

OGC's column for the October, 2001 issue of GeoWorld

OGC Lays Framework for Geospatial Web Services

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With the recently launched OGC Web Services (OWS) Initiative, OGC members are moving the geospatial industry much closer to OGC's long-stated goal of "taking geospatial into the mainstream". General IT standards and the availability of broadband for Web-based distributed processing have matured to the point where such processing is beginning to be practical, and it makes sense now to apply these approaches to geospatial interoperability. OGC's Geography Markup Language (GML) built on the Web's XML took a big step in this direction. With Web Services, however, we can now begin to develop methods to publish, find, bind, and chain geoprocessing services together. OWS sponsors and participants envision that geoprocessing applications can be dynamically composed of services discovered and marshaled at runtime for use by e-business, information clearinghouse, and enterprise applications. The maturing of technologies like WSDL, UDDI, and SOAP makes this possible.

OWS is the industry's "skunk works" for building this set of capabilities. OWS follows several successful OGC initiatives that have accelerated the creation and deployment of OGC interfaces that support interoperability in open, Web services for spatial information and processing. The OWS Initiative aims to develop interfaces that continue this progress. A Web service is a self-contained, self-describing, modular application that can be published, located, and dynamically invoked across the Web. Web services perform functions ranging from simple requests to complicated business processes. Once a Web service is deployed, other applications and other Web services can discover and invoke the deployed service.

OWS will be modular. The first stage, OWS-1, will be conducted in "Thread Sets" phased in over the coming year, beginning at the end of September, 2001. The recently published Request for Quotations (RFQ) (see <http://www.opengis.org>) describes the first Thread Set and outlines work to be done in the following areas:

Common Architecture - Define a common set of foundation guidelines and building blocks for an OGC Technical Architecture that supports web services. This effort will address an OGC General Services Model, OGC Web Registry Services, and Sensor Markup Language in support of Sensor Web. It will build upon the general IT foundation and the OGC General Services Model (GSM), which details how geospatial software can plug into broader interoperability infrastructures that can discover and use loosely coupled sources of data and services.

Web Mapping - builds upon OGC's Web Mapping Testbeds I and II and focuses on producing interoperable Web Map Clients for display and interaction with services such as Web Map Server (integrated images of maps), Web Feature Server (vector data), and Web Coverage Server (raster data and imagery).

Sensor Web - addresses interfaces that provide ability to access data from a variety of land, water, air and other sensors via open, direct real-time interfaces. The focus of this effort is on development of a Sensor Registry and Data Collection Service that will support a range of sensor interfaces.

A key part of OWS is the *OGC General Services Model*. The purpose of the OGC General Services Model (GSM) is to detail how geospatial software can plug into broader interoperability infrastructures to use and extend diverse, loosely coupled sources of data and services. With the GSM, it will be possible to implement services using a large number of different underlying processing infrastructures. The interaction between services will be completely platform and language independent. XML-based interface definition, service description and a protocol of collaboration and negotiation are considered to be the basis for shared understanding between services. Discovery of services will be possible dynamically at runtime. A service requester will be able to describe the capabilities of the service required. Once a provider of service is found, there must be enough information to connect and access it.

The U.S. Environmental Protection Agency EMPACT Program, the Federal Geographic Data Committee, GeoConnections/Natural Resources Canada, Lockheed Martin, the National Aeronautics and Space Administration, the U.S. Geological Survey, and the U.S. Army Engineer Research and Development Center are the sponsors of OWS-1.

OWS builds on previous OGC testbeds and pilot projects, but it also represents a well-resourced and well-planned attempt to consolidate the gains of those projects and integrate those gains with the latest developments in Web-based distributed computing. The people representing the sponsoring organizations comprise a skilled technical group steeped both in OGC lore and in the relevant recent developments in Information Technology. They will not fail to create a set of candidate open interfaces and protocols that will truly “take geospatial into the mainstream” when vendors implement these in products. (See <http://www.opengis.org> for the long and rapidly growing list of products that already implement OpenGIS Specifications.)

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