Center of Competence COMMUNICATION (CoC COM)

1st Industry Day – June 21, 2017

Prof. Dr.-Ing. Wolfgang Kellerer
Chair of Communication Networks (Coordinator)
What is a Center of Competence @ TUM EI?

Forum and organizational hub to
• establish and collaborate on joint research strategies
• pursue joint teaching activities

• contribute to department decision making (hiring strategy, curriculum,...)
  – e.g. Master EI is structured along CoCs

• CoCs can be established and closed depending on need
Why this Industry Day?

• Present the CoC COMMUNICATION, its members and its potential as a unique hub for research and education

• Invite industry to support strengthening the value of CoC COM at TUM and discuss its future evolvement

• Promote (more) collaboration between CoC COM and industry on various possibilities (research projects, teaching, students,...)
Agenda

9:30 Welcome and Introduction of CoC COM
10:15 Coffee

10:30 CoC COM Teaser Talks

12:00 Discussion at demos and posters - lunch served on the rooftop terrace

14:00 Panel discussion (Moderator: Gerhard Kramer)
  How to Create a Successful Industry-University Cooperation
  Christin Eisenschmid, Intel
  Peter Merz, Nokia Bell-Labs
  Andreas Pauly, Rohde & Schwarz
  Wen Xu, Huawei

15:30 Wrap up / Coffee
16:00 Continuation of discussion in foyer and terrace / End
Core Competences

- **Expertise** of 18 professors and 4 senior researchers
- Close link to research centers, e.g. DLR and Fraunhofer

- **Forwardlooking research** on all core areas of COM

- Fundamentally **interdisciplinary** (incl. **cross departments**)

- **Methodological strength**

- **Systems** - beyond 5G

- **Experimental** facilities
Unique hub of experts

Coordinator: Wolfgang Kellerer | Communication Networks
Deputy C.: Eckehard Steinbach | Media Technology
Erwin Biebl | Very High Frequency Technology
Holger Boche | Theoretical Information Technology
Georg Böcherer | Communications Engineering
Georg Carle | Informatics – Network Architecture *
Samarjit Chakraborty | Real-Time Computer Systems
Klaus Diepold | Data Processing
Thomas Eibert | High Frequency Engineering
Christoph Günther | Communication and Navigation
Norbert Hanik | Line Transmission Technology
Andreas Herkersdorf | Integrated Systems
Michel Ivrlac | Circuit Theory and Signal Processing
Michael Joham | Signal Processing Methods
Gerhard Kramer | Communications Engineering
Carmen Mas Machuca | Communication Networks
Jörg Ott | Informatics – Connected Mobility *
Gerhard Rigoll | Mensch-Maschine-Kommunikation
Bernhard Seeber | Audio-Signalverarbeitung
Georg Sigl | Security in Information Technology
Wolfgang Utschick | Signal Processing Methods
Antonia Wachter-Zeh | Coding

* Informatics

- 1 Leibniz Preis (Boche)
- 1 AvHumboldt Professorship (Kramer)
- 4 IEEE Fellows
- 2 ERC grants (Kellerer, Steinbach)
- Bell Labs Award
- Teaching Awards
- Acatech, Münchner Kreis, BNetzA (WAR), IEEE, ITG,…
- Joint appointments: Fraunhofer, DLR
Holistic end-to-end system portfolio

- Telecommunications
- Urban mobility and transport
- Industry 4.0
- Automobile systems and autonomous driving
- Robotics, automation and teleoperation
- Tactile Internet
- Internet of Things and cyber-physical networking

- Multimedia signal processing and communication
- Perception oriented (incl. haptics) and user centered design
- Machine learning and data analytics
- Network and data security
- Cloud computing and data storage
- Localization and navigation
- Optimization, planning and TCO analysis

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Selected Experimental Facilities @ CoC COM

LMT

MMK

AIP

IN CM
Selected Projects

- DFG SPP “Communications in Interference Limited Networks (COIN)” (Boche, Joham, Kellerer, Nossek, Utschick/coordinator)
- DFG SPP “Compressed Sensing (CoSIP)” (Boche, Kramer, Pohl)
- DFG SPP “Cyber Physical Networking (CPN)” (Kellerer, Hirche, Carle)

- EU H2020 5GPPP projects
- CELTIC/BMBF SENDATE (Carle, Hanik, Kellerer)
- BMBF Bernstein Zentrum für Computational Neuroscience (Seeber, Kleinsteuber, Hemmert)
- Leistungszentrum “Sichere vernetzte Systeme“ (Sigl/coordinator, et al.)
- TUM Robotics Center (Chakraborty, Diepold, Kellerer, Rigoll, Steinbach, et al.)
- TUM Zentrum für Energie und Information (Hamacher, Hirche, Kellerer, Utschick, et al.)
- ZD.B: Living Lab Connected Mobility (Ott, et al.)

- ERC Starting Grant “Haptic Signal Processing and Communication (ProHaptics)“ (Steinbach)
- ERC Consolidator Grant “Quantifying Flexibility in Commun. Networks (FlexNets)” (Kellerer)
Results

See demos and posters later today
Joint Teaching

• Bachelor: Industrie 4.0 Lab (Diepold, Herkersdorf, Kellerer, Seeber, Sigl, Steinbach)

• Master: Tactile Internet Lab (Kellerer, Seeber, Steinbach)

• Center for Digital Technology and Management

• Summer schools for CoC COM PhDs (graduate school)
Spin Offs

- CADAMI
- NavVis
- Konux
- Kinexon
- NuvoLight
- QoLWare
- ParkHere
- KliniSoft
- ANavS

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What CoC COM offers

• **Single hub for interdisciplinary research** in COM
  – large scale projects spanning >1 chairs (EU, BMBF, …)
  – exploration projects through experimental facilities
  – possibility for joint research centers, joint professorships, An-Institute,…

• **Up-to date information**
  – Regular industry days, e.g. 1/year
  – Focused research colloquiums, e.g. quantum computing
  – Cross discipline and innovation workshops

• **Access to all COM students and doctoral candidates**
  – internships
  – recruiting
    
    send us your offers – email will be announced

To join us:  give us your email - write your email to the feedback sheet