8th Sub Sahara Spectrum Management Conference

3rd & 4th August 2023 | Yaoundé, Cameroon

09:00 – 09:50 **Welcome and Keynote Presentations**
Minette Libom Li Likeng, Minister of Posts and Telecommunications of Cameroon
Kezias Mwale, Technical Coordinator, African Telecommunications Union
Ilham Ghazi, Head, Broadcasting Services Division, ITU
Luc Messi Atangana, Mayor of Yaoundé

Session 1: Final Preparation for WRC-23 – Finalising regional positions and overcoming the remaining challenges

ATU's final preparatory meeting for WRC-23 will take place the week after this conference, providing the final opportunity to set common regional positions for the African region across the key agenda items. Ahead of this crucial final meeting, this session will hear from key policymakers and industry leaders who are directly involved in the discussions on the challenges that they see as still remaining, their hopes and aims for WRC-23, and what in their opinion needs to be done in order to ensure that a positive outcome is delivered from the conference for the benefit of African citizens everywhere.

- What common ATU positions have now been agreed on the key agenda items for WRC-23?
- What were the key outcomes and conclusions from CPM and what perspectives and positions have emerged from other regions?
- What challenges still remain to be overcome, and what will be the key focus of discussion at the regional preparatory meeting (APM23-4) next week?
- What are the opinions of different stakeholder groups and sub-regional groups on the positions that have emerged? How can the African delegation now come together to ensure that the key regional objectives from WRC-23 are achieved?
- With WRC-23 also planning to see the setting of future agenda items to be discussed at WRC-27, what should be the priorities here, and what will likely be the next 'wave' of bands and issues to be focussed on?

Moderator: **Ahmed Boraud**, Head of Department, ARCEP Niger & Chair, ECOWAS

09:50 – 10:55 **Panel Discussion**
El Hadjar Abdouramane, Chairman, ATU Working Group on Fixed and Mobile Services for WRC-23
Victor Kweka, Manager, Spectrum Management, Tanzania Communications Regulatory Authority (TCRA)
Dan Obam, Special Advisor, Africa Policy & Regulatory Affairs, Huawei
Kamal Tamawa, Director of Public Policy, SSA, GSMA
Stephane Mebaley Ekome, Global Spectrum & Regulatory Policy, GSOA
Martha Suarez, President, Dynamic Spectrum Alliance

10:55 – 11:10 **The response from other regional groups**
Key policymakers involved with the preparation for WRC-23 in other regions will listen in to the panel discussion above and give their own key takeaways and thoughts.
Karim Hassine, Representative, ASMG

11:10 – 11:40 **Break**

Session 2: The future of the 470-694 MHz band – maximising the socio-economic value for Africa

The issue of the future use of the 470-694 MHz UHF band is seen as one of the most difficult and challenging agenda items to be discussed at WRC-23. No provisional regional position has yet been agreed by ATU members, and next week's CPM23-4 is set to be crucial in setting the future shape of the band. With positions across the rest of region 1 split, with Europe advocating 'no change' and a continuation of priority for terrestrial broadcast in the band, and the Arab Region favouring a co-primary mobile allocation in the band, the final decision from Africa could be critical in the overall direction of discussions at WRC-23. Against this backdrop, this session will hear from key stakeholders on their vision on the future of the band, and discuss the best way forward to maximise value for stakeholders throughout Africa.

- What is the current status of discussions on the 470-694MHz band in Africa as we head into next week's crucial CPM23-4 meeting?
- What positions are being seen elsewhere in region 1?
- What are the key arguments being put forward by key industry stakeholders such as IMT, broadcast and PMSE?
- What would be the impact for these sectors if the decision at WRC-23 goes against them?
- What are the challenges associated with coexistence of DTT and PMSE users with mobile industry in the band?
- To what extent could emerging new technologies and standards have the potential to help to make sharing of this kind a possibility either now or in the future?
- Where does the balance lie between the delivery of a coordinated approach and taking account of national differences? How important is it that a harmonised decision on the future of the band is reached both across Africa and the rest of region 1?

Moderator: **Zourmba Aboubakar**, Deputy General Manager, Telecommunications Regulatory Board, Cameroon

11:40 – 12:45 **Panel Discussion**
Basebi Moisinyi, Deputy Director Spectrum Management, BOCRA Botswana
Eiman Mohyeldin, Head of Spectrum Standardization, Nokia
Joe Frans, AUB Expert, Broadcast Networks Europe
Nada Abdelhafez, Head of Spectrum & Regulatory Affairs for Middle East and Africa, Shure
Bashir Gwandu, Executive Vice Chairman and CEO, National Agency for Science & Engineering Infrastructure (NASENI)

12:45 – 13:40 **Lunch**

Session 3: Decision time on the upper 6GHz band – maximising the benefit of this high value spectrum
Discussions are still continuing at pace on the future use of the upper 6GHz band and on whether mobile should be given co-primary status in the band or whether it should be made available on an unlicenced basis. A number of very different perspectives are being seen in different countries across region 1, and votes from African nations are set to play a big part in the decision on the future of the band that will be taken at WRC-23. Ahead of the crucial final regional preparatory meeting for WRC-23 which will take place next week, this session will look at the respective positions that are being taken by both the IMT and unlicenced communities on the best future use of the band, at the status across regulators and countries in the region. It will discuss the best approach for the use of this vital spectrum to ensure the maximum benefit for both incumbent and potential new users in the band, and most importantly, for the citizens of Africa.

- What positions are emerging for the use of the 6GHz band in countries across Africa? How can its socio-economic benefits be best maximised across both developed and developing countries?
- What are the positions in other parts of region 1 and globally?
- How important is it that a harmonised approach is achieved? Given the different positions that are being seen, to what extent is it likely that this can be achieved across Africa, region 1 and globally?
- What are the main points being made by the IMT and WiFi communities on why their position offers the best socio-economic value for the use of the band?
- How can it be ensured that the needs of key incumbent users in the region (for example satellite) are also considered?
- What would be the impact for the development of IMT and WiFi if the technologies are not able to access the spectrum that they hope for in the upper 6GHz band?

Moderator: **Ilham Ghazi**, Head, Broadcasting Services Division, ITU

13:40 – 14:45 **Panel Discussion**
Tabi Elias Mbi, Director of Frequency Management, Telecommunications Regulatory Board, Cameroon
Richard Makgothlo, Radio Frequency Specialist, ICASA

Ndukayo Zamba Leonel, Assistant Director, Spectrum Management, National Communications Authority, South Sudan
Shiv Bakhshi, Vice President, Industry Relations, Ericsson
Fargani Tambeayuk, Head of Connectivity Policy, Meta

Session 4: Maximising efficiency and balancing different needs in the 3.5GHz spectrum
Spectrum in the 3.5GHz C-band has been hotly contested by mobile and satellite users for many years – it first appeared as an item on the WRC agenda at WRC-03. 20 years down the line, discussions on the suitable balance to meet the needs of both IMT and satellite users in the band are again on the agenda for WRC-23. The 3.4GHz-3.6GHz portion of the band is already allocated to mobile on a primary basis across Africa, and it is the future of the 3.3GHz-3.4GHz and the 3.6GHz-3.8GHz portions is now due to be discussed in detail this time around. The open issue for the ATU region is whether to allow IMT in the entire 3.6-3.8 GHz range or to limit it to the 3.6-3.7GHz portion only. This session will hear from proponents advocating both of these different approaches, and more broadly look at the best way forward to deliver the maximum socio-economic value for Africa across these key frequencies.

- How does the situation in the C-band across Africa compare with that currently seen in other regions around the world?
- What options for the future of the C-band were put forward at CPM as part of AI1.3, and what would be the best approach for Africa? To what extent is there an argument for building in flexibility via footnotes to enable administrations to select the most appropriate approach for them?
- Should African countries identify for IMT in the Radio Regulations the whole 3600-3800 MHz, or only the 3600-3700 MHz?
- Can a solution be found that provides the flexibility that is needed to deliver both the required connectivity for 5G and also the regulatory certainty that satellite operators need to safeguard their continued services in the band?

Moderator: **Jonathan Wall**, Manager, Aetha Consulting

14:45 – 15:50 **Panel Discussion**
Basebi Moisinyi, Deputy Director Spectrum Management, BOCRA Botswana
Arthur Gnonsou, Radio Frequency Manager, ARCEP Benin
Mohaned Juwad, Director Spectrum Policy, Intelsat
Cesar Gutierrez Miguelez, Head of Africa Regulatory Policy, Wireless Strategy & Business Development, On behalf of Ericsson, Huawei & Nokia

15:50 – 16:10 **Break**

Session 5: Utilising spectrum for Digitalisation beyond 2024 – licencing and delivering the required bandwidth to meet key regional goals
Currently a huge amount of the focus for spectrum stakeholders in Africa is understandably on WRC-23 and on the key bands and agenda items for the region that will be discussed there. This session will provide the opportunity to look further forward, and explore the key challenges and objectives that lie ahead for spectrum managers in 2024 and beyond once the dust settles from WRC-23. It will look at the best way forward to licence, award and utilise spectrum to ensure that maximum value can be achieved and to contribute to the delivery of a competitive and innovative market. Panellists will discuss the best way forward to ensure that the required bandwidth is available to power the continent's continual rapid growth and innovation, and to deliver the sustainable, wide-reaching and reliable connectivity that is vital in order for this to be achieved.

- What should be the key long-term spectrum management policy and planning priorities for spectrum managers in Africa? How are these different to those in other regions around the world?
- How can it be ensured that the required bandwidth is available to power the continent's continual rapid growth and innovation, and to deliver the sustainable, wide-reaching and reliable connectivity that is vital in order for this to be achieved?

- How can regulators ensure that spectrum is brought to market as quickly and efficiently as possible, and that award mechanisms are designed to achieve a successful outcome and deliver on the goal of a competitive and innovative market?
- What will be the key challenges and obstacles that need to be overcome as we move into 2024 and beyond?
- How important is it that a co-ordinated approach to spectrum management is achieved? How can the needs of all countries and regions across the continent be taken into account when developing this?

Moderator: **Jonathan Wall**, Manager, Aetha Consulting

Part 1: Expert Corner - Spectrum auctions and awards

16:10 – 16:25 **Presentation: Designing spectrum awards to deliver a competitive and innovative market**
Shreyas Ravi, Associate Director, Secretariat Economists

16:25 – 16:40 **Presentation: An overview of recent auctions and awards – outcomes and lessons learnt**
Scott McKenzie, Director, Coleago Consulting

16:40 – 16:55 **Spectrum auctions and awards Q&A**
Scott McKenzie, Director, Coleago Consulting
Shreyas Ravi, Associate Director, Secretariat Economists

Part 2: Maximising spectrum efficiency and value – delivering the required bandwidth to meet key regional goals

16:55 – 18:00 **Panel Discussion**
Phil Molefe, Executive, Engineering and Technology, ICASA
Stephane Mebaley Ekome, Senior Engineer, Spectrum Management and Development EMEA, SES
Chris Woolford, Director of International Spectrum Policy, Ofcom
Eiman Mohyeldin, Head of Spectrum Standardization, Nokia
Scott McKenzie, Director, Coleago Consulting
Shreyas Ravi, Associate Director, Secretariat Economists

DAY 2

Session 6: Status of African connectivity – the journey towards 4G and beyond
5G networks are now widespread across much of the Western world, building on existing 4G networks and helping to improve speeds, reliability and coverage. And whilst in Africa this is also the ultimate goal, with 5G currently still very much in its infancy across the region, a step-by-step approach is required. A continued focus in the short term on delivering 4G is seen by most as vitally important in order to help deliver the widespread, affordable broadband that is vital to connect citizens across the region. This session will look at where countries in Africa currently lie in their journey 'through the G's', the progress that is being made with 4G rollout. It will explore the strategies and plans that are in place to find the required spectrum to continue this growth. Whilst the traditional path from 2G to 3G to 4G to 5G would seem the logical approach, it will explore the option of leapfrogging directly from 2G to 4G, and more broadly at the best way forward to ensure that affordable connectivity is delivered across Africa as quickly and as efficiently as possible.

- What progress is being seen across Africa with the rollout of mobile broadband and 4G networks? Which countries are leading the way in delivering coverage and connectivity, and which approaches have been the most successful?
- To what extent is the required spectrum for 4G now available across the region? Are there any bottlenecks and, if so, then in which areas are these being seen?
- What different strategies are being seen to tackle the technical, financial and geographical challenges to deliver 4G?
- What is the best strategy to move citizens currently using 2G (or with no connectivity at all) to 4G? Is the traditional approach to cycle through 3G first, or is there an argument to leapfrog straight to 4G?
- How can regulators balance the need to continue early exploration of 5G rollout with the vital need to maintain focus on continued 4G expansion?
- How can this combined approach of simultaneous development of 4G and 5G help Sub-Saharan Africa tackle the digital divide and meet the growing demand for connectivity coming from its population?

Moderator: **Zourmba Aboubakar**, Deputy General Manager, Telecommunications Regulatory Board, Cameroon

09:00 – 09:10 **Current State of Play Across the Region**
Alain Betu, Policy Manager, Central Africa, GSMA

09:10 – 10:15 **Panel Discussion**
Victor Kweka, Manager, Spectrum Management, Tanzania Communications Regulatory Authority (TCRA)
Peter Djakwah, Manager, Engineering, National Communications Authority, Ghana
Alain Betu, Policy Manager, Central Africa, GSMA
Abdallah Nassar, Director of Network Engineering and Development, Orange, Cameroon

10:15 – 10:35 **Break**

Session 7: Continuing the path towards a harmonized continental 5G strategy
At each of the last 5 editions of this conference, a session has been held that has charted the progress, challenges and opportunities as Sub-Sahara embarks on the path to 5G and looks to deliver a harmonized continental strategy that will help to unleash its true potential. This session will continue this discussion and discuss the progress that has been made and the path ahead.

- What progress has been seen in the past 12 months on the continued launch and rollout of 5G networks across Africa?
- What different deployment strategies are being seen, and which have had the most success?
- What lessons can be taken from experiences so far and how can these help to shape a harmonised regional approach for 5G deployment?
- What mix of technologies and solutions are best going to meet the needs of Africa's 5G future, and how can it be ensured that both the infrastructure and spectrum is in place to deliver this?

- To what extent is the impact of 5G starting to be felt in those countries in which it has now been launched? What examples of different use cases of 5G in action are starting to be seen?
- What challenges still need to be overcome to ensure that Africa can fully reap the rewards of 5G, and how can stakeholders across the region come together to help tackle these?
- How can the backhaul needs of 5G best be met, and what work is being done in this area?

Moderator: **Elizabeth Migwalla,** Vice President International Government Affairs, Qualcomm

10:35 – 10:50 **Introduction**
Elizabeth Migwalla, Vice President International Government Affairs, Qualcomm

10:50 – 11:05 **Setting the Scene: Current status of 5G deployment in the region**
Elena Scaramuzzi, Head of Global Research, Cullen International

11:05 – 11:20 **Country Case Study - Kenya**
Gababo Wako, Spectrum Manager, CA Kenya

11:20 – 11:35 **Country Case Study - Nigeria**
Abraham Oshadami, Director Spectrum Administration Department, Nigerian Communications Commission (NCC)

11:35 – 11:50 **Country Case Study – Uganda**
Lucy Nyakwera, Telecommunications Engineer, Uganda Communications Commission (UCC)

11:50 – 12:35 **Panel Discussion**
Elena Scaramuzzi, Head of Global Research, Cullen International
Gababo Wako, Spectrum Manager, CA Kenya
Abraham Oshadami, Director Spectrum Administration Department, Nigerian Communications Commission (NCC)
Lucy Nyakwera, Telecommunications Engineer, Uganda Communications Commission (UCC)

12:35 – 13:30 **Lunch**

Session 8: Towards ubiquitous connectivity – delivering the required coverage and affordability

Africa has seen real tangible progress over the last decade in delivering coverage to outlying areas. Investments by governments, industry players, and development partners have helped to reduce the percentage of the region without connectivity from 51% in 2014 to 18% today. There is still more work to be done however – this figure is still the highest in the world, and well above the global average of 6%. This session will look at the progress made to date, the approaches and technologies that have driven this, and the path ahead as efforts continue to deliver the ultimate goal of ubiquitous connectivity. It will then move on to focus on the issue of the usage gap. There is a reported 49% gap between broadband access (82%) and usage (33%) in the region, with affordability of devices and data seen as key factors in this. It will look at the measures that are being taken to address this and at the best way forward to ensure that affordability becomes less of a barrier to connectivity in the region.

- What approaches and technologies across the region have been most successful in tackling both the connectivity and usage gaps that are seen in the region?
- What countries are leading the way and what lessons can be taken from the approaches that are being seen?
- What examples are being seen of policymakers and industry representatives from different sides working together to increase connectivity across the region?
- How can advances in technology and innovative policymaking respectively help to play a part in the continual efforts towards ubiquitous, reliable, and affordable connectivity services?
- How can governments and industries work together to lower costs for data and devices and mitigate affordability as a key usage gap barrier?

- What initiatives are being seen in this area, and to what extent is policy action necessary in order to address affordability barriers for both devices and data?
- To what extent could the approach that is bring seen in Brazil of operators making investment commitments as part of their spectrum licence payments be a model that helps African countries to both increase network rollout and improve affordability?

Moderator: **Elena Scaramuzzi,** Head of Global Research, Cullen International

13:30 – 14:35 **Panel Discussion**
Peter Djakwah, Manager, Engineering, National Communications Authority, Ghana
Luc Lukomba Kilambe, Head of Frequency Assignment Department, ARPTC, Democratic Republic of the Congo (DRC)
Alexandre Campos Moraes, Regulation Expert, Brazilian Telecommunications Regulatory Agency, ANATEL
Yves Nsapngun Mbetbo, Senior Manager Network Engineering, MTN Cameroon
Kevin Eisenhauer, Lead of Africa, GSOA

Session 9: Exploring the potential of Direct Satellite-to-Device connectivity - Could this be the way to connect Africa?
A number of recent high profile partnerships involving satellite and mobile companies have helped to raise the profile of potential opportunities offered by direct-to-phone satellite connectivity. In Africa, where many countries still face the challenge of trying to connect large unserved rural and remote populations, the possibility of offering connectivity via satellite through standard consumer mobile phones could raise the potential to help reduce barriers to entry and to bridge the digital divide. In order for the potential of this technology to be realised however, there are a number of key regulatory and policy challenges that need to be overcome, not least when considering the best way to meet the spectrum requirements of these new hybrid networks. This session will examine the potential that direct-to-device connectivity can offer countries across Africa. It will examine the different approaches, technologies and methods of accessing spectrum that are currently being put forward and the different regulatory and technical challenges that these raise, and overall the extent to which connectivity in this way can help in the ongoing challenge to bridge the digital divide.

- What potential benefits can the emergence of hybrid satellite-terrestrial networks and 'direct to device' satellite connectivity offer countries and consumers across Africa?
- To what extent could it contribute to efforts across the region to tackle the digital divide and help to connect people and communities in unserved rural and remote areas?
- What performance can be expected to be seen from networks in this way? What use cases can it best provide a solution for (consumer / IoT connectivity etc.)?
- How can the spectrum requirements of direct satellite-to-device connectivity best be met?
- Should these systems use satellite spectrum, or terrestrial mobile spectrum?
- What should be the technical and regulatory regime for direct-to-phone? What are the technical and regulatory challenges with using MNOs existing spectrum and spectrum that has been specifically allocated to Mobile Satellite Services respectively?
- What is needed from a regulatory perspective in order to deliver the potential of these new services? How do services in this way fit within the ITU regulations?
- How can it be ensured that direct-to-phone systems do not interfere with terrestrial mobile networks or with any other services?
- What progress is being made in the development of HAPS technologies, and what potential does this also offer scope for direct-to-device connectivity?

Moderator: **Kezias Mwale**, Technical Coordinator, African Telecommunications Union

14:35 – 15:40 **Panel Discussion**
Patrick Musiyapo, Deputy Director for Spectrum Management, Malawi Communications Regulatory Authority (MACRA)
David Goldman, Vice President, Satellite Policy, SpaceX
Margo Deckard, COO, Lynk
Ivan Suarez, Director, Space and Spectrum Policy, Access Partnership
Timothy Ashong, Director General of the Regional African Satellite Communications Organisation (RASCOM)

15:40 – 16:00 **Break**

Session 10: Spectrum Shorts
These final sessions will provide the opportunity for short, sharp discussions on how best to meet the connectivity requirements of 2 growing use cases for 5G in the region – fixed wireless access (FWA) and IoT.

Session 10i: Meeting the connectivity needs to maximise the potential of FWA across the region
Remote locations, challenging geography and dispersed populations often make it difficult and expensive to deploy physical network infrastructure across many regions of Sub-Saharan Africa. Fixed Wireless Access (FWA) can offer an alternative solution, providing the potential to deploy broadband connectivity more cost effectively and quickly. If handled in the right way, it could potentially play a big part in helping to tackle the digital divide. This session will examine this potential, look at examples of FWA networks that are being seen in the region to date, and explore how the emergence of 5G can help the growth of the technology. It will discuss challenges and obstacles that still need to be overcome in order to ensure that the full potential of FWA can be felt.

- What role can FWA play in helping to tackle the digital divide, particularly in areas that experience poor or no fixed-network coverage?
- What examples are already being seen of FWA being rolled out and making a difference across the region? What lessons can be learnt from experiences in these situations?
- What spectrum and network requirements are necessary, and what progress has been made on delivering in these areas?
- What hurdles to widespread roll out of FWA services are still being seen and how can these be overcome?
- How can the backhaul needs for FWA be met in the most cost-efficient and effective manner?
- How can it be ensured that FWA connectivity is delivered in an affordable and secure manner, and that the needs of businesses and consumers in unconnected communities are both understood and met?
- What difference could the more widespread rollout of 5G across the region make for FWA services, and what can be expected of the technology in the future?

Moderator: **Jean-Jacques Massima**, Representative for Central Africa and Madagascar, ITU

16:00 – 16:30 **Fireside Chat**
Diffo Bertin, RF manager, CAMTEL
Elizabeth Migwalla, Vice President International Government Affairs, Qualcomm

Session 10ii: Delivering the connectivity to realise Africa's IoT vision
The African and Middle East IoT market is second only to Asia-Pacific in terms of the level of growth that is being seen in M2M and IoT Technologies. In order to deliver on the full potential of IoT however, robust and reliable network infrastructure and connectivity is required. This session will look at the current technologies, models and bands that are being used to deliver IoT across the region, and at the challenges that still remain in order to deliver a connectivity infrastructure that enables Africa to fully deliver on its IoT ambitions.

- What structures are currently in place across Sub-Saharan Africa to deliver M2M and IoT technologies across Africa?
- What different connectivity models, technologies and spectrum bands are currently being used? Which offer the greatest scope to deliver the required connectivity for IoT devices?
- What can the emergence of 5G mean for IoT services in the region and for the connectivity requirements that are seen?
- What work is being done across the region to deliver a co-ordinated policy that enables the opportunities presented by IoT in areas such as healthcare, energy, e-finance, agriculture and more to be felt by communities and businesses across the region?
- Which countries are leading the way when it comes to rollout of IoT technologies?
- What challenges still remain to be overcome in order to feel the full benefits of IoT across the Sub-Sahara region?

Moderator: **Jean-Jacques Massima**, Representative for Central Africa and Madagascar, ITU

16:30 – 17:00 **Fireside Chat**
Gababo Wako, Spectrum Manager, CA Kenya
Ngae Denis, Director of Projects, Studies and Prospective, Ministry of Posts and Telecommunications, Cameroon