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A Framework for Earth Science Search Interface Development

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Web service standards are established to support interoperability and integration of resources on the web. Techniques for semantic annotation of web services have emerged to support use cases from automated discovery, selection, and invocation to composition and mediation. In small to medium-sized data and information management projects, with only a small number of developers involved, there are close interactions between front-end user interface developers and back-end system architects. On some occasions, especially when funding is limited, these data and information management projects have little incentive to follow web service standards or provide semantic markup because the close interactions of the team itself provide the necessary integration capabilities.

We present the S2S framework, which facilitates the rapid deployment of sophisticated search interfaces for services compliant with well-known web standards. S2S utilizes the Web Ontology Language OWL for the semantic description of services, queries, search parameters, and user interface components (or widgets). In the S2S framework, services are associated with the (generic) queries they support; queries are associated with search parameters and user interface widgets. The entire framework is modular to support extensibility and community development. A prototype web interface has been implemented to provide faceted browse for OpenSearch-described web services, including those using the Geo and Time extensions.

Semantic annotation of data and services on the web is crucial to the success of larger interdisciplinary projects. It is equally important that small and medium-sized projects commit to web standards and community vocabularies when publishing resources on the web. S2S incentivizes compliance with web standards, especially in projects where funding may be limited. By complying with well-known web service standards, data and information management projects can reap the benefits of the S2S framework, including the reuse of existing user interface widgets and development contributions from the open source community. By alleviating the time and resources that data and information management projects allocate to search interface development, a greater percentage of project resources can be devoted to web service development and semantic annotation of underlying data resources.