



# Making Breakfast with 5 oz of Cinnamon Porridge and 150 gr of Sweet Oatmeal

Matthes Rieke (1), **Luis Bermudez** (2), Benjamin Pross (1),  
Aijun Chen (3), and Genong (Eugene) Yu (3)

(1) 52North, (2) Open Geospatial Consortium, (3) George Mason University

April 9, 2013

EGU General Assembly 2013

Vienna, Austria

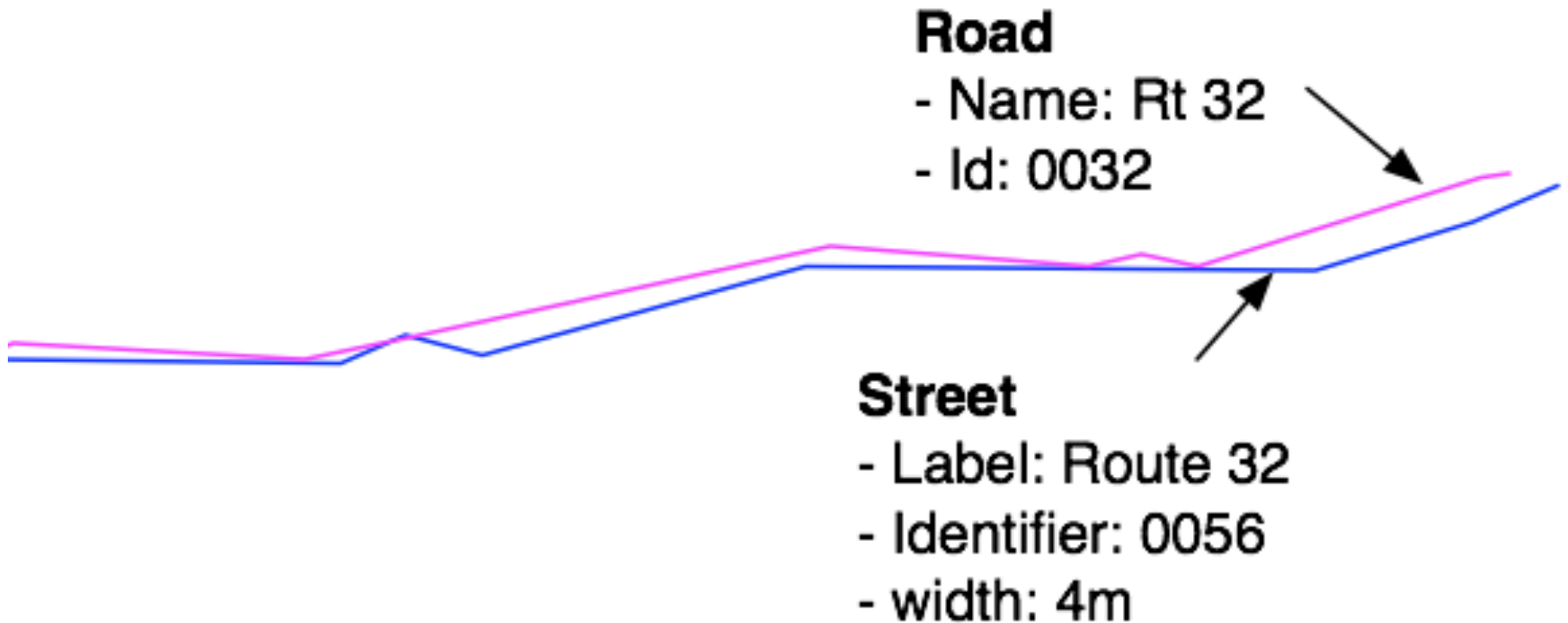


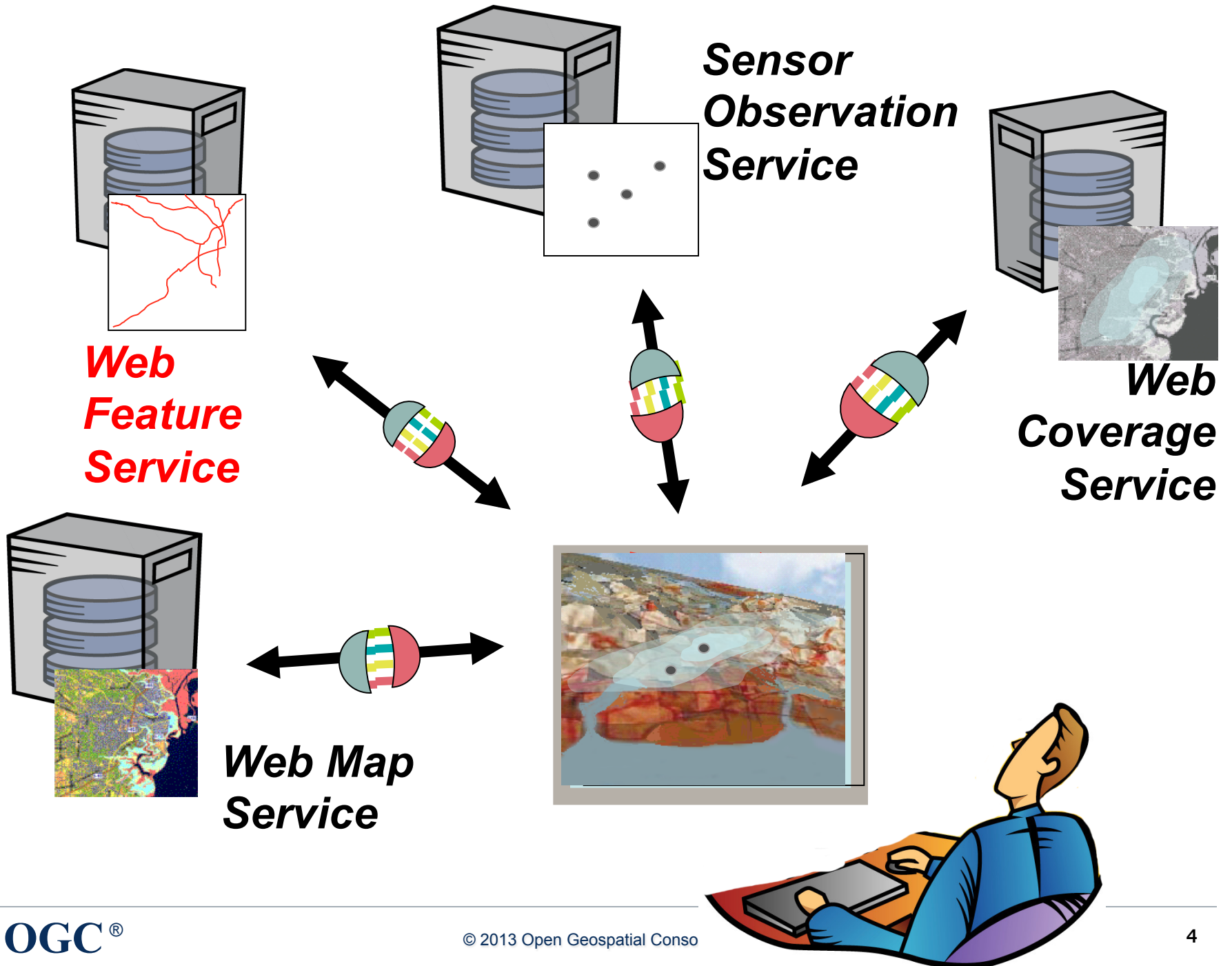
---

**5 oz of  
cinnamon  
porridge  
+  
150 gr of  
sweet  
oatmeal  
?**

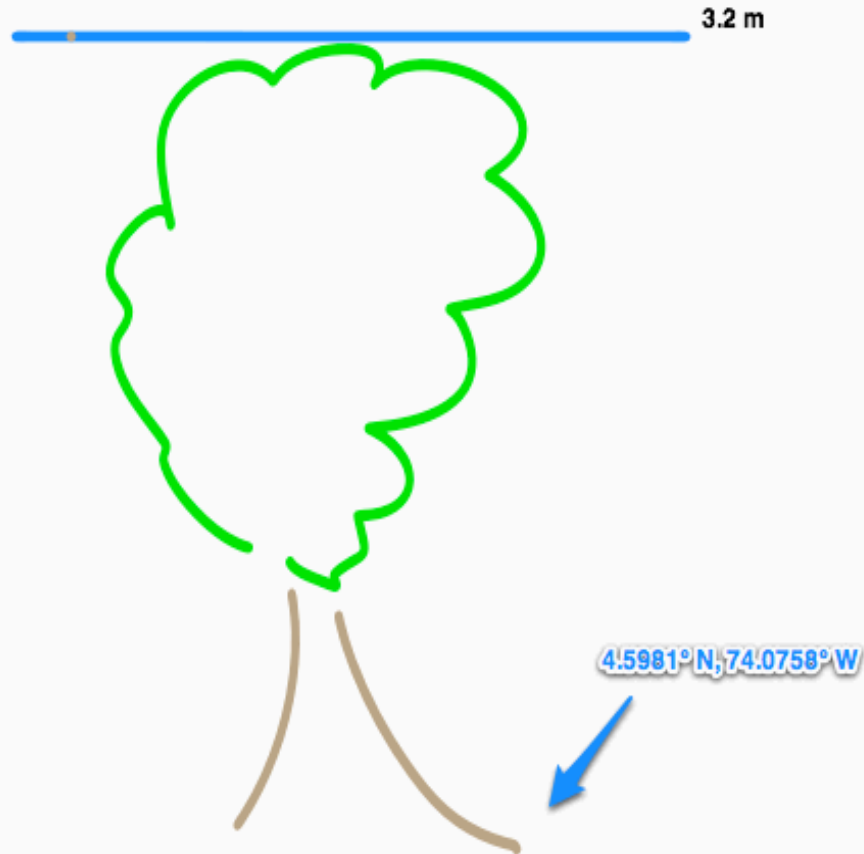
---

# Confusion





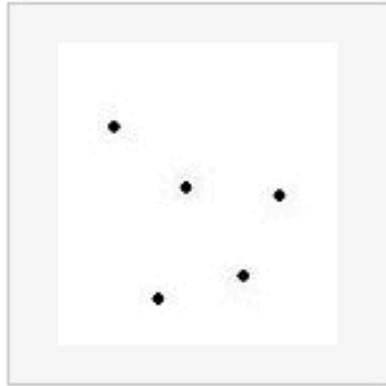
# Feature



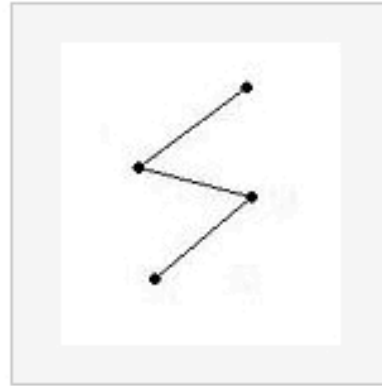
# Features Geometries



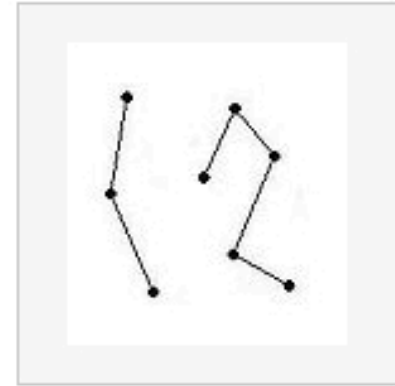
Point



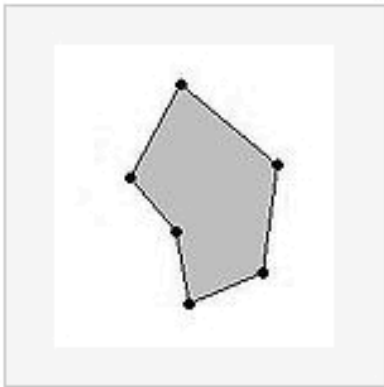
MultiPoint



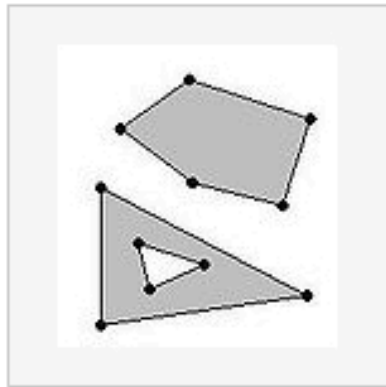
LineString



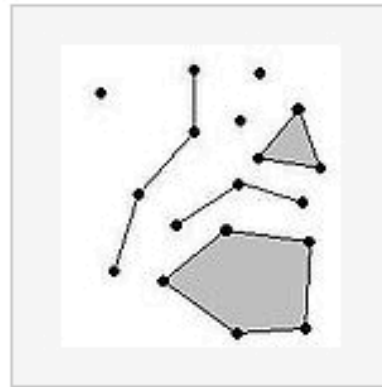
MultiLineString



Polygon



MultiPolygon



GeometryCollection

# Web Feature Service



**Client**



**WFS Server**

# Get Feature via web Requests





# Semantic Mediation and Conflation



Likes  
NGA



Likes  
USGS



Prefers

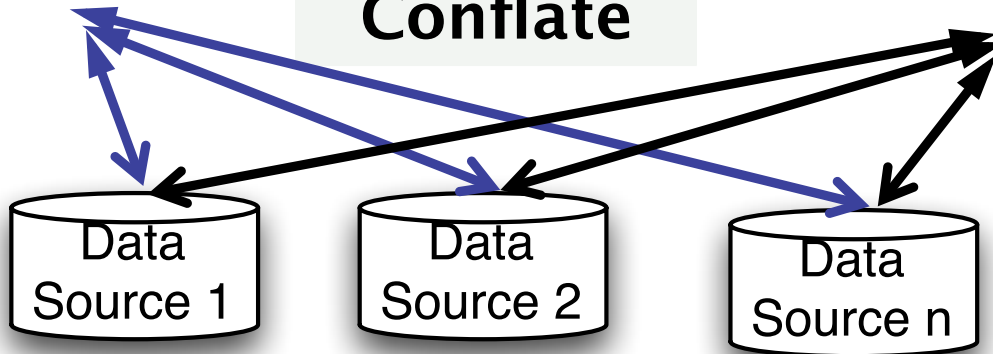


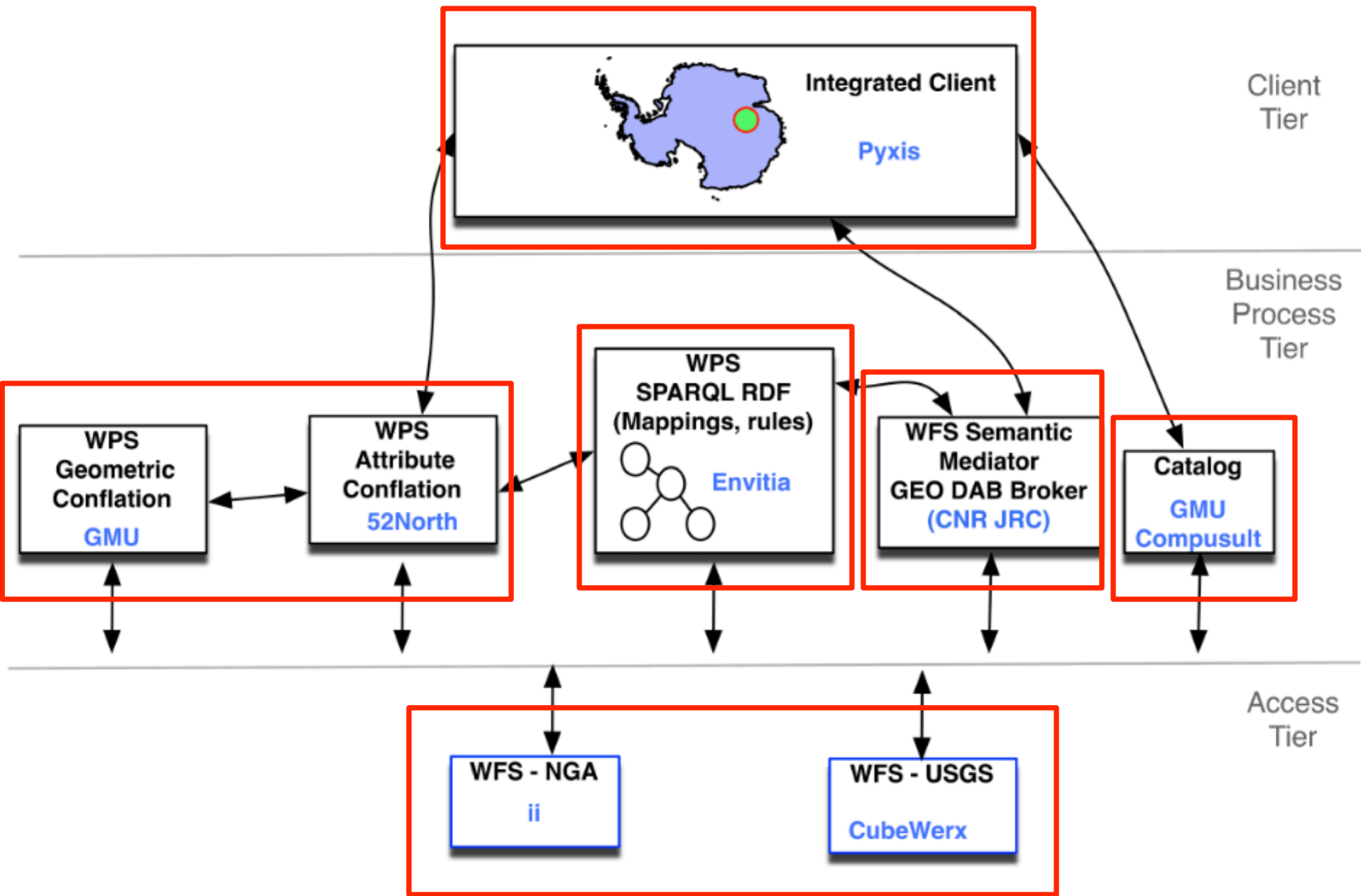
Prefers

**NGA model -**  
Local Topographic  
Data Store (LTDS)

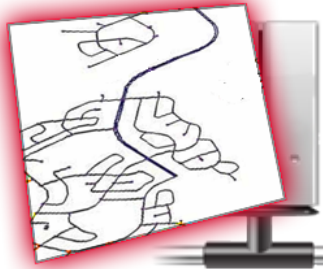
**Mediate  
and  
Conflate**

**USGS model -**  
The National Map (TNM)





# Conflation



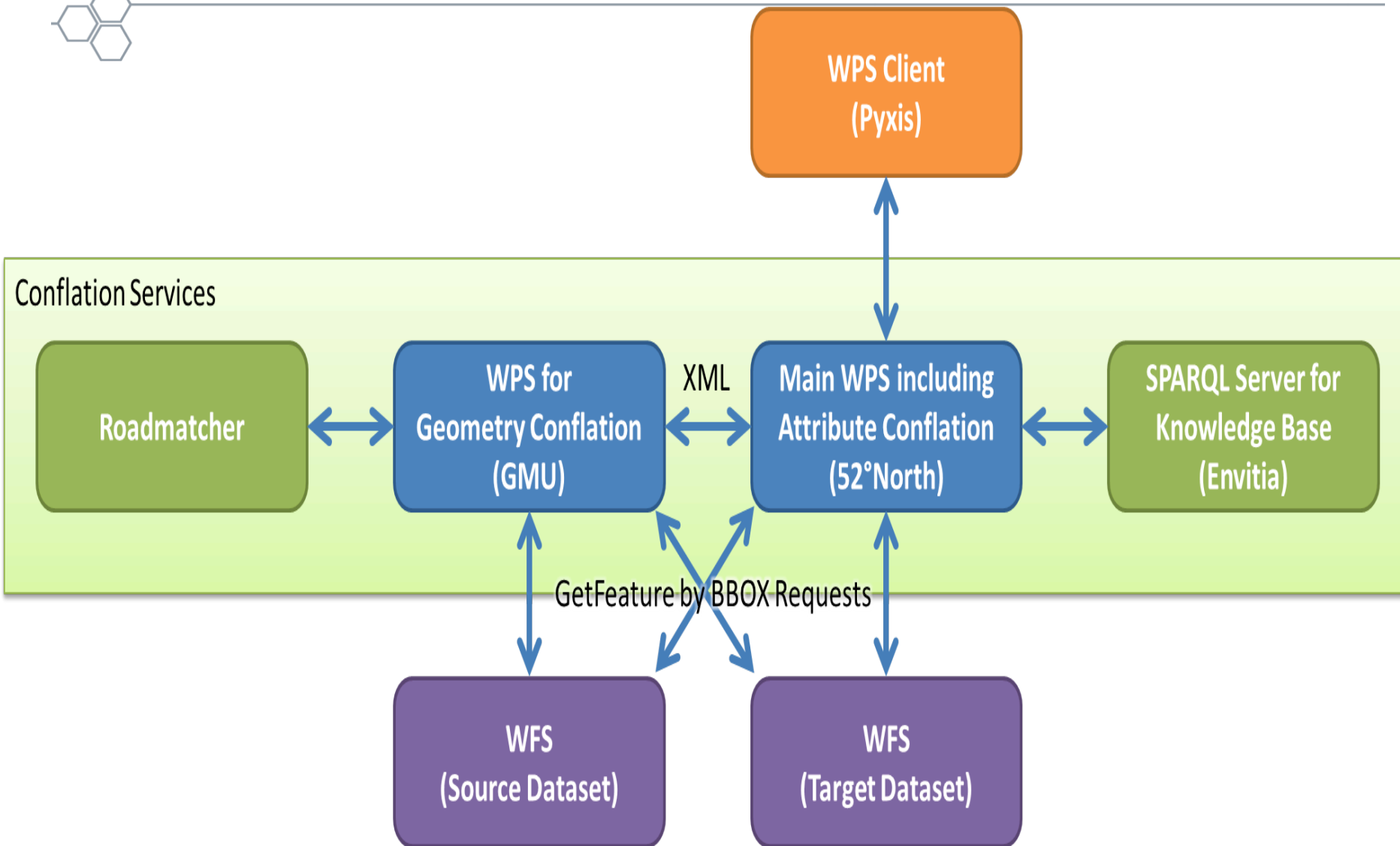
**Source Dataset**



**Target Dataset**



# Architecture



# Web Processing Service



Client

`<execute> input </execute>`

`<output> result... </output>`



WPS Server

# Main WPS Conflation Inputs

---



- **source-wfs** – a WFS GetFeature request providing the source dataset
- **target-wfs** – a WFS GetFeature request providing the target dataset
- **bbox** – an optional bounding box where the conflation should be applied

# Main WPS Conflation Outputs

---



- wps:Output with identifier “**result**”.
- wps:Output with identifier “**provenance**”

# Geometry Conflation



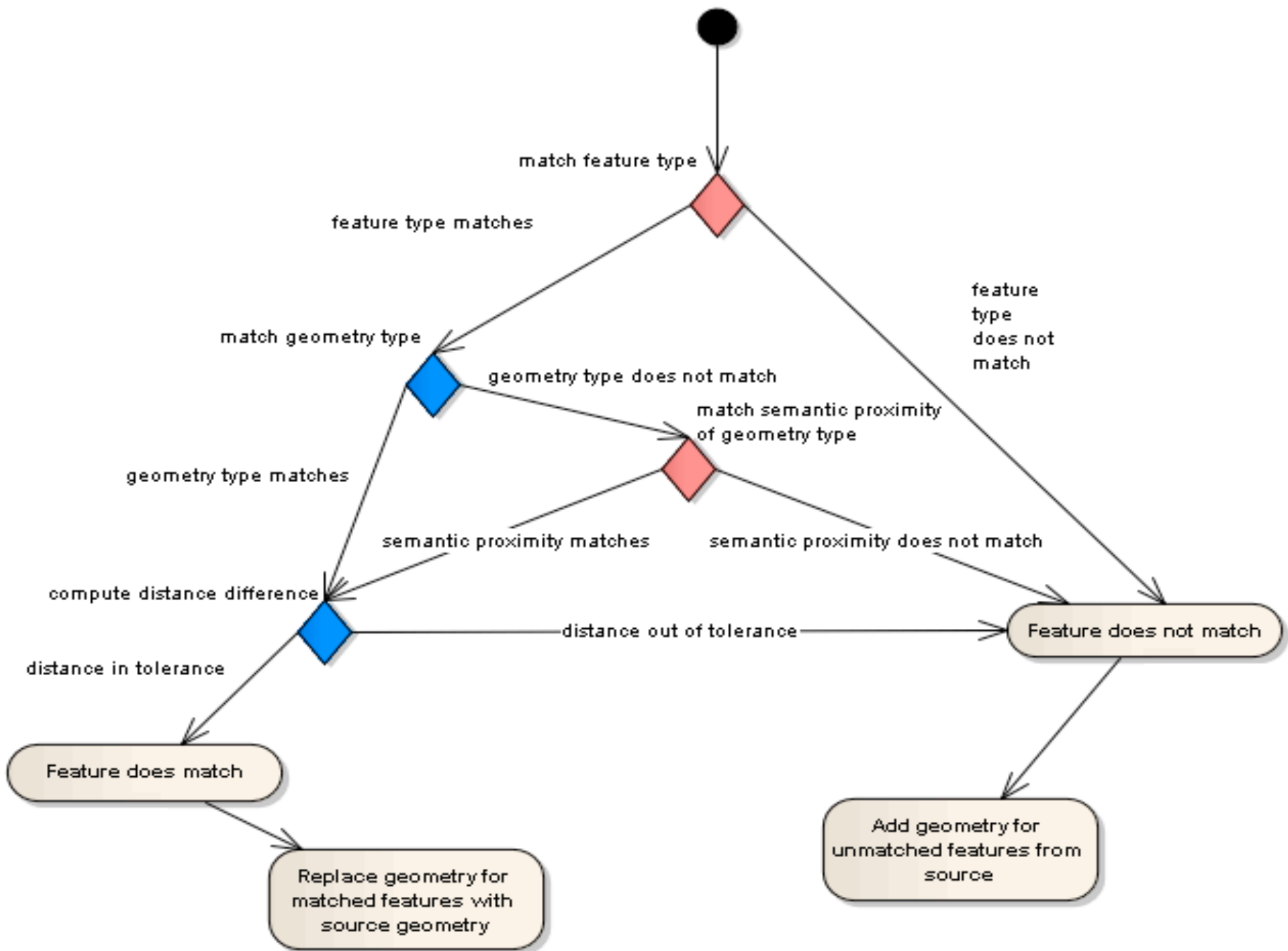


# WPS Geometry – Inputs and Outputs

---



- Input
  - **inputGMLURL1**
  - **inputGMLURL2**
- Output
  - **outputGMLURL1** – link to download the resulted dataset
  - **outputGMLversion1** - reference to on the fly schema for download
  - **outputGMLschemaname** – provides the schema location as defined in the resulting dataset



# Attribute Conflation



## RoadDatasetA

+ oneWay = true  
+ roadClass = 1

## RoadDatasetB

+ oneWay = true  
+ roadName = Main Rd

## RoadResultDataset

+ oneWay = true  
+ roadName = Main Rd  
+ roadClass = 1

# Knowledge Base

---



**ONTOLOGIES and  
MAPPINGS  
OWL, SKOS**

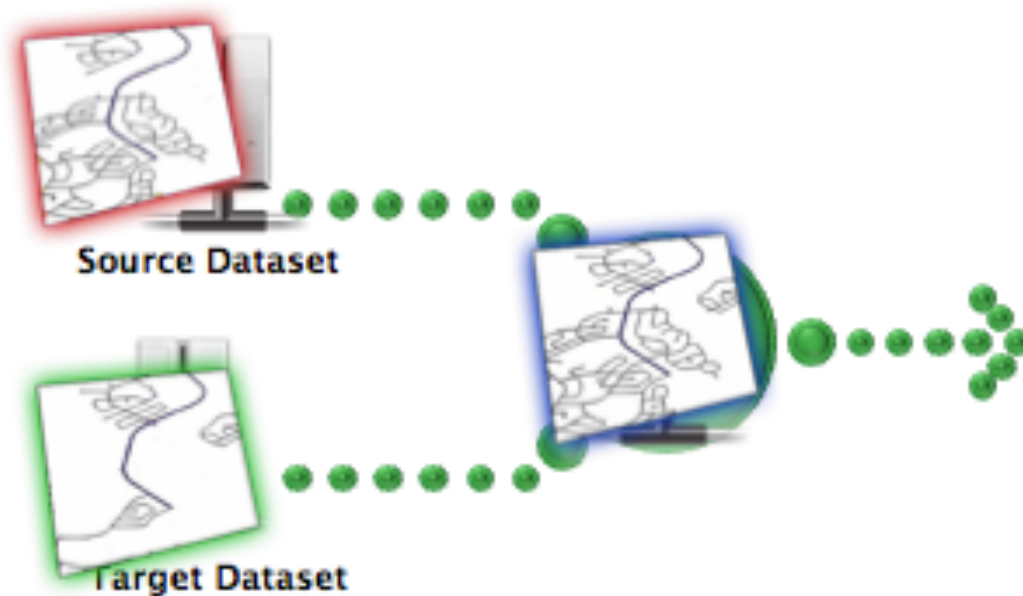
**SPARQL**

**OGC Web Processing Service (WPS)**

# Provenance



- Dataset
- Feature Level

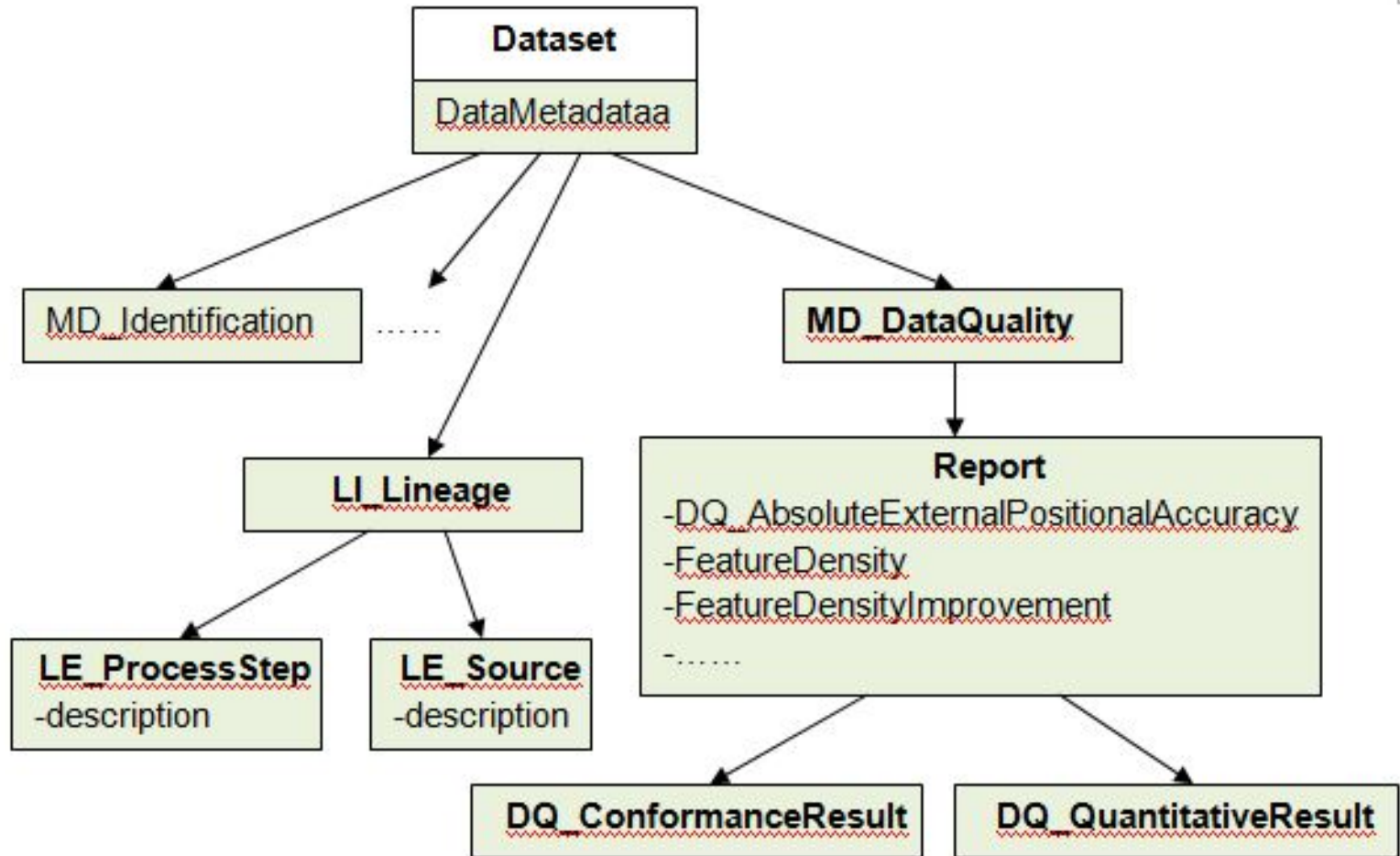


**How?**

**Who?**

**When?**

# Dataset Level – ISO Lineage

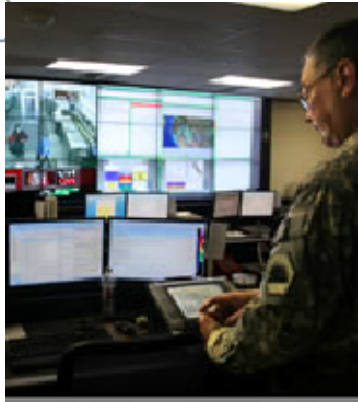




# Feature provenance available via GML

Field	Value
gml_id	usgsToNga10000
geometrySource	inputTargetDataset
conflation_startTime	2001-12-17T09:30:47Z
conflation_endTime	2001-12-17T09:30:47Z
processStep_1	Geometry Conflation by GMU WPS
processStep_1_inputSourceDataset	<a href="http://portal.cubewerx.com">http://portal.cubewerx.com</a>
processStep_1_inputTargetDataset	<a href="http://www.interactive-instruments.de">http://www.interactive-instruments.de</a>
processStep_2	Attribute Conflation by 52North WPS
processStep_2_input	Geometry Conflation by GMU WPS
inputSourceDatasetFeature	CWFID.TR_ROADS.0.15940
inputTargetDatasetFeature	TransportationCurves1178
nearness	3.2000000000000000001e-007
nearness_uom	m
maxdist	5.3999999999999998e-005
maxdist_uom	m
trimdist	0.00020000000000000000001
trimdist_uom	m
adjsize	0.000299999999999999997
adjsize_uom	m

# Semantic Mediation and Conflation



Likes  
NGA

Likes  
USGS



Prefers

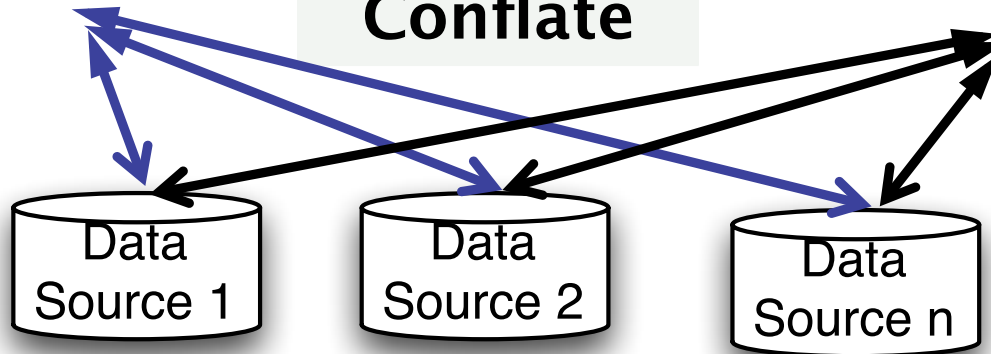


Prefers

**NGA model -**  
Local Topographic  
Data Store (LTDS)

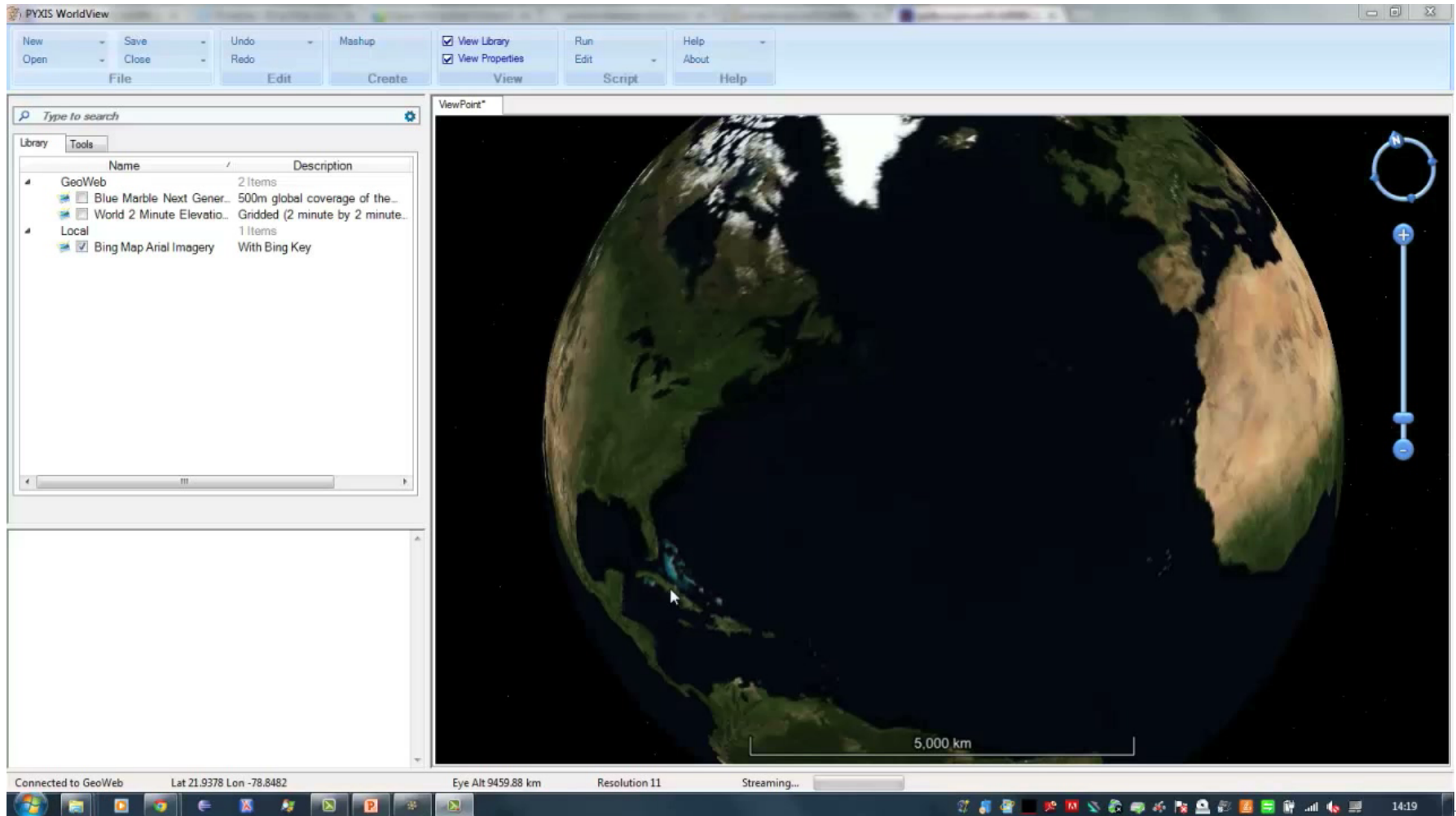
**Mediate  
and  
Conflate**

**USGS model -**  
The National Map (TNM)





# Geo DAB Broker (CNR, JRC)



# Expected Future Work

---



- Support for multiple source datasets
- Transparent service chaining
- Enhancement of provenance information
  - Better visualizaion
  - Catalog Integration
- Extending of Process Definitions

# Great Team

---



**the PYXIS innovation**



European  
Commission

**JOINT RESEARCH CENTRE**



# Great Sponsors



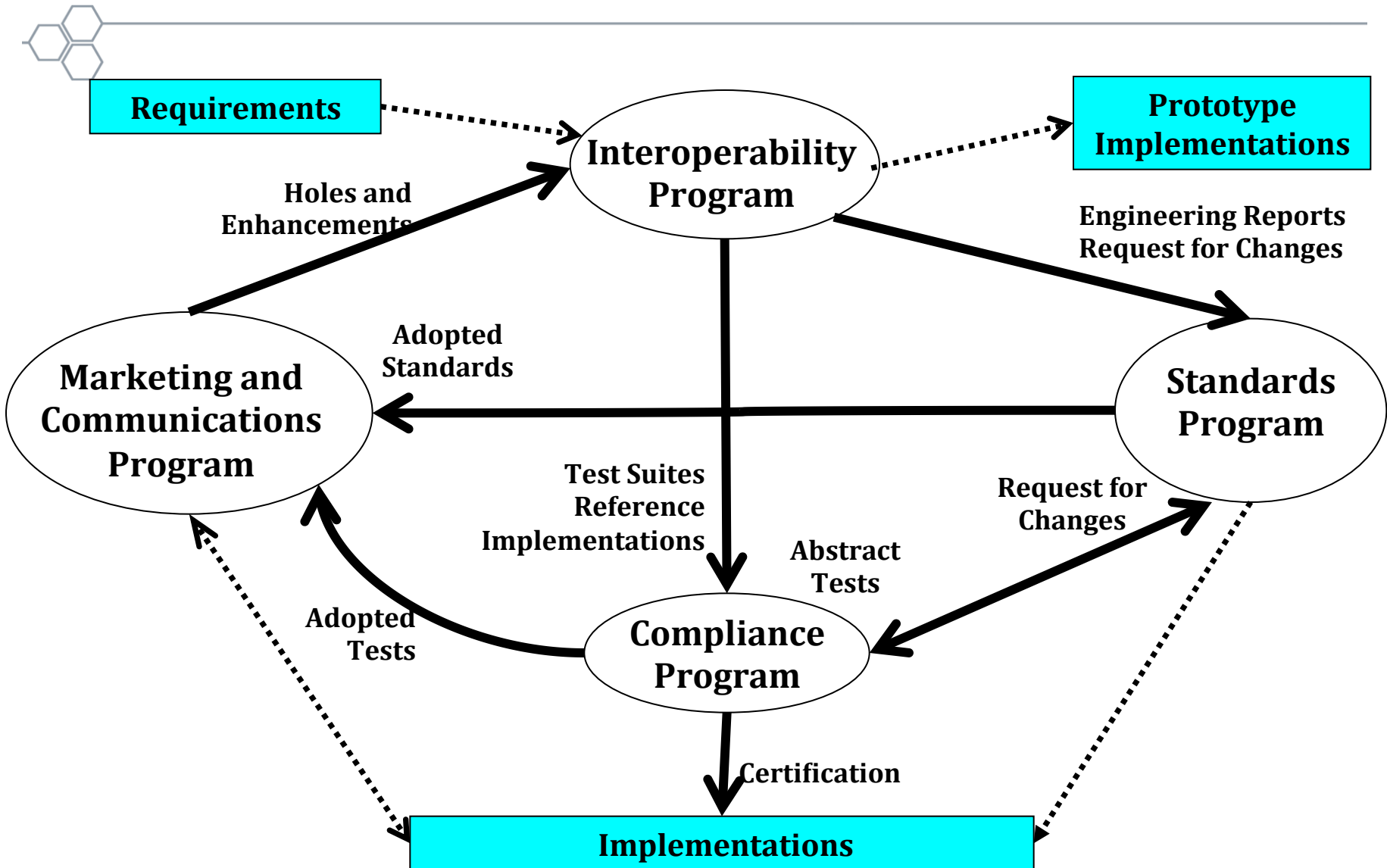
# Open Geospatial Consortium

---



**Only industry organization in  
the world focusing on  
location standards**

# Iterative Standards Development



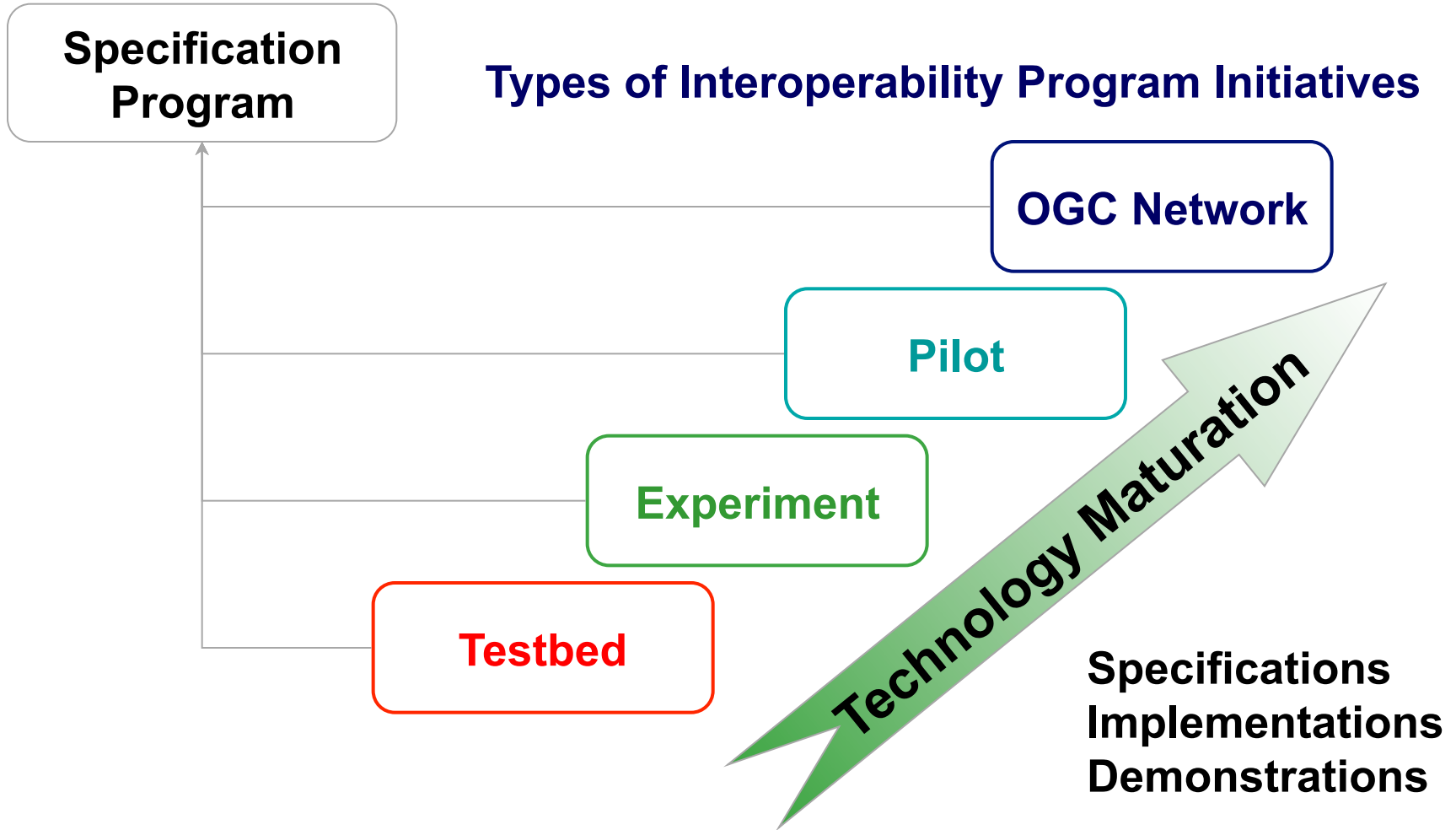
2010

2010

2010

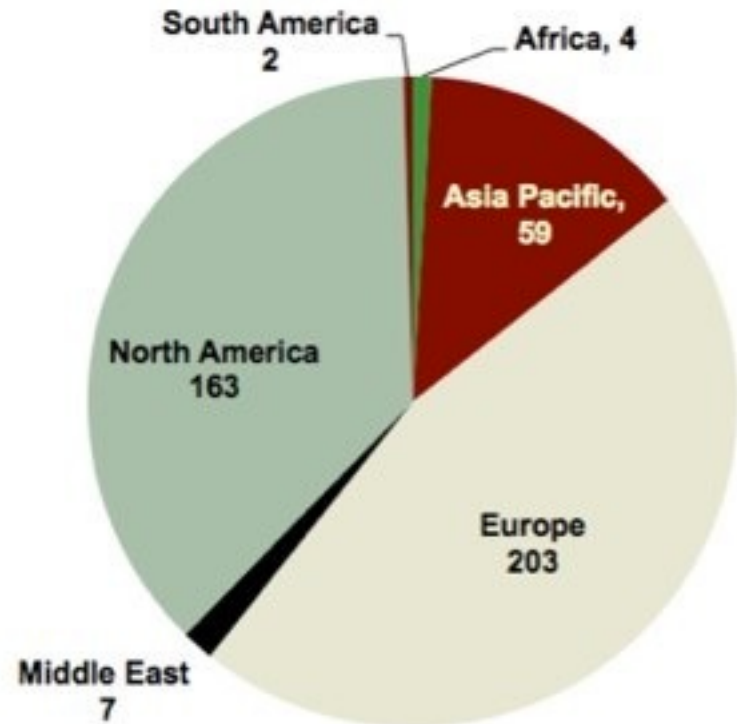
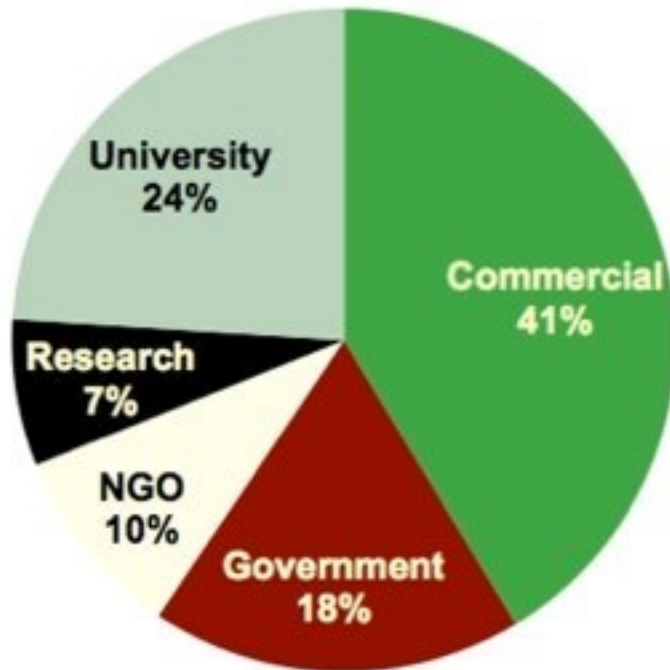
A person is holding a large, rectangular sign with the year '2010' written on it in a grid-like pattern. The sign is held up against a clear blue sky. The person's hands and part of their body are visible at the bottom of the sign. The overall scene is brightly lit, suggesting a sunny day.

# 40 Initiatives since 1999





# Who performs the work in an initiative ?



# Conclusion



Client



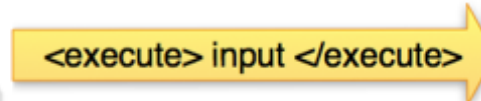
http://...



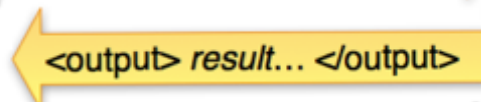
WFS Server



Client



<execute> input </execute>



<output> result... </output>



WPS Server

# Conflation Report

---



OWS-9 Conflation  
with Provenance ER

Matthes Rieke,  
Benjamin Pross

12-159

**[https://portal.opengeospatial.org/files/?  
artifact\\_id=51818](https://portal.opengeospatial.org/files/?artifact_id=51818)**

- How data preparation was performed
- Metadata attributes used
- ...

# More resources

---



- OWS-9 Public Web page
  - <http://www.opengeospatial.org/projects/initiatives/ows-9>
- OWS-10
  - <http://www.opengeospatial.org/projects/initiatives/ows-10>
- OGC Membership
  - <http://www.opengeospatial.org/ogc/join/levels>

# Questions?

---



Luis Bermudez, Ph.D.

[lbermudez@opengeospatial.org](mailto:lbermudez@opengeospatial.org)

@berdez on Twitter

<http://www.linkedin.com/in/bermudez>