Validating Web Feature Server
Milestone 4 Report

Submitted To: Program Manager
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1 SUMMARY OF WORK ACCOMPLISHED

The goal of this project is to build a Validating Web Feature Server (VWFS) by adding extra functionality to a Web Feature Server (WFS). A Web Feature Server is an application that delivers information about spatial objects across the Web.

The WFS that we will be using is called GeoServer. GeoServer is an open source implementation of the Open GIS Consortium's Web Feature Server Specification. Our project will add a level of validation to GeoServer to help maintain spatial database integrity.

During the fourth and final Milestone, we have revised our web based configuration interface and gathered metrics on the performance of the Validation Processor.

All required documents have been completed for this final milestone.

These documents are:

Phase 1.5

- Programmers documentation for plug-in API
- Users documentation for Validation Language tool
- Report on performance metrics for validation modules

Phase 3.3

- Web Based Configuration Implementation Report

Phase 4.1

- Final report

For the final milestone we have completed:

Phase 1.5

- Implemented Recommendations from previous phase
- Installation and Packaging

Phase 3.3

- Implemented Recommendations from previous phase
- Implemented Graphic Design changes
- GeoServer 1.2.0 Beta Release

We were very pleased with the performance and maturity of the Validation Processor and associated Plug-Ins.

This work is publicly available at the GeoServer and Geotools2 CVS repositories.

2 ENCOUNTERED PROBLEMS AND SOLUTIONS

The FeatureType Editor page in the Web Based User Interface was the focus of our recommendations from the previous phase.

The encountered problems mentioned below have resulted from the need to allow convenient editing of FeatureType information.

2.1 GML and XMLSchema Use

The open source development community has consistently lacked in the ability to work with XMLSchema information dynamically. Most validating parsers continually parse and reconstruct XML Schema information as required.

This approach is not well suited to GML. In the previous milestone we had taken the trouble to extract a subset of the GML and XMLSchema schema information into GMLUtils class.

During this final milestone we have revised this class and transferred it to the geotools2 library. This has proved adequate for our current needs, although we would still like to see a long-term solution developed.

2.2 Representing Required Attributes

The XMLSchema document used to describe FeatureTypes can make use of several base elements provided by GML. This information is used at runtime to enforce the inclusion of attributes made mandatory by the base element. The FeatureType Editor required a representation for mandatory attributes.

The FeatureType Editor was extended to include the idea of read-only attributes. Read-only attributes appear in the FeatureType editor, but their XMLSchema element mapping is fixed and may not be modified by the end user.

The use of read-only attributes allows the representation of mandatory attributes as determined by the base XMLSchema element. This solution allows the additional benefit of allowing the representation of generated schema information during the FeatureType editing process.