6G Standardization in 3GPP

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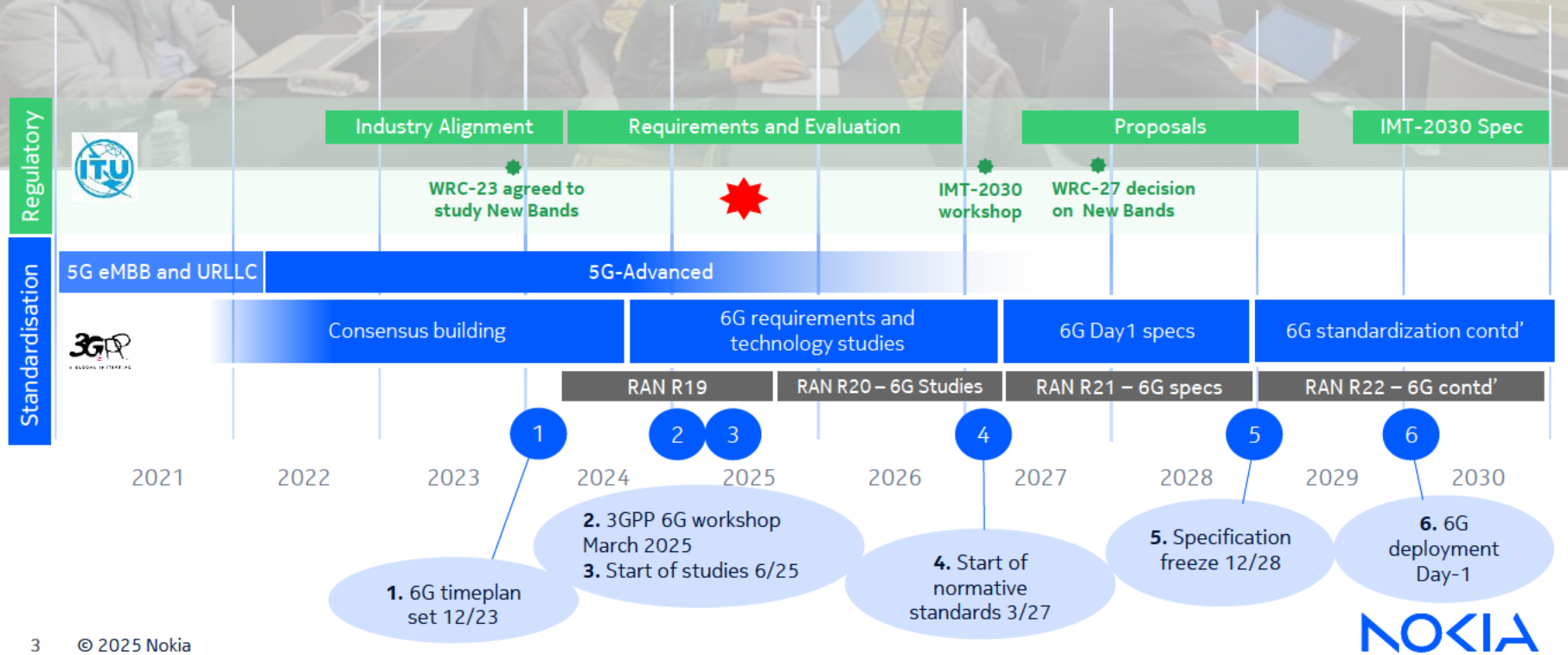
Architecting tomorrow

3GPP 6G Workshop, March 2025

The launch of 6G standardization

6G timeline



6G Radio Access

Superior radio with lean design for practical deployments

New spectrum
Engine for capacity growth
Wider channel bandwidth
Elevated radio performance

Extreme 6G radio
Evolutionary, BUT
UE-non-backward-compatible
Lean, streamlined (minimal options!)
Exploit full potential of 5G-Advanced

Standalone
Unlock full 6G potential
High performance MRSS

6G RAN
Truly multi-vendor network interfaces
Classical and disaggregated

Sustainable
Energy efficiency leap

AI-native
6G air interface with fundamental AI components natively from day one

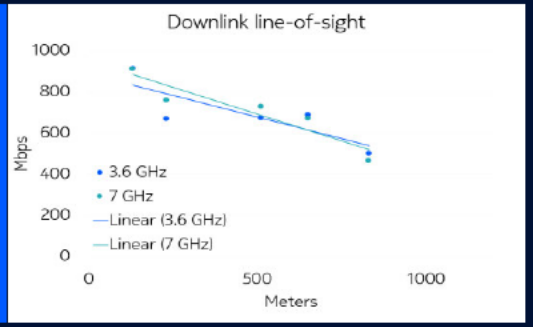
6G Spectrum considerations

Agreed focus of 6G study in 3GPP

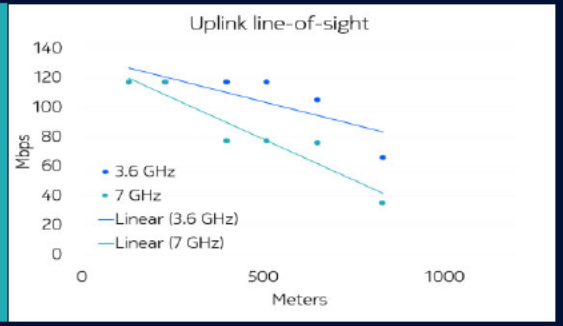
- **Frequency ranges up to 52.6GHz, including:**
  - FR1 (up to 7.125GHz)
  - Range between FR1 and FR2-1 (7.125-24.25 GHz)
  - FR2-1 (24.25 GHz – 52.6GHz)
- **Wider channel bandwidth**: at least 200 MHz
  - Aimed at deployments above 2 GHz, and especially at around 6-8 GHz
- **Re-use of existing 5G mid-band (~3.5 GHz) macro site grid** for 6G deployments at around 6-8 GHz

Field tests suggest smooth site evolution to 6G using upper 6 GHz spectrum

Downlink data rate similar to 3.6 GHz



Uplink data rate 76% of rate @3.6 GHz



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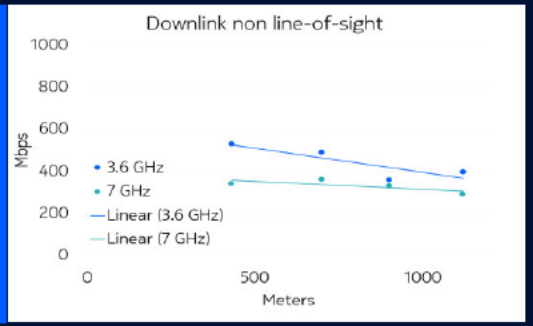

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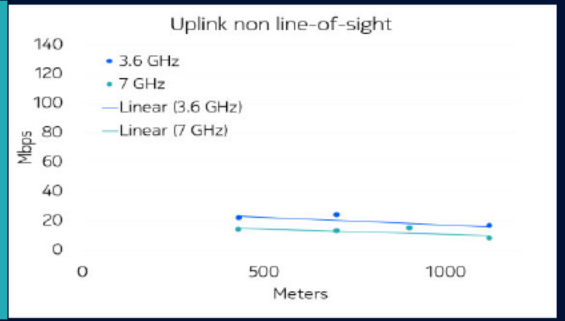

Key takeaways for 6G spectrum

1. Spectrum for both capacity and coverage

2. Re-use of existing 5G mid-band macro site grid for deployments at 6-8 GHz

3. Wider channel bandwidths:
   at least 200 MHz

4. Smooth migration via MRSS with aggregation of both new and existing spectrum

6G studies start now in 3GPP. 6G specifications planned for end of 2028.


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