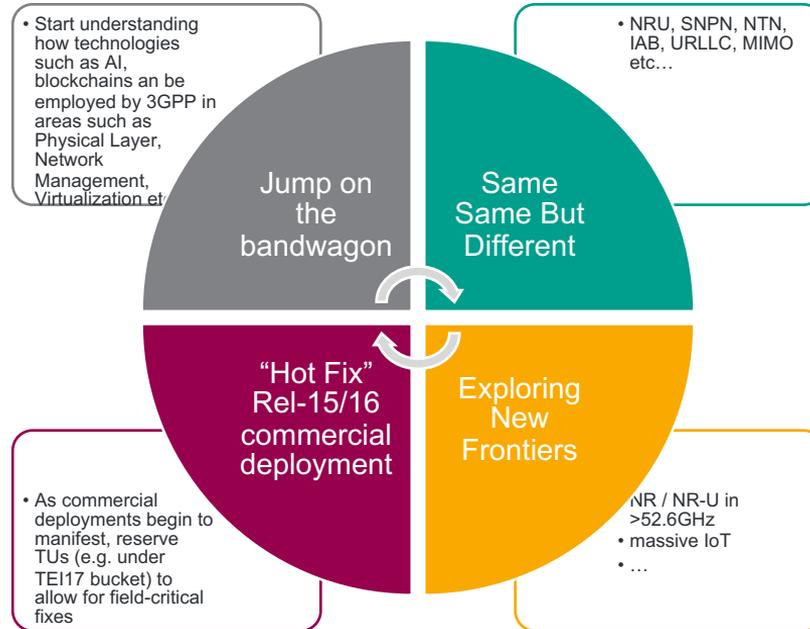


Views on 3GPP Rel-17

3GPP TSG RAN Meeting #84

Newport Beach, CA, USA, June 3rd – 6th 2019

On possible general Rel-17 themes



On dealing with Unlicensed spectrum features (1/3)

- Rel-16 is expected to contain the baseline operations for NR operating in FR1 unlicensed spectrum
- Enhancements to R16 NR-U baseline will largely fall into the following categories:
 - **Type 1a:** NR-U Incremental feature enhancements (e.g. paging, SIB, PCI collisions...) impacting isolated WGs (e.g. RAN2 only, or RAN4 only)
 - **Type 1b:** NR-U Incremental feature enhancements (e.g. paging, SIB, PCI collisions...) impacting more than 1 or 2 WGs (e.g. RAN1+RAN2+RAN4, or SA1+SA2+SA3+RAN2+RAN3)
 - Stronger Cross TSG coordination may be required
 - **Type 2:** Existing licensed spectrum features being extended to unlicensed spectrum (e.g. IAB, URLLC such as packet duplication, ...)
 - **Type 3:** New features either exclusive or extended to unlicensed spectrum (e.g. "FR4" >52.6GHz unlicensed operations)

On dealing with Unlicensed spectrum features (2/3)

- Given the classifications in previous slide, the following options exist wrt handling NR-U evolution beyond Rel-16
 - **Alt #1:** All unlicensed enhancements types (e.g Type 1b, Type 2 etc) are done under a single umbrella NR-U continuation WID
 - **Alt #2:** Each licensed feature enhancement (e.g Type 2, 3) does its unlicensed feature development in its own respective WID
 - **Alt #3:** Unlicensed feature impact evaluation are done under a single umbrella NR-U WID* (i.e. 1 NR-U WID for entire Rel-17); Then, the recommendations/CRs are absorbed under individual feature WIDs
 - e.g. Rel-16 2-step RACH WID where work on 2-step RACH for generic NR use-cases is done under 2-step WID; NR-U specific feature enhancements are expected to be covered under NR-U WID
 - Difference to Alt#1 is that in this alternative Type 2 work can continue in its own WID instead of doing it in NR-U umbrella WID

On dealing with Unlicensed spectrum features (3/3)

- Given that the expertise for NR-U lies within a smaller sub-set (of NR expertise), and for proper TU accountability, **Alt#2** should be ruled out
- Between **Alt#1** and **Alt#3**, we have a preference for **Alt#3**, but can also accept **Alt#1** as the way forward

Items of interest

- Continue evolution of **unlicensed** spectrum features
 - Leftover Rel-16 NR-U features wherever it makes sense e.g. Type 1a
 - NR-U on **>52.6GHz**
 - Completing “FR4?” study and work in Rel-17 first, and then investigate NR-U addition in **Rel-18** is acceptable to us OR
 - Extend FR2 to 71GHz; define NR-U up to FR2; continue “FR4?” study and work in Rel-17 is also acceptable to us
- Continue evolution of **Licensed** spectrum features
 - 1024 QAM for FR1 DL (to achieve parity with LTE)
 - TCP optimizations (necessitated in particular by FR2 traffic) ([Higher Layer Protocol Enhancements](#) - MTK)
- Core-related features w/ RAN impacts (*where we expect SAx WGs to involve RANx WGs once the work reaches a certain stability*)
 - Multi-SIM ([FS MUSIM](#)) (*some features can be started w/o SAx involvement*)
 - Standalone Non-Public Networks (SNPN) (e.g. [FS eNPN](#))