



Contribution ID: 87

Type: **not specified**

WisNetGrid Service Layer - Enabling Creative Research Workflows

Wednesday, 28 March 2012 14:00 (20 minutes)

Description of the Work

With increasing demand for and supply of complex services, it has become challenging to create, manage, and use appropriate services. In order to cope with these requirements, we develop an architecture to access distributed Grid and Web resources and a management system for services and workflows within the WisNetGrid project as part of the German D-Grid initiative. We provide a central infrastructure of common functionalities enabling and assisting the creation, consumption, and provision of scientific services and workflows by various Grid communities. We also present an approach for modeling services and workflows semantically.

We allow users to control the process of the workflow composition as domain experts have the knowledge to decide which particular services are applicable (e.g., the selection of a service for named entity recognition adapted for different languages and domains). The service modeling language captures basic properties of services and workflows including their functionality modeled formally as a process, while the Web browser based graphical editor allows users to model services and workflows in an easy fashion.

Conclusions

We introduce a service layer powered by semantic technologies to address common needs of different Grid communities. We provide tools for the management of service and workflow descriptions within the Grid infrastructure as well as methods and techniques for community projects in the Grid to dynamically and flexibly find, compose, and execute services and workflows.

Impact

We present an example scenario based on requirements and experiences of the TextGrid project in order to illustrate the motivated benefits of our approach. Various information resources that contain text documents as well as basic text mining and analysis functionalities that are offered as services. The flexibility of service-oriented architecture allows scientists from different communities such as cultural sciences or humanities to compose existing generic functionalities in different ways in order to run experiments on the text documents. Using the proposed architecture in combination with formal information and service modeling, we are able to integrate heterogeneous information in scientific workflows.

The scenario delineates the usefulness of the approach developed in the WisNetGrid project, including the incorporation of Grid resources providing text documents to be processed by the workflow, the management of available services, and illustrates the description formalism.

Overview (For the conference guide)

Many projects in academia and industry nowadays use and provide services electronically in order to be able to select from or target to a larger community across regional boundaries, respectively. The demand for flexibility and adaptivity arises with altering user requirements and evolving amount of functionalities within the field of research computing. While flexibility and adaptivity is achieved by service-oriented architectures, the heterogeneity between resources of different domains is addressed by formally modeling services and workflows as well as the attached information resources. The degree of automation and flexibility is further increased by a set of tools for searching, ranking, and composing services and workflow even at run-time.

Primary authors: Mr JUNGHANS, Martin (Institute AIFB/KSRI, KIT, Karlsruhe, Germany); Dr JAEKEL, Rene (ZIH, TU Dresden); Dr AGARWAL, Sudhir (Institute AIFB/KSRI, KIT, Karlsruhe, Germany)

Presenters: Mr JUNGHANS, Martin (Institute AIFB/KSRI, KIT, Karlsruhe, Germany); Dr JAEKEL, Rene (ZIH, TU Dresden); Dr AGARWAL, Sudhir (Institute AIFB/KSRI, KIT, Karlsruhe, Germany)

Session Classification: Workflows: solutions currently in use