

A service oriented framework to create, manage and update metadata for earth system science

Wednesday 13 February 2008 12:00 (20 minutes)

The system is built modular and service oriented to be expandable and easily maintainable. All XML metadata instances, as well as the service layer composed of XSL stylesheets, XQuery/XUpdate modules and XML templates and property files are stored in a native XML database (eXist) and are accessible via different interfaces, depending on the interest in the metadata.

For users of the data, described by the metadata, a detailed view on the information contained, is offered; users of the metadata can explore the structure and content of the metadata format via HTML pages; additional interfaces to manually (for existing data) and automatically (during processing) create, update and parse metadata files are offered to potential providers of data and metadata. For the automatic update, a request file can be submitted to the eXist database via a java interface, which sets on OGSADAI. Manual update is realized via an interactive GUI based on XForm technology.

3. Impact

The interfaces of the presented system offer a convenient way to explore and use the XML implementation ISO19139 of the ISO19115 format. They thus help to describe existing or emerging data in order to share them. The ISO19115 format has proven useful to describe GIS and earth system science data and is already in use by several academic and business actors (e.g. ANZLIC, ESRI, con terra GmbH). The German C3Grid (part of the D-Grid initiative), adapted this format for the grid field to offer a common view and access to data of the large German climate and earth system data providers. This C3Grid framework is set up to be expandable by further data providers. The EGEE infrastructure e.g. has been integrated as both, a data provider and processor. The presented system is intended to attract further EGEE users or earth system science data providers to share their data via this framework with the traditional earth system science community.

4. Conclusions / Future plans

The described system is currently under development and could thus not prove its feasibility yet. It is developed in collaboration with the C3Grid project and is set up to offer each current and potential data provider the opportunity to expand the system to include specific requirements needed for their data by means of stylesheets or XML templates. Once the system is in place, it might prove useful to establish a direct connection between the eXist database and the C3Grid portal.

Provide a set of generic keywords that define your contribution (e.g. Data Management, Workflows, High Energy Physics)

Metadata management, earth system science, GIS, SOA, ISO19115/19139, XML, XSLT, XQUERY, OGSADAI

1. Short overview

A precondition to effectively share and exchange data is a proper description of its content, properties and quality in a standardized metadata format. Yet, a metadata format, complex enough to describe diverse data for a broad community, needs tools to comfortably view, create, parse and update these metadata automatically as well as manually. We develop a system of such tools, based on XML standards, for metadata in the ISO19115/19139 format, describing earth system science data.

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Session Classification: Data Management

Track Classification: Existing or Prospective Grid Services