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OCEAN PREDICTION  
ENHANCEMENT IN  
REGIONS OF AFRICA



**IOC's Sub-Commission for Africa and the Adjacent  
Island States (IOCAFRICA).**

**Data Resources**

**John Ngatia**

**IOC Sub Commission for Africa and the Adjacent  
Island States**



Funded by  
the European Union



UN DECADE  
COLLABORATIVE  
CENTRE



2021  
2030 United Nations Decade  
of Ocean Science  
for Sustainable Development



**MERCATOR  
OCEAN**  
INTERNATIONAL



# IOC's Sub-Commission for Africa and the Adjacent Island States (IOCAFRICA).

## Data Resources

John Ngatia Ndarathi



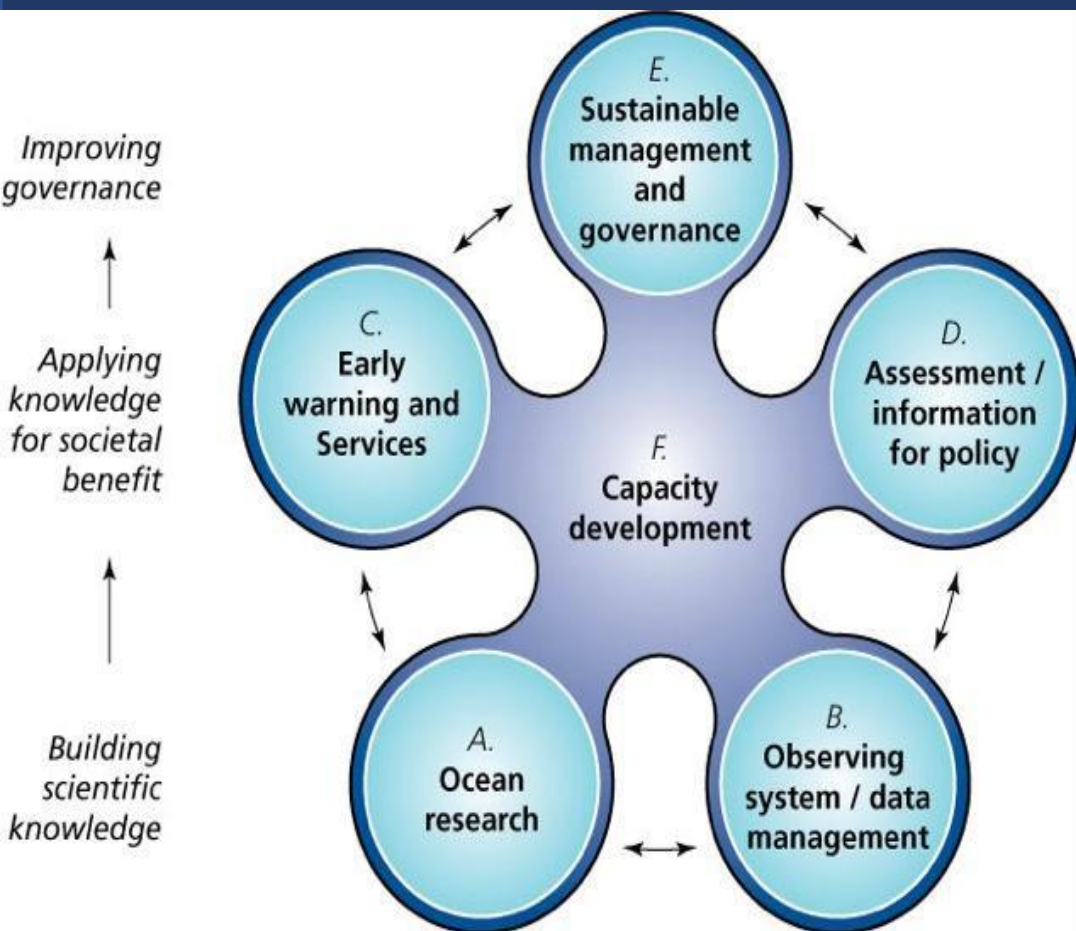
United Nations  
Educational, Scientific and  
Cultural Organization



Intergovernmental  
Oceanographic  
Commission

# The Intergovernmental Oceanographic Commission (IOC) of UNESCO, 1960->, 150 Member States

- Intergovernmental body of the UN system for **ocean science, observations, data exchange, services, capacity development, and science-to-governance work**



- A. Foster research to strengthen knowledge of ocean and coastal processes and human impacts upon them [Ocean research]
- B. Maintain, strengthen and integrate global ocean observing, data and information systems [Observing system / data management]
- C. Develop early warning systems, services, and preparedness to mitigate the risks of tsunamis and ocean-related hazards [Early warning and services]
- D. Support assessment and information to improve the science-policy interface [Assessment and Information for policy]
- E. Enhance ocean governance through a shared knowledge base and improved regional cooperation [Sustainable management and governance]
- F. Develop the institutional capacity in all of the functions above, as a cross-cutting function [Capacity Development]

# Key Regional Challenges

IOCAFRICA  
Sub-  
Commission  
sessions

Regional Gap  
Analysis

Regional  
Decade  
Consultations

(i) Need for an improved focus on user-driven data;

(ii) Challenges in data sharing related to a lack of common platforms & services, or incompatible metadata and data formats

(iii) Lack of standardized policies in relation to open access data;

(iv) Technical capacity and resource limitations; and

(v) Lack of trust between organizations to share data.

## Solutions:

- Streamlining data access, management, and SAFE sharing in IOCAFRICA and the Regional Decade (Work) Plans
- Reviving / Strengthening Data Networks in the Region, including ODINAFRICA
- Capacity Building to enhance data SAFE and FAIR Data practices in the region

# Solutions: Data in the Regional Decade Plan

## Science and Knowledge for a Resilient and Sustainable Ocean Economy in Africa (SEAWARD Africa)

Sustainable  
Management  
of Marine  
Resources

Climate  
Change  
and Marine  
Biodiversity

Tackling  
Ocean  
Pollution for  
enhanced  
human  
health

Extreme  
Events and  
Disaster  
Risk  
Reduction

*ENABLERS: 1. Capacity development 2. Technology Innovation and Blue entrepreneurship 3. Knowledge generation and dissemination 4. Ocean Literacy*

**Ocean observations including data and information (Physical, Chemical, Biological, environmental, Social-Economic)**



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Flanders  
State of the Art



## Solutions: Data in the Regional Decade Plan

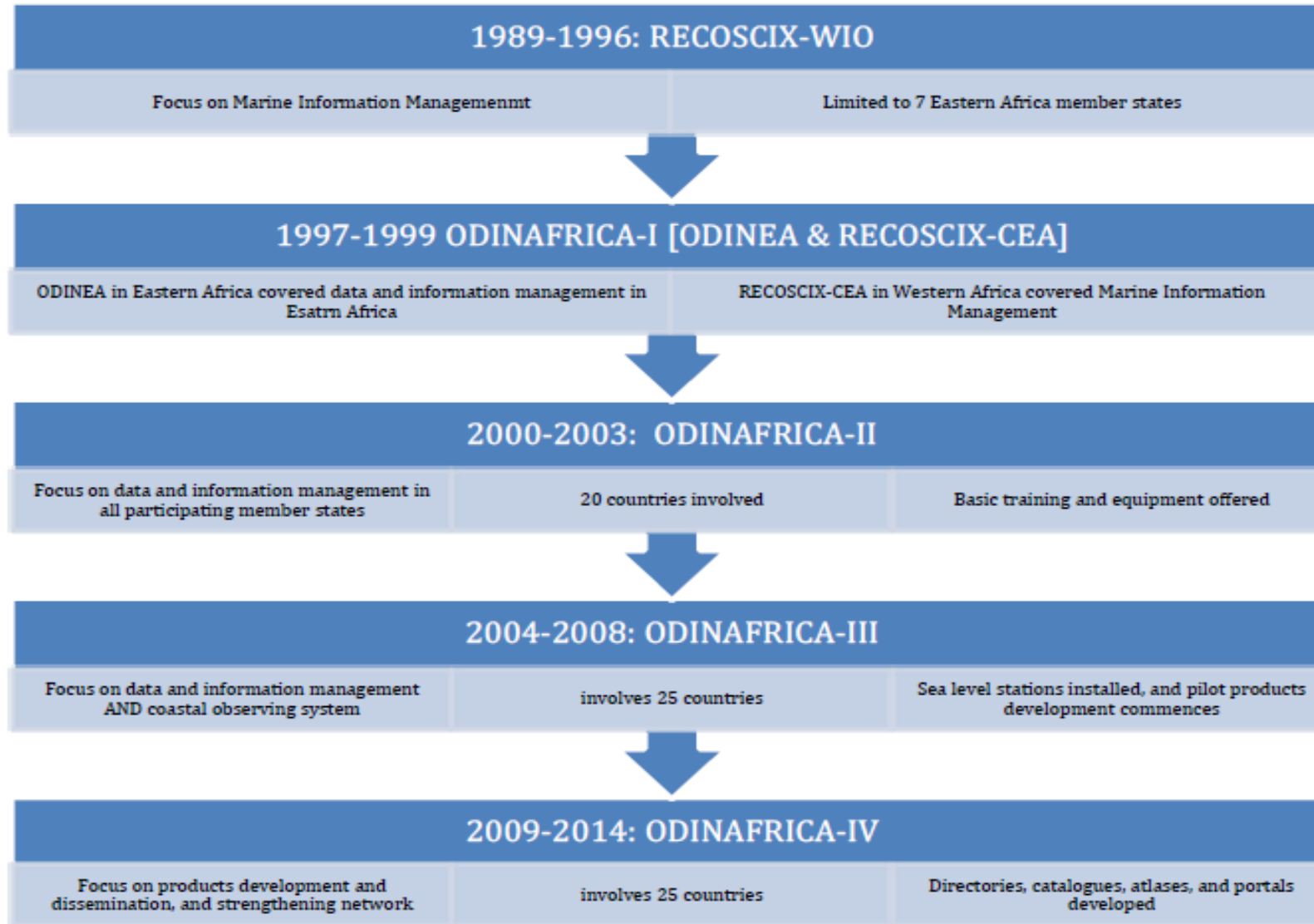
Outcome 9: Knowledge management in African coastal and adjacent island states is coordinated and harmonized through existing platforms and the development of new common platforms, facilities and infrastructure where needed to facilitate and promote open and unrestricted access to data and knowledge products required for the development and management of sustainable ocean economies.

Output 9.1: Harmonized data quality standards, metadata formats and data sharing protocols developed to facilitate sharing of data both regionally and globally.

Output 9.2: Common platform(s), facilities and infrastructure to collate and allow access to data and sharing of knowledge generated by African research institutes, universities, observatories, associations, NGOs and commercial organizations established.

Output 9.3: Capacity to manage databases and knowledge and to access the platforms and technology used to generate it developed and/or strengthened.

# Solutions: Revitalizing ODINAFRICA

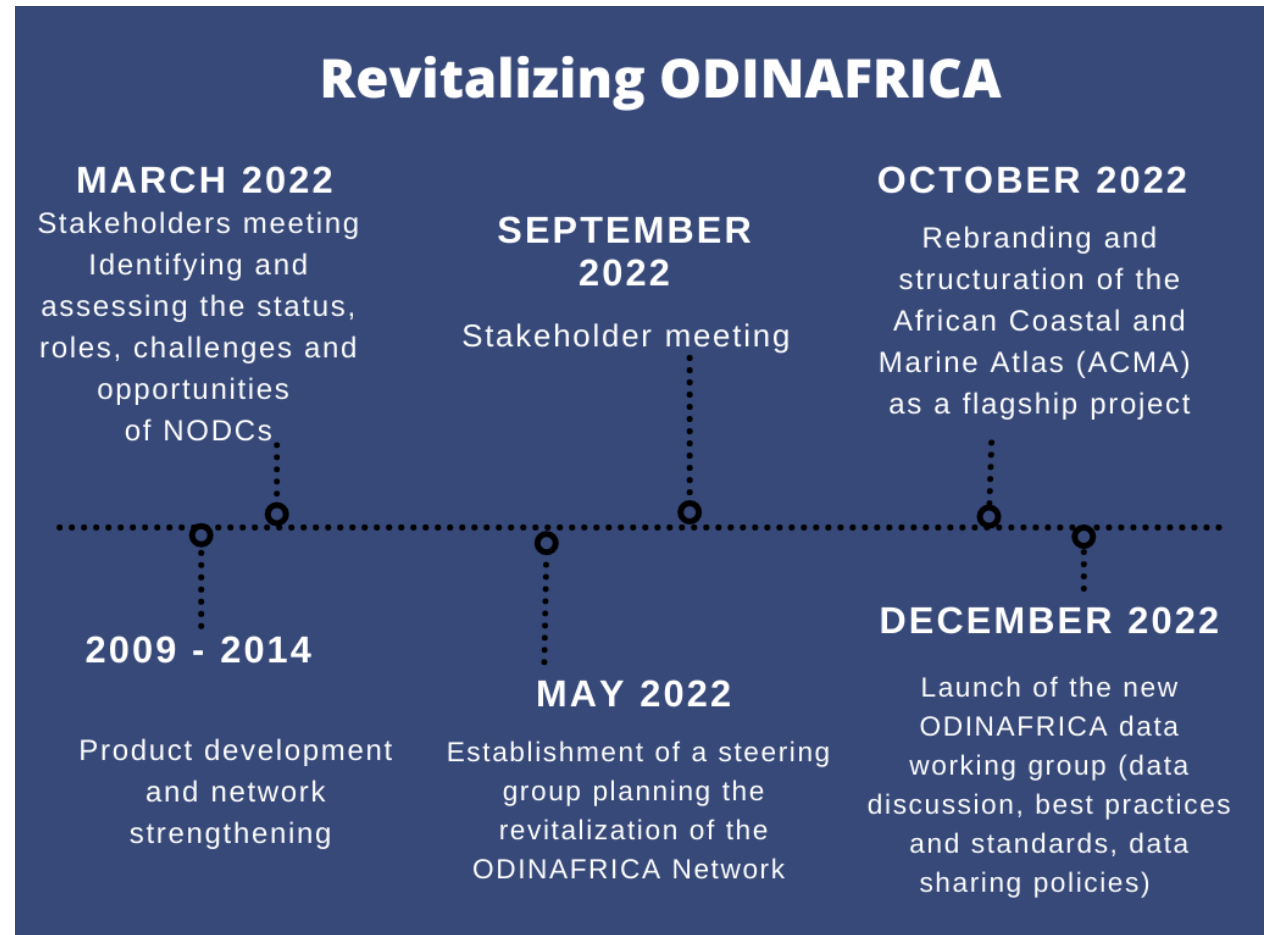


Evolution of the ODINAFRICA network..1989 - 2014

# Solutions: Revitalizing ODINAFRICA

Resolutions from the first ODINAFRICA reactivation workshop:

- Setting up a working group / steering team to guide the revitalization of ODINAFRICA and develop a comprehensive strategy for the reactivation of the network,
- Conducting a detailed inventory (human and infrastructural capacities) of National Oceanographic Data Centers (NODCs) as well as other centers that would be potentially suitable to implement the activities of ODINAFRICA,
- Developing a flagship project for the revitalized ODINAFRICA network



# A revitalized ODINAFRICA: Strategic Elements

Improved access to data and information, to facilitate better understanding and management of the marine environment

(i) Establishing and advancing the development of a regional 'digital twin' for Africa

**3 Targets, 4 Objectives,**  
Algorithms Dvpt, Capacity Building, Partnerships

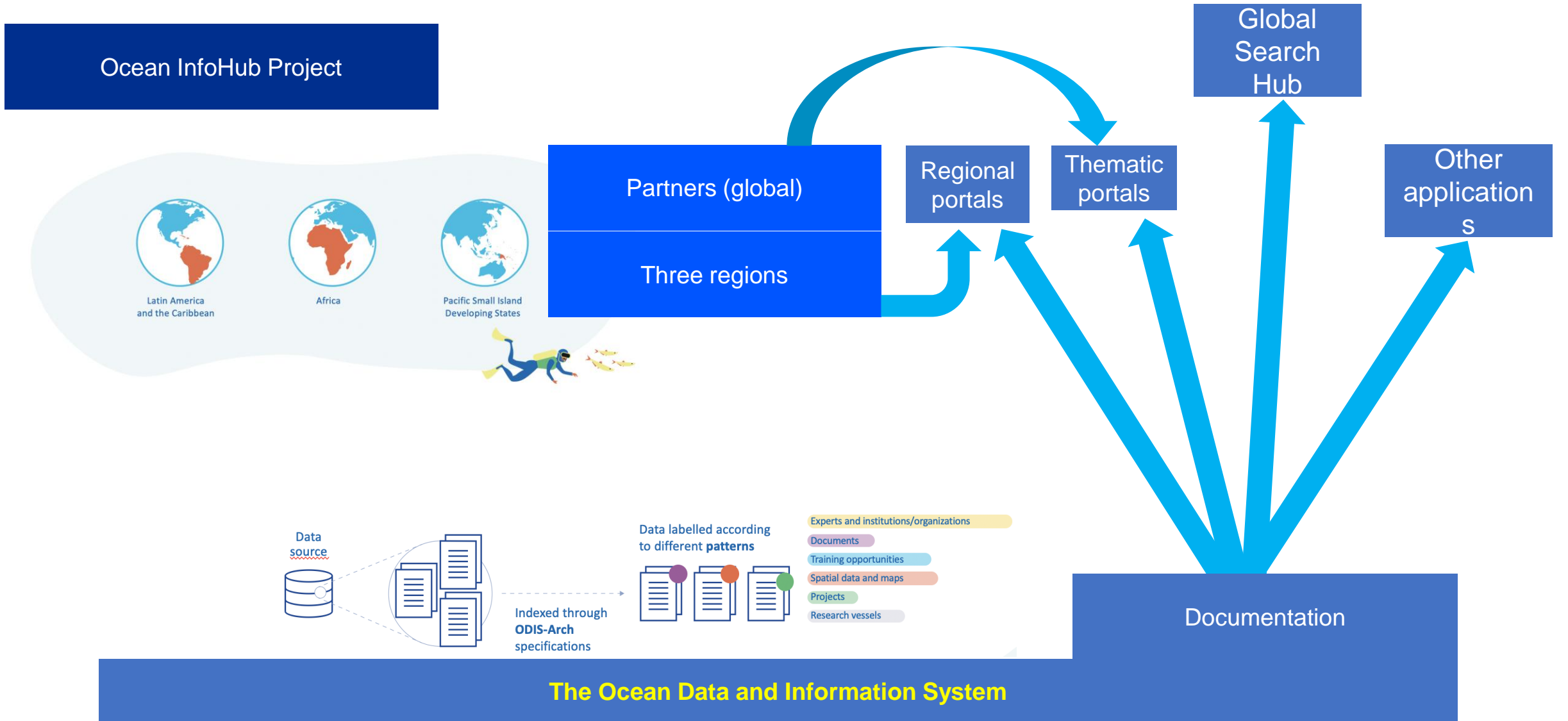
(ii) Establishing ODINAFRICA as the African regional node for the Ocean Data and Information System (ODIS)

**4 Targets, 5 Objectives**  
(Interoperability, data base development, enhancing data access, partnerships, CB)

iii) Ensuring capacity development for safe and efficient ocean data gathering, quality control, processing, summarization, dissemination, and preservation of data generated by national and international agencies

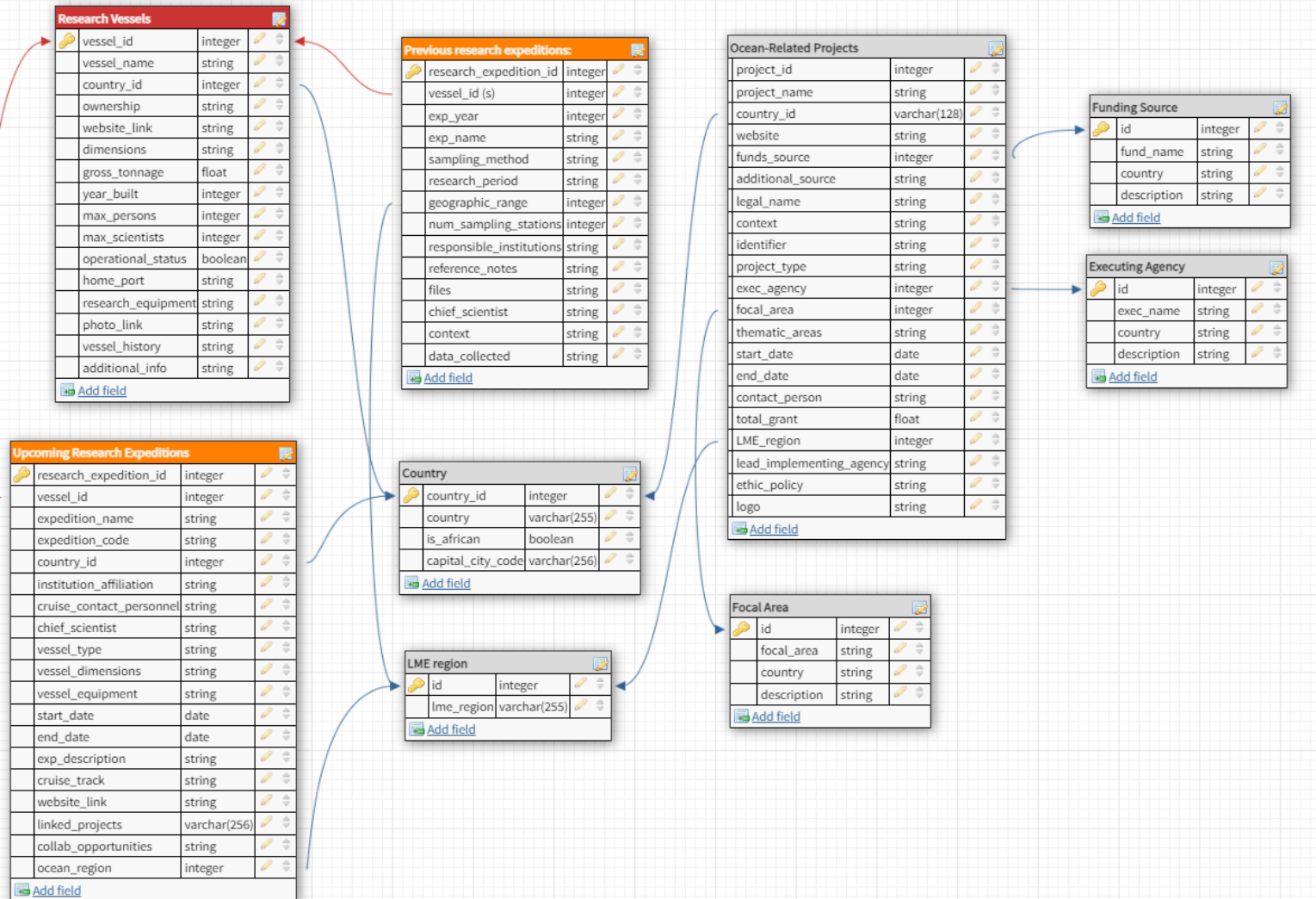
**4 Targets, 5 Objectives:**  
Reactivating NODCs, Acquisition and maintenance of requisite data equipment for NODCs, Development of standards / guides, Capacity Building

# Progress: portals and exchange of D&I



# Progress: Regional Node: DATA /WEB / DATA INTERCHANGE

<https://ioc-africa.org/dbs/displayData.php>



## INDEX PAGE:

- ✓ Ocean-related Projects
- ✓ Past research expeditions
- ✓ Upcoming expeditions
- ✓ Research vessels
- ✓ Ocean documents
- ✓ Link to OceanExpert

## Specific Links

Data	Entries	Source
Marine-related projects	240	IOCAFRICA-OIH Portal <a href="https://ioc-africa.org/dbs/displayData.php">https://ioc-africa.org/dbs/displayData.php</a>
Research vessels	28	IOCAFRICA-OIH Portal
Past Expeditions	127	IOCAFRICA-OIH Portal
Upcoming Expeditions	2	IOCAFRICA-OIH Portal
OceanExpert:		Link to OceanExpert
• Experts	2702	<a href="https://oceanexpert.org/">https://oceanexpert.org/</a>
• Institutions	628	
Documents	5252	ODINAFRICA Link to Aquadocs <a href="https://aquadocs.org/handle/1834/1337">https://aquadocs.org/handle/1834/1337</a>
Ocean Observation Platforms	-	ODINAFRICA Linked to JCOMMOPS and GLOSS
Training and research opportunities	278	<a href="https://africa.marinettraining.org/map">https://africa.marinettraining.org/map</a>
Spatial Data	218	ACMA <a href="https://acma.africanmarineatlas.org/catalogue/#/search/?f=dataset">https://acma.africanmarineatlas.org/catalogue/#/search/?f=dataset</a>



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## Progress: End-User Engagements

- ✓ Share information on regional initiative for data and information management and data infrastructure development in Africa
- ✓ Identify existing data and information infrastructures that could be potential partners with the ODIS
- ✓ Identify existing data and information infrastructure that addresses 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 OIH initiatives
- ✓ Discuss the way forward for collaboration mechanisms, and review progress in implementation



## Enhancing Linkages and Interoperability of Marine Data in Africa NODCs

### Outcomes of the Session

1. Outline of diverse data themes among NODCs –
  - Documents,
  - Experts,
  - Ocean Observations – Physical, Chemical and Biological parameters
  - Marine Species including fish
  - Geospatial Data
2. Description of existing data sharing practices (opportunities and challenges)
  - Active exchange with other NODCs and other institutions
  - Specific metadata formats.
  - Sharing protocols (use of persistent and unique DOIs).
  - Use of standardized classifications and vocabularies.
  - Open data formats and standard interfaces.
  - Many databases are hosted and backed up on local PCs and servers



## End-User Engagements : OIH 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
- Representatives added to WP2 for the development of the ODIS-architecture (Continuous)



## Next Steps / Opportunities for Collaboration

<a href="#"><u>Mauritania</u></a>	<a href="#"><u>Seychelles</u></a>	<a href="#"><u>Egypt</u></a>	<a href="#"><u>DR Congo</u></a>	<a href="#"><u>Comoros</u></a>
<a href="#"><u>Mauritius</u></a>	<a href="#"><u>South Africa</u></a>	<a href="#"><u>Gabon</u></a>	<a href="#"><u>Côte d'Ivoire</u></a>	
<a href="#"><u>Mozambique</u></a>	<a href="#"><u>Sudan</u></a>	<a href="#"><u>Ghana</u></a>	<a href="#"><u>Congo Brazzaville</u></a>	
<a href="#"><u>Namibia</u></a>	<a href="#"><u>Tanzania</u></a>	<a href="#"><u>Guinea</u></a>	<a href="#"><u>Angola</u></a>	
<a href="#"><u>Nigeria</u></a>	<a href="#"><u>Togo</u></a>	<a href="#"><u>Kenya</u></a>	<a href="#"><u>Benin</u></a>	
<a href="#"><u>Senegal</u></a>	<a href="#"><u>Tunisia</u></a>	<a href="#"><u>Madagascar</u></a>	<a href="#"><u>Cameroon</u></a>	



# Next Steps / Opportunities for Collaboration

## 1. Enhance Capacity development:

- ✓ Data processing, sharing,
- ✓ Manage databases,
- ✓ Knowledge to access the platforms t
- ✓ Technology used to generate platforms.

## 2. Digital twin for Africa –

Establishing an African Ocean Knowledge Hub

For centralizing marine data, modelling and simulations with artificial intelligence (AI) algorithms, specialized tools, and best practices.

In line with the Decade Road Map for Africa, the ODINAFRICA reactivation Plan and within the framework of The SEAWARD programme

OPERA to specify Metadata formats

Link to ODIS network (propose via African Node)

Capacity Development - Ask to align with IOCAFRICA plans