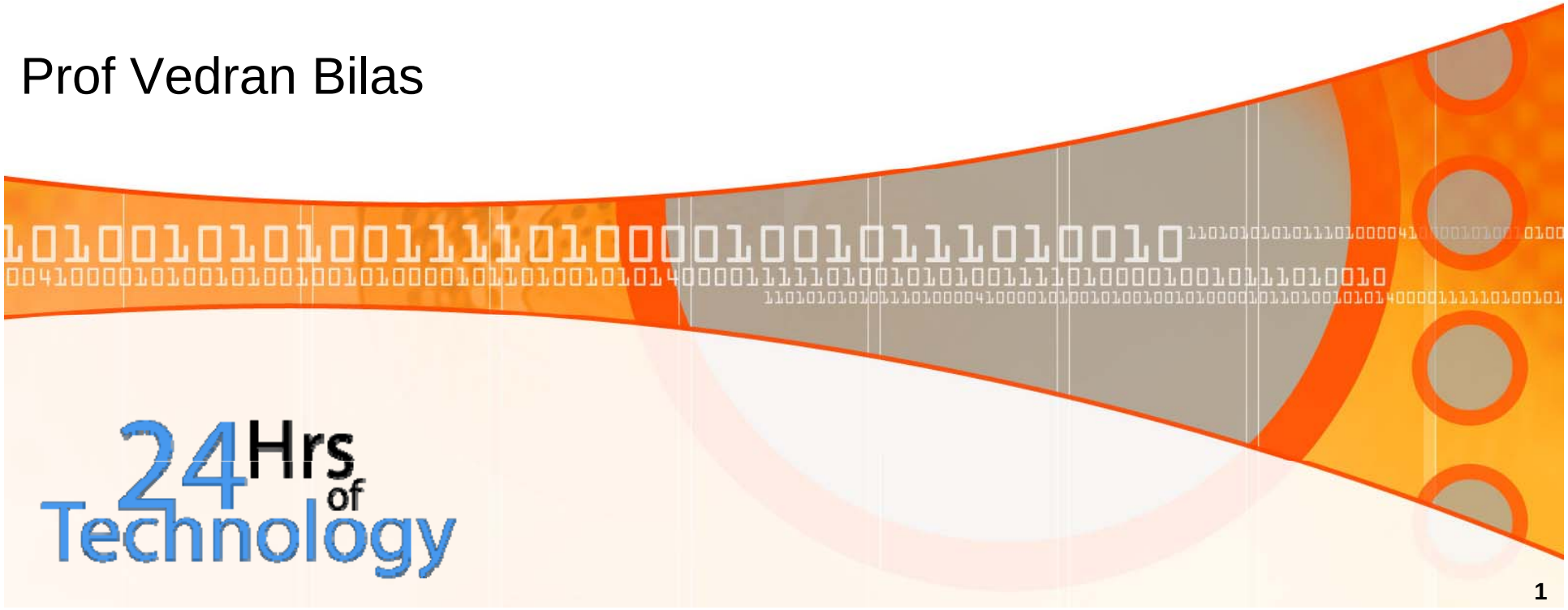
University of Zagreb
Faculty of Electrical Engineering and Computing
www.fer.hr

Wireless sensor networks in environmental monitoring and mobile health care

Prof Vedran Bilas



Outline

- University of Zagreb
- Faculty of Electrical Engineering and Computing
- R&D in Cooperative Systems
- WSN in environmental monitoring, Maslinet.com
- WSN in mobile health monitoring, asthma case

University of Zagreb

- The oldest and biggest university in South-Eastern Europe, founded in 1669
- Wide range of academic courses: Arts, Biomedicine, Biotechnology, Engineering, Humanities, Natural and Social Sciences
- Research-oriented institution
- The University consist of 33 faculties
- Over 50,000 students

Technology transfer at UoZG

- Mission - to ensure the implementation and functioning of an effective infrastructure for technology transfer within the University of Zagreb
- Three main types of activities:
  - Commercialization of research results
  - Management of intellectual property in research projects
  - Awareness raising and training on intellectual property and technology transfer

- http://technology.unizg.hr/tt/english

Faculty of Electrical Engineering and Computing (FER)

- 12 departments
- 160 professors
- 4,500 students
- The largest Croatian R&D institution in the field of Electrical Engineering, Electronic Engineering, ICT and Computing
- Strongly connected with local and regional industry
- Integrated into EU research area

- Tradition of education and training for entrepreneurship

FER strategic research areas

- Energy - renewable energy sources
- Communications
- Robotics
- Healthcare

- Top funded R&D
- Advanced cooperative systems
  - Cooperative Cognitive and Robotic Systems
  - Cooperative Networked Embedded Systems
  - Cooperative Renewable Energy Systems
  - Cooperative Control Methods

Wireless sensor networks in agriculture

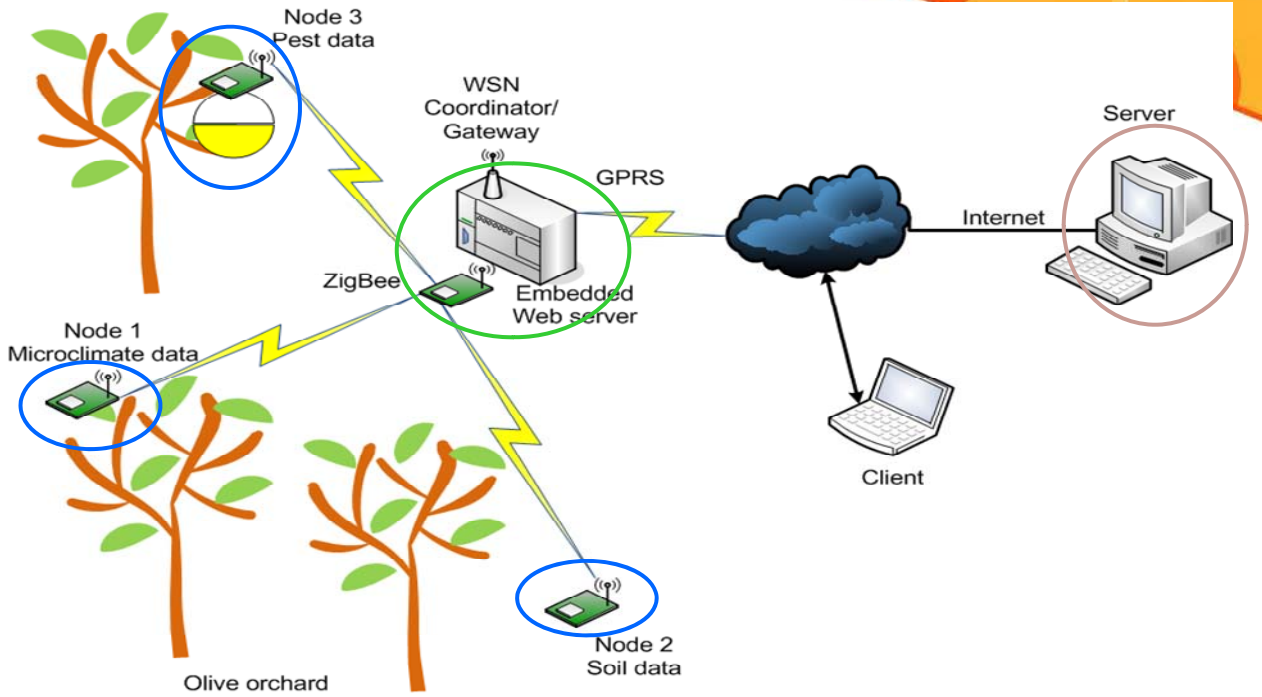
masliNET

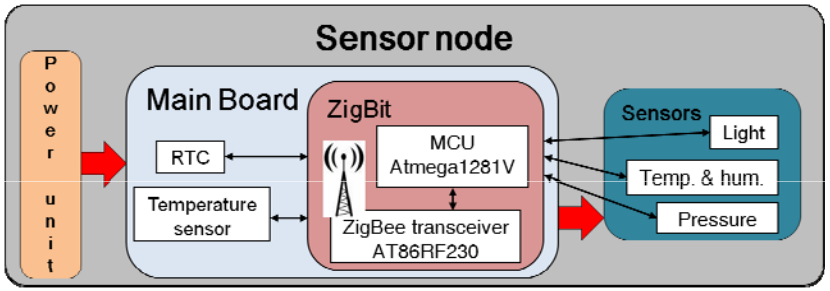
- Olive orchard
- Microclimate monitoring
- Pest detection

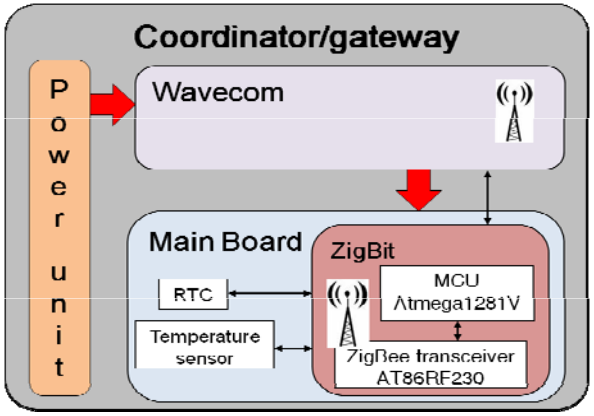
- Real-life implementation
  - Robustness
  - Reliable data transfer
  - Energy-efficiency

Maslinet – technology 1

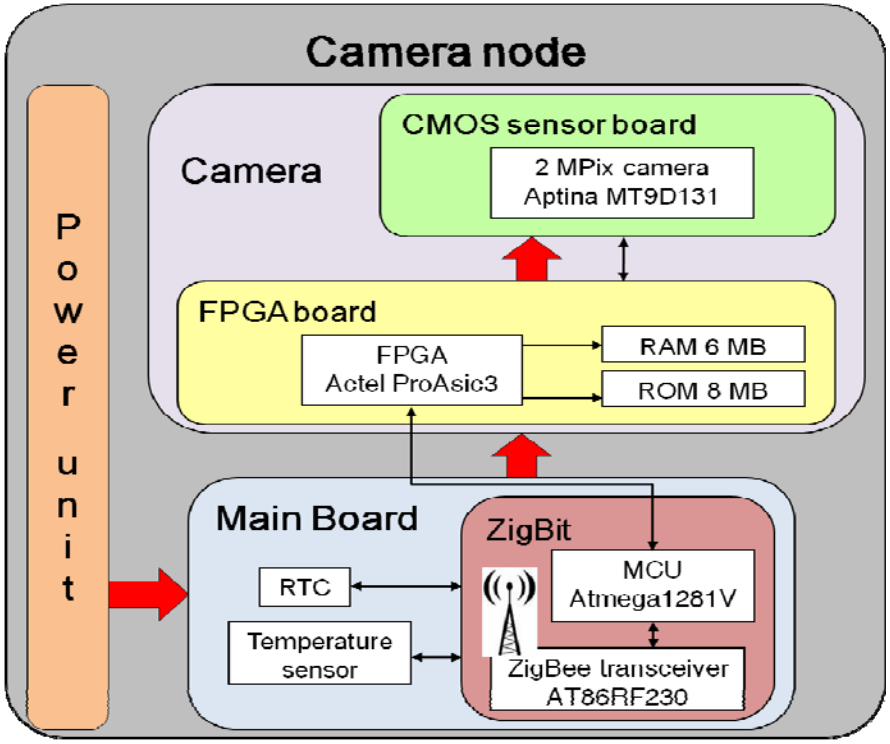
- WSN
  - Camera node
  - Air sensor node
  - Soil sensor node
  - IEEE 802.15.4 / ZigBee
- Solar harvester
- GPRS Internet access layer
- Server

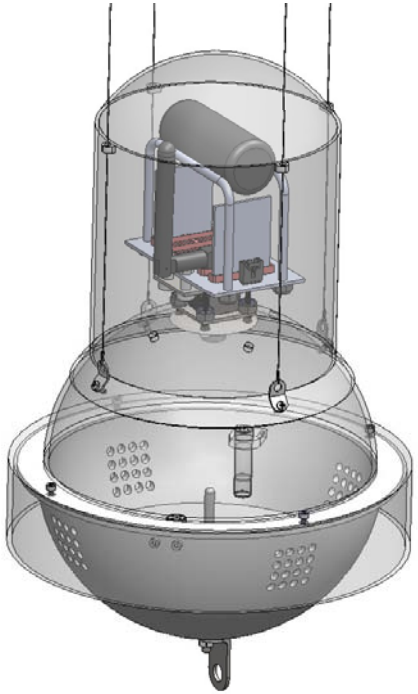




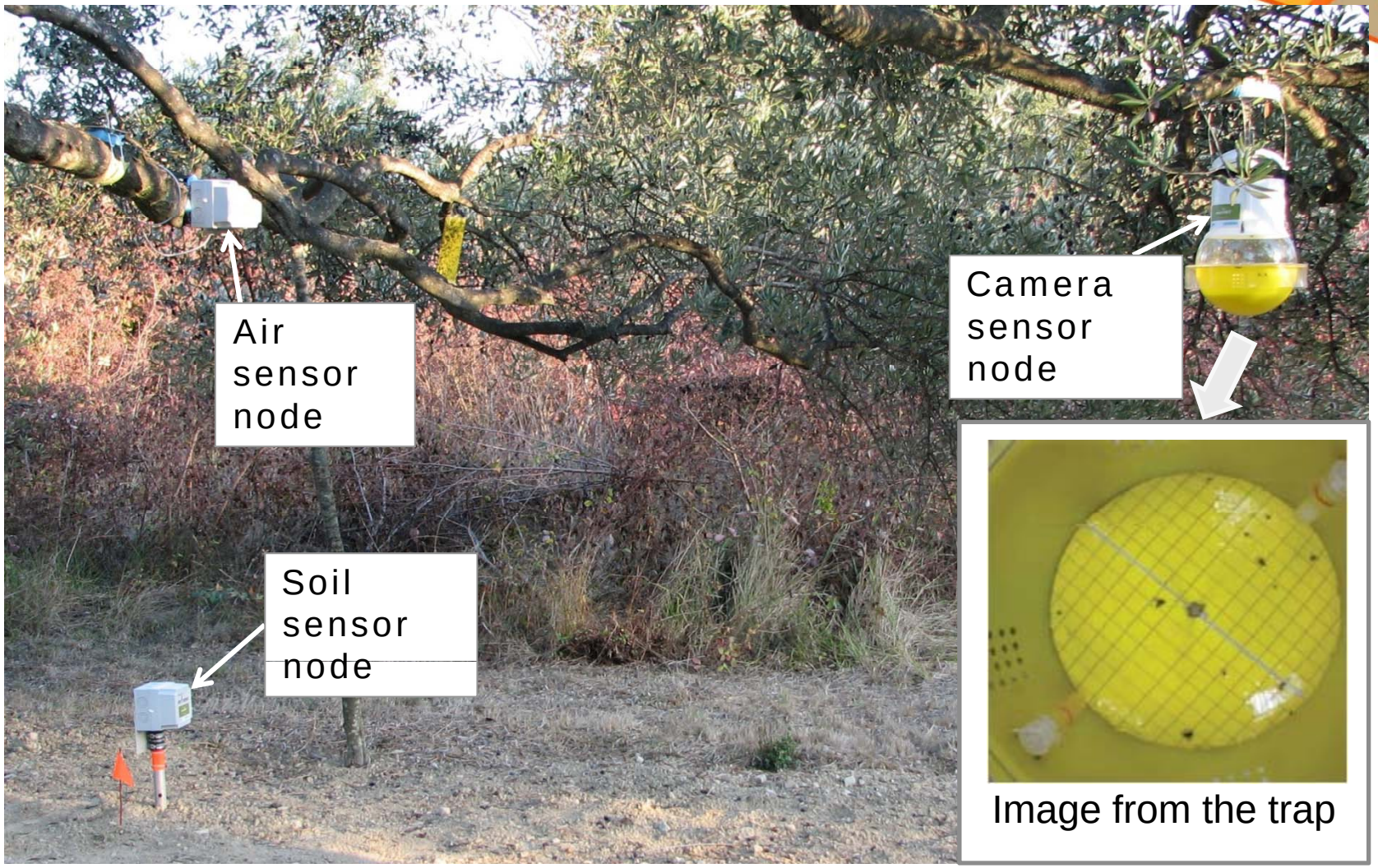


Maslinet – technology 2



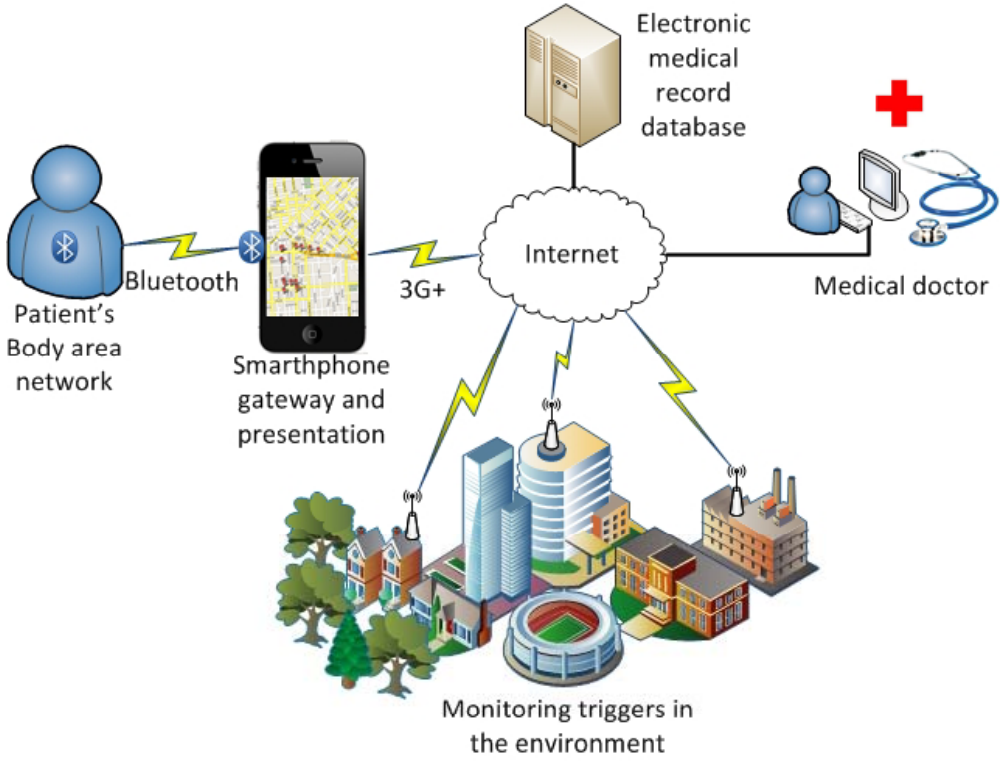


Maslinet – field deployment



Wireless wearable asthma monitoring

- Asthma - one of the most widespread chronic diseases, 5% of the population worldwide
- Goal – to automate self-care procedures
  - System transparent and unobtrusive to patient
- Long term environmental monitoring
- Wearable body area network
  - Low power real-time signal processing
  - Node-level and network-scale power management



Thank you for your attention!

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24 Hrs of Technology