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Standard and Metadata Management in GEO Grid

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GEO Grid(http://www.geogrid.org) is a R&D program in AIST, which aims to provide a distributed e-science infrastructure based on the Grid/Cloud technologies. The feature of the GEO Grid is as follows.

1) Grid/Cloud based distributed infrastructure which supports data and computing federation. Using the Grid techinology, it is achieved to support safe database federation among distributed organizations.

2) Support OGC(open geospatial consortium,http://www.opengeospatial.org) standards which provides web-based access interface for the metadata search(Catalog Service Web, CSW), map access(Web Map Service, WMS) and data processing services(Web Processing Service, WPS).

3) Various application services with original contents are provided. Examples includes fast 3D DEM(digital elevation model) service and earthquake estimation service.

Metadata management is an important functionality for our GEO Grid since it provides distributed resource discovery and management. Achieving efficient metadata management requires handling a large amount of metadata with heterogeneous profiles/schema in an integrated manner. Moreover, these metadata are generally created in a distributed environment, necessitating distributed metadata management.

For this purpose, we have developed a distributed metadata management system called AIST-CSW, which is based on data-type search indices. These indices are constructed for various data types, including full texts, and are extensible for new user-defined data types. Using this system, we can provide schema-based form queries while supporting schema-free full-text searches. We have also designed a standard HTTP-based access protocol including several domain-specific access standards, including an OGC catalog service and Open Archive Initiatives. In addition to search functionalities, we provide both data harvesting and data registration for the collection of metadata.

Keywords: Earth Observation, Metadata, OGC Standards, GEO Grid