Telematics
Chapter 0: Organizational

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Topics of this Course

- Question 1
  - What are A and B?
- Question 2
  - What is the communication between A and B?
  - How is the communication between A and B realized?
- Question 3
  - What is the distortion/attack?
Topics of this Course

- **Question 1**
  - What are A and B?

- **Question 2**
  - What is the communication between A and B?
  - How is the communication between A and B realized?

- **Question 3**
  - What is the distortion/attack?
The Term “Telematics”

Telematics: Telecommunications + Informatics

The integrated use of telecommunications and informatics. This is also known as Information and Communication Technology (ICT).

This course deals mainly with data communication and computer networks.

- Telematics in respect to applications
  - Telematics and Traffic ➔ Teletraffic
    - Computer aided traffic systems
  
  - Telematics and Medicine ➔ Telemedicine
    - Remote diagnosis, Patient observation

- Telematics and Teaching ➔ Teleteaching
  - Computer aided learning and teaching?
  - Participating in remote classes
Topics of this Course

- Introduction
- Physical Layer
- Data Link Layer
- Medium Access Control
- Network Layer
- Transport Layer
- Application Layer
- Multimedia Comm.
- P2P Applications
- Security
BE AWARE!!!

- This course REQUIRES TI III or any other basic lecture covering Networking!

- You know:
  - Reference model, TCP/IP, basic networking, layers, sockets...

- If not:
  - Attend TI III FIRST!

- The lecture will briefly touch all basic networking topics and will then go into advanced aspects!
Topics of this Course

● At the end of this course, you should ...
  ● know what is meant with Telematics and Computer Networking
  ● know how networks in general are organized
  ● know what the Internet could be or is
  ● understand how wired (and wireless, cf. Mobile Communications) networks work
  ● understand why ISO/OSI is used in theory and TCP/IP in real world
  ● understand how e-mails, videos arrive you
  ● understand how operators operate real, big networks
  ● understand the cooperation of web browsers with web servers
  ● think about security issues when you surf the web
  ● be familiar with acronyms like: ALOHA, ARP, ATM, BGP, CDMA, CDN, CIDR, CSMA, DHCP, ETSI, FDM, FDMA, FTP, HDLC, HTTP, ICMP, IEEE, IETF, IP, IMAP, ISP, ITU, ISO/OSI, LAN, LTE, MAC, MAN, MPLS, MTU, NAT, NTP, PCM, POTS, PPP, PSTN, P2P, RARP, SCTP, SMTP, SNMP, TCP, TDM, TDMA, UDP, UMTS, VPN, WAN, ...
Telematics vs. other Computer Science Classes

Telematics
(Data Communication and Computer Networks)

Operating Systems
Distributed Operating Systems

Databases
Distributed Databases

Software-Engineering
for Distributed Systems

Communications Engineering

Algorithms
Distributed Algorithms
Organizational

● Lecture
  ● Tuesday, 10:00 – 12:00, Hörsaal, Start of class at 10:15
  ● Thursday, 08:00 – 10:00, Hörsaal, Start of class at 08:30

● Exercise
  ● Thursday 14 - 16 Uhr, Takustraße 9, SR 053
  ● Thursday 16 - 18 Uhr, Takustraße 9, SR 055
  ● Friday 12 - 14 Uhr, Takustraße 9, SR 005

● Written Exam (Klausur Telematik)
  ● Tuesday, 21.02.2012, 10 – 12, Arnimallee 22 HS Großer Hörsaal
  ● TBA
Organizational

- Prof. Dr.-Ing. Jochen Schiller
  - Consulting hours: Tuesday, 14-15
  - Takustr. 9, Room 156
  - jochen.schiller@fu-berlin.de

- Ask your tutor!

- Literature and Materials
  - Website of the class
  - Literature and References
  - Exercise sheets – typ. available one week in advance
  - Slides as PDF documents ➔ Only accessible within FUB network
  ISBN 0130661023

  • General introduction to computer networks
  • Bottom-up approach
  • Discusses many aspects of data communication and networking in detail
  • The classic book for teaching computer networks
  • NOT enough for this course, does not go into more advanced details!
Literature

  - General introduction to computer networks
  - Top-down approach
  - Currently one of the most popular teaching books

- New Edition
  - Computer Networking, 5/e, 2009
Literature

  - General introduction to computer networks
  - Discusses many communication issues in detail

- Focus is on Internet protocols
- All protocols are discussed based on one network configuration