Building a bridge between the SeaDataNet data and INSPIRE data models

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The SeaDataNet metadata catalogues (CDI and CSR in particular), as well as the NERC Vocabulary Service (NVS) have been mapped against the EU INSPIRE schema (fig 1) for the INSPIRE Environmental Monitoring Facility (EF), and Observation & Measurement (O&M) schema within a series of spreadsheet worksheets (fig 2). These have then been used to create exemplar XML data files (fig 3), using a naming convention for the GML identifiers (fig 4) in order to allow for software tooling and consistent discovery methods.

SeaDataNet metadata catalogues

Common Data Index	CDI
Cruise Summary Reports	CSR
European Directory of Marine Environmental Data Sets	EDMED
European Directory of Marine Environmental Research Projects	EDMERP
European Directory of Marine Organisations	EDMO
European Directory of the Initial Ocean-Observing Systems	EDIOS

SeaDataNet data formats

Ocean Data View	ODV
Network Common Data Form	NetCDF

Figure 1 – EU INSPIRE EF and O&M schema

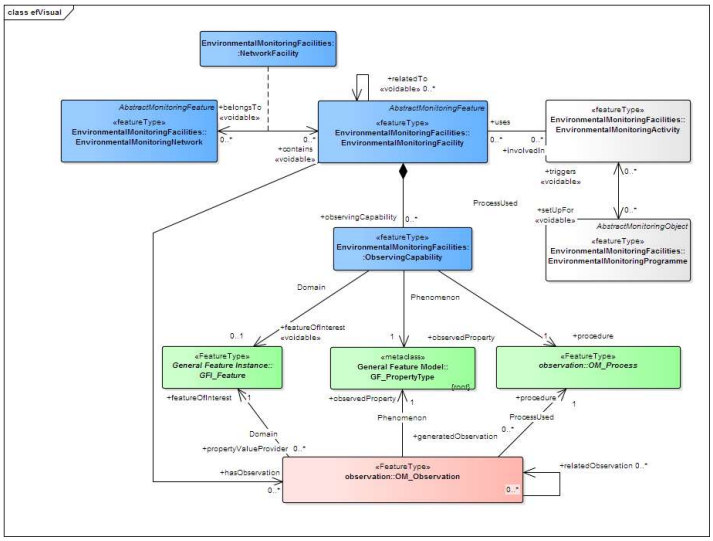


Figure 2 – SeaDataCloud – INSPIRE mapping worksheets

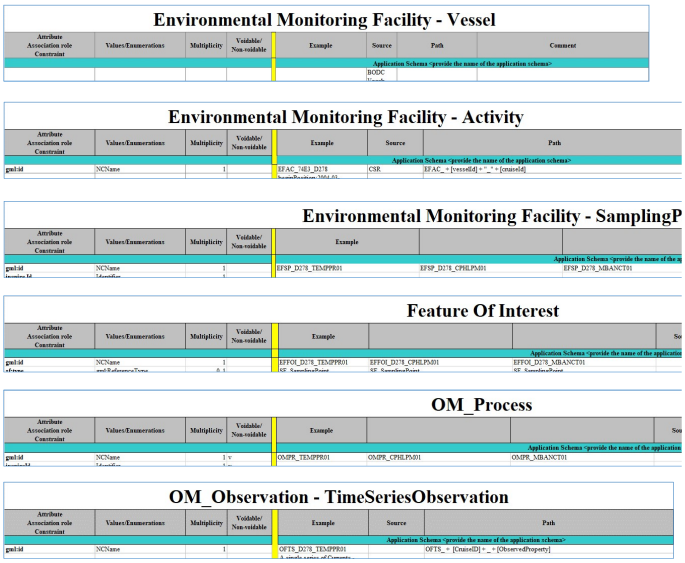


Figure 3 – SeaDataCloud – INSPIRE XML data files and linkages

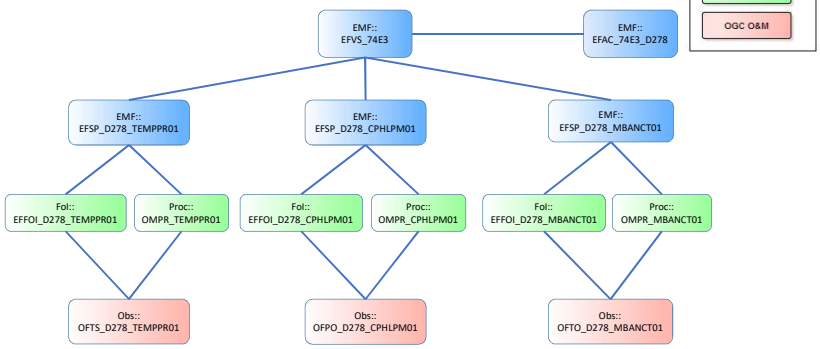
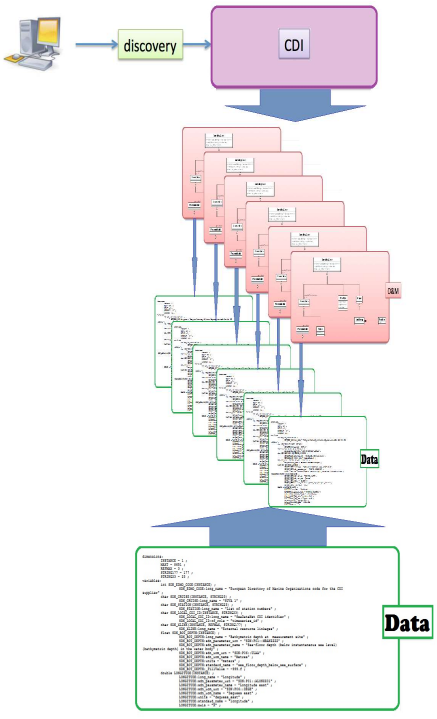


Figure 4 – SeaDataCloud – INSPIRE GML naming convention

CDI = 207582 ODV = b0686762	GML Encoding	Matching worksheet
Platform	EFVS_74E3	EMF Vessel
Cruise	EFAC_74E3_D278	EMF Activity
Sampling Point	EFSP_D278_TEMPPR01	EMF SamplingPoint
FeatureOfInterest	EFFOI_D278_TEMPPR01	Feature of Interest
Process	OMPR_TEMPPR01	OM_Process
Observation	OFTS_D278_TEMPPR01	TimeSeriesObservation

Figure 5 – Data access using one possible out-of-band method



Issues and proposed solutions

Issues highlighted by this work have been raised with the EU Joint Research Centre and other relevant bodies. These include the following:

- Encoding issues pertaining to **TrajectoryObservation and ProfileObservation:** to be dealt with as part of the INSPIRE maintenance and implementation process.
- Use of the **WGS84** Coordinate Reference System (CRS): can be allowed after some planned changes in the INSPIRE legislation have come into force, expected in 2019.
- No formal guidance for **out-of-band** results: the marine community is a good starting point for a 'best practice'.
- **Vertical CRS**, both in m and dbar: Further discussion is taking place with the OGC on how to provide this.
- **Metadata** about the measurement procedure is an area of current research for both delayed mode and near-real time data, through projects like EMODnet and ENVRIplus, and applications like the 52N Sensor Observation Service using SensorML. In addition, the INSPIRE Process should be analysed for suitability.
- Levels of **granularity**: The principal method of data access within SeaDataNet uses CDI records to drive the data discovery portal. A CDI record will discover one data file; the granularity of the EU INSPIRE schema provides data access at the parameter level either through in-line or out-of-band methods (fig 5), with formalisation to be completed.

The utilisation of the SDC INSPIRE profiles has been used by the TG-DATA group at OGS (Italy) – "An example of adopting and adapting SeaDataCloud INSPIRE data models to describe nutrients data" – IMDIS Nov 2018.

SeaDataCloud will take this work forward with the development of the cloud transformation service.

This poster is based on
Review of data formats, including alignment to the O&M based INSPIRE data models OF and EF (with coding examples), netCDF (CF) versioning and grid specification, and data enhancement with metadata.
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