

# 6G WIRELESS SUMMIT

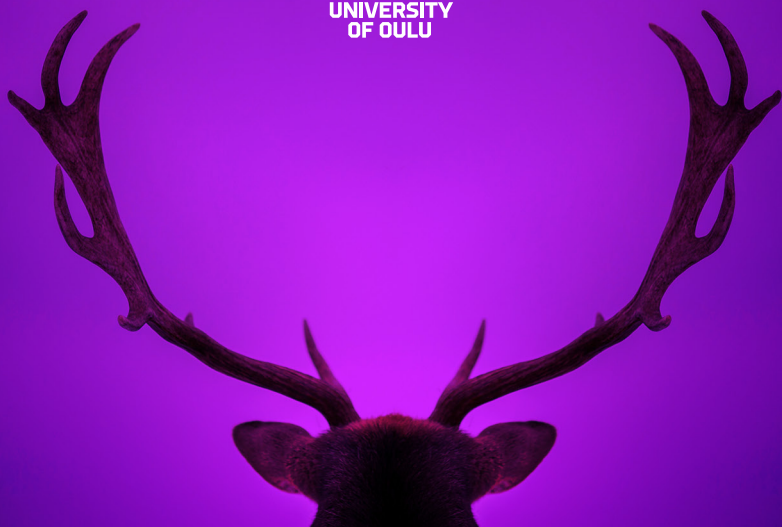
LEVI | LAPLAND | FINLAND  
24-26 MARCH 2019

[www.6gsummit.com](http://www.6gsummit.com)

PROGRAMME

6G 

FLAGSHIP  
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OF OULU



# SUNDAY 24 MARCH

## IEEE FUTURE NETWORKS TUTORIALS

- 9:30 **Tutorial 1** | LEVITORIO B  
Beyond 5G: What will it be? | Mérouane Debbah, Huawei
- Tutorial 2** | ROOMS 1-3  
mmWave Localization: on the convergence of sensing and communication beyond 5G | Henk Wymeersch, Chalmers University
- Tutorial 3** | ROOMS 4-6  
Ambient and Quantum Backscatter Communications | Riku Jäntti, Aalto University

12:30 Lunch

- 13:30 **Tutorial 4** | ROOMS 1-3 | Integrated Circuit Design for Terahertz Applications | Ullrich R. Pfeiffer, University of Wuppertal
- Tutorial 5** | ROOMS 4-6 | Future IoT connectivity | Petar Popovski, Aalborg University

16:30 Closing of IEEE Future Networks Tutorial

- 19:00 **GET TOGETHER EVENT** | The Gold Digger Bar&Lounge, Hotel Panorama, 7th floor

# MONDAY 25 MARCH

## IEEE 5G SUMMIT

- 8:30 **Opening Session** | LEVITORIO A  
Ashutosh Dutta, IEEE JHU/APL | Ari Pouttu, University of Oulu | Matti Latva-aho, University of Oulu
- 9:00 **Keynote Session** | LEVITORIO A | *Chair: Ari Pouttu*  
Lauri Oksanen, Nokia Bell Labs: Open networks for the 4th industrial revolution | Peiyong Zhu, Huawei: 5G and Evolution

10:00 Coffee Break and Exhibits

- 10:30 **Invited Session** | LEVITORIO A | *Chair: Arto Maaninen*  
Taavi Hirvonen, Bittium: Requirements, opportunities and challenges in critical wireless communications | Janne Peisa, Ericsson: NR evolution – realizing the full potential of 5G | Sudhir Dixit and Ashutosh Dutta, IEEE: Realizing wireless internet connectivity for all through 5G and B5G

12:00 Lunch

-13:00

12:30 Nokia 5G Field Test Car - **open to visit**

-14:30

#### 13:00 **Parallel Technical Sessions 1-4**

-14:30

**5G and Industry** | LEVITORIO A | *Chair: Torsten Kuepper*  
Linus Thrybom, ABB Automation | Andreas Mueller, Bosch | Petri Hovila, ABB Energy | Olli Liinamaa, Nokia | Matti Vakkuri, Tieto

**5G for Verticals** | LEVITORIO B | *Chair: Jussi Haapola*  
Juha Ala-Mursula, BusinessOulu | Rui L. Aguar, University of Aveiro  
Markus Mettälä, Traficom | Matti Vappula, Realmax

**Verticals and Test Networks** | ROOMS 1-3 | *Chair: Jaakko Sauvola*  
Mika Klemettinen, Business Finland | Mikko Uusitalo, Nokia | Ari Pouttu, University of Oulu | Jose Costa Requena, Aalto University  
| Marjo Heikkilä, Centria | Juha Kalliovaara, TUAS

**Beyond 5G Enablers** | ROOMS 4-6 | *Chair: Rahim Tafazolli*  
Hirley Alves, University of Oulu | Arto Klami, FCAI | Steven LaValle, University of Oulu | Mikko Valkama, Tampere University  
Raimo Kantola, Aalto University

14.30 Coffee and Exhibits

#### 15:00 **Parallel Technical Sessions 5-8**

-16:30

**5G Devices and Networks** | LEVITORIO A | *Chair: Ullrich Pfeiffer*  
Tapio Rautava, UROS | Harri Saarnisaari, University of Oulu  
Janne Koistinen, Telia | Alain Mourad, InterDigital | Torsten Kuepper, Qualcomm | Ville Salmi, MediaTek

**5G for Verticals II** | LEVITORIO B | *Chair: Rui L. Aguiar*  
Jorma Kivelä, JUTEL | Mohammad Patwary, Birmingham City  
University | Sudhir Dixit, Basic Internet Foundation | Riku Jäntti,  
Aalto University | Pål Grønsund, Telenor

**Verticals and Test Networks II** | ROOMS 1-3 | *Chair: Ian Oppermann*  
Kyösti Rautiola, VTT | Olli Liinamaa, Nokia | Anna-Greta Nyström,  
Åbo Akademi | Harri Posti, University of Oulu | Muhammad  
Asgar, University of Jyväskylä | Sasu Tarkoma, University of Helsinki

**From Open Call** | Rooms 4-6 | *Chair: Mikko Uusitalo*

Stefano Buzzi, University of Cassino | Ashwin S. Rao, University of Helsinki | Jari Hulkkonen, Nokia | Jyh-Cheng Chen, National Chiao Tung University | Dick Carrillo, Lappeenranta University of Technology | Uma Chunduri, Huawei

16:30 Closing of the IEEE 5G Summit

18:00 **Magical Mystery Tour** (by Invitation Only)

21:00 **Banquet Dinner** | Saamen Kammi, Hotel K5 Courtyard, Levi Village

## TUESDAY 26 MARCH

### 1ST 6G WIRELESS SUMMIT

8:30 **Keynote Session** | LEVITORIO A | *Chair: Matti Latva-aho*  
Peter Vetter, Nokia Bell Labs: New Value Creation Driving a New Generation Network: | Wen Tong, Huawei: A Perspective of Wireless Innovations in the Next Decade

10:00 Coffee, Posters and Exhibits

10:30 **Special Session** | LEVITORIO A | *Chair: Kari Leppänen*  
Magnus Frodigh, Ericsson: Towards a Connected Intelligent Future  
Juho Lee, Samsung: Moving Toward 6G | Takehiro Nakamura, NTT DoCoMo: 5G Evolution and Beyond | Qi Bi, China Telecom: An examination of the current industrial trends and an outlook of 6G | Eric Hardouin, Orange

12:30 Lunch

13:30 **Invited Session 1** | LEVITORIO A | *Chair: Ari Pouttu*  
-15:00 Bernard Barani, EU Commission: European R&D on Communication Systems, what's next? | Kwon Dong-Seung, ETRI: What is beyond hyper-connectivity? | Rahim Tafazolli, University of Surrey: What is Next? | Fan Chen, ZTE: Computational Holographic Radio and Enabling Technologies for 6G | Tanbir Haque, Interdigital Air-interfaces for ultra-low power communications – challenges, solutions and potential benefits

**Technical Session 1** | LEVITORIO B | *Chair: Hirley Alves*  
Mohamed Slim-Alouini, KAUST: Large Intelligent Surfaces Assisted MIMO – A Vision for 6G Wireless Communication Systems | Petar Popovski, Aalborg University: Start Making Sense: Semantic Plane Filtering and Control for Post-5G Connectivity | Seppo Yrjölä, Nokia: Decentralized 6G Business Models | Harish Viswanathan, Nokia Bell Labs: Evolution Beyond 5G for Vertical Industries: Key Drivers and Technology Components | Jean-Claude Belfiore, Huawei: Towards an Intelligent 6G : A Topos perspective

**Technical Session 2** | ROOMS 1-3 | *Chair: Nandana Rajatheva*  
Raja Sattiraju, University of Kaiserslautern: AI-assisted PHY technologies for 6G and beyond wireless networks | Preben Mogensen, Nokia Bell Labs: 5G Evolution: A View on Cellular Technology Beyond 5G | Janne Peisa, Ericsson: Wireless Access Evolution | Federico Clazzer, German Aerospace Center: From 5G to 6G: Has the Time for Modern Random Access Come? | Ashutosh Dutta, IEEE 5G Initiativ: Solving Complexity with Emergence

15:00 Coffee, Posters and Exhibits

15:30 **Invited Session 2, Technical Session 3**  
-17:00

**Invited Session 2** | LEVITORIO A | *Chair: Marja Matinmikko-Blue*  
Zhisheng Niu, Tsinghua University: Mobility-Enhanced Edge Intelligence (MEET) for 6G | Ullrich Pfeiffer, Wuppertal University: Radio Front-Ends for 100 Gbps and beyond | Ian Oppermann, NSW Data Analytics Centre: Data Enabled – a view of a connected, data driven future | Henning Schultzrinne, Columbia University: 6G: The beauty of a simpler network life

**Technical Session 3** | ROOMS 1-3 | *Chair: Mehdi Bennis*  
Sandra Lagen, CTTC: From NR to 6G in Unlicensed Spectrum: the RAT for Wireless Private Networks in Industry 4.0 | Yoann Corre, SIRADEL: Sub-T/Hz Spectrum as Enabler for 6G Wireless Communications up to 1 Tbit/s | Marco Giordani, University of Padova: 6G: Towards a Fully Digital and Connected World | Emilio Calvanese Strinati, LETI: Air Interface Challenges and Solutions for future 6G Networks | Werner Haselmayr, Johannes Kepler University: Integration of Molecular Communications into FutureGeneration Wireless Networks

17:00 Break

17:30 **6G Flagship Views on 6G Challenges** | LEVITORIO A  
Matti Latva-aho, University of Oulu: Challenges for 6G | Kari  
Leppänen, University of Oulu: How did we do with 5G? | Mehdi  
Bennis, University of Oulu: Wireless Network Intelligence @  
the Edge | Aarno Pärssinen, University of Oulu: RF and data  
processing towards Tbps – Challenges and Opportunities on  
the way to 6G | Tarik Taleb, University of Oulu/Aalto University:  
Beyond 5G Networking: Vision & Key Techs | Marja Matinmikko-  
Blue, University of Oulu: Changes in Mobile Business Ecosystems  
| Harri Saarnisaari, University of Oulu and Jaap van de Beek, Luleå  
University of Technology: Internet everywhere: technology,  
regulatory and network sharing solutions for the rural

19:00 **Closing of the 1st 6G Wireless Summit**

## POSTERS PRESENTED AT 1ST 6G WIRELESS SUMMIT

Hirley Alves et al. University of Oulu, Finland: **Machine-Type Wireless Communications Enablers for 6G** | Mehdi Bennis et al. University of Oulu, Finland: **Intelligent Connectivity and Networks** | Markus Berg et al. University of Oulu, Finland: **mmWave & THz Antenna Research** | Steve LaValle et al. University of Oulu, Finland: **Challenges in Wireless XR** | Lauri Lovén et al. University of Oulu, Finland: **EdgeAI - A Vision for Distributed, Edge-Native Artificial Intelligence in Future 6G Networks** | Marja Matinmikko-Blue et al. University of Oulu, Finland : **Local Vertical Specific Service Provider Networks** | Sami Myllymäki et al. University of Oulu, Finland: **Materials and Production Technologies** | Timo Rahkonen et al. University of Oulu, Finland: **IC Technologies and Circuits - mmWave to THz** | Ella Peltonen et al. University of Oulu, Finland: **EdgeAI Edge-Native Distributed Platform for Artificial Intelligence** | Pawani Porambage et al. University of Oulu, Finland: **Sec-EdgeAI: AI for Edge Security Vs Security for Edge AI** | Nandana Rajatheva et al. University of Oulu, Finland: **Novel Architecture for Autonomous Vehicles with AI Enabled Communication Links** | Shuaishuai Guo et al. King Abdullah University of Science and Technology (KAUST), Kingdom of Saudi Arabia: **Passive Intelligent Mirror-Assisted Localization for Random Blockage-Limited Urban Cellular Networks** | Khaula Zeeshan et al. University of Jyväskylä, Finland. **5G to 6G: A Peek into the Future** | Tze-Jie Tan et al. National Chiao Tung University, Taiwan: **A Vertical Approach for Beyond 5G (B5G) Mobile Networks**

# REAL TIME VR OBSERVATION OPERATION ROOM POWERED BY 5G AND AR

DURING IEEE 5G SUMMIT ON **MONDAY 25 MARCH**

*Come and discover future medical  
operation potential with today's  
wireless technology!*

Put yourself to a role of a medical student or a specialist and step in to a digital experience. Look the whole 360 view of an operation room, the surgeon's own view and important sensor data all embedded and visualized real time through 5G through VR-display.

**Demo set up** can be found at the **entrance hall** of the 6G Wireless Summit venue Levi Summit Conference Center.

**NOKIA** Bell Labs



**TRAFICOM**  
Liikenne- ja viestintävirasto  
Finnish Transport and Communications Agency



*elisa*



# 6G WIRELESS SUMMIT

LEVI | LAPLAND | FINLAND



# 6G

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