SOS vs. WFS

Coupling
52° North’s SOS and Geoserver’s WFS

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Overview

- Motivation
- Web Feature Service (WFS)
- Sensor Observation Service (SOS)
- Comparison SOS and WFS
- Coupling 52N SOS and Geoserver WFS
- Conclusions
Motivation

• Provide interoperable web-based access to sensors and its observations via the internet

• Easy integration into GIS and SDIs

• Which services should be used for providing observations?

→ SOS vs. WFS
Web Feature Service (WFS)

- Provides access to vector-based geographic features encoded in GML
- Generic property filter
- Definition of domain/application specific feature types
  - Can be retrieved from WFS
- Transactional Profile
  - Modification of features
Sensor Observation Service (SOS)

• Provides access to
  – Observations encoded as O&M and
  – Sensor descriptions encoded in the Sensor Model Language (SensorML)

• Well-defined spatial, temporal, sensor and observed property filters

• Transactional Profile
Comparison of WFS and SOS

- **WFS**
  - Self-defined feature types for observations
  - Use generic property filter for filtering
  - `GetFeature` operation

- **SOS**
  - O&M and SensorML
  - Well-defined filtering
  - `GetObservation` operation
Comparison WFS vs. SOS

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<th><code>getObservation()</code> SOS 1.0</th>
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Comparison WFS vs. SOS

• Suggestion:
  – WFS more flexible, but less interoperable
  – SOS provides well-defined formats and access methods for observations and sensor descriptions

  – Suggestion:
    • Use WFS for providing features of interest
    • Use SOS for providing time series of observations and sensor metadata
Coupling of WFS and SOS - 1

SOS

Provide dynamic Property values

WFS

Provide features of interest

FOI
Coupling of WFS and SOS - 2

WFS

GetFeature

SOS

Provide dynamic Property values

Provide features of interest

FOI

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Coupling WFS and SOS

• Idea:
  – Provide FOIs and observations through one service interface
  – Loose coupling:
    • Implement connection to WFS in backend of SOS
  – Enable spatial filtering for observations via SOS (which forwards filtering to WFS)
Implementation

• Used software
  – GeoServer 2.0.2
    • PostgreSQL/PostGIS support
    • Transactional Profile (WFS 1.0)
    • Security
  – GeoTools 2.6.1
    • Easy to connect WFS
    • Query WFS
  – 52n SOS SVN
Implementation

SOS - Client

Web Tier

SOS Servlet

52north SOS

Business Logic

RequestOperator
GetObservationListener
GetFeatureOfInterestListener

Data Layer

GetObservation DAO
GetFeatureOfInterest DAO

WFS - Client

GeoServer WFS

GeoTools
Implementation

Diagram showing the implementation process with steps involving Client, SOS, GetObservationDAO, GeoTools, GeoServer, and Database. The process includes interactions with GetObservation.xml, ObservationCollection.xml, getObservation(request), queryFeatureOfInterest(filter), GetFeature.xml, FeatureCollection.xml, queryObservations(parameter), ObservationCollection.xml, and ResultSet.
Conclusions

• Geoserver‘s WFS:
  – Much higher degree of freedom for supporting new features types as features of interest in observations

• 52°North‘s SOS:
  – Well suited for providing observation time series

• Combination eases the deployment and maintainance of services
Outlook

• Extend implementation to support other WFS‘s

• SOS 2.0:
  – Currently in RFC at OGC
  – Improved Transactional Profile
  – Further simplification of spatial and temporal filtering
  – Improved Capabilities structure
  – Using new SWE services common model → URLs recommended
Thank you for your attention!

More information:

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