Editorial

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Biographical notes: Paolo Petta established the Intelligent Software Agents and New Media group at the Austrian Research Institute for Artificial Intelligence in 1996 and served in different functions in the European coordination actions AgentLink I-III. His research interests include intra- and inter-agent coordination and agent-oriented dynamic models of cognition.

The papers making up this special issue are extended versions of a selection of the contributions presented at the sixth edition of the bi-annual workshop, 'From Agent Theory to Agent Implementation' (AT2AI) held at AAMAS 2008 in Estoril, Portugal. The specific agenda of AT2AI aims at relating directly the opportunities, needs, results and experiences of deployment of agent based technologies and applications to the capabilities, limitations, and new trends in theory and good and bad practices in methodology. Historically, it has proven a fertile *intra*(!)-disciplinary ground to not only assess the practical realities behind the promises of agent-oriented technology, but also to expose and relate areas, both deep within and at the fringes of current research, where important developments are taking place. For AT2AI-6, this is documented with the questions identified for the individual sections of the programme of the workshop[2] that covered: the industrial impact of agent orientated design; aspects of agent-oriented control solutions – in particular, the increasing superposition and still embryonic dialogue with artificial cognitive systems engineering; practice-driven AOSE – application-driven performance measures for methodologies; approaches to agent modelling – as important tools to verify and help implement agent-oriented designs; collaboration and decision support – a paradigmatic application domain; and an update of the practitioners' understanding of the notion of 'agent' in their own field of activity. The contributions in this issue provide a small but indicative sample from these areas.

Giancarlo Fortino and colleagues present their event-driven lightweight distilled statecharts-based agent (ELDA) model aimed at effective design, rapid prototyping, and validation of agent-based applications for open and dynamic computing environments with explicit coverage of the aspects of agents' behaviours, interactions, and strong mobility. In the ELDA framework, design and development can draw on a dedicated meta-model as well as further tool that facilitate programming and enable simulation and validation of functional and non-functional system characteristics. A case study is used to illustrate these capabilities and to also motivate further research directions.

Complementing the aim and scope of the efforts of the first paper, Aniruddha Dasgupta and Aditya K. Ghose present the CASO programming language as a means to improve end-user's possibilities of configuring BDI-based agent-oriented applications by refining specifications in terms of constraints and preferences over goal states. The paper explains the selection of baseline technologies and their integration into a system with clear operational semantics and illustrates the potential with the non-trivial real-time example of a supply-chain application. Finally, the paper by Peng Zhang et al. puts the deployed application into central stage: in recent years, diabetic healthcare has been the target of a number of efforts deploying distributed technologies. This article discusses the pivotal role played by a FIPA-compliant agent-oriented platform in facilitating collaboration among the range of stakeholders organised in different 'collaboration zones' and the range of decision support functionalities provided.

With the traditional AT2AI Co-Chair Jörg P. Müller being involved in the organisation of the main conference, it was a group of younger colleagues – in alphabetical order: Bernhard Jung, Fabien Michel, and Alessandro Ricci – who shared the honours and burdens of organising AT2AI-6, and part of the follow-up activities leading to the present journal issue. I would like to express my gratitude to them, along with the AAMAS 2008 staff involved in the organisation of the workshop: the workshop chair, Juan Antonio Rodríguez-Aguilar, and the local conference organisers, Ana Paiva and Luís Antunes. My special thanks go to Lotzi Boloni, Jacques Ferber, and Massimo Cossentino for their precious help in ensuring the quality of the journal contributions.

Notes

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2   The website of AT2AI-6 at http://www.ofai.at/research/agents/conf/at2ai6 (last access on October 2009) also offers access to individual papers and the full working notes of the workshop, published as OFAI Technical report (Jung et al., 2009).