The Grid, Grid Services and the Semantic Web: Technologies and Opportunities

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Abstract. Grids are an emerging computational infrastructure that enables resource sharing and coordinated problem solving across dynamic, distributed collaborations that have come to be known as virtual organizations. Unlike the web, which primarily focuses on the sharing of information, the Grid provides a range of fundamental mechanisms for sharing diverse types of resource, such as computers, storage, data, software, and scientific instruments. In this talk, I will introduce the Grid concept and illustrate it with application examples from a range of scientific disciplines. It is likely that technology that is being developed for the Semantic Web will have important roles to play in Grid Services; I will explore some of these potential areas of Semantic Web technologies, identifying those that I think offer the most potential.

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A recent advance in Grid technologies has been the recognition of the relationship between Grids and Web technologies, specifically those developed to support Web Services (e.g. WSDL, SOAP, UDDI, and WSIL). While the Grid deals with the creation, discovery and management of transient services, Web services provides mechanisms for discovering services as well as describing service interfaces in terms of abstract operations, and mapping of these operations onto concrete data transport mechanisms. The relationship between the Grid and Web services is being codified in a new specification called the Open Grid Services Architecture (OGSA).

I. Horrocks and J. Hendler (Eds.): ISWC 2002, LNCS 2342, pp. 3–4, 2002.

In this talk, I will introduce the Grid concept and illustrate it with application examples from a range of scientific disciplines. I will give high level description of how Grid infrastructure is structured and the current state of practice with respect to existing Grid software and services. I will then describe the on going work in OGSA.

It is likely that technology that is being developed for the Semantic Web will have important roles to play in Grid Services. Many decision making processes that go into assembling services into an application can be empowered by providing richer, and deeper descriptions of service properties and semantics. In this talk, I will explore some of these potential areas of Semantic Web technologies, identifying those that I think offer the most potential.