

Web Services: A Mechanism for Across-the-Internet On-Demand Computing and Communication

**IRIS Annual Workshop
Wed. June 8, 2005**

The appearance of the World Wide Web one decade ago marked a significant advancement in the way we communicate ideas and research results. Our ability to create HTML-based web pages and to host our own web sites allows us to provide materials of our own choosing to students, colleagues and broader audiences around the globe. While web pages are static, real-time calculations and database access are available with the incorporation of script-based access methods (such as CGI or php) or java applets. However, a different class of functionality is now available using information technology methods which only recently have become used in the geosciences. These methods offer on-demand computing using facilities located remotely but accessed in real-time across the Internet. More widely deployed in the commercial world, these methods offer our earth sciences communities access to additional computing resources, evolving data archives maintained elsewhere, and delivery of data products selectively produced in real-time. These methods also allow run-time access to common codes (for the sake of commonality) or to codes which undergo frequent upkeep.

The purpose of this workshop is to examine these Across-the-Internet On-Demand methods in contrast to more familiar script- or java-based methods. While evolving, four principal IT methods are currently widely used to provide distributed computing services: java servlets, CORBA, java-RMI, and web services. These methods have strengths, weaknesses, and are better at different types of computing purposes. The workshop will explore these differences and then examine in more depth the method of web services. Web Services can be used to create a true community library of remote computing modules ranging from the very simple (e.g., latitude-longitude to UTM conversion) to the heavy duty (modeling codes). The goal of the workshop is to give participants sufficient conceptual understanding in order to know which method to choose when planning to offer online service to others. Workshop target audience consists of scientists, project leaders or administrators, students. IRIS offers supplemental financial support to attend this workshop in advance of the main IRIS meeting. IRIS will offer a followup workshop later in 2005 aimed at students and programmers who wish to learn how to create a web service.

For more information, contact the convenors:

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AGENDA

Wednesday, June 8, 2005, 9 AM - 5 PM

Objectives: What are web services and why do we want/need them?
Target audience: Scientists, project coordinators/administrators, students.

INTRODUCTIONS

* Why do distributed (remote) computing in contrast to local computing? Advantages offered by across-the-Internet on-demand computing (such as access to compute resources, commonality of codes, code updates, access to evolving databases and data archives maintained elsewhere).

- * Design factors for across-the-Internet services based on application. Current methods (applets, php, simple database access) versus new methods. What are client-side and server-side components and what do they do?
- * Overview of four primary distributed methods: *servlets*, *CORBA*, *java-RMI*, *web services*. What do they do, how do they work, what applications are they better suited to do? Examples.

WEB SERVICES

- * What is a Web Service - an earth scientist's view. What is a web service and what can it do for us in the geosciences? Examples of web services versus other distributed access methods.
- * What is a Web Service - an IT view. what is a web service and how does one work. Introduction of key ideas regarding clients & servers, across-the-Internet communication, security. GUIs and wrapping legacy codes. Needed resources to make and host one. Future directions.

SUMMARIES/EXAMPLES

- * Examples: Geoinformatics and IT research projects which use both web services and other distributed computing methods.
- * Future perspectives for a scientific community's distributed work environment. Community library of geoscience web services. Sharing codes, linking of multidisciplinary functionality. Access to community databases, archives, data products. Delivery mechanism for EarthScope data and knowledge products.