Applications of Intelligent Agent Technology to The Grid

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Abstract

Grids are a distributed computing technology whose objective is to provide the basic mechanisms for forming and operating dynamic distributed collaborations, or virtual organizations as they are sometimes called. While Grid infrastructure has focused on such things as the means for discovering and monitoring dynamic services, managing faults and failures, creating and managing service level agreements, creating and enforcing dynamic policy, to name a few – to date, only limited progress has been made on creating the higher level reactive behaviors that would enable truly dynamic formation of virtual organizations. What is needed are the basic algorithms that enable independently operating entities to interact with one another with partial knowledge and have emerge a robust desirable behavior. This is exactly the range of problems that are being addressed by intelligent agent technologies. Hence, it seems likely that agent technology will play an important role in the development of the Grid as a pervasive infrastructure and the Grid offers an exciting range of new applications for agents. In this talk I will explore the relationship of intelligent agents to the Grid and in particular focus on how agent technology can be applied to some specific challenges faced by Grid infrastructure and applications.

Bio Sketch

Dr. Carl Kesselman is Fellow in the Information Sciences Institute at the University of Southern California. He is the Director of the Center for Grid Technologies at the Information Sciences Institute and a Research Associate Professor of Computer Science at the University of Southern California. He received a Ph.D. in Computer Science from the University of California, Los Angeles, a Master of Science degree in Electrical Engineering from the University of Southern California, and Bachelors degrees in Electrical Engineering and Computer Science from the University at Buffalo.

Dr. Kesselman's current research interests are all aspects of Grid computing, including basic infrastructure, security, resource management, high-level services and Grid applications. He is the author of many significant papers in the field. Together with Dr. Ian Foster, he co-leads the Globus Project, one of the leading Grid research projects. The Globus project has developed the Globus Toolkit, the de facto standard for Grid computing.

Dr. Kesselman received the 1997 Global Information Infrastructure Next Generation Internet award, the 2002 R&D 100 award, the 2002 R&D Editors choice award, the Federal Laboratory Consortium (FLC) Award for Excellence in Technology Transfer and the 2002 Ada Lovelace Medal from the British Computing Society for significant contributions to information technology. Along with his colleagues Ian Foster and Steve Tuecke, he was named one of the top 10 innovators of 2002 by InfoWorld Magazine. In 2003, he and Dr. Foster were named by MIT Technology Review as the creators of one of the "10 technologies that will change the world."

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