

Lecture Notes in Business Information Processing

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Agent-Based Technologies and Applications for Enterprise Interoperability

International Workshops
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Revised Selected Papers

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Preface

Today's enterprises must adapt their software processes to work in open settings, such as online marketplaces and, more generally, the Web, where business relationships exhibit a high degree of dynamism. Moreover, open settings are characterized by the autonomy and heterogeneity of the enterprises. In such settings, interoperability is a key concern: how do we ensure that diverse enterprises can work together toward a mutually desirable end?

Interoperability problems occur at different levels: at the business level (how organizations do business together, what needs to be described and how?), at the knowledge level (different formats, schemas, and ontologies), and at the infrastructure level (the underlying information and communication technologies and systems). Agents, Model Driven Architecture (MDA), and Service Oriented Architecture (SOA) are complementary approaches to addressing the enterprise interoperability problem. Agents enable dynamic collaboration and orchestration in changing and unpredictable situations; MDA provides mechanisms that generate artifacts for different platforms; SOA gives us late-binding interoperability between business process requirements and providers of service implementations.

The ATOP (Agent-Based Technologies and Applications for Enterprise Interoperability) workshop series focuses on technologies that support interoperability in networked organizations, on successful applications of these technologies, and on lessons learned. In particular, ATOP aims to bring together research that combines ideas from MDA and SOA with agents in presenting new concepts for enterprise interoperability.

This book combines selected and revised contributions gathered from two editions of ATOP workshops: ATOP 2009, which was held in co-location with the 8th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2009) in May 2009 in Budapest, Hungary, and ATOP 2010, which was held in co-location with AAMAS 2010 in May 2010 in Toronto, Canada. Following ATOP 2008 and ATOP 2005, a total of four issues of ATOP workshops have taken place so far. Selected papers of the 2005 and 2008 editions were also published in the Springer LNBIP series (LNBIP Vol. 25). In all, 25 papers were submitted to ATOP 2009 and 2010. Each paper was reviewed by three members of an international Program Committee. The submissions followed a call for papers on all aspects of agent-oriented enterprise interoperability, and showed the range of results in numerous areas, such as methodologies, architecture, modeling and design, tools, and applications.

Eleven articles from the ATOP 2009 and 2010 workshops were carefully selected and revised; they are complemented by an invited contribution that reports on an important standardization activity in the area of agent-based modeling. Together these articles represent the state of the art in research on agent-based enterprise interoperability. The topics covered include modeling and design of interoperable

systems, semantic approaches to enterprise interoperability, and technologies for interoperable business processes and business interactions. The main goal was to collect approaches for the application of agent technologies in these areas. Current trends in the development of agent technologies are compared with recent developments in service-oriented and model-driven system design, with respect to their ability to solve interoperability problems.

It is our hope that this thoroughly prepared volume is of particular value to all readers interested in the key topics and most recent developments in the exciting field of agent-oriented enterprise interoperability.

Finally, we would like to thank the authors, the participants, and the reviewers for contributing to this book.

September 2011

Klaus Fischer
Jörg P. Müller
Renato Levy

Organization

The ATOP 2009 and 2010 workshops were organized in the context of the 8th and the 9th International Conference on Autonomous Agents and Multiagent Systems in Budapest and Toronto, respectively.

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