Soaplab: Open Source Web Services Framework for Bioinformatics Programs

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Soaplab is a specialized Web Services framework for command-line bioinformatics programs. Its recent reincarnation Soaplab2 introduced enhancements that made Soaplab servers more reliable than before. However standard Web Services clients were not able to use their full capacities with Soaplab generic interface since it was not presenting complete input/output descriptions in standard way using XSD. In order to address this issue we have worked on a new Soaplab interface that includes input/output type definitions at WSDL level.

Soaplab prepares Web Services for command-line programs based on descriptions written using an extended version of the ACD language from the EMBOSS open source bioinformatics program suite. It includes routines for basic validation of inputs, making inputs available to command-line programs, running programs, and collecting and returning outputs of executed programs [1]. Soaplab's latest version, Soaplab2, was first released in 2007 after it had been refactored and enhanced in several ways, making Soaplab servers more reliable than before.

One of the unique features of Soaplab is its generic interface that makes it possible to use the same interface when accessing any Soaplab Web Services regardless of the command line interface of underlying programs. However Soaplab generic interface restricts the ways WSDL files of individual Soaplab Web Services can be tailored. For example Web Services specific input-output data types are not described at WSDL level; instead the interface accommodates methods to query this information. This difference from common WSDL interfaces, for example, doesn't allow standard Web Services clients to check input data types before sending a request or output data types after a response has been received.

There was a growing concern in Bioinformatics Web Services community that Soaplab should include input/output type descriptions at WSDL level. To address this concern we have extended Soaplab in such a way that service providers can deploy their Soaplab Web Services with WSDL files that includes type descriptions. The new interface, called typed interface, will also facilitate integration of service and data ontologies some service providers are working on.

A beta version of Soaplab typed interface for EMBOSS Web Services was made available on EBI Soaplab server last December. We are planning to include full support for typed interface in the next release of Soaplab (2.1.2) first week of June this year. The new release will also include support for load sharing system LSF.

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

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Project home page: http://soaplab.sourceforge.net/soaplab2/

Project download page: http://soaplab.sourceforge.net/soaplab2/Download.html