## Program 6GNet 2023

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<td>(Thales Group, France)</td>
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<td>Ari Pouttu</td>
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Welcome Message from the Chairs

We are very pleased to welcome you to the 2nd edition of the International Conference on 6G Networking (6GNet 2023)!

6G network research has already started with some initiatives like the 6G Flagship. Besides the (somewhat questionable) speed race, 6G networking is a tremendous opportunity to investigate and foster research in areas like the need for massive digital inclusion and stronger robustness against attacks of any kind, among other challenging topics like global network automation and cross-domain service/slice design, delivery and operation. 6G networking may also be seen as a true convergence point where the distinction between fixed and mobile infrastructures would not make sense anymore.

The research effort in this area of convergence has ignited for quite some time but dramatically progressed with 5G techniques, possibly combined with others like advanced forwarding schemes (multi-path communication designs) or AI/ML-fueled network automation.

This second 6G conference therefore aims at assessing the progress of the various research efforts in areas that will forge 6G networks.

This year the program features 7 technical sessions, 2 special sessions and one Posters & Demos sessions, we have also the great pleasure to welcome six keynote speakers who will provide us with unique insights into the world of 6G: Prof. Rahim Tafazolli (Founder and Director of 5GIC, 6GIC and ICS at the University of Surrey, UK), Prof. Ari Pouttu (Vice-director of the national 6G Flagship Programme, University of Oulu, Finland), Van-Tam Nguyen (head of the communications and electronic department at Telecom Paris, France), Emmanuel Dotaro (VP, Fellow 5G-6G expertise (Thales, France), Halim Yanikomeroglu (Chancellor’s Professor at Carleton University, Canada) and Michael Dieudonné (Director of Keysight Technologies, Belgium).

Apart from the keynotes, our panel moderated by Amina Boubendir (Airbus, France), will engage in interesting discussions between 3 distinguished experts about “3D networks: towards integrated Land-Sky-Space Communications”.

We would like to thank everyone who contributed to the organization of the conference: The organization committee, technical program committee, and reviewers.
Additionally, we are grateful to all the authors who submitted their high-quality research to 6GNet 2023!

We are looking forward to a successful conference and thank you for joining us at 6GNet 2023. Enjoy!
6G Challenges and some solutions

**Rahim Tafazolli**  
(University of Surrey, UK)

**Regius Rahim Tafazolli**, Fellow of Royal Academy of Engineering, IET, WWRF and Regius Professor of Electronic Engineering, Professor of Mobile and Satellite Communications, Founder and Director of 5GIC, 6GIC and ICS (Institute for Communication System) at the University of Surrey. He has over 30 years of experience in digital communications research and teaching. He has authored and co-authored more than 1000 research publications and is regularly invited to deliver keynote talks and distinguished lectures to international conferences and workshops. He was an advisor to the Mayor of London (Boris Johnson) on London 2050 Infrastructure.

**Abstract:** The talk will be why, what and how of 6G and present some potential solutions that address these challenges. These challenges relate to future wireless, ubiquitous coverage and Core network that underpin concept of Future Network of Networks.

6G System Architecture: A Service Of Services Vision

**Ari Pouttu**  
(University of Oulu, Finland)

**Prof. Ari Pouttu** has scientific and engineering experience as a researcher, project manager and research manager in various domains of ICT development. The projects under his command have resulted in waveform and system designs for military radio communication, radar systems, embedded device networks, future wireless radio communications including cellular systems, cognitive networks and navigation applications.

He has published more than 70 conference or journal papers in the field of wireless communications and he holds two patents. He is the principal investigator of 5G test network (5GTN) experimental research, and vice-director of the national 6G Flagship Programme as well as 6GESS programme targeting 6G solutions including wireless solutions for business verticals such as energy, industry, health and automotive.

**Abstract:** The architectures of mobile networks have seen an unprecedented techno-economic transformation, fusing the telecommunications world within the cloud world, adding the spices of Software Engineering to the overall system design, and ultimately yielding the concept of Telco Cloud. This has brought significant benefits in terms of reducing expenditure and operational costs, flexibility in deployment, and faster time to market. The key enablers are network function virtualization, software-defined networking, and edge/cloud computing. Artificial intelligence is also kicking in this arena. When all these technologies are well integrated, the creation and life-cycle management of fully programmable, flexible, service-tailored, and automated end-to-end network slices/services become possible. This will support diverse 5G and beyond 5G services, spanning from tactile IoT to pervasive robotics and immersive services.

In this talk 6G Flagship introduces an unprecedented and disruptive vision for 6G that shifts the perception of future mobile networks from the old-fashioned concept of “network of networks” towards a new vision of “service of services.” The talk then introduces the functional model of the envisioned system architecture, along with its components. It then provides a high-level description of the logical architecture.

On-Device Learning for Extreme-Edge Intelligence

**Van-Tam Nguyen**  
(Télécom Paris, France)

**Van-Tam Nguyen** received the Diplôme d’Ingenieur from Ecole Superieure d’Electricite (Supelec), the M.Sc. degree in automatic and signal processing from University Paris XI, the graduation degree in image processing from EPFL, Switzerland, in 2000, the Ph.D. degree in communications and electronic from Ecole Nationale Superieure des Telecommunications (Telecom ParisTech) in 2004, and the H.D.R. degree from University Paris VI in 2016. He was a Rank A Guest Researcher at NICT, Japan (2012-2013). He has held visiting positions at UC Berkeley (2013-2016) and Stanford (2016-2017). He was director of Intek Institute (2018) and CEO of TAM-AI Co. Ltd (2019-2021). He received a Senior Marie Curie Fellowship from the European Commission in 2015. In 2022, he became the head of the communications and electronic department at Télécom Paris, where his research interests includes, ADCs, Cognitive Radio, Neural Networks, Tiny ML, embedded AI and AIoT.

**Abstract:** AI in telecommunications is currently at its all-time high as a solution to optimize and automate networks, keep them healthy and secure, while reducing operational costs. AI not only provides an ability for devices and systems to perceive, deduct, and act intuitively and intelligently, but also changes how we approach and solve technical challenges. Future 6G networks with their massive connectivity will elevate object capabilities to new levels as well as expand intelligence into new devices. With the proliferation of connected devices and the role of on-device intelligence becoming ever more important, the transformation of AI into fully distributed intelligence will be one of the keys to realize the full potential of future 6G networks.

In this talk, we will present the on-device learning approach through algorithm-system co-design which adapts pre-trained AI model to newly collected data after deployment. By training and adapting locally at the edge, the AI model can learn to improve its predictions and achieve continuous learning and user personalization.

A 6G Differentiated Services Vision and related Challenges

**Emmanuel Dotaro**  
(VP, Fellow 5G-6G expertise, Thales, France)

**Emmanuel Dotaro** is VP, Fellow 5G-6G expert at Thales. He is in charge of 6G topics across the Thales group with CTO organization. He received an M.S. degree in Computer Science from the University of Versailles, France in 1996. He was three years with the Institut National des Telecommunications Performance Evaluation lab. as PhD student while holding a teaching position at the University of Versailles.

He joined in 1999 the Alcatel Research and Innovation lab, at Marcoussis, France. He was director of research on networking topics at Bell Labs including successively Packet Transport Infrastructure and Semantic and Autonomic Technologies. He joined Thales in 2009 as director of innovation for C4I systems and was until 2022 the director of ICT and Security labs at Thales Secure Communications and Information Systems. He holds more than 30 papers as author or co-author as well as more than 40 patents in the ICT field. He is at the initiative, contributor or leader of various European or national collaborative R&D projects. He is serving at various international conference or journal Technical Committees. Beside his current research and innovation management activities he is involved in various National or European ICT and Cybersecurity initiatives: – He serves at the 6G-IA association Governing Board as well as specific Task Forces or Working Groups (Verticals, Policies, Security,…). Although, he is devoted to foster collaborations between Network and Security communities/ecosystems.

He is member of the NetworldEurope Steering Board and expert group. Belonging to the editors of the European Strategic Research and Innovation Agenda and in particular Security chapter. – he is Participating to Scientific committee, certification and research activities of ECSO association (cybersecurity community) – He is the chair of the Cyber & Security Hub (260+ members) from Systematic Paris-Region cluster – He is active in multiple industrial and research digital-related ecosystems such as Cyber Campus, Strategic digital infrastructure committee and Strategic Security Industry in France.
The New NTN (Non-Terrestrial Networks) Discussion

Halim Yanikomeroglu
(Carleton University, Canada)

Halim Yanikomeroglu received the BSc degree in electrical and electronic engineering from the Middle East Technical University, Ankara, Turkey, and the MSc degree in electrical engineering and the PhD degree in electrical and computer engineering from the University of Toronto, Canada. Since 1998 he has been with the Department of Systems and Computer Engineering at Carleton University, Ottawa, Canada, where he is now a Full Professor.

Dr. Yanikomeroglu’s research interests cover many aspects of wireless communications and networks, with a special emphasis on non-terrestrial networks (NTN) in the recent years. He has given 110+ invited seminars, keynotes, panel talks, and tutorials in the last five years. He has supervised or hosted over 150 postgraduate researchers in his lab at Carleton. Dr. Yanikomeroglu’s extensive collaborative research with industry resulted in 39 granted patents. Dr. Yanikomeroglu is a Fellow of the IEEE, the Engineering Institute of Canada (EIC), and the Canadian Academy of Engineering (CAE). He is a Distinguished Speaker for the IEEE Communications Society and the IEEE Vehicular Technology Society, and an Expert Panelist of the Council of Canadian Academies (CCA|CAC).

Dr. Yanikomeroglu is currently serving as the Chair of the Steering Committee of IEEE’s flagship wireless event, Wireless Communications and Networking Conference (WCNC). He is also a member of the IEEE ComSoc Governance Council, IEEE ComSoc GIMS, IEEE ComSoc Conference Council, and IEEE PIMRC Steering Committee. He served as the General Chair and Technical Program Chair of several IEEE conferences. He has also served in the editorial boards of various IEEE periodicals.

Dr. Yanikomeroglu received several awards for his research, teaching, and service, including the IEEE ComSoc Satellite and Space Communications TC Recognition Award (2023), IEEE ComSoc Fred W. Ellersick Prize (2021), IEEE VTS Stuart Meyer Memorial Award (2020), and IEEE ComSoc Wireless Communications TC Recognition Award (2018). He received best paper awards at IEEE Competition on Non-Terrestrial Networks for 5G in 2022 (grand prize), IEEE ICC 2021, IEEE WISEE 2021 and 2022.

Abstract: NTN (non-terrestrial networks) will arguably be the most prominent aspect of 6G. Most of the novel elements in the ITU 6G wheel diagram (ITU-R WPSD Recommendation Framework for IMT-2030), such as coverage, interoperability, sustainability, and resilience, can simply be read as “NTN”.

The NTN expression has been used to refer to the SatCom paradigm almost exclusively until recently. It is now increasingly acknowledged that within NTN, there are separate satellite, HAPS (high altitude platform station), and UAS (unscrewed aerial systems) paradigms with their own special dynamics.

NTN is not only for connectivity; the framework includes connectivity, computing, edge intelligence, surveillance, security, sensing, monitoring, positioning, localization, navigation, and more. The humanity will demonstrate its full potential in every dimension (economic prosperity, wellbeing, equal opportunity, environmental, and more), when the communities get ultra-connected with a sustainable, reliable, resilient, intelligent, green/clean/econo-friendly, secure, ubiquitous & affordable, and ultra high-speed “network of networks” with terrestrial (6G and beyond) and non-terrestrial (space and stratospheric) components.

The NTN discussion will continue throughout the 2030s as well (the beyond-6G era) – exciting times indeed…

A Test & Measurement Perspective on Integrating Artificial Intelligence into 6G Future Networks

Michael Dieudonné
(Keysight Technologies, Belgium)

Michael Dieudonné is currently the Director of Keysight Technologies Belgium. He is also an R&D Department Manager of Keysight Laboratories and supervises research performed in different domains around 5G/6G wireless and network test, and high-frequency metrology. He currently works on test automation (OPentap.io), Open Radio Access Network (ORAN) test, the Internet of Things (IoT) test, 5G test, and 6G test. He coordinates the 6G-SANDBOX SNS-JU project and is member of the 6G-IA Board. Over the years he has been active in various international projects, such as the EURAMET EMPIR MET5G Project (on 5G EMF), coordinated European Union (EU) SAMURAI Project defining early day multiple input multiple output (MIMO) techniques for 4G systems, and European Union-Horizon 2020 (EU-H2020) Triangle (test of application in a 5G context).

Abstract: The cellular technology has taken a great leap forward over the past decade. Even if 5G has brought tremendous change, 6G mobile networks will represent the underlying fabric of the future network deployments. Societies are increasingly reliant on communications in a broader sense, making them one of the critical infrastructures. 5G evolution and 6G are expected to push the boundaries of mobile networks’ trustworthiness, reliability, and robustness to a level where the networks must fulfill the needs of most mission- and business-critical use cases.

In increasingly complex future mobile networks artificial intelligence (AI) will play one of the key roles and an optimal test infrastructure is critical for its advancement in mobile communications.

Therefore, trial networks, which refer to fully configurable, manageable, and controlled end-to-end networks, composed of both digital and physical nodes will be instrumental in the evaluation of AI embedded in the infrastructure of the future mobile networks. An exhaustive and modular facility for the European experimentation ecosystem is required to support the next decade technology and research validation processes needed on the pathway towards 6G. A rich and extensible toolbox complemented by automated experimentation capabilities will enable the evaluation of 6G KPIs and KVIs.
3D networks: towards integrated Land-Sky-Space Communications

The advancements in communication networks towards and those made within the aviation industry and the space communications are promising for researchers and industries to a federating 6G network in the form of 3D-integrated networks.

The integration of Terrestrial and Non-Terrestrial Networks (NTN) namely Mobile networks, Drones, High Altitude Platforms (HAPs), LEO and GEO satellites, is being investigated to provide connectivity to mission-critical and commercial users as well as for multiple usages in aero-connectivity.

The network and infrastructure coverage extension and reliability are major motivations for such a holistic multi-technology architecture. Therefore, both design and management schemes for 3-dimensional (3D) 6G networks should meet emerging requirements including Urban Air Mobility and be able to bridge gaps identified in today’s communication networks.

In this direction, multiple research projects are working to provide intelligent and optimized solutions. The interoperability for such heterogenous 6G networks is yet a cornerstone especially when it comes to security and trustworthiness.

This 6G Panel Session is an opportunity to hear from experts in industry and academia about the technical and standardisation challenges behind 3D Land-Sky-Space communication networks.

Amina Boubendir (Airbus, France)

Amina Boubendir is Head of Research and Standardisation at Airbus Defence and Space. She promotes research and technology to overcome connectivity and secure communications challenges through development projects on 5G/6G networks and software-oriented design of end-to-end networks, including satellite communications, arial platforms, and AI-based automated management. Sitting at engineering leadership boards, Amina leads the connectivity roadmap and Airbus contributions at major European and global SDOs like, 3GPP, TMForum, ETSI ISGs, and IEEE DIFI consortium. She represents Airbus at the European 6G Industry Association (6G-IA) and is a member of the Advisory Group of the European 6G Flagships Hexa-X and Hexa-X II.

Amina led a number of projects within Orange Labs in collaboration with industry and academia. She was an expert member of the Orange experts’ community on Networks of the Future. Amina has a PhD in networks and computer science from Télécom Paris and a publication record of 30+ publications.

Dinh-Thuy PHAN HUY

Dinh-Thuy PHAN HUY is currently the Referent of the Community of Orange Experts on Future Networks, at Orange Innovation/Networks entity. She also is research project manager. She received the degree in engineering and the Ph.D. degree in electronics and telecommunication from the National Institute of Applied Sciences of Rennes, France, in 2015. In 2001, she joined France Telecom R&D (now Orange Innovation), Châtillon, France. She has contributed to and led several collaborative research projects on 5G. She is co-inventor of more than 40 patents. She is the recipient of the “Prix Irène Joliot Curie 2018 – catégorie Femme-Recherche-Entreprise” from the French Ministry of Education and Research. She is a Senior Orange Expert and an IEEE senior member. Her research interests include wireless communications and 6G. She is currently involved in Hexa-x II EU project on 6G on Zero-Energy Devices, in RISE-6G EU project on reconfigurable intelligent surfaces (as workpackage leader on sustainability and security), in the IEEE Emerging Technology Initiative on RIS (as industry liaison officer), in 3GPP Ambient IoT and in the ETSI ISG RIS.

Marius Corici

Marius Corici is a senior researcher at the Fraunhofer FOKUS Institute. He has received his Diploma-Engineer degree at the Polytechnia University of Bucharest on Nomadic Satellite-Based VehIP Infrastructure. He has received his Doctoral Degree in 2013 on Self-Adaptable IP Control in Carrier Grade Mobile Operator Networks. Currently, he is the deputy head of the Software-based Networks division of Fraunhofer FOKUS, leading the research and development teams for the Open5GCore (www.open5gcore.org) and NEMI (www.nemi-project.org) toolkits and acting as a research pathfinder for the evolution towards vertical sectors and wide area networks as well as the design and specification of novel beyond-5G features and 6G architectures. Furthermore, he is acting as researcher at the Technische Universität Berlin, preparing the lectures on 5G of the department next generation networks (Architekturen der Vermittlungsknoten – AV) (www.av.tu-berlin.de).

Dominic A. Schupke

Dominic A. Schupke is a research leader in reliable communication networks, currently focusing on Wireless Communications at Airbus, in Munich, Germany. He is also a lecturer in Network Planning at Technical University of Munich (TUM). Prior to Airbus, he was with Nokia, Siemens, and TUM. He studied Electrical Engineering and Information Technology at RWTH Aachen, Imperial College London, and TUM, where he received a Dipl.-Ing. degree, an International Diploma, and a Dr.-Ing. degree (summa cum laude), respectively. Dominic authored or co-authored more than 150 journal and conference papers (Google Scholar h-index 32), as well as several patents. Three contributions received a best paper award. His research interests include network architectures and protocols, routing, recovery methods, availability analysis, critical infrastructures, security, virtualization, network optimization, and network planning. His current research focus is on aerospace networks. Since 2010, Dominic has been Editorial Board Member of the IEEE Communications Surveys and Tutorials (Impact Factor 33.84 in 2021). He was also Associate Editor of the IEEE/OSA Journal of Optical Communications and Networking from March 2009 to August 2013. He served as TPC chair and TPC member for numerous conferences as well as Advisory Board member of European research projects. Dominic is Senior Member of IEEE, and member of Comsoc, VDE/ITG, and VDI. He was appointed to an IEEE ComSoc Distinguished Lecturer for 2013 and 2014. Dominic received the Outstanding Service Award of IEEE Optical Networking Technical Committee (ONTC) for Key Efforts in Industry Outreach in 2017.
Wednesday, October 18, 2023

8:30 - 9:00 Registration

9:00 - 9:15 Opening ceremony

9:15 - 10:45 TS #1: New architectures for 6G (1)

A Low-Complexity Handover Scheme Using Unsupervised Learning Techniques for 6G Multi-Networking
Guanghui Ma and Mohammad Khalili (University of Oulu, Finland); Rajendran Parthiban (Electrical and Computer Systems Engineering Department, Monash University, Australia); Marcos Katz (University of Oulu, Finland)

MEC Implementation in NFV Architecture Supporting 5G End-to-End Network Slicing
Yao-Chia Chan, Li-Hsing Yen and Tse-Han Wang (National Yang Ming Chiao Tung University, Taiwan); Chien-Chao Tseng (National Chiao-Tung University, Taiwan)

A Generic High-Availability Solution to Next-Generation Mobile Core Networks
Yi Chen & Chien Chen & Je-Wei Chang & Jyh-Cheng Chen (National Yang Ming Chiao Tung University, Taiwan)

Internet of Edges architecture for 6G
Guy Pujolle (Sorbonne University, France)

10:45 - 11:15 Coffee Break

11:15 - 12:15 Keynote 1: 6G Challenges and some solutions
Speaker: Rahim Tafazolli (University of Surrey, UK)

12:15 - 13:30 Lunch Break

Speaker: Ari Pouttu (University of Oulu, Finland)

14:30 - 15:35 TS #2: IoT and sensing in 6G

Survey on Integrated Sensing and Communication Performance Modeling and Use Cases Feasibility
Silvio Mandelli & Marcus Henninger & Maximilian Bauhofer & Thorsten Wild (Nokia Bell Labs, Germany)

True 3D Holography: A Communication Service of Tomorrow and Its Requirements for a New Converged Cloud And Network Architecture on the Path to 6G
Ingo Friese (Deutsche Telekom Laboratories, Germany); Sergiy Melnyk (German Research Center for Artificial Intelligence, Germany); Louay Bassbouss (Fraunhofer FOKUS, Germany); Tobias Pfandzelter (Technische Universität Berlin & Einstein Center Digital Future, Germany); Prasenjit Dhara (Technische Universität Ilmenau, Germany & Audiovisual Technology Group, Germany); Mandy Galkow-Schneider (Deutsche Telekom AG, Germany); Enrico Zschau (SeeReal Technologies GmbH, Germany); Qiuheng Zhou (German Research Center for Artificial Intelligence (DFKI GmbH), Germany); Alexander Zoubarev (Fraunhofer FOKUS, Germany); Hans Schotten (DFKI, Germany); David Bembach (TU Berlin, Germany); Arndt Kritzner (Logic Way GmbH, Germany); Steve Göring & William Menz & Alexander Raake (Technische Universität Ilmenau, Germany); Wolfgang Rüther-Kindel and Fabian Quaeck (Technical University of Applied Sciences Wildau, Germany); Nick Stuckert (Technische Hochschule, Germany); Robert Vilter (University of Applied Sciences Wildau, Germany); Andy Neparidze (Fraunhofer FOKUS, Germany)

15:35 - 16:00 Coffee Break

16:00 - 17:20 TS #3: Secure 6G

The use of statistical features for low-rate denial of service attack detection
Ramin Fuladi (Ericsson & Boğaziçi, Turkey); Tuncer Baykas (Kadir Has University, Turkey); Emin Anarim (Bogazici University, Turkey)

On the Security of 6G Use Cases: AI/ML-specific Threat Modeling of All-Senses Meeting
Leysi Karaçay & Zakaria Laaroussi and Sonika Ujjwal & Elif Ustundag Soykan (Ericsson Research, Turkey)

Towards a Blockgraph-based Trustless Authentication Scheme for Future 6G Technology
David A. Cordova Morales & Thi Mai Trang Nguyen & Guy Pujolle (Sorbonne University, France)

Securing Private 5G Campus Networks: Abstract Survey on Current Status, Security Threats, and Research Landscape
Hubert Dijulicheu (Technische Universität Kaiserslautern, Germany); Sachinkumar Bavikatti Mallikarjun, Mohammad Asif Habibi, Nandish P. Kuruvatti and Hans D. Schotten (University of Kaiserslautern, Germany)

17:20 - 18:00 Posters & Demos session

Implementation of Software-Defined Adaptive DCOfDM for Vehicular Visible Light Communication (Poster)
Daniel K. Tettey (Ozyegin University, Turkey); Mohammed Elamassie(Ozyegin Üniversitesi, Turkey); Murat Uysal(Ozyegin University, Turkey)

Zero-Energy-Device for 6G: First Real-Time Backscatter Communication thanks to the Detection of Pilots from an Ambient Commercial Cellular Network (Demo)
Papis Ndiaye (ORANGE, France); Dinh-Thuy Phan-Huy (Orange, France); Ayman Mostafa Hassan(Benha University, Egypt); Jingyi Liao, Xiyu Wang, Kalle Rutik and Riku Jääntti (Aalto University, Finland)

Eduardo Kochenberger Duarte (Halmstad University, Sweden); Mikael Ermeberg&H&E Solutions AB, Sweden); Edison Pignatno(UFRGS, Brazil); Boris Bellalta (Universitat Pompeu Fabra, Spain); Alexey Vinel(Halmstad University, Sweden)

Resilient manufacturing through 6G mechanisms: Handling of unexpected situations in industrial environments (Demo)
Sokratis Bampounakis and Antonis Karousalides (WINGS ICT Solutions, Greece); Panagiotis Demestichas(University of Piraeus, Greece); Frederic Fauchex & Bessem Sayadi (Nokia Bell-Labs, France)
Thursday, October 19, 2023

**9:00 - 09:45 TS #4: Non-terrestrial 6G**

**Distributed Q-Learning-Based UAV-Assisted Small World Wireless Network for Energy-Efficient and Delay-Critical Data Transmission**
Sriram Mahateja Akella and Kamar Mubasier (University of Agder, Norway); Maximilian Michallik (Technical University of Munich, Germany); Srerivasa Reddy Yeduri and Linga Reddy Cenkeramaddi (University of Agder, Norway)

**A Data Collection Scheme for IoT Using NOMA Techniques in UAV-LEO 6G Networks**
Tsang-Ling Sheu (National Sun Yat-Sen University, Kaohsiung, Taiwan); Yerra Prathyusha (National Sun-Yat-Sen University, Taiwan)

**Optimizing Network Performance and Reliability with an Integrated SD-WAN and Satellite 6G Architecture**
Luca Borgianni (University of Pisa, Italy); Davide Adami (CNIT Pisa Research Unit, University of Pisa, Italy); Stefano Giordano (University of Pisa, Italy)

**9:45 - 10:45 Keynote 3: On-Device Learning for Extreme-Edge Intelligence**
*Speaker: Van-Tam Nguyen (Télécom Paris, France)*

**10:45 - 11:15 Coffee Break**

*Speaker: Emmanuel Dotaro (Thales, France)*

**12:15 - 13:30 Lunch Break**

**13:30 - 14:30 Keynote 5: The New NTN (Non-Terrestrial Networks) Discussion**
*Speaker: Halim Yanikomeroglu (Carleton University, Canada)*

**14:30 - 15:35 TS #5: Software-driven 6G**

**Organic 6G Networks: Ultra-Flexibility Through Extensive Stateless Functional Split**
Marius Corici, Fabian Eichhorn & Hauke Buhr (Fraunhofer FOKUS, Germany); Thomas Magedanz (Fraunhofer Institute FOKUS / TU Berlin, Germany)

**A 6G Function Placement Framework based on Complex Networks and Evolutionary Dynamics**
Mariàlisa Scatà (University of Catania, Italy); Aurelio La Corte (Ministry of Enterprises and Made in Italy, Italy); Andrea Marotta (University of L’Aquila, Italy & WEST Aquisa SRL, Italy); Fabio Graziosi (University of L’Aquila, Italy); Dajana Cassioli (University of L’Aquila, Italy)

**15:35 - 16:00 Coffee Break**

**16:00 - 17:00 TS #6: AI native 6G**

**AI/ML driven network automation/orchestration techniques for 6G**
Ambrose Kam (ASME, IEEE, AIAA & Lockheed Martin, USA); Michael Nance and Robert Hale (Lockheed Martin, USA)

**Embedded AI and Computation Offloading for 6G Green Communication**
Naila Bouchemal (ECE Paris, France)

**AI-Assisted Edge Computing for Multi-Tenant Management of Edge Devices in 6G Networks**
Nader Mir (San Jose State University, USA)

**Distributed Learning for Application Placement at the Edge Minimizing Active Nodes**
Claudia Torres-Pérez (i2CAT Foundation, Spain); Estefania Coronado (Universidad de Castilla-La Mancha & Fundació i2CAT, Internet i Innovació Digital a Catalunya, Spain); Cristina Cervelló-Pastor (Universitat Politècnica de Catalunya, Spain); Juan Sebastian Camargo (i2CAT Foundation, Spain); Muhammad Shuaib Siddiqui (Fundació i2CAT, Internet i Innovació Digital a Catalunya, Spain)

**17:00 - 18:00 Panel: 3D networks: towards integrated Land-Sky-Space Communications**
*Moderator: Amina Boubendir (Airbus, France)*

**Panelists:**
- Marius Corici (Fraunhofer FOKUS Institute, Germany)
- Dominic A. Schupke, (Airbus, Germany)
- Dinh-Thuy Phan-Huy (Orange, France)

**18:00 - 19:00 Welcome Reception**

**19:00 - 09:45 TS #7: AI native 6G**

**Distributed Intelligent Resource Orchestration (Demo)**
David Kule Mukuli (Nokia Networks France, France); Abdelkader Outtagarts (Nokia Bell Labs, France)

**6G RAN-Core Control Plane Convergence Essential Functionality Study**
Marius Corici (Fraunhofer FOKUS, Germany); Elena-Ramona Modroiu (Technische Universität Berlin, Germany); Fabian Eichorn and Eric Troudt (Fraunhofer FOKUS, Germany); Thomas Magedanz (Fraunhofer Institute FOKUS / TU Berlin, Germany)

**16:00 - 17:00 Coffee Break**

**17:00 - 18:00 Panel: 3D networks: towards integrated Land-Sky-Space Communications**
*Moderator: Amina Boubendir (Airbus, France)*

**Panelists:**
- Marius Corici (Fraunhofer FOKUS Institute, Germany)
- Dominic A. Schupke, (Airbus, Germany)
- Dinh-Thuy Phan-Huy (Orange, France)

**20:00 - 22:00 Conference Dinner**

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## Friday, October 20, 2023

### 9:30 - 10:45 TS #7: New architectures for 6G (2)

**CRAP: Clutter Removal with Acquisitions Under Phase Noise**  
Marcus Henninger (University of Stuttgart & Nokia Bell Labs, Germany); Silvio Mandelli, Artjom Grudnitsky and Thorsten Wild (Nokia Bell Labs, Germany); Stephan ten Brink (University of Stuttgart, Germany)

**Experimental Demonstration of 3D Reflected Beamforming at sub6GHz thanks to Varactor Based Reconfigurable Intelligent Surface**  
Philippe Ratajczak (Orange Innovation, France); Eric Seguenot (Orange Labs, France); Dinh-Thuy Phan-Huy (Orange, France)

**Minkowski Based Microwave Resonator for Material Detection over Sub-6 GHz 5G Spectrum**  
Ali Ismael Arwer (Mustansiriyah University, Iraq); Mohammad Albakkshikenari (Universidad Carlos III de Madrid, Spain); Taher Elwi (UPM, Malaysia); Bal Virdee (London Metropolitan University, United Kingdom (Great Britain)); Lida Kouhalvandi (Dogus University, Turkey); Zaid A. Abdul Hassain (Mustansiriyah University, Iraq); Mohammad Soruri (University of Birjand, Iran); Nurhan Turkuer Tekan (Yildiz Technical University, Turkey); Naser Ojaroudi Parchin (Edinburgh Napier University, United Kingdom, United Kingdom (Great Britain)); Chan Hwang See (Edinburgh Napier University, United Kingdom (Great Britain)); Patrizia Livreri (University of Palermo, Italy)

**Implementation and Evaluation of LISP Publish/Subscribe**  
Tom Piron (Université de Liège, Belgium); Luigi Iannone (Huawei, France); Benoit Donnet (Université de Liège (ULg), Belgium)

### 10:45 - 11:15 Coffee Break

### 11:15 - 12:15 Keynote 6: A Test & Measurement Perspective on Integrating Artificial Intelligence into 6G Future Networks  
**Speaker:** Michael Dieudonné (Keysight Technologies, Belgium)

### 12:15 - 13:30 Lunch Break

### 13:30 - 14:30 Special session: AI for 5G/6G

**Using Public Datasets to Train O-RAN Deep Learning Models**  
Rodrigo S. Couto, Pedro Cruz, Miguel Elias M. Campista and Luis Henrique M. K. Costa (Federal University of Rio de Janeiro, Brazil)

**Generative AI in Mobile Networks: A Survey**  
Athanasiios Karapantelakis (Ericsson Research, Sweden); Pegah Alizadeh (Ericsson Research, Ericsson France); Abdulrahman Alabassi (Ericsson Research, Sweden); Kaushik Dey (Ericsson Research, India); Alexandros Nikou (Ericsson Research, Sweden)

**An Agile Conflict-Solving Framework for Intent-Based Management of Service Level Agreement**  
Nicollas Oliveira (UFF, Brazil); Igor Monteiro Moraes and Dianne Medeiros (Universidade Federal Fluminense, Brazil); Martin Andreoni Lopez (Technology Innovation Institute, United Arab Emirates); Diogo M. F. Mattos (Universidade Federal Fluminense & MidiaCom, Brazil)

### 14:30 - 15:30 Special session: Digital Twin for 6G  
**Chaired by:** Noël Crespi (IMT, France)

**Generative Twin for 6G and Beyond 5G Networks: Vision, Challenges and Architecture**  
Marius Corici and Hauke Buhr (Fraunhofer FO KUS, Germany); Thomas Magedanz (Fraunhofer Institute FO KUS / TU Berlin, Germany)

**Network Digital Twins in 6G Network and Service Automation**  
Laurent Ciavaglia (Nokia Bell Labs, France)

**Digital Twins, the road from Descriptive to Prescriptive Modeling**  
Roberto Minerva (IMT, France)

### 15:35 - 16:00 Coffee Break

### 16:00 - 16:30 Closing Conference