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SOS vs. WFS
–
Coupling 52° North's SOS and Geoserver's WFS

Simon Jirka, Carsten Hollmann, Christoph Stasch

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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

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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

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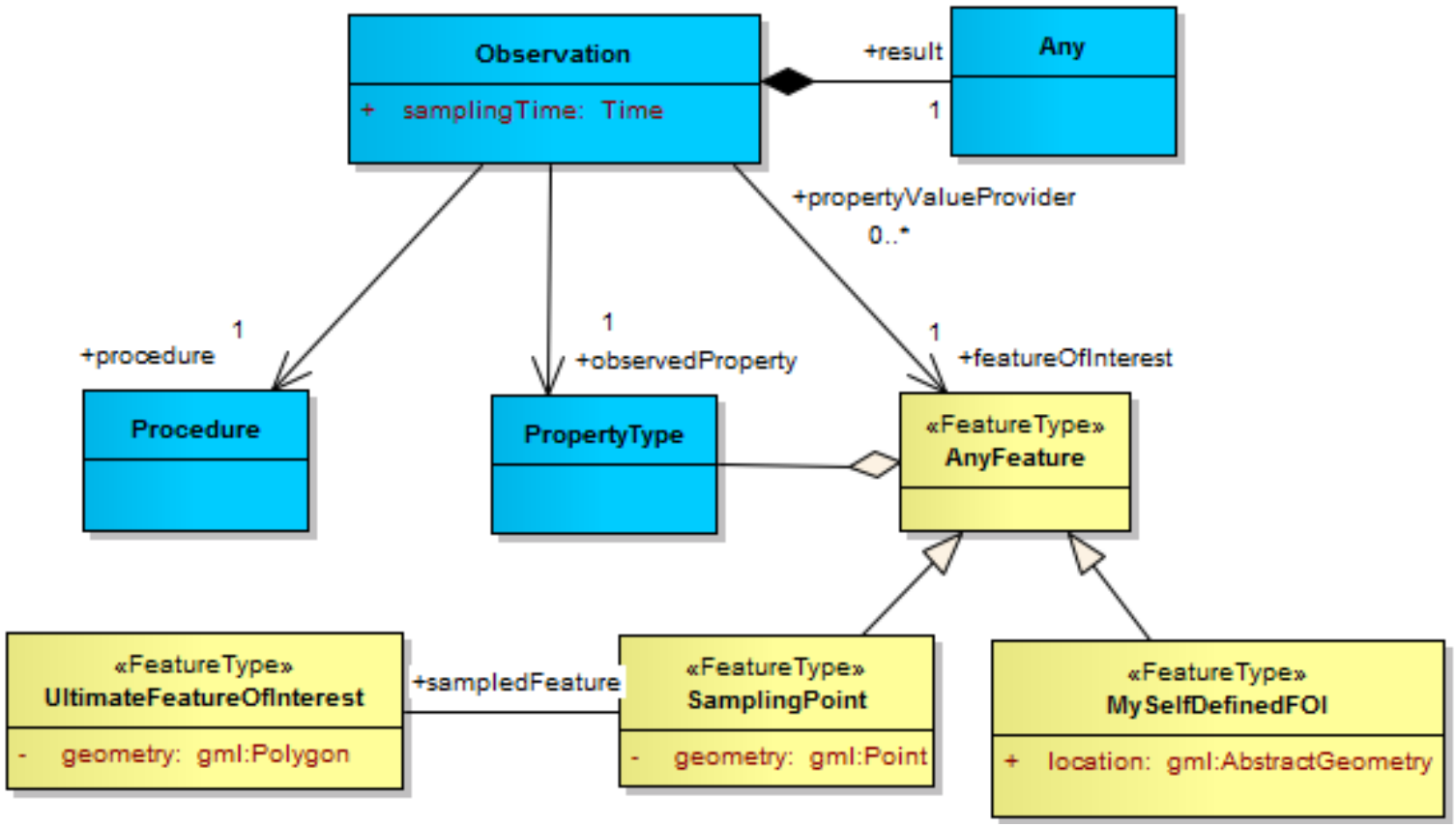
Sensor Observation Service (SOS)

- 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

Observations and Measurements (O&M)



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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

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Comparison WFS vs. SOS

Query	getFeature() WFS 1.1	getObservation() SOS 1.0
Geographic Location		
lat long	X	X
lat long z	X	X
Time		
time instance		X
time range		X
Procedure		
1 (query single procedure)		X
N (query multiple procedures)		X
all available		
Observed Property		
1 (query single property)		X
N (query multiple properties)		X
all available		
Number of Records		
latest (1)		
latest (N)		

Source: Bermudez et al. „Web Feature Service (WFS) and Sensor Observation Service (SOS) - Comparison to Publish Time Series Data" accessible at http://www.oostethys.org/outreach/presentations-and-papers/wfs-sos-cts2009-lb.pdf/view

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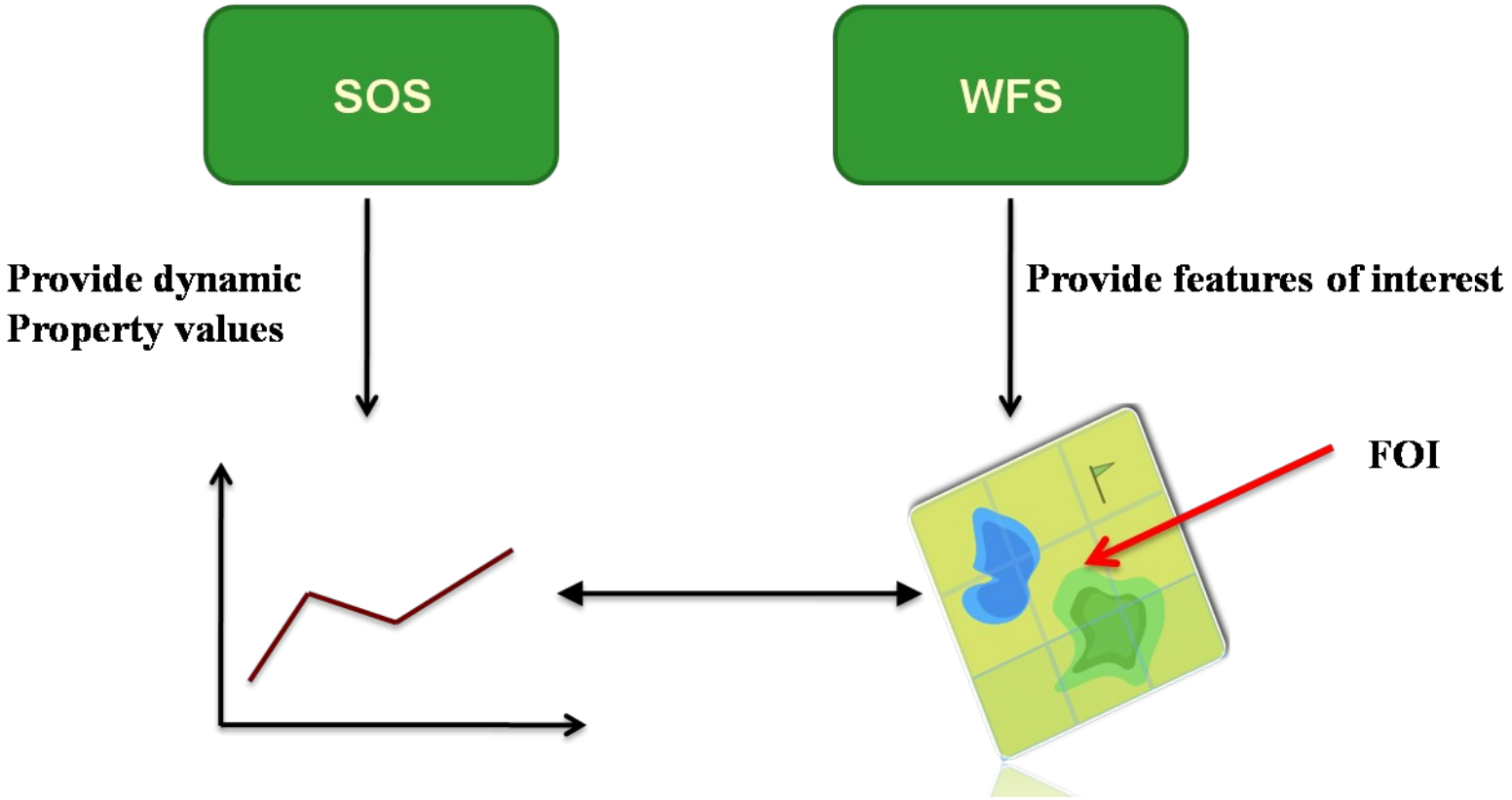
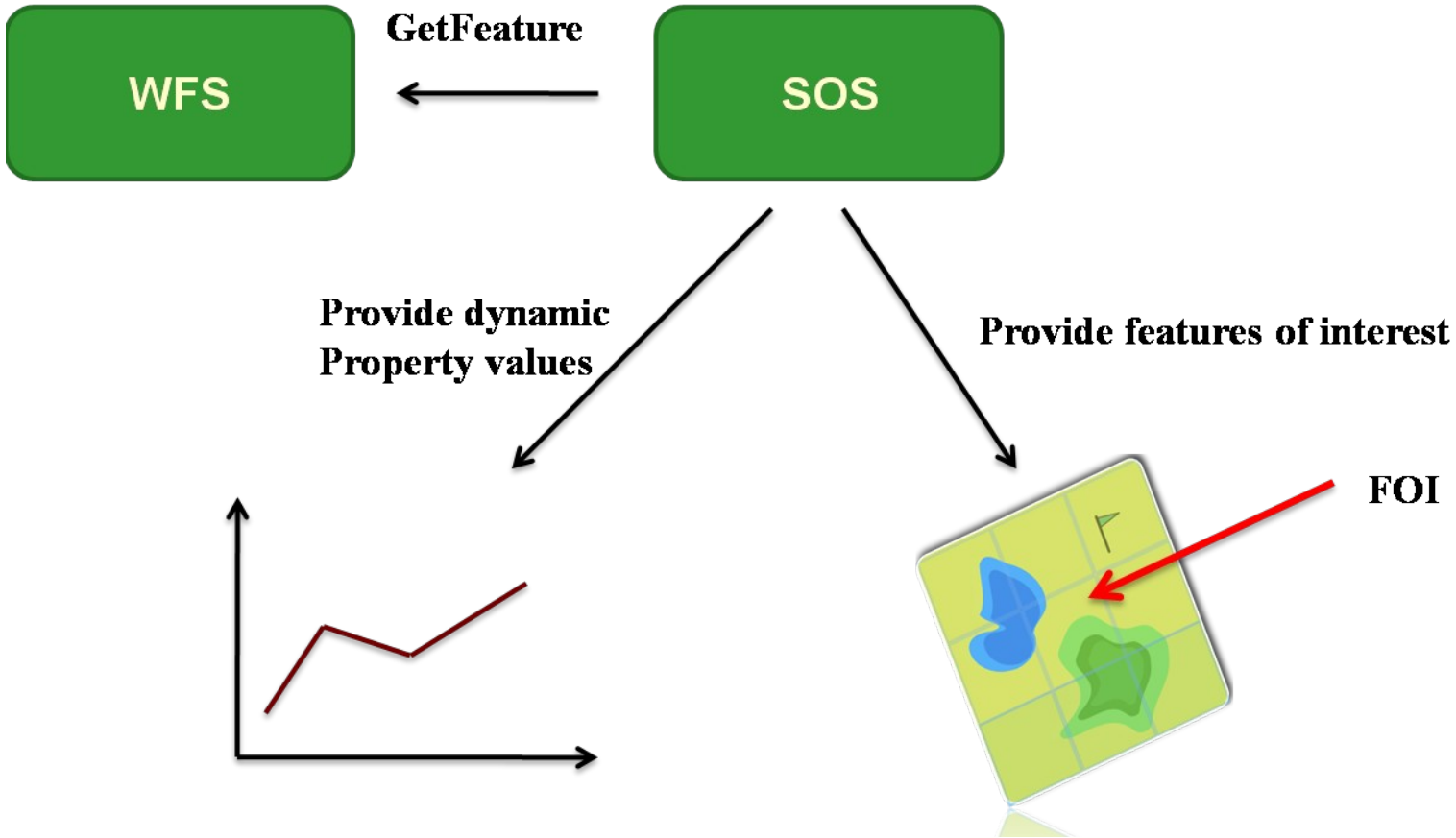
Comparison WFS vs. SOS

- 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



Coupling of WFS and SOS - 2



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)

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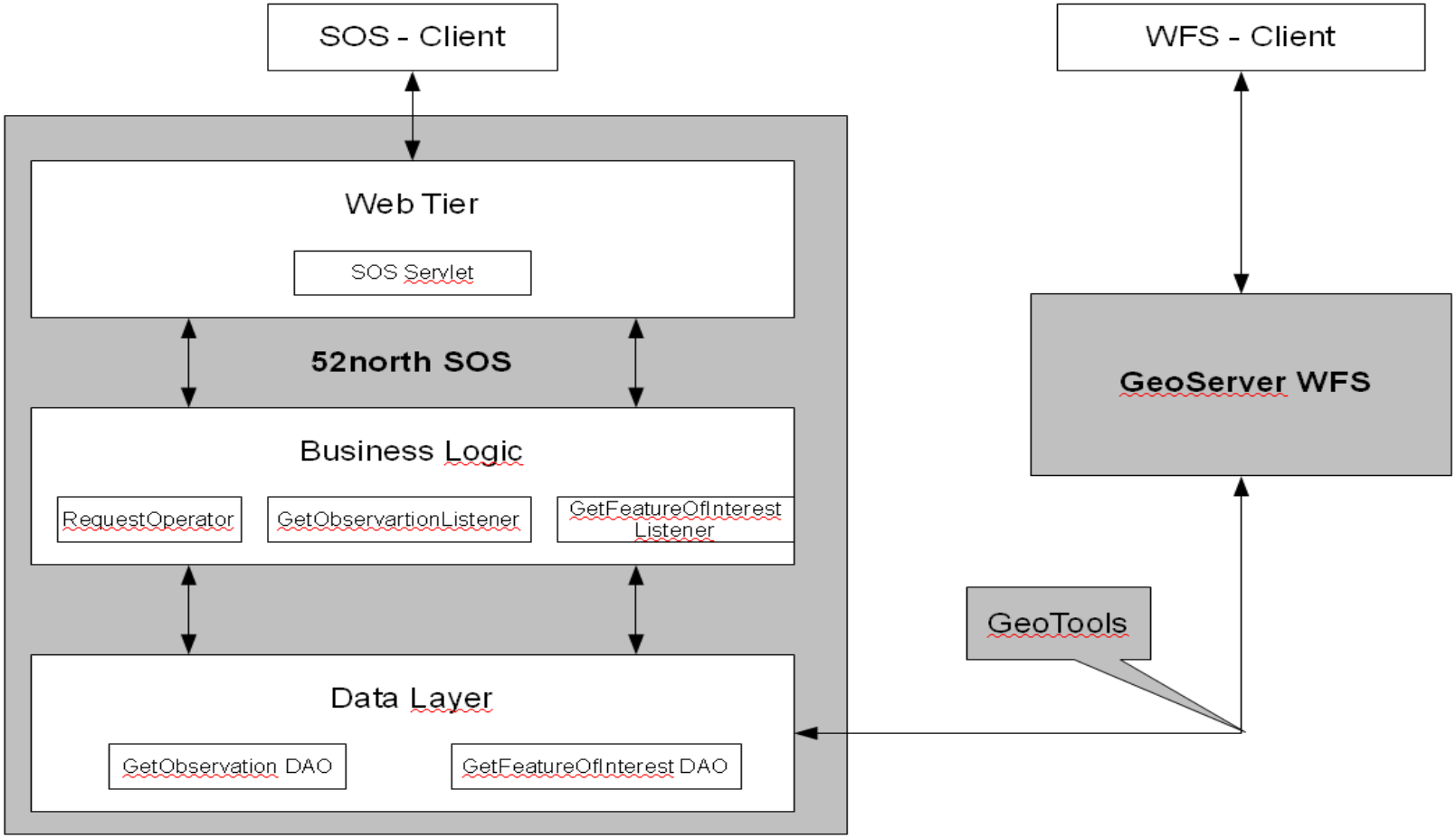
Implementation

- 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



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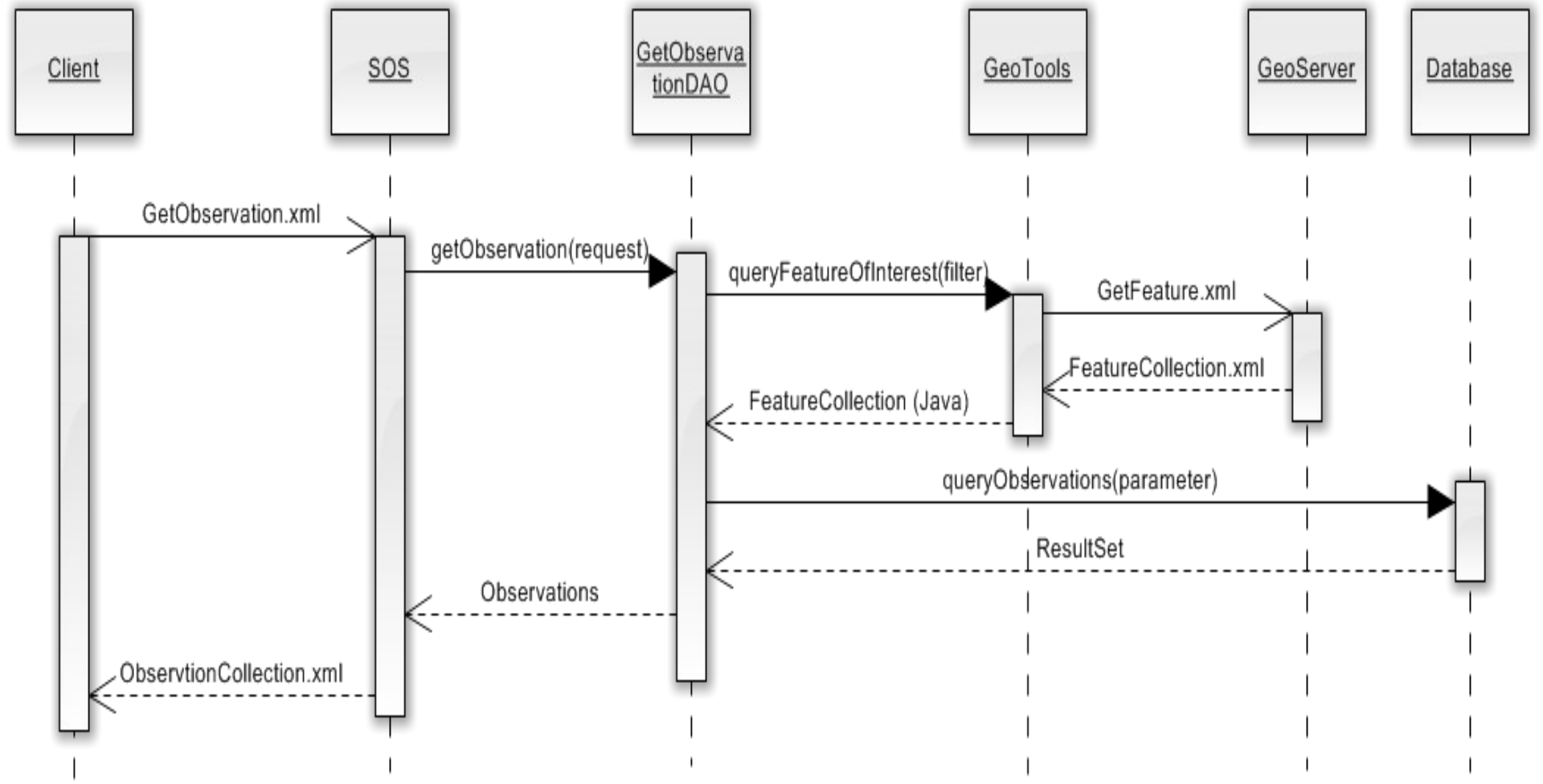
Implementation



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

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Thank you for your attention!

More information:

http://sensorweb.uni-muenster.de

http://52north.org/swe

jirka@52north.org