

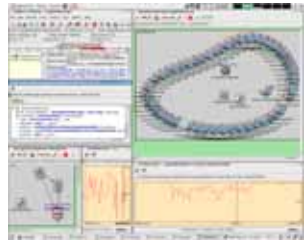
LABORATORIES

Internet Lab

The institute operates a router testbed based on standard PC hardware. The testbed can be easily expanded by using virtual hosting concepts (e.g., XEN) and is used for both teaching and research (esp. prototype evaluation and detailed measurements).

Simulation Lab

In order to evaluate new protocols and mechanisms introduced into networks, typically simulative experiments are applied. Therefore, our group operates a simulation lab with different simulation platforms. For research into overlay and P2P networks we developed the overlay simulation framework OverSim which is based on OMNeT++.



Mobile Communications Lab

Various mobile communication technologies are available, including an 802.11 based wireless network, various handheld devices as well as Bluetooth equipment. The mobile communication lab is used for research purposes as well as for lab courses introducing the students to this new technologies.

Sensor Lab

Practical experiments in the field of ambient technologies and sensor networks are made possible both, by a hardware prototyping lab where various very-low resource wireless devices can be built quickly, and a test-lab where experimental set-ups with these devices can be laid out accordingly.

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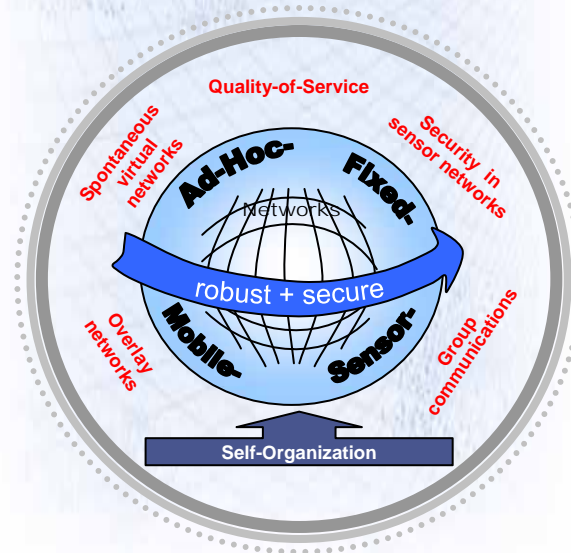


Fakultät für Informatik

INSTITUTE OF



Prof. Dr. Martina Zitterbart
High Performance Networking
Mobile Communications
Ambient Technologies



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SELECTED PROJECTS

Ambient Technologies and Sensor Networks

• **Security in Sensor Networks:** New communication paradigm and progressive security architectures are developed in particular context-optimized service execution, secure service discovery, and data transport.



• **FleGSens:** Investigation of how wireless sensor networks can be used to protect borders and estimates against illegal crossing. Focus on protocols against adversaries trying to attack the sensor nodes to illegally cross a border.

• **Context management in wireless sensor networks:** Leveraging context information from applications, network devices, and sensors for cross layer optimization of network topology, communication characteristics, and node behavior

• **ZEUS:** Demands of sensor networks, regarding provision, processing and forwarding of information, monitored in real environments. Focus on energy-consumption, reliability, security, query processing, and verification in sensor networks.

Internet Economy

• **SESAM:** Decentralized markets based on P2P technologies, automatic conclusion of the contract and economic optimizations for vendors and customers

SELECTED PROJECTS

Mobile Communication

• **MAMAS:** Mobility-aware multicast for ad-hoc learning groups in self-organized networks, middleware for adaptive multicast services, end-system multicast, peer-to-peer networking.

• **RoSe:** Routing and Security in WLAN Meshes; Layer 2 routing with support of real time applications and different trust levels for different nodes in a mesh network.

Overlay and P2P-Networks

• **ScaleNet:** Scalable, efficient and flexible next generation converged mobile, wireless and fixed access networks; launch of novel services like decentralized VoIP and massively multiplayer online games in a flexible and cost-saving way by using optimized overlay techniques.



• **SpoVNet:** Spontaneous virtual networks in context of highly heterogeneous communication networks, flexible and adaptive, application- and network-oriented services. Controllability of complex systems and quality of service in communication networks.

• **KAI:** Internet-based peer-to-peer network that enables organizations or other closed groups of users to communicate without support of dedicated servers or special infrastructure. Provision of integrity, confidentiality, and availability for user communication.

SELECTED PROJECTS

Next Generation Networking

• **QoS Management:** New signaling protocols for QoS (NSIS), Management of DiffServ networks, QoS and mobility, domain resource manager (DRM), inter-domain aggregation of resource reservations, QoS in sensor networks.

• **4WARD:** New Architectural Principles and Concepts (NewAPC), Network Virtualization (VNet), In Network Management (INM), Forwarding and Multiplexing for Generic Paths (ForMux), or Network of Information (NetInf).

• **G-Lab:** Experimentally driven research to exploit future internet technologies. Germany-wide research and experimental facility used to investigate the interplay between new technologies and the requirements of emerging applications.

Network Security

• **Distack:** Scalable multi-level DDOS detection system using packet sampling and programmable nodes

• **PktAnon:** Network trace anonymization. Highly configurable by using anonymization profiles. Arbitrary primitives can be mapped to protocol attributes, thus providing high flexibility.

Current Project Partners

