Preface

The scientific paradigms of the Semantic Web, Multi-Agent Systems, Peer-to-Peer Networks and Grid Computing are currently receiving a lot of attention, and are producing solutions to important problems ranging from e-science to e-business. The United States, the European Commission, Japan and other countries have been investing heavily in these technologies recently.

According to Tim Berners-Lee, James Hendler and Ora Lassila (Scientific American, May 2001), "the Semantic Web aims to bring structure to the meaningful content of Web pages, creating an environment where software agents roaming from page to page can readily carry out sophisticated tasks for users". This vision of the Semantic Web has recently become even more important with the advent of Web Services technology that enables the Web to be used for application to application communication through appropriate programmatic interfaces.

In peer-to-peer (P2P) networks a very large number of autonomous computing nodes (the peers) pool together their resources and rely on each other for data and services. P2P computing has been recently attracting wide publicity, spurred by the popularity of file sharing systems such as Napster, Gnutella and KaZaA and others.

Grid Computing is a new field concentrating on "flexible, secure, coordinated resource sharing among dynamic collections of individuals, institutions, and resources - what we refer to as virtual organizations" ("The Anatomy of the Grid: Enabling Scalable Virtual Organizations" by Foster, Kesselman and Tuecke).

The proposed workshop aims to foster international collaboration among the above areas of research and technological development with the aim to realize the vision of semantic intelligent middleware for the Web and the Grid. The workshop is collocated with the premier European AI conference to emphasize the role of Artificial Intelligence techniques (e.g., knowledge representation, ontologies, planning, learning etc.) in making progress in the above four areas and the ultimate realization of the Semantic Web and the Semantic Grid.

One of the key challenges in todays webs and grids is the need to deal with knowledge and data sources that are distributed, heterogeneous, and dynamic, and where effective elicitation of implicit knowledge is a necessary component of the overall system. In such systems, a complete global viewpoint or understanding is impossible to achieve we therefore need to go beyond centralised knowledge service provision, and develop effective open, distributed, knowledge-based solutions.

Researchers in Multi-Agent Systems, Semantic Web and Semantic Grid aim to overcome these difficulties by adding meaning (ontologies, annotations and negotiation processes) to existing webs and grids. In this way, one not only provides a general semantic-based computational network infrastructure, but a rich, seamless collection of intelligent, knowledge-based services for enabling the

management and sharing of complex resources and reasoning mechanisms. In the Semantic Web and Semantic Grid knowledge and semantics are deployed explicitly for applications and for the development of innovative infrastructure. This knowledge-oriented semantics-based approach goes hand-in-hand with the exploitation of techniques and methodologies from Multi-Agent Systems representing various components of the virtual organizations and interacting in a P2P way.

Having articulated the above vision, we should not underestimate the complexity of realizing the Semantic Web and Semantic Grid and fulfilling the expectations of users. The Semantic Web and Grid vision can only become a reality if high quality of service is offered to users and applications at all levels of the Web or Grid fabric. Research needs to concentrate on issues of quality of service in the provision of knowledge services and semantic grid services and attention should be devoted to high-performance, scalability, resilience to failures, robustness and adaptivity of the proposed systems.

The workshop brought together researchers active in knowledge representation and ontologies, software agents, P2P and Grid computing who share an interest in working towards the vision of the Semantic Web and Semantic Grid.

The workshop was organized in association with the Global Grid Forum Semantic Grid Research Group (http://www.semanticgrid.org).

<div align="right">

June 2004

Jérôme Euzenat
Carole Goble
Asunción Gómez-Perez
Manolis Koubarakis
David De Roure
Mike Wooldridge

</div>

Organization

The organization of the International Workshop on Semantic Intelligent Middleware for the Web and the Grid was coordinated by the following committee:

Jérôme Euzenat, INRIA Rhône-Alpes, France
Carole Goble, University of Manchester, United Kingdom
Asunción Gómez-Perez, Universidad Politecnica de Madrid, Spain
Manolis Koubarakis, Technical University of Crete, Greece
David De Roure, University of Southampton, United Kingdom
Mike Wooldridge, University of Liverpool, United Kingdom

The organizers are indebted to the following members of the Program Committee for their assistance in evaluating the submitted papers:

Karl Aberer, EPFL, Switzerland
Richard Benjamins, iSOCO, Spain
Joost Breuker, University of Amsterdam, The Netherlands
Christopher Bussler, DERI, Ireland
Mario Cannataro, University "Magna Græcia" of Catanzaro, Italy
Vassilis Christophides, University of Crete and ICS FORTH, Greece
Oscar Corcho, Universidad Politecnica de Madrid, Spain
Stephan Decker, DERI, Ireland
Alexis Delis, University of Athens, Greece
Ian Dickinson, HP Labs, United Kingdom
John Domingue, Open University, United Kingdom
Dieter Fensel, IFI, Innsbruck University, Austria
Mariano Fernandez-Lopez, Universidad Politecnica de Madrid, Spain
Geoffrey Fox, University of Indiana, USA
Yolanda Gil, ISI, University of Southern California, USA
Fausto Giunchiglia, University of Trento, Italy
Michael Gruninger, NIST, USA
Manfred Hauswirth, EPFL, Switzerland
Carl Kesselman, University of Southern California, USA
Matthias Klusch, DFKI, Germany
Manuel Lama Penin, Universidad de Santiago de Compostela, Spain
Michael Luck, University of Southampton, United Kingdom
Bertram Ludaescher, San Diego Supercomputing Center, USA
Zakaria Maamar, Zayed University, UAE
Luc Moreau, University of Southampton, United Kingdom
Enrico Motta, KMI, Open University, United Kingdom
Mark Musen, Stanford University, USA
James Myers, Pacific Northwest National Laboratory, USA
Wolfgang Nejdl, L3S and University of Hannover, Germany

Tim Norman, University of Aberdeen, United Kingdom
Natasha Noy, Stanford University, USA
Sascha Ossowski, Rey Juan Carlos University, Spain
Terry Payne, University of Southampton, United Kingdom
Dimitris Plexousakis, University of Crete and ICS FORTH, Greece
Alun Preece, University of Aberdeen, United Kingdom
Omer Rana, Cardiff University, United Kingdom
Dave Robertson, University of Edinburgh, United Kingdom
Peter van Roy, Universite Catholique de Louvain, Belgium
Norman Sadeh, Carnegie Mellon University, USA
Vassilis Samoladas, Technical University of Crete, Greece
Guus Schreiber, Free University of Amsterdam, The Netherlands
Carles Sierra, IIIA, CSIC, Spain
Steffen Staab, University of Karlsruhe, Germany
Heiner Stuckenshmidt, Free University of Amsterdam, The Netherlands
Rudi Studer, University of Karlsruhe, Germany
York Sure, University of Karlsruhe, Germany
Valentina Tamma, University of Liverpool, United Kingdom
Simon Thomson, BTexact, United Kingdom
Mike Uschold, Boeing Corporation, USA
Ubbo Visser, University of Bremen, Germany
Steven Willmott, Universitat Politecnica de Catalunya, Spain
Michael Wooldridge, University of Liverpool, United Kingdom
Hai Zhuge, Chinese Academy of Sciences, Beijing, China