

4th International Workshop on Middleware for Pervasive and Ad-Hoc Computing
<http://www.smartlab.cis.strath.ac.uk/MPAC/>

A Workshop of Middleware 2006
Melbourne, Australia
November 27th - December 1st, 2006

Problem Space

Building on the success of the 2003, 2004 and 2005 workshops, this workshop seeks to develop a roadmap for research on the essential middleware abstractions and infrastructures for ad-hoc and pervasive computing in general, and sensor-based services in particular.

Over the past decade, large-scale ad-hoc and pervasive computing environments have grabbed the attention of the research community as evidenced by the large number of research and development projects in the area. However, despite considerable progress, the promise of pervasive computing still remains elusive. The diversity in currently available devices, networking infrastructure and information content has complicated research efforts, forcing many projects to focus only on point-examples of this technology.

This workshop is premised on our belief that underpinning middleware mechanisms are central in weaving together the multitude of sensing, computing, communication and information technologies. In this respect, middleware for pervasive computing and ad-hoc networking provides two core research areas. In particular, pervasive computing middleware will allow you to take advantage of the resources in your environment to tailor your services and applications for seamless access and unrestricted mobility. Ad-hoc networking middleware will permit the formation of ad-hoc communities for new applications. However, such pervasive and ad-hoc environments pose some serious challenges to existing middleware technologies and approaches.

A synthesis of the discussion that took place in the MPAC 2003, 2004 and 2005 workshops has led to the identification of the following topics of interest for the workshop, this list is by no means exhaustive:

- Sensor networks: applications, infrastructure, middleware support and emerging standards (OMG DDS, IEEE/NIST 1451.x, OSGi WireAdmin, JSR256 & 257 ...);
- Calculi for sensor data, and middleware support for their processing and distribution;
- Sensor data mining;
- Component-based and service-oriented architectures, and design patterns for sensor based services;
- Theoretical foundations and middleware support for context based adaptation for mobile pervasive systems, and sensor-based services;
- New notations for specifying context-sensitive systems;
- Ad-hoc communities: applications, infrastructure and middleware support;
- Roles and responsibilities in ad-hoc communities;
- Group management and communication support for ad-hoc communities;
- Ad-hoc network communications, quality of service, management and middleware support;
- Service-connection middleware and architectures;
- Support for zero configuration;
- Middleware for self-assembly, self-configuration, self-distribution and autonomic computing in general;
- Data management infrastructures for ad hoc and pervasive systems;
- Trust, security, and privacy for pervasive systems and sensor based services;
- Reliability and availability in pervasive systems and sensor based services;
- Technology trade-offs (agent infrastructures, mobile code systems, event based middleware);
- Resource discovery and management;
- Implications of heterogeneity (addressing needs for protocol interaction across technologies).

Submission

The workshop format will be focused around submission of position papers of no more than 6 pages.

Please submit your papers in PDF, using the ACM proceeding format (see <http://www.acm.org/sigs/pubs/proceed/template.html>), to the web site <http://www.cis.strath.ac.uk/external/mpac2006/openconf/openconf.php>.

Papers are solicited that present a view of the state of the art in a particular sub-problem area, identify specific middleware challenges, and suggest potential avenues for exploration by proposing models, abstractions and infrastructure components addressing these challenges. Approximately two thirds of the workshop will be devoted to the presentation and discussion of these papers, while the remaining third of the time will be devoted to the development of the research roadmap.

Papers will be reviewed by at least 2 members of the programme committee. The review process will be based upon identifying the relevance and potential of the position statement to contribute to the elaboration of the roadmap and to stimulate discussion.

All accepted papers will appear in the [ACM Digital Library](#) as well as in a CD companion proceedings issued to the workshop participants.

Appropriate publication of extended versions of the best workshop submissions and the research roadmap along similar lines to the special issue on middleware and systems software for pervasive computing of the [Journal of Personal and Ubiquitous](#) and [IEEE Distributed Systems Online](#) is being investigated.

Important Dates

Workshop papers submission: **August 25th, 2006**

Workshop paper notification of acceptance: **September 15th, 2006**

Workshop papers camera-ready: **October 6th, 2006**

Workshop date: **November 28th, 2006**

Programme Committee

Christian Becker, University of Stuttgart, DE

Vinny Cahill, Trinity College Dublin, IE

Roy Campbell, University of Illinois at Urbana-Champaign, US

Dan Chalmers, University of Sussex, UK

Domenico Cotroneo, University of Naples, IT

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