Implementing modern data dissemination concepts in the ISDC Portal

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The ISDC data management system reliably serves data on a day-to-day basis though interfaces designed to meet the requirements set at the projects begin. In light of the tasks set out in WP 170 ISDC-Portal - Produktverwaltungssystem und Nutzerschnittstelle of this geo-technology program, issues such as interoperability, modularity, harmonisation and publication of data were re-addressed in ISDC.

The strongest demand is to provide interoperable interfaces in the ISDC system. The concept behind interoperability is to provide an efficient and user friendly means of maximising the usefulness of information computing resources hereby enabling the exchange of science-data in distributed computing environments (Buehler & McKee 1996). Service-Oriented Architecture (SOA) is a design pattern for software architectures which fundamentally supports this concept. SOA is based on the assumption that only the service-type and its metadata are required to construct distributed solutions. Through the work of the Open Geospatial Consortium, Inc. (OGC) the OGC Web Services (OWS) and respective metadata specifications have been defined and implemented in open source software projects such as deegree, Geoserver and UMN Mapserver along.

A key advantage of services is that they can be combined or chained together in applications for example to visualise the result set of a catalogue query or to perform a spatial query in the ISDC portal. The deegree project implements this concept at its core. This software is being evaluated and has demonstrated itself highly suitable for ISDCs purposes.

The service of primary interest here is the Catalogue Service for Web (CS-W). The Catalogue Service defines a common interface to discover, browse, and query metadata about data, services, and other potential resources (Voges & Senkler 2005). Currently incoming product metadata is stored in a relational database. This metadata will be made available to the Catalogue Service using an adapter. When successfully implemented this new access point will provide exciting new possibilities.

Abb. 1 Proposed ISDC metadata workflow
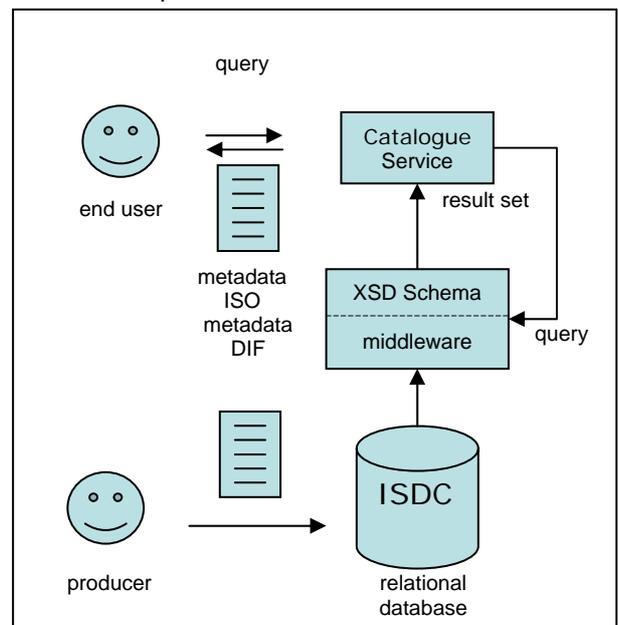
Most importantly the ISDC catalogue can then be (machine) harvested. This mechanism could be used to:

- build a new catalogue in a standard conforming data model (e.g. ISO19115)
- publish data products using a URL resolving unique identifier (e.g. Digital Object Identifier-DOI) enabling data to be cited (Paskin 2005)
- publish product metadata through an Open Archives Harvester
- efficiently manage data harmonisation with other centres

Based on this new catalogue, an ontology model could be constructed poising ISDC for the emergence of the Semantic Web as well as the construction of more complex product and user adapted query masks based on JSR168 portlet technology.

In the interim the realisation of such concepts will give ISDC products added value and improve their accessibility. Ultimately however the goal is to structure future developments along the guidelines of these concepts to maintain a sustainable development through increased modularity and interoperability.

References

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deegree project – http://www.deegree.org

Introduction to JSR 168 - The Portlet Specification - http://developers.sun.com/prodtech/portalserver/reference/techart/jsr168/