



6G TECHNOLOGY & SPECTRUM NEEDS

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Mobile connectivity is enabling intelligence everywhere

Mobile transformations by Qualcomm



NEXT-GEN WIRELESS

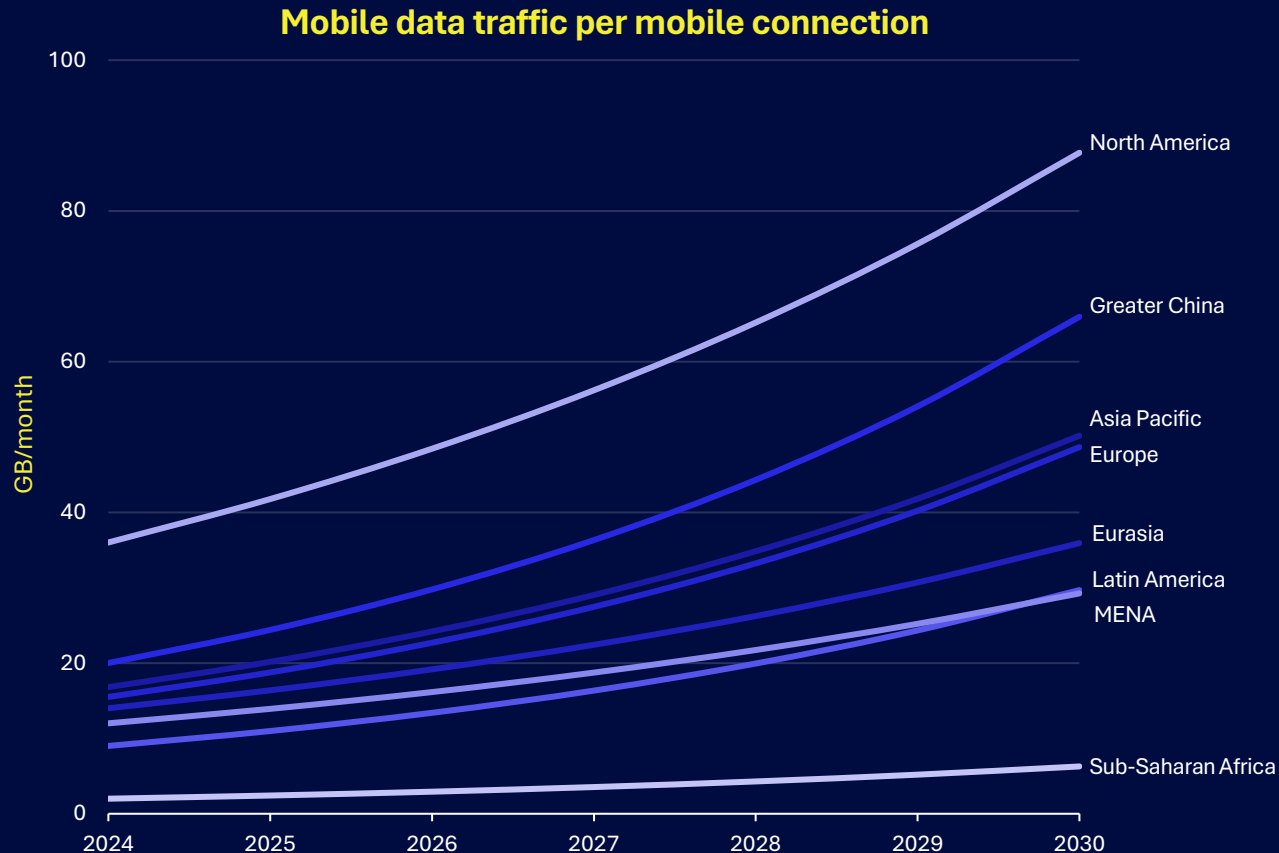
Innovation platform for the next decade and beyond

New user experiences and services at scale

AI-native for efficient and resilient operations

FULLY UNLOCKING AI'S ECONOMIC POTENTIAL

Surging global mobile data usage to be supported by 5G and 6G



Sources: GSMA The Mobile Economy 2025; ABI Research.



Global mobile data usage will **increase 3X by 2030**

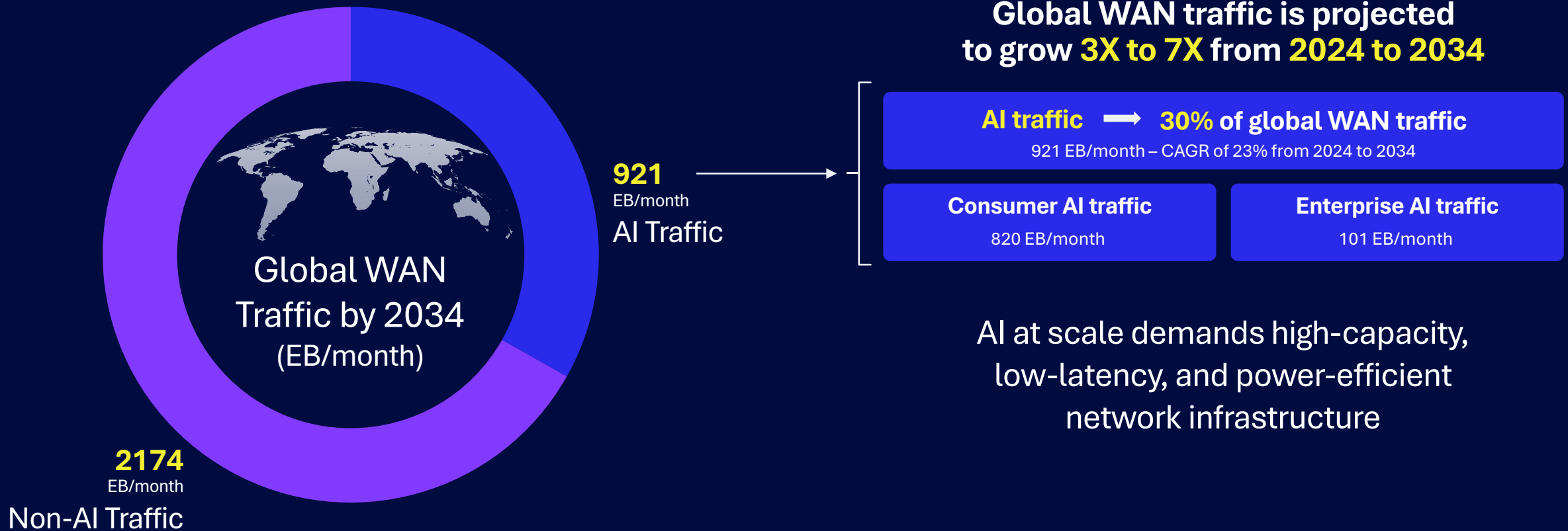
Data traffic per mobile connection projected to grow at a 19% CAGR from 2024 to 2030

Key drivers of this increase:

- Broad 5G adoption & use
- AI generated content and services
- Enhancements in streaming video quality
- Rise of XR eyewear
- Cloud gaming

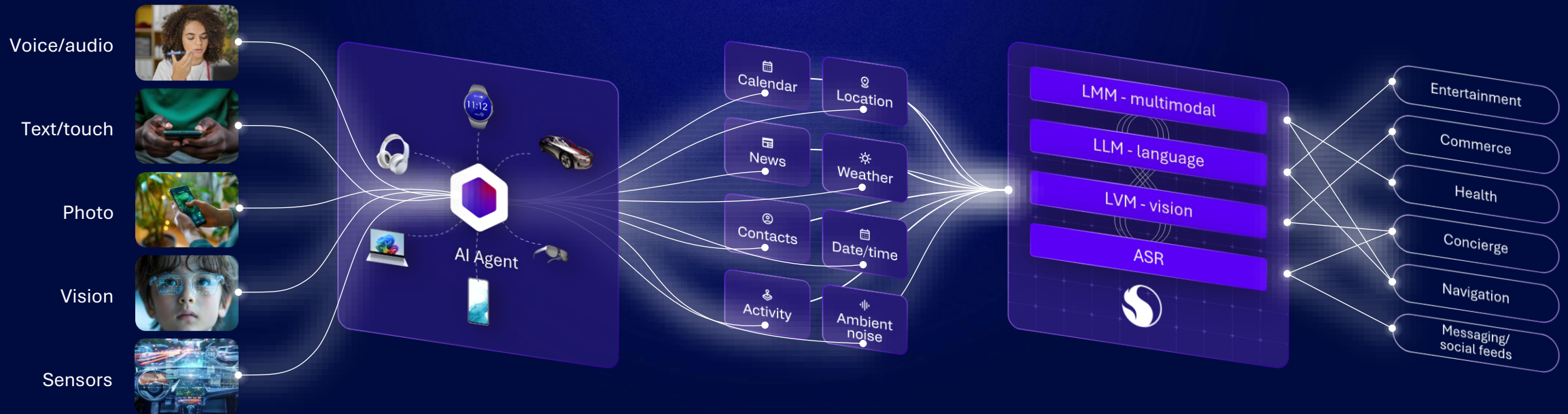
AI is redefining network capacity at scale

Consumer AI will drive global wide-area network (WAN) AI traffic



AI is the new UI

and it is increasing mobile data demands



XR experiences (fueled by AI) will drive mobile data growth

PERSONAL AI ASSISTANT



SEE WHAT I SEE



DESCRIPTION	Real-time responses to user queries	Live video streaming of the user's field of view
TRAFFIC REQUIREMENT	UL: 1-5 Mbps (image, video, audio) DL: 1-5 Mbps (AR overlays, voice) Latency: 100 ms	UL: 1-20 Mbps (video, audio) DL: 1-5 Mbps (AR feeds, overlays) Latency: 100+ ms

AVATAR CALLING



PERSONALIZED EXPERIENCES



DESCRIPTION	Realistic and lively interactions	Digital Companions, Interactive gaming
TRAFFIC REQUIREMENT	UL: 1-10 Mbps (compressed avatar formats) DL: 1-100 Mbps (multi-party calls) Latency: 10 -30 ms	UL: 1-10 Mbps (video, audio, sensors) DL: 5-100 Mbps (2D/3D video) Latency: 10-30 ms

Data volume for a single XR application exceeds current average mobile user volume of 19 GB/month²

USER DATA VOLUME ESTIMATES

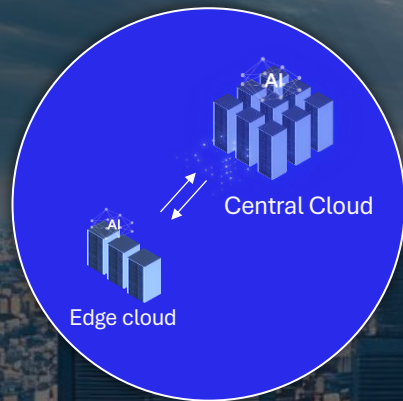
See what I see	Personal Assistant
50GB/month 10Mbps UL, 1Mbps DL, 20mins per day 90% uplink	44 GB/month 2.5Mbps UL and DL 40mins per day 50% uplink

Significant spectrum resources needed to scale XR services

		
Channel Bandwidth	100MHz	~500MHz
Cell Capacity 45 Mbps DL 10 Mbps UL	~ 5 users/ cell ¹	> 25 users/cell

Source: Qualcomm Technologies estimates:
1. Based on 3GPP TR 38.838 "Study on XR Enhancements for NR" for Dense Urban deployment, 80% indoor users projecting ~2-6 users/cell @45Mbps and 10ms latencies DL; ~4-9 users/cell @10Mbps and 30ms latencies UL
2. Ericsson Mobility Report, June 2025

6G will connect an expanded set of AI-powered devices and enable new services



Enabling tiered AI inferencing
on device, at network edge, and cloud



ON-DEVICE AI

Processing and streaming contextual data
including sensor, audio and vision data



The smartphone currently is the primary mobile
hub for connectivity and compute, but that is changing



AI-powered consumer devices (glasses, watches, PCs)
with cellular connectivity



AI-powered IoT devices, robots, and cars with mobile
cellular connectivity

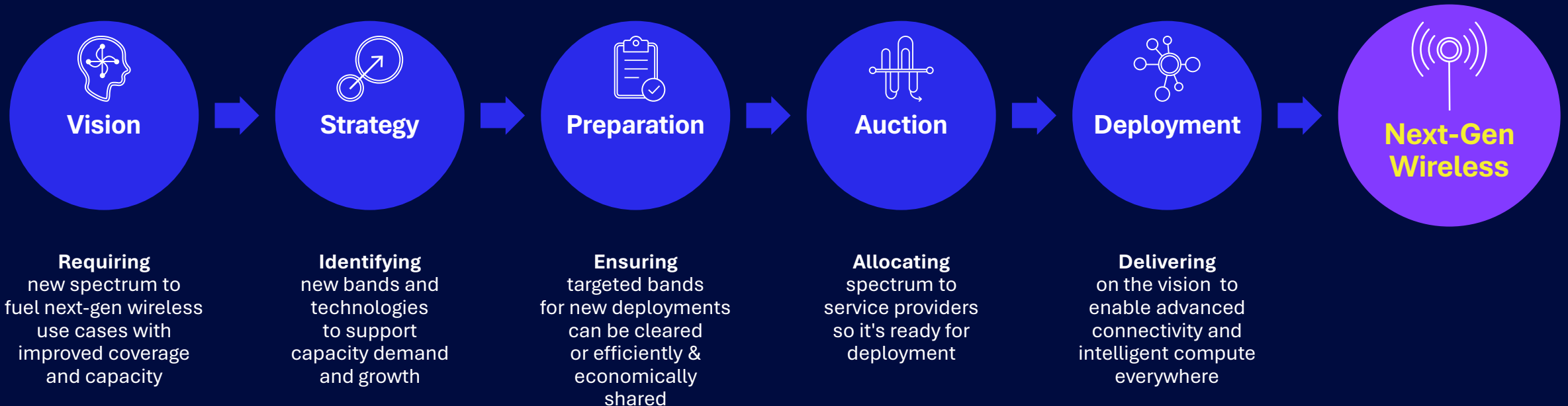


Surging mobile data
demand necessitates
large licensed
spectrum blocks for 6G



Introducing new bands for global connectivity takes time

Spectrum is the key ingredient to unlocking wireless advancements



Spectrum planning cycle: ~8-10 years

Qualcomm began working to open 6G spectrum bands in 2021

Outcome from WRC-23

Creates the conditions for a more connected and technologically advanced future



Setting the stage for WRC-27

Outlined the WRC-27 agenda, encompassing the evaluation of extra spectrum bands for IMT to support next-gen mobile connectivity in the 2030s



New spectrum allocations

Allocated new low-band (< 1GHz) and mid-band (3.5 GHz and 6 GHz) spectrum, crucial for mobile sector innovation and digital ambitions globally



3.5 GHz band harmonization

Achieved final harmonization across EMEA, marking a significant advancement for 5G technology



6 GHz band for IMT

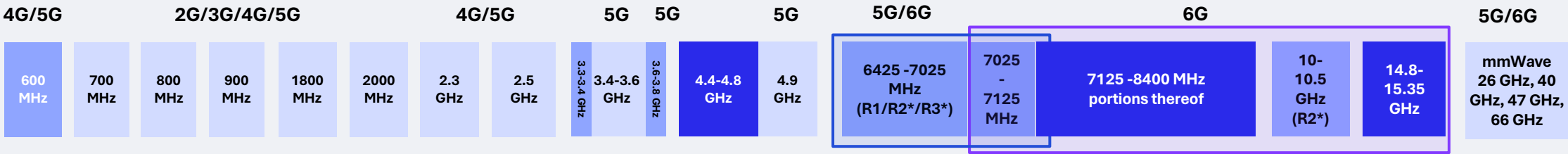
Identified 6.425 - 7.125 GHz for IMT in all ITU regions, supporting the expansion of mobile capacity for future networks



Low-band spectrum for digital equality

Allocated the 470-694 MHz band, aiming to improve internet connectivity, especially in rural areas

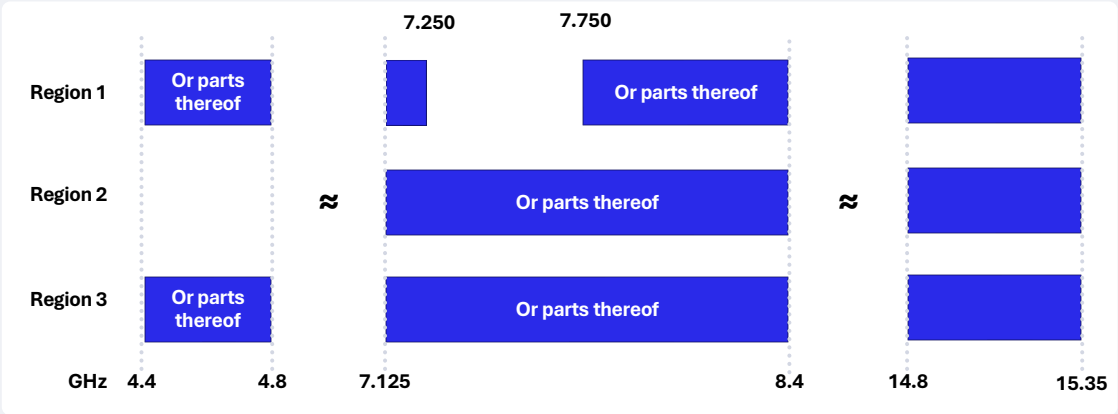
Setting the stage for WRC-27



- Existing IMT
- IMT spectrum identified at WRC-23
- IMT spectrum to be studied towards WRC-27

* By footnote, limited countries

ITU-R will study new candidate bands for IMT-2030/6G usage with decisions to be made at WRC-27



To support the usage scenarios defined in the IMT-2030 framework, i.e., ITU-R M.2160 Recommendation, there is a need to study **mid-band spectrum** with **more contiguous bandwidth**

Thank you

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6G will bring innovation opportunities for all spectrum bands

