12th FOKUS FUSECO Forum

Forward to 6G!

Nov. 7–8, 2024 – Fraunhofer FOKUS, Berlin

DAY 1 - THURSDAY, NOV 7, 2024

08.30 - 09.30 REGISTRATION

TRACK 1 - TUTORIAL & WORKSHOP

Beyond 5G and 6G Network Technologies and Enablers: RAN & Core, NTN, and AI

09.30 - 10.45 TRACK 1 | SESSION 1 | TUTORIAL

Tutorial Part 1: "Understanding the Pivotal Role of Software-Based Beyond 5G and 6G in the Age of Complexity, Energy Efficiency, and AI"

The tutorial will cover a comprehensive number of software-based technologies from the perspective of the 6G and beyond 5G system as a basis for a highly flexible, customizable and automatic multi-network infrastructure, as well as a critical overview of the impact of AI on the network.

Aiming to reflect the current R&D trends, it focuses on the importance of full softwarization and cloud-native developments to address the complexity and energy-efficiency challenges, as well as on its highly ramified implications towards a high utility, "useful" network, customized for satellite-terrestrial convergence, campus networks for highly diverse use cases and large operators alike.

Speaker: Marius Corici, Fraunhofer FOKUS, Germany

09.30 - 18.00 TRACK 2

Campus Networks: From Research to Reality

Chairs: Florian Schreiner and Marc Emmelmann, Fraunhofer FOKUS, Germany

09.30 - 10.45 TRACK 2 | SESSION 1

Workshop "CampusOS Networking"

Chairs: Florian Schreiner and Marc Emmelmann, Fraunhofer FOKUS, Germany

CampusOS Overview
Thomas Magedanz, Fraunhofer FOKUS / TU Berlin, Germany

The Private 5G Components Catalog
Leszek Raschkowski, Fraunhofer HHI, Germany

Connected Construction Sites
Raimo Vollstädt, Topcon Positioning Group, Germany

Industrial Campus Networks for Teleoperated Driving
Oscar Dario Ramos-Cantor, Bosch, Germany

09.30 - 18.00 TRACK 3

INPACE EU/Japan 5G Collaborations Workshop and Workshop on TN NTN Unification

09.30 - 10.45 TRACK 3 | SESSION 1 | WORKSHOP

INPACE Workshop "5G and Beyond – Topics of Common Interests between Japan, Republic of Korea, Singapore, India, and Europe"

A workshop organized by the Horizon Europe support action INPACE.

Chair: Adam Kapovits, Eurescom GmbH, Germany

Welcome and Introduction to the Horizon Europe INPACE Support Action and the Digital Partnerships between the EU and the Republic of Korea, Japan, and Singapore
Adam Kapovits, Eurescom GmbH, Germany

Cross-Industry Orchestration Enabled by Beyond 5G and 6G
Kentaro Ishizu, National Institute of Information and Communications Technology (NICT), Japan

The ESA SATis5 Activity – Results from the Collaboration with Japanese Consortium
Adam Kapovits, Eurescom GmbH, Germany

Stochastic Geometry for 5 and 6G Networks
François Baccelli, INRIA/Télécom Paris, France

10.45 - 11.15 COFFEE BREAK & DEMOS

11.15 - 13.00 TRACK 1 | SESSION 2 | TUTORIAL

Tutorial Part 2: "Understanding the Pivotal Role of Software-Based Beyond 5G and 6G in the Age of Complexity, Energy Efficiency, and AI"

In part 2 of the tutorial we will take a closer look at the software RAN and core network functionality, data-intensive AI-impacted network management. We will conclude with a study on the different deployment scenarios for nomadic and mobile network infrastructures, highlighting the specific opportunities and benefits and their best-practice engineering in the Fraunhofer FOKUS toolkits.

Speaker: Marius Corici, Fraunhofer FOKUS, Germany

11.15 - 13.00 TRACK 2 | SESSION 2 | WORKSHOP

Workshop "How Campus Networks Enable 6G -- Ecosystems and Technologies Beyond 5G" (Part 1)"

Chairs: Florian Schreiner and Marc Emmelmann, Fraunhofer FOKUS, Germany

Campus Network Trials in 5G-OPERA
Thomas Höschele, TU Dresden, Germany

Totally Integrated ... Modularity? Industrial Perspective on Modular Campus Networks
Björn Richerzhagen, Siemens AG, Germany

How Portable 5G Networks Enable Media Production
Klaus Nagora, Smart Mobile Labs, Germany

6G-SANDBOX: Update on Experimentation Results
Michael Dieudonné, Keysight Technologies, Belgium

11.15 - 13.00 TRACK 3 | SESSION 2 | WORKSHOP

Workshop Part 1 "3rd Euro NTN Workshop: TN NTN Unification, Non-Terrestrial Networks in the 6G Era – Current Topics and Latest Advancements"

Chairs: Adam Kapovits, Eurescom GmbH, and Markus

TN NTN Unification, Non-Terrestrial Networks in the 6G Era - Current Topics and Latest Advancements
Maria Guta, ESA, The Netherlands

Connecting the World – from Ground, Air, and Space
Markus Breitbach, Deutsche Telekom AG, Germany

Operator Perspectives on NTN Going Beyond 5G
Tilo Heckmann, Telefónica, Germany

5G Non-Terrestrial Networks: NB-IoT for Space - from Study to Deployment
Robert van der Pool, Gatehouse Satcom, Denmark

Satellite-Terrestrial Integration: The SeRANIS 5G-Beyond Demonstrator Platform
Diego Tuzi, University of the Bundeswehr Munich,

13.00 - 13.40 LUNCH BREAK

13.40 - 14.00 DEMO SESSION

14.00 - 15.30 TRACK 1 | SESSION 3

Workshop Part 1: "Technologies and Enablers for Beyond 5G and 6G Networks: RAN, Core, NTN, and AI"

Chair: Daniel Mierla, Kamailio, Germany

Channel Charting: A 6G Positioning Solution
George Yammine, Fraunhofer IIS, Germany

New Technologies in Standardization Towards 6G
Thomas Heyn, Fraunhofer IIS, Germany

NTN in srsRAN Enterprise 5G
Piotr Gawlowicz, Software Radio Systems (SRS), Ireland

Advances Towards 6G Architecture - a 6G Platform View
Gerald Kunzmann, Nokia, Germany

From 5G Core to a Real Cloud-native 6G Core
Hans Einsiedler, Deutsche Telekom AG, Germany

Integrated Sensing and Communications (ISAC) - Challenges, Technologies and Results
Eckhard Grass, IHP, Germany

14.00 - 15.30 TRACK 2 | SESSION 3

Workshop "How Campus Networks Enable 6G -- Ecosystems and Technologies Beyond 5G" (Part 2)"

Chairs: Florian Schreiner and Marc Emmelmann, Fraunhofer FOKUS, Germany

Industrial IT/OT Services Enabled by 6G Satellite Systems
Florian Zeiger, Siemens, Germany

How Campus Networks Enable 6G - Ecosystems and Technologies Beyond 5G
Martin Kasparick, Airpuls, Germany

How 5G and Edge Clouds Empower Robot Intelligence
Cornelius Heim, Roboverse Reply GmbH, Germany

Neutral Host Concepts and Challenges
Bernd Schröder, brown-iposs GmbH, Germany

Technology Validation and Measurement Campaigns for Non-terrestrial Networks
David Artuñedo Guillen, Telefónica, Spain

14.00 - 15.30 TRACK 3 | SESSION 3 | WORKSHOP

14.00 - 15.30 TRACK 3 | SESSION 3 | WORKSHOP

Workshop Part 2 "3rd Euro NTN Workshop: TN NTN Unification, Non-Terrestrial Networks in the 6G Era – Current Topics and Latest Advancements"

Chairs: Adam Kapovits, Eurescom GmbH, and Markus

Architectural Aspects of TN-NTN Integration – The ETHER Project Approach
Lechoslaw Tomaszewski, Orange Innovation Poland

Inclusion of Satellite Components in 6G – The Path Towards TN-NTN Unification
Sebastian Euler, Ericsson, Sweden

Experiment in the Space to Test 5G NTN gNodeB for Future Space Network Systems (SpaNeSys)

NTN Evolution: Stepping into 6G
Alessandro Guidotti, University of Bologna, Italy

Performance of NTN - TN Spectrum Sharing in the Presence of Interference Restricted Areas
Heikki Kokkinen, VTT Technical Research Center of Finland

15.30 - 16.00 COFFEE BREAK & DEMOS

16.00 - 18.00 TRACK 1 | SESSION 4

Workshop Part 2 "Technologies and Enablers for Beyond 5G and 6G Networks: RAN, Core, NTN, and AI"

Chair: Daniel-Constantin Mierla, Kamailio, Germany

AI Native Networks: Standards and Innovations with ITU
Abhishek Girish Dandekar, Fraunhofer HHI, Germany

6G Computing Computing Continuum New Security and Trustworthy Challenges
Luis Cordeiro, OneSource, Portugal

The New Paradigm for Next Generation of Networks Enabled by AI
Xueli An, Huawei Technologies Duesseldorf GmbH, Germany

Building Sustainable 6G Networks and Enabling Sustainability for Other Applications
Xi Li, NEC Laboratories Europe, Germany

Security and Trust in Multi-Stakeholder 6G Networks
Sandro Rodriguez Garzon, TU Berlin, Germany

5/6G RTC Services with Open Source
Daniel-Constantin Mierla, Kamailio, Germany

16.00 - 18.00 TRACK 2 | SESSION 4

Workshop "How Campus Networks Enable 6G -- Ecosystems and Technologies Beyond 5G" (Part 3)"

Chairs: Florian Schreiner and Marc Emmelmann, Fraunhofer FOKUS, Germany

What 6G and Beyond Can Do for Industrial Automation Use Cases
Raheeb Muzaffar, Silicon Austria, Austria

5G-RACOM and Multipath Communications
Kevin Wriston, Kontron, Germany

Improvement of Tele-based Wound Care by Using Advanced Telecommunication Technology
Nils Lahmann, Charité Berlin, Germany

5G Campus Network for Aeronautical Research
Wolfgang Rüther-Kindel, TU Wildau, Germany

5G for Safety and Security-related Campus Networks
Tanel Järvet, CAFA Tech OU, Estonia

16.00 - 18.00 TRACK 3 | SESSION 4 | WORKSHOP

16.00 - 18.00 TRACK 3 | SESSION 4 | WORKSHOP

Workshop Part 3 "3rd Euro NTN Workshop: TN NTN Unification, Non-Terrestrial Networks in the 6G Era – Current Topics and Latest Advancements"

Chairs: Adam Kapovits, Eurescom GmbH and Markus

6G Laboratory in Orbit
Alexander Hofmann, Fraunhofer IIS, Germany

From 5G Advanced to 6G: The 5G-STARDUST Vision
Tomaso de Cola, German Aerospace Center (DLR),

The ESA 5GEOSiS Activity – a Prototype Testbed for Dynamically Repurposable 5G and Earth Observation Server in Space Payload
Adam Kapovits, Eurescom GmbH, Germany

Resource Management Challenges of Tightly Integrated Terrestrial and Non-terrestrial 5G/6G Networks
Mihaly Varga, Viasat, UK

Stochastic Geometry of RIS and NT Networks
François Baccelli
INRIA/Télécom Paris, France

18.00 CONFERENCE DINNER & DEMO BY NIGHT

08.00 - 09.00 REGISTRATION

09.00-17.30 CONFERENCE

Forward to 6G! Challenges & Opportunities of Beyond 5G Networks

While digital transformation represents a pivotal development of our society, converging the communication technologies within a single mainstream technology, gradually connecting everything and everywhere, the 5G deployments have still to overcome the economic challenges and to prove their exceptional qualities across the world.

In this context it is time to look beyond the 5G network towards what the telecommunication system would look like in 2030. Commonly referred to as 6G, the network of 2030 is driven by the pervasive adoption of AI, both within the individual network layers and holistically across the system, as well as the need for energy efficiency, decomplexification, extensive trust, and security to deliver on the promise of digitization across a wide variety of use cases and deployments.

In addition, the standardization community is in full swing towards full network flexibility, aiming to provide ultra-low latency, dedicated fixed, nomadic and mobile campus networks, and alternatively global networks. The time has come to prove the full potential of campus networks, build a corresponding provider ecosystem, and deliver on the promise of 5G by complementing the operator deployments with a myriad of highly customized, yet convergent, vertical networks.

Starting from 3GPP Release 18 and beyond, the amazing customization features of fully software networks – open, serverless, cloud-native and organic – are leading the new service developments on top of the 5G Service-Based Architectures (SBA). The same trend of software-based services is pushing forward the RAN flexibility and scalability, gradually expanding the telco ecosystem.

The conference will feature short, stimulating presentations followed by highly interactive panels to discover and discuss the latest trends. Interactive demos alongside the conference during the breaks will provide hands-on inspiration and illustrate the beyond 5G and 6G technologies.

09.00 - 09.30 WELCOME
Welcome
Manfred Hauswirth, Fraunhofer FOKUS, Germany

Greetings from BMBF
Dirk Ziemann, Federal Ministry of Education and Research (BMBF), Germany

Greeting from the German Ministry for Economic Affairs and Climate Action
Walter Mattauch, Federal Ministry for Economic Affairs and Climate Action (BMWK), Germany

Welcome
Thomas Magedanz, Fraunhofer FOKUS / TU Berlin, Germany

09.30 - 10.30 SESSION 1 | PRESENTATION
What Should 6G Achieve?

Chair: Thomas Heyn, Fraunhofer IIS, Germany

SA1 Status: Our Road Towards 6G
José Almodovar, TNO / 3GPP SA1, The Netherlands

The ETSI Approach to Research & Innovation and Thoughts on ... "What Should 6G Achieve"?
David Boswarthick, ETSI, UK

Developing a Holistic Sustainability Framework for Future Communication Systems
Anastasius Gavras, Eurescom GmbH, Germany

AI-Driven DSM and SCMs: Unlocking the Potential of FR3 for 6G
Ivan Seskar, Rutgers University/WINLAB, USA

Maria Guta, ESA, The Netherlands
Markus Amend, Deutsche Telekom AG, Germany
Serge Fdida, Sorbonne University, France
Takehiro Nakamura, NTT Docomo, Japan

10.30 - 11.00 COFFEE BREAK & DEMOS

11.00 - 12.30 SESSION 2 | PRESENTATION

Operator Perspectives Going Beyond 5G

Chair: Guy Redmill, Redmill Marketing Associates

13.00 - 13.40 LUNCH

Towards 6G or the Story of a Boat
Markus Amend, Deutsche Telekom AG, Germany

13.40 - 14.00 DEMO SESSION

Operator Perspective Going Beyond 5G
Tilo Heckmann, Telefónica, Germany

5G Evolution and 6G
Takehiro Nakamura, NTT Docomo, Japan

6G Challenges & Opportunities
Ryan Husbands, British Telecom, UK

Key Learnings from 5G Pilots in Belgium
Eric Smekens, Citymesh, Belgium

Unleashing the Next Wave in Interoperable Smart Public Networks and Services
Håkon Lønsethagen, Telenor, Norway

12.30 - 13.00 PANEL

6G for All

Chair: Thomas Magedanz, Fraunhofer FOKUS / TU Berlin, Germany

Alfonso Ehijo, University of Chile
Bessie Malila, University of Cape Town, South Africa
Hakima Chaouchi, Institut Mines-Télécom, France
Ivan Seskar, Winlab/Rutgers University, USA
Maria Guta, ESA, The Netherlands
Markus Amend, Deutsche Telekom AG, Germany
Serge Fdida, Sorbonne University, France
Takehiro Nakamura, NTT Docomo, Japan

13.00 - 13.40 LUNCH

13.40 - 14.00 DEMO SESSION

14.00 - 15.30 SESSION 3 | PRESENTATION

Industries' Perspectives on Beyond 5G Networks

Chair: Anastasius Gavras, Eurescom GmbH, Germany

What Automotive Needs from 5G and Beyond
Johannes Springer, Deutsche Telekom / T-Systems, Germany

6G - Separating the Wheat from the Chaff
Andreas Müller, Robert Bosch GmbH, Germany

Can Societies Depend on 6G? TCCA 6G Position
Joakim Åkesson, Ericsson / The Critical Communications Association (TCCA) 6G Taskforce, Sweden

Unified 3D Networks - A Research Perspective
Dirk Wübben, University of Bremen, Germany

B5G Infrastructures Monetization Challenges – MNO Perspective
Cristian Patachia-Sultanoiu, Orange Romania

15.30 - 16.00 COFFEE BREAK & DEMOS

16.00 - 17.15 SESSION 4 | PRESENTATION

Towards 6G! National Programs and Research Directions

Chair: Serge Fdida, Sorbonne University, France

Direction and Status of Beyond 5G and 6G R&D Activities in Japan and NICT
Kentaro Ishizu, National Institute of Information and Communications Technology (NICT), Japan

Metaverse Cyber Studio with Future Multi-Sliced Connectivity Supporting Industry x.0
Ari Pouttu, University of Oulu, Finland

SLICES, Assisting Scientist in Digital Infrastructures to Measure the Subject of their Investigations
Serge Fdida, Sorbonne University, France

6G Revolution in South Africa: Progress, Challenges, and Future Research Directions
Bessie Malila, University of Cape Town, South Africa

Task-Oriented Communication Meets Next-Generation AI
Slawomir Stanczak, Fraunhofer HHI, Germany

17.15 CLOSING & FAREWELL