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# Open Source – OGC Web Services

**Olivier COURTIN - 2<sup>nd</sup> Workshop on the use of GIS/OGC Standards in Meteorology**

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# Oslandia

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- Young and Small Company
- Expertise in GIS OpenSource
  
- Mainly Focus on:
  - Spatial Databases (PostGIS, SpatiaLite)
  - OGC/ISO Web Services
  - Routing, Network and Graphs Solutions
  
- OGC member inscription in progress



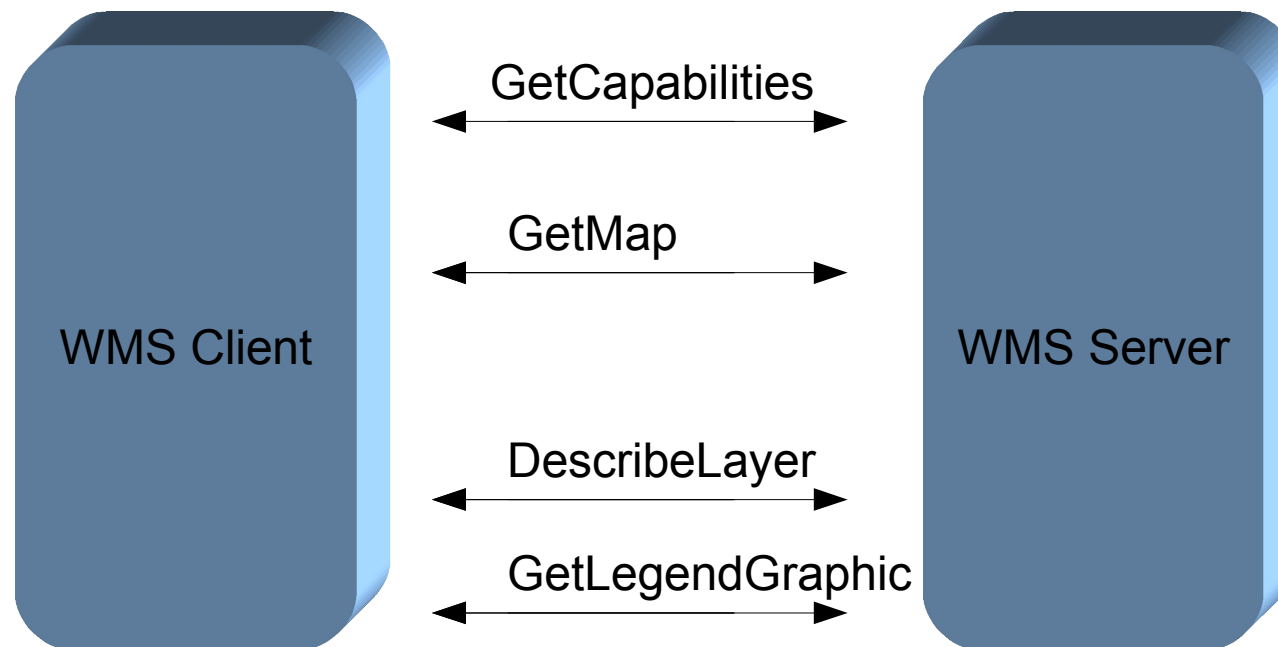
# Summary

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- OGC Web Services, with some OSS implementations:
  - WMS
  - WFS
  - WPS
  - SOS
- PostGIS & TinyOWS: Reducing stack concept
- Conclusions/Questions

# WMS with SLD synopsis

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# MapServer Application

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- OsGeo Member
- Written in C
- OGR/GDAL abstraction data access
- Used as CGI or FastCGI
- Widely used and mature
- Configuration via a text-based file (MapFile)

# GeoServer Application

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- OsGeo incubation process
- Written in JAVA
- GDAL plugin to raster data access
- Used with Tomcat and deployed as a .war
- Widely used and mature
- Native Administration Web Interface
- OGC reference application for WFS 1.0.0

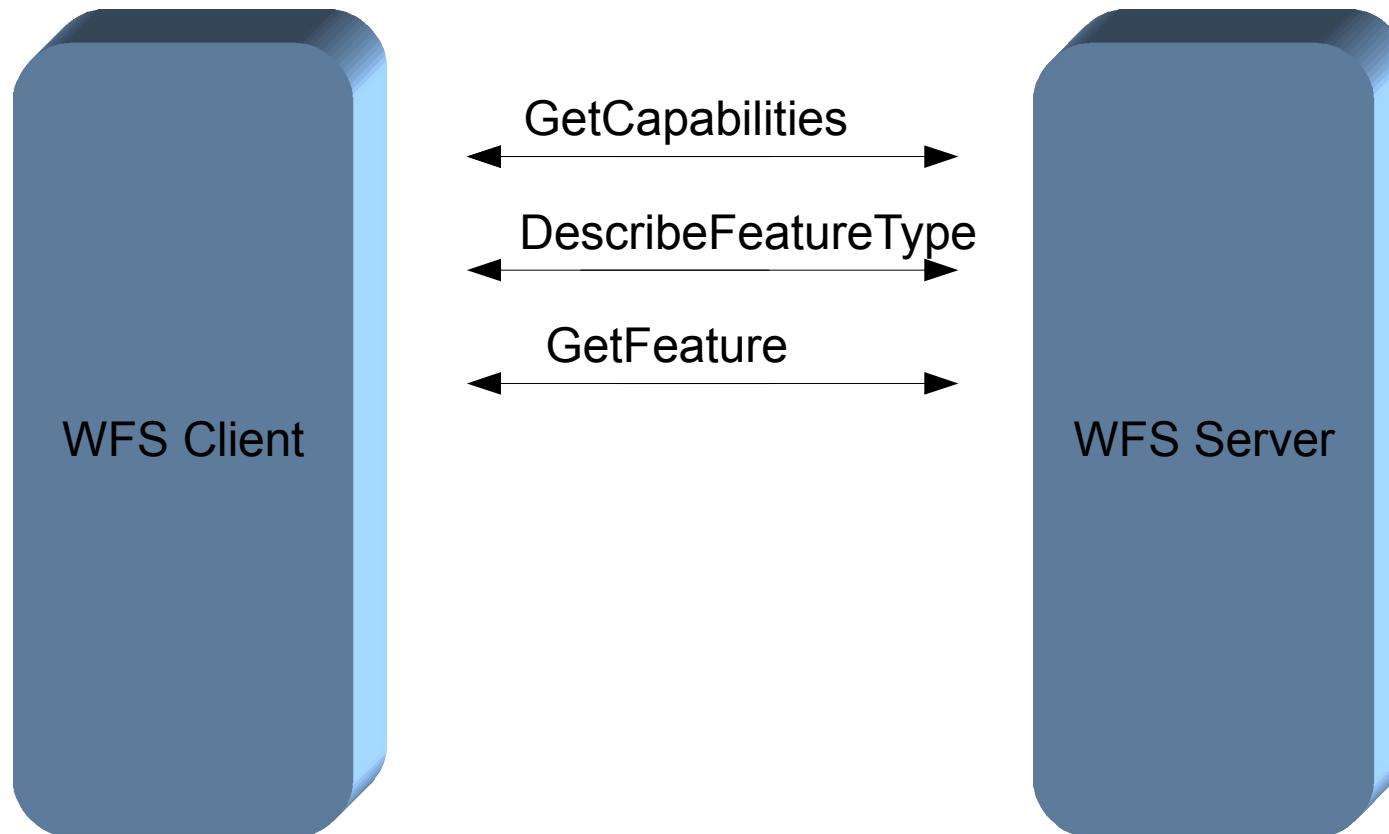
# WMS OSS implementations

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	MapServer	GeoServer
WMS	1.1.1 & 1.3.0	1.1.1 & 1.3.0
WMS-C	TileCache	GeoWebCache
Performances	Good	Good
Filter Encoding	Partial	Yes
Symbology	Rich symbology Support SLD	Mainly restricted to SLD
TIME Dimension	Yes	Not yet implemented
ELEVATION Dimension	No	No

# WFS synopsis

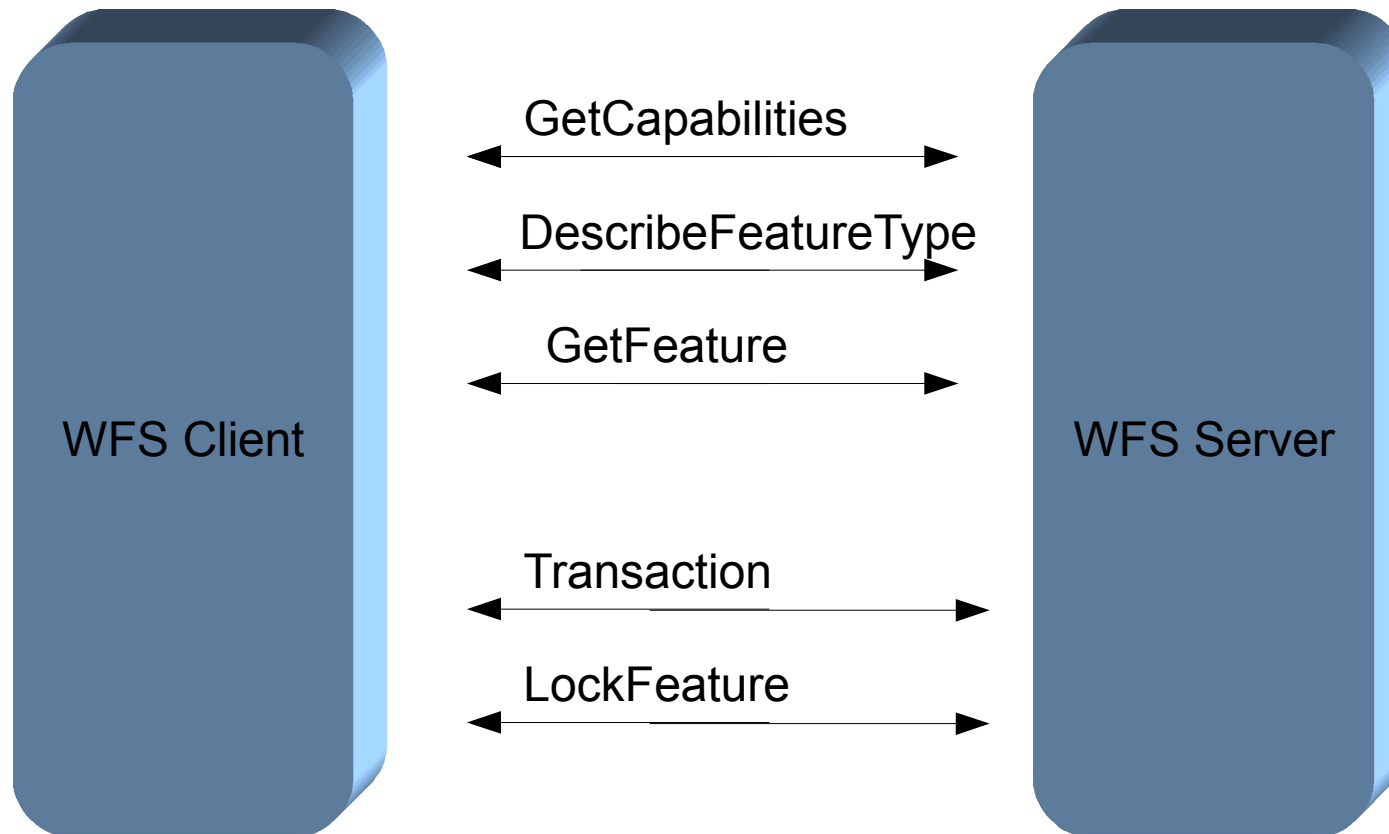
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# WFS-T synopsis

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# TinyOWS

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- High performance WFS-T architecture
- PostGIS frontend application
- Written in C
- CGI based

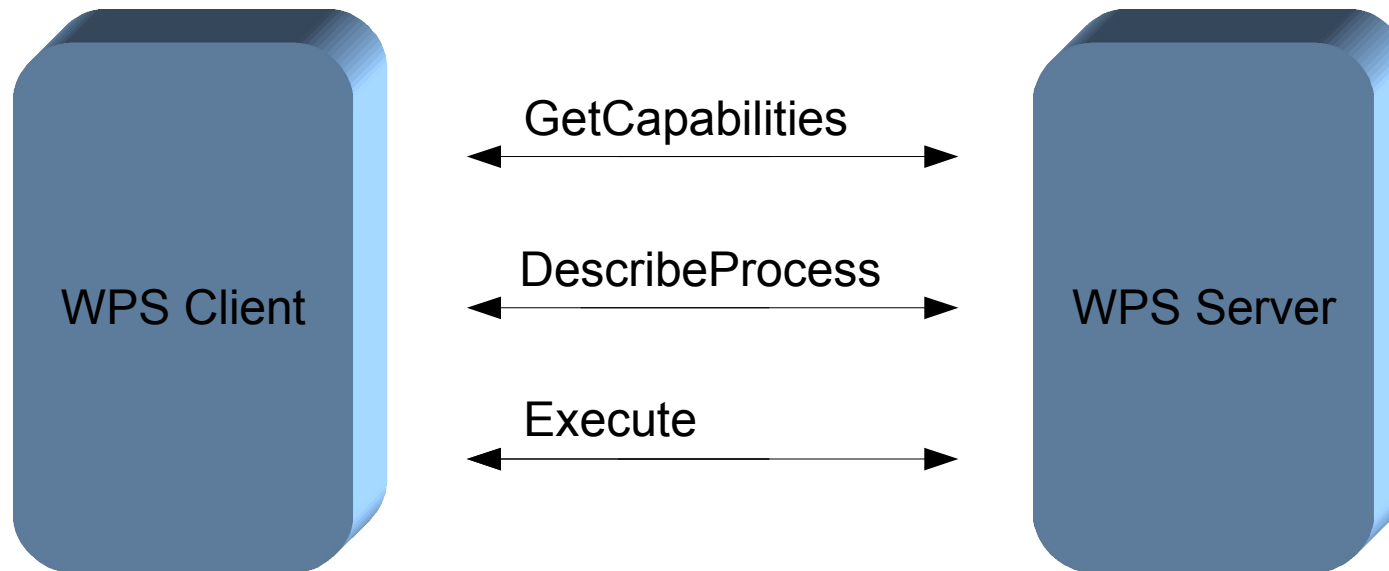
# WFS OSS implementations

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	MapServer	GeoServer	TinyOWS
WFS	1.0.0 (Only Basic Profile)	1.0.0 & 1.1.0	1.0.0 & 1.1.0
ISO 19142 (aka WFS 2.0.0)	No	No	No
GML	2.1.2 & 3.1.1	2.1.2 & 3.1.1	2.1.2 & 3.1.1
Databases Backend	PostGIS OracleSpatial ArcSDE	PostGIS OracleSpatial ArcSDE	PostGIS

# WPS synopsis

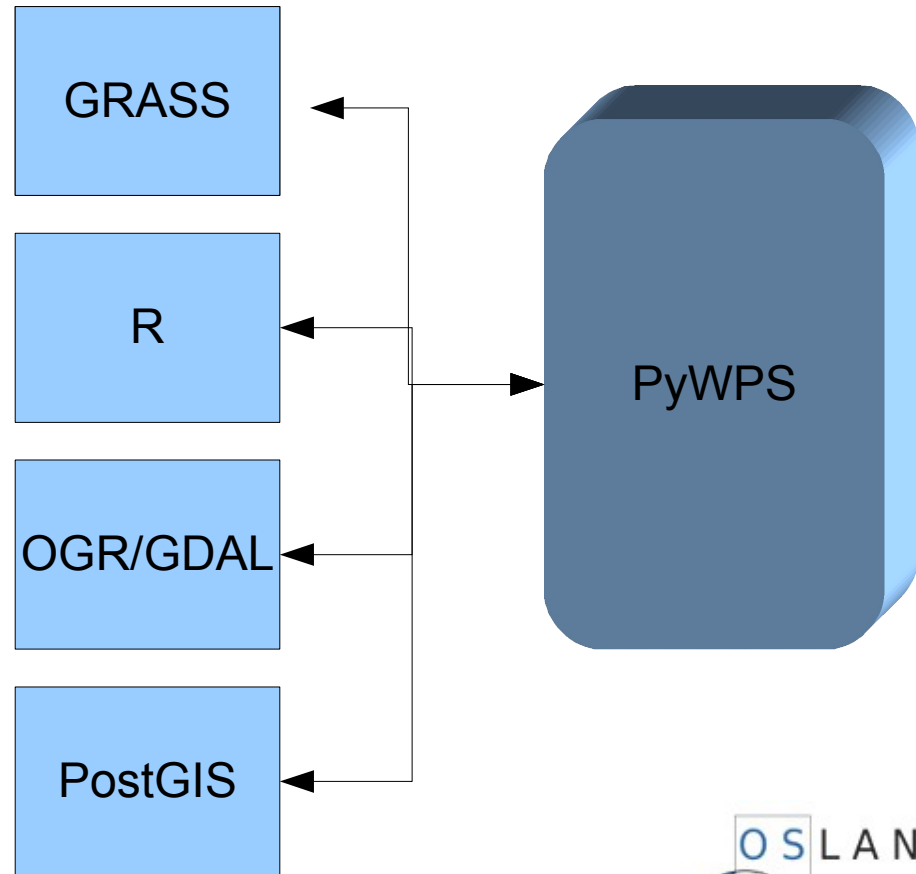
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# PyWPS Application

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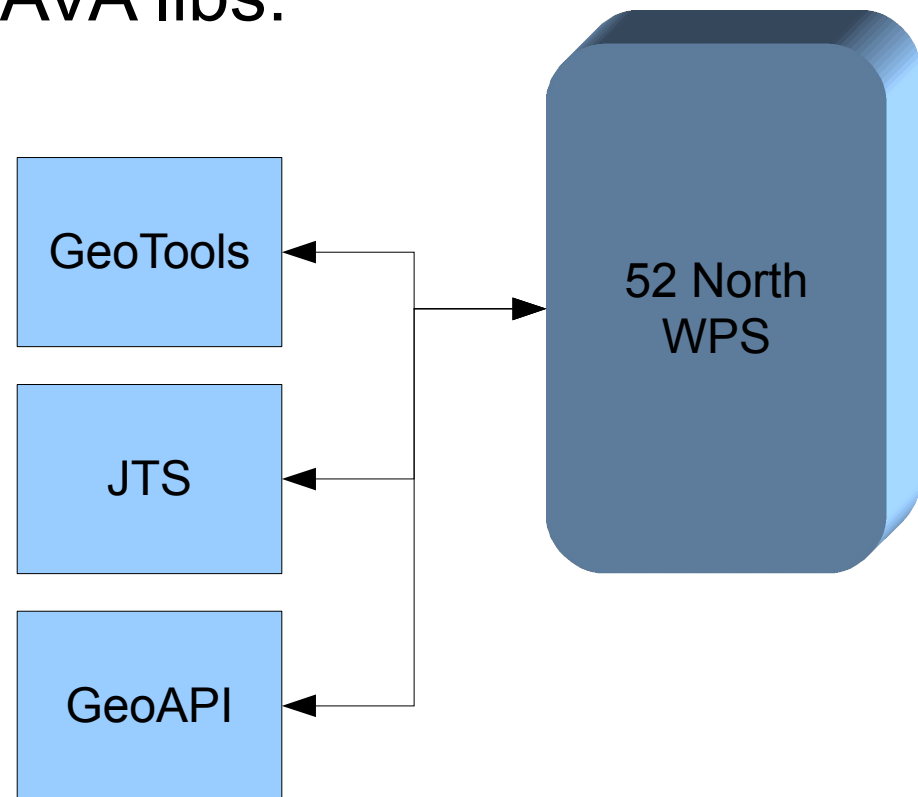
- OsGeo incubation process
- Written in Python
- Used as a CGI
- Processing tools with Python API libs & applications:



# 52 North WPS Application

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- Written in JAVA
- Deployed with TomCat environment
- Processing tools with some JAVA libs:



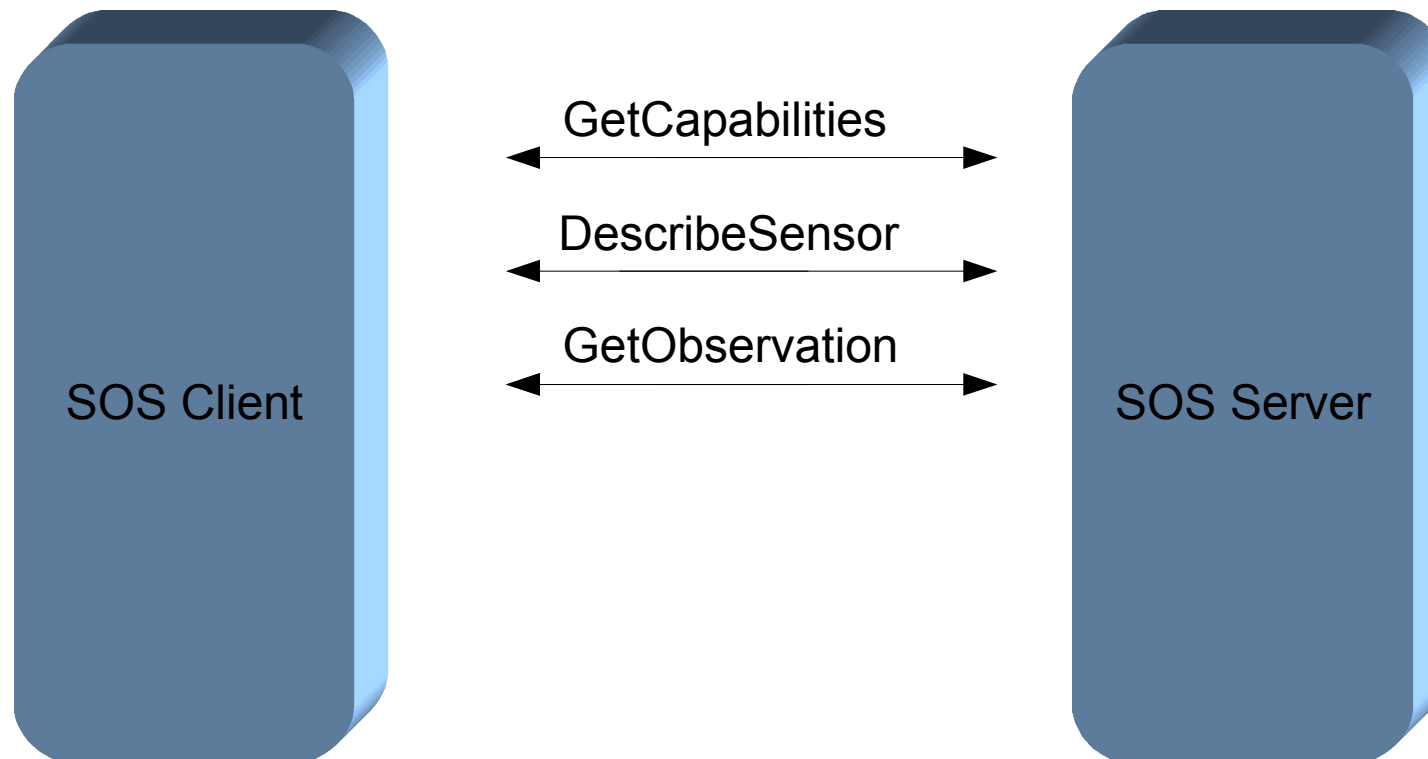
# WPS OSS implementations

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	PyWPS	52 North WPS
WPS	1.0.0	1.0.0
HTTP Method	GET / POST	GET / POST
SOAP & WSDL support	No	Yes
Raster support	Yes	No

# SOS synopsis

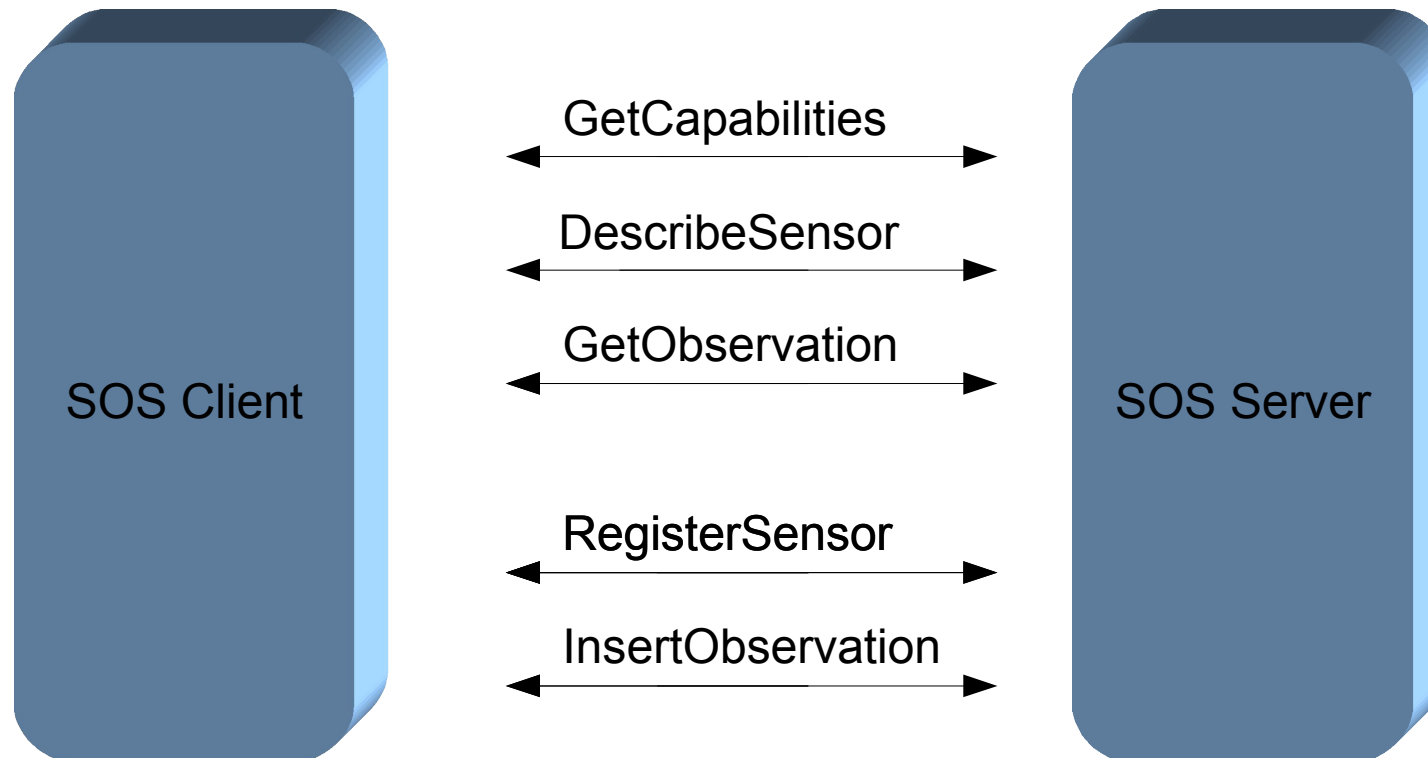
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# SOS-T synopsis

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# OSS SOS implementations

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- 52 North SOS project
  - JAVA application
  - Deploy as a Tomcat .war
  
- OOS Thetys
  - JAVA application
    - NetCDF datas
  
  - Python application (PySOS)
    - Spatial databases datas

# SOS OSS implementations

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	MapServer	52 North SOS	PySOS
SOS	1.0.0 (Only Basic Profile)	1.0.0 Basic, enhanced Transactional	1.0.0 (Only Basic Profile)
Databases Backend	PostGIS Oracle Spatial Arc SDE	PostGIS	PostGIS

# Summary

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- OGC Web Services, with some OSS implementations:
  - WMS
  - WFS
  - WPS
  - SOS
- PostGIS & TinyOWS: Reducing stack concept
- Conclusions

# Why TinyOWS

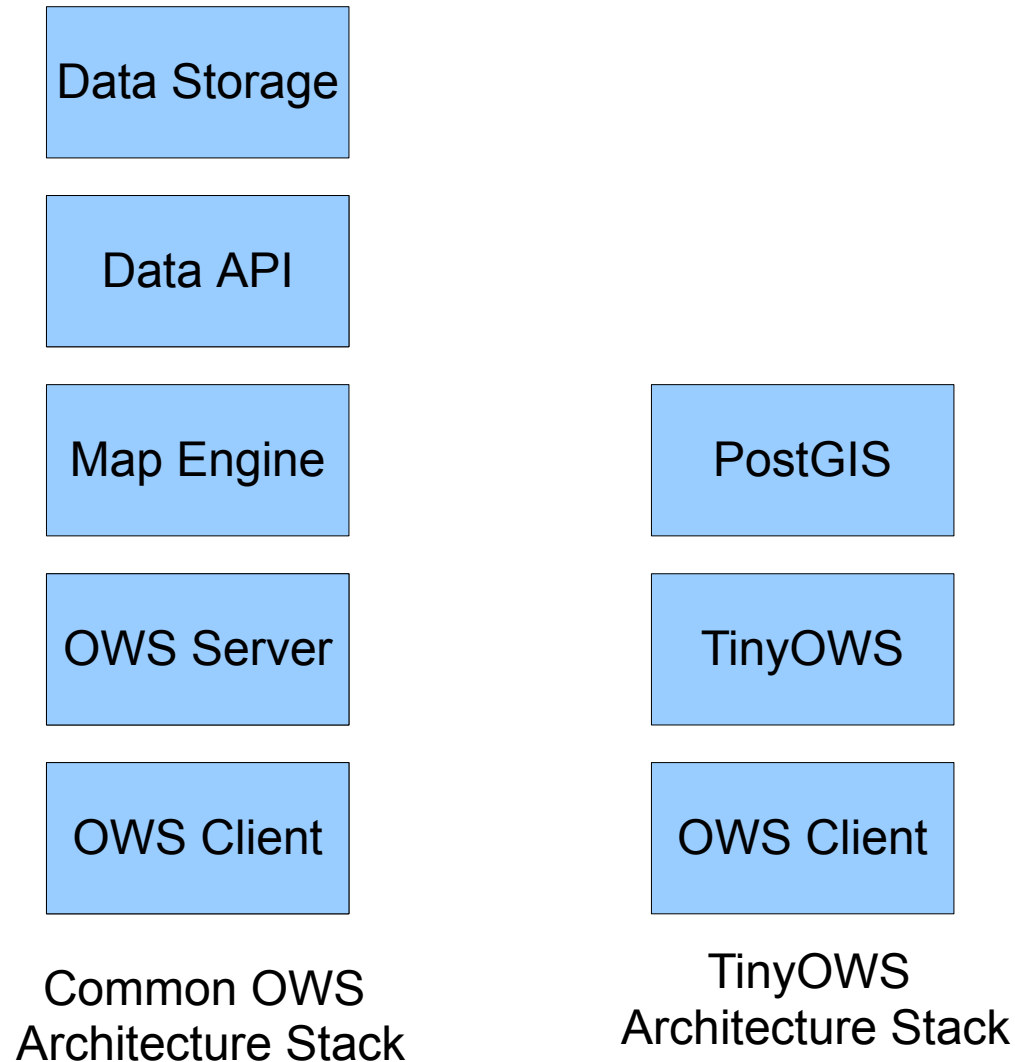
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- Begin as a R&D project
  - Yet another WFS server
- Keep Lightweight architecture
  - Perfect couple with MapServer as a WMS
  - No need to use Tomcat to provide WFS-T
- Performances in mind

# Reduce Web Services stack

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- Implement Web Services directly in front of PostGIS
- Performances in mind



# PostGIS GML import/export functions

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- ST\_AsGML
  - GML 3.1.1 compliant
    - OGC CRS urn format
    - Lat/lon reverse axis order issue
  - Availability: 1.4.0
  
- ST\_GeomFromGML
  - GML 3.1.1 Simple Features profile SF-2
  - GML 2.1.2
  - GML 3.2.1 Namespace support
  - Availability: 1.5.0

# PostGIS GML import/export functions

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# TinyOWS History

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- October 2007
  - First public presentation: FOSS4G 2007 – Victoria
  - Version 0.6.0 (alpha)
- 2008
  - MapGears contributions
  - Add MapGears project demonstration
  - Lot of improves and bugfixes
- March 2009 (Toronto Code Sprint)
  - DMSolutions contribution
  - Achieve export function rewrite and bugfixes (1.4.0 branch)
- July 2009
  - TinyOWS 0.7.0 released (tied on PostGIS stable 1.4.0)
  - OGRS presentation
- December 2009
  - Plan to TinyOWS 0.8 (tied on PostGIS 1.5.0)



# GetFeature Benchmark on a single Layer

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	200 Features	1000 Features	5000 Features
TinyOWS	0.5s	2.5s	11.4s
MapServer	1.0s	4.3s	20.1s
GeoServer	1.7s	12.1s	39.5s

# TinyOWS: Units tests policy

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- OGC CITE Units Test development driven

✓ WFS 1.0.0

**Summary**  Pass: **366**  Warning: **0**  Fail: **32**

✓ WFS 1.1.0

**Summary**  Pass: **408**  Warning: **0**  Fail: **57**

- Valgrind test
  - memory leak check

# Current reflexions

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- Is it also meaningful to bring SOS operations like `getObservation` as close as possible to PostGIS ?
- WKT Raster could provide some WCS rasters primitives ?

# Questions

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- Thanks you !

