



WRC-23 Issues for mobile services

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WRC-23: Spectrum Needs of 5G

Harmonising for cost efficiency and coverage

Low-band

Agenda Item 1.5 considers
470-960 MHz

Mid-band

3300-3800 MHz
4800-4990 MHz
6425-7125 MHz

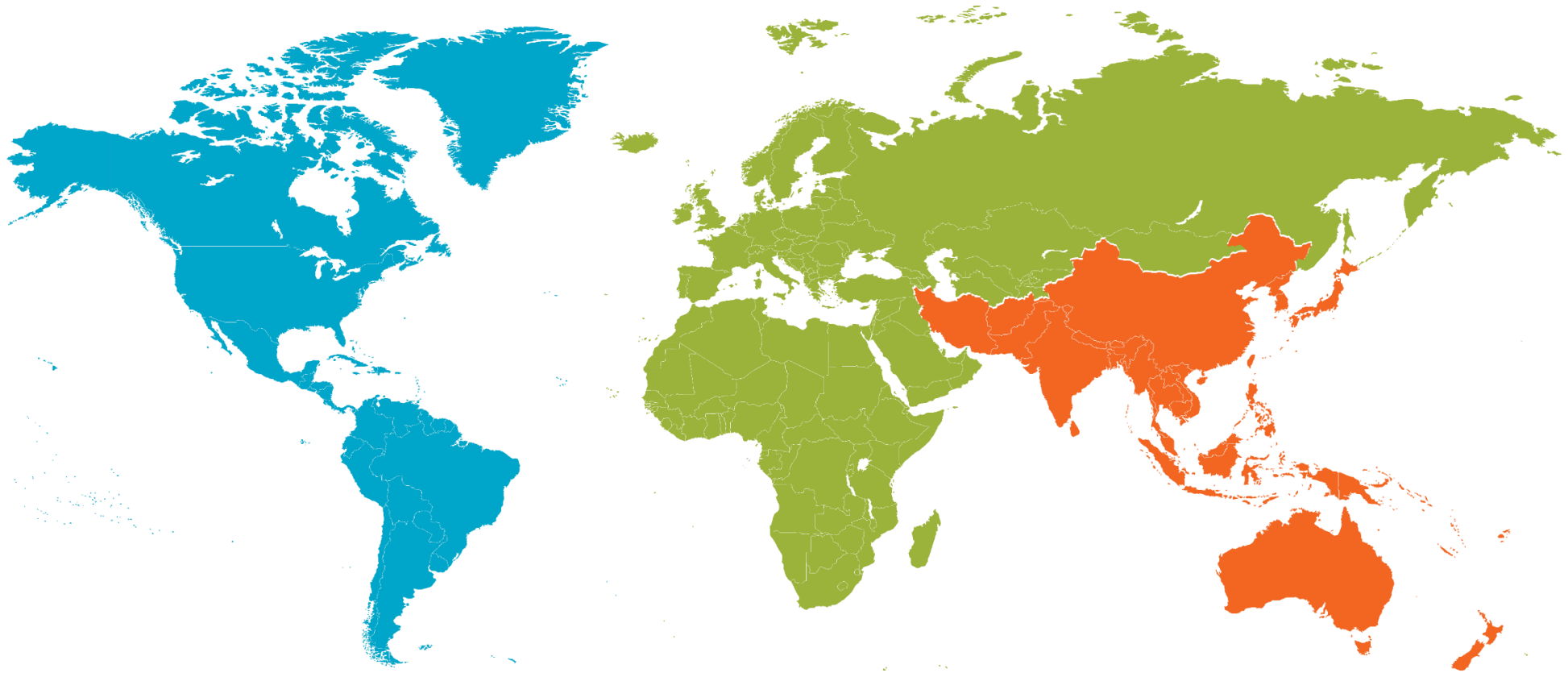
Capacity bands

10-10.5 GHz can add to
existing mmWave capacity



WRC-23 Agenda Items Overview

● Region 1 ● Region 2 ● Region 3



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



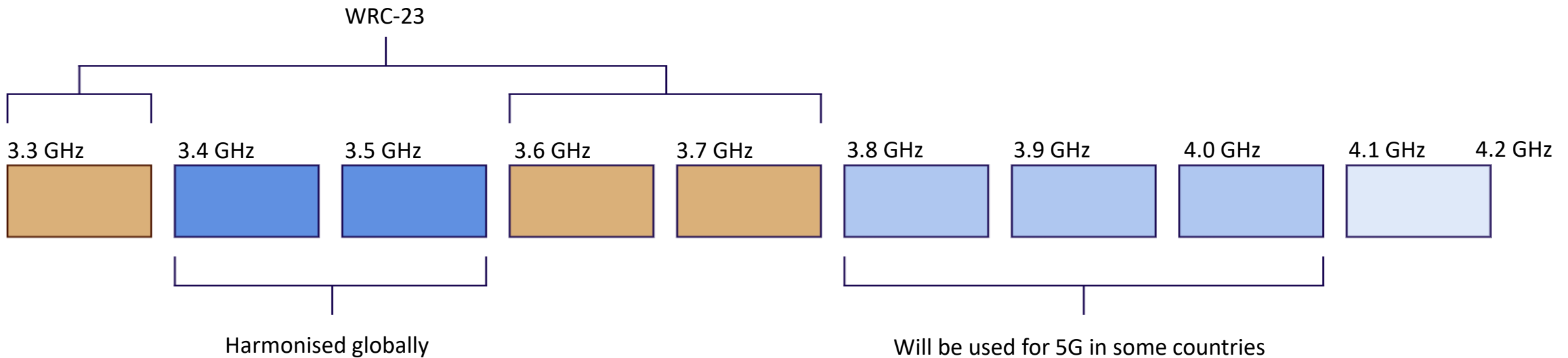
WRC -23 IMT Agenda Items

Bands	Region 1	Region 2	Region 3	Group
470-960 MHz	AI1.5 (IMT)	-	-	TG 6/1
3300-3400 MHz	AI1.2 (IMT)		-	WP5D
3600-3800 MHz	AI1.3 (MS)	AI1.2 (IMT)	-	WP5A / 5D
4800-4990 MHz	AI 1.1 (IMT)			WP5B / 5D
6425-7025 MHz	AI1.2 (IMT)	-	-	WP5D
7025-7125 MHz	AI1.2 (IMT)			WP5D
10-10.5 GHz	-	AI1.2 (IMT)	-	WP5D
IMT in the fixed service	Topic 9.1.c			WP5A / 5C
Article 21	21.5			WP5D



3.5 GHz range

100 MHz channels improve performance and reduce cost of connectivity





The Whole 6 GHz

5925 MHz

6425 MHz

7025 MHz 7125 MHz



Potential use for licensed or unlicensed 5G, Wi-Fi

WRC-23 Discussions



China
Licensed



Europe
Unlicensed



Europe
TBD @ WRC-23



US
Unlicensed





5G Evolution Needs WRC-23 Action

The ITU has a chance to get it right in 2023 and bridge the gap left since WRC-15

Mid-Band Capacity

Expand WRC-15's capacity in
harmonised
mid-band

Coverage

Increase mid and low-frequency
spectrum availability

Digital Divide

Drive further harmonisation for
global markets



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 3.5 GHz range*



ADDITIONAL 300MHz

\$50bn



ADDITIONAL 700MHz

\$80bn



What the GSMA is Working on

WP 5D

- Agenda Item 1.2 – 3.3-3.4 GHz and 6 GHz- characteristics ahead of studies
- Agenda Item 1.5 - 470-960 MHz mobile spectrum use and needs
- Article 21.5 review
- Guidance on compatibility between IMT and MSS in 1518-1525 MHz

SG 5

- Agenda Item 1.3 and 3.6-3.8 GHz
- Issue 9.1.c – Fixed IMT (ad hoc group between 5A and 5C)
- Discussion on 4.8-4.99 GHz (Agenda Item 1.1)

TG 6/1

- Agenda Item 1.5 - 470-960 MHz
- Start of technical studies
- Review of spectrum use and needs from 5D and 6A



Summary: WRC-23 has solutions

Harmonisation

- Regional advances reflected in radio regulations will build ecosystem for global consumers
- Access to core mid-band spectrum in 3.5 GHz range is crucial

Cost-Efficiency

- Sufficient channel size for 5G must be available at e.g. 3.5 GHz
- Lower network density will reduce costs

Coverage

- AI 1.2 and 1.3 can provide city-wide capacity solutions
- Long-term solution to sub-1 GHz must also be found (AI 1.5)