

NR-Unlicensed and 6 GHz

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December 2021

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Two major trends in unlicensed operation

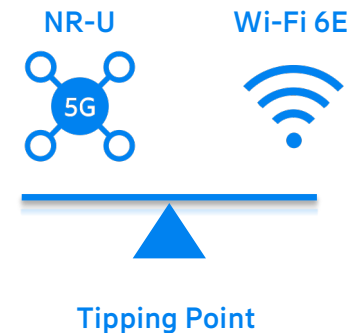


Spectrum

- 1.2 GHz of spectrum at 6GHz, all unlicensed in US
- 1.7 GHz if you include 5GHz band!
- Technology-neutral band allowing any unlicensed technology

Standards

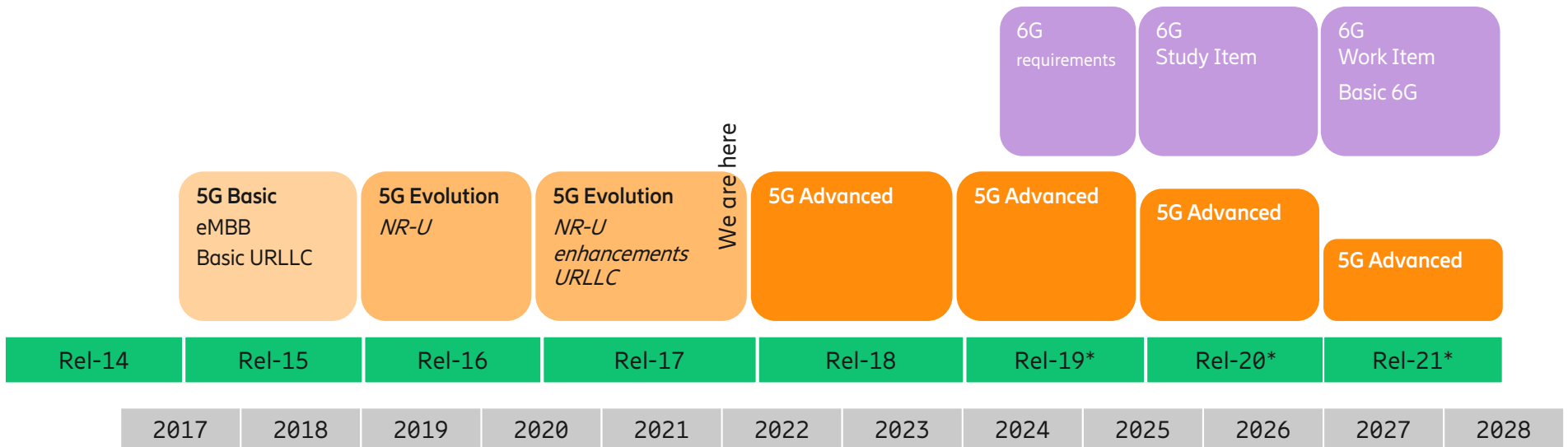
- 3GPP Release-16 provides enhancements to NR for unlicensed operation
- Referred to as NR-U
- For the 5 and 6 GHz bands
- Need simple, technology-neutral, AFC interface



Huge new spectrum allocation + new technology = traditional and new opportunities for operators

3GPP standards timeline

Most NR-U work completed in Rel-16 in 2020



WInnForum

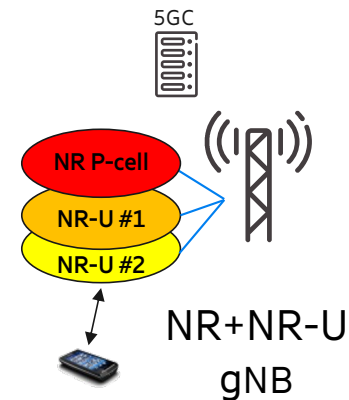
- 6GHz committees
- Cooperation with WFA

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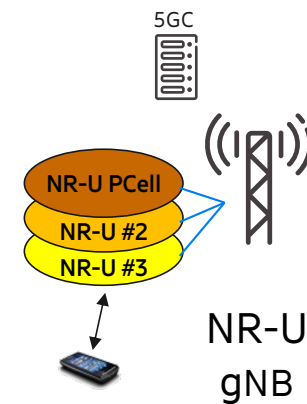
- Work on 6GHz Harmonized Standard (HS) underway

NR-U deployment scenarios

1. Carrier Aggregation between licensed band P-cell and multiple unlicensed NR-U S-cells like LAA
 - Outdoor and indoors
 - Standard Power yields upto 8x range increase!



2. Fully standalone NR-U operation unlike LAA
 - Flexible UL / DL balance for UL-heavy applications



Use cases



Outdoor small cell

- Capacity augmentation
- MNO focus
- Carrier Aggregation with licensed bands including CBRS PAL
- At least 2x LAA capacity
- QoS + mobility
- Also standalone for large private networks



Indoor private networks

- 5G NR in more indoor locations
- Enterprise NR with standalone mode
- Operator NR CA with licensed bands
- Focus on business-critical applications
- Complement to and co-exist with Wi-Fi 6



Indoor standalone

- New low-end market
- SMB NR
- New business models
- e.g. HCPs?



Operator

Enterprise

SMB





<https://www.ericsson.com/en/small-cells>