

# Lecture Notes in Artificial Intelligence 4995

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# Engineering Societies in the Agents World VIII

8th International Workshop, ESAW 2007  
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Revised Selected Papers



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# Preface

The 8th annual international workshop “Engineering Societies in the Agents’ World” was hosted by the National Centre for Scientific Research “Demokritos”, in Athens, Greece, in October 2007. The workshop was organized as a stand-alone event, running over three days. ESAW 2007 built upon the success of prior ESAW workshops: ESAW 2006 held in Dublin, ESAW 2005 held in Kuşadasi, going back to the first ESAW workshop, which was held in Berlin in 2000. ESAW 2007 was attended by 40 participants from 10 different countries. Each presentation was followed by highly interactive discussions, in line with the ESAW spirit of having open discussions with fellow experts.

The ESAW workshop series started in 2000 to provide a forum for presenting highly inter-disciplinary work on technologies, methodologies, platforms and tools for the engineering of complex artificial agent societies. Such systems have found applications in many diverse domains such as space flight operations, e-business and ambient intelligence. Despite ESAW traditionally placing emphasis on practical engineering issues and applications, the workshop did not exclude theoretical and philosophical contributions, on the proviso that they clearly documented their connection to the core applied issues.

Discussions coalesced around the following themes:

- electronic institutions;
- models of complex distributed systems with agents and societies;
- interaction in agent societies;
- engineering social intelligence in multi-agent systems;
- trust and reputation in agent societies;
- analysis, design and development of agent societies.

Three invited presentations underlined the interdisciplinary nature of research on agent societies by considering aspects of action and agency, and conflict detection and resolution in norm-governed multi-agent systems, and coalition formation for collective economic action in electronic markets. The first invited talk was given by Marek Sergot, a professor of computational logic at Imperial College London. In his talk, the contents of which appear in this volume as an invited submission, Professor Sergot presented a formal language for describing and analyzing norm-governed systems. The language provides constructs for expressing properties of states and transitions in a transition system. Moreover it includes modalities of the kind found in logics of action/agency for expressing the fact that an agent brings it about that, or is responsible for, its being the case that a certain property holds.

The second invited talk was given by Robert Axtell, a professor at the George Mason University, and an external professor at the Santa Fe Institute. Professor Axtell presented the conditions under which it is individually rational for agents to spontaneously form coalitions in order to engage in collective economic

action in e-commerce. He showed that, under certain conditions, self-organized coalitions of agents are capable of extracting welfare improvements even in non-cooperative environments.

The third invited talk was given by Tim Norman, a senior lecturer in the Department of Computing Science of the University of Aberdeen. Dr. Norman elaborated on three challenges concerning the development of Virtual Organizations. First, social norms governing the behavior of agents must be explicitly declared rather than being implicit in the design of a system. Second, it should be recognized that there are situations in which there is no possible course of action available for an agent that satisfies all norms. Third, agents must have mechanisms to resolve conflicts and to reason about norm violation.

The original contributions, the slides of the presentations, and more information about the workshop are available online at the ESAW 2007 website (<http://esaw07.iit.demokritos.gr>). The present post-proceedings continue the series published by Springer (ESAW 2000: LNAI 1972, ESAW 2001: LNAI 2203, ESAW 2002: LNAI 2577, ESAW 2003: LNAI 3071, ESAW 2004: LNAI 3451, ESAW 2005: LNAI 3963, ESAW 2006: LNAI 4457). This volume contains extended and substantially revised versions of selected papers from ESAW 2007 and an invited contribution by Marek Sergot.

The organization of ESAW 2007 would not have been possible without the financial help of:

- the University of the Aegean, Greece,
- the EU-funded project Argugrid,
- cosmoONE Hellas MarketSite,
- NCSR “Demokritos”, Greece,
- the Hellenic Artificial Intelligence Society,
- the Institute for Human and Machine Cognition (IHMC), US, and
- Imperial College London, UK.

We would like to thank the Steering Committee for their guidance, the Program Committee and the additional reviewers for the insightful reviews, and the Local Organizing Committee for arranging an enjoyable event. We would also like to thank all the researchers who submitted a paper to the workshop. Finally, we would like to offer our thanks to Alfred Hofmann and the Springer crew for helping us realize these post-proceedings.

The next ESAW workshop will be hosted in France by the Ecole Nationale Supérieure des Mines de Saint-Etienne, in September 2008, with Alexander Artikis, Gauthier Picard and Laurent Vercouter as organizers. We look forward to even more lively interactions, and a still higher level of originality and innovation.

June 2008

Alexander Artikis  
Gregory M. P. O'Hare  
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