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Intelligent Agents for Telecommunication Applications

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Preface

The first international workshop on Intelligent Agents for Telecommunications Applications (IATA'96) was held in July 1996 in Budapest during the XII European Conference on Artificial Intelligence ECAI'96. The workshop program consisted of technical presentations addressing agent based solutions in areas such as network architecture, network management, and telematic services. Presentations gave rise to a lively debate on the advantages and difficulties of incorporating agent technology in telecommunications. The proceedings were published by IOS Press providing introductory papers on agent technology as well as telecom applications and services and also papers about appropriate languages and development tools.

The second International Workshop, IATA'98, was held in Paris, in the framework of Agents' World which brought together the principal scientific and technical events on agent technology such as the International Conference on Multi-Agent Systems (ICMAS'98), RoboCup'98 devoted to an international competition between soccer-playing robot teams, and six international workshops. Each workshop focused on specific aspects of agent technology such as databases and information discovery on the Internet (CIA'98), Collective Robotics (CRW'98), Simulation (MABS'98), Agent Theories, Architectures and Languages (ATAL'98), Communityware (ACW'98), and Telecommunications Applications (IATA'98). The proceedings of IATA'98 were published by Springer-Verlag.

Agent technology is a very promising approach to addressing the challenges of modern day telecommunications. The existing world of telecommunications – which is deeply influenced by monopolistic public network operators (PNOs) – is currently changing at a rapid pace. This change is taking place in the technological as well as the regulatory arena. Additionally, market forces on an unprecedented scale are at work. Given this change, it will no longer be sufficient for PNOs to solely provide network infrastructure. The challenge for PNOs consists in evolving to full-service providers. This implies that, on the one hand, an increasingly complex telecommunications infrastructure needs to be managed more efficiently and, on the other hand, that new types of telecommunications services need to be developed and provided. It is particularly such future services that need to satisfy a diverse range of requirements, e.g. personalization, support for user mobility, on-demand combination of different services, offline/online service usage etc..

Agent technology addresses these requirements particularly well as opposed to other technologies, e.g. client-server. A stationary agent can reside on agent platforms “in the net”, providing various types of services. Besides being potentially decentralized and cooperative, these stationary service provider agents possess capabilities for issues of security, accounting, and billing etc. On the client side, agent-based services will be requested by means of small, mobile agents which may enable both offline and online service usage. Agent technology is very well supported by the language Java and corresponding Java APIs.

The aim of IATA'99 is to provide a state-of-the-art forum for presenting innovative agent based applications in telecommunications, and for discussing new approaches, new models, and technology trends in both telecommunication and agent related fields.

This volume contains a revised version of the papers selected by the program committee for presentation and discussion at IATA'99.

The book comprises a collection of fourteen papers organized into four groups. Contributions in the first group present *architecture, tools, platform, and languages* for development of agent-based systems for TelCos. This first part starts with a presentation of a toolkit for the realization of agent-based applications in the telecommunications domain.

The second group deals with new approaches for *network management solutions* that can be realized by using agent technology.

The third group shows how *e-commerce* platforms and services can be realized based on agent technology.

The last group's contribution comprises 5 papers. The first one shows how agent technology can realize telecommunication services and how the service provisioning is established based on agent cooperation. The second paper describes the realization of VPN services based on agent technology. The third paper shows how agent technology can be deployed in universal messaging. Finally, the last paper describes the realization of agent-based brokerage.

Acknowledgements

We would like to express our sincere gratitude to all the people who helped to bring about the production of this book.

Nothing would have been possible without the initiative and dedication of the DAI-Lab team at the Technical University of Berlin.

We owe particular gratitude to the members of the program committee for their professionalism and dedication in selecting the best papers for the workshop. We especially thank all contributing authors for choosing IATA'99 to present their research results, and for their diligence and their cooperation in the preparation of this volume.

Hans Schlenker of the DAI-Lab has organized the review process, keeping in touch with the authors and monitoring the submitted contributions and the accepted papers. He did a great job.

Finally, we would like to express our appreciation of the various workshop sponsors:

- Deutsche Telekom
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