SeaDataNet

PAN-EUROPEAN INFRASTRUCTURE
FOR OCEAN & MARINE DATA
MANAGEMENT

Future options

17 September 2015

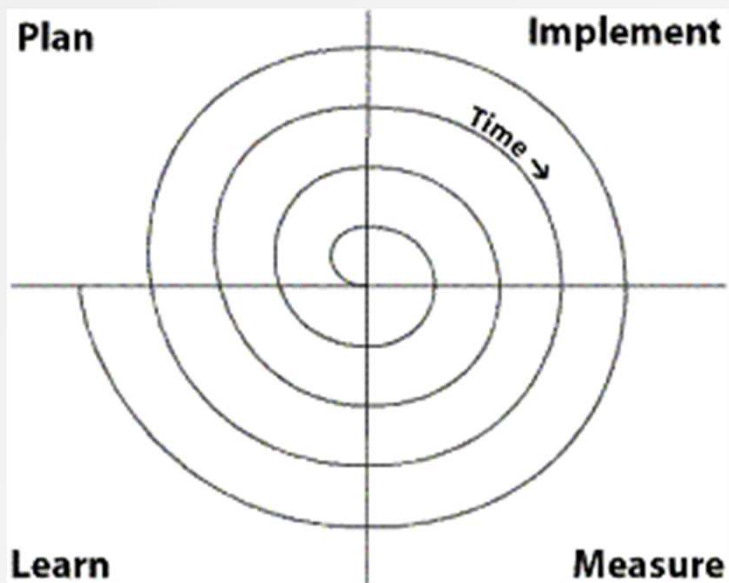By Dick M.A. Schaap – Technical Coordinator

Needs

- Continuation of operation and maintenance of infrastructure and services

- Further development and implementation of new standards and services

Opportunities

- EMODnet

- HORIZON 2020

PAN-EUROPEAN INFRASTRUCTURE FOR OCEAN & MARINE DATA MANAGEMENT

SeaDataNet

2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Phase 1 – limited sea basins (ca 6 MEuro)											
				Phase 2 - low resolution (ca 16 MEuro)							
						Phase 3 - multi-resolution (> 100 – 200 MEuro?)					

Plan | Implement

Time →

Learn | Measure

PROTOTYPING:

allows users to assess and improve product by trying it out

EMODnet
European Marine Observation and Data Network

sdn-userdesk@seadatanet.org – www.seadatanet.org

EMODnet 2nd Phase ongoing:

- SeaDataNet subgroups already involved in:
  - EMODnet Bathymetry
  - EMODnet Chemistry
  - EMODnet Physics
  - EMODnet Biology
  - Relation with EMODnet Geology

- Regular new Calls (moderate budgets) building upon earlier projects and further deploying EMODnet

$\Rightarrow$ Follow and identify potential Calls

$\Rightarrow$ EMODnet Chemistry seeking to become building block for MSFD implementation => Directive aimed at achieving Good Environmental Status (GES) by 2020. => need for sustainability = opportunity for maintenance of SeaDataNet

EMODnet 2nd Phase ongoing:

- Recent Call on Data ingestion

$\Rightarrow$ SeaDataNet has responded as a united team and proposal has been submitted last Friday for 4 Million Euro

$\Rightarrow$ Synergy between SeaDataNet and all EMODnet data lots

$\Rightarrow$ Wait for circa 6 months on review

Exploitation plan:

- Anyway we must arrange by mutual agreement that SeaDataNet services, operations, and maintenance are continued by all partners, for at least 3 years after finish, even if no alternative project

- To find and score opportunities

- To demonstrate commitment

New Call of EU – HORIZON 2020:

- INFRAIA-01-2016/2017: Integrating Activities for Advanced Communities

- Call expected: 15 October 2015
- Deadline submission: 30 March 2016

- Budget total: 160 Meuro
- Budget project max: 10 Meuro

- Number of preferred topics in Call: 27 => 60% chance

Call topic: **Multidisciplinary Marine Data Centres for ocean and marine data management**

Category: Environmental and Earth Sciences

This activity aims at providing and facilitating access to the key data centres in Europe for in situ and remote sensing data for marine research (including coastal research). It must present a long-term sustainable perspective on the integration of these facilities and related resources. It should enhance and innovate the services offered to an expanded multi-disciplinary community and promote the adoption of the developed protocols and standards for interoperability to other key downstream initiatives in the field. Synergies with relevant ESFRI Infrastructures should be duly exploited.

EU funding will be provided to support:

- trans-national and virtual access provided to European researchers

- cooperation between research infrastructures, scientific communities, industry and other stakeholders,

- improvement of the services the infrastructures provide,

- harmonisation, optimisation and improvement of access procedures and interfaces.

Impact expectations:

- Proposals must clearly demonstrate the added value and the progress beyond current achievements in terms of integration and services

- The strongest impact is expected typically to arise from focusing on innovation aspects and widening trans-national and virtual access provision.

- Communities, earlier supported, must create strategic roadmaps for future research infrastructure developments as well as prepare a sustainability plan beyond the grant lifecycle, including, where appropriate, the involvement of funders.

Considerations:

- Pay due attention to any related international initiative (i.e. outside the EU) and foster the use and deployment of global standards.

- Organise the efficient curation, preservation and provision of access to the data collected or produced under the project, defining a data management plan. Data management (including ethics and privacy issues), interoperability, as well as advanced data and computing services should be addressed where relevant.

- Build upon the state of the art in ICT and e-infrastructures for data, computing and networking, working in cooperation with e-infrastructure service providers.

Considerations:

- Contribute to fostering the potential for innovation, including social innovation, of research infrastructures by reinforcing the partnership with industry, through e.g. transfer of knowledge and other dissemination activities, activities to promote the use of research infrastructures by industrial researchers, involvement of industrial associations in consortia or in advisory bodies."

- To duly take into account all relevant ESFRI research infrastructures to exploit synergies, to reflect on sustainability and to ensure that rationally designed, comprehensive and coherent overall concepts for European Infrastructures are being pursued.

Integrating Activities (I3) structure for proposals:

- (i) **Networking activities**, to foster a culture of co-operation between research infrastructures, scientific communities, industries and other stakeholders as appropriate, and to help developing a more efficient and attractive European Research Area;

- (ii) **Trans-national access or virtual access activities**, to support scientific communities in their access to the identified key research infrastructures;

- (iii) **Joint research activities**, to improve, in quality and/or quantity, the integrated services provided at European level by the infrastructures.

Proposed approach:

- Describe SeaDataNet in its current state, as an authoritative standard setting network and as operational infrastructure, well embedded in the marine domain, with relationships with many data collection infrastructures (EuroGOOS and various ESFRI), other EU projects, incl ODIP with USA and Australia, and IOC-IODE, and ICES

- Describe direct relationship between SeaDataNet and the EMODnet initiative, incl MSFD support, as a vital element with sustainable perspective for operations

- However explain that EMODnet is adopting SeaDataNet standards and services for wider deployment, resulting in more data centres connected, and European data products, but no RTD

Proposed approach:

- Explain that SeaDataNet is based upon NODCs and marine data centres that are nationally funded and that EU funding is in most cases a small percentage, but necessary for further joint activities for common standards and services, also anticipating new developments in the ocean domain

- The previous will underpin a solid business opportunity and sustainability planning of SeaDataNet as already well advanced towards data users, data providers, and data managers at local, regional, national, European and international levels

- But:………..

Main targets for proposal:

- **To meet better requirements of users:**
  - Performance of services
  - Quality of (meta)data
  - Completeness of (meta)data provision
  - Availability of services
  - Added-value products
  - Added-value services
  - Upgrading CDI service following user surveys

- **To meet new standards and technologies**
  - New ISO and OGC standards
  - New instruments
  - New types of data
  - INSPIRE compliance

Main targets for proposal:

- To meet better requirements of data providers:
  - Tools
  - Services
  - Standards
  - Interoperability
  - Data publishing – DOIs

- In order to lay a strong foundation under the business plan as intermediary between data providers and data users
  - Expanding the network
  - Streamlining the operations
  - Demonstrating a positive cost – benefit ratio

Main focus for proposal:

- Innovation to upgrade existing and develop new standards, products and services

- Secure operation and maintenance of services, also during transitions

- Expanding the communities of data providers and users

- Elaborating the business case and sustainability plan

Ideas:

- Do better:
  - Dynamically replicating local SeaDataNet data collections to common 'distributed cloud' environment:
    - Higher speed and overall improved reliability of access
    - Quality ensurance by horizontal quality scans + actions at metadata and data level (with feedback loops)
    - Users can download one integrated data package vs multiple now,
    - Versioning easier with frozen copies to support DOIs – data publishing while CDI is latest version
    - Transformation services on cloud resources for formats (ODV => NetCDF), merging CDI + data files, harmonised parameters + units
    - Download Manager will be less complex and serve as replicator from local to cloud

Ideas:

- Do better:
  - Dynamically replicating local SeaDataNet data collections to common 'distributed cloud' environment:
    - Duplicate checking also at data level
    - Tools for extracting information from data (Science 2.0)
    - MySeaDataNet: personalised services such as user profiles, subscriber service for data alerts, toolbox for analysis on pools and own data etc

- Do better:
  - Dynamically replicating local SeaDataNet data collections to common 'distributed cloud' environment:
    - EUDAT = European network of computing infrastructures is very interested in strategic cooperation with SeaDataNet to provide a distributed cloud as a common storage environment + to work together to solve some of the challenges (selected EUDAT partners: CSC – Fi, CINECA – It, SURFSara - NL, RZ Juelich - DE, Barcelona SC – ES; STFC - UK and CINES – FR)
    - Hybrid solution between EUDAT and own clouds possible model
    - Monitoring and tracking & tracing (RSM) services for all traffic
    - Security and back-ups in SLA

- **Do better:**
  - More data in SeaDataNet available:
    - Keep focus on European originators, but give better follow-up to international and European data collections with extra data such as Euro-ARGO, GOSUD, within CORIOLIS, ICES, PANGAEA, BODC, IFREMER, ….
    - Closer cooperation with operational oceanography networks (EuroGOOS, gliders, EMSO, JERICO-Next, FerryBox, ..) for uptake, processing and storage to provide access to their validated data AND using SWE for (N)RT data provision
    - Interaction with other domains – e.g. via ENVRI+

- **Do better:**
  - More products and services for users:
    - Make use of interoperability solutions (follow-up of ODIP prototype 1 and 2) for giving users also discovery and access to data collections at large international data centres such as US-NODC and IMOS/AODN as well as expanded CSR catalogue
    - Advanced services on the data collections in the cloud
      - Further development of Oceanotron services;
      - Further development of OceanBrowser
      - Pilot with ERDDAP
    - Linkages CDI – CSR, CDI – EDMED and use also v.v.
    - Improved T&S climatology
    - Ready made regional collections. Multidisciplinary product?

- **Do better:**
  - More products and services for users:
    - CSR in cloud opens option for more related documents and annexes, such as video's, images, etc
    - Linked data => complete missing items in checklist Adam
    - Methodology for evaluating and indicating fitness for purpose of data products (following Checkpoint experience) -

SeaDataNet

- **Do better:**
  - Innovate for data providers:
    - O&M profiles (ISO 19156) for extra use metadata in combination with CDI for chemistry and biology data for more precise description (include in SWE activities)
    - More interactivity for online editing / new entries of CSR, EDMO, EDMERP, and EDMED catalogues with staging – validation process (closer to the providers)
    - CSR from research vessels following EuroFleets 2 developments
    - Further develop SWE standards and provide online tools for operational observation network managers to describe their platforms and sensors, and to connect their data streams via SOS and 'Internet of Things'

Ideas:

- ## Do better:
  - Innovate for data providers:
    - Continuation of vocabularies and innovate with exposure of P01, online interaction for new terms (not only P01), governance communities, multilingual
    - O&M profiles for extra use metadata in combination with CDI for chemistry and biology data
    - Data publishing – DOIs – citation indexes
    - Personal identifiers in metadata (ORCID, ..)
    - Expand platform register together with JCOMMOPS

Ideas:

- Do better:
  - Innovate for data providers, users and managers:
    - Online ODV software for data validation, harmonisation (via P01 – P35 – P06 relations, conversion business rules), metadata enrichment (CDI => ODV / NetCDF), analyses, and visualisations
    - Online DIVA software for spatial interpolations
    - Maintenance and upgrading of tools such as MIKADO, NEMO …
    - INSPIRE compliance for selected data models
    - Efficient machine-to-machine services
    - Online data quality tools for biology data
    - Achieve WDC Seal of Approval certification for all DCs

Ideas:

- Expand:
  - Expand capability for handling data types:
    - ADCP
    - HF-Radar
    - Video
    - Images
    - Zoo scanner
    - Flow cyto meter data
  - To develop as pilots of excellence with a number of partners

- Follow-up in coming months