

The Infusion of Dust Model Model Outputs into Public Health Decision Making - an Examination of Differential Adoption of SOAP and Open Geospatial Consortium Service Products into Public Health Decision Support Systems

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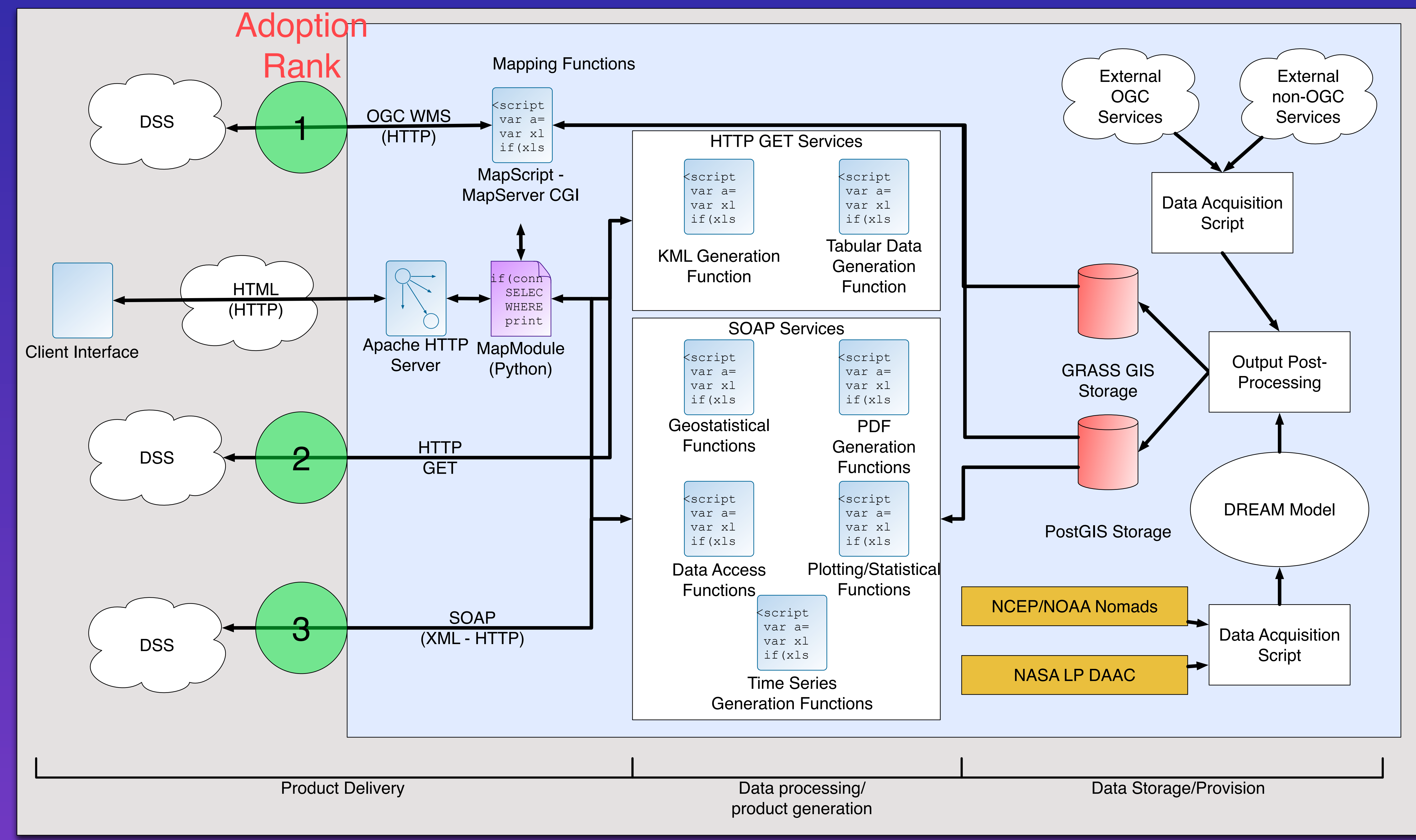
Project Background

The Public Health Applications in Remote Sensing (PHAIRS) project has been a five-year project in which Earth Data Analysis Center at the University of New Mexico, the Department of Atmospheric Sciences at the University of Arizona have collaborated (with funding from NASA's Applied Sciences Division) in the development of a core set of standards-based services and demonstration interfaces for the delivery of dust forecast model outputs and related data to public health decision support systems and epidemiological researchers. For the last year of the project these services were expanded through an interoperability demonstration project (funded by NASA's Geosciences Interoperability Office) in which George Mason University joined the collaboration in the development of enhanced high-performance computing modeling capabilities and new interoperable services.

- The standards-based services developed for the PHAIRS project fall into three classes
- ✘ Open Geospatial Consortium (OGC) services
 - Standard and Time-enabled Web Map Services (WMS)
 - Web Coverage Services
 - KML
 - ✘ World Wide Web Consortium (W3C) SOAP services
 - ✘ HTTP GET-based data processing and delivery services

Differential Adoption of Web Service Models

The project goal of providing a variety of web service interfaces for developers of public health decision support systems provided an unintended experiment in determining the preference of this developer community for different service models. In spite of the greater potential power of the SOAP service model for the delivery of rich content that may be more flexibly requested and delivered, the feedback that our project received from DSS developers and other system users has indicated a strong preference for the more simple OGC service model over the more powerful SOAP model. While the project has benefitted significantly from the internal use of SOAP for defining the interaction between components, the OGC service have seen much greater uptake by the DSS developers. Similarly, the HTTP GET request model services that were developed for the project also experienced rapid uptake by end users.



W3C SOAP and OGC Service Models

The W3C SOAP specification is part of a family of WS-* standards that define different aspects of machine-to-machine interaction between different systems, with those specifications including messaging, metadata, security, reliability, resources, management, business processes, transactions, and presentation. This collection of standards provides a comprehensive set of capabilities at the expense of being complex. Figure 1 illustrates this complexity through the graphic depiction of the various WS-* and related standards.

The OGC Web Service Standards (WMS, WFS, and WCS), in contrast, provide a fairly straightforward URL-based request model that is required to support the HTTP GET method, and optionally the POST method. While the RESTfulness of the OGC service interfaces is still debated, the relative simplicity of the request-response model for OGC WxS services in comparison with SOAP is clear.

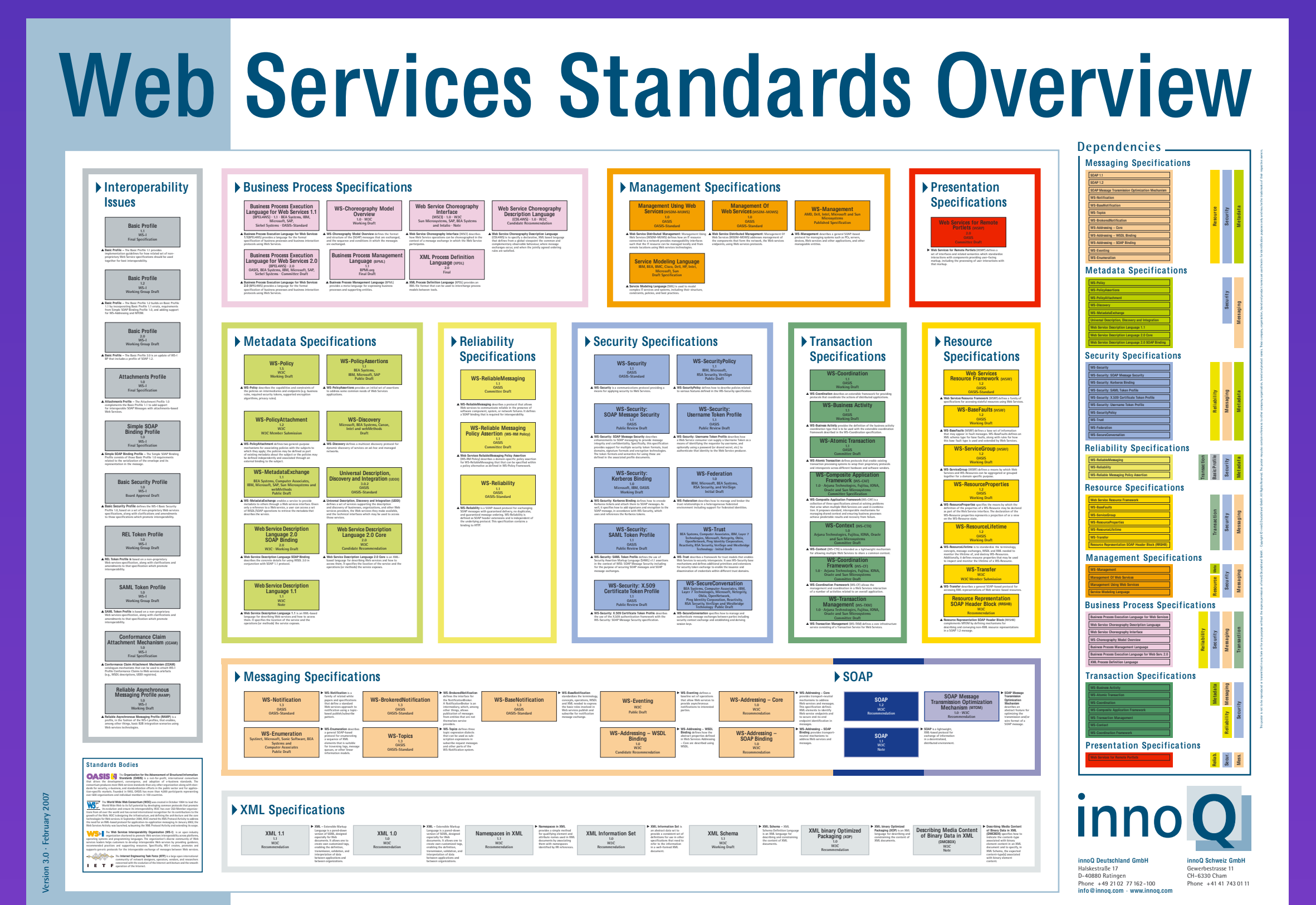


Figure 1, Web Services Standards Poster developed by innoQ in Q1 2007. (<http://www.innoq.com/resources/ws-standards-poster/>)

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Web Resource
 PHAIRS Project Website:
<http://phairs.unm.edu/>