Establishing and operating an Ocean Data Interoperability Platform – ODIP

EU – US – Australia cooperation

By

Helen Glaves – NERC- BGS
ODIP Coordinator
&
Dick M.A. Schaap – MARIS
ODIP Technical Coordinator

Supported by the European Commission

Rationale

- A very wide range of oceanographic and marine data
- Collected by thousands of organisations around the world
- Using a wide array of instrumentation and platforms
- Very considerable costs (e.g. in Europe 1.4 Billion Euro per year)

=> capture once – use many times

=> Strong need for a robust operational infrastructure for the management and exchange of ocean and marine data

E-infrastructure

- Should be based upon internationally agreed standards, covering data quality, and long term stewardship as well as technical and semantic aspects of interoperability.

- Great progress is being made with developing and establishing well founded and structured ocean and marine data infrastructures in many regions, including the European Union, the USA, Australia and elsewhere.

- International organizations such as UNESCO‘s Intergovernmental Oceanographic Commission (IOC) and its IODE programme are promoting and supporting the development of such e-infrastructures.

EU Developments

- **SeaDataNet:** leading network actively operating and further developing a pan-European infrastructure for managing, indexing and providing access to ocean and marine datasets and data products, acquired from research cruises and other observational activities in European marine waters and global oceans. Lead by NODCs from 35 coastal states bordering the European seas and including IOC-IODE, ICES and EU-JRC in its network.

- **Geo-Seas:** adopting and adapting SeaDataNet standards and infrastructure for discovery and delivery of marine geological and geophysical data from 26 data centres from 17 states.

- **EMODNet -** European Marine Observation and Data Network - EU initiative - EU Marine Strategy Framework Directive (MSFD). Must become a network of existing and developing European observation systems, linked by a data management structure covering all coastal waters, shelf seas and surrounding ocean basins.

EU Developments

- **EUROFLEETS:** enhancing the coordination of the European research vessel fleet and promoting the cost-effective use of these vessels. SeaDataNet standards are adopted to streamline the flow of marine data from the research vessels to the data centres and SeaDataNet infrastructure.

- **JERICO:** Joint European Research Infrastructure network for Coastal Observatories for better coordination between coastal observatories, development of new sensors, and best practice for setting up and operating coastal observatories. SeaDataNet standards and services are adopted for managing the stream of real-time data from sensors to the MyOcean forecasting services and the SeaDataNet data centres.

- These result in **standards** for the formats of metadata, data, and data products, quality control methods and common vocabularies.

- **Services** for data discovery, viewing and downloading, and **software tools** for data editing, conversions, communication, analysis and presentation

- The extensive range of data types in the marine domain and adoption and customisation of upcoming new basic standards (ISO, OGC, ..) provide more challenges for establishing standards.

USA Developments

- **R2R** - Rolling Deck to Repository program aims to develop comprehensive fleet-wide management of underway data for the U.S. academic research fleet to ensure preservation of and access to these ational oceanographic research data resources.

- **MMI -** Marine Metadata Interoperability project. Its goal is to promote collaborative research in the marine science domain, by simplifying the complex world of metadata into specific, straightforward guidance.

- Quality Assurance of Real-Time Oceanographic Data (**QARTOD**) is a continuing multi-agency effort to address the quality assurance and quality control issues of the Integrated Ocean Observing System (IOOS) community.

- **UNIDATA -** is a diverse community of education and research institutions vested in the common goal of sharing data, tools to access the data, and software to analyze and visualize the data. UNIDATA provides a rich set of services and tools.

USA Developments

- **US IOOS -** Integrated Ocean Observing System. To advance the utility of marine observations by creating a system to rapidly and systematically acquire and disseminate ocean, coastal, and Great Lakes data and data products to meet critical societal needs.

- **US NODC** - the National Oceanographic Data Centre is one of the national environmental data centres operated by NOAA.

- The **NGDC** - the National Geophysical Data Centre is also operated by NOAA. This serves as national repository and dissemination facility for global geological and geophysical data.

=>Just like in Europe, all these developments result in establishing US standards, protocols, services and tools for ocean and marine data management. Also many developments are underway, because new basic standards such as from ISO and OGC are coming up, demanding customisation for the ocean domain.

Australia Developments

- **AODCJF** - Australian Ocean Data Centre Joint Facility provides a whole-of-government approach to ocean data management that aims to develop a national multi-agency data management system to manage the ocean data resources of the partner agencies through a distributed network (**AODN)**

- **IMOS** - Integrated Marine Observing System is designed to be a fully-integrated, national system,observing at ocean-basin and regional scales, and covering physical, chemical and biological variables.

Global development

- The **UNESCO Intergovernmental Oceanographic Commission - IOC** operates the **International Oceanographic Data and Information Exchange - IODE** programme to facilitate and promote the exchange of oceanographic data and information; and to develop standards, formats and methods for the global exchange of oceanographic data and information;

- IODE is developing the **Ocean Data Portal** to facilitate and promote the exchange and dissemination of marine data and services on a global scale and through a federated and interoperable network of national and regional data systems.

- The future Ocean Data Portal is considered to be a federating system, interoperating with national and regional systems, such as **US IOOS**, **SeaDataNet**, **Australian Oceans Portal**, and others, and international systems such as the WIS of the World Meteorological Organisation (WMO).

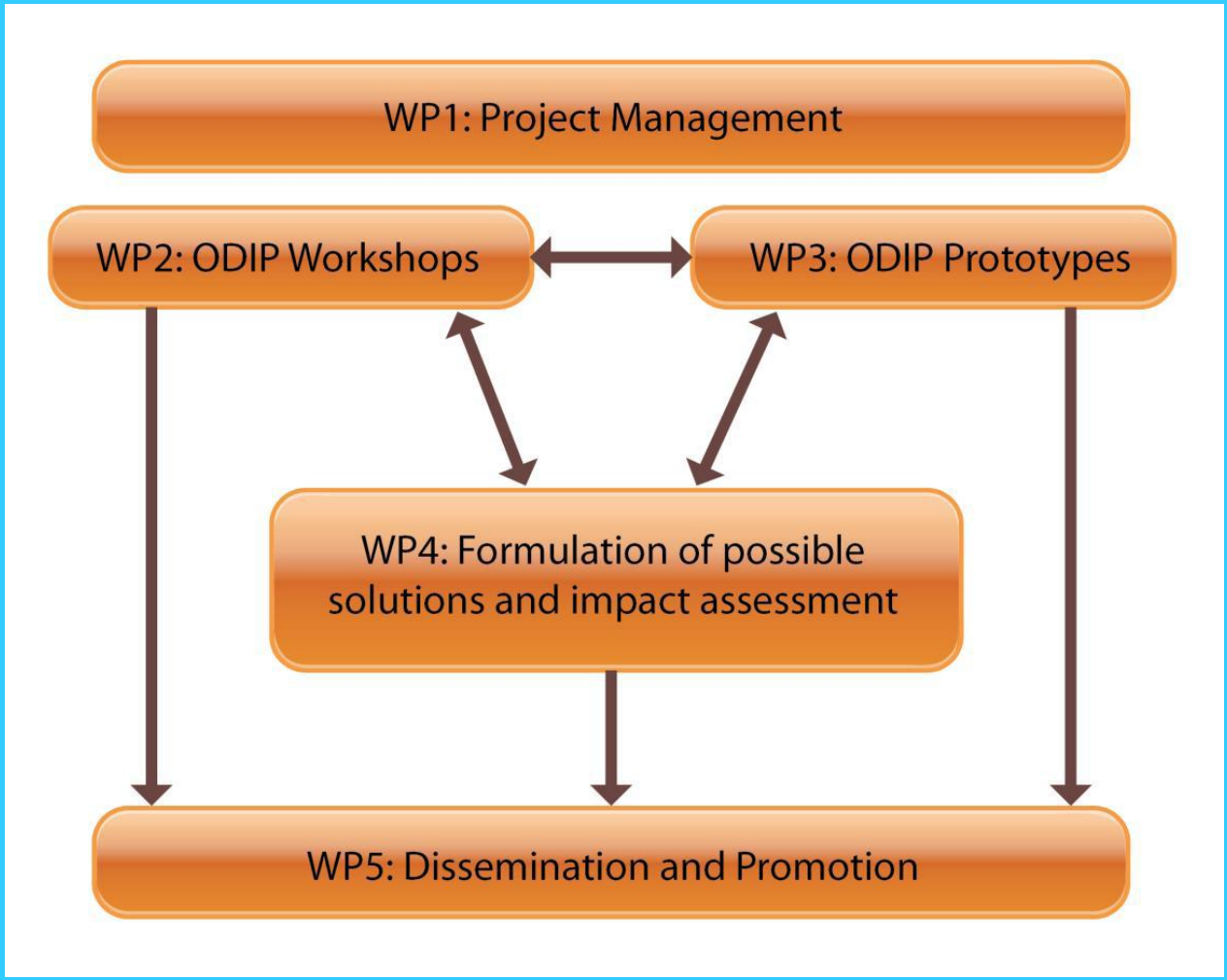
ODIP Overall objective

- to establish an EU / USA / Australia/IOC-IODE coordination platform for achieving the interoperability of ocean and marine data management infrastructures, and to demonstrate this coordination through several joint EU-USA-Australia-IOC/IODE prototypes that would ensure persistent availability and effective sharing of data across scientific domains, organisations and national boundaries.

ODIP Partners

- EU: NERC-BGS, MARIS, OGS, IFREMER, HCMR, ENEA, ULG, CNR, RBINS-MUMM, TNO
- USA: San Diego Supercomputer Center, Scripps Institution of Oceanography, Woods Hole Oceanographic Institute (WHOI), UNIDATA, Lamont-Doherty Earth Observatory (LDEO), NOAA US-IOOS, NOAA US-NODC, NOAA NGDC, Florida State University - Center for Ocean-Atmospheric Prediction Studies
- AUSTRALIA: University of Tasmania
- UNESCO IOC-IODE

ODIP Workplan



3 YEAR PROJECT

Resulting in common standards, interoperability solutions and items for future joint projects

Extra Synergy

- EUDATA – iCORDI
- DWF
- COOPEUS