

5G




NR: 3GPP's answer to 5G radio requirements

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What is 5G NR ?

-  Operation from low to very high bands: 0.4 – 100Ghz
 - Including standalone operation in unlicensed bands

-  Ultra wide bandwidth
 - Up to 100MHz in <6GHz
 - Up to 400MHz in >6GHz



What is 5G NR ?

- 📶 Set of different numerologies for optimal operation in different frequency ranges
- 📶 Native forward compatibility mechanisms
- 📶 New channel coding
 - LDPC for data channel, Polar coding for control channel



What is 5G NR ?

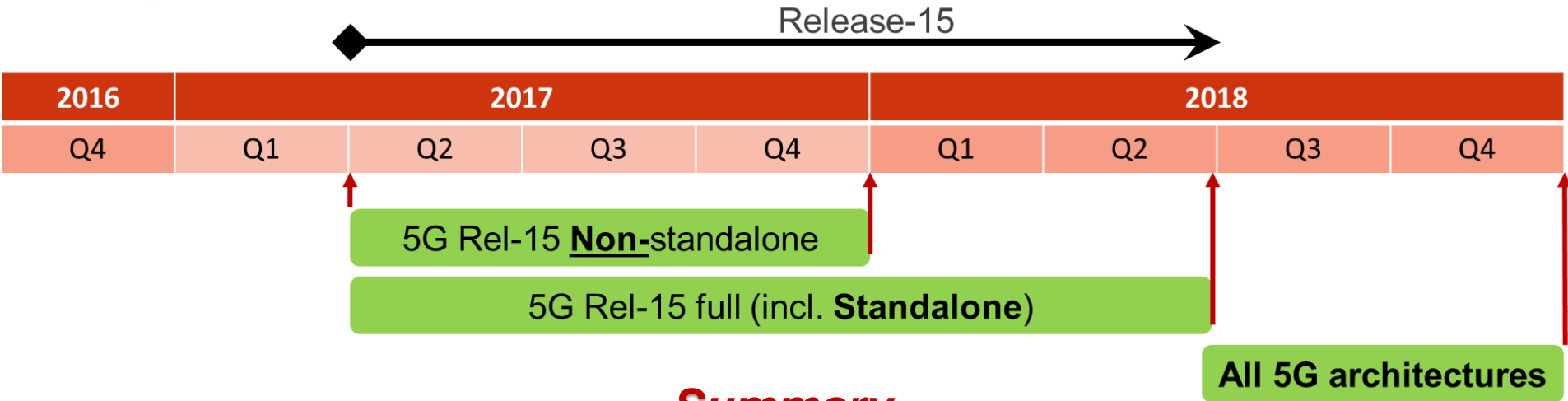
- 📶 Native support for **Low Latency and Ultra Reliability**
- 📶 **Flexible and modular** RAN architecture: split fronthaul, split control- and user-plane
- 📶 Native end-to-end support for **Network Slicing**



Delivering the 5G vision through multiple phases



5G phase-1 in Rel-15



Summary

- Licensed bands between 600MHz – 39 GHz
- LTE-Anchored 5G (NSA), and Standalone (SA) 5G
- Basic URLLC support
- Massive MIMO
- Flexible RAN architecture
- Fulfills IMT2020 criteria



5G phase-2 in Rel-16

Release-15

Release-16

2017	2018				2019			
Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4

3GPP #80: Release-16
Study approval

3GPP #83&84: Release-16
Work Item approval

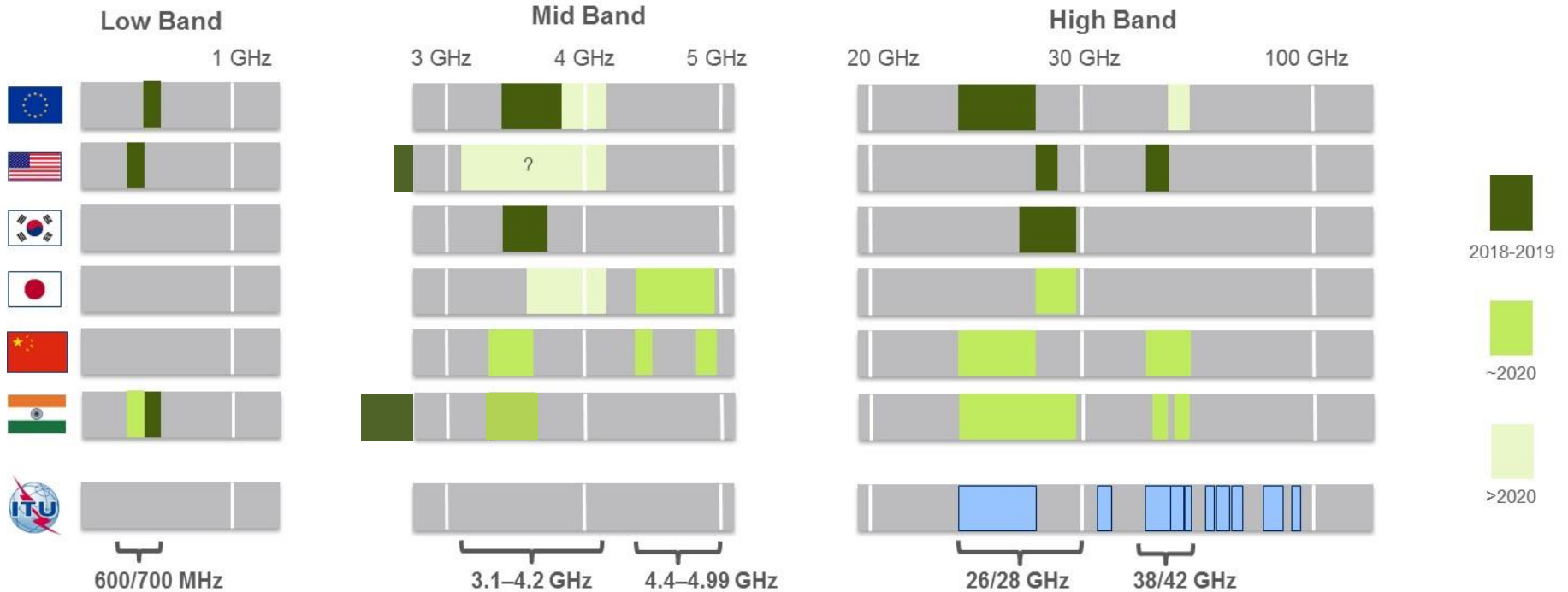
3GPP #86:
Release-16
freeze

... towards the full 5G vision:

- V2X support – autonomous driving
- Enhanced MIMO
- Support for Unlicensed bands
- Factory automation
- Support of higher bands (>52.6 GHz)
- ...



The global spectrum landscape



5G



Thank You !

The screenshot shows the 3GPP website with the following content:

- Header: 3GPP THE Mobile Broadband Standard GPRS
- Navigation: About 3GPP, Specification Groups, Specifications, 3GPP Calendar, Technologies, News & Events
- Section: Specification Groups
- Text: Click on any TSG or WG - in the chart below - to go to that Group's home page to find information on its elected officials, its meeting schedule, the Work Items and Specifications for which it is responsible, etc.
- Section: TSG Structure
- Project Co-ordination Group (PCG)
- Grid of TSGs and WGs:

TSG GERAN	TSG RAN	TSG SA	TSG CT
GSM EDGE Radio Access Network	Radio Access Network	Service & Systems Aspects	Core Network & Terminals
GERAN WG1 Radio Aspects	RAN WG1 Radio Layer 1 Aspects	SA WG1 Services	CT WG1 MTC/CIOT Aspects
GERAN WG2 Protocol Aspects	RAN WG2 Radio Layer 2 Aspects	SA WG2 Architecture	CT WG2 Interworking with external networks
GERAN WG3 Terminal Testing	RAN WG3 SA Aspects, Core Aspects, Aspects WTDAS (S&T) requirements	SA WG3 Security	CT WG4 M2M/CIOT/DevOps
	RAN WG4 Radio Performance Protocols Aspects	SA WG4 Coding	CT WG5 Small Cell Applications
	RAN WG5 Mobile Terminals Conformance Testing	SA WG5 Telecom Management	

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