

# Embedded WiSeNts

Cooperating Embedded Systems for Exploration and Control featuring Wireless Sensor Networks



## **Project Information**

## Embedded WiSeNts

- Coordination Action EU / IST / FP6
- 1.Sep. 2004 31.12.2006
- Contact: Prof.Dr.-Ing. Adam Wolisz (TUB) awo@ieee.org
- http://:www.embedded-wisents.org

# **Project Goals**

## **Education and Training**

## Joint education activities

- Summer School. International Summer School on Wireless Sensor Networks and Smart Objects:
- Teachware improvement and dissemination. Provide teachers and students with teaching material:
- Student Mobility. Financial support for master and PhD student mobility

### **Participants**

TUB (Germany), UCAM-CL (UK), DIKU (Denmark), SICS (Sweden), UT (Netherlands), YTU (Turkey), CINI (Italy), DEI (Italy), ETHZ (Switzerland), AICIA (Spain), INRIA (France), USTUTT (Germany)

## **Research Integration**

## Integration of European Reserach

- Research Facilitation: Platform and Tools. Platform survey, forums
- Distinguished Visitors Program. Encourage visits of distinguished researchers
- Workshop Organization. European Workshop on Wireless Sensor Networks (EWSN 2005/2006)

## **Road Mapping and Technology Adoption**

### Survey of the state of the art and development of a critical research agenda

- Studies. A survey of today's state of the art and open research issues by the mean of the following studies:
- Visions for innovative applications. An attempt to envision potential disrupting future applications of Cooperating Objects
  - Sentient Future Competition
  - Whitepaper
- **Research Roadmap preparation**. The studies and the visionary applications whitepaper serve as a starting point for the *Research Roadmap* document



# Embedded WiSeNts - Research Roadmap - Studies

## http://www.embedded-wisents.org/studies/studies\_wp3.html



The main objectives of the studies carried out in the Embedded WiSeNts Coordination Action are:

- In-depth analysis of the current state-of-the-art in Cooperating Embedded Systems and Wireless Sensor Networks.
- Identify open issues and trends in the field.

In the scope of the project, a Cooperating Object (CO) is defined as a collection of sensors, actuators, controllers or other COs that communicate with each other and are able to achieve, more or less autonomously, a common goal. The inclusion of other cooperating objects, as part of CO itself indicates that these objects can combine their sensors, controllers and actuators in a hierarchical way and are, therefore, able to create arbitrarily complex structures.

## • Study 1: Applications and applications scenarios

Overview of cooperating object (CO) applications and application scenarios that can be readily understood today and identify relevant state of the art, projects and activities in the CO domain.

Some application scenarios that enable us to better understand the area of CO in the wide sense of the term from two different perspectives: *socio-economic* and *application domains*.

### • Study 2: Paradigms for algorithms and interactions

Provide an up-to-date overview of the fundamental design *paradigms, algorithms and interaction patterns* that enable the realization of systems based on Cooperating Objects (COs).

Thematic Areas: Wireless Sensor Networks for Environmental Monitoring, Wireless Sensor Networks with Mobile Nodes, Autonomous Robotic Teams and Inter Vehicular Networks.

### Study 3: Vertical Systems Functions

The main goal of this study is to discuss the roles and effects of Vertical System Functions which are defined as the functionality that addresses the needs of applications in specific domains. Vertical Functions also offer minimal essential functionality that is missing from available real-time operating systems.

## • Study 4: System Architectures and Programming Models

Survey the current state of the art of programming models and system architecture for Cooperating Objects. The document points out some of the limitations of current approaches, and proposes some research perspectives.

- Visions for innovative applications. An attempt to envision potential disrupting future applications of Cooperating Objects.
  - Whitepaper on visionary applications
  - Sentient Future Competition
- **Research Roadmap preparation**. The studies and the visionary applications whitepaper serve as a starting point for the Research Roadmap document. The roadmap will:
  - Estimate time and effort for on-going and additional research
  - Identify research areas requiring special attention in the near future
  - Suggest organizational and funding measures for future research
  - Provide guidelines for the analysis and solution of specific problems for the realization of applications