Open, Modular Services for Large, Multi-Dimensional Raster Coverages: The OGC Web Coverage Service (WCS) Standards Suite

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Recent progress in hardware and software technology opens up vistas where flexible services on large, multi-dimensional coverage data become a commodity. Interactive data browsing like with Virtual Globes, selective download, and ad-hoc analysis services are about to become available routinely, as several sites already demonstrate. However, for easy access and true machine-machine communication, Semantic Web concepts as being investigated for vector and meta data, need to be extended to raster data and other coverage types. Even more will it then be important to rely on open standards for data and service interoperability.

The Open GeoSpatial Consortium (OGC), following a modular approach to specifying geo service interfaces, has issued the Web Coverage Service (WCS) Implementation Standard for accessing coverages or parts thereof. In contrast to the Web Map Service (WMS), which delivers imagery, WCS preserves data semantics and, thus, allows further processing. Together with the Web Catalog Service (CS-W) and the Web Feature Service (WFS) WCS completes the classical triad of meta, vector, and raster data. As such, they represent the core data services on which other services build.

The current version of WCS is 1.1 with Corrigendum 2, also referred to as WCS 1.1.2. The WCS Standards Working Group (WCS.SWG) is continuing development of WCS in various directions. One work item is to extend WCS, which currently is confined to regularly gridded data, with support for further coverage types, such as those specified in ISO 19123. Two recently released extensions to WCS are WCS-T ("T" standing for "transactional") which adds upload capabilities to coverage servers and WCPS (Web Coverage Processing Service) which offers a coverage processing language, thereby bridging the gap to the generic WPS (Web Processing Service). All this is embedded into OGC's current initiative to achieve modular topical specification suites through so-called "extensions" which add focused capabilities to some minimal "core" specification.

In this talk the current status of WCS, ongoing work, and directions under consideration are outlined. Further, embedding of WCS in the larger context of OGC's modular specification framework and into SOA concepts is discussed. The author, who is co-chair of OGC's WCS Working Group (WG) and Coverages WG, presents facts and personal views on the future of large-scale coverage services.