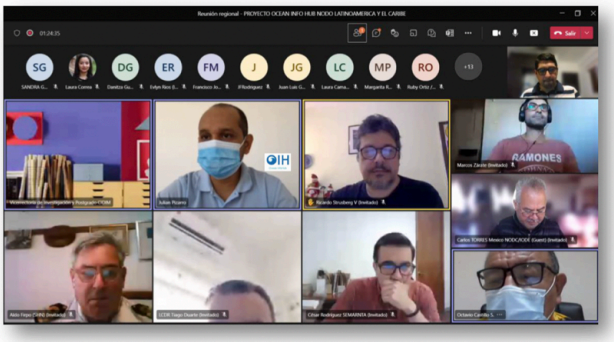
Specific objectives:

- Develop a software prototype to retrieve data from regional data providers that implement the Schema.org vocabulary and JSON-LD data encoding method and store it in a local database for later querying.
- Rebuild CHM LAC Pilot with ODIS Arch specifications
- Translate communication and training course materials from English to Spanish

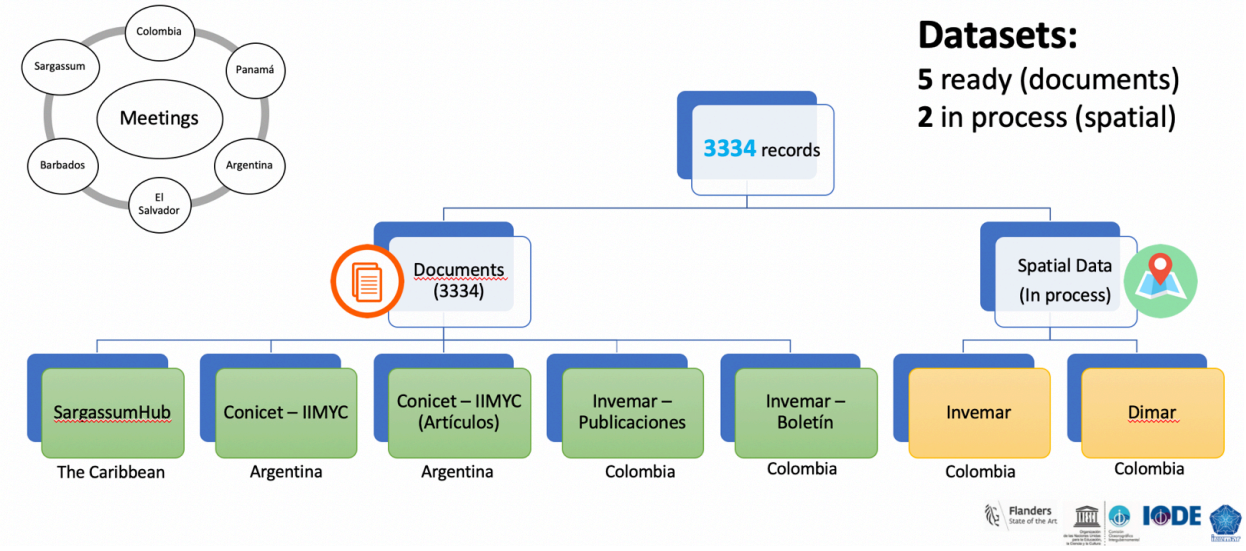
New data provider identification

Date	*Detail*
03/02/2022	OIH-LAC: Reunión Regional, 11 countries: AR (3), BR (2), CL (1), CO (11), DO (2), JM (1), MX (6), PA (9), SV (1), TT (1), VE (3)
15/02/2022	OIH-LAC: Reunión técnica CESIMAR-CENPAT-CONICET / AR
16/02/2022	OIH-LAC: Reunión técnica con DIMAR
17/02/2022	OIH-LAC: Reunión técnica PNN & IAVH
18/02/2022	OIH-LAC: Reunión técnica Min Ambiente / El Salvador
14/03/2022	OIH-LAC: Reunión técnica Universidad de Panamá / PA
21/03/2022	OIH-LAC: Panamá / Configuración de fuentes de datos identificadas
	SargassumHub Project
	Barbados (Coastal Zone Management Unit)

- ❑ **1st meeting** - survey to identify interest and data/information
- ❑ **Subsequent meetings** for technical issues to link data sources, with each institution/project



New data provider identification

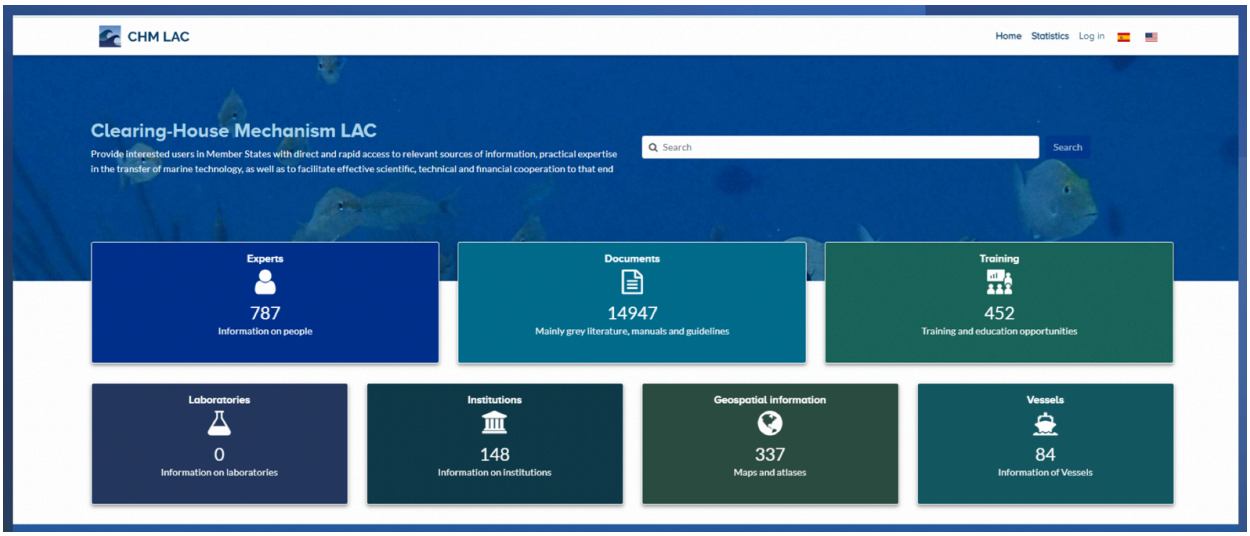


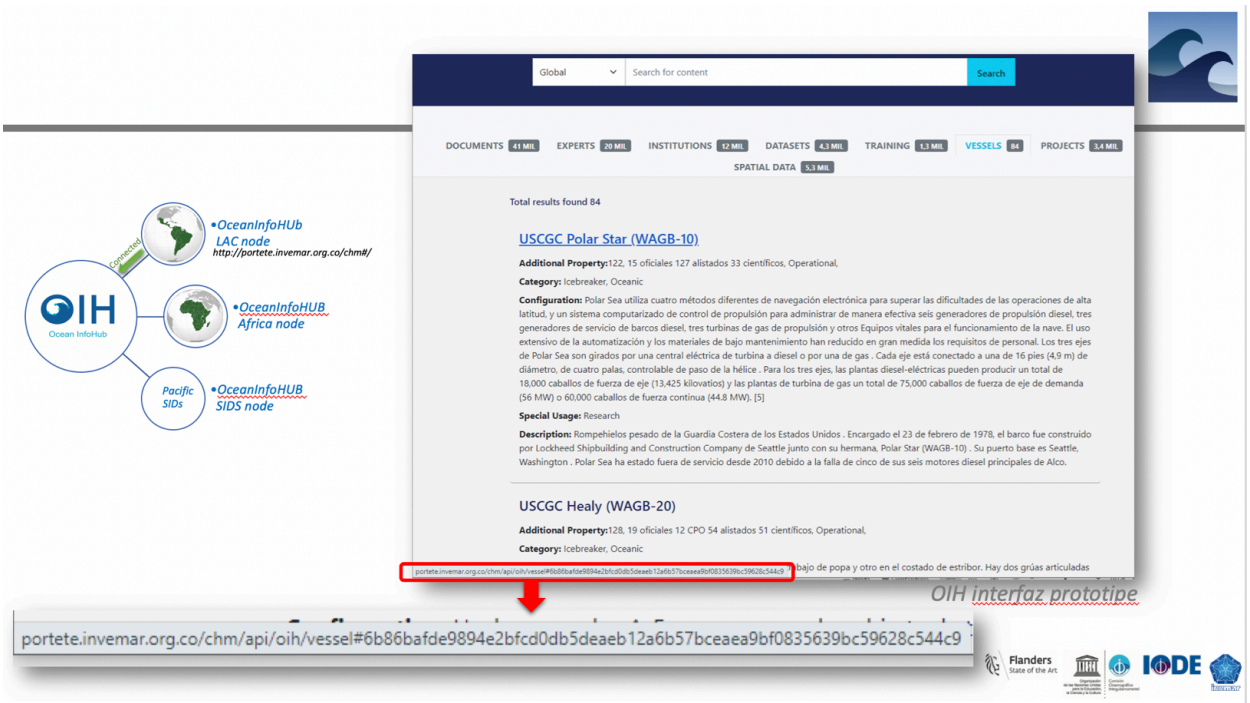
OIH LAC (7 endpoints)

https://portete.invemar.org.co/chm/api/oih/<categoria>?format=json

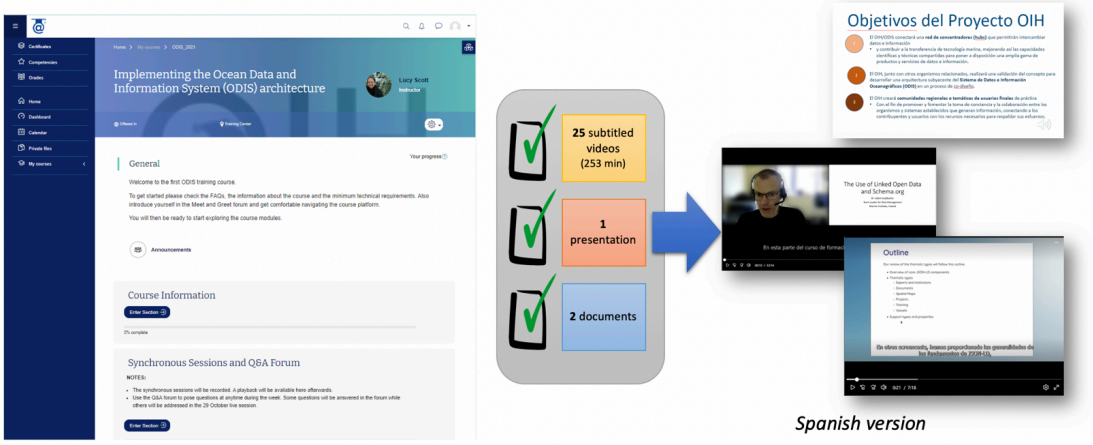
Using Django REST framework

Documents:	Institutions:	Experts:	Training courses:	Geoespatial Information:	Vessels:	Laboratories:
http://portete.invemar.org.co/chm/api/oih/documents?format=json	http://portete.invemar.org.co/chm/api/oih/institution?format=json	http://portete.invemar.org.co/chm/api/oih/expert?format=json	http://portete.invemar.org.co/chm/api/oih/training?format=json	http://portete.invemar.org.co/chm/api/oih/platformgeo?format=json	http://portete.invemar.org.co/chm/api/oih/vessel?format=json	http://portete.invemar.org.co/chm/api/oih/laboratories?format=json


CHM LAC
Home Statistics Log in
Clearing-House Mechanism LAC
Provide interested users in Member States with direct and rapid access to relevant sources of information, practical expertise in the transfer of marine technology, as well as to facilitate effective scientific, technical and financial cooperation to that end
Search
Search
Experts
787
Information on people
Documents
14947
Mainly grey literature, manuals and guidelines
Training
452
Training and education opportunities
Laboratories
0
Information on laboratories
Institutions
148
Information on institutions
Geospatial information
337
Maps and atlases
Vessels
84
Information of Vessels


Global
Search for content
Search
DOCUMENTS 41 MIL
EXPERTS 20 MIL
INSTITUTIONS 12 MIL
DATASETS 4,3 MIL
TRAINING 1,3 MIL
VESSELS 84
PROJECTS 3,4 MIL
SPATIAL DATA 5,3 MIL
Total results found 84
USCGC Polar Star (WAGB-10)
Additional Property:122, 15 oficiales 127 alistados 33 científicos, Operational,
Category: Icebreaker, Oceanic
Configuration: Polar Sea utiliza cuatro métodos diferentes de navegación electrónica para superar las dificultades de las operaciones de alta latitud, y un sistema computarizado de control de propulsión para administrar de manera efectiva seis generadores de propulsión diesel, tres generadores de servicio de barcos diesel, tres turbinas de gas de propulsión y otros Equipos vitales para el funcionamiento de la nave. El uso extensivo de la automatización y los materiales de bajo mantenimiento han reducido en gran medida los requisitos de personal. Los tres ejes de Polar Sea son girados por una central eléctrica de turbina a diesel o por una de gas . Cada eje está conectado a una de 16 pies (4,9 m) de diámetro, de cuatro palas, controlable de paso de la hélice . Para los tres ejes, las plantas diesel-eléctricas pueden producir un total de 18,000 caballos de fuerza de eje (13,425 kilovatios) y las plantas de turbina de gas un total de 75,000 caballos de fuerza de eje de demanda (56 MW) o 60,000 caballos de fuerza continua (44.8 MW). [5]
Special Usage: Research
Description: Rompehielos pesado de la Guardia Costera de los Estados Unidos . Encargado el 23 de febrero de 1978, el barco fue construido por Lockheed Shipbuilding and Construction Company de Seattle junto con su hermana, Polar Star (WAGB-10) . Su puerto base es Seattle, Washington . Polar Sea ha estado fuera de servicio desde 2010 debido a la falla de cinco de sus seis motores diesel principales de Alco.
USCGC Healy (WAGB-20)
Additional Property:128, 19 oficiales 12 CPO 54 alistados 51 científicos, Operational,
Category: Icebreaker, Oceanic
bajo de popa y otro en el costado de estribor. Hay dos grúas articuladas
•OceanInfoHUb
LAC node
http://portete.invemar.org.co/chm#/
Connected
OIH
Ocean InfoHub
•OceanInfoHUB
África node
Pacific
SIDs
•OceanInfoHUB
SIDS node
OIH interfaz prototipe
portete.invemar.org.co/chm/api/oih/vessel#6b86bafde9894e2bfcd0db5deaeb12a6b57bceaea9bf0835639bc59628c544c9
Flanders
State of the Art
IODE

Training course materials (English to Spanish)



Challenges

- Maintain technical expertise to assure permanent platform support.
- The region has suffered the drain of technical experts from science institutions, pandemic triggered new labour spaces for technicians, this situation may hamper continuity of technical support.
- Strategies to attract young technicians are being developed

Recommendations

- Most part of institutions/countries of the region do not have published/online the offer of capacities (marine instrumentation/vessels mainly e.g.) and available to be linked from metadata. OIH LAC has not yet been able to capture all the real capacity for the region.
- Strengthening the capacities of institutions to publish information can be an activity to be taken into account in the framework of the Decade of Ocean Sciences (A transparent ocean...) and that in an important way the results for the GOSR (Global Ocean Science Report).
- The characterization of the "Laboratory" category lacks a template with minimum attributes, which means that no records have been reported for that category to date, despite the fact that there are records for the region.
- NODC and ADU should have more intense activity to promote information sharing to OIH

http://portete.invemar.org.co/chm#/

Questions and discussion

No discussion

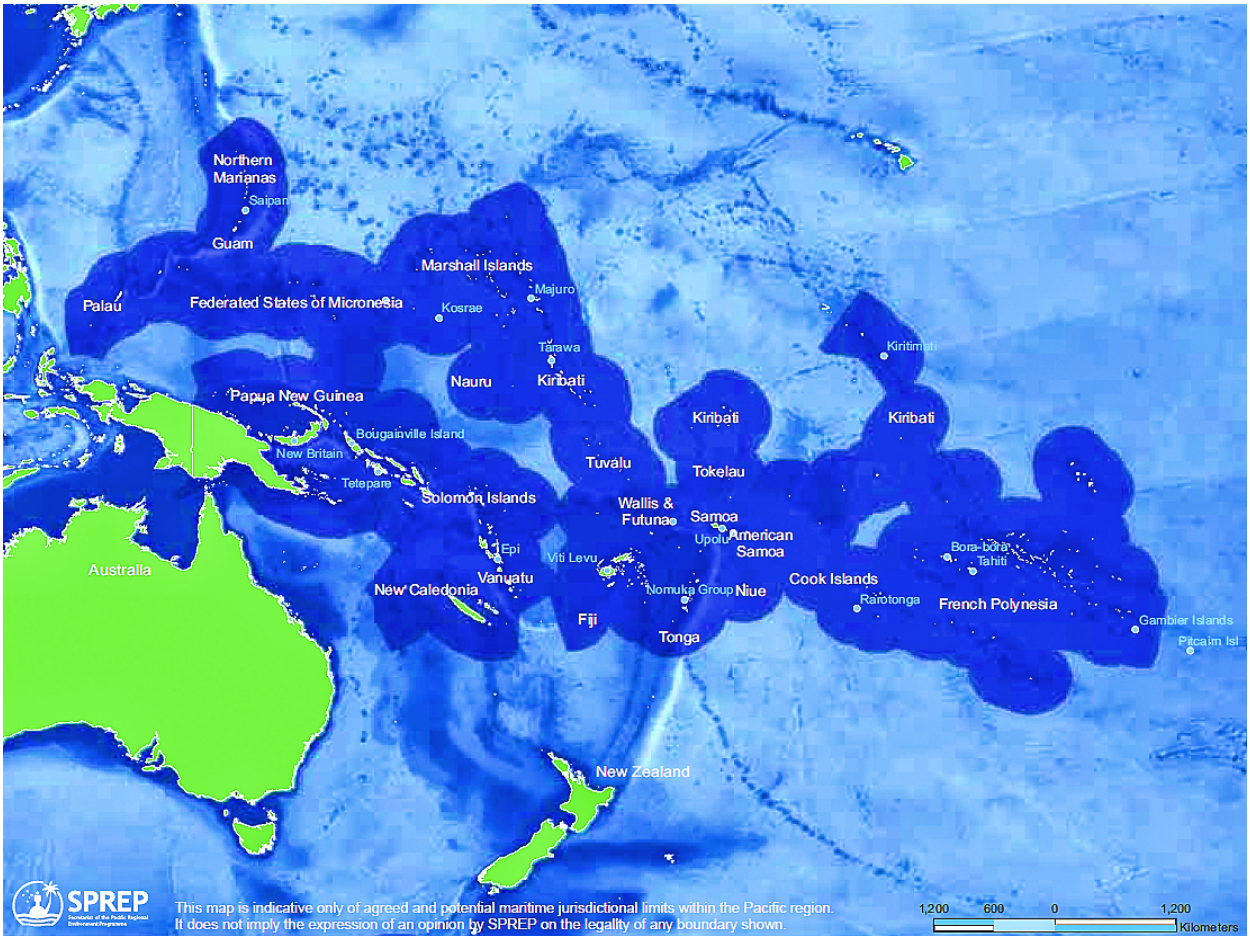
5.3.1.3 Pacific Small Island Developing States (PSIDS) (Paul Anderson and Zulfikar Begg)

- SPC and SPREP are regional organizations established by the Governments and Administrations of the Pacific charged with a wide remit including protecting and managing the oceans and natural resources including fisheries of the Pacific.
- Under its vision and mandates, SPREP and SPC provide regional leadership and technical guidance for Member States in the implementation of regional and global MEAs including the Framework for a Pacific Oceanscape, and the Convention on Biological Diversity and SDGs including SDG14.

The role of the Secretariats as clearing-houses of information and knowledge is fundamental to ensuring that essential technical, scientific information, and traditional knowledge is available to our Members when needed.

SPC and SPREP -Regional Oceans Data Custodians

- Established the Pacific Environment Data Portal Network &
- The Pacific Data Hub
- Systems Serve 14 Countries and 7 Territories spanning the Pacific Region
- https://pacific-data.sprep.org/

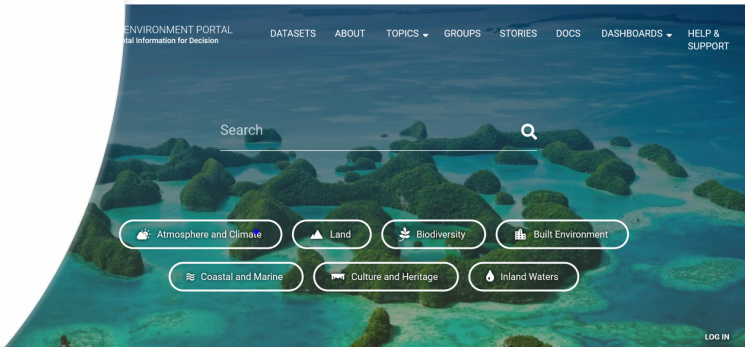


SPREP data portals

https://pacific-data.sprep.org/

- SPREP hosts the **Pacific Environment Portal Network** which includes 14 National Environment Data portals hosting resources including, tabular data, GIS information and published reports

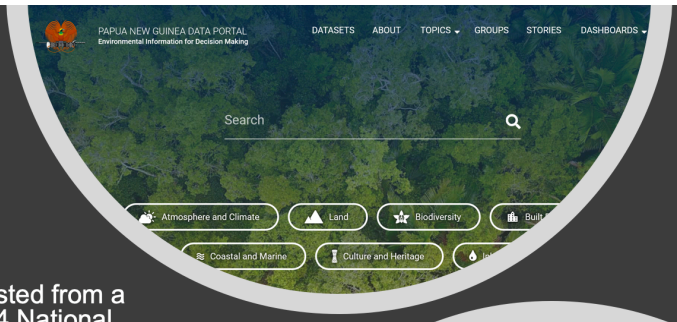
- Host 1000s of dataset
- Owned by countries
- Supported by SPREP
- Part of the Pacific Data Ecosystem in Partnership with the SPC Data Hub



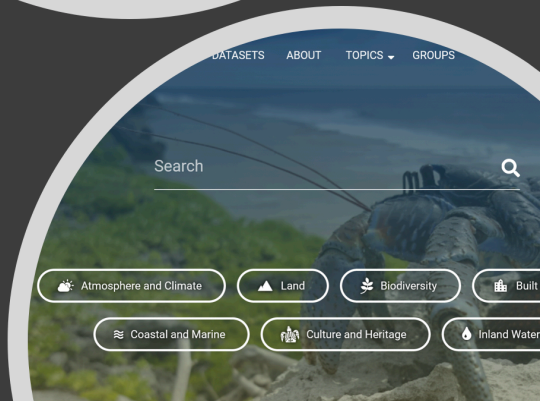
Pacific Data Hub

- The **Pacific Data Hub (PDH)**, is a central repository of data **about the Pacific** and **from the Pacific**. The platform serves as a gateway to the most comprehensive collection of data and information about the Pacific across key areas including population statistics, fisheries science, climate change adaptation, disaster risk reduction and resilience, public health surveillance, conservation of plant genetic resources for food security and human rights.

OIH and Pacific Data Ecosystem



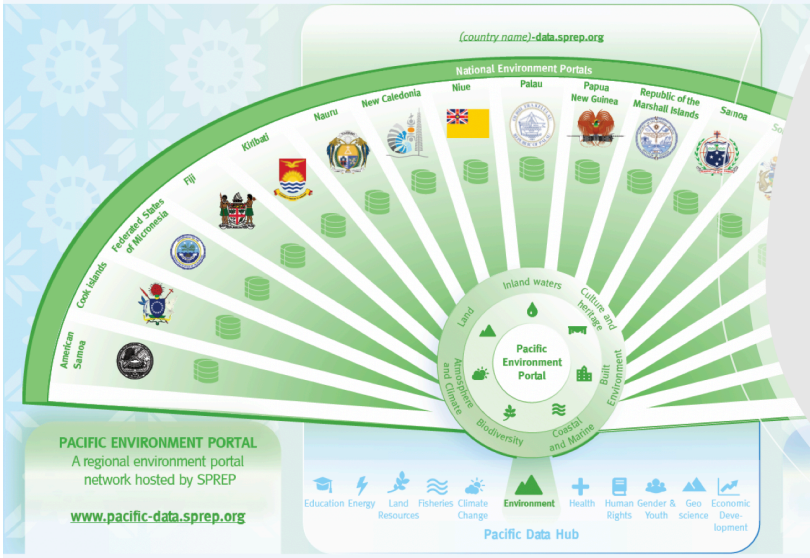
- Country Specific data is currently harvested from a variety of sources and exposed in the 14 National Environment Data Portals – Reaching decision makers and government officers
- OIH in 2023 this same pathway to reach national and regional audiences needs to be explored with tangible outputs
- Data on the PEP and PDP is exposed with an open API
- Important partners include the Countries and Territories of the Pacific, regional CSOs
- Recommendations – Develop 1-3 specific OIH informed products and roll out to PICs via existing channels.



PACIFIC DATA ECOSYSTEM

- ENVIRONMENT -

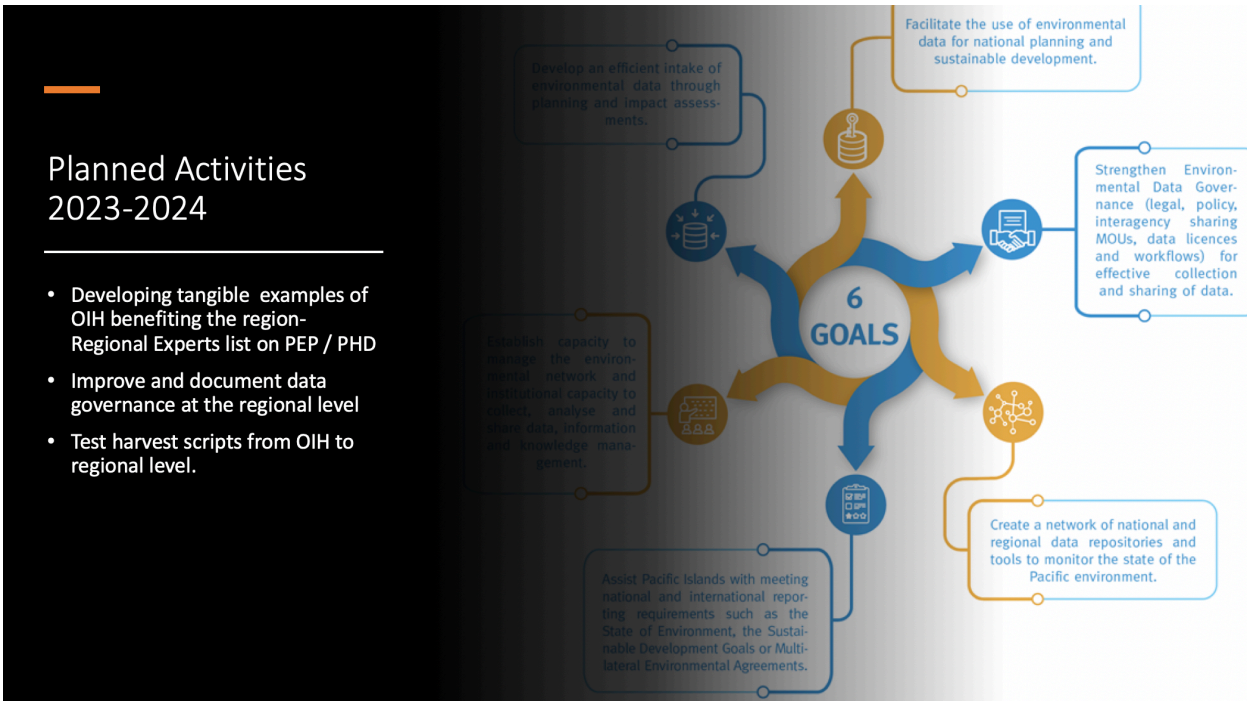
A strategic partnership between Pacific Isla… the Pacific Community (SPC) and the Se… Pacific Regional Environment Progr… to increase the availability of env…



Activities

- Metadata standards
- Expanding userbase across the Pacific
- Supporting PICs with national and International reporting requirements

"Harnessing the power of data and knowledge for sustainable development and improved decision making



Questions and discussion

SPREP works with member states to produce State of the Environment reports at national level which is a great opportunity to access and insert better data through the OIH initiative and thereby show colleagues who are working on similar projects, that these new resources are available, and we can provide a pathway to better decision-making. We can show value to decision makers which will lead to greater support and sustainability over time.

Action: Follow up with SPREP and OIH usage to inform State of the Environment reports at national level
Action: Follow up with OIH integration with the World Ocean Database.

We have heard a lot about decision-grade data but this will depend on the need; often for secondary or tertiary data. This is where regional teams (eg Pacific) can help the Project come up with specifications for specific formats that decision makers want. PSIDS could perhaps assist in building this bridge. PSIDS will provide a number of examples that could be considered.

Action: Follow up with the PSIDs region for examples of decision-grade data or products and formats that decision-makers have requested.

5.3.1.4 Africa (Mika Odido)

Consultations

- Share information on regional projects involved in data and information management and data infrastructure development in Africa
- Identify existing data and information infrastructures that could be potential partners with the Ocean Info Hub
- Identify existing data and information infrastructure that address these requirements and can partner in the development of the regional hub
- Identify some initial end user needs/knowledge products not yet covered by existing initiatives
- Discuss way forward for collaboration mechanisms, and review progress in implementation

NODCs involvement, maintaining existing partner portals which would then link to OIH (reactivation of ODINAFRICA)

Regional partners

- MarCoSouth, CORDIO, Benguela Current Commission, IUCN, Regional Remote Sensing Centre, UNEP Nairobi Convention Secretariat etc.
- Partners have submitted documentation on data sources / architecture / vocabularies / ontologies / standards to the OIH GitHub Project
- Partner representatives added to WP2 for the development of the ODIS-architecture
- Possible new partners: - RAFISMER Network, - PRCM, FAO, COMHAFAT/ ATLAFCO, UEMOA initiatives, BLUE BELT Initiative

Experts and institutions

- A list of organizations with a sub-list of names for each institution compiled. Currently we have a total of 454 institutions and 2516 expert names
- Key contacts for 386 institutions have been identified (Name and email). 89 names are pending verification
- 400 individuals contacted (via email and requested to register on OceanExpert Platform
- 16 IOCAFRICA national focal points have been consulted to confirm lists of institutions within their respective countries

Documents and best practices

- Database will be linking to AquaDocs: focus has been on policy frameworks and legislation
    - ✓ National direct legislation
    - ✓ Agreements (bilateral and multilateral) – 181
    - ✓ National Indirect Legislation- 45 + 174 Policies
- Total of 2034 records consolidated in a spreadsheet.
- Next step will be to enter the records in the Documents Catalog in the ODINAFRICA portal

Vessels and other observation platforms

- Research cruises (Past and planned / future)
- Up-to-date documentation of research vessels in the region
- Sea Level
    - ✓ GLOSS
    - ✓ An inventory of tide gauge network in the region
    - ✓ National reports on sea level

- Key Ocean Observation Platforms: Links to DBCP, OceanSITES, SOT, GO-SHIP, OceanOPS, OceanGliders, Argo
- Reports and Publications: Repository for all the ocean observation reports

Marine related projects

A list of 354 project entries in a MS Excel worksheet. In line with the OIH project guidelines (https://book.oceaninfohub.org/index.html), each entry has the following metadata

- Project Name
- Website
- Additional Source
- Legal Name
- Context
- Identifier
- Type
- Country
- Funds Source
- Executing Agency
- Focal Area
- Thematic Areas
- Start Date
- End Date
- Contact Person
- Total Grant
- LME Region
- Lead Implementing Agency
- Ethic Policy
- Logo

Training and research opportunities

Study undertaken in 2022 to Identify :

- ✓ Institutions/organizations that offer training opportunities in Africa and collect information
- ✓ Additional institutions/organizations not in OceanExpert that offer ocean related training and collect relevant information for inclusion in OceanExpert and the training opportunities database
    - ✓ Distribution of experts by qualifications, areas of expertise, nationalities, gender etc
- Records of the training opportunities database (http://africa.marinetraining.org/)

Data collection ongoing

Spatial data and maps

- Upgrade of ACMA Geonode and training of administrators and users
- Meeting held in February to discuss possible future development work. A dedicated channel has been set up on Slack to take the discussion forward
- 596 (or 537 valid) records injected the old from old GeoNetwork catalogue into the new GeoNode server. This will be connected as a node into ODIS
- Country-specific metadata records for all cut data sets created
- ACMA further prioritized as Flagship project for the revitalized ODINAFRICA

Development of the ODINAFRICA portal

- Received proposals to:
    - ✓ Develop new database for marine-related projects.
    - ✓ Develop database for research vessels, past & upcoming research cruises in the region, and other ocean observation platforms the database will also comprise of data and information extracted from existing study reports on status of ocean

observation platforms and infrastructure, while providing links to major ocean observation platforms in the region and allow for the monitoring of their status.
- ✓ Create a view of the OceanExpert database in the ODINAFRICA portal, which will harvest in real time Africa region-specific experts and institutions from the main Ocean Expert Database.
- ✓ Create a view of the Aquadocs database in the ODINAFRICA portal, which will harvest in real time Africa region-specific ocean-related documents
- ✓ Create standard static web pages for each of the NODCs that link to either the NODC website or to the host institution

- Setup a catalogue service for each database (where they do not already exist), that exposes each record through JSON-LD, to become a node within OIH's ODIS network. (using common catalogue software such as CKAN, GeoNode, pygeoapi, or GeoNetwork, etc.)

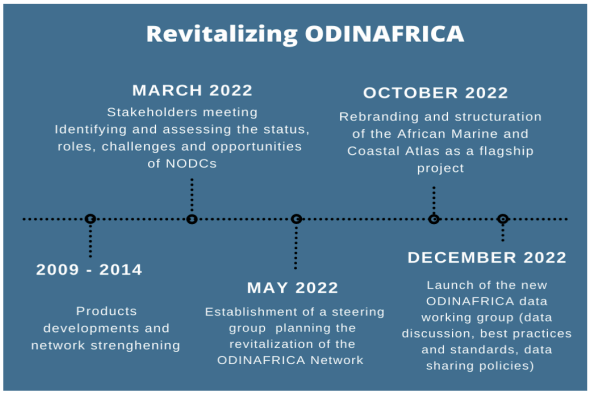
ODINAFRICA network reactivation

- Workshop on 24 March 2022
  - The status, roles, challenges and opportunities of National Oceanographic Data and Information Centre (NODCs),
  - Progress in implementing the OIH project in Africa, specifically on addressing the six OIH project thematic areas: (i) experts and institutions/organizations, (ii) documents, (iii) Spatial data and maps, (iv) research vessels, (v) education and training opportunities, (vi) projects;
  - The steps towards developing a joint framework for member states and institutions in the region to actively engage and contribute to the Ocean Data and Information Network for Africa;

Discussed:
- ✓ Financing the new ODINAFRICA phase
- ✓ Leveraging on existing activities as flagship projects for ODINAFRICA
- ✓ Drawing Lessons from the past ODINAFRICA phases
- ✓ Assessment of the current status of the National Oceanographic Data and Information Centres
- ✓ Revision and update of the mailing lists
- ✓ Setting up of a working group to guide the revitalization of ODINAFRICA

ODINAFRICA NETWORK REACTIVATION

Prof. Angora Aman – Cote d'Ivoire
Mr Harrison Ong'ada – KMFRI, Kenya
Jeff Mckenna – OIH Project
Dr. Zachary Sohou, IOCAFRICA Vice Chair
Dr. Karim Hilmi, IOC Vice Chair
Ms Tinah Martin – Seabed2030 project
Dr. Regina Folorunsho, NIOMR, Nigeria
Mr Mika Odido
Mr John Ngatia Ndarathi



Next ODINAFRICA meeting on 13 September 2022

ODINAFRICA REACTIVATION STRATEGY

- ✓ Establish and advance the development of a regional 'digital twin' for Africa for centralizing marine data acquisition, data handling and management, computing infrastructures and interoperability, data sharing, big data analytics, data validation, training and collaboration.
- ✓ Establish ODINAFRICA as the African regional node for the Ocean Information Hub (OIH) Project's Ocean Data and Information System (ODIS).
- ✓ Ensure capacity development for safe and efficient ocean data collection, management and sharing

Topics flagged from the Regional Ocean Decade Roadmap: ***Big Data and Artificial Intelligence***

Questions and discussion

Discussion about the Digital Twin: Africa.
Within the region, an Ocean Decade Roadmap was prepared, and of nine priority areas, the Digital Twin is one. Some of the others have significant data components. There will also be a special session on the Ocean Decade during the WIOMSA conference. This is a great opportunity to work with new partners, beyond the science community. Digital twins need to be populated with data, so this is something OIH can help with – geared towards regionally specific requests.

Work package 4: Training and capacity development of the nodes

This work package focuses on the development of a series of online training modules and tutorials as well as written documentation such as manuals. WP4 only commenced in 2021.

Table 6. Work Package 4 overview of timeline

Timeline and Activities	Year 1 (2020)			Year 2 (2021)				Year 3 (2022)				YEAR 4 (2023)				YEAR 5 (2024)	
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
	Apr-jun	Jul-Sep	Oct-Dec	Jan-mar	Apr-jun	Jul-sep	Oct-Dec	Jan-mar	Apr-jun	Jul-sep	Oct-Dec	Jan-mar	Apr-jun	Jul-sep	Oct-Dec	Jan-mar	Apr-jun
WP4: Training and capacity development of the nodes	Year 1 (2020)			Year 2 (2021)				Year 3 (2022)				YEAR 4 (2023)				YEAR 5 (2024)	
4.1 development of online training modules (6 modules)			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Operations manuals (D4.1)					x	x	x	x	x	x	x	x	x	x	x	x	x
Online training courses (D4.2)						x	x	x	x	x	x	x	x	x	x	x	x
Communication skills course (D4.4)									x								
4.2 in-class training courses					x			x									
Coordinated staffing, professional development and other strategies (D4.3)				x	x	x	x	x	x	x	x	x	x	x	x	x	x
4.3 online hosting of training materials					x	x	x	x	x	x	x	x	x	x	x	x	x

5.4.1 Deliverables October 2021 - August 2022

5.4.1.1 Development of online training modules

- IOC/OTGA/OIH Training course: Implementing the Ocean Data and Information System (ODIS) architecture. 25-29 October 2021 [online]
- All course materials have been translated into Spanish.
- A contract is in preparation for course materials to be translated into French and Portuguese.

5.4.1.2 Operations Manuals: ODIS-architecture documentation
https://book.oceaninfohub.org

Videos: ODIS-architecture reference (walk-through) videos
https://drive.google.com/drive/folders/1JnfiXLwxYIc3Zx0WS5-6lyqDKahHfg8f?usp=sharing

5.4.1.3 Online Training course:
IOC/OTGA/OIH Training course: Implementing the Ocean Data and Information System (ODIS) architecture. 25-29 October 2021 [online]

- Event info on OE https://oceanexpert.org/event/3256
- Actual course https://classroom.oceanteacher.org/course/view.php?id=722

Training course materials also contributed to:

- ICAN9 Session III – Sharing your Atlas with the World (OceanInfoHub & Schema.org)
- IOC/OTGA/RTC/Tianjin 2021 training course Course: Ocean Data Stewardship in the Decade of Ocean Science for Sustainable Development (oceanteacher.org).

5.4.1.4 Communication skills course
Not yet addressed

5.4.1.5 In-class training courses
Not yet addressed.

5.4.1.6 Online hosting of training materials
IOC/OTGA/OIH Training course: Implementing the Ocean Data and Information System (ODIS) architecture. 25-29 October 2021 [online]

- Event info on OE https://oceanexpert.org/event/3256
- Actual course https://classroom.oceanteacher.org/course/view.php?id=722

5.4.2 Objectives September 2022 – June 2024

5.4.2.1 Development of online training modules

- Further development of the course IOC/OTGA/OIH Training course: Implementing the Ocean Data and Information System (ODIS) architecture. 25-29 October 2021 [online]
- Delivery of the course again in English, and also in Spanish, French and Portuguese.

5.4.2.2 Operations Manuals: Further development of the ODIS-architecture documentation
https://book.oceaninfohub.org

5.4.2.3 Online Training course:
IOC/OTGA/OIH Training course: Implementing the Ocean Data and Information System (ODIS) architecture. 25-29 October 2021 [online]

- Holding region-specific courses (language and time sensitive)

5.4.2.4 Communication skills course

5.5.2.5 In-class training courses
Will be considered in 2023.

5.4.2.6 Online hosting of training materials
This is ongoing

5.4.2.7 OceanTeacher Global Academy developments
Ms Claudia Delgado presented the new OTGA course template and assessment tools.
OceanTeacher is a long-term project of IOC, funded by the Government of Flanders, Belgium.
The second phase of the OceanTeacher Global Academy started in April 2020. It builds on the legacy of the previous project and includes new initiatives and challenges now in place, such as the 2030 Agenda and its SDGs and the UN Decade of Ocean Science for Sustainable Development.
Its main goals are to:
1) Develop a portfolio of packaged courses (related to the needs of IOC and other partners and stakeholders)
2) Deliver courses online and/or blended learning, as well as onsite through the training centers, on demand
OTGA is an endorsed UN Ocean Decade Project since October 2021. It's main contribution to the Decade will include providing relevant and customised training on the different topics and that are relevant to the different audiences.

The e-Learning platform, based on the freeware Moodle allows F2F learning, blended and online learning through:

- **Sharing** content and learning between organisations / stakeholders
- **Co-creating** content and knowledge
- **Recognition** for the organisations as well as course developers

Besides its LMS, another essential component of the OTGA approach to training is its global network of Training Centres.
OTGA works in partnership with the IOC Member States and its institutions, and it's now a network of 17 Regional and Specialised Training Centres.
These RTCs and STCs play an essential role, as they help tailoring courses to the regional specific needs, provide training in the languages that are relevant to the Regions and also host the face-to-face courses.

OTGA strives to deliver the best quality training possible. To this aim, OTGA established a quality management system that supports the design and delivery of the training services.

The OTGA e-Learning Platform is now a mature Learning Management System that provides an integrated system to create personalised learning environments and enables a collaborative learning environment that can include resources such as course information, handouts, presentations, video and web links and activities such as discussion fora, assignments, online tests and quizzes, online submission of assignments by the learners, and subsequent online grading automatically or by the facilitators.
The platform also allows the creation of learning paths specific to the needs of the learner through the sequencing of resources and activities and in a modular approach. This is especially important on an online learning environment.

The COVID19 pandemic triggered a fundamental change on how we look into and ensure that education and training does not stop. No doubt that the move to online learning is demanding and implies a considerable mind shift on how we deliver training.
I invite you to check the paper on The changes we need: Education post COVID 19.

After a global pandemic that at some point prevented over 1 billion learners to continue learning, it seems clear that blended learning formats, including the enhanced use of technology for training, are here to stay and should become the 'new-normal'.

www.oceanteacher.org

Questions and discussion

There was discussion of SPC as a Regional Training Centre (it is one and has delivered a successful Ocean Acidification course recently.

On the communications skills course, guidance and ideas were requested from the Steering Group on what could be developed. At the recent CLIVAR /GOOS workshop there was an exercise to upskill scientists – to write policy briefs etc, so perhaps this is something that could be considered. Perhaps a similar or linked course for data scientists. Stakeholders may not be aware that a system like ODIS is receptive to change; feedback mechanisms is a kind of communication. In terms of capacity awareness, it would be useful to know who has been to which courses, to know who has gone to which trainings.

The link between OTGA and OIH was discussed. The OIH training course was delivered via OTGA, so they are partners in that way. Also, training course opportunities are discoverable from the Ocean Expert platform via OIH. In future, MarineTraining.eu and Ocean Exert (which are both OIH partners) will be able to exchange records and save duplicate entries. It was proposed that the communications course should assist existing and potential users and providers – and for managers and decision-makers.
Action: Develop a communications course or course component that assists existing and potential users and providers – and for managers and decision-makers.

There have been requests for ODIS in-person training, and this can be considered B2B with an event.
Action: consider ODIS training in-person, B2B or as part of an event.

Work package 5: Communication, user marketing and feedback

This work package covers the communications and engagement activities needed to ensure the relevance and usefulness of the Ocean InfoHub global and regional/thematic nodes, to promote community participation in the Ocean InfoHub as contributors and users, and to solicit input needed to foster ongoing development of the Ocean InfoHub nodes.

Table 7. Work Package 5 overview of timeline

Timeline and Activities	Year 1 (2020)			Year 2 (2021)				Year 3 (2022)				YEAR 4 (2023)				YEAR 5 (2024)	
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
	Apr-jun	Jul-Sep	Oct-Dec	Jan-mar	Apr-jun	Jul-sep	Oct-Dec	Jan-mar	Apr-jun	Jul-sep	Oct-Dec	Jan-mar	Apr-jun	Jul-sep	Oct-Dec	Jan-mar	Apr-jun
WP5: Communication, users marketing and feedback:																YEAR 5 (2024)	
Implementation of the communications plan (D5.1)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5.1 participation in meeting and workshops (D5.2)	Xv	Xv	Xv	Xv	Xv	Xv	Xv	X	X	X	X	X	X	X	X	X	X
Regional / global webinars *cross ref with WP3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5.2 community surveys (by global hub and regional nodes)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Engage with global partners to ID needs	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Engage with three regional communities to ID needs	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5.3 communication services including social media, web site	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
News releases, communications materials developed (national, regional, international) (D5.3)	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Raise awareness for collaboration via IOC Circular Letter to Member States/ Presentations at events	X	X	X	X	X	X	X	X									
Mailing lists set up (D5.4)* Mailing list activity also in WP3		X															
Logo developed		X															
OIH web page on IODE site updated by Project Manager	X																
Contributor and user satisfaction surveys / reports (D5.5)			X					X				X					
Active updates on project progress: Project Steering Group/ IOC/CD Secretariat and IOC regional offices/ IODE Secretariat/ Member State contacts	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Updated needs assessments (D5.6)				X								X					
5.4 publications and reports	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

5.5.1 Deliverables October 2021 - August 2022

5.5.1.1 Participation in meetings and workshops

- Altogether, the project has organised or participated in 218 documented virtual, physical or hybrid meetings, webinars or events (besides staff meetings) since the last Steering Group meeting.
- Many of these were internal WP2 or WP3 meetings, but many internal meetings include partners and can also be seen to contribute to WP5 by contributing directly to awareness raising about OIH activities, objectives, and benefits of partnership.

Selected examples (a full list is available)

- Marine and Coastal Operations for Southern Africa (MarCoSouth) webinar (Nov 2021)
- GEBCO Map the Gaps symposium (Nov 2021)
- African Kick-off conference for the UN Decade for Ocean Sciences for Sustainable Development (December 2021), postponed to January 2022
- International Ocean Data Conference, Poland (February 2022)
- IODE management group (March 2022)
- MEDIN open meeting, March 2022
- Ocean Literacy for the Finance Sector - Webinar series (March 2022)
- GOOS Webinar: IOC/UNESCO information and data related resources and the Ocean InfoHub Project (April 2022)
- AA-Data2030 webinar
- Digital Twin Interoperability - Architectures of Digital Ocean Twins (May 2022)
- UN Ocean Conference side event Marine Data Interoperability (June 2022)
- MGR webinar "Marine genetic resources: exploring scientific practices and wider uses in conservation in the BBNJ agreement" June 2022
- Fourth Sino-Africa Forum on Marine Science and Technology (July 2022)

5.5.1.2 Community surveys and needs assessments.
The 2020-2021 IOC-CD survey incorporated questions for and relevant to OIH; this will be repeated in 2022.
Many regional engagement feed into identification of regional needs.

5.5.1.3 Communication services (social media, website)

- The website is updated frequently and contains news items, media feeds.
- We are currently using the IODE social media channels.
- Three products have been developed together with Sciencecrunchers; a **video**, a **brochure** and a **slide deck**. These will all be used in outreach and public awareness activities.

The OIH 2-minute video was played.
Link to video: https://drive.google.com/file/d/1SIeKjSRm-ZpUviOWIVhZ9qpOT2ZAxXOF/view?usp=sharing

5.5.1.4 Awareness raising through communications and events
We use the mailing lists for important communications.
Regular communication uses Slack and email

5.5.1.5 Active updates on project progress
Through the website, Slack, Github and infrequent email updates.

5.5.2 Objectives September 2022 – June 2024

Multiple outreach activities ongoing & planned including, for example:

- End user engagement in all three regions (dedicated session on that 24/08)
- Western Indian Ocean Marine Science Association conference 2022
- Gulf Caribbean Fisheries Institute 75th Conference (OIH-LAC) 2022
- Ocean data conference March 2023

Questions and discussion

Discussion of translation of the video voice-over. Subtitles will be provided in Spanish, Portuguese and French, and we have had an offer from INVEMAR for them to provide a sign language translation. Two small changes will be made to the video and then it will be freely available for partners to use for raising awareness of the project. We also have a 4-page brochure and slide deck with graphics, all of which will be available.
Some OIH events are not on the website and should still be shared. Part of the reason is that we only have OIH events on the Ocean Expert calendar, so external events may not appear.

The landing page of the OIH website is an important source of information, and elements of communication should be embedded there. Our intention is for the global search hub portal to become the OIH home page with the project information and technical details in the background – with drop down menus for accompanying information. Naturally, a project website will evolve over time, and now the tools can be upfront with project matters and structure in the background.

We have a few changes to make to the Global Search Hub before we go live – there should be no major glitches before we go live; the team and partners should be happy. We don't have a dedicated launch event planned. The search at the moment reflects the state of ocean information at the current time, and this will also change and improve over time as the contributors improve their contributions.

The technology of the global search hub and long term sustainability was discussed. The search hub code, developed by Derilinx will be hosted by IODE in the long term and the Project Office will take over the further development of the search hub, together with the same company, or other companies or in-house. We are not locked in to a maintenance contract.

Regarding the launch, was there a launch for the 18 partners? Not yet, there have been two broad consultative meetings that included the partners, to get their input in the development process.
Action: Consider doing a Global Search Hub pre-launch to get the perspective of the core partners, then consider some dates in 2023 to have a launch event, at IODE-27 and the associated Conference, with a sales desk for more information and to get more partners involved. Also consider an event at the IOC Assembly in June. This will be important to mobilise national and regional partners – NODCs. There might be some decade events where we should be present in 2023, this will give us some good visibility. There will be several regional events in the Pacific that could be used to raise awareness of the OIH Project.

Action: Lucy to email all participants for ideas of dates and events where OIH may be present.

UNFCCC might be another good option. We must ensure we don't put all the emphasis on the search interface, as the technology behind it is also really important, as well as the open-source nature of the whole enterprise, that allows anyone to build portals.

Will there be a quality assessment mechanism for the information in the system? Partially through the dashboard system which would indicate whether data that are contributed are within specification. Users would be able to see and select partners, and identify the quality of data returned in their search.

6. Budget

Significant cost savings were made during 2021 and 2022 due to the travel restrictions imposed as a result of the global COVID-19 pandemic. Some meetings might still need to be held so a balance had to be found between additional spending (on consultancies, for example), while still retaining reserves to enable travel when permitted.

Costs to be spent for the remainder of 2022, 2023 and to June 2024 include:

- Three contracts for the ongoing development of the ODIS-architecture.
- Co-financing of PSIDs regional activities
- Co-financing of activities at the IOC Sub-Commission for Africa
- Co-financing of activities in the LAC region
- Translation services for training course material
- Further development of the Global Search Hub based on end-user feedback
- IODE27 travel
- SG-OIH-IV travel 2023

Co-financing received

2020-2021 NORAD
African database of training opportunities: There was no single database or portal for marine and coastal training opportunities for Africa, training opportunities and resources were sourced from numerous distributed resources. The Africa Marine training Database has been successfully developed and populated with training course records. The portal is online

at: http://africa.marinetraining.org/ and provides ocean professionals with direct information on training opportunities. Records are discoverable through the OIH Global Hub

Planned next steps: the database will be continuously further updated and promoted in Africa and will also feed into the CD effort compendium.

2021-2022 NORAD

Establishment of new nodes in the Ocean Data and Information System: Three regions have been identified as priorities for additional Ocean InfoHub support in the development or strengthening of robust and sustainable information management systems, as well as linking to global and other regional databases using the ODIS infrastructure. These would become new nodes in the Ocean Data and Information System, supported by the OIH Project. One or more of these three regions will be the focus of this additional OIH development: (i) NODCs of Individual Member States (e.g.Indonesia and Malaysia); (ii) Areas Beyond National Jurisdiction; and (iii) Member states that have participated in the Indian Ocean Expedition II (IIOEII).

Stakeholder analysis of new nodes has commenced, and several project-relevant meetings have been held, mainly with the NODC Indonesia and IOCAfrica; and one of our technical subcontractors is working actively with partners. A Terms of Reference for further development work has been defined.

Planned next steps: Ongoing bilateral meetings will be held with member states to further identify existing expertise, and existing online resources that can be linked to the global OIH.

Questions and discussion

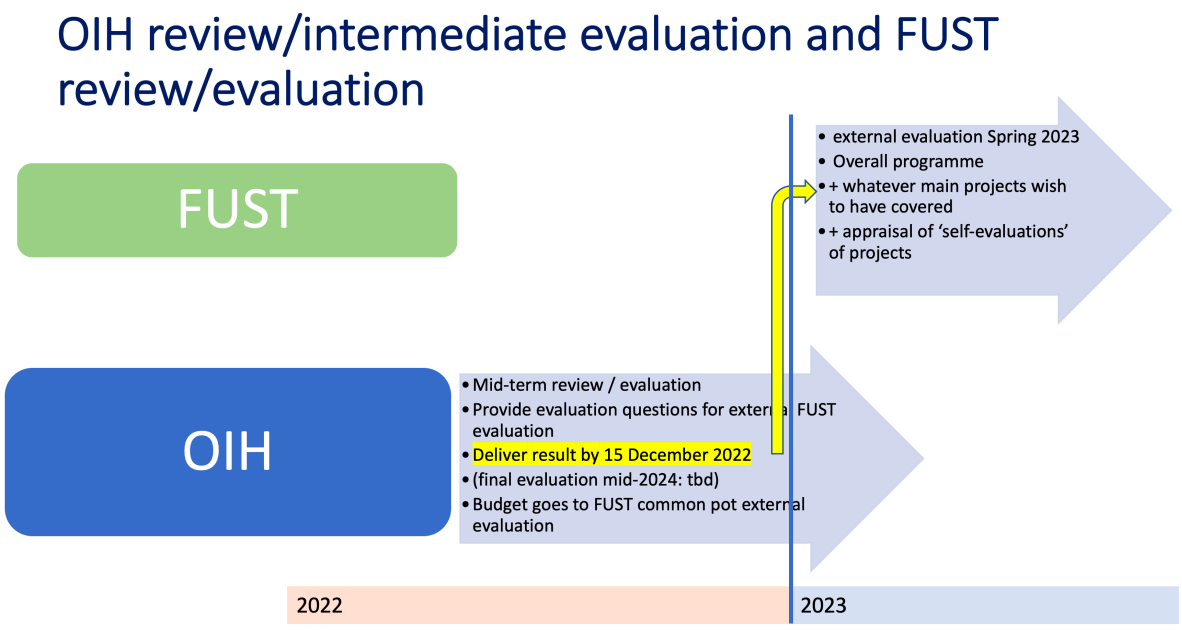
No questions were raised.

7. OIH review/intermediate evaluation and FUST review/evaluation

Mr Gert Verreet presented an overview of the requirements of the OIH review/intermediate evaluation and the FUST review/evaluation.

FUST is the Flanders UNESCO Science trust fund; a funding agreement (Programme) between Flanders and UNESCO that funds projects. This programme is agreed on a five-yearly basis and the current term is 2019-2023. All major projects have a budget and a requirement for a self-evaluation, which would normally be done in time to feed into the overall FUST evaluation. Covid-19 has caused delays in most of the projects, which meant that we could not have final project evaluation results by 2023.

Each of the projects is now required to do a mid-term self-evaluation will be undertaken by large scale projects (OIH being one) in collaboration with the relevant partners and stakeholders. The purpose will be to obtain data on the implementation, including the results (even partial) achieved for each project. The mid-term self-evaluation shall also include a set of key evaluation questions to be included in the terms of reference for the FUST external evaluation to be undertaken during the first semester of 2023. So the two processes would be complementary. The self-evaluation shall be conducted by the end of 2022 and the report submitted to BSP for transmission to the Government of Flanders by the 15 December 2022.



A FUST steering committee meeting will be organized mid-January 2023 with the aim to review the single progress reports containing the mid-term self-evaluation as well as the proposed evaluation questions for each project to be included in the final Terms of Reference of the FUST external evaluation, which the steering committee shall approve.

The FUST external evaluation and related Terms of reference will be divided in two different outcomes : (a) the assessment of the single mid-term self-evaluations produced for each above-mentioned large-scale project ; (b) the assessment of the overall governance framework. The bidding process for the selection of the external evaluators will be launched by the end of January 2023. A reference group will be established for the selection of the evaluator and follow-up of the evaluation process. The submission of the final evaluation report will be expected by September 2023 for subsequent submission to the Government of Flanders. The cost of the external evaluation will be covered by the evaluation budget included in each large-

scale project. BSP will further discuss with each project officer the amounts to be allocated from each project budget to the external evaluation.

Action: Project evaluation: We should develop a short ToR for the self-evaluation, and establish a small group of colleagues that could work on the ToR and help with the self-evaluation.

Questions and discussion

What we learn from the evaluation can also inform and assist the project.

Are there pre-established requirements for the projects to know about? Each of the project documents has a set of indicators / KPIs and also results should be included (even partial results) as well as the evaluation questions. It could take the form of a description, and then perhaps a SWOT analysis which includes perceptions of what went well, and not so well. It would most likely be the project teams that would give input – not end users. It is not intended to be an onerous task, but something that is useful and also benefits the project.

The KPI table, and the report for IODE-27 can be used. It would be useful to record any unexpected spinoffs or needs. There was a question about changing the trajectory of the project based on recommendations. We will try to be responsive – if there is a change in budget between activities, we would try to be responsive. It is still possible to change the balance of activities if needed.

There was an open call for volunteers who are interested and willing to assist with the process.

- Lucy Scott
- Pier Luigi Buttigieg
- Sioeli Tonga
- Ann-Katrien Lescrauwaet
- Jeff McKenna
- Harrison Ong'Anda
- Mika Odido

8. Decade action OceanData-2030

Ms Lucy Scott presented an overview of the Decade Programme OceanData2030.

- A submission was made to the UN Decade in order to:
    - raise awareness of the contributions that OIH and ODIS will make to the UN Decade
    - raise the profiles of Ocean InfoHub and ODIS in general
    - solicit support and participation in both efforts

The work will contribute to multiple goals/challenges of the UN Decade through general improvement to discoverability of data and information, along with specific support focusing on developing regions and capacity development.

Key contributions

- Primary Sustainable Development Goals supported by the project:
    - **Goal 4:** Quality Education
    - **Goal 9:** Industry, Innovation, and Infrastructure
    - **Goal 13:** Climate Action
    - **Goal 14:** Life Below Water
- Decade Outcomes supported by the project:

- **Outcome 4:** A predicted ocean where society understands and can respond to changing ocean conditions.
- **Outcome 6:** An accessible ocean with open and equitable access to data, information and technology and innovation.

UN Decade Challenges to be supported by the project:

- **Challenge 8:** Through multi-stakeholder collaboration, develop a comprehensive digital representation of the ocean, including a dynamic ocean map, which provides free and open access for exploring, discovering, and visualizing past, current, and future ocean conditions in a manner relevant to diverse stakeholders.
- **Challenge 9:** Ensure comprehensive capacity development and equitable access to data, information, knowledge and technology across all aspects of ocean science and for all stakeholders.
- **Challenge 10:** Ensure that the multiple values and services of the ocean for human wellbeing, culture, and sustainable development are widely understood, and identify and overcome barriers to behaviour change required for a step change in humanity's relationship with the ocean.

How will OIH and ODIS deliver on UN Decade commitments?

- Facilitate discovery of data, information, and other resource types through co-development of a lightweight metadata architecture (ODIS Architecture)
- Lower the barriers to enabling discovery of resources through development of implementation guidance, adoption/development of low-barrier technologies, and development of reusable implementation toolkits
- Advance the implementation of the ODIS Architecture through direct collaboration with regional partners, with a special focus by OIH on developing regions

Approach

- Technically, continuously link digital programmes, projects, and other stakeholders together to prevent silos
- Implement lightweight architecture (at the beginning) and evolve provide broad (many participants) and deep (rich content) by ~2030
- The project will deliver an Interoperability layer - starting with key metadata and going to full FAIR and CARE data packet exchange with provenance tracking
- Build around a nucleus of regions (across capacity levels) and then gradually scale out

Current status

- OIH and ODIS are both established as active projects under the IODE. The UN Decade submission is intended to support and up-scale the work.
- The projects are aligned from a vision, technical architecture, and implementation approach.
- The ODIS Architecture which underpins both projects and continues to develop.
- Key separation between the two initiatives is the participating communities/regions - OIH is focused primarily of developing regions and capacity development where ODIS is broader in its community

Status of submission: submitted and registered as a Decade Programme

Questions and discussion

A question was raised about full FAIR and CARE compliance – from the partners, or the programme, and how it would be evaluated. We would just be encouraging partners to align with these principles. We should also engage with those who are developing the CARE principles, and develop a clear pathway to implementation.

The UN Decade is about reaching out to new partners that we might not already be working with – is there a plan to engage the private sector, or other partners who have not been involved to date? Yes, OceanData-2030 is an opportunity to broaden participation, including industry partners. Other programmes have launched calls, so this is something we can also consider.

Action: In the list of contributions from the Ocean InfoHub to the Ocean Decade, include a reference to the IOC strategy on capacity development and knowledge transfer. This was one of the main drivers for developing the proposal, and also the OIH Project itself. This is a good opportunity for advocacy and ambassadorship for the OIH and the role it plays in the decade. Many of us participate in meetings and conferences that could be used as opportunities for advocacy for the OIH, but it would be interesting to have a discussion on when and how that should take place, strategically. How does OIH want to profile itself within larger programmes. This would help partners in their support of OIH. We could follow up with a dedicated discussion around this – how we can take advantage of upcoming meetings and events. We need to decide not only which materials should be used, but also the message. We should stress that the decade actions are not totally new initiatives (from OIH / ODIS for example) but is rather an expansion of the scope, to benefit the Decade which has a wider scope. Existing projects are a contribution to the Decade.

Action: Make presentations and project materials (brochure and final video) available to project partners.

Besides the Ocean Decade Coordination Group, there is now a working group - Corporate Data Group, which could be an opportunity to raise the profile of OceanData-2030 to corporate partners (Jan-Bart offered to facilitate this).

Action: Lucy to follow up with Jan-Bart regarding the Corporate Data Group

9. DCO for Data Management

Mr Peter Pissierssens presented an overview of the planned DCO for Data Management. He began with an introduction to the Decade and operational structures hosted by the IOC.

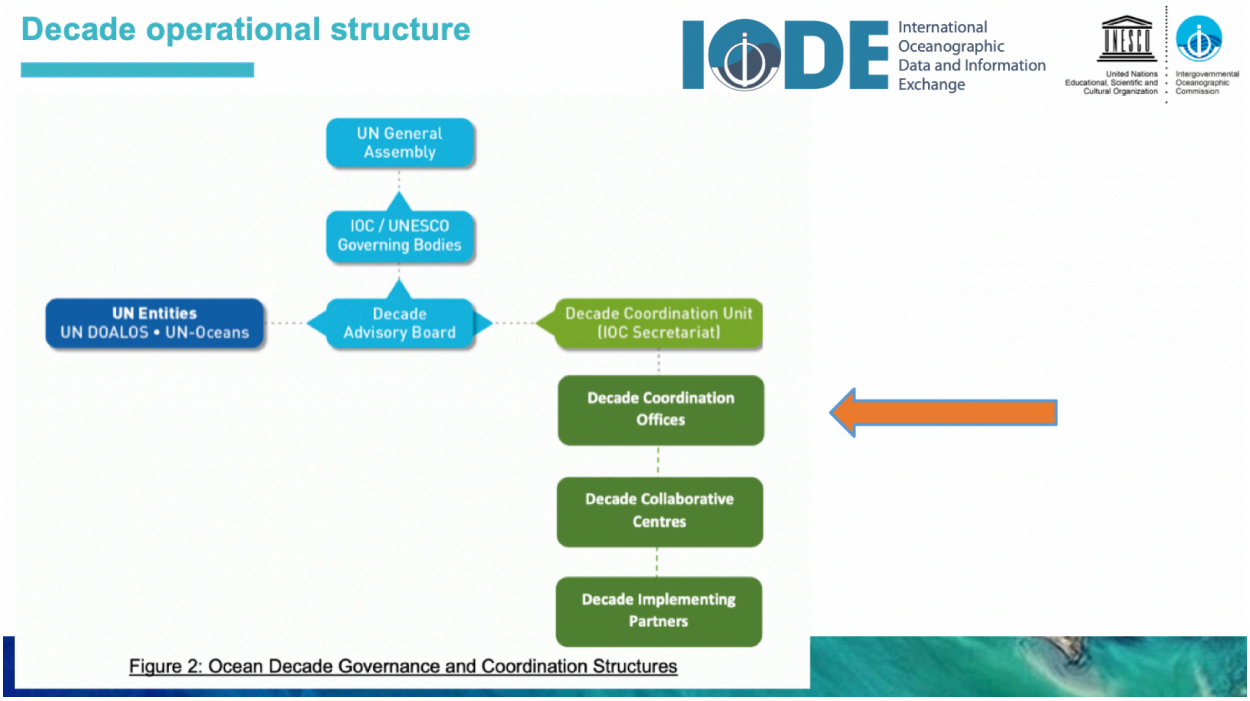


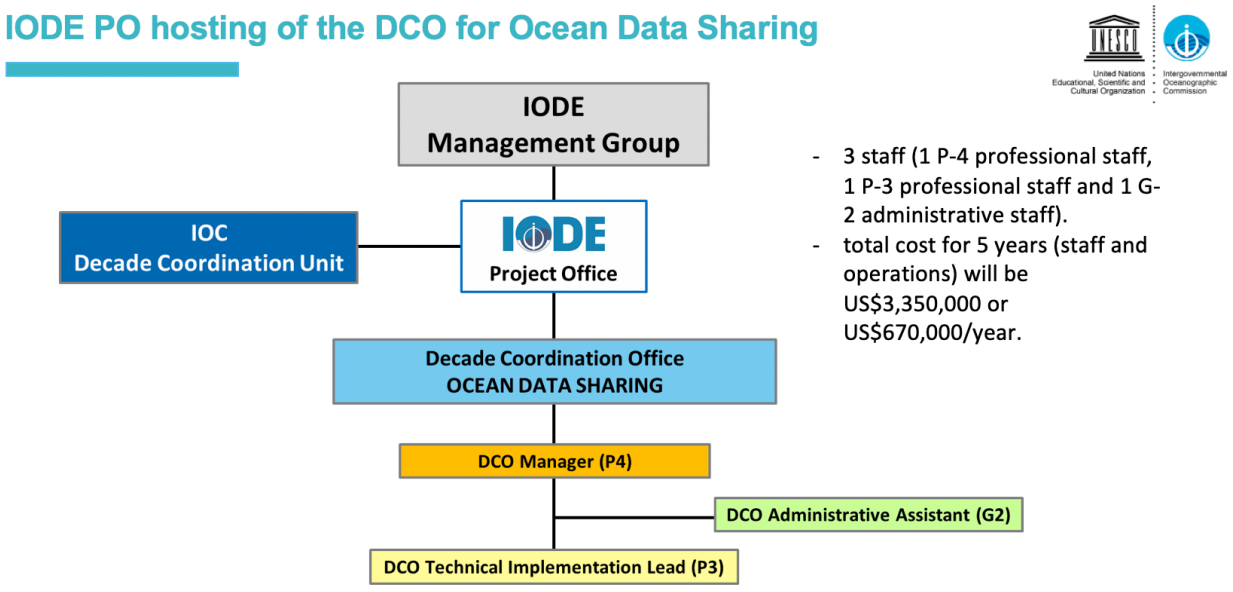
Figure 2: Ocean Decade Governance and Coordination Structures

The main roles of the DCO: “Acts as sub-unit of the central Decade Coordination Unit. Catalysis and coordination of Decade Actions including Calls for Decade Actions, organise and coordinate Decade review processes, promote cooperation amongst UN and Member State partners, communications, monitoring, and resource mobilisation. “

The DCO has a geographic or thematic scope which can be an ocean basin or related to one or more Ocean Decade Challenges.
In terms of expected resource commitments, the DCO should have a small team of dedicated UN staff, premises and office operational costs.
It oversees the work of the Decade Collaboration Centres and links with the Decade Implementing Partners.
It should be hosted by a UN entity ….

The core focus of the Decade Coordination Office (DCO) for Ocean Data Sharing will be on supporting the Ocean Decade Challenge 8 :
“Through multi-stakeholder collaboration, develop a comprehensive digital representation of the ocean, including a dynamic ocean map, which provides free and open access for exploring, discovering, and visualizing past, current, and future ocean conditions in a manner relevant to diverse stakeholders.”
The DCO aims to manage the Data Sharing component of the digital ecosystem needed for the Ocean Decade to be successful.

… In addition, the DCO will, through its OceanTeacher Global Academy (OTGA), Ocean InfoHub (OIH) and other related IODE projects (which have also been submitted as Decade Actions) work towards equitable participation of all IOC Member States (and related regional organizations) in the Decade data activities, thereby also furthering the mission described in the Capacity Development chapter of the Decade Implementation Plan.
These activities will anchor broader networks of data, information, and capacity sharing, while maintaining an overall strategic direction continually shaped by partner feedback.



DCO for Ocean Data Sharing status

Feb-Mar 2022 Drafting of the proposal between DCU and IODE Secretariat
March 2022 Approval of the proposal by the IODE Management Group
March 2022 Formal submission of the proposal to the DCU
June 2022 IOC Exec Council informed of proposal
Next steps
September-… Seeking funding (DCU)
Early 2023 Launch?

Planning for 2023

1. The DCO will seek contact with all Decade Actions that have clearly defined data activities (data collection, data management, data product/service development)
2. The DCO may discuss the development of data management plans
3. The DCO may recommend best practices for data/information management
4. The DCO may recommend data sharing through OIH and provide advice ("how-to"). Note that the decade "digital ocean data ecosystem" will go beyond the data types traditionally managed by IODE so this also widens the scope of ODIS and OIH.
5. The DCO may organize training on sharing data, data management etc through OTGA and invite additional partners (special attention to developing regions) to join OIH

Decade Actions submitted by IODE

1. E-DNA expeditions in marine World Heritage sites (Ward Appeltans)
2. Ocean Practices for the Decade (Peter Pissierssens on behalf of OBPS)
3. OceanTeacher Global Academy: Building Capacity and Accelerated Technology Transfer for the Ocean Decade (Claudia Delgado, Greg Reed, Sofie De Baenst)
4. Pacific Islands Marine Bioinvasions Alert Network (PacMAN) (Ward Appeltans, Pieter Provoost)
5. **OceanData-2030 (Lucy Scott)**
6. OBIS 2030 (proposal writing workshop 6-7 Oct 2022 in Ostend)

In addition, a number of proposals were submitted in cooperation with IODE:

1. The World Ocean Database Programme (WODP): Openly discoverable, accessible, adaptable, and comprehensive digital global profile oceanographic data of known quality (Hernan Garcia, United States)
2. CoastPredict - Observing and Predicting the Global Coastal Ocean (Nadia Pinardi, Italy)
3. Ocean Observing Co-Design: evolving ocean observing for a sustainable future
4. Marine Life 2030

Questions and discussion

There was discussion around coordination between the different groups – there probably needs to be some more work on this between the partners. Good that the data coordination group is providing active guidance to the next call to action, to make sure it is well aligned to the work the coordination office does in future. Yes there is a DCC/DCO for ocean observing and ocean prediction. The blueprint is developing rather organically. There is a risk that if there are too many coordination groups, they start doing their own thing rather than working together. As the DCO for data sharing, we need to engage new entities as soon as they start. Also so that when new entities develop their data and information management strategies, that they are aligned with the IOC data and information management strategy.

An example was made of an Ocean Acidification Project that required end-to-end advice on data management in the project, and this was being provided by KMFRI, so advice form the IODE continues to be needed and appreciated.

10. Report on actions from SG-OIH-2

- The project team should make a note of links to other UN agencies as we make them.
- *This is done within our partners tracking sheet. This is openly available and available here:* https://docs.google.com/spreadsheets/u/1/d/13bn9IPL8mYOwwoIKtTfx1XgW4FJsvofLSivevGTG7UE/edit#gid=0

- Follow up with EMODnet to connect to ODIS.
- *This is actively underway, and regular meetings are being held between the technical teams of OIH and EMODnet.*

- Plan a training course for 2022, based on the 2021 training course but translated to Spanish, for the LAC region.
- *Training course materials have been translated into Spanish, thanks to a partnership with INVEMAR (very recently completed) and next steps are to select dates that suit OTGA and the OIH Project team*.

- Every ±3 months, hold a general WP2 meeting for overall project progress and updating of partners. Invite the Steering Group to participate.
- *Three general meetings have been held; one a general WP2 meeting on progress, and the second two with a focus on Global Search Hub development and user engagement.*

- Once the OIH video has been produced, work with INVEMAR to make it available with sign language translation to increase accessibility.
- *The OIH video is in final stage of completion.*

- Plan the next steering group meeting in ±October 2022, ideally face-to-face if this is possible.
- *OIH-SG-3 currently held as a hybrid meeting*

11. End-user engagement

During project preparation, end user communities were identified as being:

- scientists (academic and private sector)
- government agencies/policy makers
- IOC global and regional programmes
- IODE National Oceanographic Data Centres (NODCs), IODE Associate Data Units (ADUs) and IODE Associate Information Units (AIUs)
- UN agencies, International Governmental Organizations (IGOs) and Non-Governmental Organizations (NGOs) industrial and commercial enterprises

It was noted that the above-mentioned user groups are also those who provide content to the system. This will enhance the self-driven nature of the system and thus ensure its sustainability beyond the lifespan of the project. Furthermore, the distributed approach will allow further expansion of the “partner network” with new content providers as well as users, thereby further enriching the content ecosystem.

In addition, the project will target a wide variety of potential users to get their feedback on global and regional hub design, including early career scientists.

Priorities for September 2022 – June 2024
The emphasis to date has been on building communities of practice (including partners and contributers) and co-designing the ODIS architecture on which products and services will be built.

Now that we have a Global Search Hub demonstration, we will be able to actively engage end users to further refine and develop the search tools that they need.

Each region presented their plan for end user engagement:

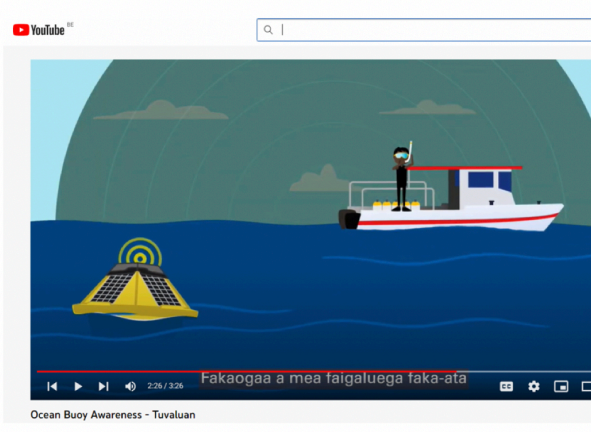
End-user engagement in the PSIDS region

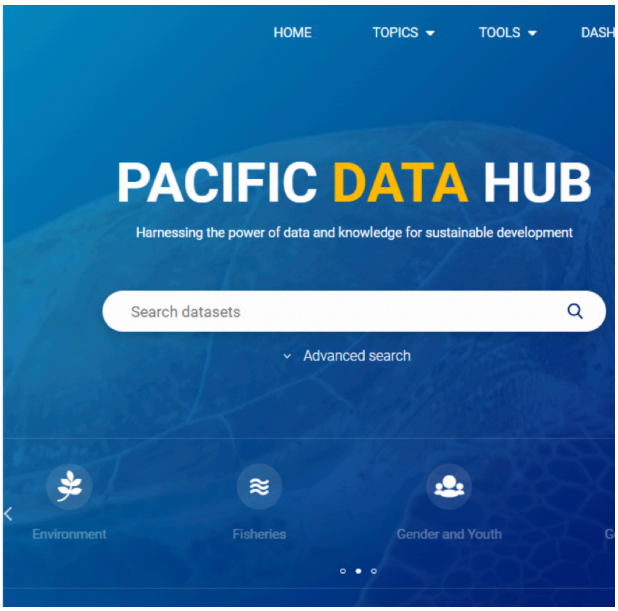
EXISTING MECHANISMS

Leverage SPC and SPREP's existing networks with national ocean management professionals across the region

For this to have impact – concrete outputs and products will be **required**

Awareness and information products





Regional Workshops	Pacific Islands Ocean Science Conference- Tentatively scheduled February-March 2023
	Regional Tides Workshop- March 2023
	GIS User Forums
National Workshops	Ocean Science to Service workshops:
	PNG-October 2022
	Kiribati-November 2022
	PEP in-country capacity building efforts

Pacific solutions for a healthy Blue Pacific Continent: Integrated Ocean Management to sustain livelihoods today and into the future

Officially Endorsed Action

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

Integrated Ocean Management

CULTURE & TK: Actions are inclusive of traditional knowledge

LAW & POLICY: Robust legal instruments and policy frameworks

SCIENCE: Improved decision support systems

OIH-PSIDS Contractor

Terms of Reference for the Development of the Ocean InfoHub Pacific Small Island States Region (P-SIDS)

1. Background

The IOC Ocean InfoHub (OIH) Project is a new initiative to streamline access to ocean science data and information for management and sustainable development. Funded by the Government of Flanders (Kingdom of Belgium), the project started in April 2020 and will run for three years. The OIH is coordinated by the IOC Project Office for IODE (Oostende, Belgium). The OIH will establish and anchor a network of regional and thematic nodes that will improve online access to and synthesis of existing global, regional and national ocean data, information and knowledge resources. The project will centre on an openly accessible web platform designed to support interlinkages and interoperability between distributed resources including existing clearinghouse mechanisms (CHM). The initial focus of OIH will thus be on (i) experts, (ii) institutions/organizations, (iii) research data and information infrastructures and their capabilities and services offered, (iv) projects, (v) research vessels, (vi) education and training opportunities, (vii) funding programs and other opportunities, (viii) documents and publications, (ix) manuals, guidelines, standards and best practices, (xi) metadata catalogues for specific variables and (xii) access to data sets and/or data products relevant to particular program priorities (e.g. the SDGs and Essential Ocean Variables). The project will benefit marine and coastal stakeholders across the globe, but its initial focus will be on responding to requests for data products and services from three regions: IOCAFRICA, Latin America and the Caribbean (LAC) and the Pacific Small Island Developing states (SIDS) to meet their unique user community (thematic and language) requirements. The initial priorities for the Project will be to develop communities of practice for the three pilot regions, as well as to formalize partnerships with other UN agencies and key international partners.

The OIH Project has supported the development of a global ODIS (Ocean Data and Information System) Architecture (ODIS-Arch) which underpins the interoperability between local, regional and thematic infrastructures. The OIH Project and its partners have successfully tested a prototype implementation of the Ocean Data and Information System (ODIS) using a schema.org-based interoperability architecture (ODIS-Arch) to allow independent data systems (ODIS nodes) to push and pull (meta)data.

The Pacific SIDs region has two platforms to pilot the Infohub concept. These being the Pacific Data Hub (PDH) https://pacificdata.org/ housed at the Pacific Community and the Pacific Environment Portals (PEP) as part of the Inform Project at the Secretariat of the Pacific Regional Environment Programme : https://www.sprep.org/inform.

1. Phase 1: Assessment of the PDH and PEP and preliminary needs assessment

1.1 Provide an overview of the information resources in the PDH and PEP.
1.2 Provide a regional assessment of other potential metadata providers or users in the PSIDs region; engage in correspondence with at least 5 other national or regional partners,
1.3 Raise awareness of the OIH project and PSIDs role,
1.4 Begin a preliminary needs assessment through these engagement actions.

2. Phase 2: Curation of Global Datasets and comprehensive end-user needs assessment.

2.1 Identify global ocean and coastal datasets of relevance to the P-SIDs region (undertake a comprehensive needs assessment of datasets of relevance to the P-SIDS region and member states).
2.2 Webinars: assist with organising, and moderate 2 webinars, based on sharing project results and further identifying end-user needs; a report produced for each webinar.
2.3 Present feedback from at least 10 institutional partners on their needs, and how data would be used to feed into management, policy or governance processes. Include at least one source of indigenous knowledge (metadata).

3. Phase 3: Capacity Development and further end-user engagement

3.1 Conduct a physical or hybrid workshop for at least 10 partners / institutions on OIH for PSIDs region to showcase the interoperability project as well as to identify additional regional needs and the identification of ODIS-relevant gaps in capacity. Workshop report.
3.2 Conduct interviews with relevant stakeholders to strengthen the needs assessment. Interview results presented in a short report.
3.3 Work with PDH, PEP to identify and provide relevant capacity building opportunities and develop training materials on data (curation/harvesting).
3.4 Report on at least 5 uses of the OIH to source data that has had local application for research, management and especially policy development within the PSIDS region.
3.5 Local media: 1-2 short items shown on local TV and/or newspapers to boost interest and perhaps increase local users. We are preparing a short video and this can be used.

Questions and discussion

A large project is just starting up in the Pacific related to meteorological services and disaster risk reduction. SPC and SPREP will be involved & will be collating data sets not already available – and making them available to countries. Could be a timely opportunity for OIH, which can assist 5 countries to gather new information. OIH could be part of the solution. First quarter 2023. If we can think of some example products it would make our pitch much easier.
Action: Together with SPC and SPREP, develop some materials that we could demonstrate at a new 5-country project meeting; early 2023; what OIH is doing and some critical features.

Thinking about how we could take this back to our stakeholders – we get requests to build portals. Our approach is to centralise data and expose though different thematic portals. Go through an iterative process, automated to some extent. This is another opportunity for OIH.

A comment on the CD needs assessment – SPC is planning a region wide needs assessment (not duplicating the global one) but will include data aspects - and SPC will be happy to share the results.

End-user engagement in the LAC region

Most of the technical framework has been established and is working.

The overall plan of activities: September 2022 to June 2024

ACTIVITY	DATE
To finalize engagement of the rest of the data providers identified (ESRI sources spatial information)	December 2022
Continue engagement of new data providers, as much as possible INVEMAR's technical capacity	Permanent / June 2024
Dissemination of OceanInforHUB LAC node use (74th GCFI Conference, SENALMAR, COLACMAR, OTGA, Regional meetings, etc.)	November 2022
Dissemination of OceanInforHUB LAC node use (48th IAMSLIC Conference & 4th Grupo Regional Latinoamericano Meeting, Other regional meetings) OIH Demonstrative workshop (s) (On-line)	October 2022 - March 2023 1st sem 2023
Platform support and maintenance for OIH-LAC node (24/7)	June 2024

The project team will be taking advantage of a large number of regional conferences.

The OIH global team will be translating the materials to Portuguese – so we can make this available to the LAC team. The LAC team will be translating to Colombian sign language, so these can be made available as well.

End-user engagement in the Africa region

In the Africa region, a number of user categories were identified as well as platforms that could be used to engage them.

- ✓ Students and scientists (academic and private sector)
- ✓ Private sector/industry
- ✓ Government agencies/policy makers
- ✓ IOC global and regional programmes
- ✓ IODE National Oceanographic Data Centres (NODCs), IODE Associate Data Units (ADUs) and IODE Associate Information Units (AIUs)
- ✓ UN agencies, International Governmental Organizations (IGOs) and Non-Governmental Organizations (NGOs) industrial and commercial enterprises

- ▪ Science Associations (e.g. WIOMSA)
- ▪ Universities and Research Institutions
- ▪ ODINAFRICA – reactivation, broaden stakeholder group
- ▪ IOCAFRICA sessions/programmes
- ▪ Regional Intergovernmental Organizations and their projects (e.g. African Union Commission,
- ▪ UN COPs (UNEP Abidjan & Nairobi Conventions, UNFCCC-COP27)

Engaging data use and product development will be a focus. ODINAFRICA and WIOMSA meetings will be used among others.

Questions and discussion
It's great to see how the three regions are taking advantage of opportunities to raise awareness of project activities. We need to consider how the win-wins and engagement strategies will be maintained over the long term. It will be useful for partners to know what they can rely on from the IOC, over time. A good example would be a clear relationship between IOC structures / ODINAFRICA and the regional seas organisations, and how the OIH could enhance and support regional environmental cooperation mechanisms. Thematic areas could also be an opportunity, such as the link between IOC and the EU for Marine Spatial Planning.

End user engagement should not only be with potential partners and data providers, but also data consumers.

SPREP is the regional seas secretariat for the pacific region, and the information required to report on regional seas obligations is often lacking or sparse. There is an opportunity there for collaboration – between this work and SPREPs role as the regional seas representative for the pacific region.

Action: Follow up with SPREP and other regional seas bodies to enhance links

As one of the global users of the system, OBIS is one of the metadata providers, but there is also an opportunity for OBIS to become a user of the system – and having a filter on the OBIS page to provide a clearinghouse for biodiversity information coming from OIH: documents, best practices – to go beyond biodiversity distribution data. There will be other opportunities with GOOS biology and the EOV portal as well as the new MarcoBolo Project.

Action: Work with OBIS as a user node as well as a contributor.

There was discussion of the kind of materials (swag) that could be shared with the three regions. Also we could decide what new materials are needed as a priority and who could develop this.

Priority materials:
Stickers (Africa, PSIDS)
Postcards with QR code (Africa)
Pens, possibly with flash drive (PSIDS)
Printed brochures (Africa, PSIDS)
Bottles (PSIDS)

POGO has moved away from printing lots of brochures, and instead do online brochures and they print a postcard with a QR code (easier to send and distribute). Similarly, logo and QR code on a sticker would be very useful.

Action: Awareness materials to be developed as required; postcards with QR codes and stickers are a priority.

For PSIDS, it would be important to target a large regional event and to have some side events for marketing / launch.

Discussion about the matchmaking service, mentioned as a deliverable for the project (human brokering and assisting end users with capacity development related queries). At this stage, that is being addressed through the identification of specialists in certain fields – people and institutions, and also through the discovery of training opportunities. All those resources are discoverable through OIH. Eg if someone were interested in sharks in a certain region – they would be able to search and find people, institutions, documents, data etc. There is also a human brokerage service which may still need to be addressed – end users might need to be assisted to find certain information. This might also help the design of the system; if certain questions are FAQs they can also be used to guide the design of the automated system. We will be able to track search terms and the country of origin; so we will be able to track quick searches are being made.

For PSIDS, OIH is already helping with the data brokering role in establishing a data curation position. This will largely be to work with our users to decide what data they need to expose in the portals we are building for them. User engagement is critical to understand what questions they are asking and what tools need to be provided in the portals that are being built. It's also really important to get that feedback loop closed and to feed back into the ODIS architecture design.

Addressing the human brokerage and how to get scientific information to decision makers in a format they can understand: requirements could be built into ODIS-arch to ultimately reduce the burden of doing this on a project by project basis. Tracking what people is searching for is another indicator for matchmaking: are they finding what they are looking for? If not, what can be changed to ensure that this happens.

12. Election of the chair

Harrison Ong'Anda noted his availability to stand for the next inter-sessional period. Lucy Scott thanked Harrison for chairing the project over the last year and reiterated his availability to continue. A call was made for any volunteers to co-chair with Harrison, but none were received so Harrison Ong'Anda was elected for another term.

13. Next meeting: Fourth Session of the SG-OIH

We hope to have another face-to-face or hybrid meeting next year in ±September / October. Hopefully we will have the results of the evaluation ready well in advance of that.

Action: If there are any proposals for changes to the project, or key issues that need to be discussed, information should be shared together with the agenda of the SG meeting ± one month in advance of the next meeting.
A suggestion was made to look at other events around that time to see if we could possibly hold it B2B.

Action: all participants will be requested to share a list of meetings, either for OIH user engagement or to consider for the Steering Group meeting (back-to-back). Note: please avoid the international data week 23-27 October 2023.

Regarding the location, we need to look at participants and then do a cost assessment of the destination; Paris might be a cost effective solution.

14. Thanks and close of the meeting

Lucy Scott thanked the Government of Flanders (Kingdom of Belgium) for making the project possible, to the Project Office and especially Sofie, Arno, Kristin and Peter for hosting us, to all of the participants for travelling so far or for joining online. She also thanked the technical teams and the regional teams for their participation.

Ariel Troisi reflected on the progress of the project overall, and how technology development has exceeded expectations. He noted we need to reinforce our engagement with end-users and take their needs into account as far as possible, before broadening the outreach to more public launches. Linkages to the IOC Capacity Development strategy also need to be reinforced; the CHM has been a very long term aim of the IOC and now we are achieving that. He thanked the Government of Flanders (Kingdom of Belgium) for support of the project and also permanent support of the IOC. He thanked the secretariat and the members of the project before declaring the meeting closed.

15. Demonstrations and working sessions

The final day of the Steering group session (25th August 2022) was concerned with informal sessions for each of the three regions, as well as for the global search hub. The time was spent on some technical actions for each of the regions and ongoing work with regional partners.

Africa

The priorities for the coming year will include the new data base for marine related projects, and also other activities in support of ODINAFRICA. It will also be important to hear from policy makers, what information is a priority to them. We need directed awareness to partners, but also general and higher level awareness. Many of the same people and institutions are involved in the same projects, so networking is sometimes informal.

- ✓ Develop new database for marine-related projects.
- ✓ Develop database for research vessels, past & upcoming research cruises in the region, and other ocean observation platforms the database will also comprise of data and information extracted from existing study reports on status of ocean observation platforms and infrastructure, while providing links to major ocean observation platforms in the region and allow for the monitoring of their status.
- ✓ Create a view of the OceanExpert database in the ODINAFRICA portal, which will harvest in real time Africa region-specific experts and institutions from the main Ocean Expert Database.
- ✓ Create a view of the Aquadocs database in the ODINAFRICA portal, which will harvest in real time Africa region-specific ocean-related documents
- ✓ Create standard static web pages for each of the NODCs that link to either the NODC website or to the host institution

- Setup a catalogue service for each database (where they do not already exist), that exposes each record through JSON-LD, to become a node within OIH's ODIS network. (using common catalogue software such as CKAN, GeoNode, pygeoapi, or GeoNetwork, etc.)

Further ways of engaging stakeholders were discussed – including upcoming meetings:

Science Associations (e.g. WIOMSA)

Universities and Research Institutions

ODINAFRICA – reactivation, broaden stakeholder group

IOCAFRICA sessions/programmes

Regional Intergovernmental Organizations and their projects (e.g. African Union Commission,

UN COPs (UNEP Abidjan & Nairobi Conventions, UNFCCC-COP27)

Engagement is a two-way process, also back from stakeholders to the ODIS development. OIH will never be able to serve every stakeholder community; perhaps a use case could be providing quality controlled information to a local or regional actor. We cannot control and continue to drive all levels of supply, but if we focus on our core objectives and deliver useful data, that will drive overall sustainability.

Looking at the technical level, there is also an opportunity to focus on the back end (eg nodes for GBIF) that can be deployed on the local level, behind which is a community of users. So there can also be technical solutions to community building.

PSIDs has had common challenges; we all have a role to play in the value chain and we need to be clear where OIH and ODIS have a role to play in that value chain.

Scarce resources and scare time – piggyback on existing activities that are taking place already. We cannot be all things to all people.

We need to work on engaging with the Nansen and Copernicus.

PSIDS

Currently generating site maps by country, but should split that by topic. Have some challenges in getting consistent metadata. PSIDs already has a technology stack in place, so the challenge is in fitting in with ODIS. Ontologies, data management, ontology development and other challenges. Also working with a high diversity of partners at different stages of technology development. Challenges such as with Google dataset search indexing PSIDs data – all dates changed format so has been a major challenge.

ODIScat and discussion of multiple entries. Follow-up in slack.

One thing PSIDS countries need to know is how much is being invested by major donors, into the Pacific (in various sectors – climate etc). Eg by world Bank, USAID, GEF, GCF, and others.

Action: Would it be possible to extract machine readable data from international funders and produce a product that can be used for reporting. It would be a really useful product that does not currently exist.

This also relates to the Global Ocean Science report which also needs numbers. We haven't yet asked donors, but this could be a very useful extension. IOC could make this available as a

new data type. Useful to also be extended beyond Oceans. Paul Anderson will provide a list of donors (Slack) and Peter Pissierssens can also take up with the IOC. It would also be useful to OTGA to find out how much training a person costs – perhaps also useful for the GOSR.

OceanData-2030 can have a small activity where we engage selected donors to serve this need. Good opportunity for multilateral actors.

Discussion of Derilinx staging site

Comments on the staging site are not saved as actions for the Steering Group meeting report – they will be recorded in the Github tracker

- OE duplicate entries and some are abbreviated, some being re-shared via INVEMAR (this is a graph issue, not for Derilinx).
- Under training 'provider' there are different providers, one is providing the record, and one is providing the training. So we need to make that distinction.
- We need to have a feedback button for people to report unexpected results.
- From OE there should be 500 records for Africa, but nothing shows up in search. They are in global but not in the regions.
- This is an issue with country mapping to regions
- Search should be AND not OR
- Anything with time information should have faceted search for year.
- Too much white space, results page needs to be tightened up
- Should be able to sort (eg documents for most recent)
- Troisi returns an incorrect training record, but this also returned Troisieme
- Are partners listed somewhere? They should be. Each partner could have a dashboard page. We should also be visible as OIH on *partner* websites.
- Plan for March and June 2023, make sure that strange results don't come up
- There will be a continuous stream of requests so we need to manage that somehow.
- How to handle middle names or initials like J / De
- The search must point to the latest / full knowledge graph
- Training course records – provider and author issue
- If metadata are not full – facets will change or disappear
- Pacific SIDS (not small islands)
- Search within results
- Consider a longer retainer contract for ongoing development.
- Noted that this is just a small part of OIH/ODIS, BUT this is how the project is visible. It can be limited in functionality BUT this must be explained.
- We can explain that you can develop your own system.
- Issues that don't return the correct information do need to be fixed.
- Member states will also criticize when their country information is incorrect.
- This portal is a window into what is being shared right now – so in some respects we have limited influence on the results – this can also be explained.
- Further comments will go into the dedicated slack channel
- We will have an issue session in Github for issues to be filed directly.

ANNEX 1

Third Session of the IODE Steering Group for the Ocean InfoHub Project

Final Agenda:

Physical meeting location: Wandelaarkaai 7/61 8400 Oostende, Belgium
Online connection details:
https://us06web.zoom.us/j/84994766928?pwd=WWdDUEpDNnVjbnRiMVkvM0dUZlFDUT09
Meeting ID: 849 9476 6928
Passcode: 016914
Link to recordings for asynchronous viewing [available after 24 hrs]:
https://drive.google.com/drive/folders/1NgefZSiJN5NZOw-LOU_vZ8lrh8DSMbxP

The participants list and available documentation can be found on OceanExpert:
https://oceanexpert.org/event/3573

If you are connecting via Zoom, the meeting will open 20 minutes before the time; please connect early and keep your microphone on mute.
We suggest that you have the latest version 5.11.1 (available at: https://zoom.us/download).
Please note, the meeting will be recorded and made available online, together with all the presentations.

Working language of the meeting: English

Provisional agenda

23 August 2022 (all times in CEST)	
09h30	Arrival on site, tea and coffee
10h30-12h30	Session 1
	Opening of the meeting (Mr Vladimir Ryabinin and Mr Gert Verreet) Administrative arrangements (Ms Lucy Scott) Adoption of the agenda (Mr Harrison Ong'Anda) Overview of the OIH work plan and deliverables (Ms Lucy Scott and OIH team) WP 1 : Project management, coordination and evaluation WP 2 : Technology development
12h30 - 14h30	Lunch
14h30 - 16h00	Session 2
	WP 3 : Establishment and initial support of the global hub and regional nodes WP 4 : Training and Capacity Development WP 5 : Communication, user marketing and feedback
16h00	Tea and coffee

24 August 2022 (all times in CEST)	
09h30	Arrival on site, tea and coffee
10h30-12h30	Session 3
	Budget (Ms Lucy Scott) OIH review/intermediate evaluation and FUST review/evaluation (Mr Gert Verreet) Decade action OceanData-2030 (Ms Lucy Scott) Decade DCO for Data Management (Mr Peter Pissierssens) Report on actions from SG-OIH-2 (Ms Lucy Scott)
12h30 - 14h30	Lunch
14h30 - 15h30	Session 4
	End-user engagement (Ms Lucy Scott and OIH team) Election of the Chair Next meeting: Fourth Session of the SG-OIH Thanks and closing
15h30	Tea and coffee

25 August 2022 (all times in CEST)	
09h30	Arrival on site, tea and coffee
10h30-12h30	Demonstrations and working session
	Africa LAC PSIDS Global Hub Thanks and closing

ANNEX II

Summary of Actions

- We should develop a short text around ODIS, OIH and ODIScat to clarify their relationship.
- Follow up with SPREP and OIH usage to inform State of the Environment reports at national level
- Follow up with OIH integration with the World Ocean Database.
- Follow up with the PSIDs region for examples of decision-grade data or products and formats that decision-makers have requested.
- Develop a communications course or course component that assists existing and potential users and providers – and for managers and decision-makers.
- Consider ODIS training in-person, B2B or as part of an event.
- Consider doing a Global Search Hub pre-launch to get the perspective of the core partners, then consider some dates in 2023 to have a launch event, at IODE-27 and the associated Conference, with a sales desk for more information and to get more partners involved. Also consider an event at the IOC Assembly in June.
- Lucy to email all participants for ideas of dates and events where OIH may be present.
- Project evaluation: We should develop a short ToR for the self-evaluation, and establish a small group of colleagues that could work on the ToR and help with the self-evaluation.
- In the list of contributions from the Ocean InfoHub to the Ocean Decade, include a reference to the IOC strategy on capacity development and knowledge transfer.
- Make presentations and project materials (brochure and final video) available to project partners.
- Lucy to follow up with Jan-Bart regarding the Corporate Data Group
- Together with SPC and SPREP, develop some materials that we could demonstrate at a new 5-country project meeting; early 2023; what OIH is doing and some critical features.
- Follow up with SPREP and other regional seas bodies to enhance links
- Work with OBIS as a user node as well as a contributor.
- Awareness materials to be developed as required; postcards with QR codes and stickers are a priority.
- If there are any proposals for changes to the project, or key issues that need to be discussed, information should be shared together with the agenda of the SG meeting ± one month in advance of the next meeting.
- All participants will be requested to share a list of meetings, either for OIH user engagement or to consider for the Steering Group meeting (back-to-back). Note: please avoid the international data week 23-27 October 2023.
- Would it be possible to extract machine readable data from international funders and produce a product that can be used for reporting. (Follow up PA, LS, PLB and PP)

ANNEX III

LIST OF PARTICIPANTS

Event: **3rd Steering Group meeting of the Ocean Infohub project [hybrid]**
Dates: 2022-Aug-23 to 2022-Aug-25
(v) indicates online participation

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