Ocean Data Interoperability Platform (ODIP) I & II

Collaborative project between Europe, USA, and Australia

FP7 Grant Number: 312492
1 October 2012 – 30 September 2015
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1 April 2015 – 31 March 2018

By Dick M.A. Schaap – MARIS (NL), technical coordinator

E-infrastructures

- A number of regional initiatives have made significant progress in addressing discovery, access, and long term stewardship of ocean and marine data on a regional basis

- ODIP is a community lead initiative to overcome barriers by exploring common standards and interoperability solutions for improving exchange between regional infrastructures and towards global infrastructures such as GEOSS, IODE – ODP, and POGO

AODN

Australia

IMOS

Europe

SeaDataNet

EMODnet
European Marine Observation and Data Network

IOOS® INTEGRATED OCEAN OBSERVING SYSTEM

USA

rvdata.us

Partners

Europe: 19 EU-funded partners (9 countries)

NERC-BGS/BODC, MARIS, OGS, IFREMER, HCMR, ENEA, ULG, CNR, RBINS, TNO, AWI, BSH, RIHMI-WDC, VLIZ, UniHB, CSIC, 52°North, IEEE, SOCIB

Contributors

USA

- Scripps Institution of Oceanography (SIO)
- Woods Hole Oceanographic Institute (WHOI)
- Lamont-Doherty Earth Observatory (LDEO),
- Florida State University (FSU): Center for Ocean-Atmospheric Prediction Studies
- ESRI
- NOAA - NCEI
- US-IOOS
- UNIDATA
- MMI

IOOS® INTEGRATED OCEAN OBSERVING SYSTEM

Contributors

Australia:

- University of Tasmania (IMOS)
- CSIRO
- Geoscience Australia (GA)
- NCI
- ANDS

International:

- UNESCO IOC-IODE
- POGO
- ICSU – WDS
- GEO/GEOSS

Canada

- Ocean Networks Canada

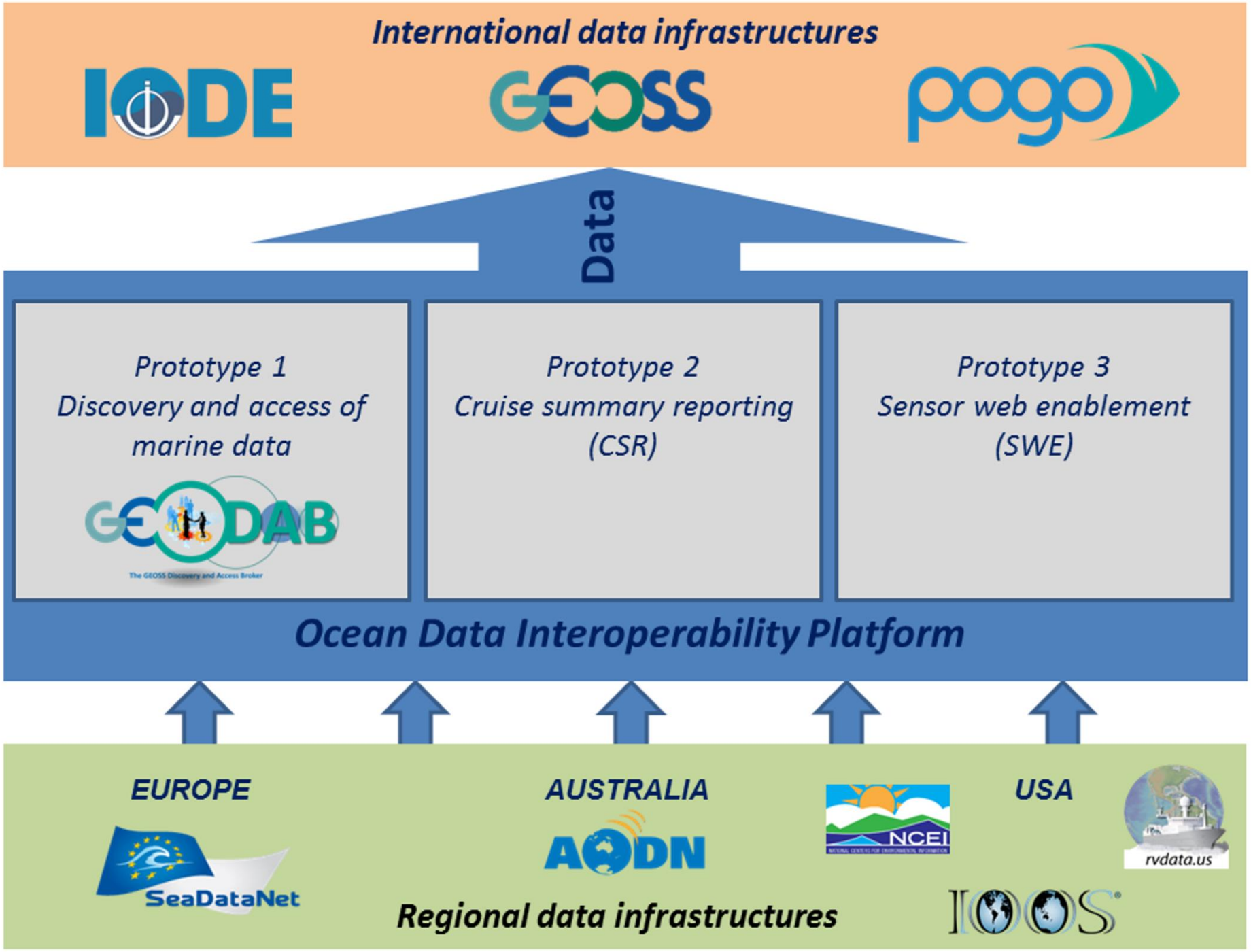
Objectives

- To provide a coordination platform to facilitate the establishment of interoperability between regional data infrastructures in Europe, USA and Australia and also with global systems e.g. IODE Ocean Data Portal, GEOSS, POGO

- To demonstrate this co-ordination through the development of several joint prototype projects that allow effective sharing of marine and ocean data

- To develop these prototype projects by largely leveraging on existing and ongoing regional projects and initiatives

- To promote and disseminate ODIP approach and results widely for further uptake and feedback


International data infrastructures
IODE
GEOSS
pogo
Data
Prototype 1
Discovery and access of marine data
GEODAB
The GEOSS Discovery and Access Broker
Prototype 2
Cruise summary reporting (CSR)
Prototype 3
Sensor web enablement (SWE)
Ocean Data Interoperability Platform
EUROPE
SeaDataNet
AUSTRALIA
AODN
NCEI
USA
rvdata.us
IOOS
Regional data infrastructures

ODIP 1 prototype:

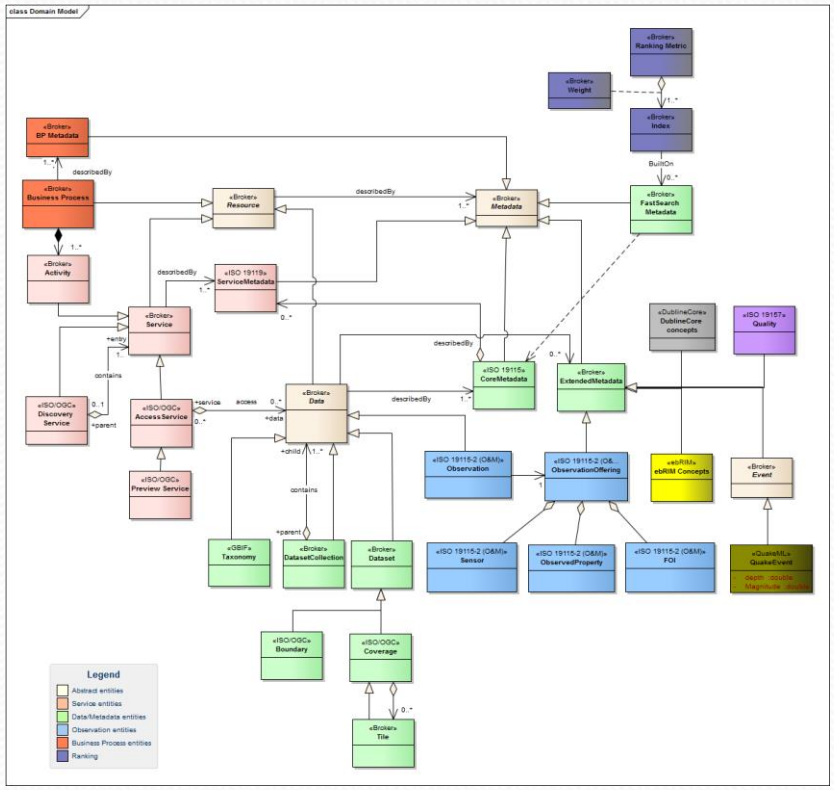
- Establishing interoperability between the SeaDataNet, IMOS and US NODC data discovery and access services using the GEO-DAB brokerage service and interacting with the IODE-ODP and GEOSS portals
- Lead by European partners via SeaDataNet

ODIP Prototype 1 - context

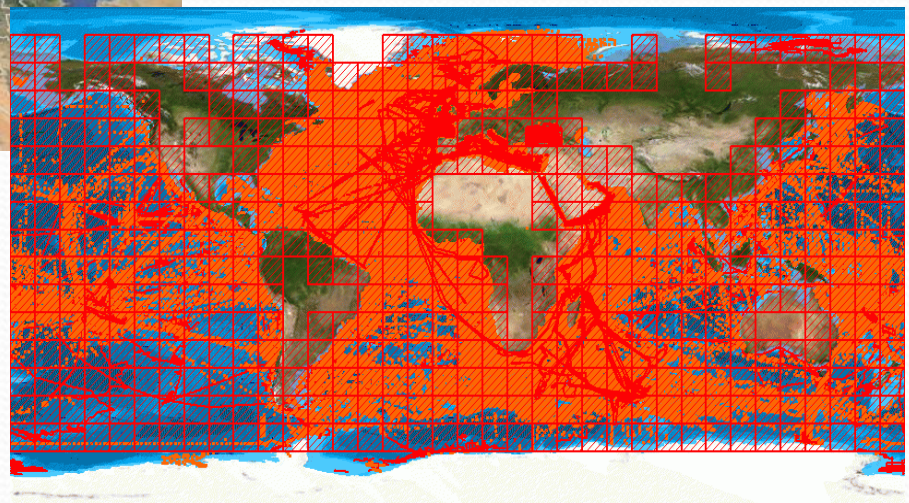
- **Marine Data Discovery & Access services:**
  - Europe: Common Data Index (CDI) service, operated by SeaDataNet
  - USA: Data Discovery and Access service, operated by US NODC
  - Australia: Data Discovery and Access service, operated by AODN
- **Global Data Discovery & Access services:**
  - GEOSS portal
  - IODE Ocean Data Portal (ODP)

GEO-DAB Brokerage service implementation

- The GEO-DAB Brokerage Service at CNR harvests XML entries and converts these following a Generic Brokerage Reference Schema, adopting prevailing vocabs

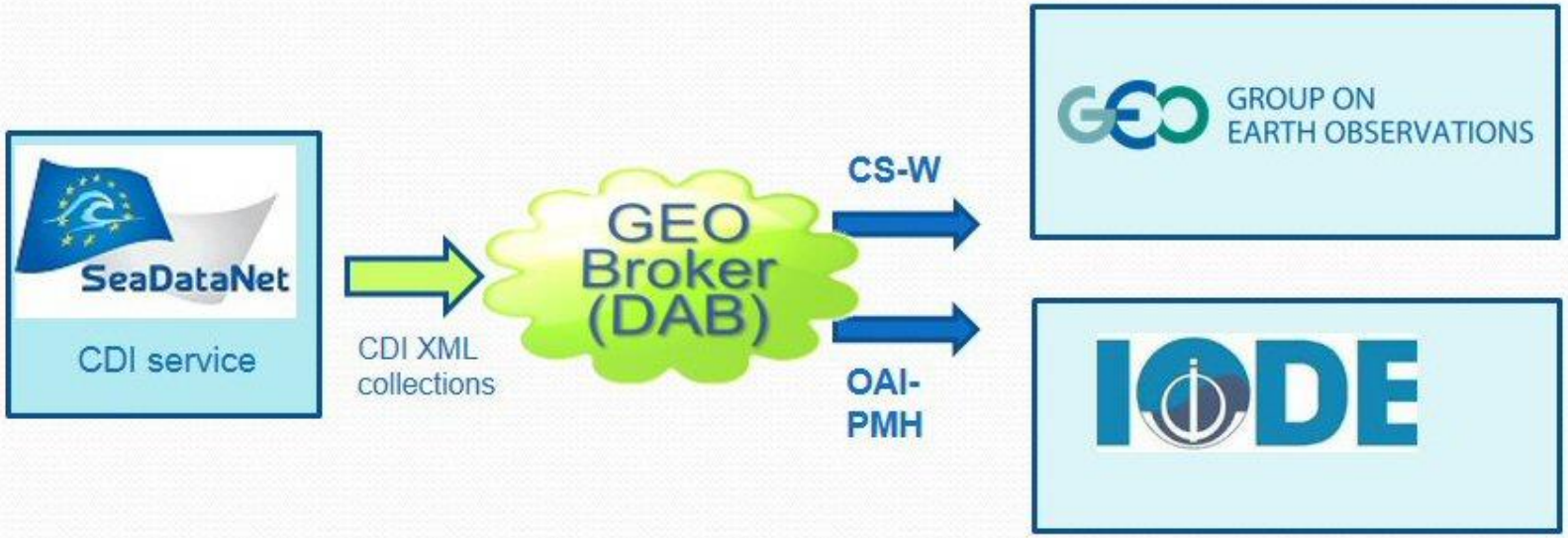


pan-European infrastructure



May 2017: **102** data centres connected; > 1.9 million data sets

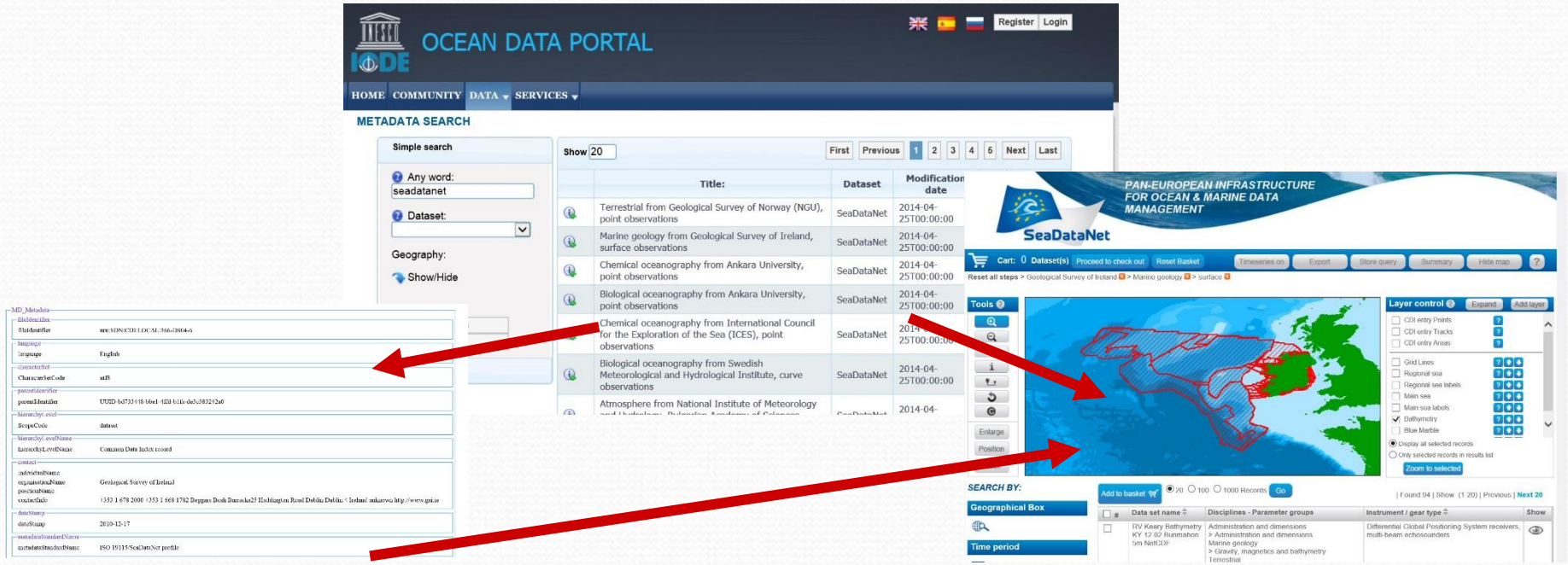
ODIP 1 prototype:



- Aggregation of SeaDataNet metadata CDI granules to CDI collections (ISO 19115 – 19139) (1.9 million => 450 collections), conversion to Common Brokerage Model, and harvesting via CS-W and OAI-PMH services

ODIP 1 – SeaDataNet in ODP

- RIHMI-WDC, operator of IODE ODP portal, has harvested SeaDataNet CDI collections and included in ODP
- OAI protocol used in combination with jOAI harvester (also used in WIS)



Node 2: US NODC

- Activities extended to include US NODC services:
  - US NODC already provides web services at **collections** level as CSW, OAI-PMH and OpenSearch endpoints for discovery. All metadata contain at least FTP and HTTP links to the data, and many also have Hyrax, THREDDS Data Server, and Live Access Server links.
  - 1st analysis of definition of US NODC collections => use of ISO19115 – 19139 metadata
  - US NODC has circa **28.000** collection entries which relate to > 1.3 million granule data sets

US NODC web page collection

Data access URLs

NOAA NATIONAL OCEANOGRAPHIC DATA CENTER (NODC)
UNITED STATES DEPARTMENT OF COMMERCE

NOAA Satellite and Information Service

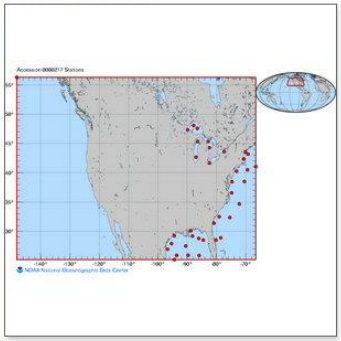
Search the NODC Archives for Go

You are here: Home › Data › Metadata › gov.noaa.nodc:0000217

Alternate Views: HTML · FAQ · Text · Rubric · XML (Plain)

Wind waves spectra and other data collected using moored buoy in the Great Lakes, Gulf of Mexico, South Pacific and East/West coast of US from 01 June 2000 to 30 June 2000 (NODC Accession 0000217)

gov.noaa.nodc:0000217



Wind wave spectra and other data were collected using moored buoys in the Great lakes, Gulf of Mexico, South Pacific and East/West coast of US from June 01, 2000 to June 30, 2000. Data were submitted by National Data Buoy Center.

Get the Data

Access

download

HTTP
Navigate directly to the URL for data access and direct download.

search

NOAA Marine Environmental Buoy Database
Search for data by user-specified criteria and optionally download data.

information

Details
Navigate directly to the URL for a descriptive web page with download links.

Distributor(s) / Contact Information

Email: NODC User Services
US National Oceanographic Data Center
301-713-3277
8:30-6:00 PM, EST

Instructions / Constraints

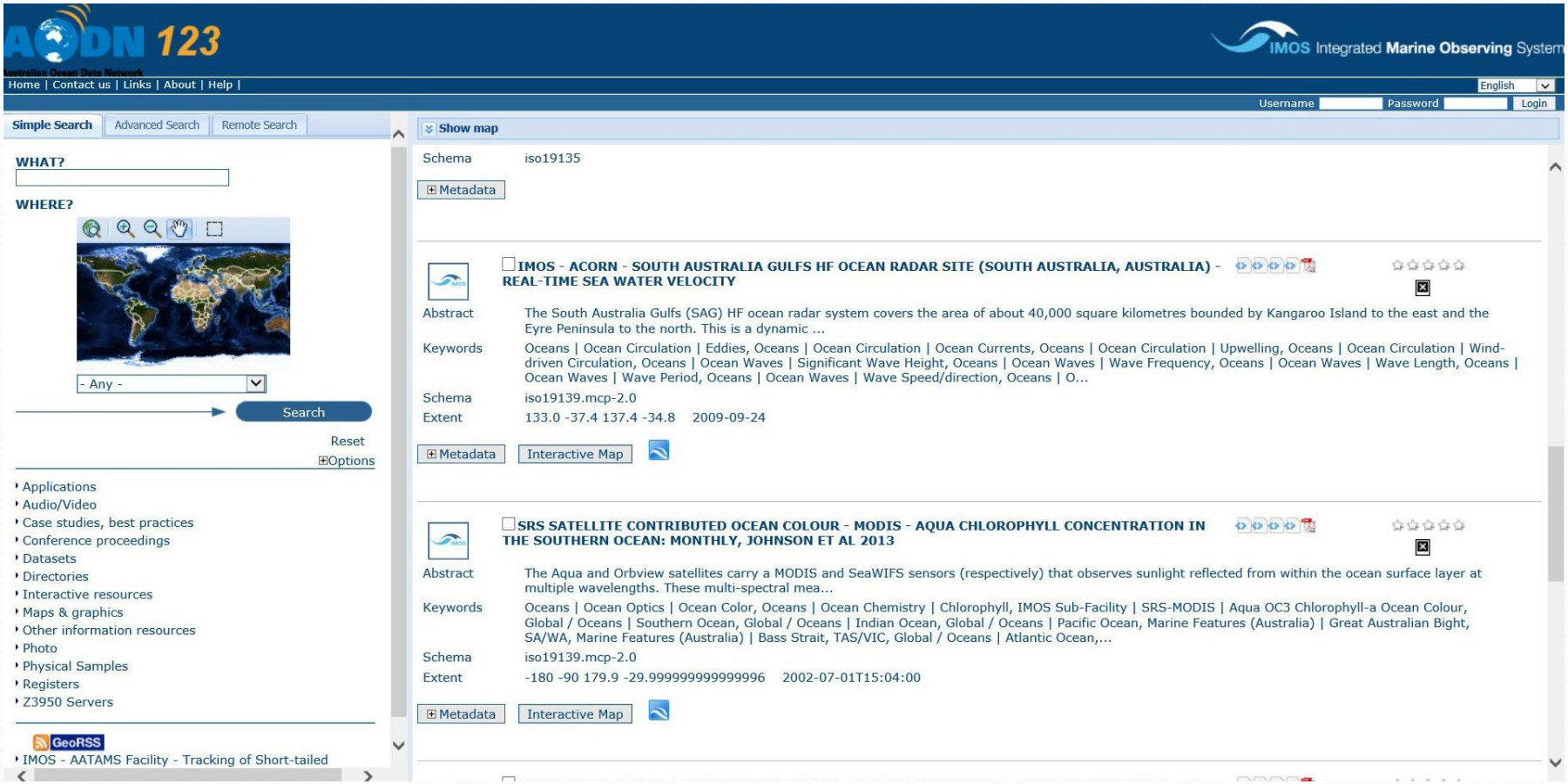
Use Limitations

Please note: NOAA and NODC make no warranty, expressed or implied, regarding these data, nor does the fact of distribution constitute such a

Node 3: AODN - Australia

- Activities extended to include AODN services:
  - AODN makes use of GeoNetWork and already provides web services at **collections** level as CSW, OAI-PMH and OpenSearch endpoints for discovery.
  - Collections are defined somewhat differently from SeaDataNet and US NODC
  - Circa **110** collections, defined by IMOS facilities (similar to data originator), geometric object, timeliness (real-time or delayed mode)

AODN - Australia

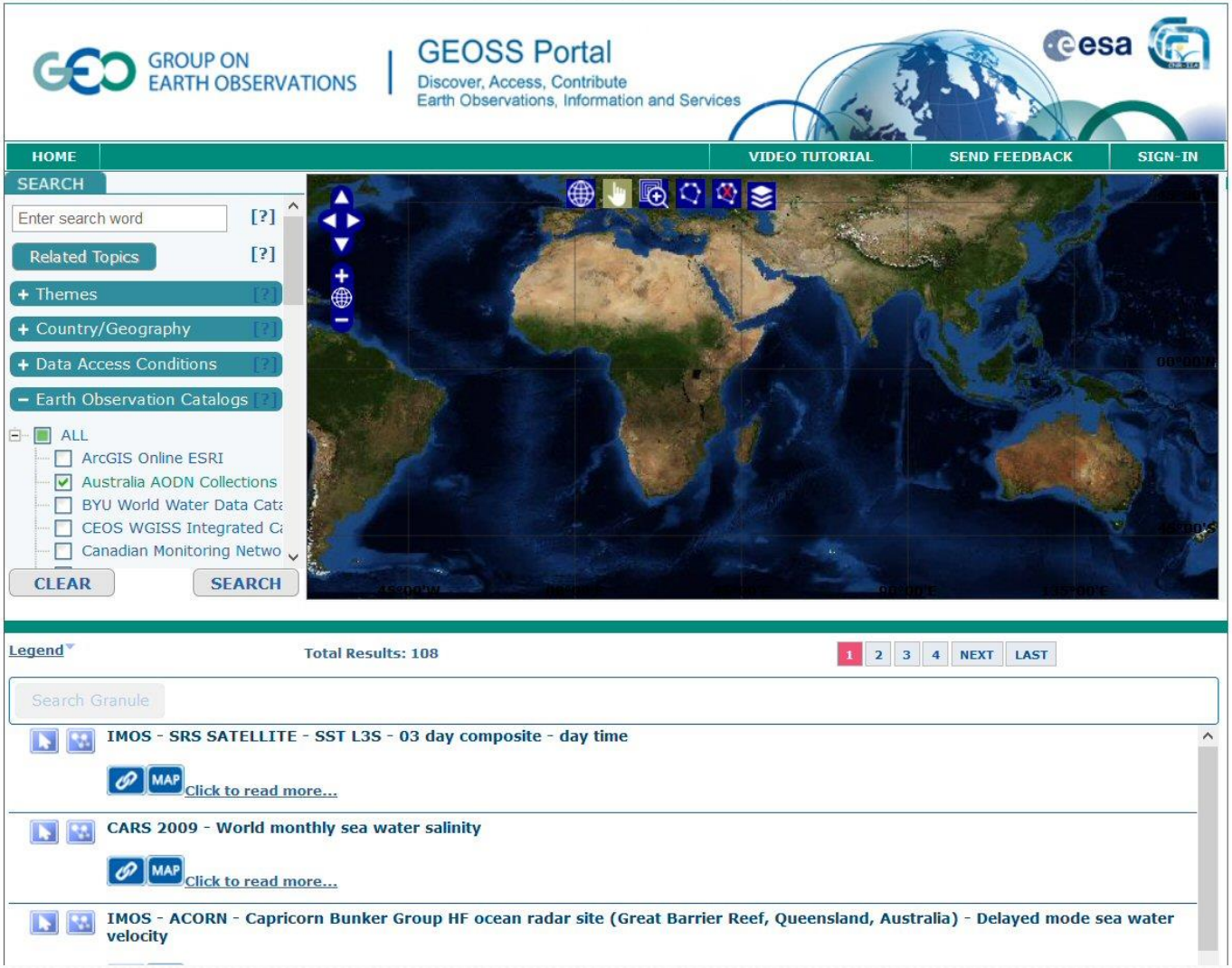


Catalogue with collections

Results: GEOSS portal – SDN, AODN and US-NODC entries

- http://www.geoportal.org/

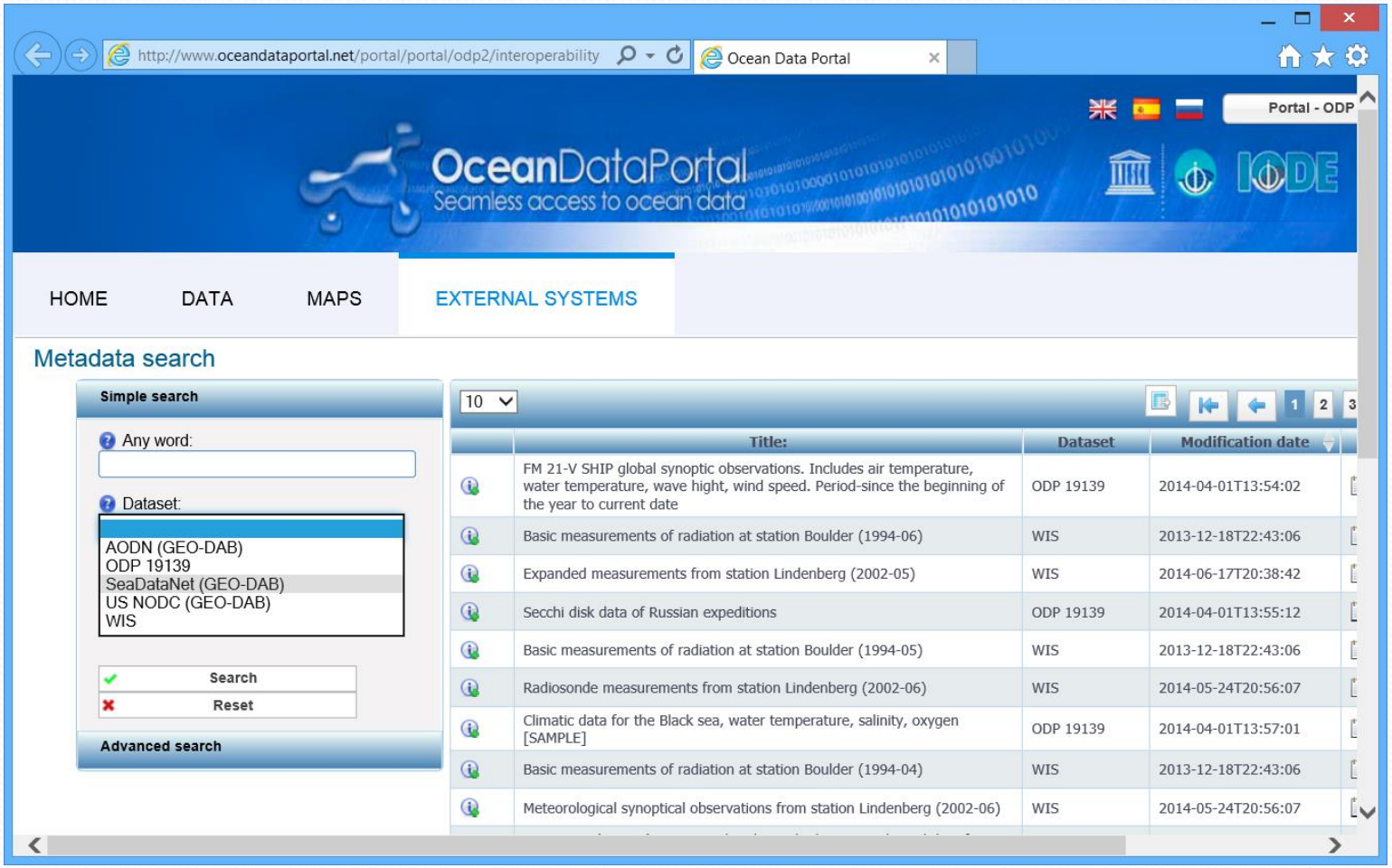
AODN



Results - ODP portal -– SDN, AODN and US-NODC entries

http://www.oceandataportal.net/portal/portal/odp2/interoperability

US NODC
SeaDataNet
AODN



ODIP Prototype 1+ - Development underway

- US NODC portal is being upgraded as part of the new NCEI organization with a new discovery and access service, including more harmonized vocabularies
- AODN portal also upgraded

- Expand the core metadata model to include more distinction for platforms, parameters, instruments

- Include semantic interoperability ('Rosetta Stone')

- Explore implementing also **horizontal** interoperability between the 3 regional systems, using OpenSearch and/or WMS-WFS, considering granules vs collections

Lead: MARIS

ODIP 2 prototype:

- ODIP 2: Establishing interoperability between cruise summary reporting systems in Europe, the USA and Australia and also towards global POGO portal

- Led by Rolling Deck to Repository (R2R) partners (USA)

- SeaDataNet Cruise Summary Report (CSR) adopted with ISO19115 – 19139 Schema and supporting Common Vocabularies

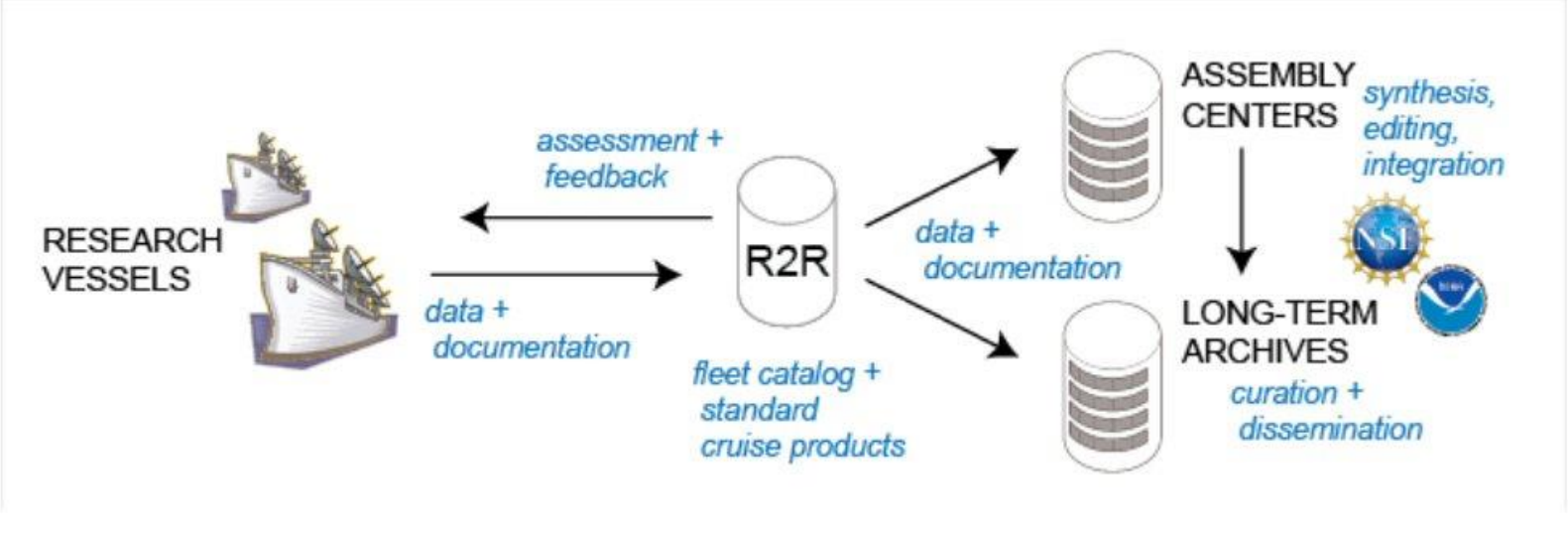
ODIP Prototype 2 - Context

- Europe, USA and Australia administer cruises and related data acquisition activities undertaken by their research vessel fleets:
  - In Europe via SeaDataNet Cruise Summary Reports directory
  - In USA via Rolling Deck to Repository (R2R) project
  - In Australia via Marine National Facility (MNF)

- All 3 regions are participating in the Partnership for Observation of the Global Oceans (POGO).
- A POGO portal is maintained for sharing information on planned, current and past cruises to enhance awareness of opportunities, and to improve the cost-effectiveness of cruises.

ODIP Prototype 2 - USA

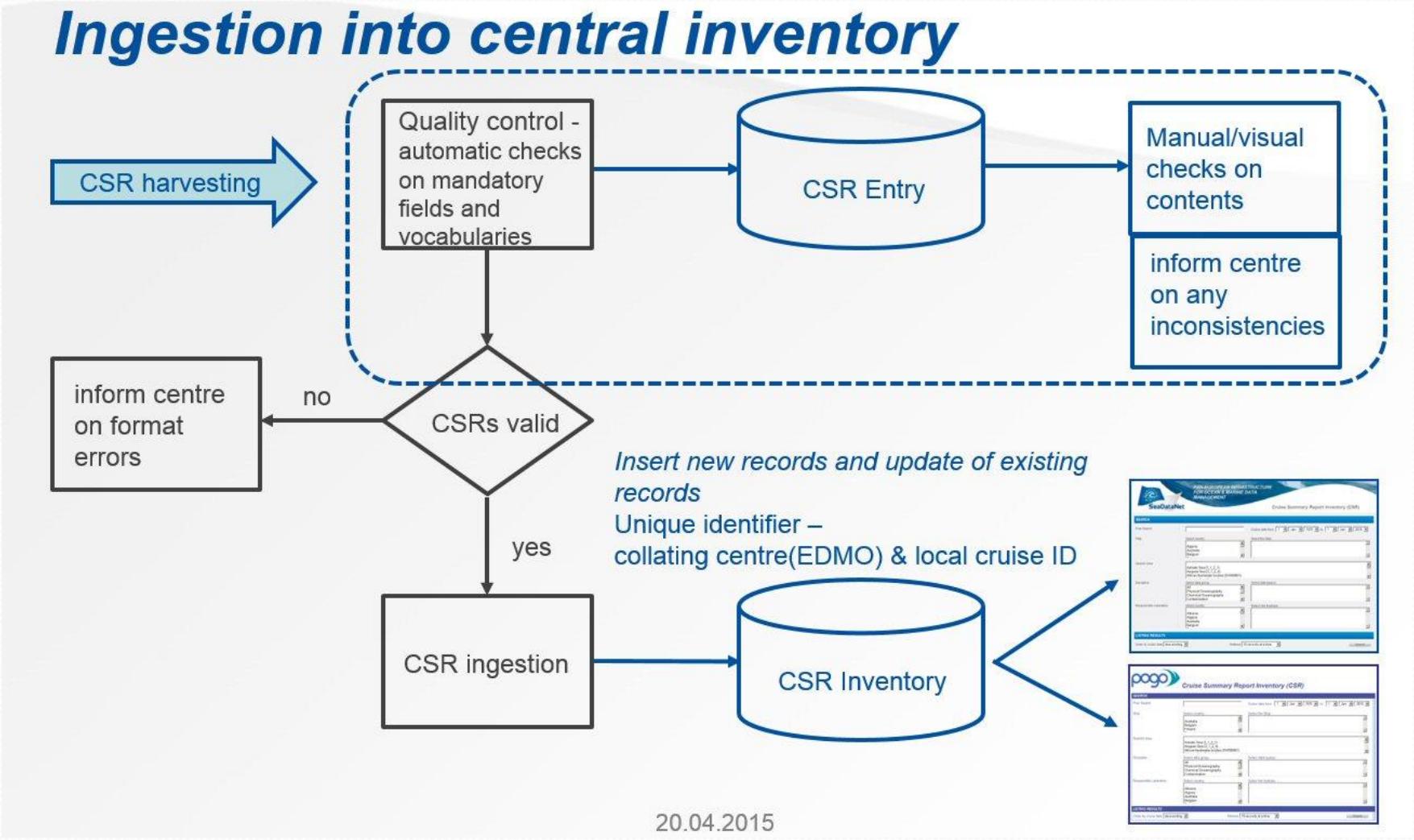
- The mission of the Rolling Deck to Repository (R2R) project is to provide uniform stewardship of routinely-collected environmental sensor data from the US academic research fleet. It publishes Cruise records in multiple formats.



ODIP Prototype 2 – Activities

- **ISO Cruise Summary Reports published at regional nodes:**
  - Europe: Cruise Summary Reports (CSR) service, operated by SeaDataNet
  - USA: Rolling deck to Repository (R2R) catalogue, operated by R2R group
  - Australia: Marine National Facility (MNF) service, operated by CSIRO
- **GeoNetwork catalogs deployed at regional nodes** to provide both GUI (Web portal) and API (CSW service)
- **GeoNetwork nodes harvested into POGO global catalog** to provide integrated search

ODIP Prototype 2 – Activities



ODIP Prototype 2 - results

- R2R team has prepared and published by its GeoNetwork node until recently 750 CSRs for a number of USA research vessels
- First CSR entries prepared by Australia
- These were harvested and successfully integrated by BSH into the POGO CSR Catalog service.

pogo

Cruise Summary Report Inventory (CSR)

SET OF RESULTS

| New Query | Found 1229 | Show (1-10) | Next 10 |

Platform Name	Cruise Name	from	to	Show
Kilo Moana	Hawaii Ocean Timeseries (HOT)	15.12.2014	19.12.2014	
Kilo Moana	C-MORE 2014, Leg 5	08.12.2014	12.12.2014	
Kilo Moana	Hawaii Ocean Timeseries (HOT)	12.10.2014	16.10.2014	
Kilo Moana	Hawaii Ocean Timeseries (HOT)	13.09.2014	17.09.2014	
Kilo Moana	Pelagic Food Web Connectivity in the Central North Pacific	29.08.2014	11.09.2014	
Kilo Moana	U.S. Extended Continental Shelf (ECS) Survey: Kirin Ridge	09.08.2014	22.08.2014	
Kilo Moana	Transit	07.07.2014	17.07.2014	
Kilo Moana	Hawaii Ocean Timeseries (HOT)	29.06.2014	03.07.2014	
Kilo Moana	C-MORE 2014, Leg 4	16.06.2014	27.06.2014	
Kilo Moana	C-MORE 2014, Leg 3/Summer Course (AGOURON-10)	09.06.2014	16.06.2014	

| New Query | Found 1229 | Show (1-10) | Next 10 |

ODIP Prototype 2+ - Development underway

- Further population of the CSR system and going to weekly harvesting
- Follow-up and upgrading of the CSR legacy records for USA, Canada and Australia as received through ICES
- Upgrading the CSR schema in a number of ways: (lead: SeaDataNet group)
  - Introduce gmx:Anchor to support links to vocabularies
  - Introducing ORCID for chief scientists in the CSR format
  - Publishing CSR also as Linked Data – SPARQL endpoints
  - Include station lists with event documentation
  - Automatic CSR generation from ship system – link with Eurofleets
- Lead: BSH

ODIP Prototype 3+ - Development underway

- Develop marine SWE profiles (syntax and semantics) in concertation with many projects and interacting with INSPIRE and OGC
- Build an overview/directory of SOS servers
- Demonstrate interoperability by integrating SOS servers into a common demo server
- Metadata/SensorML Editors → Synchronise the efforts
- Analyse handling large, heterogeneous observation data sets

Lead: 52North

ODIP Prototype 4 development underway

- Set up a '**digital playground**' or Virtual Research Environment to explore and demonstrate standard solutions for:
  - discovery and retrieval of data from data archives and SensorWeb systems
  - processing and product generation using workflow management systems (e.g. Kepler or Taverna), standard OGC interfacing and various tools
  - visualisation and publishing (incl metadata and DOIs) of created data products
  - Focus on methodology, not on completeness of data

Lead: CSIRO + MARIS

ODIP II: Cross-cutting topics

- Data citation and publication
- Persistent identifiers: DOIs, ORCiDs etc.
- Vocabularies: RDF, SPARQL endpoints, mappings etc.
- Big data and model workflows

Ocean Data Interoperability Platform

OVERVIEW | AGENDA | WORKSHOPS | PROMOTION | PARTNERS

Tools

Contact | Extranet

Sitemap | Home

Mailing registration

Home

Welcome

The **Ocean Data Interoperability Platform (ODIP)** contributes to the removal of barriers hindering the effective sharing of data across scientific domains and international boundaries. ODIP includes all the major organisations engaged in ocean data management in EU, US, and Australia. ODIP is also supported by the IOC/IODE who participates in its implementation and operation, closely linking this activity with its ODSBP project.

The ODIP platform organises international workshops to foster the development of common standards and develop prototypes to evaluate and test selected

News

ODIP presented at the EGU 2017 conference

Successful 7th Workshop

ODIP presented at IMDIS 2016 Conference

ODIP presented at the Oceans

www.odip.org