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Preface

In this book we present a collection of papers around the topic of Agent Communication. The communication between agents has been one of the major topics of research in multi-agent systems. The current work can therefore build on a number of previous workshops, the proceedings of which have been published in earlier volumes in this series. The basis of this collection is the accepted submissions of the workshop on Agent Communication Languages which was held in conjunction with the AAMAS conference in July 2003 in Melbourne. The workshop received 15 submissions of which 12 were selected for publication in this volume. Although the number of submissions was less than expected for an important area like Agent Communication there is no reason to worry that this area does not get enough attention from the agent community. First of all, the 12 selected papers are all of high quality. The high acceptance rate is only due to this high quality and not to the necessity to select a certain number of papers. Besides the high-quality workshop papers, we noticed that many papers on Agent Communication found their way to the main conference. We decided therefore to invite a number of authors to revise and extend their papers from this conference and to combine them with the workshop papers. We believe that the current collection comprises a very good and quite complete overview of the state of the art in this area of research and gives a good indication of the topics that are of major interest at the moment.

The papers can roughly be divided over the following four topics:

- Fundamentals of agent communication
- Agent communication and commitments
- Communication within groups of agents
- Dialogues

Although the topics are of course not mutually exclusive they indicate some main directions of research. We therefore have arranged the papers in the book according to the topics indicated above.

The first six papers focus on some fundamental issues in agent communication. The paper of *A. Jones and X. Parent* explains how the semantics of messages can be given in terms of the institutional context in which they are sent. *M. Rovatsos, M. Nickles and G. Weiss* go one step further and pose the thesis that the interaction itself provides the meaning of the messages. The use of cognitive coherence theory is explored in the paper of *P. Pasquier, N. An-drillon, B. Chaib-draa and M.-A. Labrie*. This theory is used to explain why certain utterances are used and why some effects are achieved. In the paper of *R. Kremer, R. Flores and C. La Fournie* the performatives that are used in the messages are discussed and a hierarchy of performative types is proposed. The last two papers in this section deal with the verification of agent communication. In the paper of *M.-P. Huget and M. Wooldridge* model checking is used as

a method to check the compliance of agent communication to some properties. *U. Endriss, N. Maudet, F. Sadri and F. Toni* propose a logical formalism to describe communication protocols. The use of this formalism makes it possible to verify the communication protocols against some properties such as guaranteed termination, answers when you expect them, etc.

The concept of “commitment” is used by a growing number of researchers in agent communication and therefore is given a separate section in this book. The first paper of this section is by *N. Fornara and M. Colombetti* and discusses how protocols can be specified when the ACL is based on a semantics of commitments. A logical model to describe the commitments themselves as a basis for agent communication is discussed in the paper of *M. Verdicchio and M. Colombetti*. *J. Bentahar, B. Moulin and B. Chaib-draa* argue that commitments can be combined into a commitment and argument network to formalize agent communication. When commitments are used to model agent communication some issues arise in how to create and dissolve them. In the paper of *A.U. Mallya, P. Yolum and M. Singh* some of the issues around resolving commitments are discussed. In the paper of *A. Chopra and M. Singh* especially some nonmonotonic properties of commitments are handled.

A relatively new topic that arose at this year’s workshop is that of multi-party dialogues. Many issues come up in this setting that do not play a role in dialogues between only two agents. The main issues are discussed in the first two papers of this section. The paper of *D. Traum* focuses on the complete setting of the dialogues, including the focus of attention, etc. The second paper of *F. Dignum and G. Vreeswijk* discusses the issues from the dialogue perspective. The latter paper also gives a first attempt to create a test bed in which one can check the properties of multi-party dialogues. This is of particular interest because it will be hard to formally prove some of these properties given the complex settings and many parameters that play a role.

In the papers of *P. Busetta, M. Merzi, S. Rossi and F. Legras* and of *F. Legras and C. Tessier* some practical applications and implications of multi-party dialogues are discussed. Finally, in the paper of *J. Yen, X. Fan and R.A. Volz* the importance of proactive communication in teamwork is discussed.

The last section of the book is centered around the concept of dialogues in agent communication. The first two papers discuss some fundamental issues concerning dialogues while the other three papers describe some applications of dialogue theory in negotiation and resolving discrepancies. The paper of *P.E. Dunne and P. McBurney* handles some issues around the selection of optimal utterances within a dialogue. In the paper of *S. Parsons, P. McBurney and M. Wooldridge* the mechanics of the dialogues themselves are discussed.

In the paper of *R.J. Beun and R.M. van Eijk* we see the application of dialogue games in resolving discrepancies between the ontologies of the agents. A topic that will certainly become more and more relevant in open agent systems!

The paper of *P. McBurney and S. Parsons* describes how the idea of “posit spaces” can be exploited to describe protocols for negotiation between agents. In the final paper by *I. Rahwan, L. Sonenberg and F. Dignum* a first attempt is

made to describe how negotiation dialogues can be modeled using the interests of the agents as a basis.

We want to conclude this preface by extending our thanks to the members of the program committee of the ACL workshop who were willing to review the papers in a very short time span, and also of course to the authors who were willing to submit their papers to our workshop and the authors who revised their papers for this book.

October 2003

Frank Dignum
Utrecht, The Netherlands

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