

SIGMOBILE FY'06 ANNUAL REPORT
July 2005-June 2006
Submitted by: David B. Johnson, SIGMOBILE Chair

Introduction

SIGMOBILE is the leading international organization dedicated to addressing the latest developments in the area of mobility of systems, users, data, and computing. The group's technical scope reflects the convergence of mobility, computing, and information organization, its access, services, management, and applications, fueled by the symbiosis of portable computers and wireless networks. Members of ACM SIGMOBILE are active in the development of new technologies and techniques for mobile and wireless computing and communications.

The year 2005-2006 has been another great year for SIGMOBILE, and SIGMOBILE remains strong and growing. As the ACM Special Interest Group on Mobility of Systems, Users, Data, and Computing, SIGMOBILE addresses all things mobile, including mobile computing and mobile and wireless networking. The elected officers of SIGMOBILE are *Prof. David B. Johnson* (Rice University, USA), Chair; *Dr. Jason K. Redi* (BBN Technologies, USA), Vice Chair; *Prof. Tracy Camp* (Colorado School of Mines, USA), Treasurer; and *Prof. Chiara Petrioli* (University of Rome "La Sapienza," Italy), Secretary. SIGMOBILE's officers also include *Prof. Mani Srivastava* (University of California, Los Angeles, USA) as the Editor-in-Chief for SIGMOBILE's journal *Mobile Computing and Communications Review* (MC2R), and *Dr. Robert Steele* (University of Technology, Sydney, Australia) as SIGMOBILE's Information Director.

Conferences and Workshops

SIGMOBILE sponsors or co-sponsors four annual conferences:

- **MobiCom:** The Annual International Conference on Mobile Computing and Networking. MobiCom has been held every year since 1995.
- **MobiHoc:** The ACM International Symposium on Mobile Ad Hoc Networking and Computing. MobiHoc has been held every year since 2000.
- **MobiSys:** The International Conference on Mobile Systems, Applications, and Services. MobiSys has been held every year since 2003.
- **SenSys:** The ACM Conference on Embedded Networked Sensor Systems. SenSys has been held every year since 2003.

Our conferences are very successful, with growing number of submissions and growing attendance. They are each widely recognized as the premier conferences in the field. At many of our conferences, we also sponsor a number of different co-located workshops on emerging topics and feature tutorials on the latest research areas and background topics.

SIGMOBILE's conferences have been very international, both in attendance and in location. In 1997, MobiCom was held in Budapest, Hungary. In 2001, MobiCom was held in Rome, Italy, and in the next year, 2002, MobiHoc was held in Lausanne, Switzerland. In 2004, MobiHoc was held in Tokyo, Japan, and in 2005, MobiCom was held in Cologne, Germany. This year, in 2006, MobiHoc was held in Florence, Italy, and MobiSys was held in Uppsala, Sweden.

SIGMOBILE strongly supports students at these conferences and workshops, for example through reduced registration fees, student travel awards for some conferences (with NSF and industry support), student poster sessions, the MobiCom Best Student Paper Award, and hosting the ACM Student Research Competition (SRC) at MobiCom.

SIGMOBILE has again this year been very successful in attracting donations from leading edge companies and other organizations around the world in support of these conferences. Over the past year, these supporters have included adesso, Chipcon, Cisco Systems, Crossbow

Technology, Deutsche Telekom, E-NEXT Network of Excellence, Ericsson, IBM, IIT-CNR, Intel, Microsoft Research, NEC Europe Ltd. Network Labs, Nokia, NTT DoCoMo USA Labs, SAP, Sprint, the Swedish Agency for Innovative Systems (VINNOVA), the Swedish Institute of Computer Science (SICS), Telecom Italia, Toyota Technical Center USA Inc., Uppsala Kommun, and the U.S. National Science Foundation (NSF). We thank them for their help in offsetting the financial costs of these events and contributing to their success.

MobiCom 2005, *the Eleventh Annual International Conference on Mobile Computing and Networking*, was held August 28-September 2, 2005, in Cologne, Germany. *Prof. Tom La Porta* (Pennsylvania State University, USA) and *Prof. Christoph Lindemann* (University of Dortmund, Germany) served as General Co-Chairs, and *Prof. Elizabeth Belding-Royer* (University of California, Santa Barbara, USA) and *Prof. Songwu Lu* (University of California, Los Angeles, USA) served as Program Co-Chairs. The MobiCom conference covers all areas of mobile computing and mobile and wireless networking at the link layer and above.

The MobiCom 2005 technical program featured two keynote talks: one by *Dr. Ralf Guido Herrtwich* (Director of Vehicle IT and Services Research, DaimlerChrysler AG, Germany) and a second by *Dr. Jeffrey M. Jaffe* (President, Bell Labs Research and Advanced Technologies, USA). The conference included two days of tutorials on August 28-29:

- Wireless Sensor and Actuator Networks (full-day), *Prof. Mani Srivastava* (University of California, Los Angeles, USA).
- Security in Sensor and Ad-hoc Networks: Perspective and Status (full-day), *Prof. Virgil Gligor* (University of Maryland at College Park, USA).
- Wide-area Wireless Networks: Third Generation and Beyond (half-day), *Dr. Ram Ramjee* (Bell Labs, Lucent Technologies, New Jersey, USA).

MobiCom 2005 also included five full-day workshops on September 2:

- DIALM-POMC 2005: The Third Joint Workshop on Foundations of Mobile Computing.
- DIN 2005: The First International ACM Workshop on Dynamic Interconnection of Networks.
- VANET 2005: The Second ACM Workshop on Vehicular Ad Hoc Networks.
- WiSe 2005: The Fourth ACM International Workshop on Wireless Security.
- WMASH 2005: The Third ACM International Workshop on Wireless Mobile Applications and Services on WLAN Hotspots.

In addition, this year for the first time, MobiCom hosted the ACM Student Research Competition (SRC). MobiCom 2006 will be held September 24-29, 2006, in Los Angeles, California, USA, and we will be hosting the ACM SRC again at MobiCom 2006.

MobiHoc 2006, *the Seventh ACM International Symposium on Mobile Ad Hoc Networking and Computing*, was held May 22-25, 2006, in Florence, Italy. *Prof. Sergio Palazzo* (University of Catania, Italy) served as General Chair, and *Dr. Marco Conti* (IIT-CNR, the Italian National Research Council, Institute for Informatics and Telematics, Italy) and *Prof. Raghupathy Sivakumar* (Georgia Institute of Technology, USA) served as Program Co-Chairs. The MobiHoc conference addresses the challenges emerging from wireless ad hoc networking and computing, with the focus being on issues at and above the MAC layer.

The MobiHoc 2006 technical program featured a keynote talk by *Prof. Jean-Pierre Hubaux* (EPFL, Switzerland) and included four half-day tutorials:

- Wireless Mesh Networks: Fundamentals, Basic Protocols, and Research Issues, *Prof. Samir R. Das* (State University of New York at Stony Brook, USA), *Prof. Prasant Mohapatra* (University of California, Davis, USA), and *Dr. W. Steven Conner* (Intel, USA).
- Wireless Mesh Networks: Applications, Testbeds, Products, and Standards, *Prof. Samir R. Das* (State University of New York at Stony Brook, USA), *Prof. Prasant Mohapatra* (University of California, Davis, USA), and *Dr. W. Steven Conner* (Intel, USA).
- Delay/Disruption Tolerant Networking, *Dr. Kevin Fall* and *Dr. Michael Demmer* (Intel Research, Berkeley, USA; and University of California, Berkeley, USA).
- Multimedia Conferencing in Mobile Ad Hoc Networks: Challenges and Early Approaches, *Dr. Roch H. Glitho* (LM Ericsson and Concordia University, Canada).

MobiHoc 2006 also included one full-day workshop on May 26:

- RealMAN 2006: The Second International Workshop on Multi-hop Ad Hoc Networks: From Theory to Reality.

MobiSys 2006, *the Fourth International Conference on Mobile Systems, Applications, and Services*, was held June 19-22, 2006, in Uppsala, Sweden. *Prof. Per Gunningberg* (Uppsala University, Sweden) and *Dr. Lars-Åke Larzon* (Uppsala University, Sweden) served as General Co-Chairs, and *Prof. Mahadev Satyanarayanan* (Carnegie Mellon University, USA) and *Prof. Nigel Davies* (Lancaster University, United Kingdom) served as Program Co-Chairs. The MobiSys conference addresses broad systems research issues in mobile computing and mobile networking, particularly valuing the practical experience gained from designing, building, and using mobile systems, applications, and services. MobiSys is jointly sponsored by ACM SIGMOBILE and The USENIX Association, with actual financial sponsorship and organization alternating yearly between the two organizations; SIGMOBILE provided sponsorship for MobiSys 2005.

The MobiSys 2006 technical program featured two keynote talks: one by *Prof. Daniel P. Siewiorek* (Carnegie Mellon University, USA) and a second by *Erik Ekudden* (Vice President Technology and Standardization, Ericsson AB, Sweden). The conference also included one full-day workshop on June 19:

- REALWSN 2006: The ACM Workshop on Real-World Wireless Sensor Networks.

SenSys 2005, *the Third ACM Conference on Embedded Networked Sensor Systems*, was held November 2-4, 2005, in San Diego, California, USA. *Dr. Jason Redi* (BBN Technologies, USA) served as General Chair, and *Prof. Hari Balakrishnan* (MIT, USA) and *Dr. Feng Zhao* (Microsoft Research, USA) served as Program Co-Chairs. The SenSys conference focuses on systems issues in the emerging area of embedded, networked sensors, spanning multiple disciplines, including wireless communication, networking, operating systems, architecture, low-power circuits, distributed algorithms, data processing, scheduling, sensors, energy harvesting, and signal processing. SenSys is co-sponsored by SIGMOBILE together with SIGCOMM, SIGARCH, SIGOPS, SIGMETRICS, and SIGBED.

The SenSys 2005 technical program featured two keynote talks: one by *Prof. John R. Delaney* (University of Washington, USA) and a second by *Dr. Henry Tirri* (Research Fellow, Nokia Research Center, Finland). SenSys 2006 will be held November 1-3, 2006, in Boulder, Colorado, USA.

Beyond SIGMOBILE's own conferences and workshops, SIGMOBILE was in-cooperation with 15 other conferences and workshops during this past year (July 2005 through June 2006):

- The 2005 International Conference on Mobile Business (ICMB 2005), Sydney, Australia, July 11-13, 2005.
- The Second Annual International Conference on Mobile and Ubiquitous Systems (MobiQuitous 2005), San Diego, California, USA, July 17-21, 2005.
- The IEEE International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob 2005), Montreal, Canada, August 22-24, 2005.
- The 7th International Conference on Human Computer Interaction with Mobile Devices and Services (MobileHCI 2005), Salzburg, Austria, September 19-22, 2005.
- The 9th International Symposium on Wearable Computers (ISWC 2005), Osaka, Japan, October 18-21, 2005.
- The First IEEE International Symposium on New Frontiers in Dynamic Spectrum Access Networks (DySpan 2005), Baltimore Harbor, Maryland, USA, November 8-11, 2005.
- The IEE Mobility Conference 2005, Guangzhou, China, November 15-17, 2005.
- The First International Conference on COMmunication System softWARE and MiddlewaRE (COMSWARE 2006), New Delhi, India, January 8-12, 2006.
- The 19th International Conference on Architecture of Computing Systems (ARCS 2006), Frankfurt/Maine, Germany, March 13-16, 2006.
- The Seventh IEEE Workshop on Mobile Computing Systems and Applications (WMCSA 2006), Semiahmoo Resort, Washington, USA, April 6-7, 2006.
- The 2006 Wireless Telecommunications Symposium (WTS 2006), Pomona, California, USA, April 27-29, 2006.
- The 7th International Conference on Mobile Data Management (MDM 2006), Nara, Japan, May 9-12, 2006.
- The International Cross-Disciplinary Workshop on Web Accessibility (W4A), Edinburgh, Scotland, United Kingdom, May 23-26, 2006.
- The First International Conference on Cognitive Radio Oriented Wireless Networks and Communications (CROWNCOM 2006), Mykonos Island, Greece, June 8-10, 2006.
- The Fifth International ACM Workshop on Data Engineering for Wireless and Mobile Access (MobiDE 2006), Chicago, Illinois, USA, June 25, 2006.

Publications

SIGMOBILE produces a large number of publications and is a major contributor of content to the ACM Digital Library. SIGMOBILE's publications include conference proceedings for MobiCom, MobiHoc, MobiSys, and SenSys; proceedings for each of the workshops co-located with our conferences; and *Mobile Computing and Communications Review* (MC2R), SIGMOBILE's journal for our members. In addition, we also strive to include in the ACM Digital Library the proceedings for each of the other conferences or workshops with which SIGMOBILE is in-cooperation. SIGMOBILE also maintains an extensive web site at <http://www.sigmobile.org>, including information about SIGMOBILE and its activities, and information about membership in SIGMOBILE.

MC2R serves both as a newsletter, keeping SIGMOBILE members informed, and as a scientific journal, publishing high-quality peer-reviewed research papers on mobile computing and wireless and mobile networking; MC2R publishes articles that provide a balance between state-of-the-art research and practice. In addition to publishing original research papers, MC2R provides regular features on the status of major international standards in mobile computing and communications (e.g., IETF, ITU, ISO, and IEEE), articles on the health aspects of wireless communication, bibliographies of recent publications in other journals and technical reports, paper and book reviews, workshop and conference reports, calls for papers, information on research groups from throughout the world, and general news in the field.

In addition to Editor-in-Chief *Prof. Mani Srivastava* (University of California, Los Angeles, USA), MC2R currently has two Associate Editors, *Prof. Raghupathy Sivakumar* (Georgia Institute of Technology, USA) and *Prof. Andreas Savvides* (Yale University, USA), and a group of

outstanding Area Editors who are all recognized experts in the field. MC2R achieves a fast turn-around time, generally less than 6 months between submission and publication, and all submissions and reviewing for MC2R are handled electronically.

MC2R is published quarterly and sent to SIGMOBILE members; it is also available through ACM's Digital Library. In addition, MC2R content is indexed in IEE INSPEC, the leading English-language bibliographic information service, providing access to the world's scientific and technical literature in physics, electrical engineering, electronics, communications, control engineering, computers, computing, information technology, manufacturing, production and mechanical engineering. INSPEC contains over eight million references cataloged since 1969. Indexing in INSPEC makes the content in MC2R more accessible and increases the impact of SIGMOBILE's journal.

Over the 2005-2006 year, MC2R published four quarterly issues (volume 9 numbers 3-4, and volume 10 numbers 1-2), with an average of 65 pages per issue. In addition to a number of general articles and features, these four issues included a total of 20 peer-reviewed research papers from authors around the world.

We have also continued this year our monthly e-mail newsletter (*E-News*), started last year, for SIGMOBILE members. This electronic newsletter, edited by our Information Director *Dr. Robert Steele* (University of Technology, Sydney, Australia), includes SIGMOBILE announcements, pointers to relevant mainstream news articles of interest to SIGMOBILE members, a calendar of upcoming events of interest to our members, and pointers to developer news for active developers in the area of mobile computing and wireless networking.

Chapters

Last year, SIGMOBILE started a new Local Chapters program. SIGMOBILE Professional and Student Chapters continue the work of SIGMOBILE within their local regions by bringing together individuals with an interest in mobile systems, users, data, and computing. The Chapters consist of students and professionals from academia, industry, and government. We currently have two Local Chapters fully approved and operating:

- *Nanyang Technological University Student Chapter*: This SIGMOBILE Student Chapter is organized in Singapore within the Nanyang Technological University (NTU) ACM club. The President of this Chapter is *Priyanka Gupta*.
- *Sydney Professional Chapter*: This SIGMOBILE Professional Chapter is organized in Sydney, Australia. The Chair of this Chapter is *Dr. Robert Steele*.

These two international Chapters extend the reach of SIGMOBILE and further emphasize SIGMOBILE as a truly global organization.

We encourage interested groups around the world to form a SIGMOBILE chapter in their local community, school, city, or region. For details about the procedures and benefits for forming a Local SIGMOBILE Chapter, see <http://www.sigmobile.org/chapters/>.

Membership

SIGMOBILE's membership continues to grow steadily, and we enjoy a very high retention rate among our current members. Despite many challenges in the economy causing some to be more selective with their SIG memberships, and at a time when many SIGs within ACM have had declining membership, SIGMOBILE has continued to grow and do well. In the past few years, we have tried to better define the benefits of SIGMOBILE membership and to make those in our community more aware of SIGMOBILE. This has been paying off, and we continue to look for

ways to enhance our member benefits, such as our new e-mail *E-News* letter, and to improve our publicity in the mobile computing and mobile networking community.

Awards

Prof. Deborah Estrin, nominated by SIGMOBILE, has been named as the first Athena Lecturer by ACM's Committee on Women in Computing (ACM-W). This recognition celebrates women researchers who have made fundamental contributions to Computer Science. Deborah Estrin holds the Jon Postel Chair in Computer Networks and is Professor of Computer Science at the University of California, Los Angeles, and is the founding director of the U.S. National Science Foundation (NSF) Science and Technology Center for Embedded Networked Sensing (CENS). Her recent research has focused on the design and application of wireless sensor networks. Deborah will present her Athena Lecture on "Wireless Sensing Systems: From Ecosystems to Human Systems" at MobiCom 2006, on Tuesday, September 26, 2006; the conference will take place at the Marina del Rey Marriott in Los Angeles, California, USA.

At the ACM Student Research Competition (SRC) hosted at MobiCom 2005, August 28-September 2, 2005, in Cologne, Germany, 10 graduate students presenting their research in the MobiCom Poster Session competed in the SRC. The winners at the MobiCom 2005 SRC were *Joel Koshy* (University of California, Davis, USA), First Place; *Albert F. Harris, III* (University of Illinois at Urbana-Champaign, USA), Second Place; and *Yaling Yang* (University of Illinois at Urbana-Champaign, USA), Third Place.

At the Grand Finals for the entire ACM SRC for 2005, *Yaling Yang* received Second Place for her work on "Interference-aware Loop-free Routing For Mesh Networks." Yaling is a Ph.D. candidate in the Department of Computer Science at the University of Illinois at Urbana-Champaign, working with her advisor *Prof. Robin Kravets*.

The 2006 SIGMOBILE Outstanding Contribution Award was presented at MobiSys 2006 to *Prof. Daniel P. Siewiorek* (Director of the Human-Computer Interaction Institute and Buhl University Professor of Electrical and Computer Engineering and Computer Science, Carnegie Mellon University, USA), "*For pioneering new areas of research in wireless and mobile computing, driven by a unique blend of innovative academic research and recognition of its commercial potential.*" The Outstanding Contribution Award is given by SIGMOBILE to recognize an individual who has made a significant and lasting contribution to the research on mobile computing and communications and wireless networking; the contribution can be a single event or a lifetime of achievement.

The MobiCom 2005 Best Student Paper Award was presented to *John Bicket*, *Daniel Aguayo*, *Sanjit Biswas*, and *Robert Morris* (Massachusetts Institute of Technology, USA) for their paper "Architecture and Evaluation of an Unplanned 802.11b Mesh Network." Each year, the MobiCom Technical Program Committee chooses the best paper with a student as the primary author from among all papers submitted to the conference that year.

The MobiSys 2005 Best Paper Award was presented to *Carl Hartung* and *Richard Han* (University of Colorado, Boulder, USA) and *Carl Seielstad* and *Saxon Holbrook* (University of Montana, USA) for their paper "FireWxNet: A Multi-Tiered Portable Wireless System for Monitoring Weather Conditions in Wildland Fire Environments." Each year, the MobiSys Technical Program Committee chooses the best paper from among all papers submitted to the conference that year.

Future Challenges

A problem we have had in the past is that our fund balance, although it has been strong and continues to grow, has been less than the minimum fund balance that ACM requires for us; this has been a difficult problem, since ACM has at the same time continued to increase the fund

balance requirements for all SIGs. In response, we have been more conservative in budgeting our recent conferences and are being careful with expenses. Over the past year, we have made significant progress in closing the fund balance gap.

A continuing problem exists with the ever-increasing number of new conferences and workshops in the field of mobile computing and mobile and wireless networking, many of which technically compete directly with SIGMOBILE events. We believe that the community recognizes SIGMOBILE's conferences and workshops as the premier events in the field, but we need to ensure that this reputation is maintained. In particular, we remain concerned about the large number of these other new events requesting in-cooperation status with SIGMOBILE. Although we believe in granting in-cooperation status where justified, we need to be careful which events we lend our name and reputation to in this way. To help with this process, we have instituted new requirements for in-cooperation events and have been increasing the scrutiny practiced in reviewing such requests.

Another problem we have had is that the acceptance rate for papers submitted to our conferences is very low, typically less than 10% in recent years of MobiCom and MobiHoc. This low acceptance rate demonstrates that the reviewing is highly selective, in general increasing the prestige of the conference, but it creates problems by making it hard for authors to get papers published, particularly discouraging students and new faculty members who may feel more pressure to publish. As an experiment last year, MobiHoc used a mostly double-track format, accepting 40 papers rather than the 24 papers accepted last year. The results from this experiment were mixed, with some attendees saying they prefer the traditional single-track format. This year, while still remaining single-track for the upcoming MobiCom 2006 conference, we increased the number of papers accepted to 35, compared to a maximum of 28 papers accepted for MobiCom in previous years. This change has created a very tight schedule for the conference but has allowed room for more accepted papers. We will evaluate the reaction of attendees to this change.

Summary

SIGMOBILE is a vibrant, healthy, and growing SIG. Our conferences and workshops are strong and well supported. Our membership is growing, with members around the world, from academic organizations, industry research and development, government, and other interested individuals. We look forward to continuing to grow and improve SIGMOBILE together.

