Industry Partner Program Event

IPP is now

5G Lab Germany

INDUSTRY DAY

SEPTEMBER 24 2015

www.5glab.de
5G Industry Day Registration

Company .................................................................
Title .................................................................
Name .................................................................
First name .............................................................
E-mail .................................................................

☐ I will attend the 5G Lab Germany Industry Day Presentations, and will join the...
  ☐ Wireless Track
  ☐ Network & Cloud Track
  ☐ Hardware Track
  ☐ Application Track

☐ I will take part in the evening get-together

submit Register via email or fax
Sascha Berger
E event@5glab.de
F +49 351 463 41099

Register online at
5glab.de/events/summer-event-2015

5G Industry Day Content

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5G Industry Day Invitation

We are pleased to invite you to our 2nd 5G Lab Germany Industry Day, which will be held on September 24, 2015 at Technische Universität Dresden.

The 5G Lab Germany and its industry partners will be presenting their recent research activities to their respective affiliates.

After the welcome session, the event will be held in four parallel tracks, which cover the 5G Research Tracks of the 5G Lab Germany.

We are looking forward to welcome you to the 5G Lab Germany Industry Day 2015.

Yours faithfully,

Prof. Gerhard Fettweis
5G Lab Germany
Coordinator

Prof. Frank Fitzek
5G Lab Germany
Coordinator

5G Mission

Understand and Drive the Holistic Requirements and Solutions of 5G

Deliver Technology Breakthrough

Be Opinion Leader in Forming 5G

Deliver Lab Examples and Test Beds

Business Innovation Through Technology Transfer and Cooperation

Simple One-stop Shop for Complex 5G Research Topics

5G Lab GERMANY
5G Industry Day Agenda

08:00  Welcome Coffee

08:45  Welcome Speech  
Prof. Dr.-Ing. habil. Hans Müller-Steinhagen  
Rector // TU Dresden

08:55  The 5G Lab Germany - Update & Vision  
Prof. Dr.-Ing. Dr. h.c. Frank Fitzek  
Prof. Dr.-Ing. Dr. h.c. Gerhard Fettweis  
Coordinators // 5G Lab Germany

09:30  External Plenary Keynote: 5G as a Catalyst  
Luke Ibbetson  
Head of Research and Development // Vodafone

09:50  External Plenary Keynote: 5G – Getting Closer to the Answers?  
Dr. Chih-Lin I  
Chief Scientist of Wireless Technologies // China Mobile Research Institute

10:10  Coffee Break & Walk to Parallel Tracks

10:45  Parallel Tracks // Morning Session

13:00  Lunch Break

14:00  Parallel Tracks // Afternoon Session  
Walk to the Various Chairs of 5G Lab Germany

16:10  Demonstrators // Posters // Coffee

17:00  Open End

19:00  Informal Get-together in the Restaurant ‘Italienisches Dörfchen’

5G Industry Day Tracks

→ **Wireless Track**  
*led by Prof. Fettweis*

→ **Network & Cloud Track**  
*led by Prof. Fitzek & Prof. Fetzer*

→ **Hardware Track**  
*led by Prof. Plettemeier & Prof. Ellinger*

→ **Application Track**  
*led by Prof. Urbas & Dr. Altinsoy*

5G Industry Day Localities

- **Joint Welcome Session**  
  GÖR 226  
  Görges-Building

- **Wireless Track**  
  GÖR 226  
  Görges-Building

- **Network & Cloud Track**  
  BAR 218  
  Barkhausen-Building

- **Hardware Track**  
  GÖR 127  
  Görges-Building

- **Application Track**  
  BAR II63a  
  Barkhausen-Building

Görges-Building // Helmholtzstr. 9 // 01069 Dresden  
Barkhausen-Building // Helmholtzstr. 18 // 01069 Dresden

Please see p.21 for a campus map.  
In the map the rooms are marked with a triangle.
Wireless Track Agenda

10:45 The 5G Lab Germany Wireless Track
Prof. Dr.-Ing. Dr. h.c. Gerhard Fettweis
Coordinator // 5G Lab Germany

11:15 KEYNOTE // Nokia
5G: Expand the Human Possibilities of the Connected World
Dr. Amitava Ghosh
Head // North America Radio Systems Research
Nokia Networks

11:30 KEYNOTE // Alcatel-Lucent
The role of Multiple RANs and the challenges for the future
Dr. Theodore Sizer
Vice President // Wireless Research Program
Bell Laboratories, Alcatel-Lucent

11:45 Projects Presented by Track Members
Link-Level Algorithms
Research Overview of the Link-Level Algorithms Group
Dr. Wolfgang Rave
Investigation on Channel Estimation for mmW Outdoor Environments
Hsiao-Lan Chiang
Adaptive Beamforming for mmW Environment
Tobias Kadur
mmWave Wireless Backhaul with MIMO
Xiaohang Song
Synchronization: Embryonic Development to Electronic Networks
Alexandros Pollakis

12:20 Coding & Links
Information Theory - The Guide to Optimal Information Transmission and Processing
Dr. Meik Dörpinghaus

12:30 Energy-Efficient Communication employing 1-bit Quantization and Oversampling at the Receiver
Lukas Landau
Code Design to Achieve Arbitrary Diversity Order Using Spatial Coupling
Najeeb ul Hassan

12:45 KEYNOTE // Ericsson
The Road to 5G
Dr. Magnus Frodigh
Director // Wireless Access Networks // Ericsson

13:00 Lunch Break

14:00 KEYNOTE // National Instruments
5G: From Theory to Practice
James Kimery
Director of Marketing // National Instruments

14:15 Projects Presented by Track Members
Multi-carrier Waveform GFDM
Research Overview of the GFDM Group
Dr. Dan Zhang
Waveform Advancements and Synchronization Techniques for GFDM
Ivan Gaspar
Spatial Multiplexing for GFDM
Maximilian Matthé
Fronthaul Requirements of Flexible Centralization in Cloud Radio Access Networks
Jens Bartelt

14:40 KEYNOTE // Inradios
M2M meets Satellite Communications
Dr. Marco Krondorf
Management // Inradios
Wireless Track Agenda

→ Wireless Track
led by Prof. Fettweis

14:55 Projects Presented by Track Members
Links & Protocols
Research Overview of the Links & Protocols Group
Dr. Andreas Festag
Exploiting Distributed Source Coding for Multi-hop Routing in Wireless Ad Hoc Networks
Sebastian Kühlmorgen
Power Allocation in Ad-Hoc Networks
Albrecht Wolf
Linear Multi-Cell Precoding for Throughput Optimization Considering Outage
Dr. Xin Zhang

15:20 System Level Algorithms
Research Overview of the System Level Group - Models and Algorithms for the Design and Analysis of Future Wireless Networks
Dr. Meryem Simsek
Achieving High Availability in Wireless Networks by Inter-Frequency Multi-Connectivity
David Öhmann
Multi-Cell Beamforming Performance under Realistic Spatial Traffic Conditions
Henrik Klessig
On the Impact of a High Dynamic Range on Cell-Edge Uplink Performance in SC-FDMA
Sascha Berger

15:45 KEYNOTE // KOMSA
25 Years of ICT-Experience in Distribution and some Views on Future Developments
Dr. Gunnar Grosse
Chief Executive Officer // KOMSA Kommunikation Sachsen AG

Wireless Track Sponsors

→ Sponsors of the former IPP

Alcatel-Lucent
ALTERA
Actix
Bosch
Intel Mobile Communications
Huawei
Kathrein
National Instruments
Nokia
Rohde & Schwarz
Synopsys
Cadence
Xilinx
Network & Cloud Track Agenda

Network & Cloud Track led by Prof. Fitzek & Prof. Fetzer

10:45 The 5G Lab Germany Network & Cloud Track
Prof. Dr.-Ing. Dr. h.c. Frank Fitzek
Coordinator // 5G Lab Germany

11:20 KEYNOTE // O&O Software
Bringing Windows NT 4 to the Cloud
Olaf Kehrer
Managing Director // O&O Software

11:45 Projects Presented by Track Members
Coding
Distributed Storage Using Network Coding in Peer Devices at the Edge of the Network
Juan Cabrera // Group Fitzek
Deploying Network Coding with Software Defined Networks
Frank Wilhelm // Group Fitzek
Browser Based Peer-to-Peer Streaming
Patrik Braun // Group Fitzek
Multipath Routing in Network Coded Wireless Mesh
Sreekrishna Pandi // Group Fitzek

12:20 KEYNOTE // Ericsson Eurolab
5G: Media Everywhere
Dr. Thorsten Lohmar
Expert – Media Delivery // Ericsson Eurolab

12:45 Open Discussion

13:00 Lunch Break

14:00 KEYNOTE // Cloud & Heat
Decentralised Low Latency Micro Datacenters
Dr. Jens Struckmeier & Sebastian Varga
Chief Technical Officer // CLOUD & HEAT Technologies

14:15 Projects Presented by Track Members
Security & Cloud
Secure Edge Computing
Dr. Thomas Knauth // Group Fetzer
Secure Storage in Datacenters
Robert Krahn // Group Fetzer
Protocols for Ultra-low Latency, Ultralow Power Communication
Martina Brachmann // Group Santini
Applications of Advanced System Verification Techniques
Steffen Märcker & Marcus Daum // Group Baier

14:55 KEYNOTE // Chocolate Cloud
NC in the driver seat for distributed clouds
Prof. Daniel Lucani
Chief Executive Officer // Chocolate Cloud

15:20 Projects Presented by Track Members
Coding
Matrix-valued Compressed Sensing for Massive MIMO Channel Estimation
Dr. Christian Scheunert // Group Jorswieck
Multi-way Relaying
Bho Matthiesen // Group Jorswieck
Physical Layer Security on 5G
Dr. Pin Hsun-Lin // Group Jorswieck
Flexible Spectrum Management in 5G Systems
Dr. Siddharth Naik & Janis Noetzel // Group Jorswieck

15:50 Open Discussion
Hardware Track Agenda

11:00  **The 5G Lab Germany Hardware Track**  
   Prof. Dr. Dirk Plettemeier  
   Chair for RF and Photonics Engineering

11:10  **KEYNOTE // Rohde & Schwarz**  
   From mm-Wave to Gbps Experience – 5G Outlook from a T&M Perspective  
   Meik Kottkamp  
   Technology Manager // Rohde & Schwarz

11:30  **Projects Presented by Track Members**  
   On-chip Antenna Measurements in the (Sub-) Millimeter-Wave Range  
   Bernhard Klein // Group Plettemeier

11:40  **Projects Presented by Track Members**  
   Millimeter-Wave Wireless Data Transmission  
   Gregor Tretter & David Fritsche // Group Ellinger

11:55  **KEYNOTE // NEC**  
   Technologies for Base Station with Massive Antenna towards 5G  
   Masao Ikekawa  
   Senior Principal Researcher // NEC

12:15  **KEYNOTE // Intel Mobile Communications**  
   Vision and Implication on Radio Access and Silicon Technologies  
   Prof. Dr. Josef Hausner  
   Division Vice President // Wireless Systems Engineering  
   Intel Mobile Communications

12:35  **Projects Presented by Track Members**  
   Broadband Dielectric Material Characterization in the Microwave Range  
   Patrick Seiler // Group Plettemeier

12:50  **Chair for Electron Devices and Integrated Circuits (CEDIC): Research and Project Overview**  
   Dr. Wenfeng Liang // Group Schröter

13:00  **Lunch Break**

14:00  **KEYNOTE // Globalfoundries**  
   FD-SOI - Prospects and Requirements on the Design Ecosystem  
   Dr. Gerd Teepe  
   Director Design Engineering // GLOBALFOUNDRIES

14:20  **KEYNOTE // RacyICs**  
   Advanced Node SoC Design Services  
   Holger Eisenreich  
   Co-Founder and Managing Director // RacyICs

14:40  **Projects Presented by Track Members**  
   Chip Design for Energy Efficient MPSoCs in Nanometer CMOS  
   Dr. Sebastian Höppner // Group Mayr  
   Research Overview of the Vodafone Chair Hardware Group  
   Dr. Emil Matus // Group Fettweis  
   Guaranteed Service in TDM NoCS  
   Yong Chen // Group Fettweis  
   Accelerating Database Applications in MPSoCs  
   Sebastian Haas // Group Fettweis  
   Fault Resilient Network on Chip for Heterogenous MPSoCs  
   Sadia Moriam // Group Fettweis  
   Data Management on MPSoC  
   Benedikt Nöthen // Group Fettweis  
   Adaptive Memory Pooling in Heterogeneous MPSoCs  
   Friedrich Pauls // Group Fettweis
Hardware Track Agenda

→ Hardware Track
led by Prof. Plettemeier & Prof. Ellinger

15:25 Accelerating Frequency-Domain Equalization for Processors using Instruction Set Extension
Tobias Seifert // Group Fettweis

15:30 KEYNOTE // Lumiloop
Efficient, Miniaturized Optical Data and Power Transmission
Eike Suthau
Technical Director // Lumiloop

Application Track Agenda

→ Application Track
led by Prof. Urbas & Dr. Altinsoy

10:45 The 5G Lab Germany Application Track
Dr.-Ing. habil. Ercan Altinsoy
Chair of Communication Acoustics

11:05 KEYNOTE // Claas
Current agricultural process data handling and future Farming 4.0 communication requirements
Dr. Carsten Hoff
Managing Director // CLAAS E-Systems

11:25 KEYNOTE // Dresden Elektronik
Wireless into Industry 4.0
Mike Ludwig
Group Leader Research // Dresden Elektronik

11:45 Projects Presented by Track Members
Industry 4.0
Prediction of human mobility by analysing sensor data
Paul Baumann // Group Santini
A 5G Application Vision from Research: Adaptive Federative 3D Exploration with Multi Robot Systems (ADFEX)
Michael Klix // Group Janschek
Error Propagation Analysis in Space to Ground Robotic Haptic Feedback Systems
Dr. Andrey Morozov // Group Janschek
Communication Requirements for Mobile Migratory Visualization Systems
Lukas Baron // Group Janschek
Co-Working in Industry-4.0 – When Robots Meet People
Prof. Uwe Aßmann

13:00 Lunch Break
Application Track Agenda

14:00  **KEYNOTE // ABB**  
Wireless for Internet of Things, Services, and People  
**Dr. Dirk Schulz**  
Principal Scientist // ABB Corporate Research

14:20  **Projects Presented by Track Members**  
**Automation**  
5G as an Innovator for Mobile Information Systems in the Process Industries  
Jens Ziegler // Group Urbas  
5G as an Information Carrier for Vertical Data Integration in Automation Networks  
Chris Iatrou // Group Urbas

14:40  **KEYNOTE // Samsung**  
5G Mobile Communications: Vision and Key Technologies  
**Dr. Maziar Nakovee**  
Chief Engineer // Samsung Electronics R&D Institute UK

15:00  **KEYNOTE // HP**  
HP’s Vision  
**Dr. Dejan Milojicic**  
Senior Research Manager // HP Labs Palo Alto

15:20  **KEYNOTE // FireEye**  
Microkernels and Formal Verification: Towards Software without Security Critical Bugs  
**Dr. Hendrik Tews**  
Software Development Engineer // FireEye Deutschland

15:40  **Projects Presented by Track Members**  
**VR & OS**  
Operating Systems for the 5G Era  
Adam Lackorzynski // Group Härtig  
Tactile Extension of Kinaesthetic Feedback Systems for Virtual Reality  
Petko Bakardiev // Group Altinsoy

15:55  **Closing Remarks**
5G Demonstrations & Tours

DEMONSTRATIONS

Vodafone Chair Mobile Communications Systems
- Communications with 1-Bit Quantization and Oversampling at the Receiver // A Proof of Concept
- Multigigabit/s Link at 60 GHz
- FPGA-Demo / Dataflow Oriented Baseband Processing
- GFDM Transceiver Prototype
- GFDM MIMO Transceiver Prototype
- Channel Emulator Based on EASY-C Measurements
- GFDM Cognitive Radio within LTE UL
- Chip Demo // A MPSoC for Accelerating Database Applications

Chair of Communication Networks
- Reliable Synchronous Multicast
- Software Defined Networking
- Tactile Internet
  - Haptic User Interface
  - Tactile Goggles
  - Nao Robot
- Distributed Storage
  - Browser Based Distributed Cloud Storage
  - Local Network Based Distributed Cloud Storage
- Low Latency Security Solution
- Coded WebRTC

Chair of Communication Acoustics
- Virtual Reality in the Multimodal Lab

GUIDED LAB TOURS

Chair for RF and Photonics Engineering
- Microwavephotonic Laboratory
- On-Chip Antenna Measurement Setup
- Antenna Laboratory

How to get there?

Joint Welcome Session   GÖR 226  
1st Floor

Wireless Track   GÖR 226  
1st Floor

Network & Cloud Track   BAR 218  
1st Floor

Hardware Track   GÖR 127  
Groundfloor

Application Track   BAR II63a  
2nd Floor

Lunch   BAR Foyer  
Groundfloor

Görges-Building // Helmholtzstr. 9 // 01069 Dresden
Barkhausen-Building // Helmholtzstr. 18 // 01069 Dresden
Restaurant
“Italienisches Dörfchen”

Theaterplatz 3
01067 Dresden

Our Industry Partner Symposium ends with an informal get-together in the restaurant “Italienisches Dörfchen” in downtown Dresden (tram line 8 toward direction Dresden Hellerau: entrance Nürnberg Platz - stop Theaterplatz).

Hotels

**InterCityHotel Dresden**
Wiener Platz 8, 01069 Dresden
Tel: +49 351 26355-0, Fax: +49 351 26355-200
Email: dresden@intercityhotel.de
Internet: www.intercityhotel.com/Dresden
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You will get our special rate.

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Internet: www.ibis-dresden.de

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Email: reservierung@ibis-dresden.de
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**Ibis-Hotel LILIENSTEIN**
Prager Str. 13, 01069 Dresden
Tel: +49 351 4856 7445, Fax: +49 351 4856 7777
Email: reservierung@ibis-dresden.de
Internet: www.ibis-dresden.de

**Pullman Dresden Newa**
Prager Strasse 2c, 01069 Dresden
Tel: +49 351 481 4109, Fax: +49 351 495 5137
Email: h1577@accor.com
Internet: www.pullmanhotels.com

**Motel One**
Postplatz 5, 01067 Dresden
Tel.: +49/351/438 38 - 0, Fax: +49/351/438 38 - 10
Email: dresden-am-zwinger@motel-one.com
Internet: www.motel-one.com/de/hotels/dresden/dresden-am-zwinger/
5G Partners

Industry Partners are welcome to join our initiative. 5G Lab Germany is offering a platform for companies to explore the impact of 5G on their business and gain experience of 5G technologies through our unique interdisciplinary approach, access to the latest research results and close contacts to world-class experts.

The 5G Lab Germany is already supported by highly innovative companies:

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5G Contact

Technische Universität Dresden
5G Lab Germany

Dr.-Ing. Rico Radeke

T +49 351 463 39245
F +49 351 463 37163
E contact@5glab.de
H www.5glab.de