

6G Spectrum Perspectives

UK SPF Cluster 4

WRC27 Agenda Item Discussion

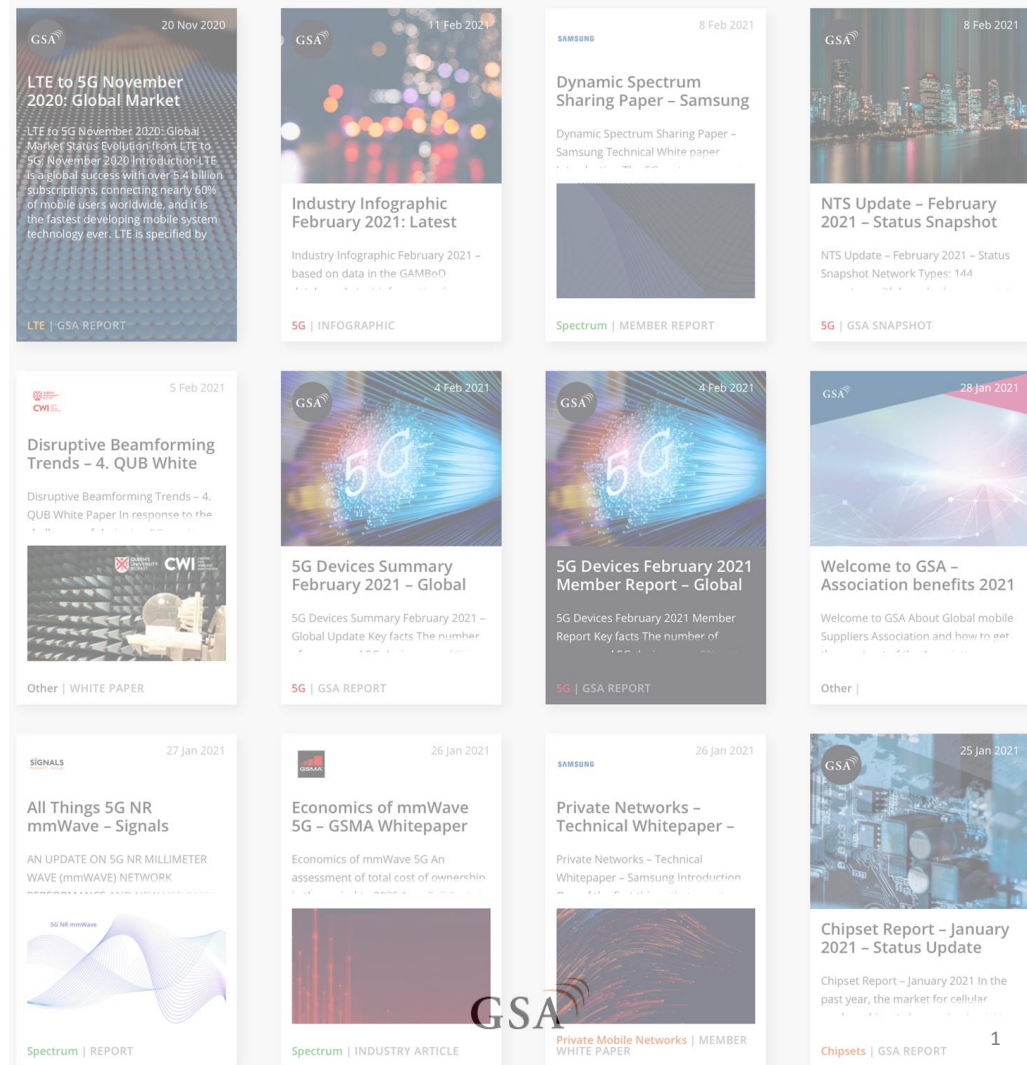
29th November 2021

Stuart Cooke

Chair GSA Spectrum Team

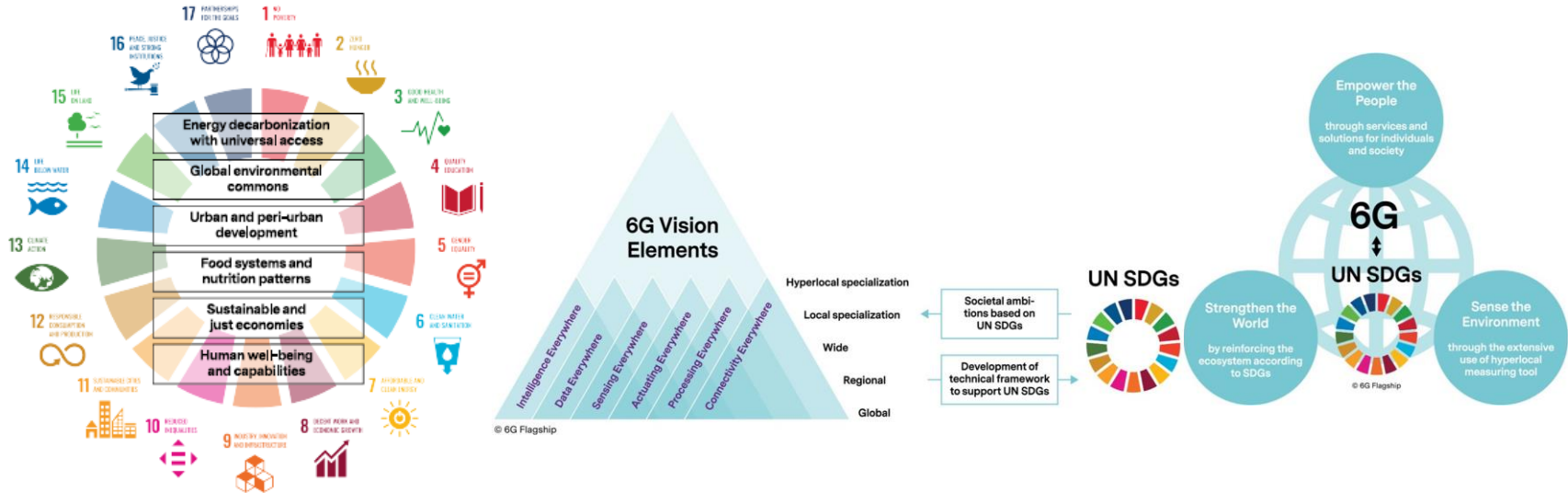


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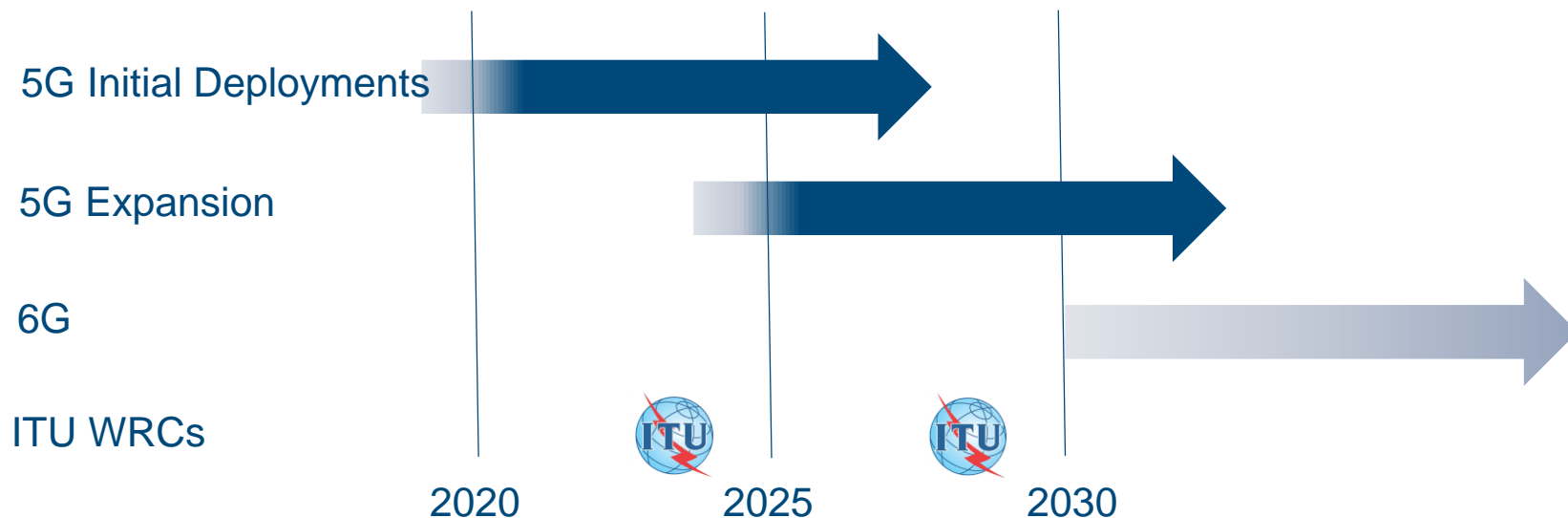
Everyone, Everything, Everywhere

10Bn people, 1000Bn things, 95-100% coverage



- Healthcare, education, food, decarbonisation, electricity, water, communications objectives are essential
- ITU/3GPP/CEPT/EU etc helps enable UN / Europe Sustainable Development Goals (SDGs) to be realised
- 4G / 5G / 6G need to help connect people & things everywhere to the benefit of society & our planet
- IMT can help enable SDGs to be achieved

IMT Spectrum 2020-2030



- 5G underway with licensing & roll outs
- 5G expansion spectrum planning underway in other regions 2023/5+ timeframe
- 6G early research & planning discussions commencing targeting 2030+ timeframe

Global 6G research & framework - examples

China



www.caict.ac.cn/english/news/202106/t20210608_378637.html

Korea



Ministry of Science and ICT

www.msit.go.kr

Europe



www.hexa-x.eu

Japan



www.b5g.jp/en/

ITU



www.itu.int

USA

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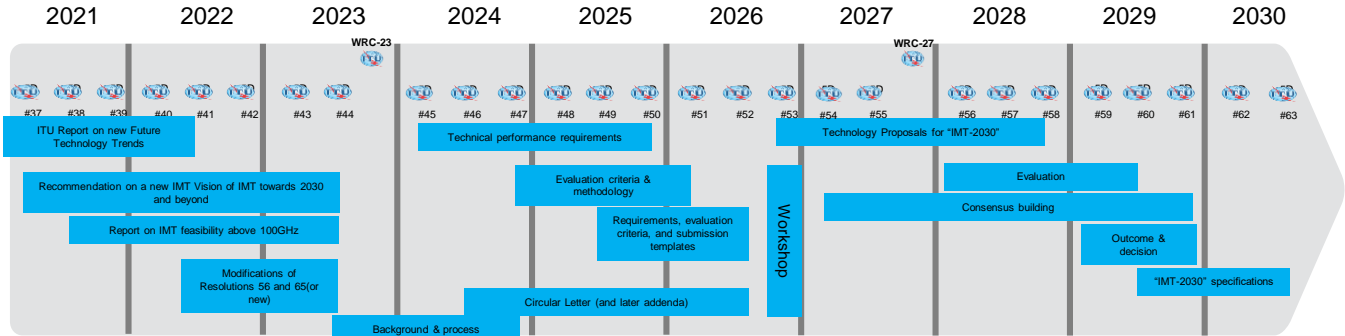
6G Timing

- Major elements stable - Tech Trends, Vision, Feasibility 100GHz+, IMT standards in 2030
- Further discussion on detailed timings & deliverables for period 2024-2030

Option A

ITU-R WP5D

Workplan Group chair developed option A & B discussion paper to help move forward the discussion. Other options also exist.



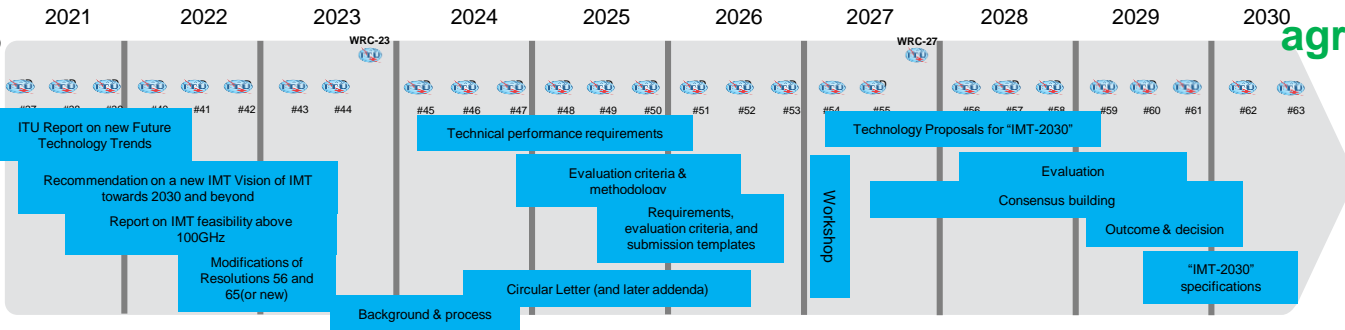
← Agreed →

← Under discussion →

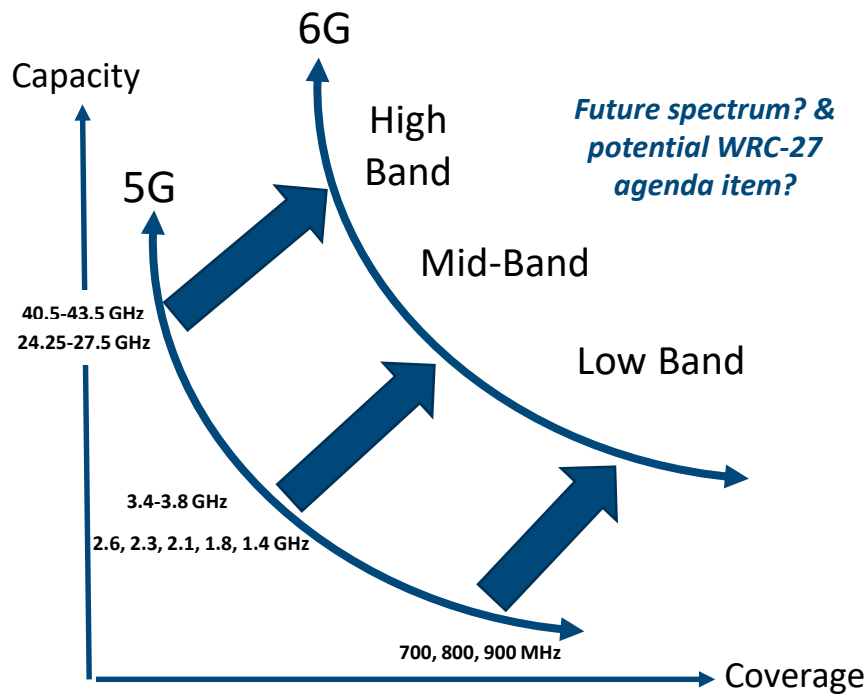
→ Finalize in 2030 agreed!

Option B

Further discussions at the next meeting of WP5D.



6G Spectrum Europe Areas for research & debate



Spectrum

Sharing

NTN

- Exploit existing low, mid and high bands
- Consider WRC-23 outcome (AI 1.2* and AI 1.5** in particular)
- 3.8-4.2 GHz currently being harmonized for local area connectivity with low/medium power
- Consider new spectrum for 6G (e.g., sub-THz & other bands in all spectrum ranges)

- Is sharing feasible (geographic, time, freq, etc)?
- Early discussion on standards & regulatory aspects?

- Role of Non-Terrestrial Networks?
- Standardisation (3GPP) approach ?

- (*) WRC AI 1.2 'to consider identification of the frequency bands 3 300-3 400 MHz, 3 600-3 800 MHz, 6 425-7 025 MHz, 7 025-7 125 MHz and 10.0-10.5 GHz for International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis....
- (*) Resolution **245**; Res2 conduct and complete in time for WRC-23 the sharing and compatibility studies¹, with a view to ensuring the protection of services to which the frequency band is allocated on a primary basis, without imposing additional regulatory or technical constraints on those services, and also, as appropriate, on services in adjacent bands, for the frequency bands: 3 600-3 800 MHz and 3 300-3 400 MHz (Region 2); **3 300-3 400 MHz (amend footnote in Region 1); 7 025-7 125 MHz (globally); 6 425-7 025 MHz (Region 1); 10.0-10.5 GHz (Region 2)...**
- (**) to review the spectrum use and spectrum needs of existing services in the frequency band **470-960 MHz in Region 1** and consider possible regulatory actions in the frequency band 470-694 MHz in Region 1 on the basis of the review in accordance with Resolution **235 (WRC-15)**

Summary

- Exploit existing bands in the low, mid and high ranges
- Consider WRC-23 outcome (AI 1.2 and AI 1.5 in particular)
- 6G research is underway
- Commercialisation target around 2030 & onwards
- Sub THz (100+ GHz) new frontier in high bands mobile wireless research
- Coverage, as well as capacity, remains crucial and therefore additional spectrum in all ranges also important – political & policy support needed – UN/EU SDGs
- Very early stage in the WRC-27 planning cycle & debate
- GSA plans to contribute next year to the potential WRC-27 IMT agenda item debate
- GSA continues to support the ongoing evolution of the ITU's global IMT vision and the ongoing development of the 3GPP global standard

Global mobile Suppliers Association

Together let's continue realize the IMT vision,
plan for ongoing 5G continual success and
begin longer term 6G discussions!

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Mobile Ecosystem

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