TESTING, TESTING…

THE OGC TESTBED 10 WORKS ON RAPID PROTOTYPING OF INTEROPERABILITY STANDARDS. LEW LEINENWEBER REPORTS ON SOME OF ITS LATEST ACTIVITIES

During the first half of 2013, 11 OGC Member organisations delineated urgent interoperability requirements to be addressed in the OGC Testbed 10 rapid prototyping activity. These organisations positioned these requirements with use-cases and scenarios in the following activities:

- Cross-community interoperability (CCI) activities focused on best practices for semantic mediation, volunteered geographic information (VGI), provenance and data quality, and Global Gazetteer.
- Open mobility activities addressed the geospatial standards requirements of the growing mobile environment where client applications are mobile and information services are increasingly distributed across cloud infrastructures.
- Aviation work involved the demonstration and use of the Aeronautical Information Exchange Model (AIXM) and the Flight Information Exchange Model (FIXM).

From October 2013 through to April 2014, 29 OGC Member organisations from the private sector worked together with research organisations and universities to address the sponsors’ interoperability requirements. These participants developed and tested candidate standards, best practices, interoperable and commercially available technologies and products, and demonstrated the availability and practicality of operational systems based on open standards.

The participants developed 19 OGC Testbed 10 public engineering reports to document the progress they made for the geospatial technology industry at large. Summaries of the reports can be found at the OGC Testbed 10 web page (www.opengeospatial.org/projects/initiatives/ows-10), but the following provides an overview of some of these reports.

Volunteered information
The Cross Community Interoperability VGI Engineering Report describes an approach for integrating VGI into a spatial data infrastructure (SDI). It includes optimisation ideas, recommendations for improvements in certain standards, and lessons learned. Using the OGC Observations & Measurements (O&M) data model enabled transformation of heterogeneous VGI data into a standardised model and format. The candidate OGC Event Service Interface Standard supports real-time, complex event processing on incoming O&M-encoded VGI data streams.

The VGI report is not the only report that is significant for users and developers of SDIs. Recommendations for the Exchange of Terrain Data investigates the possibilities for INSPIRE-compliant web-based access to terrain data for aviation purposes, comparing EUROCONTROL’s Terrain Information Exchange Model (TIXM), OGC GeoPackage, and Defence Geospatial Information Working Group (DGIWG) Elevation Surface.
Model (ESM) options for the exchange of terrain data. The report’s recommendations for the exchange of terrain data will be useful for those looking at exchanging terrain data in domains other than aviation.

Integration of legacy systems with modern web services-based applications that implement OGC standards will be important for many years to come. *Aviation Dissemination of Weather Data Engineering Report* describes how to provide an OGC-compliant Web Coverage Service (WCS) HTTP GET interface to the US NOAA National Weather Service’s large-scale National Digital Forecast Database (NDFD). NDFD has been in operation for 10 years, services millions of hits each day, but does not use OGC standards.

**Integration**

Integrating and making sense of data from diverse sources is one challenge that developers face as digital geospatial data becomes a part of everyone’s information environment. Providing data in graphic representations that suit particular user communities is another. *Aviation Human Factor Based Portrayal of Digital NOTAMs Engineering Report* provides an assessment of the guidelines provided by the Society of Automotive Engineers (SAE) in their latest published document regarding portrayal of Notices to Airmen (NOTAMs) in the aircraft flight deck. Participants analysed the recommendations of the SAE and evaluated the feasibility of applying them using the OGC Symbology Encoding (SE) standard, version 1.1.

*Cross Community Interoperability (CCI) Hydrology Model Interoperability Engineering Report* documents best practices and recommendations developed for enabling interoperability among the hydrologic data models used by national hydrological services of Canada and the United States using a common hydrologic feature model developed in the joint WMO/OGC Hydrology Domain Working Group.

Ontology mapping between hydrology feature models using Simple Protocol and RDF Query Language (SPARQL) and the OWL 2 Web Ontology Language was shown in the *OWS Cross-Community Interoperability Ontology Engineering Report*. Within Testbed 10, the CCI thread built on interoperability within communities sharing geospatial data and advanced semantic mediation approaches for data discovery, access and use of heterogeneous data models and heterogeneous metadata models. This thread explored the creation of domain ontologies and tools to create, assemble, and disseminate geographic data provided voluntarily by individuals. One objective was to build integration across all OGC web services with the intent to provide a better understanding of service content and the relationships or associations that exist between OGC services and resources/content.

*CCI Virtual Global Gazetteer Engineering Report* describes an approach to gazetteer linking, demonstrated by accessing the New Brunswick Gazetteer and geonames.org to provide access to additional information about a location contained in other gazetteers. It addresses gazetteer conflation and semantic gazetteer linking. OGC Filter Encoding Standard extensions add text search operators, fuzzy string-matching operators, and filtering by country, feature description or spatial constraints.

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![Figure 1. VGI client showing Flickr image (source: PYXIS innovation). Flickr is just one of many consumer apps that people can use to report information](image)