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Enabling conformity to international standards within SeaDataNet

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SeaDataNet objective is to construct a standardized system for managing the large and diverse data sets collected by the oceanographic fleets and the new automatic observation systems. The aim is to network and enhance the currently existing infrastructures, which are the national oceanographic data centres and satellite data centres of 36 countries, active in data collection. The networking of these professional data centres, in a unique virtual data management system will provide integrated data sets of standardized quality on-line.

The Common Data Index (CDI) is the middleware service adopted by SeaDataNet for discovery and access of the available data. In order to develop an interoperable and effective system, the use of international de facto and de jure standards is required. In particular the new goal object of this presentation is to introduce and discuss the solutions for making SeaDataNet compliant with the European Union (EU) INSPIRE directive and in particular with its Implementing Rules (IR).

The European INSPIRE directive aims to rule the creation of an European Spatial Data Infrastructure (ESDI). This will enable the sharing of environmental spatial information among public sector organisations and better facilitate public access to spatial information across Europe.

To ensure that the spatial data infrastructures of the European Member States are compatible and usable in a community and transboundary context, the directive requires that common IRs are adopted in a number of specific areas (Metadata, Data Specifications, Network Services, Data and Service Sharing and Monitoring and Reporting). Often the use of already approved digital geographic information standards is mandated, drawing from international organizations like the Open Geospatial Consortium (OGC) and the International Organization for Standardization (ISO), the latter by means of its Technical Committee 211 (ISO/TC 211).

In the context of geographic data discovery a set of mandatory metadata information is identified by INSPIRE metadata regulations and recommended implementations appear in IRs, in particular the use of ISO 19139 Application Profile (ISO AP) of OGC Catalogue Service for the Web 2.0.2 (CSW), as well as the use of ISO19139 XML schemas (along with additional constraints) to encode and distribute the required INSPIRE metadata.

SeaDataNet started its work in 2006, basing its metadata schema upon the ISO 19115 DTD, the available schema at that time. Overtime this was replaced with the present CDI v.1 XML schema, based on ISO 19115 abstract model with community specific features and constraints.

In order to assure the INSPIRE conformity a GI-cat based solution was developed.

GI-cat is a broker service able to mediate from different metadata sources and publish them through a consistent and unified interface. In this case GI-cat is used as a front end to the SeaDataNet portal publishing the available data, based on CDI v.1, through a CSW AP ISO interface.

The first step consisted in the precise definition of a community profile of ISO19115, containing both INSPIRE and CDI driven constraints and extensions.

This abstract model is ready to be implemented both in CDI v.1 and in ISO 19139; to this aim, guidelines were drafted.

Then a mapping from the CDI v.1 to the ISO 19139 implementation was ready to be produced.

The work resulted in the creation of a new CDI accessor within GI-cat. These type of components play the role of data model mediators within the framework.

While a replacement of the CDI v.1 format with the ISO 19139 solution is planned for SeaDataNet in the future, this front-end solution make data discovery readily effective by clients within the INSPIRE community.