Building Information Models (BIM) Demonstrated in OGC Testbed

On March 13, the National Institute of Building Sciences (NIBS) Facility Information Council has released the first version (see link) of the National Building Information Modeling Standard (NBIMS) for a two month industry review period.

The Open Geospatial Consortium, Inc. (OGC) has been helping to promote this standard through interoperable web services using NBIMS and helping to ensure compatibility with the geospatial industry's consensus based open standards for urban mondeling.

The OGC Web Services test bed (OWS-4) demonstration, held December 7-8, 2006 at an emergency response center in the New York metropolitan area, showed how interoperability is possible among 3D geospatial models, CityGML and Industry Foundation Classes (IFCs). CityGML applies the OGC's Geography Markup Language (GML) for encoding urban environments. IFCs are an International Alliance for Interoperability (IAI) International standard and a common component of Building Information Models. High level decision makers involved in disaster management saw a live enactment of a fictional scenario in which a "dirty bomb" explodes at a wharf, causing injuries and releasing a plume of dangerous radioactivity. The demonstration used a variety of Web-based geospatial information systems to show evacuation management, find a building suitable to contain an emergency decontamination and hospital unit, and track victims. The geospatial and CAD technologies used at the demo event were mainly commercial off-the-shelf systems employing the OGC's open specifications for geospatial interfaces and encodings.

In the scenario, a temporary hospital and decontamination site had to be found near the event but not in the path of the radioactive plume. Building information models (BIM) were available for the area. The BIM encoding used IFCs. Visual inspection and review of the integrated IFC, CAD, and GIS data showed that one building in particular was well suited to meet the special emergency hospital requirements. Thus, the search took less than an hour, and preparation of the site and transportation of patients could begin immediately.

An open standards approach to sharing of information and services between AEC/CAD and geospatial technologies is critical for urban planning, emergency response, homeland security, defense and intelligence as well as many business and legal activities that involve buildings and capital projects such as highways, bridges and airports.

The OWS-4 demonstration relied on CityGML - an emerging OGC standard - for sharing urban models. CityGML is the result of work in the German North Rhineland Westphalia Sig3D organisation. OWS-4 participants demonstrated workflows that bridged the general framework for city representation provided in CityGML with much more specific information models for AEC developed by the IAI and BIM guidelines developed by the United States General Services Administration. Participants in the test bed's CAD-GIS-BIM thread extended the OGC specification for Web Feature Service (WFS), creating a WFS-BIM that for the first time integrates authoritative building data from AEC workflows with the geospatial search, discovery and contextual layering capabilities inherent in the OGC Open Web Services architecture.

A 12 minute OWS-4 video and interactive demo are available at http://www10.giscafe.com/goto.php? http://www.opengeospatial.org/pub/www/ows4/index.html

The OGC will soon launch and manage a fifth OWS test bed activity to advance the development of interoperability of BIM, GIS and 3-D models.