Qualcomm

New Delhi

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ISMC : WRC-27 Preparations

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Collaborating with the global ecosystem to drive innovation

Shaping the digital future

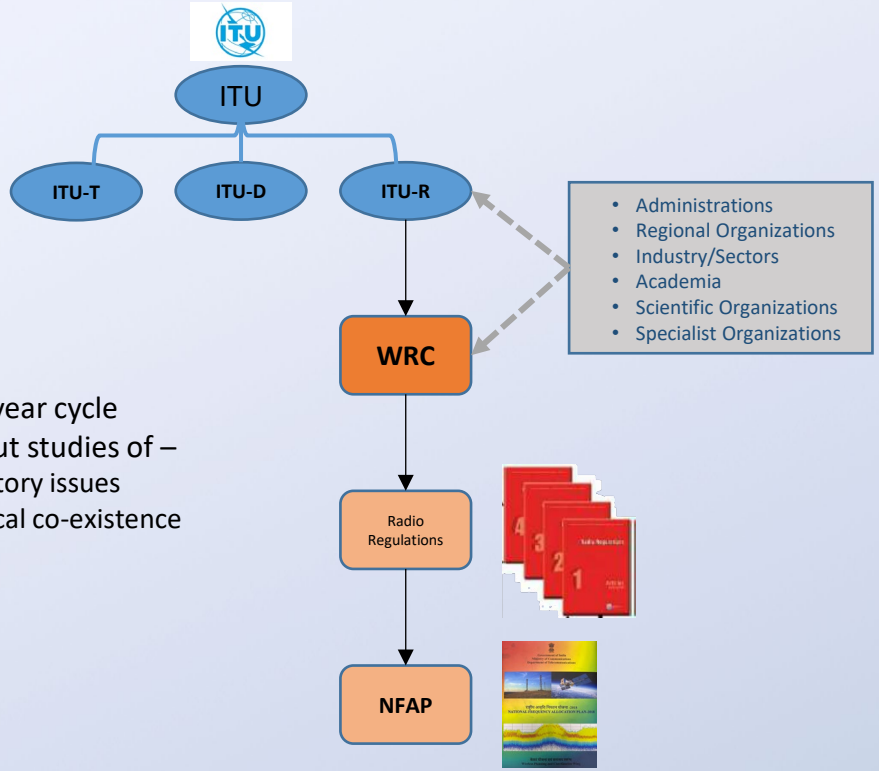
Powering the mobile revolution

Redefining connected processing

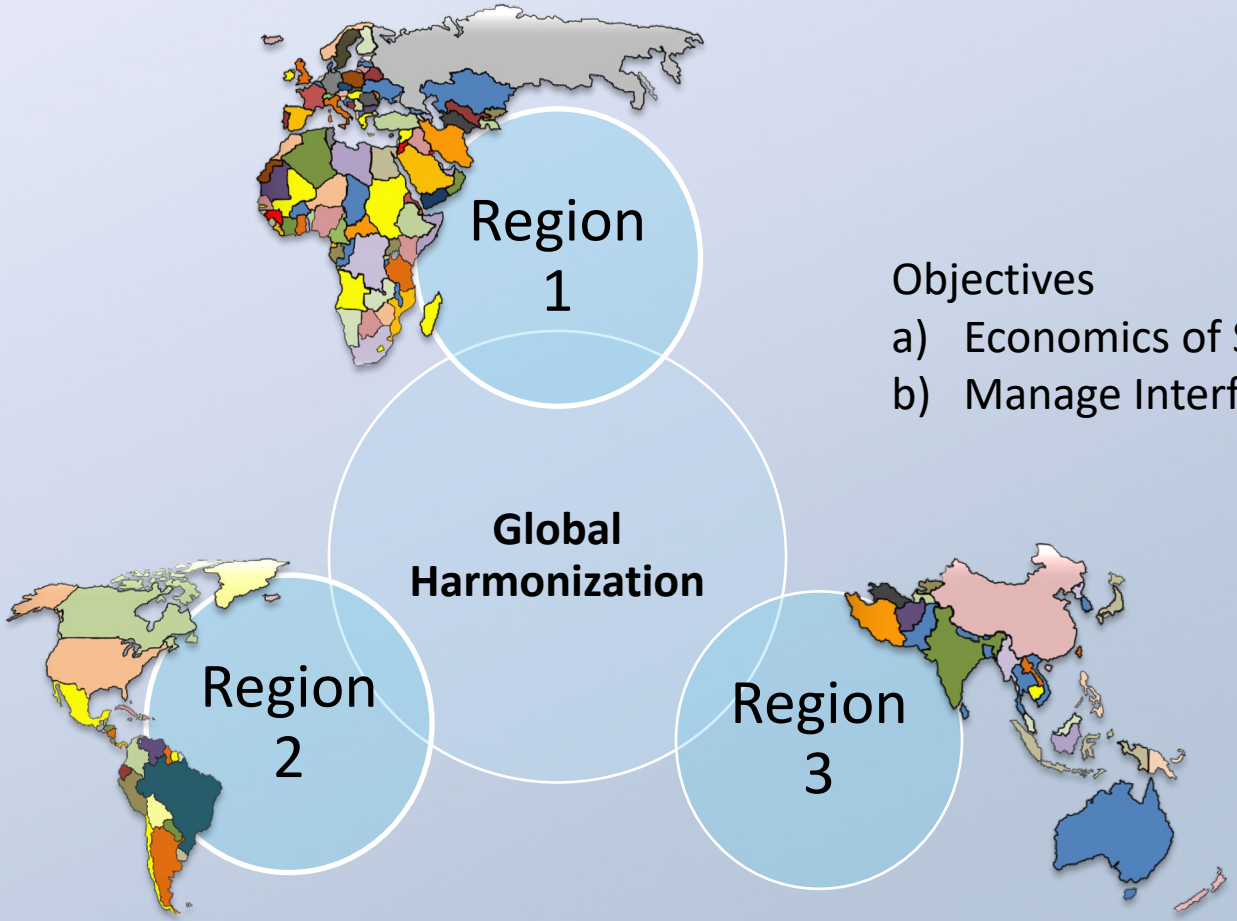
Enabling intelligent computing everywhere

Harmonization Process

ITU Process : Global Harmonization



- WRC - 4-year cycle
- Carries out studies of –
  - Regulatory issues
  - Technical co-existence



Objectives

a) Economics of Scale
b) Manage Interference

Spectrum is Globally and/or Regionally Harmonized

Where are we in the cellular innovation cycle?

5G

Ramping volume and expanding to new use case

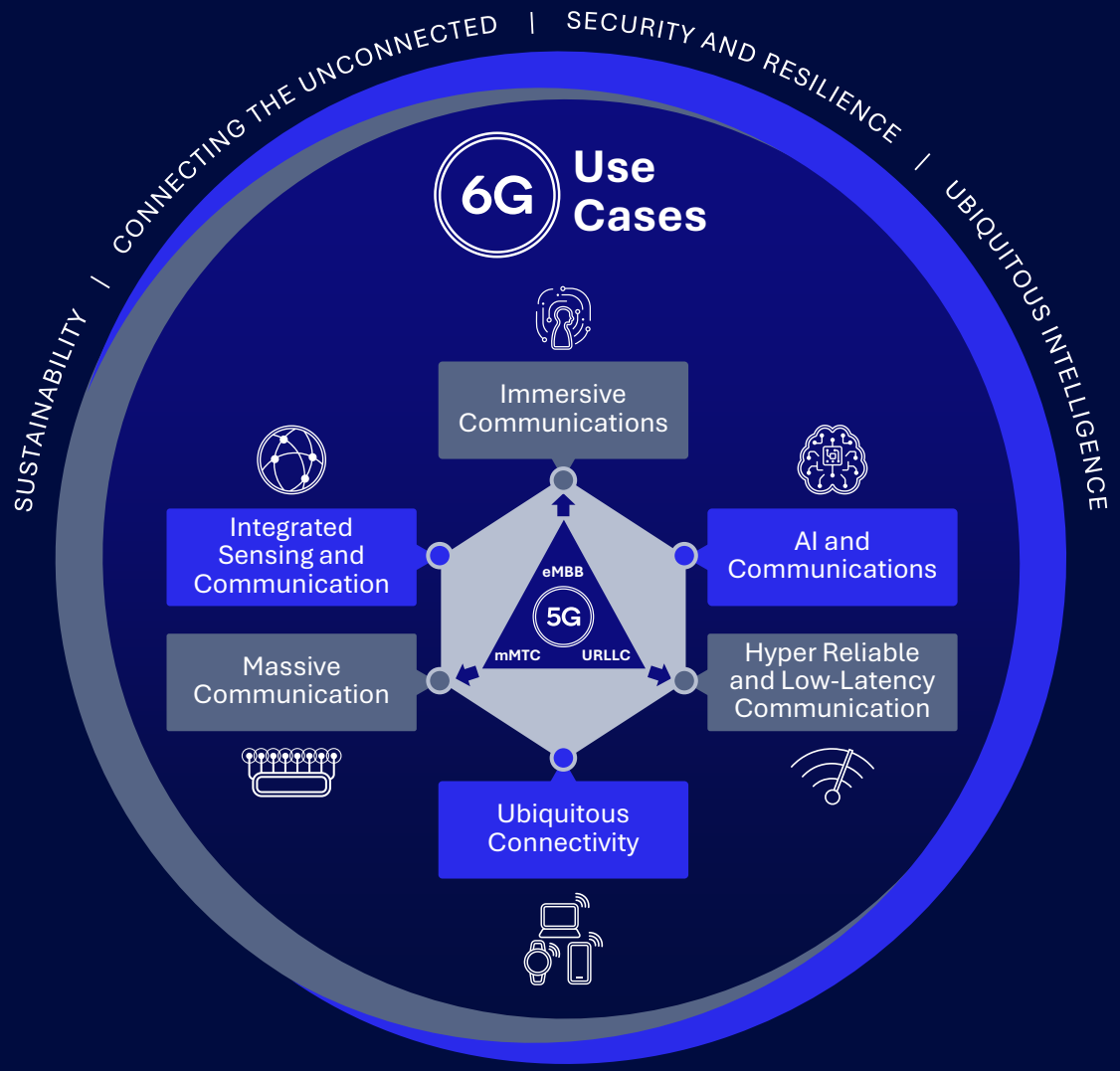
5G ADVANCED

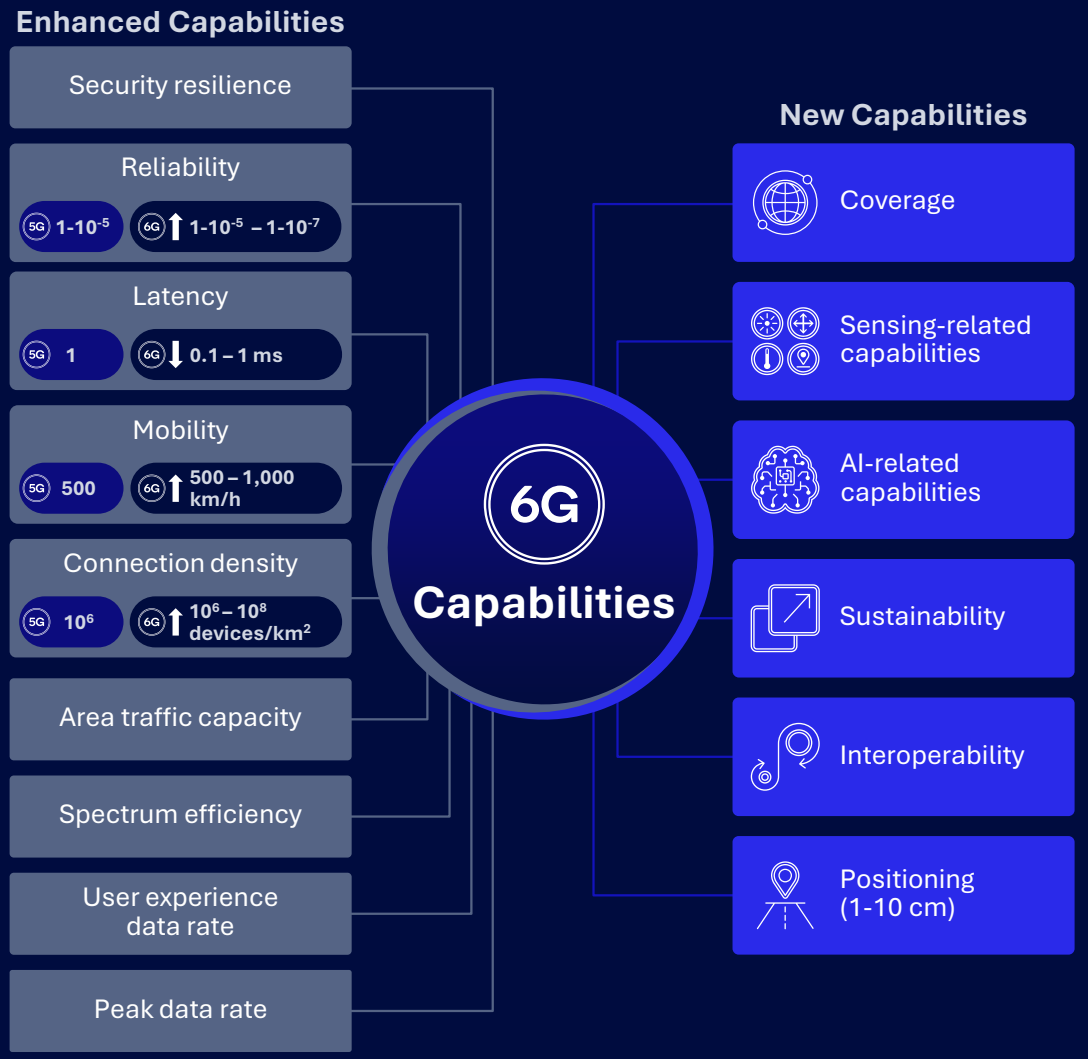
Completing 1st standard —2nd phase of 5G innovations

6G

Aligning on vision, foundational research, timeline, requirements

6G vision from ITU-R — Usage scenarios and capabilities





Source: ITU-R's IMT towards 2030 and beyond (https://www.itu.int/en/ITU-R/study-groups/rsg5/rwp5d/imt-2030/Pages/default.aspx)

6G will support an unprecedented range of frequency bands

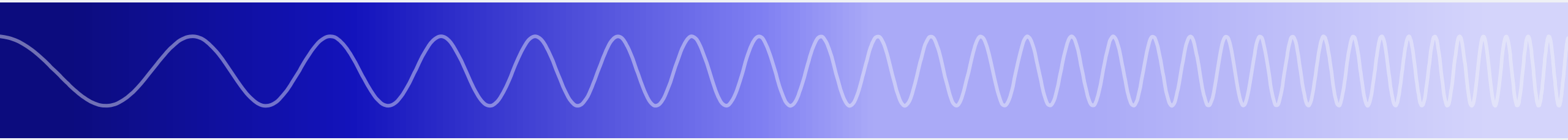
LOW BANDS
below 1 GHz (~20 MHz BW)

MID BANDS
1 — 7 GHz (~100 MHZ BW)

UPPER MID-BANDS
7 – 24 GHz (~500 MHz BW)

mmWAVE BANDS
24-71 GHz

SUB-THZ
above 100 GHz



With 6G, lower frequencies with narrower bandwidths will provide even better long-range coverage.

Bandwidths up to ~100 MHz, shorter wavelengths, massive MIMO antennas and MU-MIMO enable high capacities

New 6G spectrum with bandwidths up to ~500 MHz bring additional wide-area capacity for communications and sensing

6G spectrum bringing additional local-area capacity for communications and sensing

Higher frequencies with wide bandwidths provide excellent precision

Improving coverage and capacity in legacy bands and supporting new frequency bands for growth

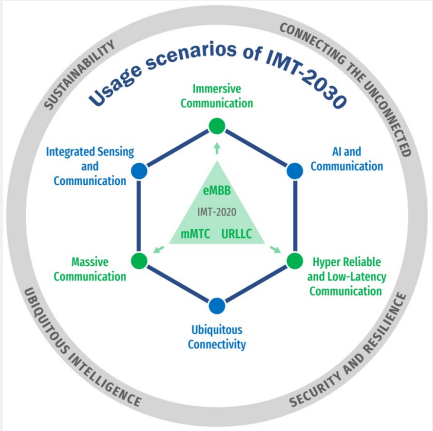
Spectrum Bands Identified for IMT studies

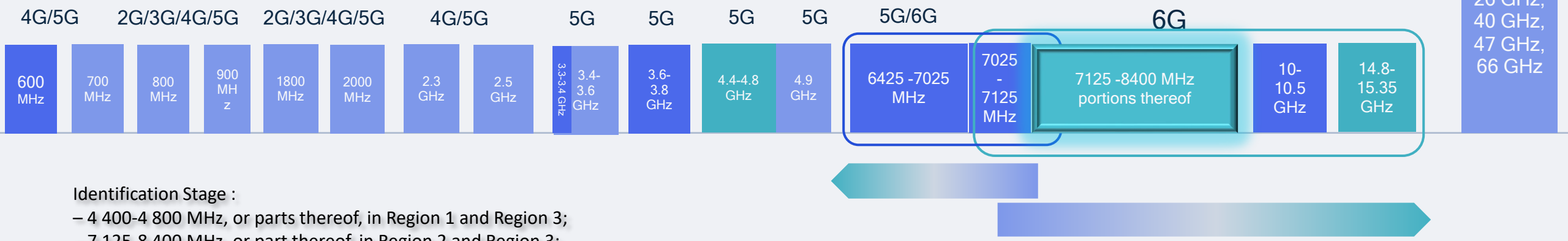
WRC-27 Agenda item 1.7

Administrations or Regions will study new candidate bands for use by 6G/IMT-2030, for decisions WRC-27.

Study Stage :
- 4 400-4 800 MHz
- 7 125-8 400 MHz
- 14.8-15.35 GHz.

Additional contiguous broadband spectrum in FR3 range is required to support the immersive communication and high-resolution sensing in wide area coverage deployment.





Identification Stage :
– 4 400-4 800 MHz, or parts thereof, in Region 1 and Region 3;
– 7 125-8 400 MHz, or part thereof, in Region 2 and Region 3;
– 7 125-7 250 MHz and 7 750-8 400, or part thereof, in Region 1;
– 14.8-15.35 GHz, Global

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

Spectrum Bands Identified for IMT studies (Lead Group : ITU-R WP5D)

WRC-27 Agenda item 1.7 : Readiness for Sharing Studies

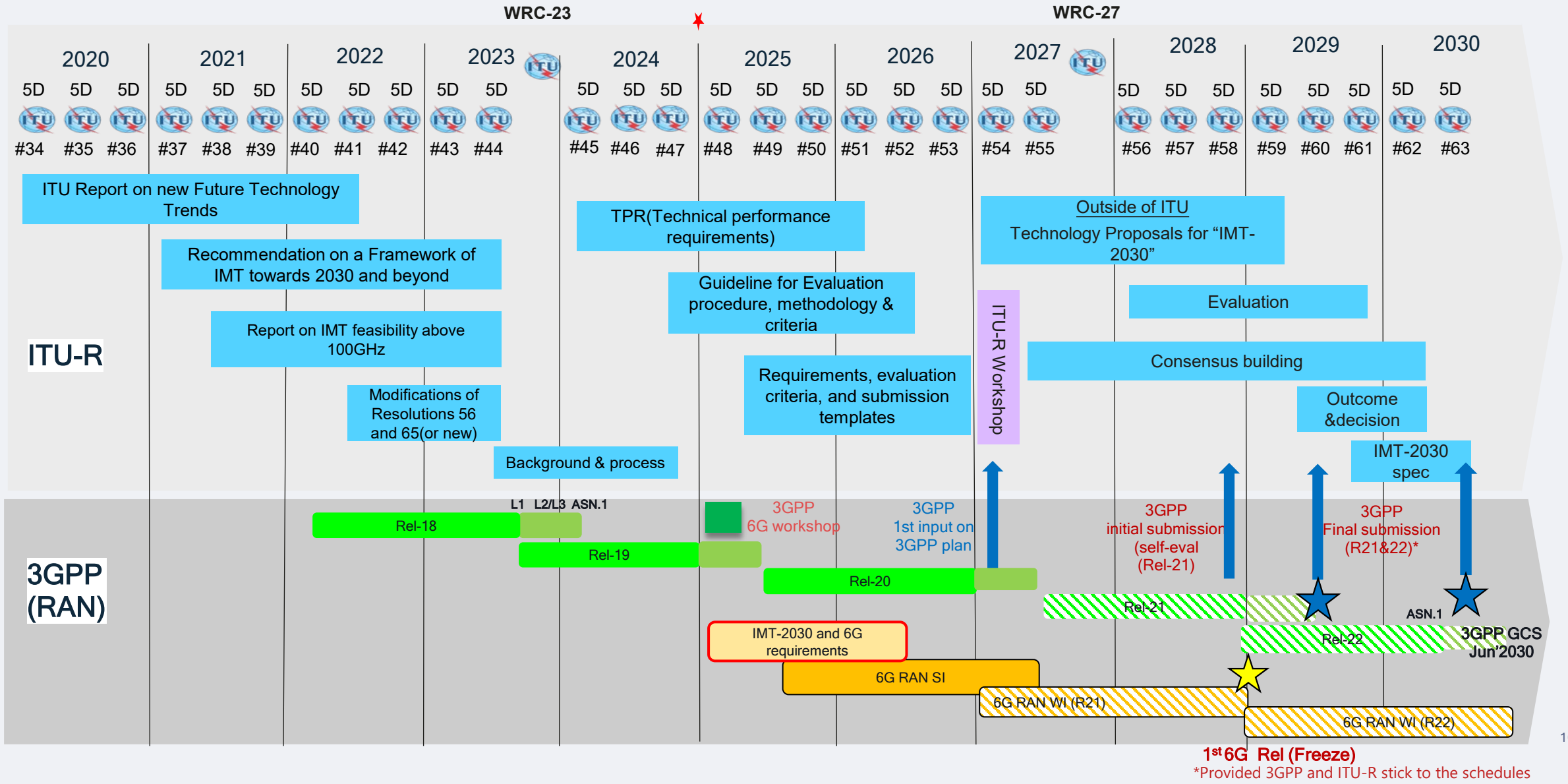
IMT Parameters:

- Most 7.124-8.4 GHz parameters finalized
- Parameters for 14.8-15.35 GHz to be finalized in Feb-25 at 5D#48
  - Decision on macro deployment to be made
- Mobile industry's priority is 7.124-8.4 GHz

Key Technical Discussions/Developments:

- AAS modelling issues: resolved with the great effort from Industry
- Reverse studies from existing incumbent services to IMT
  - Traditionally protection is always for the incumbents
  - Some countries asking for reverse studies to protect IMT from incumbents (France, Russia, China)
  - Many countries supporting traditional approach of following relevant Resolution of WRC agenda (US, Korea, Brazil, India)
- IMT deployment modelling method for large area
  - **Ra/Rb**: US, Korea, Canada, Russia, Japan, GSMA, and Industry for keeping Ra/Rb modelling.
  - **Population based method**: UK, New Zealand, France, Germany and Samoa for population-based method for IMT deployment modeling
  - Need to do a sensitivity analysis study for calibration purpose
    - Approx 800K BS per TSP in India in 6/7 GHz

ITU-R IMT-2030 and 3GPP Timeline



Global Momentum for 6G is growing

We are leading key discussions and working groups to promote early government investments in critical technologies

ITU

IMT-2030 defines next-gen mobile system requirements for 2030 and beyond

3GPP A GLOBAL INITIATIVE

The standards body responsible for global 6G technology standardization

WRC-27 Preparation

Key Agenda Items :

AI 1.7
AI 1.12
AI 1.13
AI 1.14
AI 1.19

Essentials

- Identify WRC Team
- Nomination of National Coordinators for various Agenda Items
- Coordination within Sub-Region/Region
- Coordination and alignment with administrations with common interests
  - Based on each Agenda Item
- Participation in relevant Working Parties by the National Coordinators
- Timely identify National priorities
- Timely identify issues for negotiations
- Work on relevant sharing and compatibility studies

Thank you

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