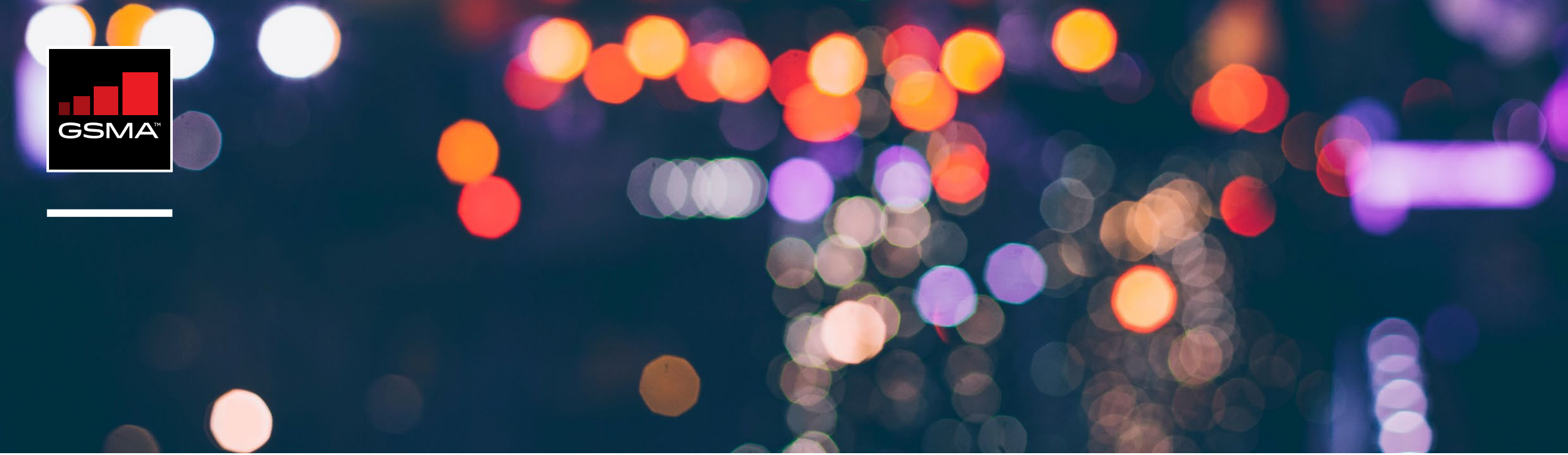


5G for All : WRC-23

Welcome

5G for All : WRC-23

Welcome

Brett Tarnutzer
Head of Spectrum
GSMA

Mobile and the Power of Spectrum

No one has done more with their spectrum to deliver a better future for everyone than the mobile industry

5G

2025

1.8bn connections

20%

2025

of total connections

Excluding licensed cellular IoT

Employment

2019

16m

Jobs directly supported by the mobile ecosystem

+14m indirect jobs

Mobile Industry Contribution to GDP

2019 4.1tn

2024 **4.9tn**

4.7% → 4.9% of GDP

Coverage and Cost

WRC-23 can provide solutions to long-standing problems

Coverage

90%

of the world's population is covered by Mobile Broadband

Mobile Broadband now connects around

4BN

PEOPLE TO THE INTERNET

Usage Gap

4BN MORE PEOPLE ARE NOT CONNECTED BUT

3.3BN

LIVE WITHIN MOBILE BROADBAND COVERAGE

WRC-23: An Opportunity to Get it Right

WRC-23 can support greater coverage and affordable broadband and drive 5G forward

Increase wide-area spectrum capacity to enhance digital inclusion and achieve social goals

Get city-wide capacity harmonised, catch up with early adopters and enhance 5G

New applications, IoT and MMTC can receive better access to the frequencies they need

Ensure Radio Regulations reflect reality and drive global harmonisation

5G for All : WRC-23

Luciana Camargos
Senior Director, Future Spectrum
GSMA

WRC-23: Solutions for Three Familiar Challenges

Harmonisation

- Further harmonisation in core bands – like 3.5 GHz – for global ecosystem
- New harmonised spectrum for 5G expansion – e.g. 6 GHz

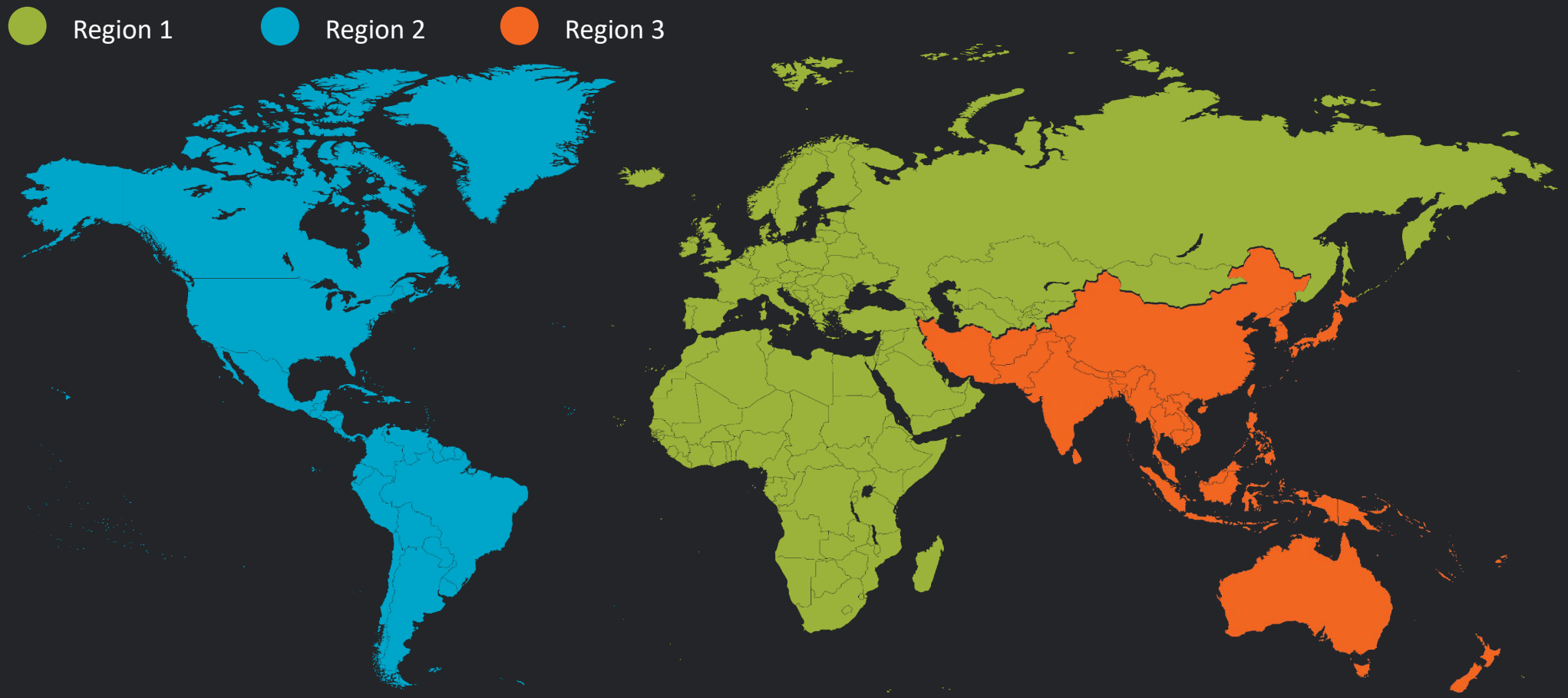
Cost-Efficiency

- Ensure 5G has sufficient channel bandwidth: 3.5 GHz, 4.8 GHz, 6 GHz
- Channel size will lower network density and increase affordability

Coverage

- City-wide capacity solutions (AI 1.1, 1.2, 1.3)
- Low-band spectrum for rural 5G and universal IoT (AI 1.5)

WRC-23 IMT Agenda Items Overview



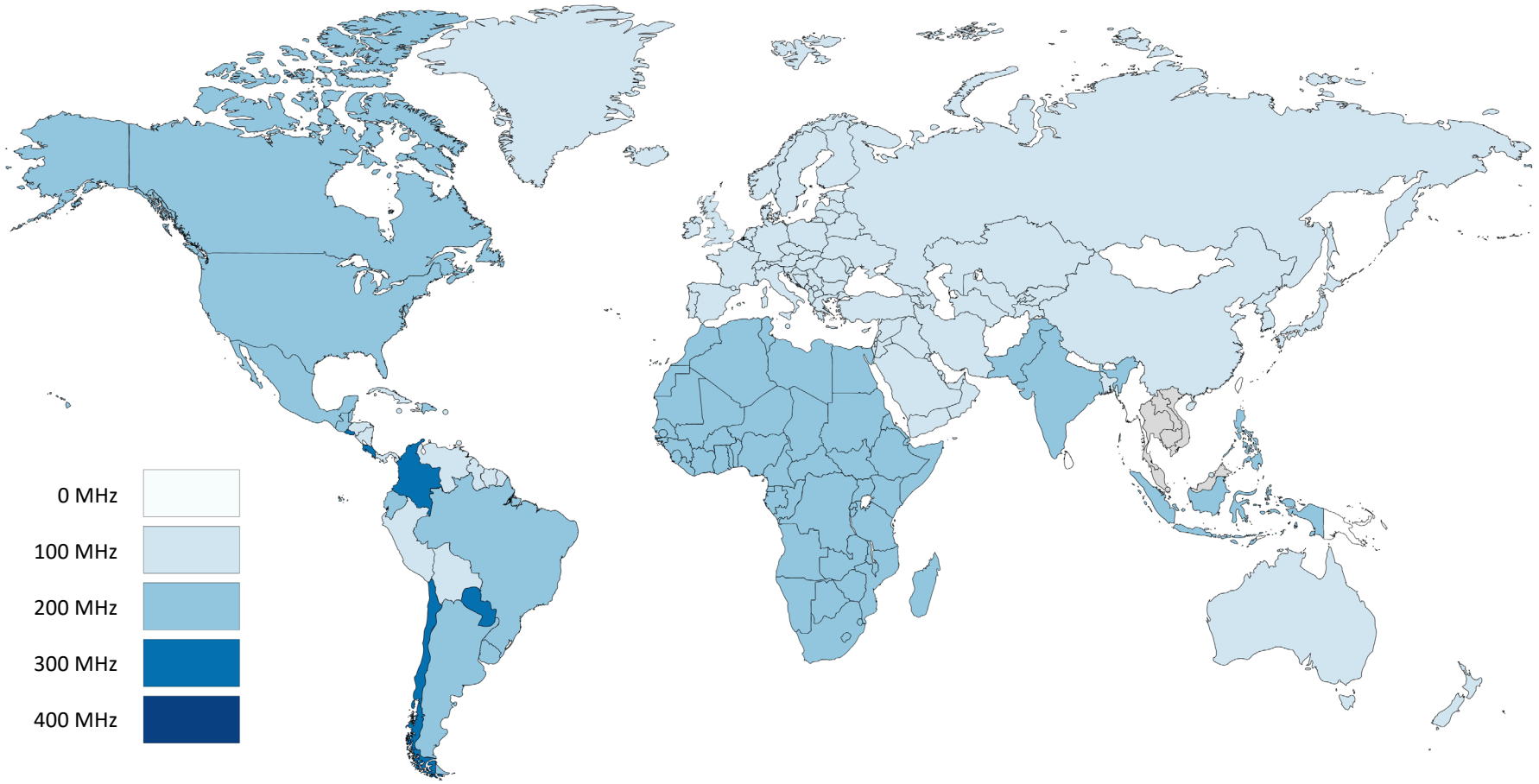
Bands	470-960 MHz	3300-3400MHz	3600-3800MHz	4800-4990 MHz	6425-7025 MHz	7025-7125 MHz	10-10.5 GHz	IMT FS
Region 1	AI 1.5 (IMT)	AI 1.2 (IMT)	AI 1.3 (MS)	AI 1.1 (IMT)	AI 1.2 (IMT)	AI 1.2 (IMT)		9.1.c
Region 2		AI 1.2 (IMT)	AI 1.2 (IMT)	AI 1.1 (IMT)		AI 1.2 (IMT)	AI 1.2 (IMT)	9.1.c
Region 3				AI 1.1 (IMT)		AI 1.2 (IMT)		9.1.c

Harmonisation: beyond the Radio Regulations

WRC-23 can move regulations closer to reality in 3.3-4.2 GHz

1. Progress at WRCs does not always match market forces and early adopters have moved well past decisions

2. WRC-23 can play catch up and give regulators chance to plan for 5G with sufficient channel bandwidth to lower costs

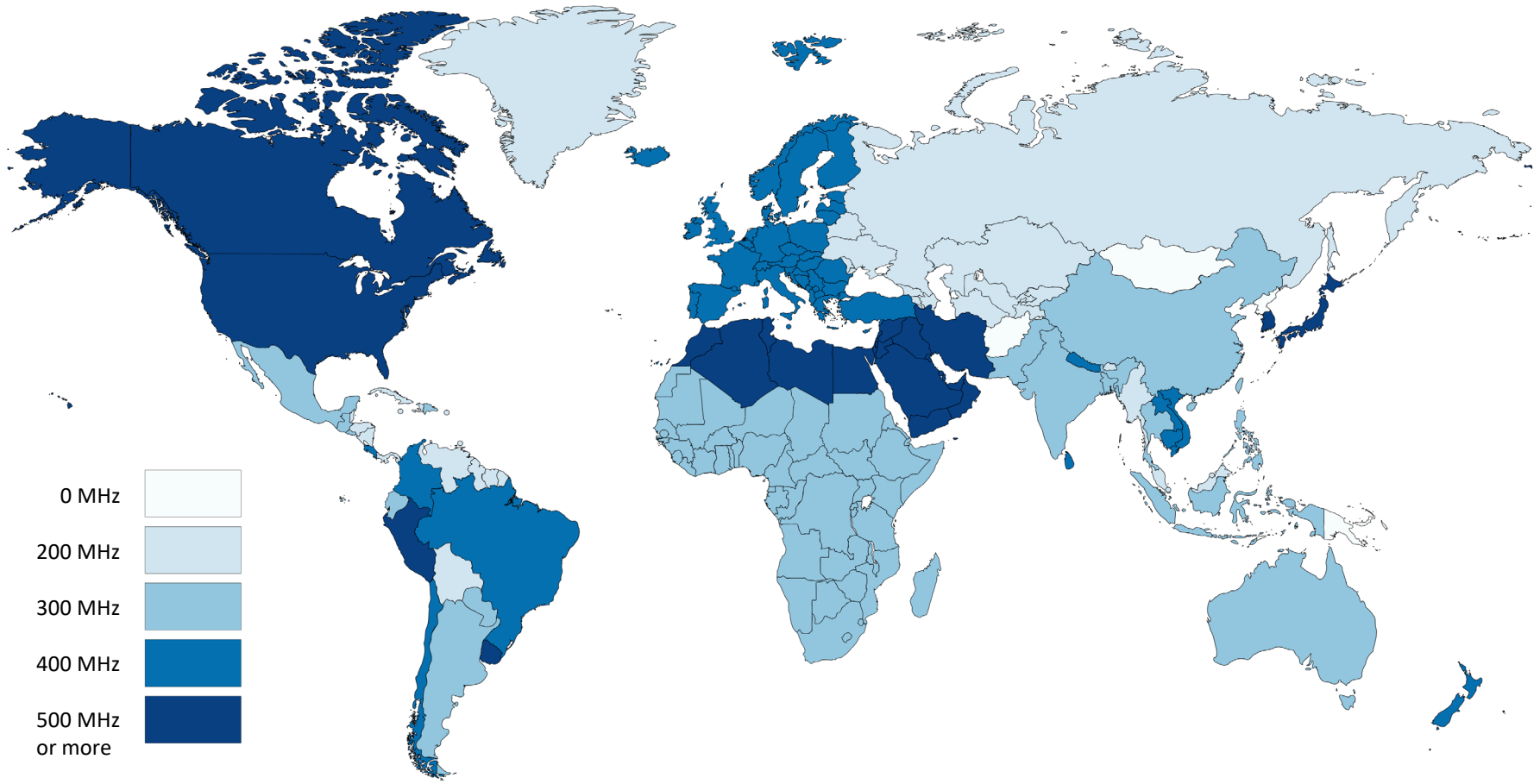


Harmonisation: beyond the Radio Regulations

WRC-23 can help lower digital divide

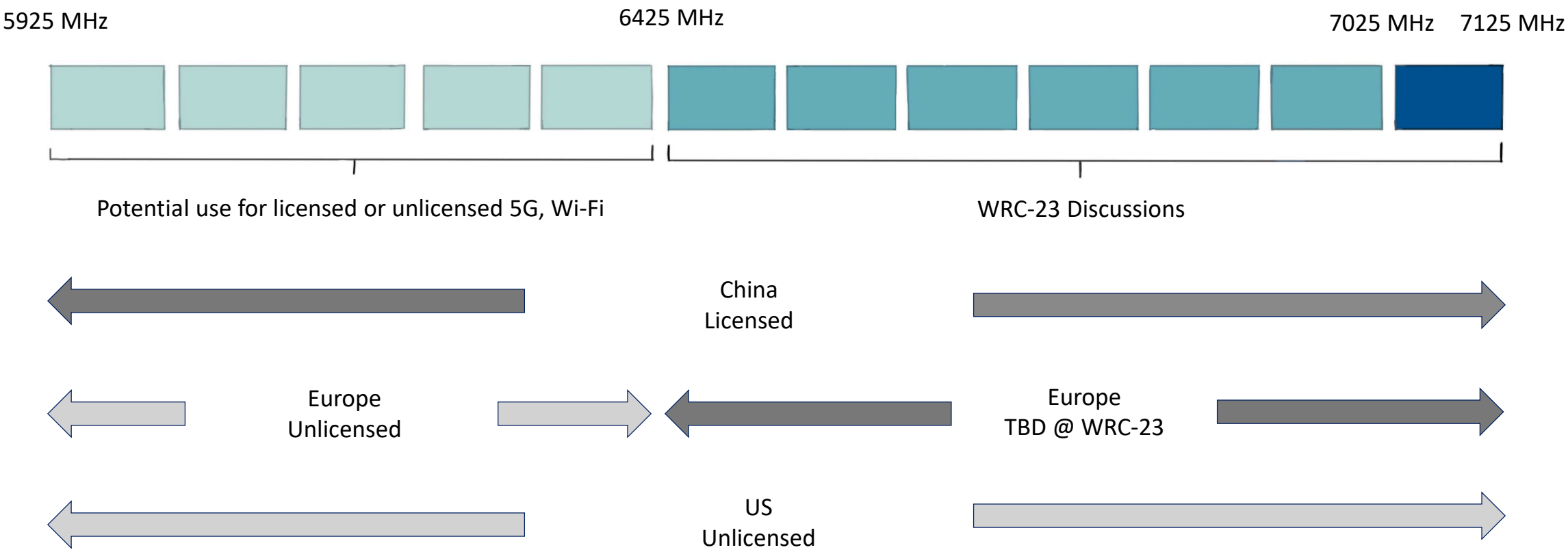
3 Regional evolution beyond WRC decisions has seen wider harmonised capacity – and lower costs - in most developed markets.

4 Radio regulations and reality do not match. Wider harmonised capacity is needed to ensure balanced spectrum availability across markets.



Harmonisation: 6 GHz at WRC-23

6 GHz represents new challenge in building robust mobile ecosystems



Cost Efficiency

Planning 5G with enough spectrum to allow sufficient bandwidth will increase performance and significantly reduce costs.

Wider channels mean fewer base stations

CHANNEL SIZE IMPACT

100 MHz → 60 MHz

64%

INCREASE IN NUMBER OF CELL SITES

WRC-23 can make huge savings on 5G roll-out

GLOBAL BENEFITS

Adding additional bandwidth to the baseline 200 MHz in 2GHz range*

ADDITIONAL 300MHz

$50bn

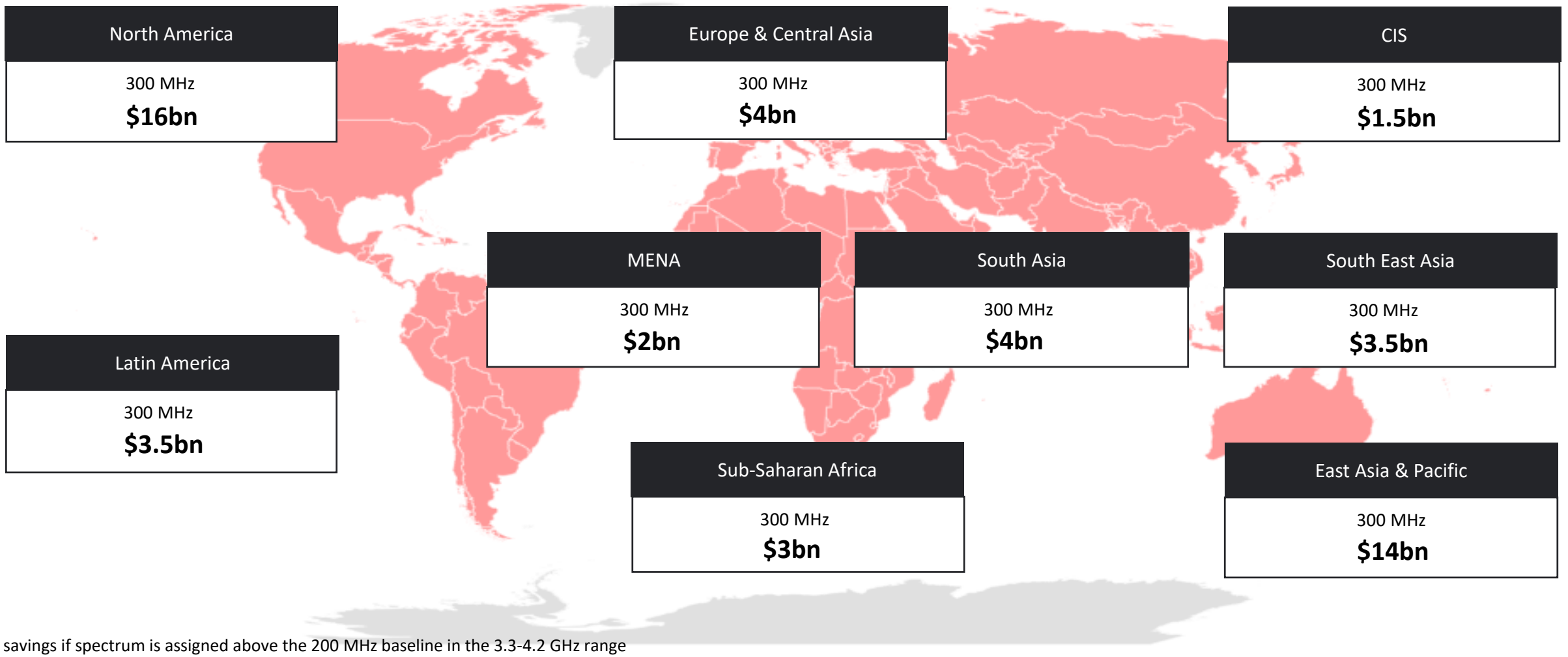
ADDITIONAL 700MHz

$80bn

Cost Efficiency

Network cost savings with 300 MHz more 3.5 GHz spectrum than WRC-15 decision is assigned to operators

By Regions



North America	Europe & Central Asia	CIS
300 MHz **$16bn**	300 MHz **$4bn**	300 MHz **$1.5bn**

MENA	South Asia	South East Asia
300 MHz **$2bn**	300 MHz **$4bn**	300 MHz **$3.5bn**

Latin America	Sub-Saharan Africa	East Asia & Pacific
300 MHz **$3.5bn**	300 MHz **$3bn**	300 MHz **$14bn**

Cost savings if spectrum is assigned above the 200 MHz baseline in the 3.3-4.2 GHz range

Coverage

WRC-23 can support greater coverage and affordable broadband

Increase wide-area spectrum capacity to enhance digital inclusion

Make wider coverage affordable to allow for wider achievement of social goals

IoT and MMTC can receive better access to low frequency spectrum

Rural areas can get better access to 5G through sub-1 GHz spectrum

Why more UHF for mobile?

Digital Divide

- Increased capacity and performance in areas where higher frequencies are not effective
- Rural users require advanced communications services like anyone else

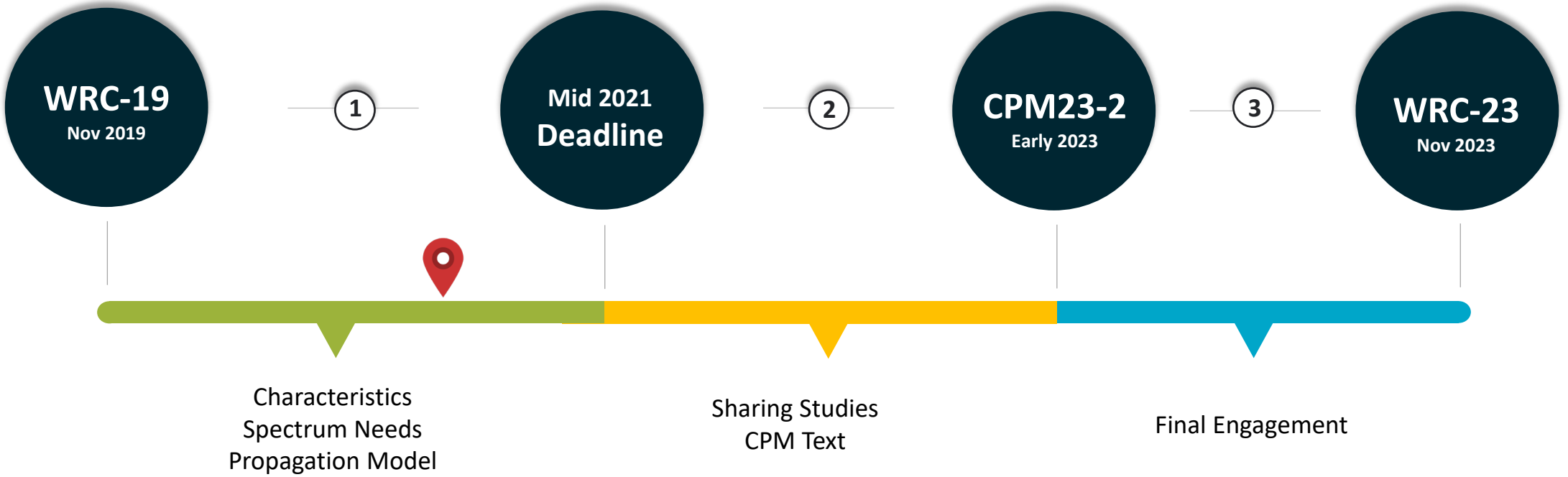
Reliability

- Consumers require consistent user experience with 5G
- ‘Best effort’ 4G speeds no longer viable for many 5G use cases

New uses

- Outside broadband, UHF is required for new 5G use cases:
- IoT (with low power consumption)
- V2X (with consistent user experience)

WRC-23 Timeline



Conclusion: what is needed

Demand

- Collaborate: mobile must make its needs clear and work with government
- Plan 4G and 5G together
- Ensure that 5G is not just an urban solution

Harmonisation

- Agree on 100 MHz channels: ITU, EU and others do
- Get 3.5 GHz band sorted for 5G
- Look at 6 GHz as next major 5G expansion band

Coverage

- Take long-term view and make strong UHF decisions
- Plan now to make changes in the 2030s

Panel Discussion

IMT at WRC-23

Moderator Luciana Camargos, GSMA

Lisa Amirault, ISED
Canada

Agostinho Linhares,
Anatel Brazil

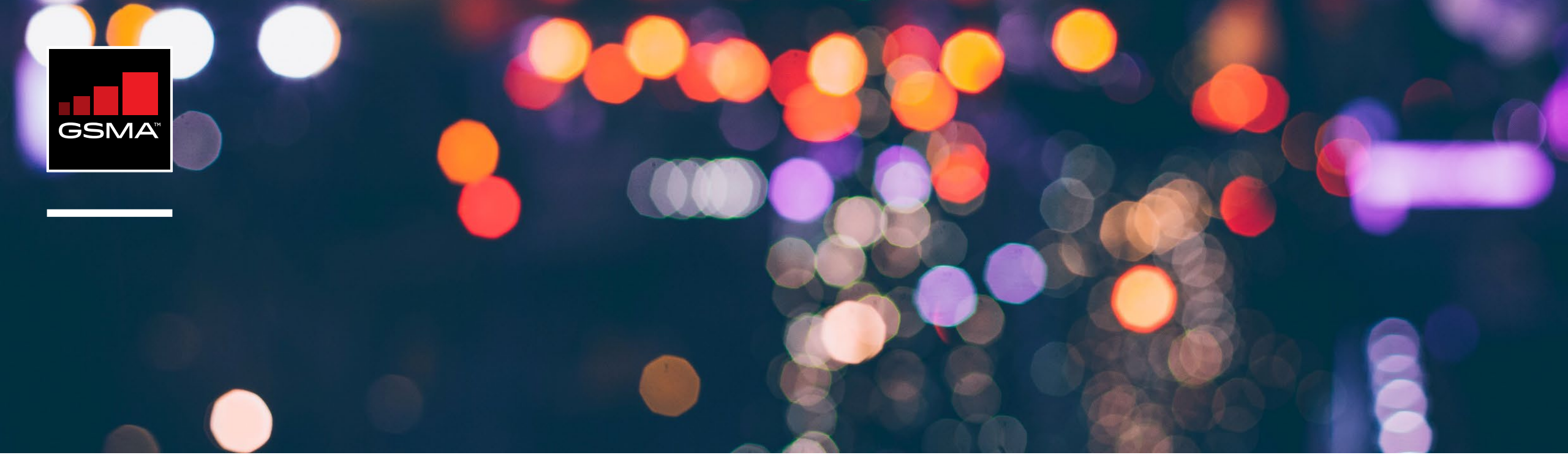
Jose Luis Ayala, Ericsson

Pascale Dumit, T-Mobile
USA

Closing Remarks and Vote of Thanks

Brett Tarnutzer

Head of Spectrum, GSMA



Thank you