

3GPP TSG RAN Meeting #102

Edinburgh, UK, December 11-15, 2023

RP-233685

Views on Rel-19 RAN4 scope

Agenda Item:

9.1.4.1

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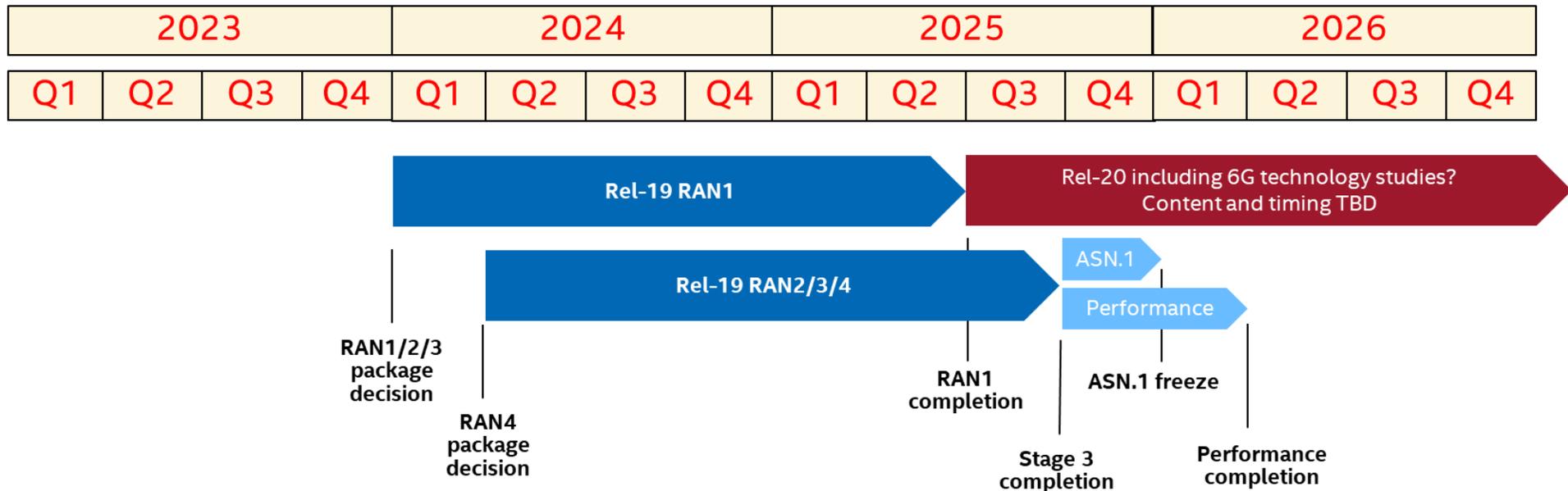
Discussion & Decision



Rel-19 Timelines

RAN4 Rel-19 package scope needs to be properly dimensioned to fit the timelines, and TU allocation shall be balanced to match RAN1/2/3-led items progress

- RAN4-led projects shall be prioritized in Q2-Q4'2024 (i.e., larger TU allocation) and TU allocation shall gradually reduce towards Rel-10 completion
- RAN1/2/3-led projects TU assignment shall gradually increase starting from Q3'2024



General Principles

Multiple RAN4-led proposals were submitted for Rel-19 Workshop covering a wide set of topic areas.

Similar to Rel-18 a substantial prioritization/downselection of proposals is required to fit the constrained RAN4 capacity.

Key principles for RAN4 WI package contents

- Balance the needs of the industry and RAN4 workload constraints
- Balance the work among in-field issues, leftover issues from early release(s), and new enhancements
- Balance between short terms commercial demands for practical deployment and forward-looking opportunities for further network evolution
- Lay a foundation for baseline device and network design concepts before the start of 6G work

RAN4 Rel-19 Workload and TU budget

Observation on Rel-18 RAN4 workload

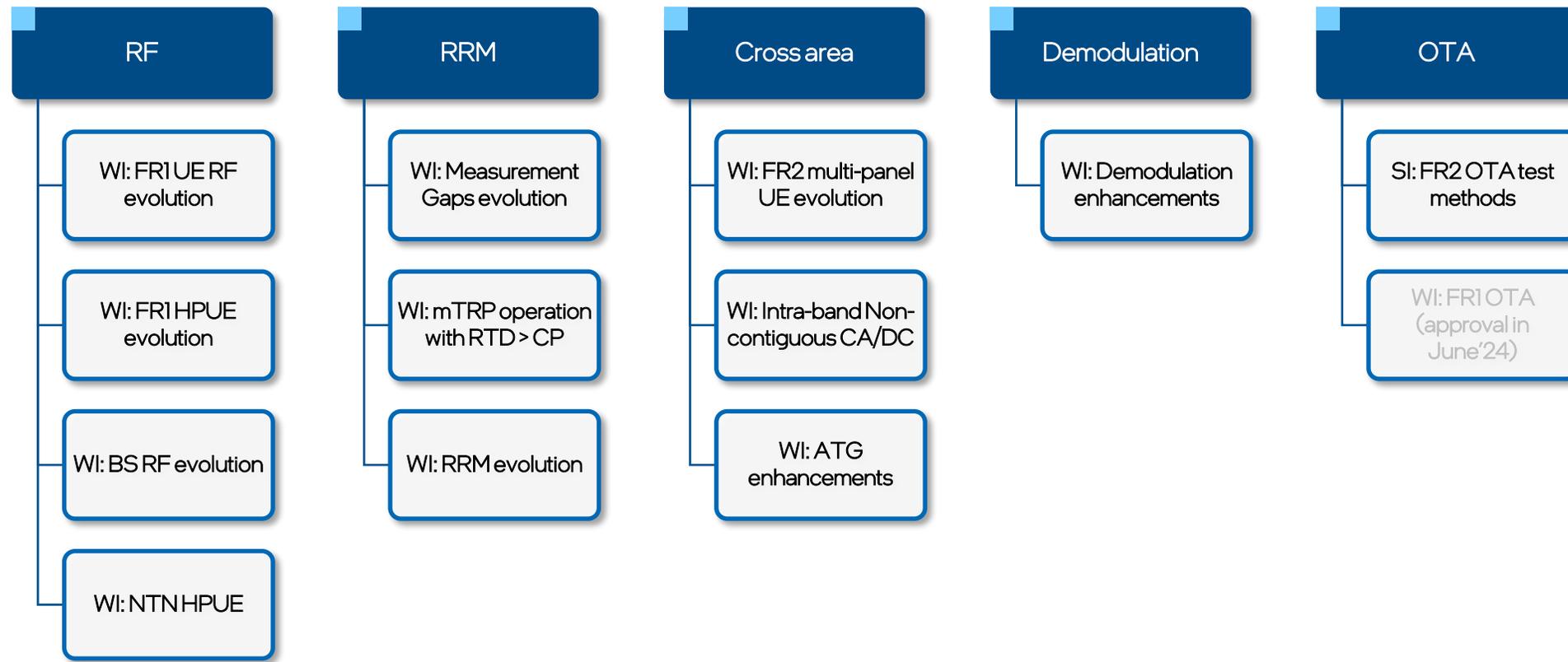
- RAN4 Rel-18 planning was better than Rel-17, but RAN4 workload in Rel-18 was still very high
- A substantial workload comes just from the number of parallel WIs with > 35 ongoing non-spectrum items
- RAN4 impacts were not well-planned for some RAN1/2-led WIs (e.g., TU request for some WIs was below the actual required time, while for some WI the TU requests were higher than the actual required time)
- Multiple new non-spectrum WIs were approved during Rel-18 timeframe further increasing RAN4 workload after the initial package was approved

Proposals

- Reserve dedicated RAN4 TUs for RAN4-led WI/SI and WI/SI led by other WGs.
- Clearly identify RAN4-related objectives as well as required TUs for Rel-19 WI/SI led other WGs in December 2023
- Reserve sufficient TUs for RAN1/2/3-led items and consider 1.0-1.5 RF/RD TUs per meeting for items with big RAN4 scope and 0.5 – 1.0 TUs for items with medium scope. 0.25 TUs shall only be used on rare occasions for items with minimum scope
- Number of Rel-19 RAN4-led and RAN1/2/3-led SI/WIs with RAN4 impact needs to be reduced comparing to Rel-18
- Minimize approval of new RAN4 items/topics after the package finalization

RAN4 Rel-19 package

Intel views on a candidate package of RAN4-led Rel-19 SI/WIs based on RAN #101 proposals is provided below and covers key areas including RF, RRM, Demodulation, OTA and several cross-area topics



See next slides for detailed views on potential scope for different WIs

Intel's priorities for RAN4 Rel-19 RF/OTA

	Prioritized objectives/scope	Comments
FR1 RF	<ul style="list-style-type: none"> SRS IL compensation and reporting 6Rx and 3Tx for handheld/CPE/FWA Irregular Channel Bandwidth 	An umbrella WI focusing on FR1 UE RF topics is recommended with [2-3] RF TU per meeting.
FR1 HPUE RF	<ul style="list-style-type: none"> HPUE with CA/DC 	A separate WI focusing on FR1 HPUE topics across different use cases is recommended to avoid fragmented discussions across multiple WIs. [1] RF TU per meeting
FR2 RF	<ul style="list-style-type: none"> Low priority: CA enhancements 	The FR2 RF objectives except for multi-panel Tx/Rx (slide 8) have low priority. Open to have a small project focusing on commercial needs (e.g., CA enhancements based on operator requests) or fine to have no dedicated FR2 RF umbrella WI.
NTN HPUE	<ul style="list-style-type: none"> HPUE for NR NTN HPUE for IoT NTN 	A separate project focusing on NTN HPUE aspects with [0.5] RF TUs. Can be a part of FR1 HPUE WI.
BS RF	<ul style="list-style-type: none"> Multi-band FR2 BS BS OTA test time reduction 	A small project with [0.5] RF TUs per meeting
OTA	FR2 OTA <ul style="list-style-type: none"> Dynamic OTA test methods Test methods for STxMP 	FR1 OTA: The work scope of FR1 OTA work can be discussed at a later stage (June'24) after completion of Rel-18 WIs performance part. FR2 OTA: Further studies on additional test methods are recommended. 0.5 – 1.0 TUs per meeting.

More detailed proposals are provided in [RP-233686](#)

Intel's priorities for RAN4 Rel-19 RRM/Demod

	Prioritized objectives/scope	Comments
Measurement Gaps evolution	<ul style="list-style-type: none"> • Pre-configured NCSG • Enhanced collision handling for concurrent MGs (parallel measurements) 	An umbrella WI is recommended to continue the evolution of MG enhancements with [1.5] RD TU per meeting.
mTRP operation with RTD > CP	<ul style="list-style-type: none"> • RRM requirements to enable mTRP operation with RTD > CP incl. inter-cell beam management, TCI state activation, LTM – L2 triggered mobility, CSI-RS based L3 measurements (intra-frequency) 	A standalone project with [1] RD TUs with an emphasis on enablement of UE operation in mTRP scenarios with RTD > CP operation. The scope can be also included in the generic RRM enhancements WI
RRM evolution	<ul style="list-style-type: none"> • Interruption and scheduling restriction optimization <ul style="list-style-type: none"> • Enhanced TCI state switching requirements • URLLC-enabling requirements • Improved UE Rx Beam switching • FR2 RRM delay reduction enhancements 	A single umbrella WI is recommended to continue the evolution of RRM enhancements with [1.5] RD TU per meeting. The scope shall focus on improving the requirements rather than on addressing leftovers.
Demodulation enhancements	<ul style="list-style-type: none"> • BS MMSE-IRC for uplink inter-cell interference • Enhanced MIMO channel models with spatial components for UE and BS requirements • UE Soft IC receivers (study) • UE application layer throughput with OLLA 	An umbrella WI is recommended to continue the evolution of Demodulation enhancements with [2] RD TU per meeting. The WI scope shall ensure a balance between BS and UE requirements.

More detailed proposals are provided in RP-233687

Intel's priorities for RAN4 Rel-19 Cross-area topics

	Prioritized objectives/scope	Comments
Evolved FR2 multi-panel UE	<p>Multi-RX panel enhancements</p> <ul style="list-style-type: none"> • CA extension • RRM enhancements (L3 enhancements, inter-cell mTRP TCI state switch and beam management.) <p>Multi-TX panel / STxMP</p> <ul style="list-style-type: none"> • RF and RRM requirements 	<p>A standalone WI to continue the work on RF/RRM enhancements for multi-panel simultaneous RX and support of simultaneous TX. [2/1] RF/RD TUs per meeting.</p>
Intra-band non-co-located CA/EN-DC enhancements	<ul style="list-style-type: none"> • UEs with 6 or 8 total antenna/LNA-s (Type 4a/4b) • UEs with 4 shared antenna/LNA-s (Type 3a/3b) 	<p>Continuation of Rel-18 work to enable non-collocated operation for additional UE types. [0.5/0.5] RF/RD TUs per meeting.</p>
ATG enhancements	<ul style="list-style-type: none"> • FR2 support • FR1 CA support • RRM leftovers and improvements 	<p>Continuation of Rel-18 work to enable ATG with focus on exploration study for FR2 use case. [1/1] RF/RD TUs per meeting.</p>

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