

The methods applied in our research focus on performance analysis of communication systems by

- modeling,
- mathematical analysis and
- stochastic simulation.

These methods are applied to

- Evaluation of existent or proposed communications protocols and their traffic performance comparison to each other
- Design and optimization of services and protocols for digital communication networks, including
 - ◆ formal specification of protocols (Specification and Description Language, SDL)
 - ◆ implementation by a tool based translation into executable code to be used in both an existent simulation environment (SPEETCL) and on a target host (the tools are developed partly at the department)
 - ◆ rapid prototyping of newly developed services and protocols to be experimented with in field trials
- CASE tools development for software engineering based on formal specification methods including traffic performance analysis and optimization, spe...[202]...zation, including emulation of the destination hardware platform
- Network architectures (Intelligent Networks, Universal Personal Telecommunications, etc.)
- Scenario specific radio propagation (in-/outdoors) prediction based on raytracing
- Development of radio channel models for indoors and outdoors
- Use of smart antenna systems in mobile environments
- Mobility models for road transport and mobile radio applications
- Agent technology to improve existent services
- Validation of the performance behavior of protocols by implementation and use in a real environment.