SeaDataNet Cruise Summary Report (CSR) metadata model for Cruise Reporting

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Title: SeaDataNet Cruise Summary Report (CSR) metadata model for Cruise Reporting

Scope: Proposal to acknowledge SeaDataNet Cruise Summary Report (CSR) metadata profile of ISO 19115 and ISO 19115-2 as a standard metadata model for the documentation of cruise reports. In particular, the proposal aims to promote CSR as a regional (i.e. European) standard.

A CSR is used to document a cruise and its releated field experiments at sea.

SeaDataNet CSR has been drafted and published as a metadata community profile of ISO 19115 and ISO 19115-2 by SeaDataNet, the leading infrastructure in Europe for marine & ocean data management. Its wide implementation, both by data centres within SeaDataNet and by external organizations makes it also a de-facto standard in the Europe region.

The acknowledgement of SeaDataNet CSR as a standard data model by IODE/JCOMM will further favour interoperability and data management in the Marine and Oceanographic community.

Envisaged publication type: The proposal target audience includes all the European bodies, programs, and projects that report research cruises and field experiments at sea. Besides, the proposed document informs all the international community dealing with cruise reports about the SeaDataNet CSR metadata model.

Purpose and Justification:

1. Describe the specific aims and reason for this Proposal, with particular emphasis on the aspects of standardization covered, the problems it is expected to solve or the difficulties it is intended to overcome.

By acknowledging SeaDataNet CSR as a standard data model for documenting Cruise Reports, multiple objectives are sought:

- Wider adoption of SeaDataNet CSR by additional marine data centres around European waters. The process will favour further harmonisation and standardisation of European ocean and marine metadata as well as interoperability by reducing the existing metadata heterogeneity. Organizations adopting this standard will be able to document their cruise reports according to a well-known and well specified marine metadata model, therefore the data management and exchange of marine and oceanographic information will be eased in many ways (see following point 2).
- Ease interoperability and outreach towards international communities and initiatives. The existence of a recognized standard at European level will favour its understanding also at a broader level.

Example given, international marine and oceanographic communities will be able to correctly understand the information carried by SeaDataNet CSR model.

2. <u>Describe how this proposed standard supports data management, exchange or interoperability. When applicable include mention of what data management functions (e.g. date transport, quality control, archive) the proposal supports.</u>

SeaDataNet CSR supports data management by providing a metadata profile of ISO 19115 and ISO 19115-2 to document observational datasets collected during a single cruise, managed and archived by Pan-European marine data centres.

Many metadata elements from ISO 19115 are part of the profile, including elements allowing discovery (e.g. using common criteria: what, when, where, who), evaluation (e.g. lineage), access and use (e.g. online resource information).

Elements from ISO 19115-2 are used to describe the single acquisitions, with metadata elements such as the used instruments.

Extended (and restricted) elements are present as well, in order to tailor SeaDataNet CSR according to the specific needs of the marine and oceanographic community. Example given, specific elements having a free text domain in ISO 19115 are domain restricted in SeaDataNet CSR only to the values listed in specific code lists. This is the case of organisation names, allowing values only from the EDMO vocabulary. Other vocabularies used to restrict the allowed values of specific elements of SeaDataNet CSR include (but not limited to):

- EDMED - European Directory of Marine Environmental Data sets
- EDMERP - European Directory of Marine Environmental Research Projects
- SeaVoX Platform Categories
- SeaVoX salt and fresh water body gazetteer
- International Standards Organization countries
- SeaDataNet Parameter Discovery Vocabulary
- SeaDataNet Ports Gazetteer
- BODC data storage units

SeaDataNet CSR is a metadata community profile of ISO 19115 and ISO 19115-2, drafted and published according to ISO methodologies. SeaDataNet CSR is also compliant with the European directive INSPIRE, which imposes a common set of mandatory and optional metadata elements to be documented by all the organizations from EU countries that are sharing spatial datasets. Compliancy with ISO and INSPIRE eases interoperability towards different communities.

3. <u>Describe the main interests benefitting from or affected by the proposed standard, such as industry, consumers, governments, distributors. Identify any relationships and/or dependencies.</u>

Adoption by IODE/JCOMM of SeaDataNet CSR as a metadata standard will give extra momentum to European marine and ocean data centres adopting SeaDataNet

CSR. This will also benefit users from all over the world from various sectors. Moreover, it will benefit efforts for global interoperability (such as ODIP project activities) because that process can focus on a limited set of marine metadata profiles, whereby SeaDataNet CSR represents European input.

4. Describe the feasibility of implementing the proposed standard.   Include any factors that could hinder the successful establishment or global application of the Proposed standard.   Are there any associated issues?   Identify resource implications resulting from the recommendations.

The feasibility and practicality of implementing the SeaDataNet CSR can be, and has already been successfully accomplished at 57 data centres within the SeaDataNet partnership. Moreover, another 47 data centres in Europe at present have realized the CSR implementation for their cruise reports. The results of these activities can be followed at the operational CSR inventory service, accessible through the SeaDataNet website (http://www.seadatanet.org/Metadata). The implementation is supported by dedicated Training Workshops which deal with presenting the standards and the associated tools and which provide hands-on training activities to get fully acquainted with them. The training material is also documented in Vademecums for study and consultation. The time needed for full implementation at a data centre is approximately estimated in 6 months considering the mapping of legacy reports to SeaDataNet CSR and deployment of the associated SeaDataNet CSR tools.

5. Considering the needs of other fields or organizations, indicate the timeliness, target date(s), or if proposing a series of standards, suggest priorities. List any statutory requirement or other driving factors.

There are no statutory requirements for adoption of the SeaDataNet CDI standard as one of the metadata discovery standards. The National Oceanographic Data Centres in Europe are bound to implement the standard within their contractual obligations of several EU projects. The NODCs also motivate other data centres in their countries to adopt it. The IOC recommendation will add to this process.

6. Describe the possible benefits gained by the implementation of the proposed standard. Alternatively, describe the loss or disadvantage(s) if no standard is established within a reasonable time.

The advantage of using the SeaDataNet CSR standard in Europe is described in (2) and (3). There are no anticipated disadvantages to adopting it.

7. Indicate whether the proposed standard is or may become the subject of regulations or may require the harmonization of existing regulations. Describe any impacts of this activity.

The SeaDataNet CSR standard is a de-facto standard in Europe and is currently subject of tests for its possible use outside of the European region (e.g. in the context of the ODIP project).

__Current Operational Implementations__:At present already 57 NODC's and marine data centres within the SeaDataNet consortium have successfully implemented the SeaDataNet CSR standard and are maintaining their CSRs at their local centre and submitting them via online Content Management System (CMS) or XML encoded to the CSR central directory of the SeaDataNet infrastructure (see http://www.seadatanet.org). The CSR standard has already been adopted by a number of other European projects raising the total number of contributing data centres to 104. These projects are:

- **Up-Grade Black Sea SCENE project (2009-2011)** that involves 6 NODCs and many other data holding institutes from 6 Black Sea countries

- **CASPINFO project (2009-2011)** that involves 12 institutes and the private industry from the Caspian Sea region.

- **Geo-Seas project (2009-2012)** that involves 24 geological and geophysical data centres from 16 European countries (EuroGeoSurveys)

- **EuroFleets project (2009-2012)** that involves 24 research institutes and data centres from 17 European countries

- **JERICO project (2011-2015)** that involves 27 institutes from 17 European countries.

- **EMODnet chemistry, hydrography, physics project lots** in which SeaDataNet has qualified itself as leading infrastructure for the EMODNet data management component

- **ODIP (Ocean Data Interoperability Platform)** in which SeaDataNet and its metadata profiles are the de-facto European standards to the efforts of establishing interoperability solutions between Cruise reporting systems in Europe, US and Australia.

- **POGO (Partnership for Observation of the Global Oceans)** in whichSeaDataNet CSR is in use at the POGO/Research Vessels (RVs) portal. (http://www.pogo-oceancruises.org/).

Moreover, different software tools are implementing SeaDataNet CSR, such as the MIKADO metadata editor and the GI-cat discovery broker.

__Relevant Documents:__

The following document (attached to the current proposal) is the normative specification for the SeaDataNet CSR metadata model:

- E.Boldrini, S.Nativi. SeaDataNet CSR metadata profile of ISO 19115 and ISO 19115-2, Version 3.0.0, September 2013, published at http://www.seadatanet.org/Standards-Software/Metadata-formats/CSR

The SeaDataNet CSR homepage represents as well an informative reference for SeaDataNet CSR, containing the normative reference document, as well as related standards (e.g. the XML encoding of SeaDataNet CSR metadata model) and useful documentation:

- SeaDataNet CDI metadata profile Homepage, at http://www.seadatanet.org/Standards-Software/Metadata-formats/CSR

Cooperation and liaison:

1. **Existing Community**: All the organizations listed in the '***Current Operational Implementations'*** section are using SeaDataNet CSR in an operational environment and represent the SeaDataNet CSR community. In particular MARIS, CNR-IIA and IFREMER have been involved in the drafting and publication of the SeaDataNet CSR standard (together with the rest of the SeaDataNet Technical Task Team) and are responsible for the current proposal submission.
2. **Expanded Community:** Firstly, other relevant marine and oceanographic data centres in Europe that are not yet engaged in the NODC national networks and/or any of the EU projects and would like to adopt SeaDataNet CSR as the metadata model for their cruise reports.

   Moreover, other marine and oceanographic data centres worldwide eager to discover, evaluate and access SeaDataNet cruise reports at full. SeaDataNet is maintaining active cooperation and exchange on an international scale with data management initiatives and networks outside Europe (such as ODIP) where common standards and interoperability solutions are investigated.

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List of Acronyms:

- BODC – British Oceanographic Data Centre
- BSH - Federal Maritime and Hydrographic Agency
- CDI – Common Data Index metadata format
- CNR-IIA – National Research Council of Italy – Insitute of Atmospheric Pollution Research
- CSR – SeaDataNet Cruise Summary Reports directory

- CSW - Catalog Service for the Web
- EDMERP - SeaDataNet European Directory of Marine Environmental Research Projects
- EDMO – SeaDataNet European Directory of Marine Organisations
- EMODNET – European Marine Observation and Data Network
- EU – European Union
- EuroFleets – EU FP7 project Towards an Alliance of European Research Fleets
- Geo-Seas - EU FP7 project for a Pan-European Infrastructure for Marine Geological and Geophysical Data Management
- GEOSS – Global Earth Observing System of Systems
- INSPIRE - Infrastructure for Spatial Information in the Europe Community
- IOC – Intergovernmental Oceanographic Commission
- IODE – International Oceanographic Data and Information Exchange
- ISO – International OrganizationforStandardization
- JERICO – Towards a joint European Research Infrastructure Network for Coastal Observations
- MIKADO – SeaDataNet metadata editor software tool
- MMI – Marine Metadata Initiative
- MSFD - Marine Strategy Framework Directive
- NODC – National Oceanographic Data Center
- OGC - Open Geospatial Consortium
- POGO - Partnership for Observation of the Global Oceans
- SeaDataNet – EU FP6 project for a Pan-European Infrastructure for Marine and Oceanographic Data Management
- SeaVoX – mailing list governing the SeaDataNet Common Vocabularies
- SWE – Sensor Web Enablement
- Upgrade Black Sea SCENE - EU FP7 project for an Upgrade Black Sea Scientific Network
- URL – Uniform Resource Locator
- URN – Uniform Resource Name
- Vocabs – SeaDataNet Common Vocabulariesservices
- WFS – Web Feature Service
- WMS – Web Map Service
- XML – Extensible Mark-up Language
- XSD – XML Schema Definition

Other Attachments: No other attachments.