Soaplab2: more reliable Sesame door to bioinformatics programs

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Soaplab2 is a refactoring and enhancement of the Soaplab Web Services framework for command-line bioinformatics programs. Enhancements include the removal of legacy layers and addition of memory management components that make Soaplab2 servers more reliable than before. While the new Spinet web client opens Soaplab2 services to a larger audience, support for the document/literal wrapped protocol makes Soaplab2 services more interoperable.

Soaplab allows service providers to make their command-line programs Web Services accessible based on metadata descriptions of the programs, without needing any programming effort in most cases. It uses a generic interface that makes it possible to use the same interface when accessing any services disregarding their implementation details. The interface includes methods to find an available service, discover what inputs it requires and what outputs it produces, to start it and to obtain results [1].

Although Soaplab opened the *Sesame door* to bioinformatics programs, the necessity of running legacy Applap CORBA servers in parallel was a maintenance headache for service providers. During refactoring this legacy layer was removed and the logic for handling management of jobs moved into Soaplab2 core libraries. In order to make Soaplab2 servers more reliable, new memory management components were implemented that periodically check for completed jobs and silent services, and returns their memory usage back to JVM. Similarly, hanging jobs are terminated and deleted based on a configurable timeout value.

Other enhancements for service providers include refactored build/install/deploy tasks that now use scripting power of *ant* together with dependency management power of *maven*. In order to make Soaplab2 platform-independent, some of the modules previously written in Perl were rewritten using Java. The new batch-client module allows defining test suites through Java configuration files and can be used to start concurrent test requests. Soaplab2 also includes built in support for EMBOSS programs and a predefined test suite for testing EMBOSS services.

One important new feature in Soaplab2 is its AJAX based new web interface, Spinet, which allows users to select a service, to specify its inputs in a usual HTML form, start the service, and to display its results. Spinet can be used from any modern web browser and comes with no extra cost to service providers.

Soaplab2 has a richer client library and a richer set of ready to use client scripts based on this library. Its architecture now has an extensible protocol layer. Support for the document/literal-wrapped protocol is already implemented for better interoperability with standard Web Services client libraries. The RPC/encoded protocol is still supported for backward compatibility. Taverna Soaplab plugin was updated by replacing Axis library calls with the Soaplab2 client library calls and is now able to communicate using both protocols.

References:

1. Senger M., Rice P., Oinn T., “Soaplab - a unified Sesame door to analysis tools“, Proceedings, UK e-Science- All Hands Meeting 2003, p. 509-513, 2003

Website: http://soaplab.sourceforge.net/soaplab2/

(*) Development of Soaplab2 is driven by Martin Senger, original Soaplab author