

# 5GIF

**National Workshop on Learnings from WRC-23 and the way forward  
Planning for WRC-27 and forthcoming ITU  
and APT meetings**

**Thursday, 22nd February, 2024  
Hotel Hyatt Centric, MG Road, Bangalore**



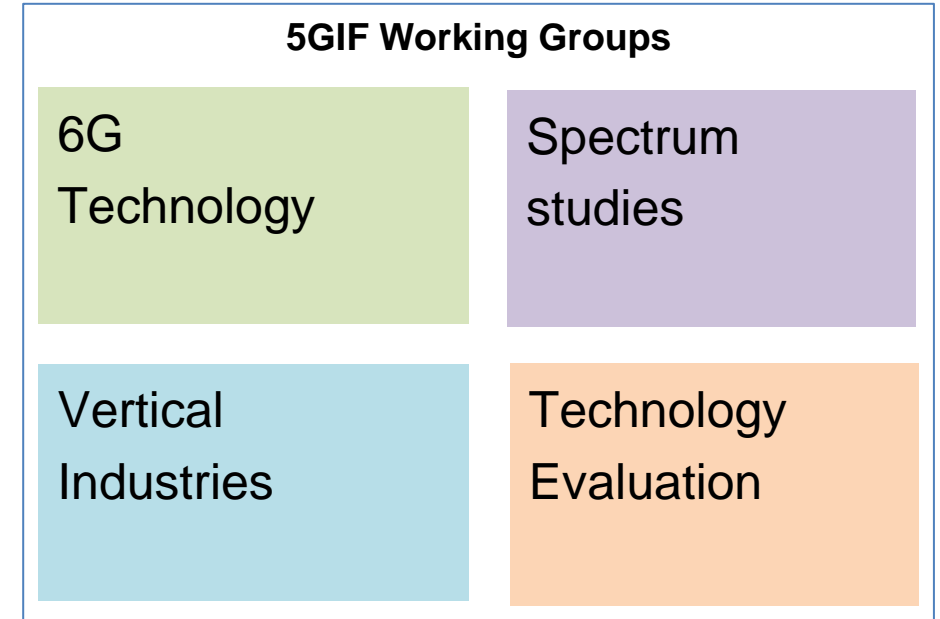
# About 5GIF

- An industry collaborative forum, established to enable synergizing the national efforts and play a significant role in shaping the strategic, commercial and regulatory development of the 5G ecosystem in India.
- We promote technologies developed by the 3GPP that are general purpose in nature.
- A trusted partner for the research community, the regulators, and to companies representing both ICT development and a broad range of ICT user fields for knowledge dissemination, training and know how on 6G.



# 5GIF Engagements

- Improve the visibility of 3GPP technologies amongst Indian stakeholders and regulatory bodies
  - Technical activities including the generation of Technical Reports, performance studies and drafting Recommendations
  - IMT-2020 Technology Evaluation
  - Facilitating the 3GPP meetings in India and 3GPP knowledge dissemination



- 6G Initiatives and engagements in India
- Contributions towards IMT-2030 in ITU-R, through the NSG5
- WRC-23 & WRC-27 – preparation and technical studies for National preparatory committees

# Recap of 5GIF activities in previous cycle

- Inputs to TIG 6G (Bharat 6G) Committee (including Spectrum) related to studies
- Inputs to AWG on 7-24 GHz Questionnaire
- Inputs to APG / NPC on WRC27 Agenda items in 7-24 GHz bands
- Contributions to NSG5 and NPC on WRC23 agenda items during 2019-2023 cycle
  - IMT Parameters
  - Sharing Studies on multiple agenda items
- 5GIF representation in multiple workshops and events
- Other 5GIF contributions where WG Spectrum was involved
  - 5GIF contributions to TEC reports on IoT / V2X

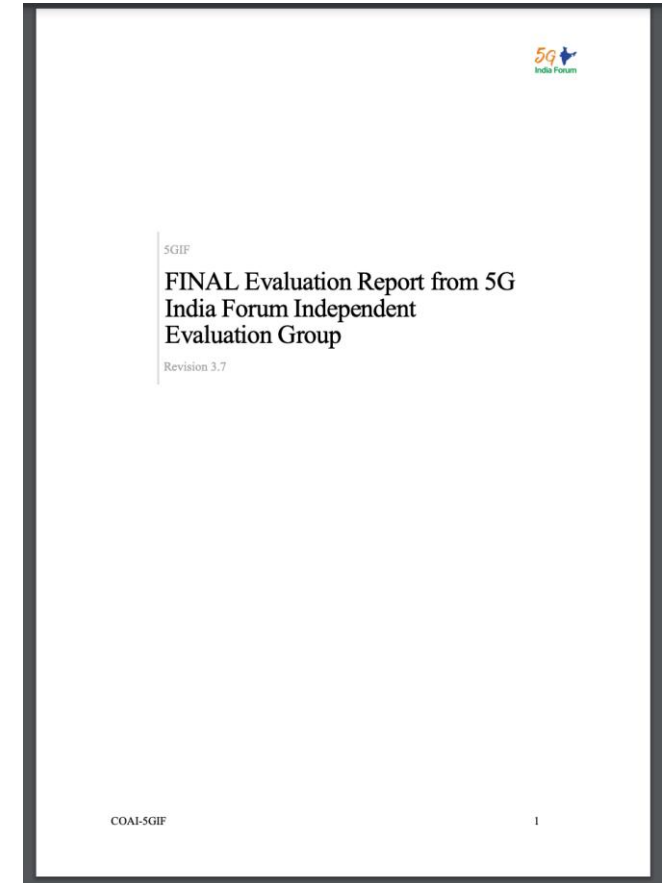
# 5GIF – Technology Evaluation

## Evaluation of Candidate Technology of IMT-2020

3GPP NR, LTE  
DECT NR-2020  
EUHT from NuFront

## Satellite Component of IMT-2020 (WP4B)

3GPP NTN



# ITU-R Propagation models : P.619, P.2108, P.1812

## ITU-R P.619

### A. Prediction of beam Spreading Losses

#### Inputs For Sample Calculation

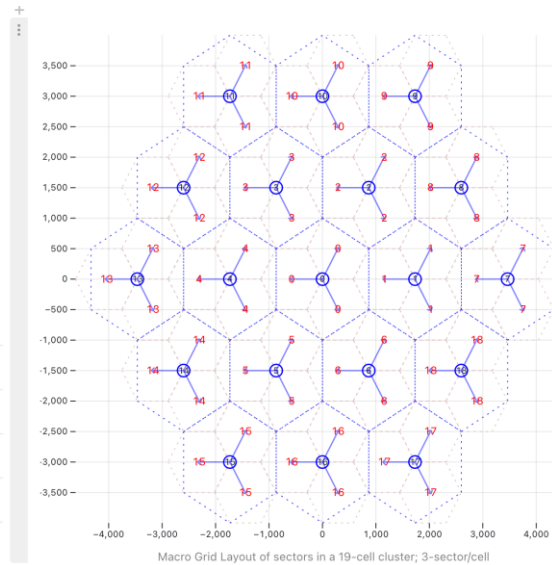
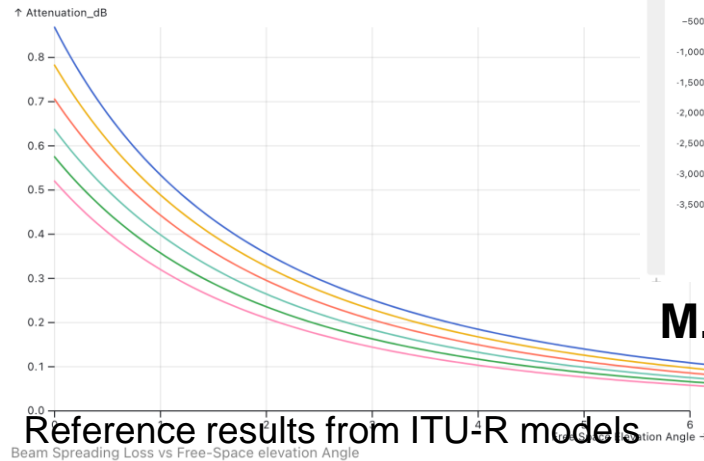
get\_Beam\_spreading\_loss = f(Altitude\_km, Elevation\_deg, Direction)

Altitude (Km)

Free Space elevation Angle(degrees)

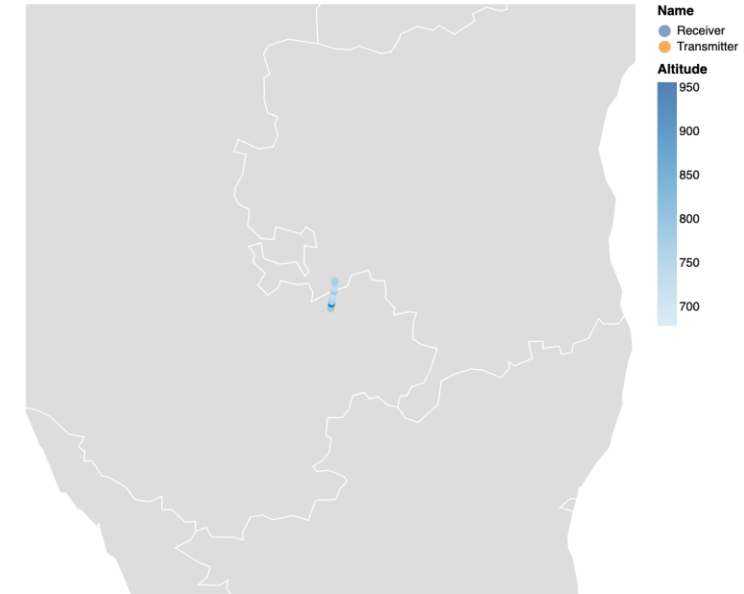
Direction  Earth to space  Space to earth

Legend: 0 (blue), 1 (orange), 2 (red), 3 (green), 4 (dark green), 5 (pink)

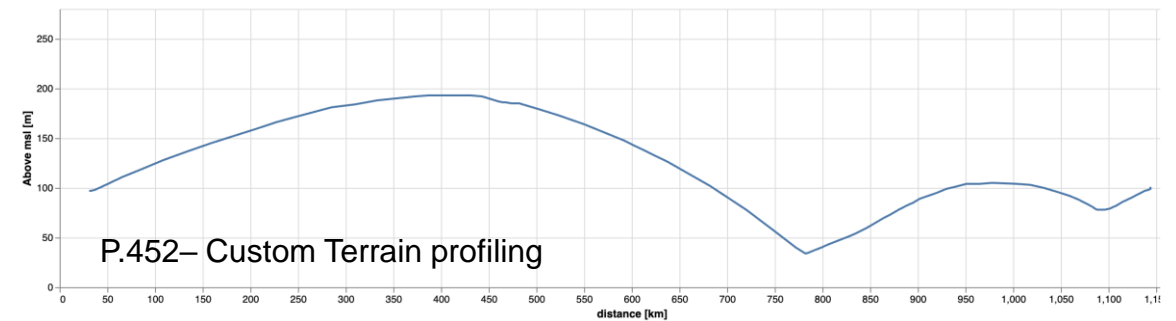


M.2101

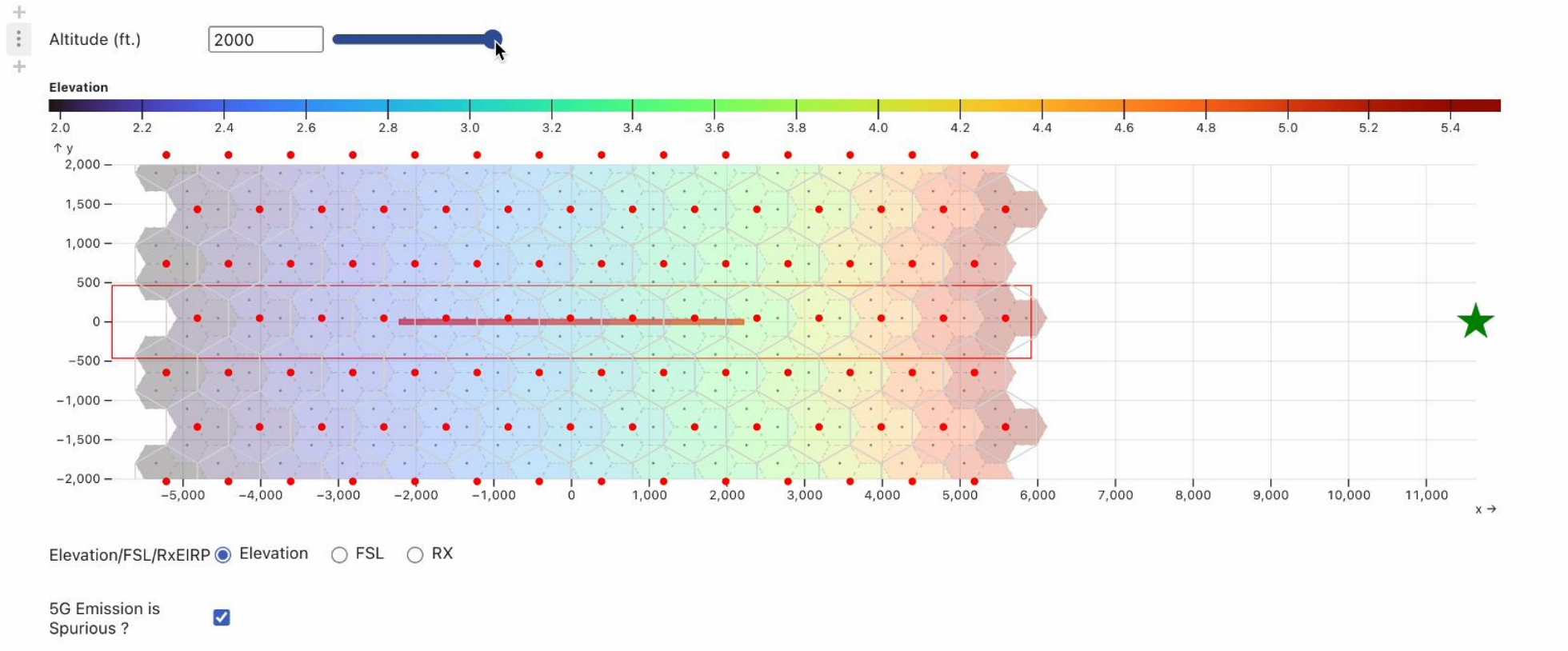
Scale



P.1812 – Terrain profile – Tx-Rx Locations



# Studying Altimeter case



Reference – Delhi Airport runway

# 5GIF – Sharing Studies (FSS)

5G India Forum

## 5GIMT FSS Sharing Study Tool

allregion@5gindiaforum.in

Log Out

Noise Temp.(K): 650

Satellite Angle: 83

MidBand to 6GHz: 0.6

FSS Rx Gain (dBi): 20

Shaped Footprint:

Show Variables:

Grid Edge:

Profiles: Indrav2

32,28,24,24,20,18,17,17

<b>15.2M</b> TOTAL AREA (15180213) SQKM	<b>170K</b> TOTAL BS (170018)	<b>26K</b> ACTIVE BS (25503)	<b>-110.5</b> NOISE DBM	<b>-121.0</b> ALLOWED INTERFERENCE DBM
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151802,18216

- Urban: -135.69 dBm
- SubUrban: -146.78 dBm

### Country Stats (7)

Iran: RaRb Scale: (1.00)   1.65M sqkm #BS 18.4k	Kazakhstan: RaRb Scale: (1.00)   2.71M sqkm #BS 30.4k	Afghanistan: RaRb Scale: (1.00)   615k sqkm #BS 6.89k	Pakistan: RaRb Scale: (1.00)   765k sqkm #BS 8.57k
India: RaRb Scale: (1.00)   3.06M sqkm #BS 34.3k	China: RaRb Scale: (1.00)   5.78M sqkm #BS 64.8k	Myanmar: RaRb Scale: (1.00)   596k sqkm #BS 6.68k	

Globe Color Layer:  None  Elevation  binID

Map Color Layer:  IMT Cell Grid  Elevation  FSSGain  lbyN  Country

Footprint: Satellite Long: 83 | 83

ITU SNS Website

lbyN Min: -160 | -160

lbyN Max: -30 | -30

Refresh

Map Views

Evaluate:  Exclude Zone

completed

Covered by Satellite Footprint

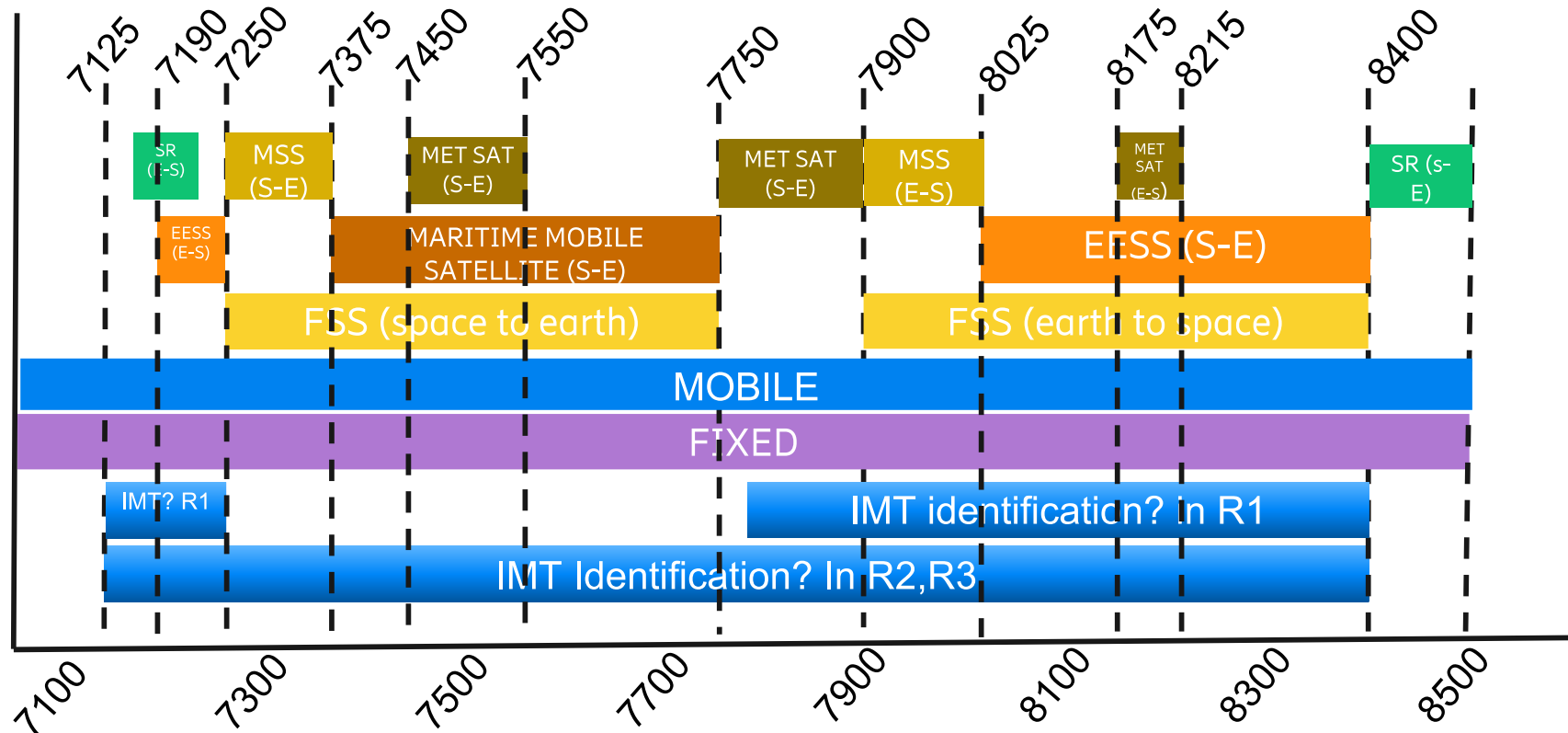
true false

Elevation 83E  
lbyN: -24.9dB



# WRC-27 : Preparing for new study cycle

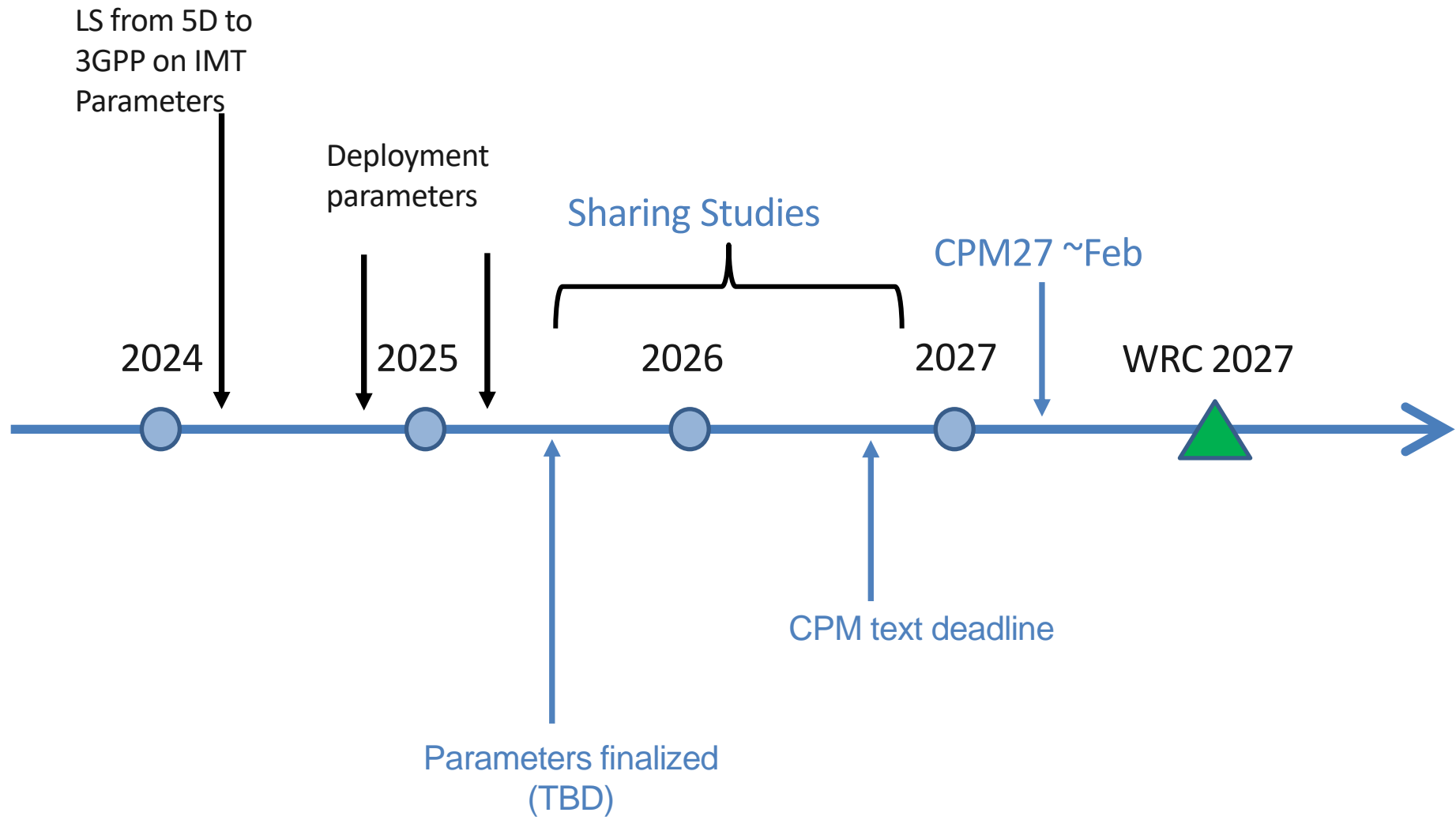
## Many combinations of services



**Contribute Technical studies for National input**

- AI 1.7
- AI 1.13

# Timeline in ITU towards WRC-27 (WP5D)





For more information visit  
<https://5gindiaforum.in>