WRC-19 | ATU

Lunchtime Seminar

GSMA

Introduction

Welcome

Brett Tarnutzer
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MNO

GSA

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Closing

SPECTRUM

THE FUNDAMENTAL ELEMENT OF MOBILE

Welcome

Brett Tarnutzer

GSMA

2G

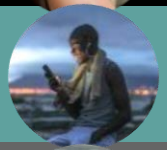
3G

4G

5G

All about calls and texts

The start of mobile data

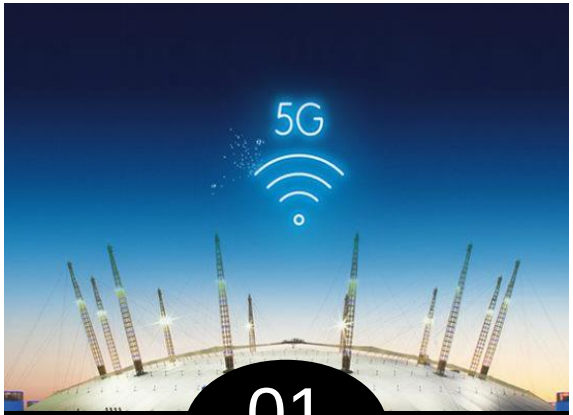


The arrival of mobile broadband services and applications

The network adapts to the application

Ultra high speed
Ultra low latency
New applications

5G Ramps Up



01

LG Uplus is seeing 1.3 gigabytes of data a day per subscriber in the early days of its 5G launch

Early 5G data usage has tripled, according to SK Telecom, in comparison with 4G

02

03

In Saudi, 1820 TB of data, a 66% increase in daily consumption, were consumed over Hajj in Mecca using networks including 37 5G sites

5G connections forecast has increased by

12.5%

It now stands at

1.6 BILLION

by 2025

5G adoption forecast has increased to

18%

by 2025

37

COMMERCIAL 5G NETWORKS

launched across

19

MARKETS

with

75 further launches

across

50 markets soon

ROUTERS

DRONES

129

5G DEVICES

TVs

ROBOTS

HOTSPOTS

2018 Mobile operators will invest

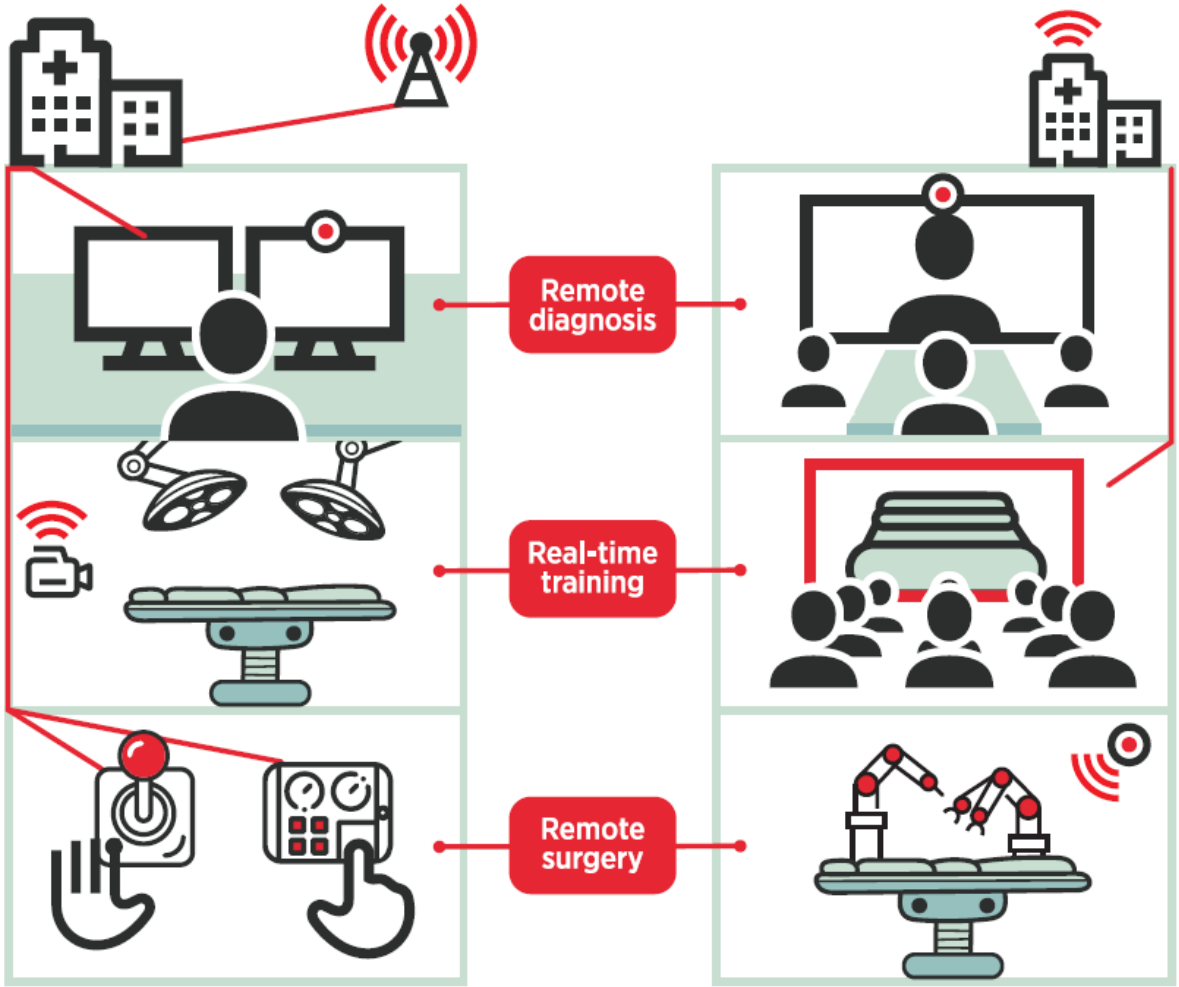
$480BN WORLDWIDE

2020 in mobile capex

Use Case

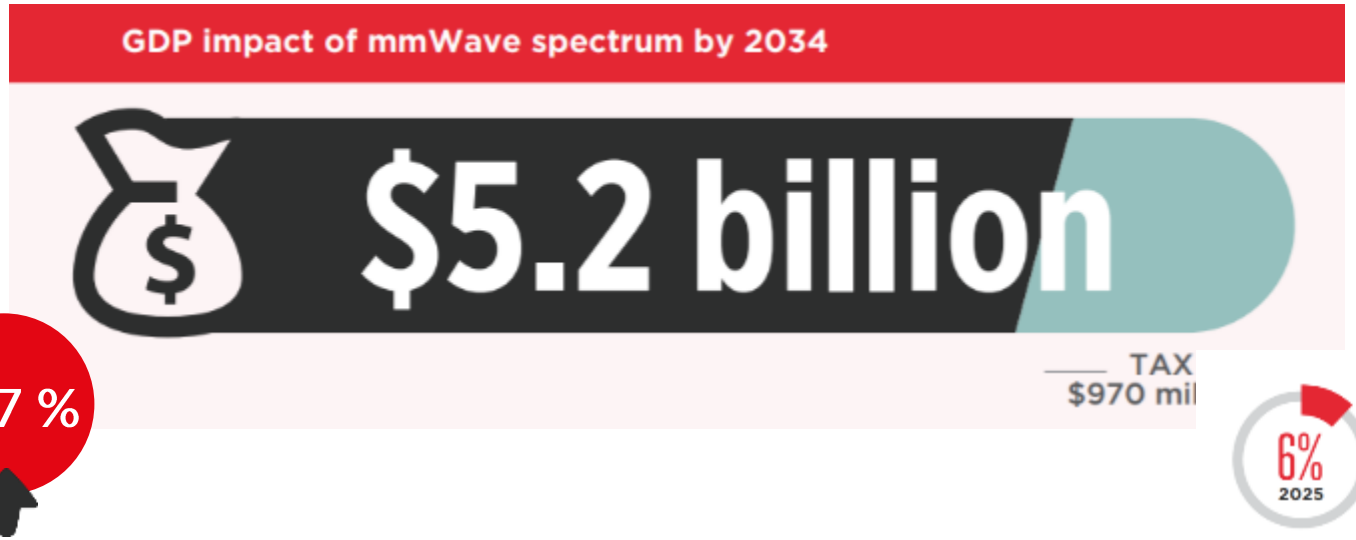
5G CAN MAKE IT HAPPEN

Healthcare



The socio-economic benefits of mmWave 5G (2020-2034)

Sub-Saharan Africa Edition



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5G Trials and Launches

Bertus Ehmke

GSMA

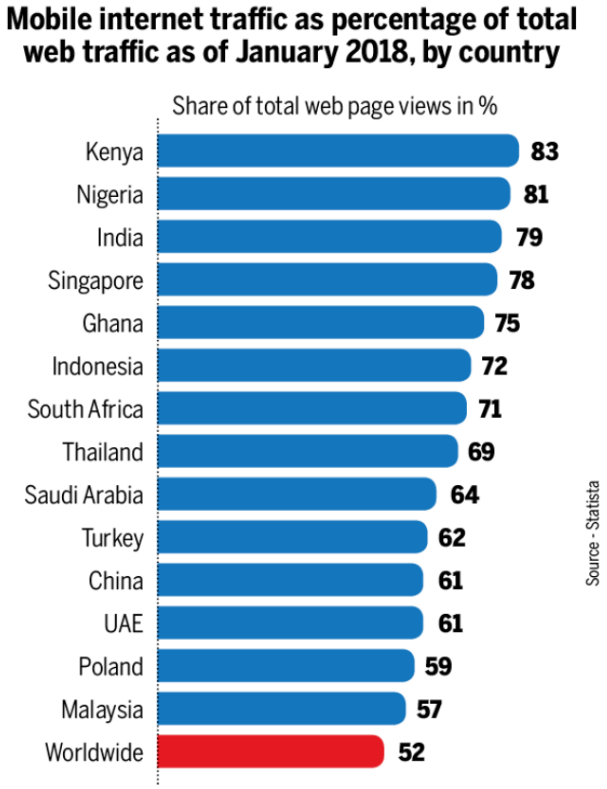
WRC-19
5G Developing Market Status Check

everywhere you go

MTN

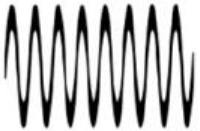
Africa's insatiable need for spectrum

- Why are developing markets pushing so hard for 5G and the spectrum required?
- Mobile broadband is a enabling technology rather than mode of usage
- It is not, as in many other developed markets, a usage mode as much as it is a technology delivery methodology
- We cannot hope to monetize the luxury of mobility like in developed markets.
- We cannot "offload" onto fixed networks - even if we do offload it is on Fixed Wireless Networks.
- It is all about spectrum….



The role mid and high band frequencies play in addressing coverage gaps

Spectrum Readiness



- New Sub-1GHz Spectrum
- New Sub-6GHz Spectrum
- New mmWave Spectrum

Device Ecosystem

- 5G Handsets & Routers
- 5G / NB-IoT IoT Chipsets & Devices

80/20 principle applies

- 20% of dense urban cells produce
- Rural coverage is always a difficult business case
- Urban profits make rural coverage initiatives possible
- Starve the network in lucrative areas and everybody loses..

5G Activity in African Networks

	Details on spectrum used	Throughput Achievement	Notes and Considerations
MTN SA	• 100MHz in 28GHz PoC	• 500<Mbps to 1.6Gbps throughput, latencies from 3ms to 5ms, coverage radius about 300m	• Performed indoor, outdoor and mobile trials
Vodacom Lesotho	• Commercial 3.5GHz network in 100MHz channel	• 500Mbps	• Started as FWA product due to CPE restrictions, now offering mobility
MTN Nigeria	• PoC in 3.5GHz and 26GHz starting in November	• TBA	• TBA
Rain SA	• 80MHz of 3.6GHz used	• Up to 700Mbps, 9ms latency	• Aggressively rolling out coverage in largest cities in SA

What Africa needs in order to seamlessly transition to 5G:

1. **Harmonization**

   - The success of mobile in Africa can be ascribed to a unique accommodating combination between devices capability, spectrum harmonization.
   - Devices and chipset specified for developed market that found their way to Africa found universal combability. The 900, 1800, 2100MHz band capability in devices found 1 to 1 match on regulatory space.
   - By restricting the full functionality of devices (e.g. 3.4-3.6G instead of 3.3-3.8G) growth will be severely inhibited.

2. **Management of expectation**

   - Developing markets cannot pay even close to what was paid for 3.5GHz and 26/28GHz in US and Europe
   - Current frequency fee models for 2, 3 and 4G are unsustainable in 5G space with wide channels and 10x amount of sites.

3. **Coexistence of legacy technologies**

   - Many markets still have 30-50% of subscriptions on 2G only – how do you manage spectrum to cater for 2, 3, 4G along with 5G?

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5G Ecosystem

Elizabeth Migwalla

GSMA

5G ECOSYSTEM UPDATE

Elizabeth Migwalla
GSA Africa

VISION

VISION

wirelessly connect almost all 7 billion people globally to new and exciting services through 100 billion devices and things, by 2030

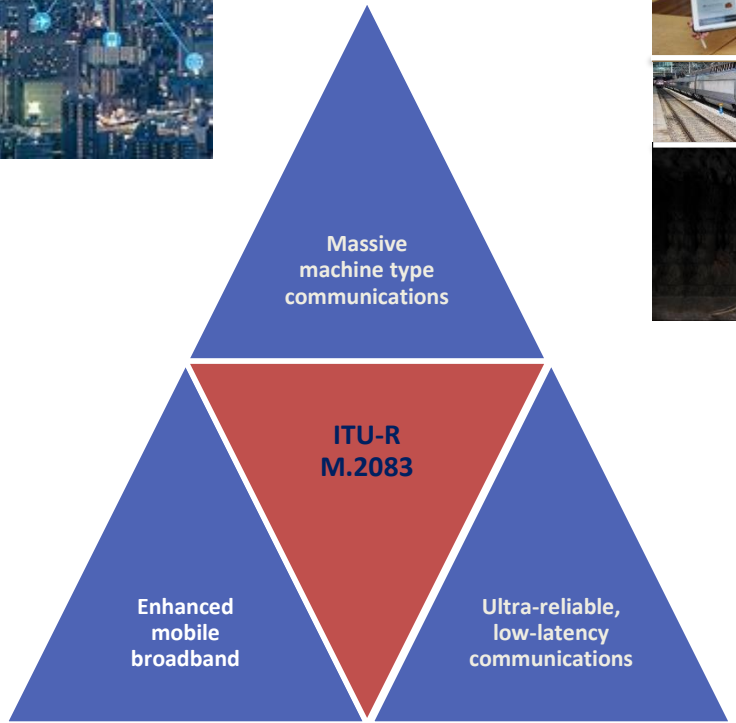
HOW

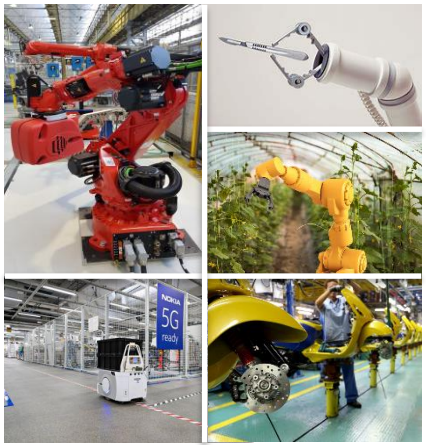
spectrum from the low-band, mid-band and high-band frequency ranges helps realise the Vision

GOAL

large contiguous amounts of high band (mmWave) harmonised spectrum, with suitable regulatory conditions, helps enable extreme capacity and ultra fast local area services

USE CASES





STANDARDS

GLOBAL INITIATIVE

Release 15 complete (2017-2019)

Release 16 development (2018-2020)

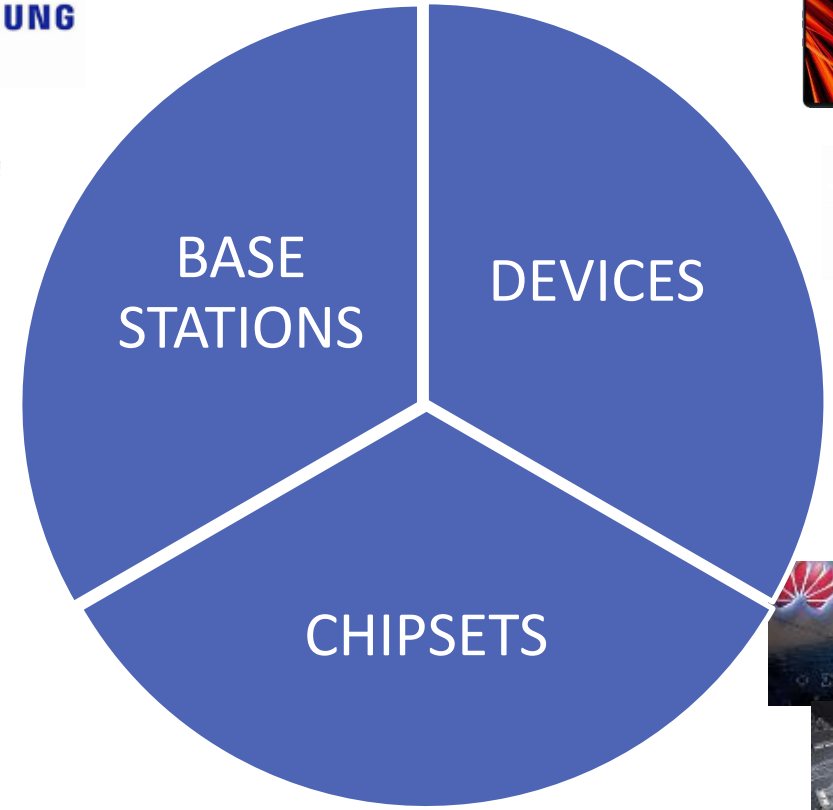
Enhancements, Unlicensed, URLLC+ & IoT+, V2X, etc

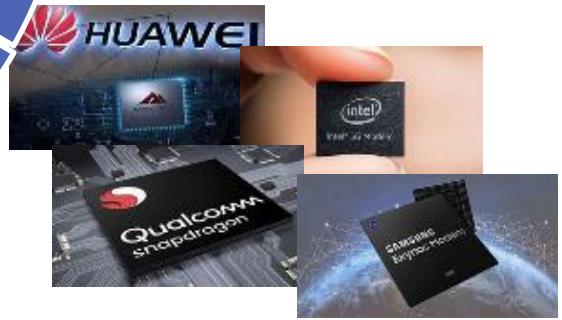
Release 17 planning (2019-2021)

Enhancements to support verticals, coverage improvements, NTN, etc

3GPP 5G specs complete – work underway on enhancements

PRODUCTS





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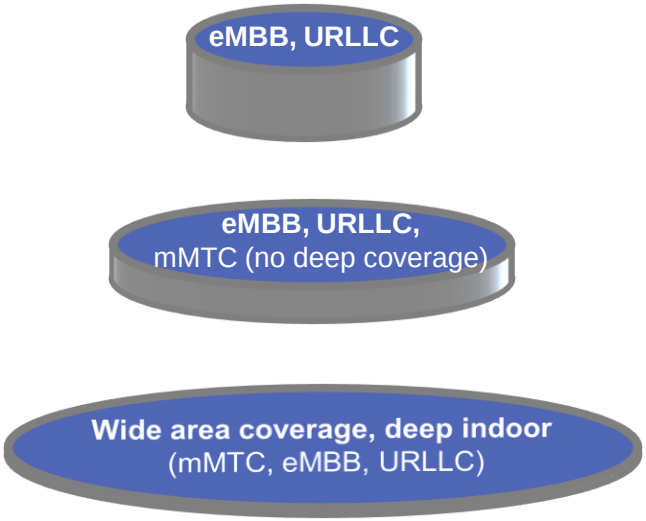

High band
Extreme capacity

e.g. 24.25-27.5, 37-43.5 GHz etc
800-1000 MHz MNO/Network contiguous 2020 onwards

Mid band
Both coverage & capacity

e.g. 2.3, 2.6, 3.3–4.2, 4.4-5 GHz etc
80-100 MHz MNO contiguous 2020 onwards

Low band
Extended coverage

e.g. 600, 700 MHz etc
Upto 20 MHz channel bandwidth 2020 onwards

Various applications and services require access to spectrum from low, mid and high bands

THANKYOU

Check out www.gsacom.com for regular report updates

5G ecosystem update

5G licensing update

ERICSSON QUALCOMM HUAWEI NOKIA intel SAMSUNG

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Conclusion

Ross Bateson

GSMA

Our Asks

26 GHz
(24.25-27.5 GHz)

- Limits to protect EESS (passive) -28 to -32 dB(W/200MHz)
- No conditions necessary for FSS/ISS since sharing studies show significant protection margin

40 GHz
(37-43.5 GHz)

- Identification of whole range provides harmonisation with other Regions
- FSS downlink: ES sharing is a national issue
- FSS uplink: sharing studies show a significant protection margin

50 GHz
(45.5-52.6 GHz)

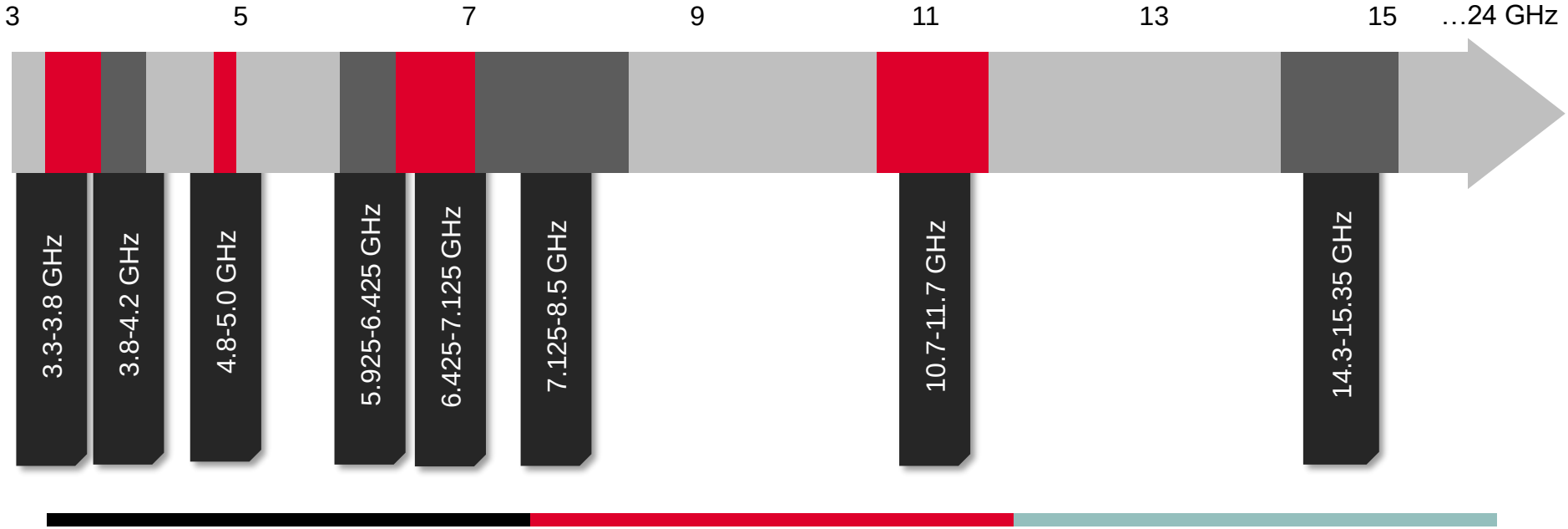
- Good options to support future 5G growth
- Studies have been performed and show sharing is possible

66 GHz
(66-71 GHz)

- Flexible use for unlicensed 5G systems - both IMT and non-IMT technologies
- Shared with WiGig
- Supported by APT, ATU, ASMG, CEPT

WRC-23 supported bands

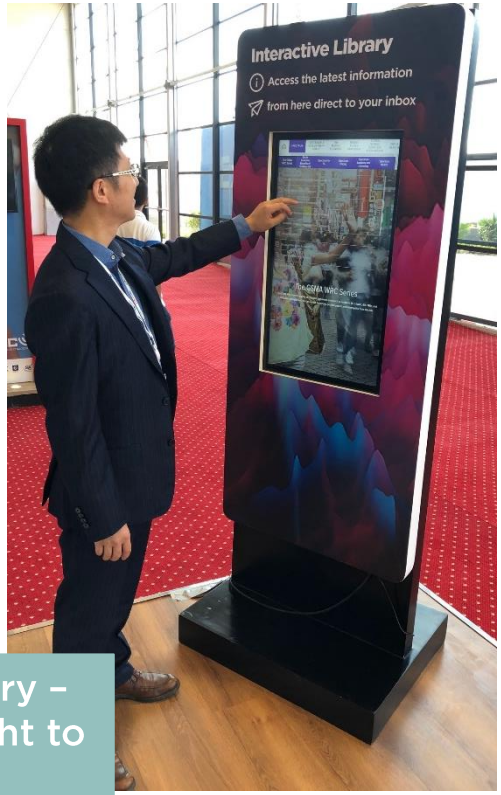
GSMA supports WRC-23 AIs for IMT in 470-960 MHz, and consideration of the bands below



Experiences at the GSMA stand

Live 5G demos

City of the Future VR experience



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