

# The 7<sup>th</sup> European 5G Conference

13 & 14 March 2023

Bluepoint, Brussels

## Day 1

09:00 – 09:20      **Keynote Presentation**

**Pearse O'Donohue**, Director, Future Networks, DG CONNECT, European Commission

09:20 – 09:40      **Keynote Presentation**

**Kostas Masselos**, Chairperson, BEREC

### **Session 1: Where are we? Progress in 5G network rollout & expansion**

One of the key aims of the European Commission's 'Path to the Digital Decade' targets was to deploy 5G in all populated areas by 2030. Member states are working hard to deliver on this target and continuing both allocation of key 5G spectrum bands and rollout of networks. However, progress in some areas remains slow, with the situation not being helped by wider societal challenges such as rising energy costs and the cost-of-living crisis affecting sales of smartphones. June this year will see the release of the first annual 'State of the Digital Decade' report, which will provide an opportunity to look at the progress being made and the extent to which member states are on track. This session will take stock of the current situation around Europe and at the progress that has been made. It will look at the challenges and obstacles that remain, and at how policymakers and industry representatives need to come together to ensure that these are overcome.

- What is the latest progress with regards to the allocation of spectrum in the 5G pioneer bands across the EU and the rollout of networks in these bands?
- To what extent can it be said that member states are on track to hit the targets, and what findings and recommendations can be expected from the forthcoming 'State of the Digital Decade' report?
- To what extent should the Commission be looking to take action against member states deemed to be behind schedule when it comes to the targets that are being set?
- To what extent are issues of excessive red tape and bureaucracy still causing a challenge and what impact can the revision to the Broadband Cost Reduction Directive (BCRD) and the Gigabit Infrastructure Act (GIA) have on addressing this?
- What is the state of play with regards to the development of cross-border corridors and the technologies that are required in order to enable 5G based services to cross from one country to another?
- What should be considered as '5G' within the context of the deployment targets, and how can it be ensured that the deployment that is being reported meets the key standards that should be expected?
- What work is being done to study 5G quality of service or quality of experience in networks that are being rolled out, and to what extent is there a need to continue to track these metrics into the future?
- To what extent is the impact of rising energy costs providing an obstacle for 5G deployments or leading to MNOs altering plans for network rollout (for example when considering the high energy costs relating to massive MIMO antennas required for 3.5GHz networks)?
- Where does Europe sit on the global level when it comes to 5G deployment, and how can EU and national policymakers work together to remove barriers to deployment and ensure that we maintain pace with other regions such as the US and Asia?

Moderator: **Ilsa Godlovich**, Director, Brussels Office, WIK-Consult

09:40 – 10:50 **Panel Discussion**

**Carlota Reyners Fontana**, Head of Unit, Electronic Communications Policy, European Commission  
**Eric Fournier**, Director, Spectrum Planning and International Affairs, ANFR  
**Luigi Ardito**, Senior Director Government Affairs EMEA, Qualcomm  
**Cecil Ameil**, Global Spectrum & Regulatory Policy, GSOA  
**Pedro Mota Soares**, Secretary General, APRITEL Portugal

10:50 – 11:15 **Morning Refreshments**

## **Session 2: Financing a long-term, sustainable 5G ecosystem - delivering the required public and private sector investment**

Through the Recovery and Resilience Facility (RRF), Connecting Europe Facility Digital programme (CEF Digital) and other investment mechanisms, Europe is making an unprecedented level of public financing available in order to help drive forward the development of network infrastructures and boost 5G network rollout. Despite this, Europe still faces an investment gap in both private and public funding when compared to other regions. And with construction and energy costs related to the deployment of networks spiralling, telecom operators across Europe are stating that there is an urgent need for additional funding to deliver and maintain a long-term sustainable 5G ecosystem. They argue that part of this financial burden should be met by BigTech firms, who contribute a large proportion of the internet traffic that is seen. With a European Commission consultation around this issue scheduled for early 2023, this session will examine the arguments for and against this 'fair contribution' debate, and also focus on funding elements more broadly to explore the work that is being done to deliver the necessary public and private funding for 5G, and ultimately the best and fairest way forward to fund 5G and Europe's digital future.

- Where does Europe sit compared to other regions around the world when it comes to the levels of private and public funding that is being seen for 5G deployment?
- Where should the balance lie between private and public 5G investment? How can policymakers and connectivity providers work together to plug the funding gap and ensure that the required investment is secured?
- To what extent is it fair to ask larger content and application providers to pay a network usage fee to help bear some of the cost of Europe's telecom networks?
- What would be the socioeconomic effects of this approach, and what effect could it have on consumers, businesses and end users?
- To what extent could it have an impact on innovation and competition within telecom markets and even on net neutrality principles?
- What ultimately is the best and fairest way forward to find the required funding to continue to rollout and upgrade networks and secure Europe's digital future?

Moderator: **Clement Perarnaud**, Research Fellow, CEPS

11:15 – 12:25 **Panel Discussion**

**Peter Stuckmann**, Head of Unit - Future Connectivity Systems, European Commission  
**Maarit Palovirta**, Senior Director of Regulatory Affairs, ETNO  
**Siada El Ramly**, Director General, DOT Europe  
**Liza Bellulo**, General Secretary, Bouygues Telecom  
**David Abecassis**, Partner, Analysys Mason

12:25 – 13:30 **Lunch**

### **Session 3: Cyber Security & 5G – Securing Europe’s 5G Networks and Architecture**

Europe is continuing to lead the way when it comes to delivering a framework that secures 5G networks and architecture. Work continues on the implementation of the recommendations made by the EU Toolbox on 5G Cybersecurity, and alongside this, Member States, with the support of the European Commission and ENISA, earlier this year published a report providing an in-depth analysis of the security implications of Open RAN. In addition, the details of a new 5G cyber certification scheme are expected to be finalised by ENISA this year. This session will explore the collaborative efforts that are continuing across Europe to bolster cybersecurity and to counter the vastly expanded threat landscape resulting from the roll out of 5G. It will look at how specific 5G related security initiatives fit within the context of Europe’s broader cyber security framework, and at the work that is being done alongside international partners to secure the global supply chain.

- What latest progress has been made with regards to the implementation of the EU 5G Toolbox across member states, and what challenges still remain?
- What specific security challenges could be raised by the introduction of OpenRAN style architecture and how can these be addressed?
- What were the key findings and recommendations of the member state report into this area, and what next steps are now being taken?
- What progress has been made in moving forward with the proposed 5G cyber certification scheme?
- What will the scheme look like and to what extent will it meet its objective of addressing the risks related to technical vulnerabilities of networks and increasing trust and security in 5G products and services?
- What work is being done on an ongoing basis by the NIS Cooperation Group to continue to monitor and assess issues related to emerging trends and developments in the 5G supply chain, are there any other specific risk areas emerging?
- How can emerging technologies such as AI and blockchain be harnessed to help secure the 5G supply chain?
- How can the specific work being conducted on 5G security be co-ordinated with other related legislative cybersecurity measures such as the Council's recommendation on critical infrastructure and the European chips act in order to further safeguard Europe's broader digital ecosystem?
- How is Europe working with other regions to ensure the security of the complex global 5G supply chain?

Moderator: **Samuel Tew**, Principal Consultant, Axon

13:30 – 13:35      **Introduction from Moderator**  
**Samuel Tew**, Principal Consultant, Axon

13:35 – 14:45      **Panel Discussion**  
**Andreas Mitrakas**, Head of Market Certification and Standardisation Unit, ENISA (European Union Agency for Cybersecurity)  
**Miguel Gonzalez-Sancho**, Head of Unit, Cybersecurity Technology and Capacity Building, DG CONNECT, European Commission  
**Katja Kmet Vrčko**, Head of Supervision Department for Operators, AKOS and Co-chair, 5G Cybersecurity Working Group, BEREC  
**Mikko Karikyto**, Chief Product Security Officer, Ericsson

#### **Session 4: 5G and Sustainability – Harnessing 5G to help achieve Europe’s climate targets**

At the recent COP27 Summit, Frans Timmermans announced that Europe is raising its 2030 target of reducing gas emissions from 55% to 57%. With a recent study claiming that at least 40 percent of the bloc’s carbon reduction solutions will rely on fixed-line and mobile connectivity, 5G is set to play a crucial role in hitting these targets. From smart cities and optimized buildings to streamlined transport networks, real-time monitoring and energy management systems to increased efficiency of inventory stocks and manufacturing – if harnessed in the right way then 5G offers the potential to enable organizations and communities everywhere to reduce our carbon footprint and move towards a more sustainable economy. At the same time however, rollout of 5G networks will also require millions of new cell antennas and billions of new devices, which initially has the potential to actually increase energy consumption and contribute to the climate change problem. This session will explore the impact of 5G on climate change from both angles. It will look at the work that is being done to mitigate the impact of 5G rollout on the environment; and crucially, explore the potential that 5G and the new use cases that it will enable can help play a role in helping Europe in meeting ambitious national and EU-wide 2030 goals for decarbonization.

- What latest estimates are being seen on the net environmental impact of 5G?
- How can the rollout of 5G networks be sustainably managed in areas such as e-waste and energy demand to allay concerns about the possible environmental impact?
- How are technology advancements, energy-saving solutions and intelligent management being applied to reduce energy consumption of networks?
- What work is being done at a European level to develop indicators to measure the environmental footprint of 5G networks and to share best practices and a common approach to delivering sustainability across member states?
- How can 5G be best harnessed to help contribute to the EU’s 2030 Climate Target Plan and more broadly to the UN Sustainable Development Goals?
- How can policymakers, connectivity providers and vertical users work together to identify the best ways to deploy and use 5G based applications and services across different sectors in order to accelerate climate actions and the transition to a circular economy?
- What 5G use cases have the biggest potential in helping to reduce carbon emissions and which sectors could be positively impacted in the best way? What work needs to be done to maximise this potential?
- What is being done at a European level to support both the public and private sectors to accelerate their green and digital transformation and to reduce their carbon footprint?

Moderator: **Manuel R. Marti**, Programme Manager, Tech UK

14:45 – 15:55      **Panel Discussion**

**Johannes Theiss**, Team Leader - Policy Coordination, Future Connectivity Systems Unit, European Commission

**Lara Connaughton**, Sustainability Lead, International Unit, Comreg

**Jean-Pierre Faisan**, Chair, Communications Working Group, EWIA

**Janette Stewart**, Partner, Analysys Mason

**Azeddine Gati**, Head of Department, Green ICT, Orange

15:55 – 16:20      **Afternoon Break**

## **Session 5: Where next? Powering the next wave of innovation through 5G Advanced and AI**

5G Advanced is seen as the next major chapter of 5G development and is expected to deliver a whole new wave of new solutions and technology components. Amongst other things, it is expected to significantly improve the ways in which 5G can support AI and machine learning, which in turn has the potential to lead to more intelligent network management and improved performance of complicated, multi-antenna systems. This session will look at the differences that the emergence of 5G Advanced and AI-powered networks could make, the new features and enhancements that could emerge and the likely timeframe for this both in Europe and elsewhere.

- What new features and enhancements could we see as we move towards the next chapter of 5G development and the potential offered by a combination of 5G Advanced and AI starts to emerge?
- When is it expected that 5G Advanced become a commercial reality both in Europe and elsewhere around the world?
- How can 5G-A and AI be combined to improve the security, performance and efficiency of networks?
- What differences will this make in reality compared to what is being seen in the current 5G market?
- What new use cases could start to emerge and what is the potential offered across industries that look to leverage AI-powered 5G networks?
- What framework for the regulation of AI is emerging in Europe, and how will measures such as the AI Act and the Digital Act help to shape the role that AI plays in future connected societies?
- How could the movement towards 5G Advanced strengthen the role that satellites and NTN play in 5G?
- How can it be ensured that the benefits of this next wave of 5G evolution are realised as quickly as possible in Europe by all areas of societies, and what role do policymakers need to play in helping to facilitate this?

Moderator: **Marc Eschenburg**, Partner, Aetha Consulting

16:20 – 17:30      **Panel Discussion**

**Bart Van Caenegem**, Head of Sector – EIC Challenge-based Pathfinder, European Innovation Council and SMEs Executive Agency (EISMEA)

**Heidi Himmanen**, Chief Adviser, Finnish Transport and Communications Agency, Traficom

**Andreas Mueller**, Chairman, 5G-ACIA

**Marvin Chen**, Chief Strategy Officer, Wireless Network Product Line, Huawei

## Day 2

### **Session 6: Looking back | looking forward - what lessons can be learnt from the 5G journey?**

From the identification of early visions and technical goals through to eventual commercial deployment, the development of any new generation in wireless technology is broadly thought to have a 10-year cycle process. The path towards 5G in Europe can be said to have begun in 2012 with the launch of Project METIS - a multi stakeholder initiative, formed with the objective of laying the foundation of 5G. Now, just over a decade on and with 5G an established commercial reality, this interactive session will offer the opportunity to look back on the different phases of the 5G 'cycle', to discuss the successes and the failures, and as we move forward, look at the lessons that can be learnt.

- If we had the chance to turn the clock back 10 years, what would you do differently?
- What has been successful and what has not?
- What lessons can be taken forward as early thoughts on a 6G strategy begin?

Moderators: **Marc Eschenburg** Partner, Aetha Consulting & **Soren Sorensen**, Partner, Nera Economic Consulting

09:00 – 09:15

#### **Introductory Remarks**

**Volker Ziegler**, Senior Technology Advisor, Chief Architect, Nokia

**William Webb**, CTO, Access Partnership

**Stephen Pentland**, Group Policy & Public Affairs, Vodafone

09:15 – 10:00

#### **Voting session and room-wide discussion**

### **Session 7: New business and connectivity models in an evolving 5G ecosystem**

Telecom companies have invested heavily to roll out 5G services in countries across Europe, and there is now increasing pressure on them to explore new service offerings and business models in order to start seeing a return on these investments. At the same time, 5G is seeing the emergence of innovative new market entrants and shifting dynamics in the relationships between key industry players. Against this backdrop, this session will examine how traditional telco business models and the overall connectivity landscape is evolving in a 5G world. It will examine the changes that 5G is bringing to both the telecom ecosystem, and also to the way in which connectivity providers are interacting with both their customers and other technology providers. It will look at the opportunities that 5G offers for telecom and technology companies, and the best and fairest way forward in order to ensure the emergence of a long-term sustainable ecosystem that delivers economic value for them all.

- How has 5G impacted the profitability of MNOs and other connectivity service providers (CSPs) to date?
- How are these companies and other players thinking beyond their traditional business models in order to deliver innovative new services to consumers and enterprises and drive 5G revenue streams?
- How has 5G helped pave the way for new entrants and strategic alliances in the telecom market, and to what extent is this driving a need for structural change within the industry and a move towards a more integrated connectivity model?
- How is the relationship between telcos and OTT media companies evolving and what options are available going forward to ensure the long term sustainability of both sectors?
- What impact could be seen by the emergence of immersive technologies such as the metaverse? What challenges and opportunities does this offer to telcos and how could they necessitate further reorganisation of the telecom industry on an infrastructure level?

- How is the emergence of private networks impacting the traditional market for connectivity services? What new business model options are emerging and how are connectivity providers and other stakeholders adapting to take advantage of these?
- What are the possible directions ahead in order to ensure the emergence of a sustainable ecosystem that delivers economic value for all key 5G stakeholders - MNOs/connectivity providers, equipment vendors, OTT media companies, private enterprises, consumers and more? Is there a need for regulatory action to deliver this?

Moderator: **Michael Opitz**, Partner, Arthur D. Little

**10:00 – 11:10 Panel Discussion**

**Philippe Lefebvre**, Head of Sector, 5G Deployment Strategy, European Commission

**Cristina Data**, Director of Spectrum Policy and Analysis, Ofcom

**Lotte Abildgaard**, Director Public Policy, Europe, GSMA

**Lorelien Hoet**, Director, EU Government Affairs, Microsoft

**Roland Beutler**, Distribution Strategy, SWR

**11:10 – 11:30 Morning Break**

**11:30 – 11:45 Meeting Europe's Evolving Connectivity Requirements for 5G and Beyond**

**Eric Fournier**, Chairman, RSPG

**Session 8: WRC-23 and 5G – what should be Europe's aspirations and how can these be achieved?**

WRC-23 will see decisions made on a number of bands that are seen as hugely important for the evolution of 5G and beyond. The final conference preparatory meeting (CPM23-2) is due to take place just a few weeks following this conference, with WRC-23 itself now less than a year away. Europe, as well as the rest of the world, are moving towards their final preparations - the final opinion from RSPG was agreed at the end of 2022 and is now with the European Commission as it looks to finalise its proposal for a Council decision which will feed CEPT European common proposals to be adopted in May or September 2023. This session will take stock on the key agenda items related to spectrum for 5G and look at the positions that are emerging. It will discuss what Europe should be aiming for in terms of its key aims and objectives, and discuss the best way forward in order to ensure a successful WRC that meets the growing connectivity needs of 5G and other related technologies.

- What aspirations should Europe have for WRC-23? What should be the key aims and objectives and what needs to be achieved in order to consider the conference a success for the region?
- How can European stakeholders work together to ensure a co-ordinated approach that delivers the best prospects for the realisation of these objectives?
- What does each of the key industry players hope to achieve, and what impact will the decisions that come out of WRC-23 have on the continued growth of 5G and the evolution of other key technologies?
- What key spectrum bands for the evolution of 5G are up for discussion? What positions globally are emerging around these bands and what discussions are expected at CPM?
- What is the process at an EU level to develop EU positions? How is this feeding in to CEPT's development of final positions and European common positions?
- How can it be ensured that the connectivity needs of 5G are balanced with the needs of WiFi, satellite and other key technologies?

Moderator: **Marc Eschenburg**, Partner, Aetha Consulting

**11:45 – 11:55 Introductory Presentation**

**Alexandre Kholod**, Chairman - Conference Preparatory Group, CEPT

**11:55 - 13:05 Panel Discussion**

**Glyn Carter**, Future Spectrum Director, GSMA

**Mohaned Juwad**, Global Spectrum & Regulatory Policy, GSOA

**Ulrich Rehfuess**, Head of Spectrum Policy, Nokia

**Jaume Pujol**, Chair, Policy Working Group, BNE

**Martha Suarez**, President, Dynamic Spectrum Alliance

**Alexandre Kholod**, Chairman, Conference Preparatory Group, CEPT

As part of their opening remarks, all panellists will be asked to address the question *'What aspirations should Europe have for WRC-23? What should be the key aims and objectives and what needs to be achieved in order to consider the conference a success for the region?'*

**13:05 – 14:00 Lunch**

**Session 9: Mid-band spectrum - Where does the long-term balance lie between 5G and other key users?**

As we have moved beyond the initial launch phase of 5G, mid-band frequencies have become the main focus of the mobile industry when it comes to identifying additional spectrum that they say is now required for 5G growth in urban areas. A recent GSMA report stated that an average of 2GHz of mid-band spectrum is required to meet the needs of 5G, identifying the 3.5 GHz, 4.8 GHz and 6 GHz frequencies as providing options to deliver this. At the same time however, spectrum in the mid-band ranges is seen as essential for key users such as satellite and military, and for the delivery and expansion of WiFi. This session will look at how much additional spectrum in the mid-band frequencies is actually needed for the growth and evolution of 5G, and at the extent to which the need for the identification of new spectrum can be offset by re-farming or increasing efficiency in existing bands. Ultimately, it will discuss the long-term balance that we should be looking to deliver in mid-band frequencies between 5G and other users, and at how the needs of all key users can be met.

- How much spectrum in the mid-range frequencies is needed in both the short term and the long term in order to meet the needs of 5G?
- How can this be balanced with the needs for satellite, WiFi and military and how can it be ensured that all key users have sufficient bandwidth to meet current needs and those that may emerge in the future?
- What candidate bands are being considered as potential options for identification for 5G? Which offers the most potential and what would be the implications on incumbent users?
- What role can the re-farming of existing IMT spectrum or increasing the efficiency of use in mid-band frequencies be part of the solution to meet increasing demand and take the pressure off the need to identify new bands?
- With mid-band frequencies so highly sought after, what structures and systems are in place to monitor the use of spectrum across these frequencies and ensure that it is being used to its full potential?
- To what extent could new technological developments such as increased integration of AI and intelligent learning help to increase the efficiency of key mid-band frequencies?

- What should be the long-term balance within mid-band frequencies when it comes to spectrum that is available on a national licenced, local licenced, unlicenced and shared basis; and the overall bandwidth that is available to IMT, satellite and WiFi?

Moderator: **Andy Hudson**, CEO, Spectrivity

#### 14:00 – 15:10 **Panel Discussion**

**Heidi Himmanen**, Chief Adviser, Finnish Transport and Communications Agency, Traficom

**Alexander Kühn**, Head of Section on International and National Spectrum Management, BNetzA

**Guillaume Lebrun**, Global Connectivity Policy, Meta

**Mohaned Juwad**, Global Spectrum & Regulatory Policy, GSOA

**Jan-Hendrik Jochum**, Vice President Spectrum Policy & Projects, Deutsche Telekom

#### **Session 10: Policy Roundtable: Licencing approaches in the mmWave frequencies – is there a need for a rethink?**

The high capacity and ultrafast speeds of mmWave spectrum meant that it was initially seen as a critical part of the spectrum mix for 5G. Technical propagation challenges however have meant that the interest in these high frequency bands is not at the level that was initially expected – the 26GHz band was one of the EU's initial 'pioneer' bands for 5G, but many member states have still not yet licenced spectrum in the band or made it available. This has raised the question of whether regulators should be considering alternative licencing approaches when allocating spectrum in the mmWave frequencies, and whether the option of lightly licenced or unlicenced models might be an approach that kick-starts interest and allows for a broader range of 5G business cases. One new approach that is being proposed is in the UK where Ofcom have recently held a consultation in which they propose a split approach to authorising mmWave spectrum, offering auctioned citywide mobile licences only in major cities and making local spectrum licences available on a first come, first served basis everywhere else. Against this backdrop, this session will explore whether there is a need for a more flexible approach to licencing spectrum in the mmWave frequencies, and at the potential impact this may have both for 5G rollout in the bands and also on other key users.

- What are the obstacles that have held up the allocation of spectrum and the rollout of 5G in mmWave frequencies to date?
- To what extent could a more flexible approach to licencing help to overcome these obstacles and enable opportunities for a wide range of 5G users and applications across the country to access mmWave spectrum?
- What different approaches could be considered, and how much licencing is appropriate in these bands?
- What would be the pros of cons of exploring different lightly licenced or unlicenced models?
- What approach is being proposed by Ofcom in the UK and to what extent could this be a model that could be rolled out elsewhere?
- What potential do mmWave frequencies offer for meeting the needs for different vertical users, and to what extent could a change in licencing models help accelerate this?
- What impact may a change in licencing approach in mmWave frequencies have on other key users in the bands, for example fixed point-to-point links and satellite operators?
- With attention expected to switch to terahertz frequencies as we move towards 6G, what lessons can be learnt from experiences with mmWave bands to enable services to be rolled out in these bands as smoothly as possible?

Moderator: **Soren Sorensen**, Associate Director, NERA Economic Consulting

#### 15:10 – 16:00 **Policy Roundtable Discussion**

**Branimir Stantchev**, Head of Sector – Wireless Broadband, European Commission

**Lara Singer**, Principal Policy Advisor, Spectrum Awards, Ofcom

**Jonas Wessel**, Director, Resource Management Department, The Swedish National Post and Telecom Agency (PTS)

16:00 – 16:30 **Coffee and Final Networking Opportunity**