



Unis



Wireless Sensor Networking Activities

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**Centre for Communication Systems
Research**

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UniS The Wireless Sensor Test Bed



- **Who are we?**

- 5 Research Fellows
- 3 PhD Students
- 2 MSc Students



- **What do we do?**

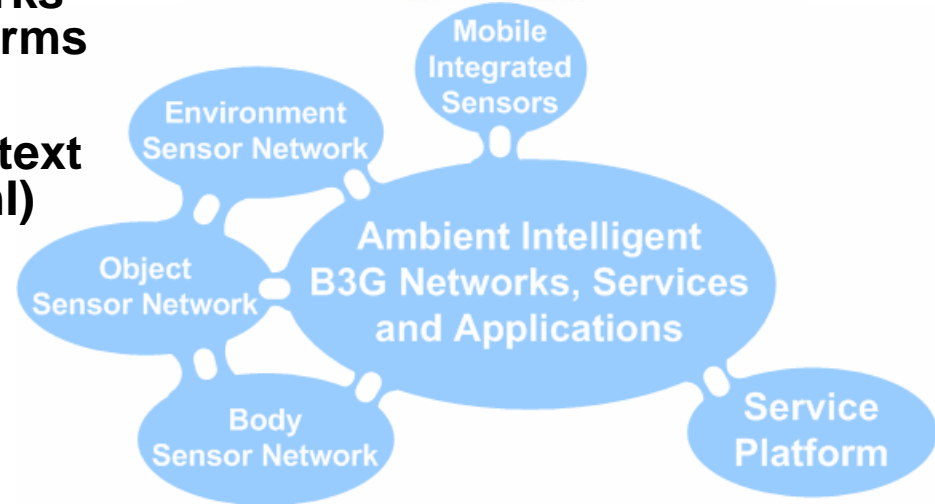
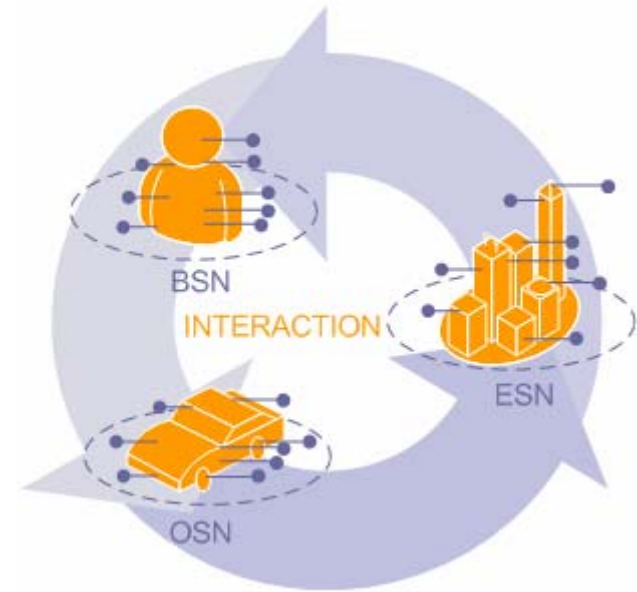
- Research WSNs
- Integration of WSNs and Context Information into Next Generation Networks
- Context Awareness

- **Context and WSN Projects we are involved in:**

- IST e-SENSE IP (technical manager) 
- IST CRUISE NoE 
- IST SPICE/MOBILIFE IPs 

UniS Our Vision

- **Efficient Wireless Sensor Networks**
- **Interaction of Sensor Network**
 - Body Sensor Networks (BSN)
 - Object Sensor Networks (OSN)
 - Environment Sensor Networks (ESN)
- **Integration of Sensor Networks into B3G systems and platforms**
- **With the goal to capture context for Ambient Intelligence (Aml) and Aml Systems**

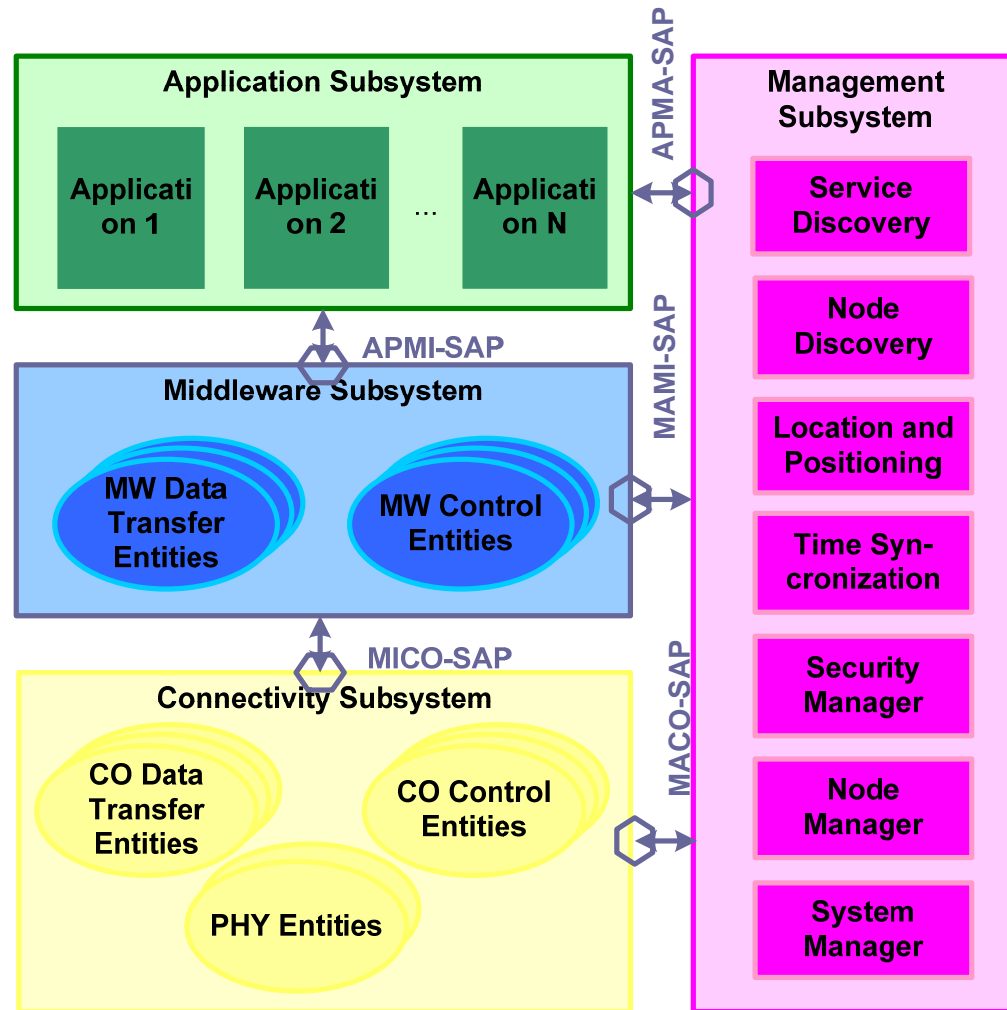


UniS The e-STACK

- **Protocols Stack Framework to support a variety of Sensor Network Applications and Requirements**

Including:

- **Gateway Architecture**
- **Integration of WSNs into B3G**
- **Node Architecture**
- **Re-configurability**



UniS Protocol Elements



- **Baseline:**
 - 802.15.4(a) 6LoWPAN based Systems
 - Better than ZigBee target
- **Protocol Elements, Mechanisms and Tools:**
 - Localisation and Synchronisation
 - Opportunistic – Practical Approach
 - Theoretical work on synchronisation
 - Source to sink flow and rate control (MAC/Transport)
 - Protocols for autonomous management and configuration of WSNs (QoI based)
 - Mobile multi-hop theoretical analysis, metrics and tools
 - 802.15.4 OPNET model
 - NS/2 simulator

UniS Test Bed Activities



- **Platform for evaluating:**
 - Protocols and mechanisms for WSNs
 - Convergence of WSNs into NGN
 - WSN Applications
- **Sensor nodes:**
 - 30 sensor nodes based on MSP430 and 802.15.4 radio (SENSINODE)
 - Operating System – FreeRTOS
- **Sensor data:**
 - ECG, EDA, Breathing Rate, Skin Temperature, Voice Carrier Frequency for Mood and Health Care Applications
 - 3D Accelerometers for Activity Measurements
 - Temperature, Ambient Noise, Luminescence, Humidity for HVAC applications
- **NGN entities:**
 - Service Platform (IMS)
 - Terminals (Q1, Nokia 770, Fujitsu Siemens Loox, Zaurus)

