Editorial

Special issue on grid computing, high-performance and distributed applications

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Multiagent and Grid Systems – An International Journal focuses on the new emerging areas of Multiagent Systems, Grid Computing, Autonomic/Adaptive Computing, and their intersections. Many of the approaches presented within these fields exploit the performance enhancement and distribution, as inherent capabilities for improving their results. Furthermore, the heterogeneity and autonomy are "common denominator" of both solutions, grid and multiagent approaches.

The purpose of this special issue is to present high-performance and distributed models, architectures and systems for grid environments. Some of these approaches are also based on research performed in the multiagent field. The set of technical papers presented in this volume has been made up by extended and modified papers from the GADA'06 (Grid computing, high-performAnce and Distributed Applications) Conference, which constituted a successful event in which researchers, developers and users exchanged ideas and works related to all these topics. This selection was the result of a difficult and thorough review process. These papers were received on June 14, 2006. Their first revision was made on July 2006, having two more posterior revisions in October-November 2006 and January-February 2007 before being definitively selected to make up the technical programme of this publication. The number of submissions - more than 70 high quality papers - and the diversity of the resulting programme are testimony of the interest in this up-and-coming area.

G.V. Iordache et al. describe a distributed, fault-tolerant, scalable and efficient solution for optimizing task scheduling in a grid. The scheduler combines both genetic algorithms and lookup services, over a multiagent infrastructure in order to obtain a scalable and highly reliable optimization tool.

A. Muñoz Ortega et al. present the achievements of the design and development of a semantic-aware management framework enabling the dynamic management of security services in Globus Toolkit release 4 infrastructures. This framework represents one step towards the automatic management of security services, considering not only authorization services, but also providing additional reasoning mechanisms to deal with issues such as detection and resolution of conflicts between different grid management rules.

F. Baude et al. propose a three staged file transfer approach for the Grid. The three stages are: deployment, user application execution, and retrieval (post-execution). Each stage has its own environmental requirements, and thus different techniques must be applied.

K. Kuliberda1 et al. describe a solution to the problem of integration of distributed, heterogeneous and variously fragmented collections of data located in object-oriented databases. Three integration methods for differently structured databases constituting virtual repositories in a data grid with a P2P architecture are presented.

A. Wierzbicki and T. Kaszuba present new techniques for trust enforcement that use cryptographic methods and are adapted to the dynamic membership and resources of Peer-to-Peer systems. This paper describes a comprehensive trust management infrastructure for P2P Massive Multi-user Online Games that enables to

recognize and exclude cheating players while keeping the performance overhead as low as possible.

J.L. Vázquez-Poletti et al. provide a comparative analysis between two major grid scheduling philosophies: a semi-centralized approach, represented by the EGEE Workload Management System, and a fully distributed approach, represented by the GridWay Metascheduler. This paper not only includes a standard analysis with the obtained times, but also a complex analysis based on a performance model.

A. Sánchez et al. describes MAPFS-DSI, a modification of the GridFTP server, based on a multiagent parallel file system. MAPFS-DSI increases the performance of data transfers, but keeping the interoperability with existing GridFTP servers.

Finally, the guest editors would like to thank all the people that have made it possible to publish this special section in such a short time: the editors-in-chief, Prof. Dr. Huaglory Tianfield and Prof. Dr. Rainer Unland, for their invitation to organize this special issue; the reviewers, for their valuable work; the editorial staff, for their support and help, and of course the authors, for their effort and good work.