TECHNISCHE
UNIVERSITÄT
DRESDEN

**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**

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

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Wireless Track Agenda

12:30 Energy-Efficient Communication employing 1-bit
Quanitization 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 Communictions
Dr. Marco Krondorf
Management // Inradios

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Wireless Track Agenda

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**

Network & Cloud Track Agenda

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**
Network 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

Network & Cloud Track Agenda

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 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

Hardware Track Agenda

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

Application Track Agenda

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?

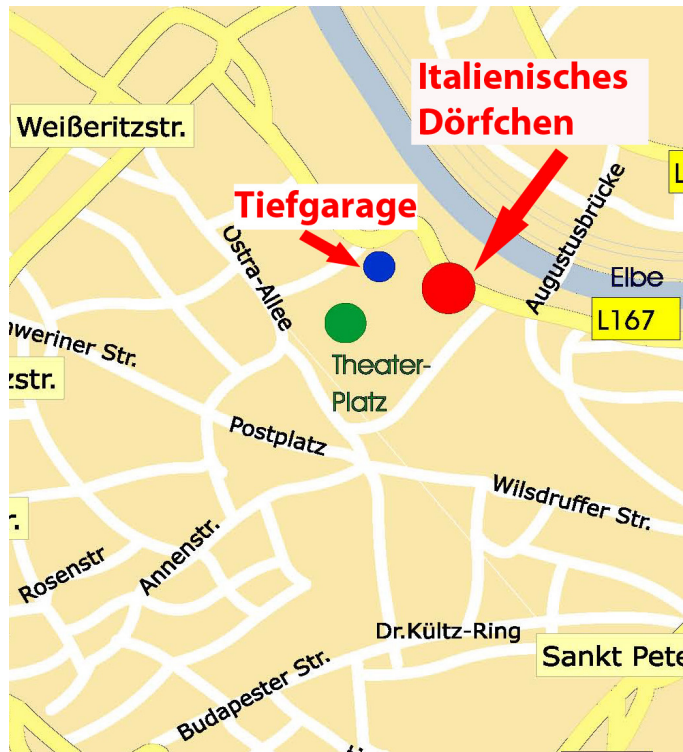|			
Joint Welcome Session	GÖR 226	1st Floor
Wireless Track	GÖR 226	1st Floor
Network & Cloud Track	BAR 218	1st Floor
Hardware Track	GÖR 127	Groundfloor
Application Track	BAR II63a	2nd Floor
Lunch	BAR Foyer	Groundfloor

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 Nürnberger Platz - stop Theaterplatz).

Hotels

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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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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 inter-disciplinary 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:

Alcatel·Lucent

ERICSSON

NATIONAL INSTRUMENTS

NOKIA

ROHDE&SCHWARZ

vodafone

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