



Extensible ArcMap WPS Client

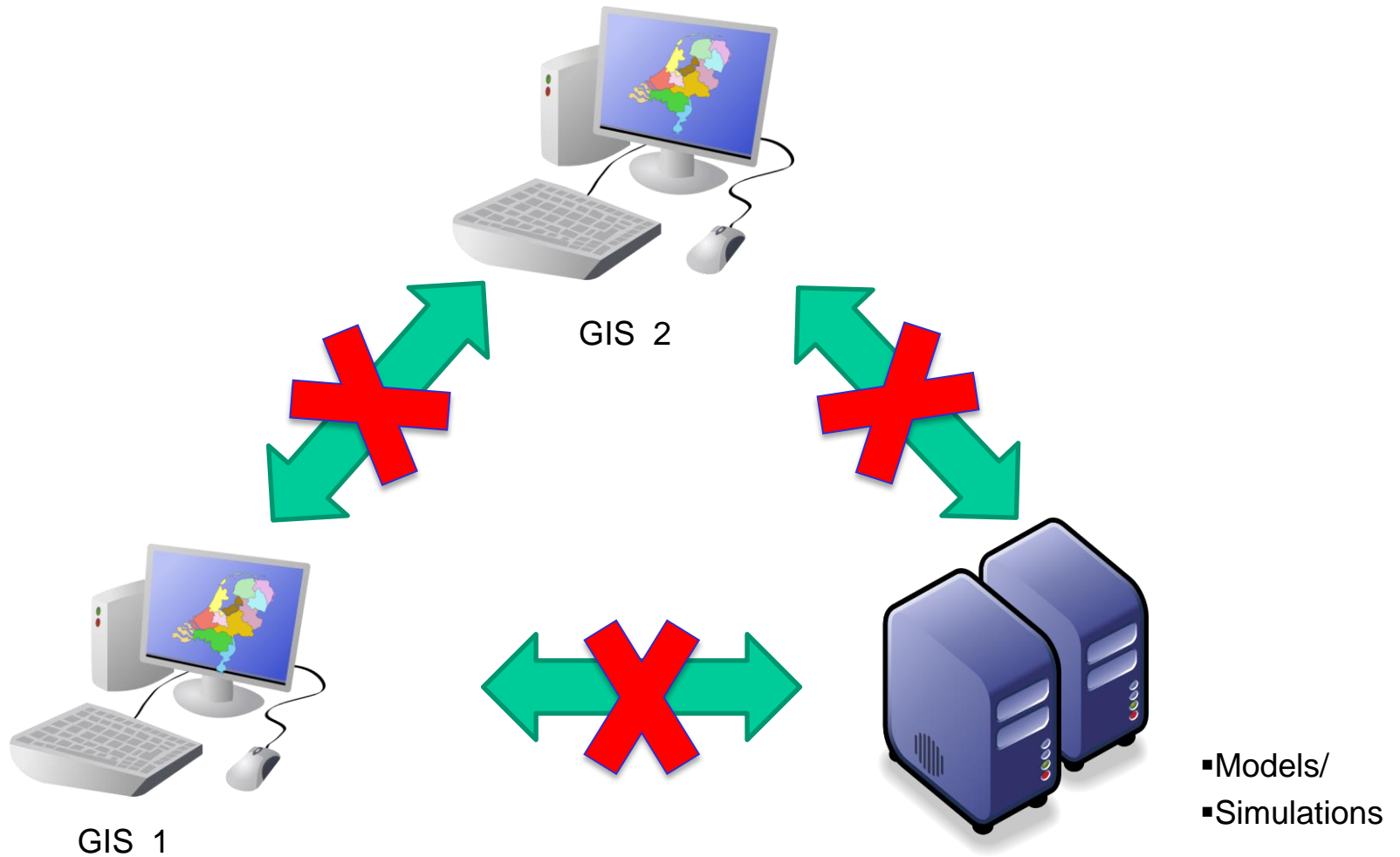
Esri European User Conference 2015

Salzburg, 15th October 2015

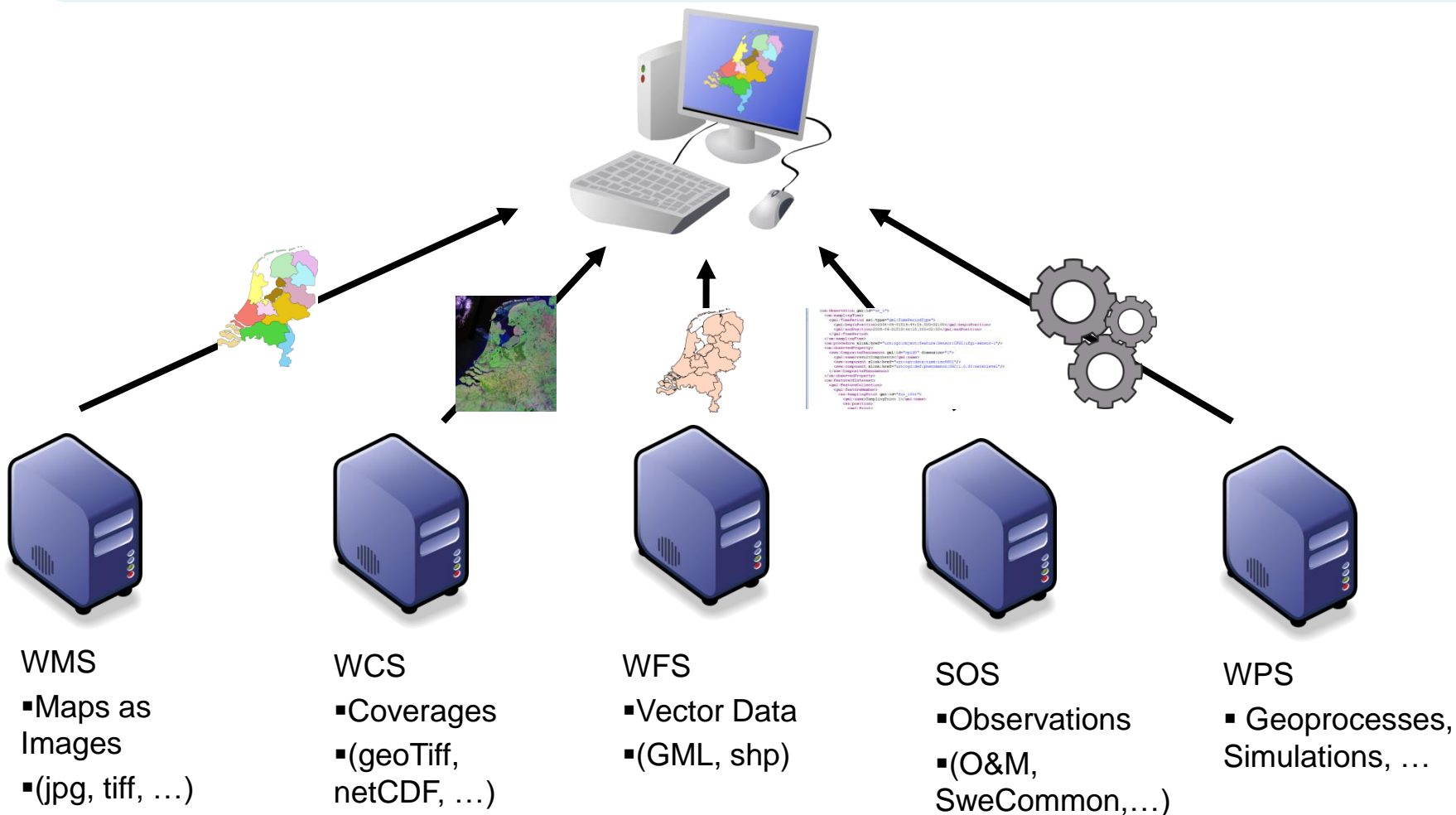
Benjamin Pross, 52°North GmbH
Christoph Stasch, 52°North GmbH

What is WPS?

Why Standards?



OGC Services



WPS Standard

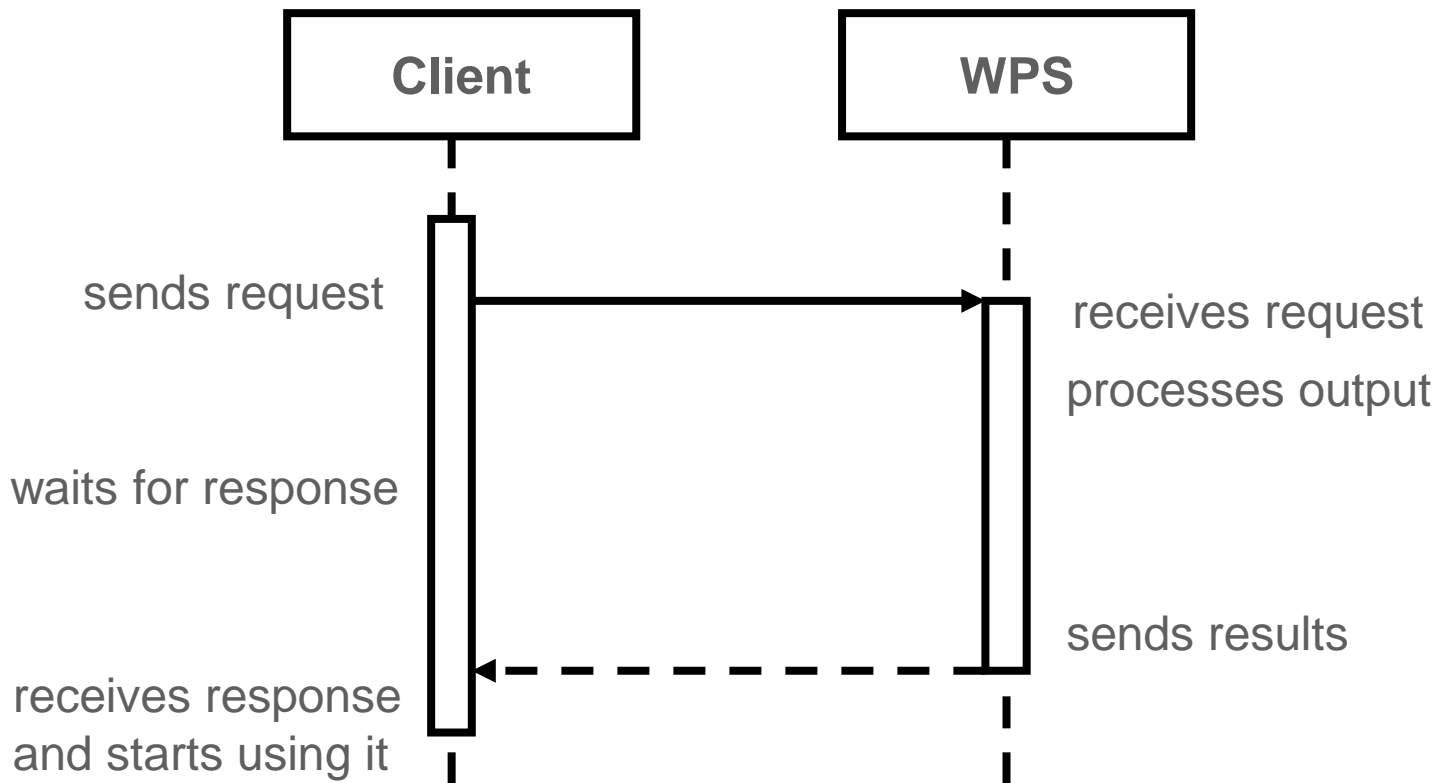
- OGC Web Processing Service (WPS)
 - OGC Standard since late 2007 (Version 1.0), Version 2.0 released in 2015
<http://www.opengeospatial.org/standards/wps>
 - Standardized service interface to publish and execute geospatial processes over the web
 - How to describe process offerings
 - How to describe input/output parameters
 - No processes are specified
 - Supported Processes
 - Simple geometric calculations (e.g. intersect algorithm)
 - Complex simulation models (e.g. weather forecast)
 - Interface to legacy software (e.g. ArcGIS Server, GRASS GIS)
 - ..

WPS Standard

- Operations:
 - GetCapabilities
 - Returns information about the service and a list of processes
 - DescribeProcess
 - Returns information about a specific process
 - Identifier, inputs/outputs,...
 - Execute
 - Executes a process

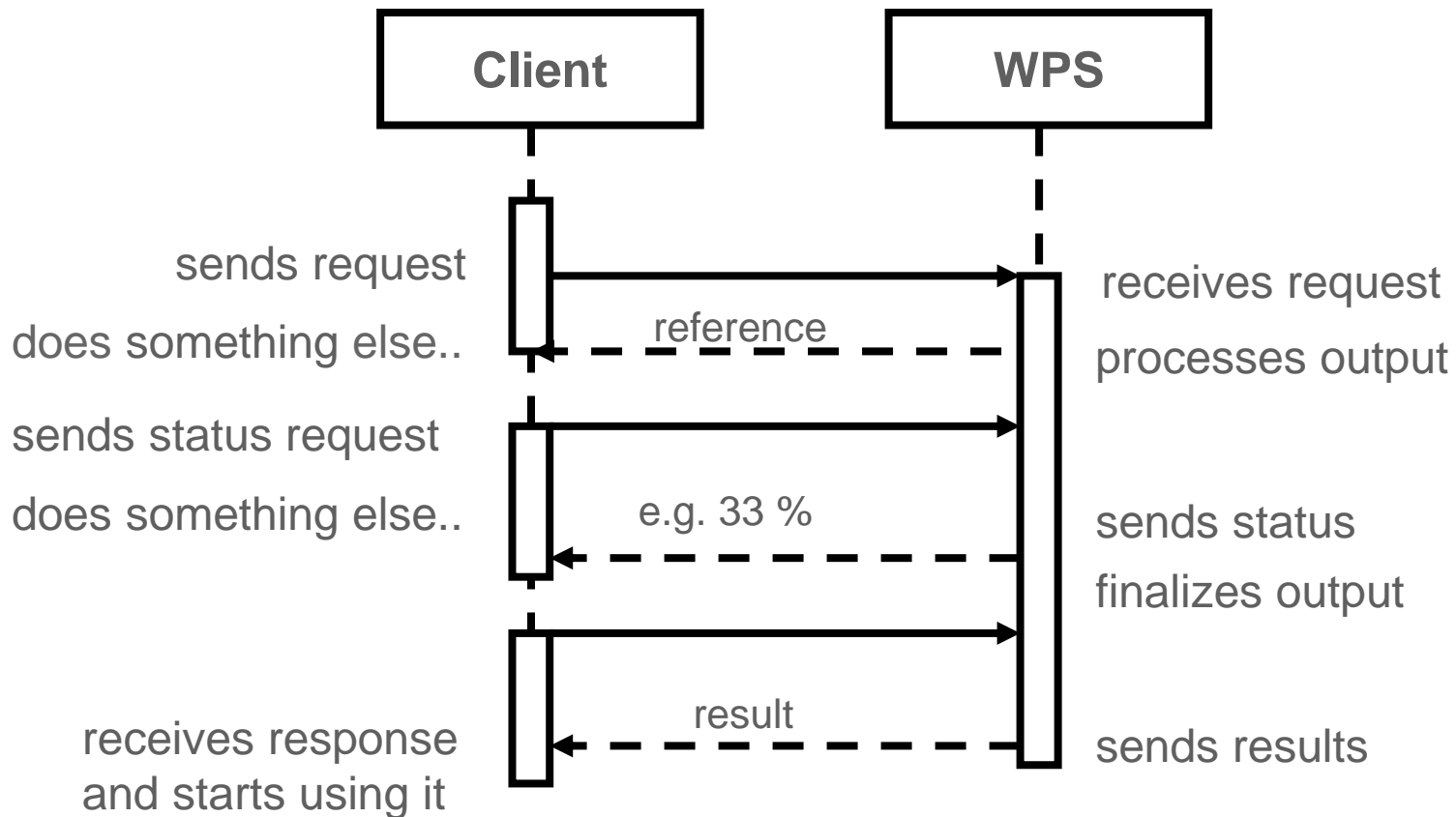
WPS - Synchronous Execution

Sequence Diagram



WPS – Asynchronous Execution (Pull Model)

Sequence Diagram



WPS Implementations

- 51 listed by OGC
 - Proprietary
 - Open Source
- ArcGIS Server supports WPS interface since version 10.1
- ArcGIS for Desktop cannot consume WPS services yet

WPS Use cases

Some application patterns that provide real advantages in practice are:

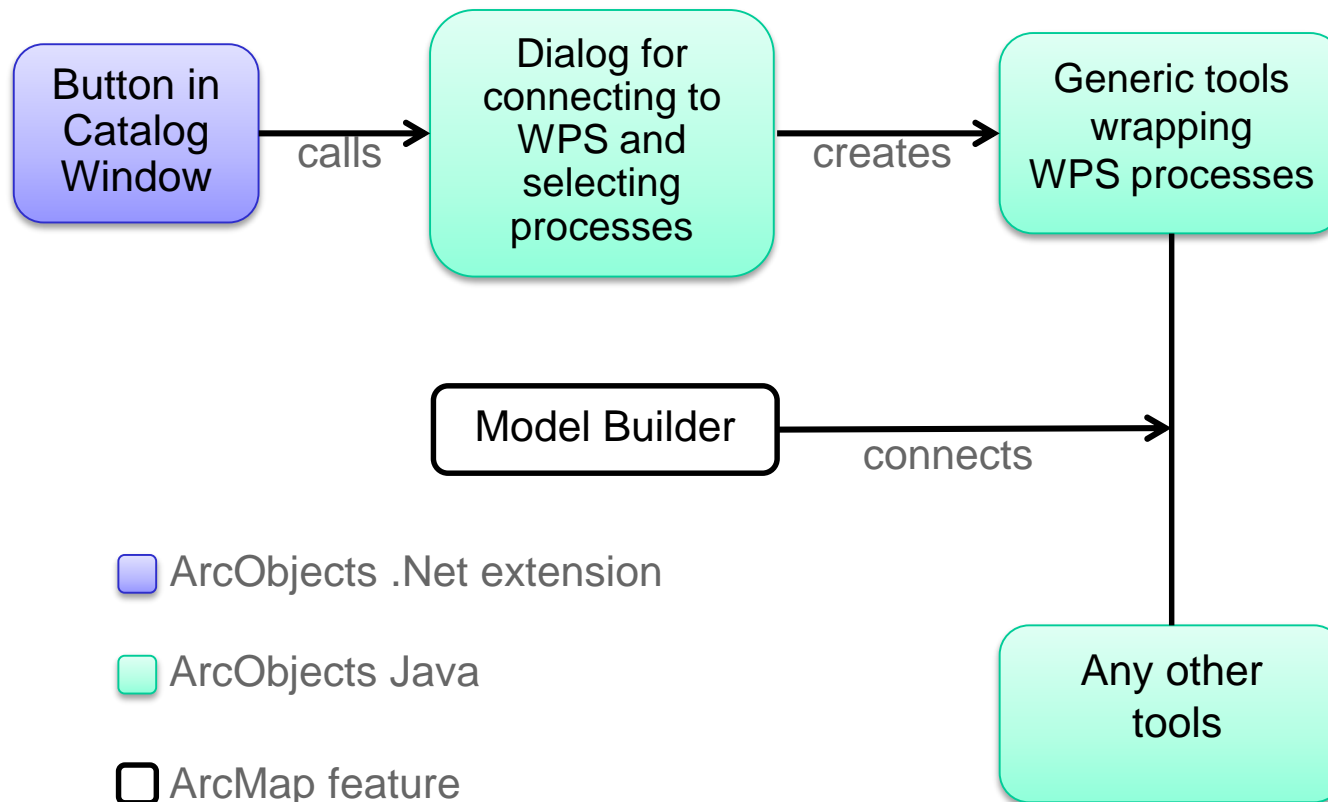
- Accessing functional views on very large data volumes (e.g. satellite data and other large sensor data archives)
- Accessing remote legacy software such as large and complex computational models

WPS Client for ArcMap

WPS Client for ArcMap

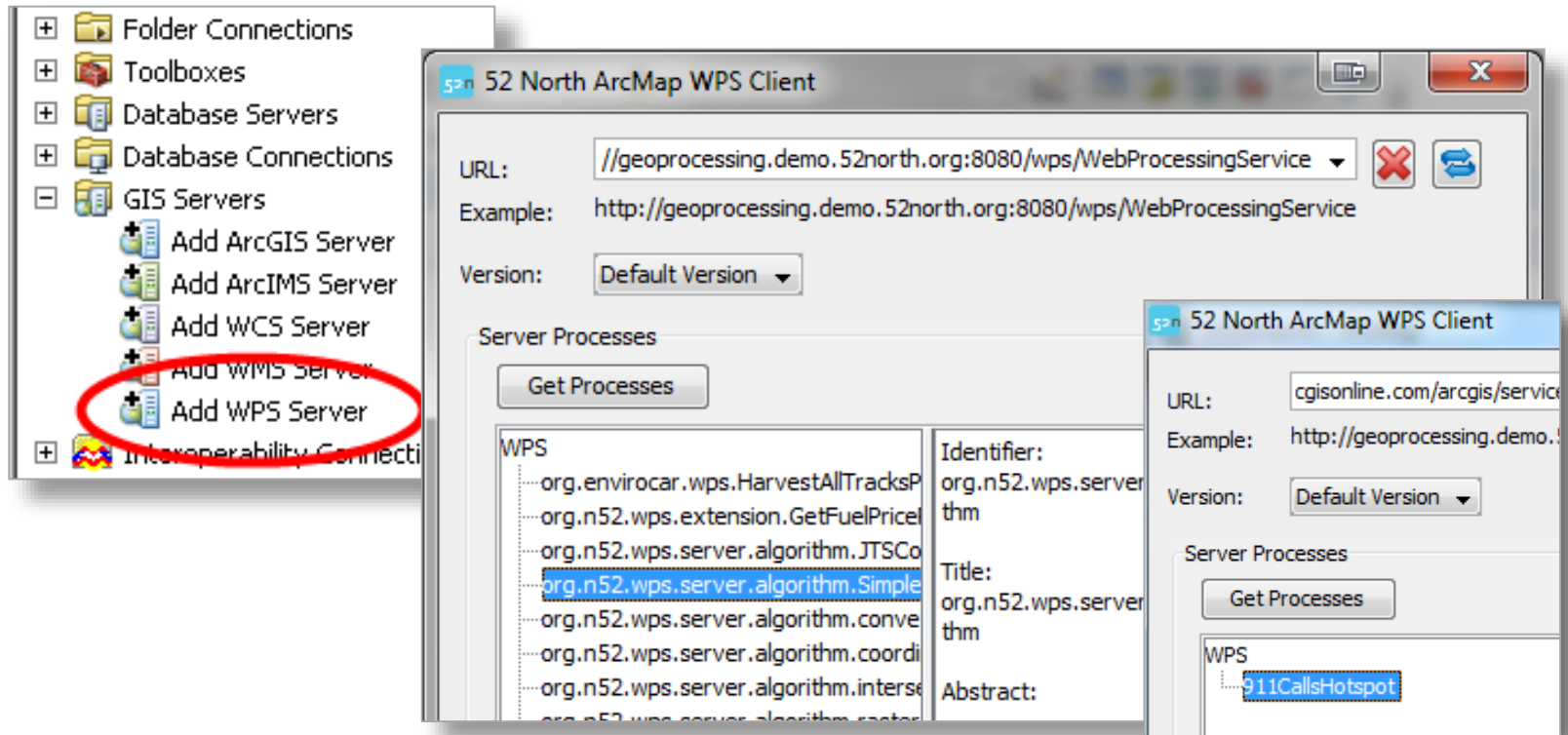
- Enables ArcMap to use remote processing services via the OGC WPS interface standard
 - Fully embedded in ArcMap 10.X
 - Adds remote processing tools to the ArcGIS toolbox
 - Web processing services can be used with model builder just as any native ArcGIS tool
- Lean and generic approach
 - Can be used to work with any WPS server
 - Takes care of creating the execute request and returns the results from WPS instances
 - Uses data transformation tools for mapping input/output data formats
 - Does not validate complex inputs/outputs

ArcMap WPS Client



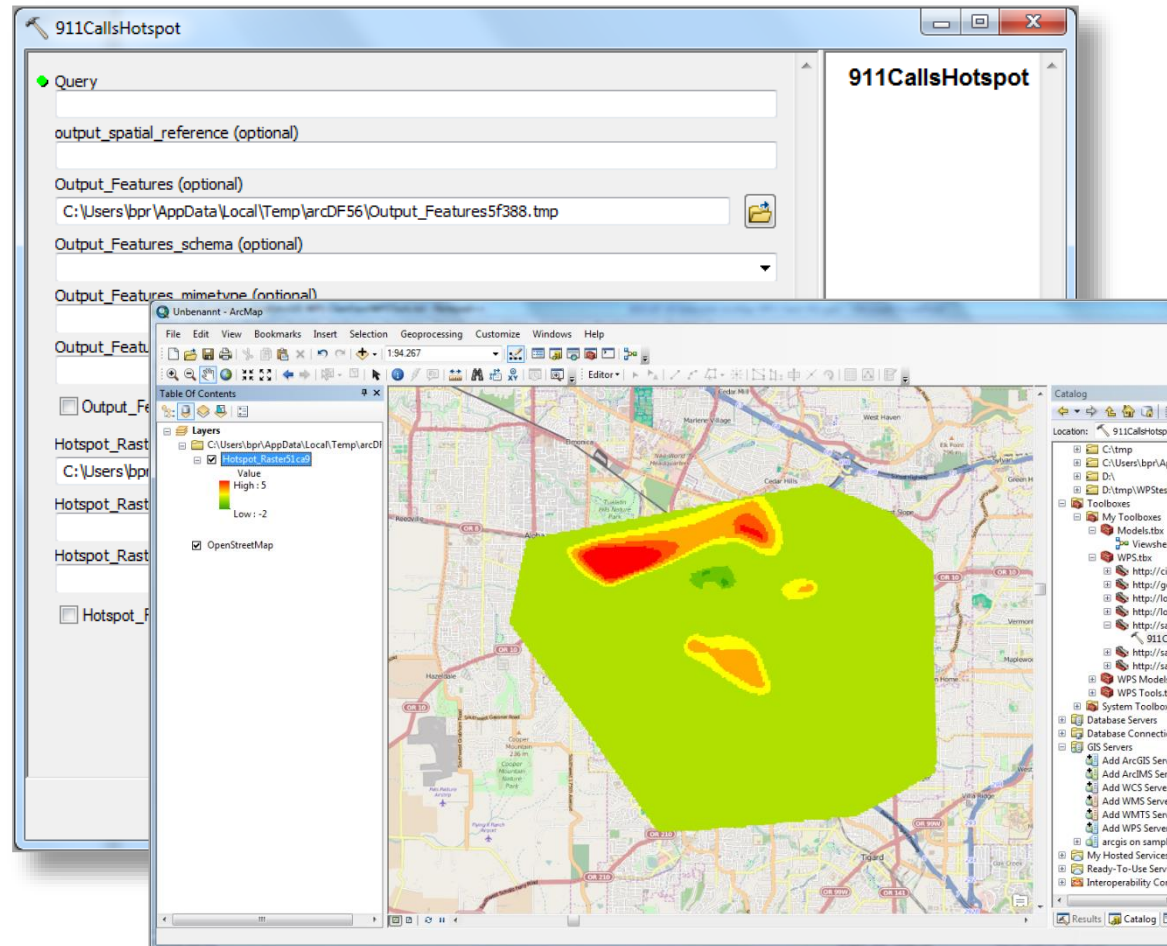
Adding WPSs to ArcMap

- Connect to the WPS server via ArcCatalog and select processing tools from any source

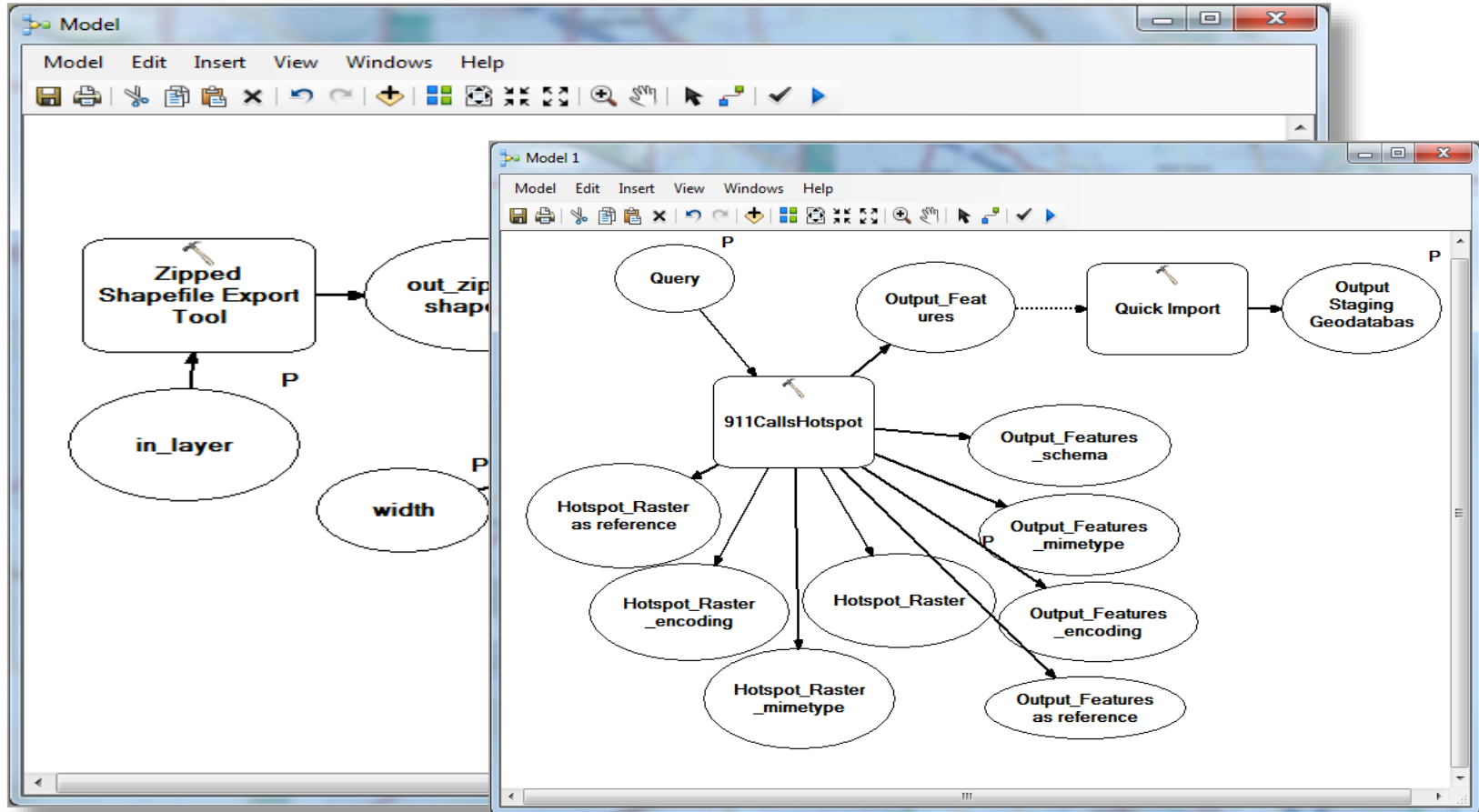


WPS processes as native ArcGIS tools

- invoke WPS
1 from the toolbox menu
- specify input data, parameters, output data
2
- execute process and receive output data
3

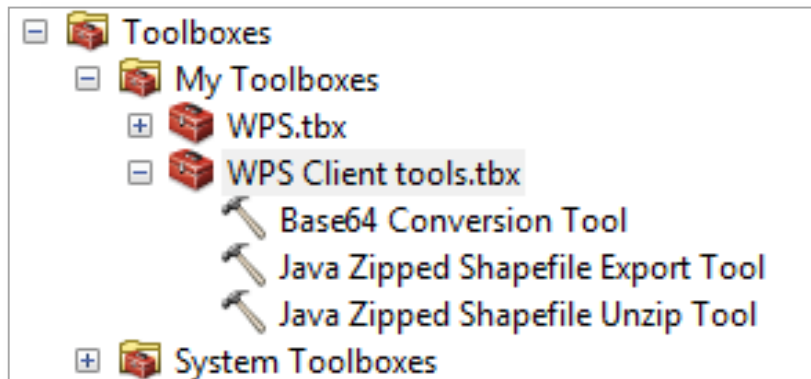


Using WPS in the Model Builder



Converting ArcMap data formats and WPS input/output data formats

- Use existing data conversion tools
- Some basic data conversion tools are shipped with the ArcMap WPS Client:
 - Base64 conversion, zipping/unzipping shape files



Conclusions

- ArcMap WPS clients allows to
 - Access external remote geoprocessing facilities
 - Can work with different WPS implementations
 - Offers tools for data conversion
 - Results of external processes can be directly visualised and explored in ArcMap

Next steps

- Streaming of process in-/outputs
- Embedded transformation and validation of data formats
- Geoprocessing Appstore -> better support for finding/accessing WPS

EDC Award

- EDC Student of the Year Award 2013 for Alber Sanchez, Institute for Geoinformatics, Münster, who contributed significantly to the conceptual and implementation work.

Further Information

Points of contact at 52N:

- Benjamin Proß b.pross@52north.org
- Christoph Stasch c.stasch@52north.org

52N geoprocessing community

<http://52north.org/geoprocessing>