



December 2-4, 2001

Georgia Center for Advanced Telecommunications Technology (GCATT)  
250 14th Street, NW  
Atlanta, Georgia 30318



## Conference Schedule

### SUNDAY, DECEMBER 2

7:30-8:30 **Coffee and Tea**

7:30 **Registration Desk Opens**

8:30-12:00 **Morning Tutorials, a choice of:**

*Mobile Middleware for Future Telecommunications: Motivation, Future Services and Architectures Based on enago-Mobile*  
T. Magedanz and L. Hagen, IKV Technologies AG, Germany

*Global Computation and the Ambient Calculus*  
L. Cardelli, Microsoft Research, UK

12:00-1:30 **Lunch for those registered both AM and PM**

1:30-5:00 **Afternoon Tutorials, a choice of:**

*Mobile Agents for Application Integration*  
F. Igo, Mitsubishi Electric Research Labs, USA  
M. Kawaguchi, Mitsubishi Electric, Japan

*Resource Control for Mobile Agents*  
N. Suri, University of West Florida, USA

7:30-9:30 **Reception**

12:00-2:00 **Lunch (on own)**

2:00-3:30 **Technical Program: Session B - Models and Architectures**

*Formal Specification and Verification of Mobile Agent Data Integrity Properties: A Case Study*  
X. Hannotin, P. Maggi and R. Sisto, Politecnico di Torino, Italy

*Lime Revisited*

B. Carbutar, M. T. Valente and J. Vitek, Purdue University, USA

*Dynamic Adaptation of Mobile Agents in Heterogeneous Environments*

R. Brandt, Skyguide, Switzerland

H. Reiser, University of Munich, Germany

3:30-4:00 **Break**

4:00-5:30 **Technical Program: Session C - Applications**

*Fast File Access for Fast Agents*

E. Gendelman, L. Bic and M. Dillencourt, University of California Irvine, USA

*Flying Emulator: Rapid Building and Testing of Networked Applications for Mobile Computers*

I. Satoh, National Institute of Informatics/Japan Science and Technology Corporation, Japan

*Crawlets: Agents for High Performance Web Search Engines*

P. Thati, P. H. Chang and G. Agha, University of Illinois at Urbana Champaign, USA

5:30-7:00 **Reception/Poster session**

7:00-8:30 **Dinner Banquet**

### MONDAY, DECEMBER 3

7:45 **Registration Desk Opens**

8:00-8:45 **Continental Breakfast**

8:45-9:00 **Welcome by the Organizers**

9:00-10:00 **Keynote**

*Mobile Code Research: Looking Back and Peering Ahead*  
F. B. Schneider, Cornell University, USA

10:00-10:30 **Break**

10:30-12:00 **Technical Program: Session A - Security**

*On the Robustness of some Cryptographic Protocols for Mobile Agent Protection*  
V. Roth, Fraunhofer Institut für Graphische Datenverarbeitung, Germany

*Trust Relationships in a Mobile Agent System*  
H. Kim Tan and L. Moreau, University of Southampton, UK

*Evaluating The Security of Mobile Agent Systems*  
S. Fischmeister, G. Vigna and R. A. Kemmerer, University of California Santa Barbara, USA

The Poster session is an ideal place to display your latest work. We invite all interested in presenting a poster to submit an abstract to the poster committee. For details see the website.

## TUESDAY, DECEMBER 4

8:00 **Registration Desk Opens**

8:00-9:00 **Continental Breakfast**

9:00-10:00 **Keynote**

*Mobile Agents and the Unsexy (but Lucrative) Reality -- Integrating and Extending the Enterprise*

A. Ricciardi, *Valaran Corporation, USA*

10:00-10:30 **Break**

10:30-12:00 **Technical Program: Session D – Communication**

*An Efficient Mailbox-Based Algorithm for Message Delivery in Mobile Agent Systems*

X. Feng, *Nanjing University, China*

J. Cao, *Hong Kong Polytechnic University, China*

J. Lu, *Nanjing University, China*

H. Chan, *Hong Kong Polytechnic Univ., China*

*Using Predicates for Specifying Targets of Migration and Messages in a Peer-to-Peer Mobile Agent Environment*

K. Haller and H. Schuldt, *Swiss Federal Institute of Technology (ETH), Switzerland*

*A Scalable and Secure Global Tracking Service for Mobile Agents*

V. Roth and J. Peters, *Fraunhofer Institut für Graphische Datenverarbeitung, Germany*

12:00-1:30 **Luncheon**

1:30-3:00 **Technical Program: Session E - Run-Time Support**

*Translating Strong Mobility into Weak Mobility*

L. Bettini and R. De Nicola, *Univ. di Firenze, Italy*

*Transparent Migration of Mobile Agents Using the Java Platform Debugger Architecture*

T. Illmann, T. Krueger, F. Kargl and M. Weber, *University of Ulm, Germany*

*Portable Resource Reification in Java-based Mobile Agent Systems*

A. Villazón, *University of Geneva, Switzerland*

W. Binder, *CoCo Software Engineering, Austria*

3:00-3:30 **Break**

3:30-5:00 **Technical Program: Session F - Quantitative Evaluation and Benchmarking**

*Mobile-Agent versus Client/Server Performance: Scalability in an Information-Retrieval Task*

R. S. Gray, D. Kotz and R. A. Peterson, Jr., *Dartmouth College, USA*

D. Chacón, P. Gerken, J. Barton and

M. Hofmann, *Lockeed-Martin Advanced Technology Laboratory, USA*

J. Bradshaw, M. Breedy and N. Suri, *University of West Florida, USA*

*Performance Evaluation of Mobile-Agent Middleware: A Hierarchical Approach*

M. Dikaiakos, M. Kyriakou and G. Samaras, *University of Cyprus, Cyprus*

*Scheduling Multi-Task Agents*

R. Xie and D. Rus, *Dartmouth College, USA*

C. Stein, *Columbia University, USA*



## Conference Organizers

### General Chair

David Kotz, *Dartmouth College, USA*

### Program Chair

Gian Pietro Picco, *Politecnico di Milano, Italy*

### Tutorials Chair

David Wong, *Mitsubishi Electric Research Labs, USA*

### Advertising Chair

Marco Cremonini, *Dartmouth College, USA*

### Registration Chair

Lori A. Terino, *Dartmouth College, USA*

### Local Arrangement Chair

Ashraf Saad, *Georgia Institute of Technology, USA*

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## Steering Committee

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## Program Committee

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Anand Tripathi, *University of Minnesota, USA*

Christian Tschudin, *Uppsala University, Sweden*

Giovanni Vigna, *University of California Santa Barbara, USA*

Franco Zambonelli, *Università di Modena e Reggio Emilia, Italy*



## Tutorial Program

### Tutorial fees include:

- Admission to the tutorials you select
- Printed and bound tutorial material
- Tutorial luncheon (only for people who attend both morning and afternoon sessions)

Visit the MA2001 website <http://www.cs.dartmouth.edu/MA2001/> to receive full tutorial details, including abstracts and full speakers bios.

### Tutorial Notes

Some tutorial notes may be available for sale after 3:00 pm on Sunday, December 2. Please check with the registration desk.



## Morning Tutorials

### Mobile Middleware for Future Telecommunications. Motivation, Future Services and Architectures Based on enago-Mobile

Thomas Magedanz and Lars Hagen,  
*IKV Technologies AG, Germany*

Today's users want to use services worldwide on different terminals independent of any underlying networks. Here the user mobility is a major market driving aspect. In the future, new services will have to be network and device independent. Also, new intelligent terminals will allow services to execute local to the users, rather than at a distant point across the network. This opens the market for services on demand, whereas these services could be distributed and executed asynchronously. But today existing networks and service provisioning platforms do not support the new requirements on such services. Due to the convergence of fixed networks, mobile networks and the Internet, a new type of platform is required – the mobile middleware platform, e.g. enago. The tutorial is structured into four parts: future services and architectures; case study for the enago-Mobile agent platform; enago-Mobile in telecommunication networks; and enago-Mobile service examples.

### Global Computation and the Ambient Calculus

Luca Cardelli, *Microsoft Research, UK*

The last decades have seen the emergence of the “sea of objects” paradigm for structuring complex distributed systems on workstations and local area networks. In this approach, applications and system services are composed of and communicate among themselves through reliable and transparently accessible object interfaces, leading to the synchronous interaction of hundreds or thousands of unstructured objects. This approach has led to major progress in software composability and reliability. Unfortunately, it is based on a number of assumptions that do not hold on wide-area networks. There, access to resources is intrinsically asynchronous and unreliable (because of failure, congestion, disconnected

operation, etc.) and not transparent (because of variations in latency and bandwidth, hardware and software mobility, and the presence of firewalls). Coping with these characteristics requires a new model of computation, where mobility can play an important role. We discuss the challenges of computation on wide-area networks and introduce a formalism, the Ambient Calculus, that matches some fundamental characteristics of wide-area networks and systems. Our approach (developed together with Andrew Gordon) reflects the intuition that to function satisfactorily on a wide-area network, the “sea of objects” must be partitioned and made hierarchical, internally mobile, and secure.



## Afternoon Tutorials

### Mobile Agents for Application Integration

Fred Igo, *Mitsubishi Electric Research Labs, USA*  
Masataka Kawaguchi, *Mitsubishi Electric, Japan*

Application integration is a thorny and complex distributed computing problem. Mobile agents are a good solution for distributed computing problems and XML helps to make documents application independent. Concordia-xml, a product developed by Mitsubishi Electric, expands the Concordia™ mobile agent platform using development tools, XML and runtime support to provide a framework for rapid development and deployment of application integration solutions. This tutorial will cover the advantages of mobile agents, XML and Concordia-xml for developing application integration solutions; present case studies of actual solutions using Concordia & XML; and review the actual methodology and tools for the development of such solutions.

### Resource Control for Mobile Agents

Niranjan Suri, *University of West Florida, USA*

Resource control is an important requirement for mobile agent systems. This tutorial will explore the requirements for resource control, different models for resource control APIs, and different approaches to implement resource control in the Java environment. A survey of existing resource control approaches will also be included.



## Keynote Speakers

**Fred B. Schneider** is a professor at Cornell's Computer Science Department and director of the AFRL/Cornell Information Assurance Institute. He has an M.S. and Ph.D. from SUNY Stony Brook and a B.S. from Cornell. Dr. Schneider is author of the graduate text “On Concurrent Programming” and co-author (with David Gries) of the undergraduate text “A Logical Approach to Discrete Math.” He is a fellow of AAAS and ACM and is Professor at Large at the University of Tromsø (Norway), where he is a member of the TACOMA project. In addition to chairing the National Research Council's study committee on information systems trustworthiness and editing “Trust in Cyberspace,” Dr. Schneider is co-managing editor of Springer-Verlag's “Texts and Monographs in Computer Science,” and serves on a number of journal editorial boards. He holds patents in the area of fault-tolerant system design.

**Aleta Ricciardi** has a Ph.D. in Computer Science from Cornell University. She is Exec VP and Founder of Valaran since June, 2000. Most recently, Dr. Ricciardi was an assistant professor at the University of Texas at Austin. While on sabbatical leave (1998-2000) she was a research scientist at Bell Laboratories, where she started the Distributed Systems Research Department. She has conducted research in distributed computing and middleware, fault tolerance, automated protocol derivation for distributed applications, and security for distributed systems. She is a member of the Jini Technical Oversight Committee, the ACM, the IEEE, and the PODC Steering Committee. In 1998, Dr. Ricciardi was the national recipient of the C. Holmes Macdonald Outstanding Young Faculty Award, given by Eta Kappa Nu, the electrical engineering honor society.



## Registration information

You can register online at <http://www.cs.dartmouth.edu/MA2001/>, or you can use the registration form on the next page. Payment by check or credit card **MUST** accompany the registration form. Purchase orders, vouchers, telephone reservations, and e-mail reservations cannot be accepted. E-mail any registration questions to [Lori.Terino@dartmouth.edu](mailto:Lori.Terino@dartmouth.edu).

The tutorials and technical session are separate, each with their own registration fees. The Tutorial fees include admission to the tutorials you select, printed and bound tutorial materials, and the tutorial luncheon (only for people who attend both morning and afternoon sessions). The Technical Session fees include admission to all technical sessions, one ticket to the Tuesday luncheon, continental breakfast both days, one ticket to the dinner banquet, and one copy of the proceedings.

**Refund/cancellation policy.** All refund requests must be in writing and postmarked no later than November 23, 2001. Fax or mail your refund request to the fax number or address shown on the registration form.

**Student discounts.** Full-time students get discounted registration fees for the Technical Session. You must include a copy of your current student I.D. card with your registration (or present your student I.D. card at the on-site registration desk).

**Student scholarships and volunteers.** MA2001 is offering a small number of student scholarships and student volunteer positions, both through a generous grant from Nokia. Please check the website for details about scholarships. About volunteers, MA2001 is looking for 4 students to help at the registration desk. Volunteers get free admission to the technical sessions in exchange for 2 to 4 hours of work each day. Interested students should e-mail the registration chair, [Lori.Terino@dartmouth.edu](mailto:Lori.Terino@dartmouth.edu).



## Hotel Reservation, Travel and Accommodation

IEEE has negotiated special rates for conference attendees at the Sheraton Colony Square Hotel. The hotel is conveniently located in downtown Atlanta. Contact the hotel directly to make your reservation. Please mention "IEEE/Mobile Agents Conference" to get the special group rate. Reservations must be made by November 8, 2001, and guaranteed with a credit card. Reservations may be cancelled up to seventy-two (72) hours prior to your planned arrival.

### Sheraton Colony Square Hotel – Midtown Atlanta

188 14th Street, N.E.  
Atlanta, GA 30361  
Toll Free: +1-800.422.7895  
Local Telephone: +1-404.892.6000  
Fax: +1-404.876.3276

#### ROOM RATES

**\$119.00 Single/Double occupancy**  
(plus local tax, currently 14%)

### Transportation to the conference site

Shuttle service will be provided between the Sheraton Colony Square Hotel and the GCATT building where the conference events will take place. More details of the shuttle service will be available at the front desk.

### Parking

The Colony Square Complex offers convenient and secured parking in the proximity of the Sheraton hotel. Current parking charges are \$14.00 per day for self-parking and \$16.00 per day for valet parking.

There is no charge for conference attendees to use the parking of the GCATT building, on the campus of Georgia Tech, where MA2001 will be held.

### Travel

Please make your air arrangements using your preferred travel agency. Atlanta's Hartfield Airport (ATL) is approximately 12 miles away from the hotel location. Taxi service to and from the downtown area costs approximately \$30 one way.

### Dinner Banquet

Monday, December 3, 7:00 pm – 9:00 pm



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