MICS Working Group 2
Sensor and Actuator Platforms
Kickoff Meeting – ETH Zurich

Location: Gloriastr. 35, Room ETZ H81 – 10:30h
http://www.ee.ethz.ch/about/bsinformationen_EN
The NCCR must be more then the sum of its projects …
NCCR Structure

Theory

Systems Platforms

Applications
Application Centric View - Synergies

Share Know How

Theory

Systems Platforms

Applications
Application Centric View - Synergies

Use Scientific Results
Tools and Platforms

Theory
Systems Platforms
Applications
Application Centric View - Synergies

Pose Research Questions

Theory

Systems Platforms

Applications
The NCCR Nightmare

- Application projects develop their technology in isolation. They do not interact with other NCCR projects.
- They do not provide feedback to theory, systems and platform projects.
- They do not incorporate results from other NCCR projects (first and second phase). They do not make of the vast amount of experience present already.
- They do not share knowledge, tools, platforms.
WG2 Goals

- Sharing the available expertise within MICS
- Knowledge transfer between projects
- Common platforms and tools
- Follow-up of new technological developments
WG2 Organization

- **Coordinators:** Lothar Thiele, Matthias Grossglauser
- **~4 meetings per year to share**
  - Experiences in using hardware/software platforms, sensors
  - New developments within and outside of MICS (technology watch function)
  - Promote interaction with ‘theory’, ‘systems and platforms’
  - One feature technology talk per meeting

- **Mailing list**

- **Data repository, knowledge exchange**
  - Web based BSCW or Wiki
  - Platform Database – The Sensor Network Museum

- …
Tentative Schedule for 2005/2006

- **December 2005 – Kickoff Meeting**
  - Topic: Requirements and challenges of MICS applications

- **February 2006**
  - Topic: MICS and other hardware platforms, sensors

- **XXXX 2006**
  - Topic: Operating systems, programming infrastructure, testbeds, deployment

- **XXXX 2006**
  - ? Hands-on workshops on different topics ?
Today’s Schedule

- **Introduction – Goals, people**
- **10’ presentations on applications and requirements**
  - Karl Baumgartner, HEIG-VD – Architecture of a scalable WSN for pollution monitoring
  - Ruben Merz, EPFL – A UWB interference platform
  - Amre El-Hoiydi, CSEM – The Ultra Low-Power WiseNET System
  - Kay Roemer, ETHZ – Deployment of Sensor Networks
  - Henri Dubois-Ferriere, EPFL – SensorScope II & III: Requirements and Status
  - Thomas Lochmatter, EPFL – Distributed Odor Source Localization
  - Christian Tschudin, U Basel – Sensing while there still is Permafrost: in June 2006
  - Markus Waelchli, U Bern – Distributed event detection and localization architecture for WSNs
  - Edoardo Charbon, EPFL – Real-Time Avalanche and Landslide Analysis through SNs
  - Michal Piorkowski, EPFL – Smart Park Mobility
  - Ali Salehi, EPFL - Global Sensor Networks
  - Lothar Thiele ETHZ – Smart Buildings

- **Discussion**

- **Planning for 2005/2006**
WSN Development Reality

It is hard to deploy anywhere beyond 10-20 nodes today.

Coordinated methods and tools are missing today.
MICS Platform Experience and Resources

- Shockfish
- TinyNodes
- TinyDB
- SensorScope
- Mica Motes + TinyOS
- WiseNet
- Semi-Automatic DSE
- BTnodes
- BTnut Tutorial
- TinyOS2 Working Group
- Deployment-Support Network
- TmoteSky
- Scatterweb
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<th>Pollution</th>
<th>UWB</th>
<th>Wise Net</th>
<th>Deployment</th>
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MICS Application Types

- **Periodic, duty-cycled, low-power SNs**
  - Pollution, WiseNet, SensorScope, Odor Sources, PermaSense, Smart Buildings

- **Specialized test systems**
  - UWB platform, Event detection, Avalanches, SmartPark

- **Tools, testbed infrastructure**
  - Deployment
The Sensor Network Museum™

- Online resource for platform/device specific data

http://www.btnode.ethz.ch/Projects/SensorNetworkMuseum
- Simple edit/add pages with password “BTnode”
MICS Common Base Infrastructure

Many applications have similar requirements.

- Periodic, duty-cycled, low-power SNs

Establish a “known-to-work” platform for MICS members

- For “standard” data collection and analysis
- Hardware (+embedded software)
- Software systems (access, infrastructure)
- Support through staffed “product group”

~5 groups interested

- Murphy, CSEM, Yverdon, Tschudin, Thiele, Grossglauser
Tentative Schedule for 2005/2006

- **December 2005 – Kickoff Meeting**
  - Topic: Requirements and challenges of MICS applications

- **February 2006**
  - Topic: MICS and other hardware platforms, sensors

- **May 2006 – Industry Forum**

- **XXXX 2006**
  - Topic: Operating systems, programming infrastructure, testbeds, deployment

- **XXXX 2006**
  - ? Hands-on workshops on different topics ?
## People & WG2 Participation Status

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