Establishing an OGC Web Processing Service for generalization processes

Theodor Foerster & Jantien Stoter
Workshop of the ICA Commission on Map Generalization and Multiple Representation
25th June 2006 - Portland
Overview

- Motivation
- The standard
- Architecture
- WPS in action
- Discussion
- Outlook
Problem

- Generalization knowledge not transparent
- Data dissemination already Web-based
- Web Services promising
  - Availability
  - Reusability
  - Platform independent
- Interoperability still a problem
- Standardization still missing
Solution

- OGC initiated standard about Web Processing Service (WPS)
- WPS provides common view on geo-processes
  - Complex processing for climate change
  - Simple spatial analysis (Buffer)

→ Establishing WPS for generalization
The standard

- Operations (HTTP+XML messaging)
  - GetCapabilities
  - DescribeProcess
  - Execute
- Features
  - Basic chaining
  - Long term processing
Architecture

Web Processing Service

- GetCapabilities
- DescribeProcess
- Execute

WPS-client

Communication over the web using HTTP

- Algorithms Repository
  - Douglas Peucker Algorithm
- Data Handler Repository
  - GML Data Handler
Implementation

- Pluggable architecture
  - Processes
  - Data handlers

- Available under GPL license (@ www.52North.org)
WPS in action

Client

WPS

<GetCapabilities> request

<GetCapabilities> response

<DescribeProcess> request

<DescribeProcess> response

<Execute> request

<Execute> response

Network
Example - Simplification

Registering the service and configuring your process…
Example - Simplification (contd.)

- ...Visualize the result!

original data  

processed result
Discussion

- Some aspects are missing in the WPS
  - Asynchronous communication mechanism
  - Complex service chaining
  - Reflecting semantics of the processes
Outlook - research context

- Automated generalization as means of information extraction
- Representation vs. process-oriented view on generalization
- Data dissemination through the Web is successful (through SDIs)
- Web provides platform-independent processing (scalability, accessibility)

⇒ Establishing automated generalization as a complete process on the Web
Outlook - Problem

- Establishing automated web-based generalization processes
  - Loose-coupled structure
  - Operators are not described meaningfully

→ Formalization of generalization operators
Outlook - Objectives

- Finding a sufficient concept for formalization of generalization operators
- Representing the formalized operators in the Web
- Applying the web-based formalized operators to a generalization system as a proof-of-concept
Conclusion

- WPS provides standard on geo processing
- Some issues remain unsolved
- Technical and organizational approach builds valid basis for knowledge exchange
- WPS will provide generalization operators within the web-based architecture
- Thanks!
- Any questions?
- foerster@itc.nl
Questions

- What is special about generalization operators?