Mobile Multi-Media Wireless Sensor Networks

u^b

Zhongliang Zhao, Gerald Wagenknecht, Torsten Braun, Björn Mosler

Commmunication and Distributed Systems,

Institute of Computer Science and Applied Mathematics, University of Bern

UNIVERSITÄT BERN

Abstract M3WSN is building an experimental research platform including both communication in wireless sensor networks (WSN) and processing sensor data in cloud computing environments. The research platform is based on existing solutions. VirtualMesh is a hybrid emulation tool for wireless multi-hop networks; it captures traffic through a virtual interface at the nodes and redirects it into OMNeT++. TARWIS is a flexible and generic testbed management system for WSN testbeds. VirtualMesh and TARWIS will be adapted and integrated within M3WSN.

Project Goal
- Interconnection of TARWIS testbed at UniBe (CH) with a cloud computing infrastructure at USTC (CN)
- TARWIS testbed extension for wireless mesh nodes
- VirtualMesh extension for wireless sensor nodes
- Mobile multi-media WSN simulation architecture

Equipment
- Sensor nodes (telosB mote)
- Mesh nodes (alix 3d board)
- Unmanned Aerial Vehicle (mikrokopter)

TARWIS Architecture

VirtualMesh Architecture

Multi-tier M3WSN Architecture
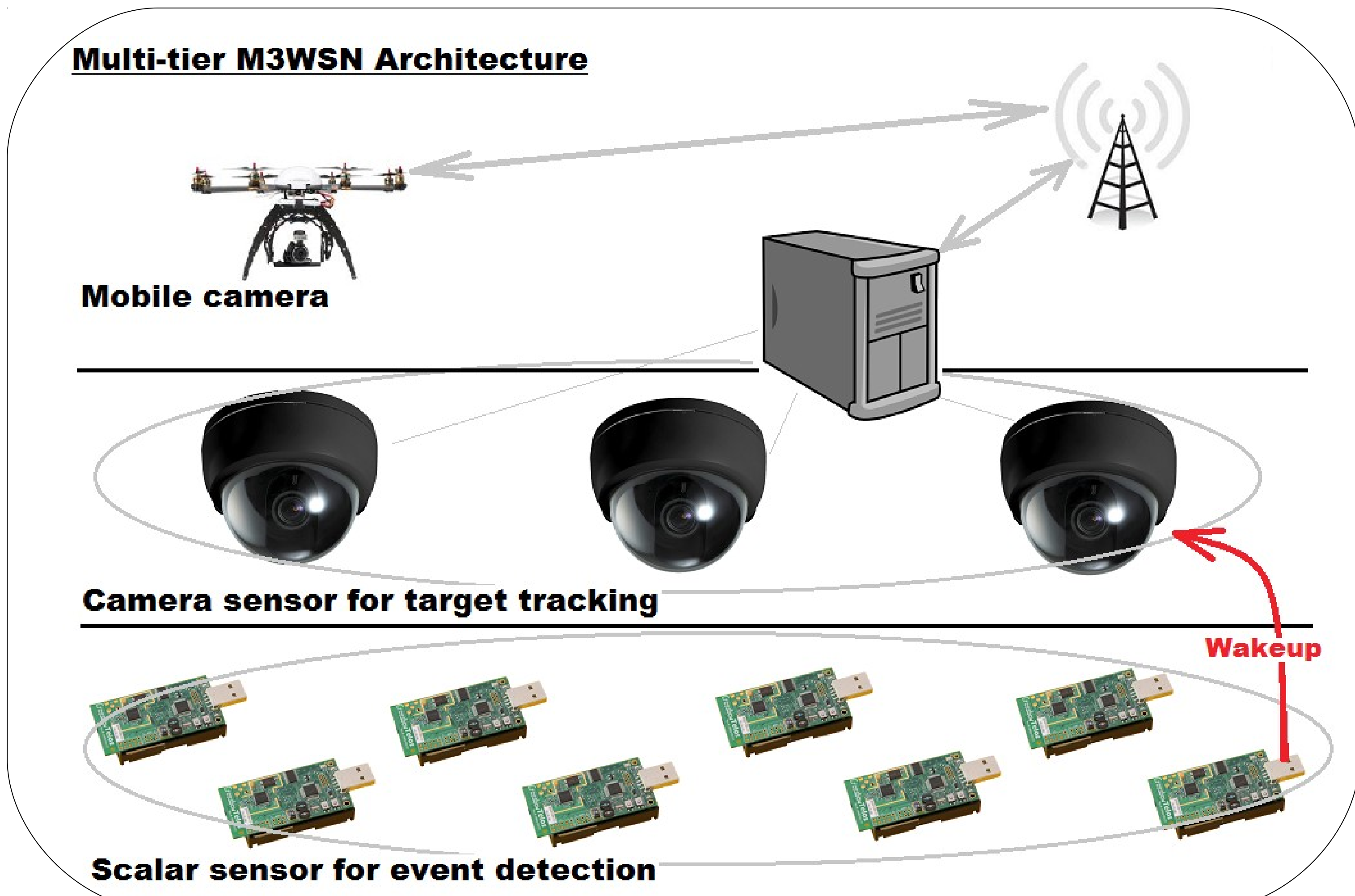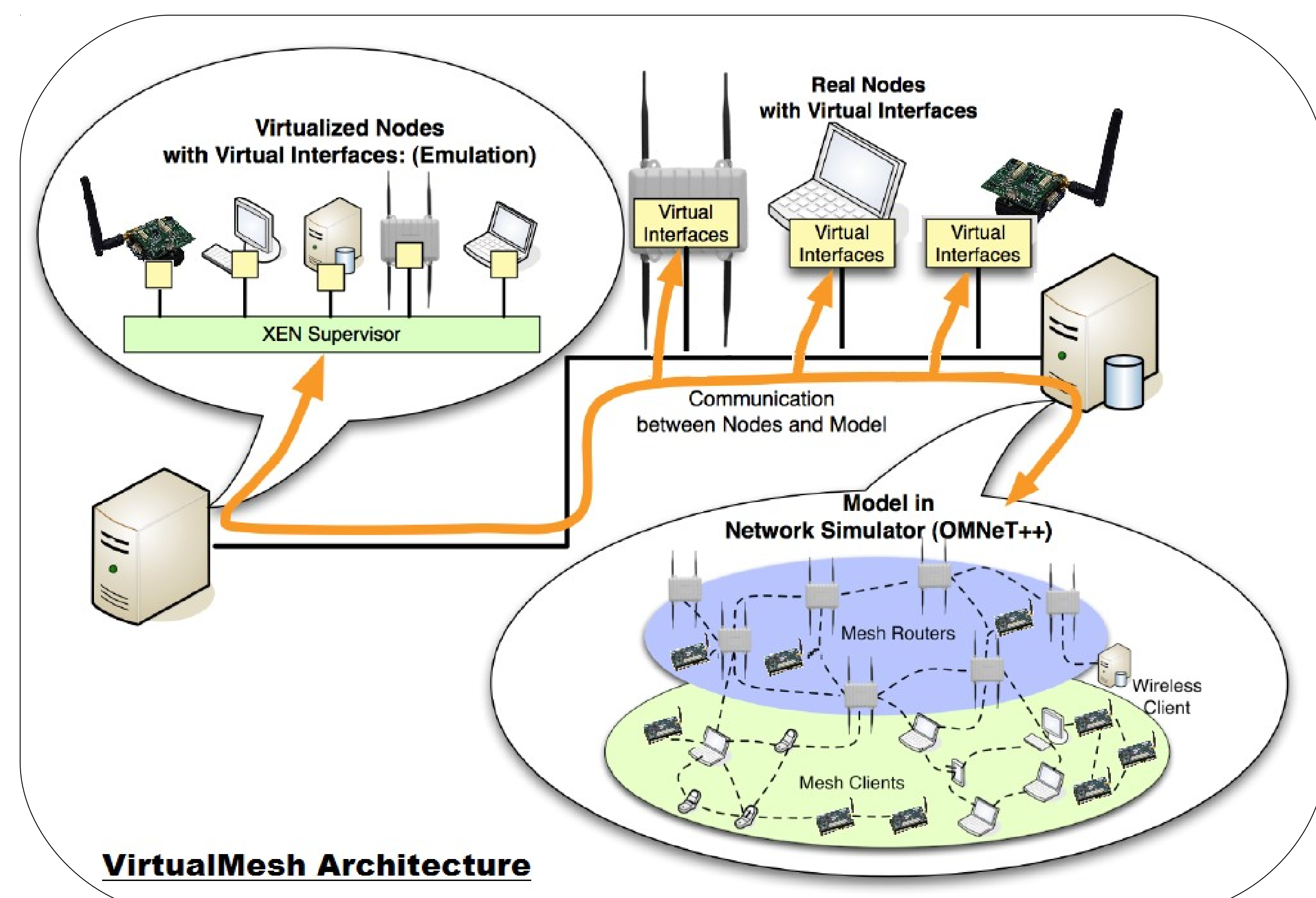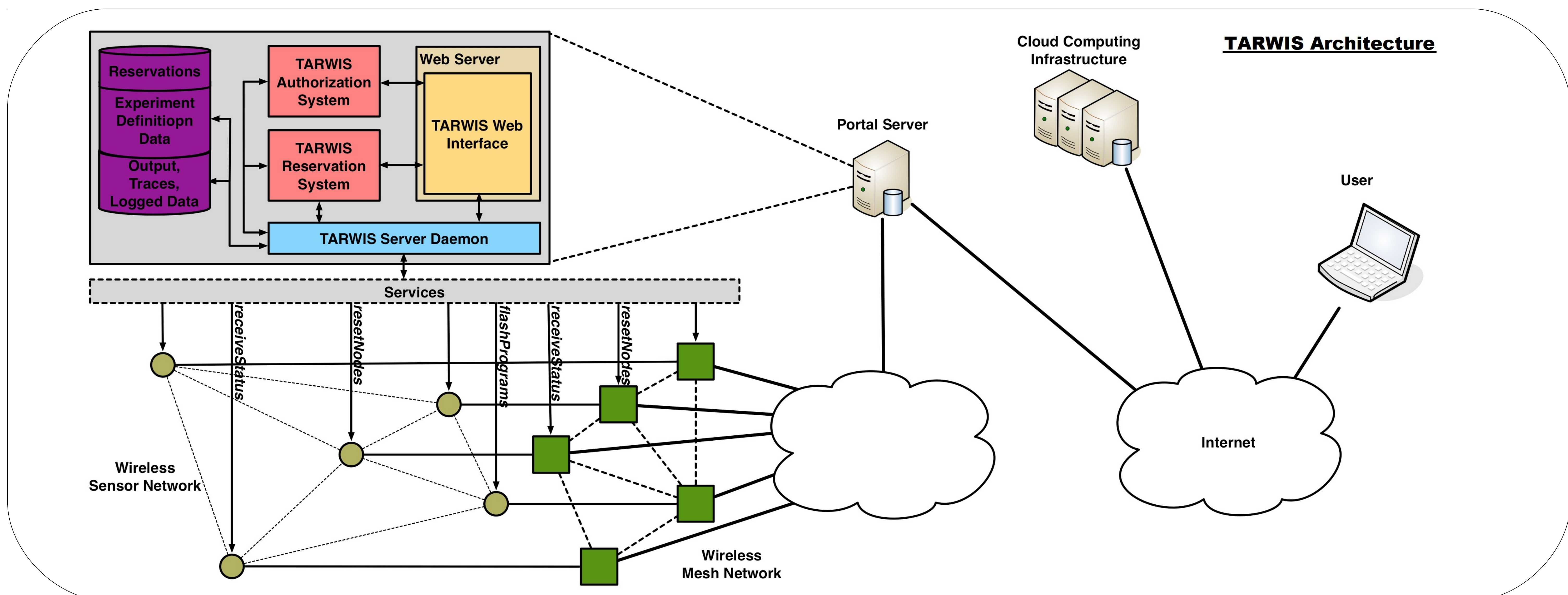
Achievements & Ongoing work
- TARWIS extension for wireless mesh nodes
- VirtualMesh extension for wireless sensor nodes
- Multi-tier M3WSN architecture (OMNeT++)

Next steps & Future works
- Interconnection of UniBe and USTC sites
- Mobile base stations
- Opportunistic communication concept