

**Call for Papers and Participation****International Workshop on  
Regulated Agent-Based Social Systems:  
Theories and Applications (RASTA'02)**as part of [AAMAS 2002](#)

organised by

Institute of Science and Technology of Cognition - CNR, Italy,

MIT Sloan School of Management, USA,

Department of Computer Science, North Carolina State University, USA,

University of Washington, USA,

[AI Lab of the Department of Computer Sciences](#), Humboldt University Berlin, and["Theoretical Foundations of Computer Science" Group](#), University of Hamburg

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*Agent Technology* is the latest paradigm of software engineering methodology. The development of autonomous, mobile, and intelligent agents brings new challenges to the field. Agent technologies and multi-agent-systems are one of the most vibrant and active research areas of computer science. At the same time commercial applications of agents are gaining attention. The construction of artificial (agent) societies leads to questions that already have been asked for human societies. Computer Scientists have adopted terms like emerging behavior, self-organization, and evolutionary theory in an intuitive manner. Multi-agent-system researchers have started to develop agents with "social" abilities and complex "social" systems. However, most of these systems lack the foundation of the *social sciences*. It is the intention to bring together researchers from computer science as well as the social sciences who see their common interest in social theories for the construction of multi-agent-systems.

The workshop will take place during the First International Joint Conference on Autonomous Agents and Multi-Agent Systems ( [AAMAS 2002](#) ) in Bologna, Italy from July 15-19, 2002.

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**Topic A***Social Theory for Agent Technology (Socionics)*

The wide range of social theories offers many different solutions to problems found in complex (computer) systems. Which theories, to apply how and when is a major challenge. In developing agents and multi-agent systems computer scientists have used sociological terms like negotiation, interaction, contracts, agreement, organisation, cohesion, social order, and collaboration. Meanwhile an interdisciplinary area called *Socionics*, the bridge between sociology and computerscience, is beginning to establish itself. The realisation that the behaviour of societies cannot fully be explained by macro-

theories only, and the progress made in agent technology opened the way to new models of societies in which both macro-theories and micro-theories are incorporated. The development of the socionics research area and the increased interest in dynamics of behaviour of agents in hybrid organisations requires the investigation of new modelling concepts like roles, groups, social intelligence, beliefs, desires, and intentions.

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Topics of interest include but are not limited to:

- Social theories relevant for the development of agent systems from the fields of
    - Sociology, Psychology, Philosophy, Economics, Cognitive Sciences, Organizational Sciences, or Game Theory
  - Social concepts and models of
    - Compositionality
    - Communication, coordination, and cooperation
    - Privacy, security, confidence, trust, reputation, control, rationality etc.
    - Emotions
    - Cognitive/neural grounding of social behavior
    - Models of cognitive representations of social worlds
    - From actor-models to agent-models
    - Methodologies for interdisciplinary theory transformation
    - Individual/society (micro/macro) dynamics
    - Intersubjectivity and attribution
    - Conceptual and functional peculiarities of dyads, teams, groups, communities, and societies
  - Social background of agents theories
    - Models of intelligence, mobility, autonomy, emotions etc.
    - Agent-oriented software engineering (AOSE)
    - Specific issues like negotiation, co-operation, decision making, platforms, architectures, frameworks, languages, protocols, knowledge, scalability
    - Role of social theories in agent systems
    - Referrals in information flow
    - Expertise management
  - Modelling and foundations
    - Methodologies, paradigms, and principles
    - Agent languages and architectures
    - Modelling techniques for social aspects
    - Formal foundations, e.g. verification and validation
    - Agent-based modeling and simulation of social networks
  - Applications
    - Social(ly embedded) agents in the area of the Internet, intranets, business objects, e-commerce, CSCW, etc.
    - Emperical studies
    - Tools in the fields mentioned above
    - Human-Computer-Interface and usability
    - Testbeds and evaluations
    - Ubiquitous computing and mobile devices
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## Topic B

### *Norms and Institutions in MAS*

Multi-agent systems are increasingly being considered a viable technological basis for implementing complex, open systems such as electronic marketplaces, virtual enterprises, military or political coalition support systems, etc. The design of open systems in such domains poses a number of difficult challenges, including the need to cope with unreliable communication and network infrastructures, the need to address incompatible assumptions and limited trust among independently developed agents, and the necessity of detecting and responding to systemic failures.

Human organisations and societies have successfully coped with similar problems of coordination, cooperation, etc., in short, with the challenge of social order, mainly by developing norms and conventions, that is, specifications of behaviour that all society members are expected to conform to, and that undergo efficient forms of decentralised control. In most societies, norms are backed by a variety of social institutions that enforce law and order (e.g. courts, police), monitor for and respond to emergencies (e.g. ambulance system), prevent and recover from unanticipated disasters (e.g. coast guard, firefighters), etc. In that way, civilised societies allow citizens to utilise relatively simple and efficient rules of behaviour, offloading the prevention and recovery of many problem types to social institutions that can handle them efficiently and effectively by virtue of their economies of scale and widely accepted legitimacy. Successful civil societies have thus achieved a division of labour between individuals and institutions that decreases the "barriers to survival" for each citizen, while helping increase the welfare of the society as a whole.

Several researchers have recognised that the design of open multi-agent systems can benefit from abstractions analogous to those employed by our robust and relatively successful societies and organisations. There is a growing body of work that touches upon the concepts of norms and institutions in the context of multi-agent systems. This work moves in several directions, including:

- Formal-Theoretical work (definitions of concepts related to norms and institutions, such as contracts, commitments, obligations, rights, permissions, responsibility, delegation; formal notations for expressing and communicating norms and institutions; development of models of institutions, institutional roles, action, legitimacy )
- Experimental, exploratory theoretical work (specifications of hypotheses to be checked via experimental computational and simulation based studies, and possibly by cross-methodological comparison between natural and artificial data)
- Architectural work (architectures of agents with norms; architectures of electronic institutions; etc.)
- Prototyping and evaluation (prototype agent systems employing norms and electronic institutions in domains such as electronic commerce; coalition formation; disaster recovery; experimental

evaluation of the effectiveness of given institutions in the face of heterogeneity; limited trust and unreliable infrastructure; etc.)

- Social simulation (modelling of social and organisational institutions using multi-agent systems; use of normative concepts and phenomena in the design, evaluation and comparison of different organisational structures; etc.)

Topics of interest include but are not limited to:

- Norms and Institutions in MAS
  - Formal definitions of normative and institutional concepts
  - Notations and languages for communicating norms and institutions
  - Architectures of agents with norms
  - Norm-based reasoning and argumentation
  - Architectures of social institutions
  - Prototype systems employing the concepts of norms and institutions
  - Methodologies for evaluating the effectiveness of norms and electronic institutions
  - Application domains for which norms and institutions are especially useful design metaphor
  - The use of norms and institutions in open environments
  - Norms and institutions in electronic commerce applications
  - Adaptive institutions
  - Emergence of institutions
  - Decentralised vs. centralised institutions and systems of enforcement
  - Reputation and reputational systems on the web
  - Social simulation and its relationship to electronic institutions
  - Multi-agent based approach to participatory policy-making
  - Evolutionary models and algorithms for the study of institutions

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## Topic C

### *Agent-based social networks*

Agent-based social networks are self-organizing networks of users, in which each user is assigned a software agent and software agents assist the users in maintaining their social relationships and searching relevant information in the networks on behalf of users. The new, multidisciplinary field might provide an effective tool for sociologists studying individual behaviors in a complex social system and testbed for the study and evaluation of artificial agent societies.

Agent-based social networks help to develop an effective, naturally occurring knowledge management system in the organizations, while each agent automatically learns one another's domains of expertise. The rapid change of organizational structure makes agent-based social networks even more important in which workers rely on their personal social networks, rather than unstable, weakening "organization charts".

Moreover, agent-based social networks are a natural nextstep in the evolution of networked computing.

Agent-based social networks extend the stand-alone multiagent systems with users, and enable them to share their knowledge and experience on a wide scale. Interesting questions include how to find the users with needed information effectively with the local knowledge while the privacy of the users is preserved, and how the structure of social networks affects the information flow.

Topics of interest include but are not limited to:

- Structure of social networks
  - Small-world networks
  - Power-law networks
  - Peer-to-peer networks
  - Dynamics of social networks
  - Multiagent learning and user modeling
- Dynamics of social networks
  - Simulation testbed, and evaluations
  - Evolution, stability and efficiency
- Search in social networks
  - Middle agents and referrals
  - Effect of the structures on the information flow
- Applications
  - Knowledge management
  - Reputation management
  - Link analysis for recommender systems
  - Computer supported collaborative learning and working
- Social psychology
  - interpersonal communication
  - transactive memory
  - cognitive process and emotions

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### Submissions

Innovative and recent papers written in English are welcome for submission. The papers will be reviewed by at least two programme committee members. Selection criteria will focus on relevance to the special topic, originality with respect to the state of the art, and potential for discussion.

The program committee invites submissions of contributions as: long versions (up to 20 pages), short versions (up to 10 pages), and position statements / posters (up to 2 pages). Submissions should be in either POSTSCRIPT or PDF format and emailed to the chair of the topic to which it pertains:

Topic A - Socionics - papers should be emailed to [rasta02@informatik.uni-hamburg.de](mailto:rasta02@informatik.uni-hamburg.de) .

Topic B - Norms and Institutions in MAS - papers should be emailed to Mario Paolucci at [mario.paolucci@thinkingolem.com](mailto:mario.paolucci@thinkingolem.com).

Topic C - Agent-based social networks - papers should be emailed to Bin Yu at [byu@unity.ncsu.edu](mailto:byu@unity.ncsu.edu) .

Accepted papers will be included in the workshop proceedings which will appear as a technical report of the Department of Computer Science, University of Hamburg, and which will be available at the workshop. After an additional review process we will publish the best submissions in a special book within the LNCS/LNAI series of Springer.

For further information about RASTA'02 contact the programme committee by email at [rasta02@informatik.uni-hamburg.de](mailto:rasta02@informatik.uni-hamburg.de) or have a look at the [RASTA'02 homepage](#)

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