



Ocean Data Interoperability Platform

Deliverable D2.2: Minutes of the 1st ODIP Workshop

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Author (s)	Sissy Iona	HCMR
Author (s)	Dick Schaap	MARIS
Author (s)		
Author (s)		
Authorized by		
Reviewer		
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Executive Summary

The 1st ODIP Workshop took place on 25th - 28th February 2013 in Ostend, Belgium at the IODE Programme Office. More than 40 people from Europe, USA and Australia attended including representatives from IODE. In addition to those attending the meeting in person a number of additional participants joined the meeting remotely. The lively discussion and brainstorming took place around six topics that were pre-selected and prioritised by the project partners before the start of the workshop. The main topics addressed were

- Common Vocabularies
- Metadata formats for discovery
- Metadata and data exchange mechanisms
- Data formats
- Observation and Measurements (O&M) metadata formats
- Added value viewing services

This deliverable reports on the organisation, participation and outcomes of the 1st ODIP Workshop. It concludes with a comprehensive list of proposed actions that resulted from the discussions both during the plenary and the concurrent break-out sessions.

These actions will be implemented through the development of a number of prototype solutions as part of the activities of work package 3, and will in some cases, amalgamate a number of the identified actions (with some possible overlap). The actual development of the prototypes will be a joint activity undertaken by ODIP partners that will leverage on the activities of current regional projects and initiatives such as SeaDataNet (EU), IMOS (Australia) and R2R (USA).

To identify the potential synergies between current ongoing projects etc. and the proposed actions resulting from the 1st ODIP workshop, the extensive list of possible actions has been circulated to all ODIP partners in the form of a MS Powerpoint presentation. This document contains a matrix for each topic covering the relevant actions for each with space for the ongoing projects in Europe, the USA and Australia to indicate which, if any of the actions, are relevant to their specific requirements. These matrices are preliminary and partners have been asked to refine them and also confirm that they are of interest to the projects / initiatives in their own regions. Once completed, these matrices will be used as input for preparing a proposal for the development of potential prototype solutions in WP3. This proposal will initially be presented to the ODIP Steering Committee for approval, after which it will be circulated to the entire ODIP partnership in preparation for starting the development of the first set of ODIP prototypes.

The 2nd ODIP Workshop is planned to take place at Scripps Institution of Oceanography, San Diego USA in December 2013. The focus of this meeting will on presenting and discussing the progress of the selected ODIP prototypes under development, but will also include additional areas of interest selected from the original list of topics developed by ODIP partners prior to the 1st workshop with a view to exploring further potential actions and prototypes.



1 Introduction

The Ocean Data Interoperability Platform (ODIP) project aims to establish an EU / USA / Australia/ IOC-IODE coordination platform, the objective of which is to develop interoperability between existing regional marine e- infrastructures to create a global framework for marine and ocean data management, and to demonstrate this coordination through several joint EU-USA-Australia-IOC/IODE prototypes that demonstrate effective sharing of data across scientific domains, organisations and national boundaries.

ODIP will convene four workshops during which the project partners and other invited experts will review and compare existing marine data standards in order to identify major differences between them, and propose how to overcome these through the development of interoperability solutions and/or common standards. Following each workshop the results, conclusions and actions will be input directly into WP3 for the purposes of prototype development.

The 1st ODIP Workshop took place in Ostend, Belgium, on 25-28 February 2013. The meeting was organized locally by the UNESCO IODE project office, based in Ostend.

2 List of Participants

Following the ODIP Kick-Off Meeting in London, United Kingdom a proposed list of topics for the 1st ODIP workshop was compiled in consultation with project partners. The ODIP Steering Committee members then nominated relevant experts who should be invited to the workshop. A list of 75 experts was compiled and e-mail invitations were sent to each including an explanation of the aims and logistics for the workshop. As a result 46 attendees from 10 countries took part 1st ODIP Workshop (12 of them participated remotely by WebEx). They were:

Ward APPELTANS	IODE, Belgium
Robert ARKO	LDEO, United States
Scott BAINBRIDGE	AIMS, Australia
Irina BASTRAKOVA	Geosciences Australia, Australia
Jean-Marie BECKERS	Ulg, Belgium
Sergey BELOV	RIHMI-WDC, Russian Federation
Enrico BOLDRINI	CNR-IIA, Italy
Simon COX	CSIRO, Australia
Karien DE CAUWER	MUMM, Belgium
Paolo DIVIACCO	OGS, Italy
Ben DOMENICO	UNIDATA, United States
Chris EVANS	NERC-BGS, United Kingdom
Mark FILIPIAK	Univ. of Edinburgh, United Kingdom
Janet FREDERICKS	WHOI, United States
Guillaume GALIBERT	IMOS, Australia
Helen GLAVES	NERC-BGS, United Kingdom
Sissy IONA	HCMR, Greece
Adam LEADBETTER	BODC, United Kingdom
Thomas LOUBRIEU	IFREMER, France
Roy LOWRY	BODC, United Kingdom
Angelos LYKIARDOPOULOS	HCMR, Greece
Giuseppe MANZELLA	ENEA, Italy
Gilbert MAUDIRE	IFREMER, France
Stuart MINCHIN	Geoscience Australia (GA), Australia
Stefano NATIVI	CNR-IAA, Italy
Marc NOKIN	IFREMER, France
Peter PISSIERSSSENS	IODE, Belgium
Dick SCHAAP	MARIS, Netherlands
Karen STOCKS	SIO-UCSD, United States
Yvan STOJANOV	MUMM, Belgium
Mickael TREGUER	IFREMER, France
Rob VAN EDE	TNO, Netherlands



Sytze VAN HETEREN	TNO, Netherlands
Matteo VINCI	OGS, Italy

Participating by Webex:

Laura BERANZOLI	INGV, Italy
Kenneth CASEY	NOAA/NODC, United States
Donald COLLINS	NOAA/NODC, United States
Kim FINNEY	AADC, Australia
Alessandra GIORGETTI	OGS, Italy
Margarita GREGG	NOAA/NODC, United States
Daphne JOHNSON	NOAA/NODC, United States
Ana MACARIO AWI,	Germany
Jacqueline MIZE	DOC/NOAA/NESDIS/NODC/NCDDC, United States
Roger PROCTOR	UTAS (IMOS), Australia
Greg REED	Royal Australian Navy, Australia
Shawn SMITH	FSU COAPS, United States

The participants of the 1st ODIP workshop represented a good cross-section of the relevant EU, USA and Australian regional infrastructure projects and initiatives that are stakeholders of the ODIP project. There was also representation from the international IOC-IODE lead Ocean Data Portal (ODP) project.

3 Workshop Agenda

The 1st ODIP Workshop focused on the topics listed below. Each topic was selected following the initial poll among all partners for a prioritized list of discussion topics. An expert for each topic from the three main geographic areas (Europe, USA and Australia) was nominated and selected in consultation with the local representative for each of the regions.

A significant amount of effort went into developing a logical structure for the workshop programme but it was necessary to schedule some topics/discussions to accommodate those people who were participating in the workshop remotely from other time zones. The agenda included an initial plenary session followed by concurrent topic specific break-out sessions. Each topic had a nominated leader; a rapporteur was also selected for each one on the first day of the workshop.

Prior to the workshop each of the nominated experts were tasked with compiling and publishing on the ODIP website relevant documentation from their area of expertise as preparatory material for the workshop participants. They were also asked to prepare presentations on possible common standards and interoperability solutions for the workshop that provided the basis for the discussions. The documentation for the 6 topics as listed for the 1st Workshop is available in the “Workshop” section of the ODIP website (<http://www.odip.eu>).

The final workshop agenda was circulated to all ODIP partners by e-mail before the workshop and also published on the public ODIP website.

Workshop Topics

Topic	Title	Leader
Topic 1	Common Vocabularies	Roy Lowry
Topic 2	Metadata formats for discovery	Enrico Boldrini
Topic 3	Metadata and data exchange mechanisms	Dick Schaap
Topic 4	Data formats	Adam Leadbetter
Topic 5	Observation and Measurements (O&M) metadata formats	Simon Cox
Topic 6	Added value viewing services	Ben Domenico



Agenda

Monday, 25 February 2013

9:30 – 10:00 Registration

10:00- 10:30 Welcome

Peter Pissierssens (IODE)

Workshop logistics

Introduction of attendees

(Name, Country, institution, main responsibility, expectations for this workshop: 30 seconds max.)

10:30 – 11:00 Overview of the ODIP project

Helen Graves (ODIP project co-ordinator)

11:00 – 11:30

Break

Topic 1

11:30 – 12:00 Common Vocabularies
Roy Lowry (EU) & Kim Finney (AU)

12:00 – 13:00 Discussion
Lead by Roy Lowry with Adam Leadbetter (EU), Karen Stocks (USA), Kim Finney (AU) & Simon Cox (AU)

13:00 – 14:00

Lunch

Topic 2

14:00 – 14:30 Metadata formats for discovery
Enrico Boldrini (EU), Irina Bastrakova (AU)

14:30 – 15:30 Discussion
Lead by Enrico Boldrini (EU) with Bob Arko (USA) & Irina Bastrakova (AU)

15:30 -16:00

Break

Topic 3

16:00 – 16:30 Metadata and data exchange mechanisms
Dick Schaap (EU); Guillaume Galibert (AU)

16:30 – 17:30 Discussion
Lead by Dick Schaap (EU) with Bob Arko (USA) & Guillaume Galibert (AU)

Tuesday, 26 February 2013

USA: Rolling Deck 2 Repository (R2R)

Update on R2R: Bob Arko and Karen Stocks

9:00 – 9:30 Overview of the R2R program: products, vocabularies, formats and metadata

9:30 – 10:00 R2R Interoperability and contributions to ODIP

10:00 – 11:00 Discussion: R2R-ODIP collaboration next steps

11:00 – 11:30

Break

Topic 4

11:30 – 12:00 Data formats
Adam Leadbetter(EU), Guillaume Galibert (AU)

12:00 – 13:00 Discussion
Lead by Adam Leadbetter (EU) with Guillaume Galibert (AU) and the R2R team

13:00 – 14:00

Lunch

Topic 5

14:00 – 14:30 Observation and Measurements (O&M) metadata formats
Simon Cox(AU), Paolo Diviacco(EU), Janet Fredericks (USA)

14:30 – 15:30 Discussion
Lead by Simon Cox (AU) with Paolo Diviacco (EU) & Janet Fredericks (USA)



15:30 -16:00 **Break**

Topic 6

16:00 – 16:45 Added value viewing services
Ben Domenico (USA), Thomas Loubrieu (EU), Scott Bainbridge(AU)

16:45 – 17:15 Discussion
Lead by Ben Domenico (USA) with Thomas Loubrieu (EU) & Scott Bainbridge (AU)

USA: NODC

Overview: Margarita Gregg, Ken Casey and Jacqueline Mise

17:15 – 17:35 *Overview of NODC activities including potential contributions to ODIP*

17:35 – 17:45 *Discussion*

Wednesday, 27 February

Australia: IMOS/AODN

Update on IMOS/AODN Scott Bainbridge, Guillaume Galibert and Irina Bastrakova

9:00 -9:30 Overview of the IMOS/AODN program

9:30 – 10:00 AODN Interoperability and contributions to ODIP

10:00 – 10:30 Group discussion of AODN-ODIP collaboration next steps

10:30- 11:00 **Break**

11:00 – 11:30 Overview of interoperability opportunities, low hanging fruit, based on previous sessions

11:30 – 12:30 Discussion

12:30 – 13:30 **Lunch**

Thursday, 28 February

9:00 – 9:30 Overview of ODIP prototype development

9:30 – 10:00 Potential prototype projects

10:00 – 11:00 Discussion

11:00 – 11:30 Break

11:30 – 13:00 Topic break-out sessions: an opportunity for informal topic lead discussions.
(A rapporteur will be nominated for each break-out group at the start of the session)

	Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6
Steering Committee Meeting	Chair: Roy Lowry	Chair: Enrico Boldrini	Chair: Guillaume Galibert	Chair: Adam Leadbetter	Chair: Simon Cox	Chair: Ben Domenico

13:00 – 14:00 Lunch

14:00 – 15:30 Topic break- out sessions (continued)

	Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6
Steering Committee Meeting	Chair: Roy Lowry	Chair: Enrico Boldrini	Chair: Guillaume Galibert	Chair: Adam Leadbetter	Chair: Simon Cox	Chair: Ben Domenico



15:30 – 16:30 Summary for each topic : 10 minutes for each

Topic	Title	Leader
Topic 1	Common Vocabularies	Roy Lowry
Topic 2	Metadata formats for discovery	Enrico Boldrini
Topic 3	Metadata and data exchange mechanisms	Dick Schaap
Topic 4	Data formats	Adam Leadbetter
Topic 5	Observation and Measurements (O&M) metadata formats	Simon Cox
Topic 6	Added value viewing services	Ben Domenico

16:30 – 17:00 Plans for next 9 months including 2nd ODIP workshop

17:00 ***Workshop close***

4 Workshop process and outcomes

Opening of the Workshop

The 1st ODIP Workshop was held on the 25 – 28 February 2013 at the project office for the International Oceanographic Data and Information Exchange (IODE) of the Intergovernmental Oceanographic Commission of UNESCO (IOC). The meeting was opened by Mr Peter Pissierssens, Head of the IOC Project Office for IODE. He welcomed everyone to the meeting and explained the arrangements regarding the video recording of each presentation made during the meeting and the posting of these and the associated slide presentations on-line via the IODE portal following the meeting. This would then allow ODIP partners and external contacts to see all of the presentations from workshop.

The logistical and practical arrangements for the meeting (coffee breaks, lunches, staff to support participants etc.) were then introduced by Ms Kristin de Lichtervelde, Administrative Assistant for the IODE project office.

Mr Dick Schaap (DS), ODIP Technical Co-ordinator, then took the floor to welcome participants on behalf of the co-ordinators. He also explained that Ms. Helen Graves (HG), the ODIP Co-ordinator, would initially be participating in the workshop remotely by WebEx but then join the meeting in person later in the week. It was also noted that there was a good cross section of attendees from around the world including representatives from IODE. DS then invited participants present in the room and also joining on-line to introduce themselves before starting with the agenda.

Overview of the ODIP project

Ms Helen Graves (HG) presented an overview of the ODIP project, its concept, the objectives, activities and structure. HG referred to the IODE involvement and the cooperation with other projects and initiatives such as COOPEUS, iCORDI and the Research Data Alliance (RDA). Finally, she introduced the 1st Workshop and its scope as well as the plans for the next workshop at Scripps Institution of Oceanography in San Diego, USA during the week commencing 2 December 2013. HG mentioned that this week had been chosen as it was the week before the American Geophysical Union conference (also in the USA) and would therefore allow those attending the workshop to travel to both meetings.

Plenary Presentations

The six topics that were discussed during the 1st ODIP Workshop were selected and prioritised by the ODIP project partners following the project kick-off meeting held in London during November 2012. These topics were:

- Topic 1: Controlled vocabularies
- Topic 2: Discovery metadata formats
- Topic 3: Metadata and data exchange mechanisms
- Topic 4: Data formats
- Topic 5: Sensor web enablement
- Topic 6: Added value viewing services

All presentations and associated videos are available at the ODIP website (www.odip.org) under the “Workshops” menu option. The presentations and video's are hosted by IODE at: http://www.iode.org/index.php?option=com_oe&task=viewEventAgenda&eventID=1276. There is also a short link on the ODIP website on the 1st Workshop page at: (http://www.odip.org/content/content.asp?menu=0150000_000000)

Plenary discussions and outcomes

Each topic presented at the workshop was followed by an open discussion session. Experts from Europe, the USA and Australia were selected to lead these discussions (see the “Workshop Topics” section of the agenda); the outcomes of which will be used as input to the development of the prototypes according to the ODIP description of work (DoW).

During the plenary discussions a list of potential subjects was prepared and these were updated every evening by the Technical Coordinator and made available to all workshop participants.

Topic 1: Common vocabularies

- SDN P01 Parameter vocabulary consisting of concatenated terms, following a conceptual model. The number of concepts can be increased considerably, e.g. for water quality and contaminants in biota. There is a need to increase the visibility of the underlying model and make it more accessible. This will make it easier for data centres to map to these vocabularies and also submit new entries, including the possibility of using external vocabularies in components (e.g. WORMS for marine taxonomy)
- SPARQL endpoints allow simultaneously submission of queries to different vocabularies
- SDN P25 or similar can be formulated to mark up Data Products in relation to groups of P01 terms
- NVS 2.0 is important for multiple use operations worldwide
- R2R and EUROFLEETS are developing vessel event logging systems
- There is experience of using SDN vocabs (NVS 2.0) in GeoNetWorks available in the MyOcean project which might be of interest for others
- Controlled vocabularies are also used in sensor web enablement (SWE) e.g. Observation & Measurements and SensorML profiles

Topic 2: Marine metadata formats for discovery

- Europe has SDN CDI; Australia has MCP; US NODC develops US NODC metadata profile (all based upon ISO19115 / ISO19139 standards)
- Europe has SDN CSR; US R2R has CS
- Europe has Sextant metadata profile for describing data products, based upon ISO19115 – ISO19139 and NVS 2.0 vocabs, in use in SeaDataNet, MyOcean and EMODNet

Topic 3: Metadata and data exchange mechanisms

- Europe operates SDN CDI data discovery and access service; Australia operates IMOS service with MCP; US NODC operates service
- Europe has SDN CSR (Cruise Summary Report); US R2R has CS (Cruise Summary); BODC and MARIS operate POGO portal with Cruise Programmes and CSR
- Linked Data Services are becoming important
- Authentication services are used for controlling access to data and thereafter for tracking and tracing of data access and use. SDN uses CAS, but upcoming systems are OpenID and Shibboleth. This is a topic of common interest.

Topic 4: Data formats

- There are various NetCDF (CF) formats in use
- SeaDataNet also makes extensive use of ASCII via the SDN ODV format
- A number of partners deliver large aggregated data sets as data products
- Biology data are more tuned towards use of spreadsheets (note: biology is beyond the ODIP scope)
- Data Brokerage services provide possible solutions for achieving interoperability

Topic 5: Observations & Measurements / SensorML

- Sensor Web Enablement (SWE) offers opportunities for streamlining and better documentation of the flow of data from acquisition to data centres; applications are in an early stage and there is a lot to gain from global cooperation in this area
- SensorML also enables quality and calibration information to be encoded
- Observations & Measurements (O&M) allows additional metadata to be included
- Sensor Observation Service (SOS) is an OGC component of SWE and it is promising for streamlining the flow of data from acquisition to data centres; there are only a few applications currently available and there is a lot of scope for setting practical standards in best practices to encourage common content.

Topic 6: Existing implementations of standards and protocols

- There are various software tools available for visualisation and analysis of data sets, for example ODV used in SDN and IDV used by UNIDATA. There are also Eclipse RCP, service chains, Matlab code
- Data brokerage services are an interesting concept, but might have scalability problems
- Volumes of data are increasing creating big data issues
- Mobile platforms such as smart phones are increasingly used to access data and information services

Break-out Sessions Discussions

Two break-out sessions on topics 1, 2, 5 and 3, 4, 6 respectively, took place on Thursday, 28 February, in order to refine the list of potential actions that have been identified. Each group was tasked to:

- Describe more precisely the actions and expected outcomes of each topic
- Define "who" (projects/initiatives) might be involved
- Give suggestions for prototyping OR exploration of longer-term solutions

This has resulted in a long list of possible actions, which are documented in the next chapter.

5 Extended list of possible ODIP actions

Topic 1: Common vocabularies

Action1-1: Implementation of SPARQL technology and mappings between vocabularies (SKOS):

- Establish further SPARQL end-points for the exposure of controlled vocabularies
- Organise these into a federated network
- Build user-friendly tools to query this federated network
- Setting up a pilot portal with mappings to demonstrate SPARQL

Action1-2: Establishing thesaurus-based semantic aggregation of data marked-up using the BODC/SeaDataNet parameter usage vocabulary (P01)

- Develop a well-governed controlled vocabulary of terms for aggregated data products, with particular reference to EMODNET mapped to P01. (Similar idea to P25 developed for NETMAR.)
- Look for other applications of this approach across the ODIP community

Action1-3: Formally document vocabulary governance within the NERC Vocabulary Server

- Prepare documentation for content management and governance, include tracking history
- Refer to the ISO19135 governance model
- Guarantee sustained service by NERC for at least 10 years

Action1-4: Harmonisation of the conceptual models and controlled vocabularies used for event logging on research vessels with particular reference to Eurofleets and R2R

- Compare and harmonise conceptual models
- Harmonise controlled vocabularies used for events
- Establish governance for these controlled vocabularies

Action1-5: Develop a unified approach to the utilisation of controlled vocabularies under NERC Vocabulary Server governance in GeoNetwork.

Action1-6: Develop a unified approach to the utilisation of controlled vocabularies under NERC Vocabulary Server governance in other metadata standards such as O&M and SensorML

Topic 2: Marine metadata formats for discovery

Action2-1: Analyse interoperability between SDN Common Data Index (CDI) versus Australia Marine Community Profile (MCP) versus US NODC metadata profile:

- Compare formats
- Compare use of vocabularies

-
- Analyse possible mappings of formats and vocabs
 - Analyse interoperability options

Action2-2: Analyse interoperability between SDN Cruise Summary Report (CSR) versus US R2R Cruise Summary (CS):

- Compare formats
- Compare use of vocabularies
- Include analysis of relationships with EuroFleets SSR (Ship Summary Reports)
- Analyse possible mappings of formats and vocabularies
- Analyse interoperability options

Action2-3: Formally document Sextant catalogue service and metadata profile

- Prepare documentation for the Sextant catalogue, including metadata profile, use of controlled vocabularies and governance
- Seek possible interest from US and Australia for joint activities
- Analyse interoperability options
-

Topic 3: Metadata and data exchange mechanisms

Action3-1: Facilitating semantic interoperability by enabling wider adoption of the BODC/SeaDataNet Parameter Usage Vocabulary (P01) by:

- Exposure and utilisation of the underlying semantic model
- Design and deployment of subsets through concept scheme thesauri
- Development of code selection tools incorporating transparent, automated vocabulary extension
- User usage empowerment through education

Action3-2: Establishing interoperability between SDN, IMOS and US NODC Data Discovery and Access services, initially at the metadata level

- Analysis of interoperability at metadata level, considering formats and controlled vocabularies
- Take into account the actions from Topic 1 and 2
- Options for adopting common approaches
- Include potential interoperability with ODP
- Possible alternative solution using the EuroGEOSS brokerage service which allows for harmonising of 3 different inputs into 1 common output

Action3-3: Establishing interoperability between Cruise Summary reporting systems in Europe, US and Australia, also on behalf of POGO

- Analyse interoperability at the metadata level, considering formats and controlled vocabularies
- Take into account actions from Topics 1 and 2

- Possible setting up of GeoNetWork instances in Europe, US and Australia for harvesting and exchanging Cruise Summary reports between regions, supporting global coverage of POGO portal
- Include URLs from CSR to data

Action3-4: Exploring use of OpenID and Shibboleth, their mutual interoperability and also with CAS

- Bring together best practice documentation on CAS, OpenID and Shibboleth
- Use experience from the EU GENESI-DEC project
- Analyse possible bridges
- Analyse support for authentication systems in GeoNetWorks

Action3-5: Learning from R2R (using DERI) by documenting practices and experiences and developing a joint pilot for Linked Data Services.

Action3-6: Share experience with the SCOR/MBL/WHOI/BODC/IODE Joint Project on data publication and its published cookbook

Topic 4: Data formats

Action 4-1: Compare different versions of NetCDF (CF) and establish a common format (point, profile, trajectory, grids (bathymetry), etc.) Note that SDN ODV ASCII format might also be interesting for US and Australian initiatives

Action 4-2: Establishing NetCDF (CF) format for glider data sets (note that comparison between existing glider formats is available)

Action 4-3: Defining an optimum format for delivery of large aggregated data sets, as collection and as grids

Topic 5: Observations & Measurements / SensorML

Action 5-1: Define SensorML profiles for selected instruments, supported by controlled vocabularies, also in cooperation with manufacturers

- Prepare shortlist of instruments
- Make use of experience and contacts with industry from Janet Fredericks on this topic
- Define a number of SensorML profiles
- Use these in a prototype

Action5-2: Defining SensorML profiles for Quality and Calibration

- Make use of experience of US project Quality to OGC
- Extend instrument SensorML profiles from Action 1

- Use these in a prototype

Action5-3: Defining O&M profiles for selected data types, supported by controlled vocabs, thereby also considering ease of population

- Prepare shortlist of data types
- Make use of EU experience with using O&M and SensorML from the Geo-Seas project for seismic data and EuroFleets for instruments on board research vessels
- Define a number of O&M profiles
- Use these in a prototype

Action5-4: Analysis and further development of SOS services for vessels and real-time monitoring systems (SWE)

- Bundle actions 1,2,3 and 4 into the development of a prototype
- Document learning experience, paving the way towards the future
- Promote industry engagement
- Possible prototypes:
 - Glider Management
 - Bathymetry and/or seismic data

Topic 6: Existing implementations of standards and protocols

Action 6-1: Prepare overview of visualisation and analysis software in use and compare features, learning from each other and sharing

- Gather an inventory
- Compare features

Action 6-2: Exploring operation and scalability of Data Brokerage services (e.g. ESSI-Lab Glaxe)

- Reporting on Data Brokerage Service and its scalability as tested in GEOSS (CNR)
- Exploring WPS service chains

Action 6-3: Share experiences on different servers (such as THREDDS) and act as community for further developments

- Gather an inventory of community data models
- Compare features
-

Action 6-4: Share experiences to identify and formulate future joint developments for Big Data

- Prepare list / matrix of data types that might fall under the heading of Big Data
- Share outcome of coming Workshop on Big Data at ESA
- Take stock of best practice

6 Proposed follow-up and approach for the development of the ODIP prototype solutions

The 1st ODIP Workshop has resulted in a long list of possible actions as described in the previous chapter.

The implementation of these actions is planned through the development of a number of ODIP prototype solutions. Each of these sub-projects will bring together a number of the identified actions (with some potential overlap). The actual developments for implementing the prototypes is foreseen as a joint activity between the ODIP participants in co-operation with and leveraging on the activities currently underway in regional projects and initiatives, such as SeaDataNet (EU), IMOS (Australia) and R2R (USA). These regional projects and initiatives are seen as ODIP stakeholders. ODIP will provide a communication and exchange platform where partners can meet, discuss and align their development activities and ensure that results are compatible with the development of the ODIP prototypes. Finding a balance between the requirements of regional initiatives and those of ODIP as well as aligning their development will be a major challenge for ODIP.

To identify the potential synergies between current ongoing projects etc. and the proposed actions resulting from the 1st ODIP workshop, the extensive list of possible actions has been circulated to all ODIP partners in the form of a MS Powerpoint presentation. This document contains a matrix for each topic covering the relevant actions for each with space for the ongoing projects in Europe, the USA and Australia to indicate which, if any of the actions, are relevant to their specific requirements. These matrices are preliminary and partners have been asked to refine them and also confirm that they are of interest to the projects / initiatives in their own regions. Once completed, these matrices will be used as input for preparing a proposal for the development of potential prototype solutions in WP3. This proposal will initially be presented to the ODIP Steering Committee for approval, after which it will be circulated to the entire ODIP partnership in preparation for starting the development of the first set of ODIP prototypes.

The implementation and monitoring of the ODIP Prototypes developments will be carried out through a combination of physical and virtual communication strategies:

- ODIP will implement a collaboration platform on the ODIP website with threads for the selected ODIP prototypes using the COLLA collaborative tool developed by OGS.
- Additional opportunities for ODIP participants to meet will be identified where a number of the ODIP participants are already attending a scheduled event such as the EGU, AGU and IMDIS conferences.

The 2nd ODIP workshop will be held at Scripps Institution of Oceanography, San Diego, USA during the week commencing 2 December 2013. It will focus on presenting and discussing the progress of the selected ODIP prototypes and also include discussions on additional topics previously identified following the ODIP kick-off meeting with the objective of exploring further potential activities and prototypes.

Annex A. Terminology

Term	Definition
CDI	Common Data Index metadata schema and catalogue developed by the SeaDataNet project
COOPEUS	EU-NSF funded project promoting open access and sharing of data and information produced by environmental research infrastructures
CSR	Cruise Summary Reports is a directory of research cruises.
iCORDI	Now renamed RDA-Europe is an international forum driving convergence between emerging global data infrastructures with a particular focus on Europe and the US
GeoNetwork	An open source catalogue application for managing spatially referenced resources. It provides a metadata editing tool and search functions as well as providing embedded interactive web map viewer
IMOS	Integrated Marine Observing System: Australian monitoring system; providing open access to marine research data
ODP	Ocean Data Portal: data discovery and access service, part of the IODE network
IOC	Intergovernmental Oceanographic Commission of UNESCO (IOC/UNESCO).
IODE	International Oceanographic Data and Information Exchange (part of IOC)
ODV	Ocean Data View (ODV) data-analysis and visualisation software tool.
O&M	Observations and Measurements: OGC standard defining XML schemas for observations, and for features involved in sampling when making observations
OGC	Open Geospatial Consortium: an international industry consortium to develop community adopted standards to “geo-enable” the Web
SensorML	OGC standard providing models and an XML encoding for describing sensors and process lineage
SDN	SeaDataNet: EU-funded pan-European e-infrastructure for the management and delivery of marine and oceanographic data



SOS	Sensor Observation Service: a web service to query real-time sensor data and sensor data time series. Part of the Sensor Web
SPARQL	a query language for databases, able to retrieve and manipulate data stored in a Resource Description Framework (RDF) format
SWE	Sensor Web Enablement: OGC standards enabling developers to make all types of sensors, transducers and sensor data repositories discoverable, accessible and useable via the web
R2R	Rolling Deck to Repository: a US project responsible for the cataloguing and delivery of data acquired by the US research fleet.
WebEx	On-line web conferencing and collaboration tool