3GPP RAN#102
Edinburgh/Scotland, 11 – 15 December 2023

RP-233120

Agenda Item: 9.1

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Views on Release-19 Package

Sharp

Sharp's vision on Release-19

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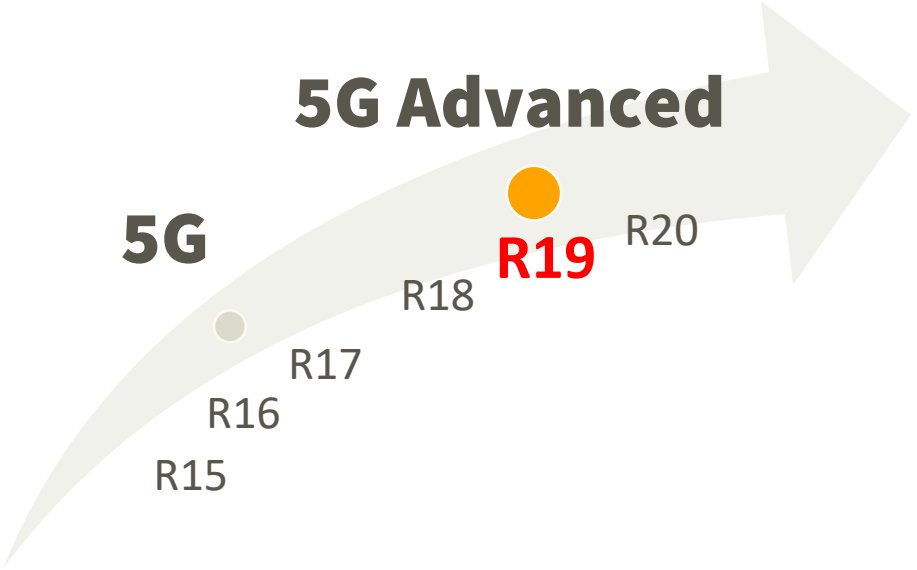
5G Advanced started with R18 provides:

- ✓ New use cases and scenarios
- ✓ Performance improvements



R19 to provide improvements on **both capacity and coverage** so that further advanced use cases and scenarios can be realized.

Guidance from RAN#101

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In RAN#101, RAN Chair's summary RP-231540 capturing the following 4 lists was endorsed.

List of Potential RAN1-led Items for Subsequent Discussion till RAN#102

Index	Title	First-order TU Estimate (# TUs)
1	AI (Artificial Intelligence)/ML (Machine Learning) for Air interface	[4]
2	MIMO Evolution	[1-2]
3	Duplex Evolution	[2-3]
4	Ambient IoT*	[3-4]
5	Network energy savings	[2]
6	LP-WUS/WUR	[1-2]
7	ISAC & Exploring study in new spectrum (7-24 GHz) **	[2]

* Further discussion SI only or SI → WI
** May start as a RAN-level study item first. For the new spectrum, focusing on channel modeling only. For ISAC, further discus channel modeling only or additionally techniques

- ~10% RAN1 capacity (~27TUs) is planned to be reserved
- ~1TU (in the 2nd half Rel-19) is planned to be reserved for TEI purpose
- With [2-3] TUs left, RAN1 may have room up to 2 RAN1-led **small** projects

Total: [17]
Cross-WG/TSG impact: 3-4 TUs
~4 TUs reserved
[2-3] TUs left

List of Potential RAN2-led Items for Subsequent Discussion till RAN#102

Index	Title	First-order TU Estimate (# TUs)
1	Mobility Enhancements	[2]
2	Enhancements for XR	[2]
3	NTN (Non-Terrestrial Networks) evolution for NR	[2]
4	NTN (Non-Terrestrial Networks) evolution for IoT	[1]
5	AI/ML for Air interface SI (Mobility)	[2]
	[RAN1-led] Ambient IoT	*[2]*
	[RAN1-led] AI/ML for Air interface	*[2]*

- ~10% RAN2 capacity (~40TUs) is planned to be reserved
- Additionally, 13 TUs are reserved in RAN2 for maintenance, LSs, overflows, etc.
- ~1TU (in the 2nd half Rel-19) is planned to be reserved for TEI purpose
- With [3] TUs left, RAN2 may have room up to 3 RAN2-led **small** projects

Total: [13]
Cross-WG/TSG impact: [7] TUs
** Besides A-IoT & RAN1-led AI/ML*
~17 TUs reserved
[3] TUs left

List of Potential RAN3-led Items for Subsequent Discussion till RAN#102

Index	Title	First-order TU Estimate (# TUs)
1	AI/ML for NG-RAN	[2]
2	SON/MDT Enhancements	[1-2]
3	Additional Topological Enhancements	[1-2]
	[RAN1-led] Ambient IoT	*[2]*

- ~10% RAN3 capacity (12 TUs) is planned to be reserved
- With [0-1] TU left, RAN3 may not have room for additional RAN3-led projects

Total: [7]
Cross-WG/TSG impact: [3-4] TUs
** Besides A-IoT*
~[1] TU reserved
~[0-1] TU left

Additional Considerations

- Additional Candidate Topics for further consideration during RAN#101 and till RAN#102
  - Multi-carrier Enhancements
  - Coverage Enhancements
  - Positioning Enhancements
  - SL Evolution
  - NCR
  - SL Relay Enhancements
  - UAV/UAM
  - MU-SIM
  - Broadcast/multicast
  - UE aggregation, collaboration, and backup
  - Lean protocol stack/High speed packetization/Layer 2 UP enhancements
  - QoE
  - Others

Topics of interest

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MIMO evolution	RP-233122	● Beam management enhancement (UE-initiated/event-driven beam management) ● Extension of the number of CSI-RS ports ● Enhancements for CJT deployments with non-idea backhaul ● 3 Tx antenna ports for UL codebook based transmission ● Asymmetric DL sTRP/UL mTRP deployment scenarios (e.g. UL-only TRP)
Duplex evolution	RP-233125	● Normative work to specify SBFD for FR1 and FR2-1 ● Semi-static configuration of time-frequency resource of SBFD subbands ● Enhancement on physical layer procedures related to SBFD subbands, e.g., resource allocation of PDSCH, CSI-RS, handling of configured transmissions/receptions and repetitions, separate uplink resource configurations, collision handling, and random access in RRC_CONNECTED mode
Ambient IoT	RP-233123	● RAN should agree to an AIoT study for Rel-19 ● AIoT normative work can follow the completion of the study in a subsequent release
Network Energy Savings	RP-233124	● On-demand SIB1 transmission for idle UEs ● On-demand SSB transmission for Scell for connected UEs ● Adaptation of common signal/channel transmissions
Study on ISAC	-	● ISAC channel modeling should be frequency agnostic (only the parameters of the ISAC model would be frequency dependent)*
Channel modeling for 7-24GHz	RP-233126	● Conduct measurements, validate and refine (if needed) the 3GPP TR 38.901 channel model for different scenarios accordingly for FR3 * ● Study near-field effect and spatial non-stationarity for FR3 bands
AI/ML for Air Interface (WI)	RP-233318	● Support Functionality/Model LCM for selected (sub) use cases ● Single sided models for BM, Positioning and CSI prediction (if recommended) ● Two-sided model for CSI compression for normative work (if recommended/supported)
Additional RAN1-led Topics	RP-233128	● SL evolution ● SL Positioning

* Ensure frequency domain continuity of channel model in all frequency regions

Topics of interest

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Mobility enhancements	RP-233127	● Support Inter-CU LTM in Rel-19 ● Specify event triggered L1 measurement reporting for LTM in Mobility ● Support Conditional LTM in Rel-19
NTN evolution for NR	RP-233121	● DL coverage enhancement ● Uplink Capacity enhancement ● Regenerative payload ● Enhanced GNSS Operation
AI/ML for Air Interface (Mobility) SI	RP-233870	● HO optimization e.g., target cell/target beam predictions ● L3 and LTM triggered Mobility enhancements ● RRM and event/measurement prediction e.g., predicting and avoiding HoF,
Additional RAN2-led Topics	RP-233129	● RAN should include multi-hop relaying in R19 Work Item at least for U2N.

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