

**China Academy of Telecommunication Technology** ■

**3GPP TSG RAN Meeting #99**

**Rotterdam, Netherlands, March 20-23, 2023**

**大唐电信集团 RP-230400**

# **Discussion of XR work in Rel-18**

**CATT**  
**2023-03-20**

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# Outline

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- Current Progress
- WID update
  - XR-awareness
  - RAN3 involvement
  - Capacity Enhancements
- Summary of proposals
- Proposed update on the WID

# Current Progress

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- RAN2#121
  - ➔ ***RAN2 considers the Rel-18 XR SI complete.***
- SA2#154AHE
  - TR23.700-60 is completed and the conclusion has been reflected in TS23.501/502/503

# WID update

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- XR-awareness
  - RAN support of XR awareness should be reflected in WID as an separate objective
  - Regarding the four sub-topics in RAN2#121
    - PDU set and data burst information: in the new objective, including support of PDU set characteristics and UE traffic assistance information for DL and UL
    - PDU prioritization: too detailed to be captured in the WID
    - PDU discard: move to the objective of capacity enhancements
    - Protocol stack impacts: due to the agreement “*Support of RLC bearer splitting should be limited to existing cases (e.g. PDCP duplication), no new XR-specific functionality.*”, will not be considered in the WID
- **Proposal 1: Add a new objective “RAN support of XR awareness” in the WID, and the new objective includes: support of PDU set characteristic, and UE traffic assistance information for DL and UL.**

# WID update

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- RAN3 involvement
  - SA2 identified XR-specific information provided by the CN to RAN (TR23.700-60/ TR38.835) in both control plane and user plane
  - RAN assistance information has been considered in SA2, such as the exposure of QoS flow congestion information, which needs further RAN3 work
- **Proposal 2: RAN3 should be involved in the objective of “RAN support of XR awareness”.**

# WID update

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- Capacity Enhancements
  - There are 6 bullets in Capacity Enhancements
  - The bullet “*delay reporting of buffered data in uplink*”: only RAN2 is involved. Although only “*BSR or a new MAC CE*” is explicitly indicated to report the delay information in TR38.835, it is also stated “*how the delay information can be up to date considering e.g. scheduling and transmission delays needs to be investigated further*”. To report the delay information timely, RAN1 solution, such as UCI on CG PUSCH may be considered. And, further estimation of delay aware scheduling should be performed in RAN1.
  - The bullet “*Provision of XR traffic assistance information for DL and UL (e.g. periodicity); (RAN2);*”: Based on the discussion on “[Post121][210][XR] Final TR 38.835 for RAN”, it will be discussed in the objective of XR Awareness. So this bullet needs to be deleted.
- **Proposal 3: Include RAN1 in the bullet of “delay reporting of buffered data in uplink”, and RAN1 could take into the delay reporting of buffered data in uplink in the UCI indication of unused CG PUSCH.**
- **Proposal 4: Delete the bullet “Provision of XR traffic assistance information for DL and UL (e.g. periodicity); (RAN2)” below Capacity Enhancements, which is now addressed in XR-awareness.**

# Summary of proposals

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- **Proposal 1: Add a new objective “RAN support of XR awareness” in the WID, and the new objective includes: support of PDU set characteristic, and UE traffic assistance information for DL and UL.**
- **Proposal 2: RAN3 should be involved in the objective of “RAN support of XR awareness”.**
- **Proposal 3: Include RAN1 in the bullet of “delay reporting of buffered data in uplink”, and RAN1 could take into the delay reporting of buffered data in uplink in the UCI indication of unused CG PUSCH.**
- **Proposal 4: Delete the bullet “Provision of XR traffic assistance information for DL and UL (e.g. periodicity); (RAN2)” below Capacity Enhancements, which is now addressed in XR-awareness.**

# Proposed update on the WID

## 4.1 Objective of SI or Core part WI or Testing part WI

Specify the Enhancements for XR-awareness in RAN:

- Support the information exchange between CN and NG-RAN (RAN3):
  - Provisioning by CN of semi-static information per QoS flow (e.g. PDU set QoS parameters), dynamic information per PDU set (PDU Set information and Identification) and End of Data Burst indication;
  - Assistance Information provided from NG-RAN to CN
- Identifying by UE of PDU Sets, Data bursts and PSI (RAN2);
- Provisioning by UE of UL traffic arrival information (RAN2).

Specify the enhancements related to power saving:

- DRX support of XR frame rates corresponding to non-integer periodicities (through at least semi-static mechanisms e.g. RRC signalling) (RAN2).

Specify the enhancements related to capacity:

- Multiple CG PUSCH transmission occasions in a period of a single CG PUSCH configuration (RAN1, RAN2);
- Dynamic indication of unused CG PUSCH occasion(s) based on UCI by the UE (RAN1);
- BSR enhancements including at least new BS Table(s); (RAN2);
- Delay reporting of buffered data in uplink; (RAN1, RAN2);
- ~~Provision of XR traffic assistance information for DL and UL (e.g. periodicity); (RAN2);~~
- Discard operation of PDU Sets (RAN2);.

~~Specify the enhancements for XR Awareness (RAN2, RAN3): TBD (detailed objectives will be further clarified at RAN#99 based on the conclusions of TR38.835, and work to be started only after RAN#99)~~

*Note: Impacts to RAN3 will be assessed at RAN#99*

# טכניקה אלה

