Service Adoption Experience of the PHAiRS Project

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Overview

- Service Models
- PHAiRS Services
- Differential Adoption Experience
- Lessons Learned
- Conclusions
Service Models

- Representational State Transfer (REST)
- Simple Objects Access Protocol (SOAP)
- Open Geospatial Consortium
  - Web Map Service
  - Web Coverage Service
REST Services

- Based upon core HTTP requests
- Get, Post, Update, Delete
- The submitted requests specify actions with or on resources
- The actions are *implicit* in the type of request
  - GET = read resource state
  - POST = create a resource
  - UPDATE = update and existing resource
  - DELETE = delete and existing resource
- HTTP headers are used to encode request/response metadata
- Argued to be simple to access for client developers
SOAP Services

- Part of a family of specifications that define a comprehensive collection of protocols for machine-to-machine communication
- Based upon an encapsulation of messages and other content within an XML document (envelope) that is often communicated over HTTP
- Designed to accommodate enterprise-scale service requirements and functionality, including specifications for messaging, metadata, management, business processes, transactions, and presentation.
- More comprehensive capabilities come at a cost of complexity in implementation.
The great thing about standards is that there are so many to choose from.
OGC Services

- Web Map Services (WMS) - HTTP-based request for a map image
- Web Coverage Services (WCS) - HTTP-based request for geospatially referenced data
- Support for Get requests is required, Post requests are optional
- OGC WMS and WCS services are not strictly RESTful but do provide a simple URL interface that supports read access to a map or data resource

A reasonable proxy for differential adoption of REST vs. SOAP services for the public health DSS developer community with which the PHAiRS project interacted
Differential Adoption

Client Interface

DSS

HTML (HTTP)

Apache HTTP Server

DSS

OGR WMS (HTTP)

MapScript - MapServer CGI

MapModule (Python)

HTTP GET Services

KML Generation Function

Tabular Data Generation Function

SOAP Services

Geostatistical Functions

PDF Generation Functions

HTTP GET Services

Date Access Functions

Plotting/Statistical Functions

Time Series Generation Functions

External OGC Services

External non-OGC Services

Data Acquisition Script

GRASS GIS Storage

Output Post-Processing

PostGIS Storage

Data Acquistion Script

NCEP/NOAA Nomads

NASA LP DAAC

Data Storage/Provision

Product Delivery

Data processing/product generation
Lessons Learned

- SOAP services provided a robust platform for developing the demonstration interfaces.
- SOAP services provide a flexible framework for exposing complex processing capabilities.
- External developers expressed a strong preference for the more basic OGC and HTTP Get interfaces deployed for use in external DSS.
- The OGC and HTTP Get services were easily deployed into existing external clients (including Google Earth, R, SYRIS syndromic surveillance system).
Conclusions

• In the specific context of the PHAiRS project
• SOAP provides a powerful model for component interaction within the system - making the development and reuse of system components easier
• SOAP was more complex than the public health DSS developer community that we worked with was interested in developing with.
• The public health DSS developers expressed no significant reluctance to the URL-based request model of the OGC and HTTP-Get services developed for the project
Discussion

• What experience have you had in adoption of your services?
• Have you seen differential adoption when your users have an alternative?
• How viable is a dual interface model?
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Resources

- REST

- SOAP

- OGC Services