ESF Exploratory Workshop on Wireless Sensor Networks

ETH Zurich, April 1-2, 2004

Welcome to Zurich!
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ETH Zurich
Institute for Pervasive Computing
Welcome at ETH Zurich!

- Swiss Federal Institute of Technology
  - Founded 1855
  - 350 professors
  - 12000 students
  - 17 departments
Department of Computer Science

- 25 professors
- 160 researchers
- 1240 students

Institutes
- Computational Science
- Computer Systems
- Information Security
- Information Systems
- Pervasive Computing
- Software Engineering
- Theoretical Computer Science
The Motivation of the Workshop

- **Vision**
  - Soon possible: very cheap and small nodes that combine sensing, computing, and wireless communication
  - Infrastructure-less, spontaneously networked
- Very interesting potential applications
- High expectations
  - Or even hype?
Formation of a “New” Area

- Networking
- Embedded Systems
- Distributed Systems
- Hardware Technologies
- Application Domains
- Sensor Technologies

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Recent Activities

- New **workshops** and **conferences**
- New **ACM Transactions** on Sensor Networks
- **EU actions** and plans
- More dedicated **research projects**, e.g.:
  - **EYES** project
  - Swiss National Center of Competence in Research *Mobile Information and Communication Systems* ("NCCR MICS")
- ...
Europe?

- Ed. Board of ACM Transactions on Sensor Networks
  - Microsoft Corp.
  - The Ohio State University
  - University of Copenhagen
  - University of California at Berkeley
  - University of California at Los Angeles
  - University of Southern California
  - Stanford University
  - University of Illinois at Urbana Champaign
  - University of Illinois at Urbana Champaign
  - Carnegie Mellon University
  - Rutgers University
  - University of Wisconsin-Madison
  - Carnegie Mellon University
  - Massachusetts Institute of Technology
  - University of California at Los Angeles
  - University of Virginia
  - Vanderbilt University

- Why is Europe almost non-existent?
- Consequences?
Europe?

- Last year a number of initial workshops were devoted to WSN (WSNA 2002, IPSN 2003, SNPA 2003). Of the 55 papers presented at these three workshops, only 4 had European (co)authors, whereas 48 papers were authored by US-based researchers.
Security the Main Driver?

- Military applications

- “Culler and fellow Berkeley researcher S. Shankar Sastry are convinced that wireless sensor webs will be an essential component of homeland security. Noting that current U.S. infrastructure is too difficult to shield from sabotage and attacks, Sastry asserts that mote technology could more effectively and efficiently monitor power plants, transportation systems, and buildings”
  -- ACM TechNews, March 19, 2004

- What is the European position?
Realization of the visions and fulfillment of the expectations requires some research coordination in a variety of technical disciplines (and also expertise from application domains)

Purpose of this workshop: initiate and promote loosely coordinated research within European academia and industry
  - Identify state of the art and European research groups
  - Community forming
  - Concrete outcome of the workshop?
Outcome?

“One desirable outcome of an ESF Exploratory Workshop may be that participants submit high quality proposals for further ESF activities ..., or research funding applications for submission to the EU 6th Framework Programme or to other European or international funding organisations.”

- Forming special interest groups?
- Establishing task forces that define common research projects?