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ebRIM Manages Artifacts in an Open World Building the GeoWeb

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The GeoWeb is an open, global or regional community of geographic information services, providing access to diverse data and geoprocessing functions. The GeoWeb can, in turn, be seen as embedded in a broader “semantic web” that will eventually provide a seamless information backdrop for interaction with the world.

Like lower levels of the information stack (e.g., IP addresses and DNS Servers), the GeoWeb will require the management of various artifacts and entities that enable the plug-and-play interaction of geographic data and services, such as changing geographic features or real-time sensor data. Unlike the lower levels of the information stack, the GeoWeb requires the management of a rich collection of artifacts, including application schemas, feature catalogs and data dictionaries, coordinate reference systems, map styles and symbologies, units-of-measure definitions, sensor descriptions, subscription policies, digital rights, access-control policies, descriptions of geospatial data access and processing services, and the description of data holdings.

A Flexible Framework

Fortunately, the broader IT world has come to the same conclusion and, through the OASIS standards organization, has created the e-business Registry Information Model (ebRIM), which has been picked up by the Open Geospatial Consortium (OGC) and now forms a key component of the ebRIM Profile of OGC Catalog 2.0. OGC prefers a simpler name, the Web Registry Service (WRS).

The WRS combines the OASIS ebRIM information model with the query and request syntax of the OGC Catalog, and it adds some basic spatial operations and data types. The ebRIM (or just RIM) provides a flexible and open framework for modeling many types of resources. The framework includes the following:

- User-defined classification schemes or taxonomies (e.g., organization, place and service types)
- User-defined associations (e.g., look for data and find services that can provide access)
- User-defined packages (e.g., collections of various registry objects, including associations)

Registries and Repositories

The RIM also provides the notion of a Registry/Repository and supports this notion through the use of ExtrinsicObjects. A “RepositoryItem” refers to content that resides in a repository. Each repository item is described in the Registry by an ExtrinsicObject instance, which acts like a proxy for the Repository Items.

It's the ExtrinsicObjects that get classified or associated to one another. In some ways, this is like the old library card catalog, with the Registry being the card catalog and the Repository being the "stacks" containing the books.

ExtrinsicObjects are extensible descriptions of Repository Items and represent them in the Registry. Some commercial implementations such as Galdos INdicio contain an integral XML Repository in addition to supporting external repositories that can be XML, imagery, etc.

Extension Packages

To deploy the WRS requires the creation of an extension package of ebRIM definitions expressed in XML encoding. The WRS has extensibility points that address the needs of a particular user domain. Extension packages are ebRIM definitions, expressed in XML encoding, that represent collections of extension artifacts. WRS contains a basic extension package for geography that includes a variety of artifact types, including Web-services profiles and service models (e.g., WSDL documents), dataset descriptions (ISO 19115), schemas, portrayal rules, generic documents, images, and digital rights.

Additional RIM packages now are being developed within the OGC community, including a Coordinate Reference System package that will be deployed by the Oil and Gas Producers Association as a world registry of coordinate reference systems. Other packages can be expected to be developed and become standards for such things as sensor description, earth-observation data, etc.

A key advantage of the RIM is that it can provide a simple abstract description of a resource that can support advertising, publication and discovery, without requiring the wholesale rewrite of existing, more-detailed descriptions of the resource or the resource itself. WRS can work well with existing description grammars such as GML, geoRSS, KML, SensorML and IEEE 1451, and it can do so across a wide range of domains.

Like other OGC services, the WRS provides standard interfaces that support resource discovery, publication and utilization of resources in applications-consistent with the Publish/Find/Bind paradigm. With the deployment of WRS, users will go beyond the era of data catalogs and lay the basis for true wide-area, plug-and-play data and services.