Introduction

Rapid advances in computing and communications technology have made possible the transparent integration of computer-based services into the everyday lives of urban populations. Examples include modern critical infrastructure systems, such as the advanced electric power grid; and “smart” homes, which aim to interconnect advanced consumer appliances into an autonomous environment responsive to the needs of the residents.

Integral to the success of pervasive systems, where graceful integration is key, is their dependability, both in terms of failure-free operation, and in terms of security. Another pivotal factor is interoperability, necessitated by the heterogeneous computing and communication foundations upon which pervasive systems are built. The ubiquity of the services provided by such systems introduces human and social aspects, which are often deemed most challenging by the engineers and computer scientists involved in the development and design of pervasive systems.

The objective of this panel is to discuss approaches to overcoming these challenges, while presenting diverse perspectives on the factors contributing to the success of pervasive systems.

Topics covered in the presentations

In the first part of the session, the expert panelists will present their views and experiences on a range of topics related to emerging pervasive systems, including:

1. Enabling technologies.
2. Metrics for the performance of pervasive systems.
3. Examples of successful and failed deployments, and lessons learned.
5. Factors contributing to interoperability.
6. Differentiating factors between pervasive systems and more general types of computer-based systems, e.g., embedded systems.
Discussion and Q&A

The panelist presentations will be followed by a discussion, with questions and contributions from the audience and panel moderator. The discussion topics may include the following:

1. What are realistic limits on the transparency of the operation of pervasive systems?
2. What are current and future bottlenecks to their performance, especially as related to dependability?
3. Can the “digital divide” be narrowed through pervasive systems, or is their deployment prohibitively expensive for developing regions?
4. What are the ethical concerns associated with the use of pervasive systems in applications such as elder care?
5. What are the potential environmental implications of their widespread deployment?

Closing remarks

Panelists will summarize their vision of the current state and future of pervasive systems.