3GPP TSG-RAN WG2 Meeting #116bis electronic [R2-2xxxxxx](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2xxxxxx.zip)

Online, January, 2022

Source: Session Chair (InterDigital)

Title: Report for Rel-17 Small data, URLLC/IIoT and RACH partitioning

**Email discussions:**

* [AT116bis-e][500] Organizational Diana – URLLC/IIoT, Small data]

Scope:

* + - Share plans for the meetings and list of ongoing email discussions for the sessions related to URLLC/IIoT, Small data and NR-U, 2-step RACH, and power saving
    - Share meetings notes and agreements for review and endorsement
* [AT116bis-e][501][Sdata] UP open issues (LG)

Remaining UP open issues

Deadline: Proposals by rapporteur by Friday (intermediary deadlines for comments to be set by rapporteur)

* [AT116bis-e][502][Sdata] CP open issues (InterDigital)

Remaining CP open issues

Deadline: Proposals by rapporteur by Friday (intermediary deadlines for comments to be set by rapporteur)

* [AT116bis-e][503][IIoT] Tsynch open issues (ZTE)

Remaining CP open issues

Deadline: Proposals by rapporteur by Friday (intermediary deadlines for comments to be set by rapporteur)

* [AT116bis-e][504][IIoT] UCE open issues (Vivo)

Remaining CP open issues

Deadline: Proposals by rapporteur by Friday (intermediary deadlines for comments to be set by rapporteur)

* [AT116bis-e][505][Sdata] LS to SA3 on small data (Nokia

Deadline – Friday

* [AT116bis-e][506][IIoT] LS to CT1 on small data (ZTE)

Deadline – Friday

* [AT116bis-e][507][IIoT] LS to RAN3 on small data (Intel)

Deadline – Friday

## 8.5 NR IIoT URLLC

(NR\_IIOT\_URLLC\_enh-Core; leading WG: RAN2; REL-17; WID: RP-210854)

Time budget: 1 TU

Tdoc Limitation: 3 tdocs

Email max expectation: threads

### 8.5.1 Organizational

Including email discussions [Post116-e][511][IIoT] MAC running CR update (Samsung) and [Post116-e][512][IIoT] Stage-2 running CR update (Nokia)

[R2-2200080](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200080.zip) LS on propagation delay compensation (R1-2112834; contact: Huawei) RAN1 LS in Rel-17 NR\_IIOT\_URLLC\_enh To:RAN2, RAN4

=> Noted

[R2-2200024](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200024.zip) MAC Running CR for Rel-17 IIoT/URLLC Samsung draftCR Rel-17 38.321 16.7.0 B NR\_IIOT\_URLLC\_enh

=> The CR is endorsed

[R2-2200052](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200052.zip) Stage-2 Running CR for Rel-17 IIoT/URLLC Nokia, Nokia Shanghai Bell CR Rel-17 38.300 16.8.0 0392 - B NR\_IIOT\_URLLC\_enh [R2-2110441](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2110441.zip)

=> The CR is endorsed

[R2-2200951](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200951.zip) RRC running CR for IIoT Ericsson draftCR Rel-16 38.331 16.7.0 NR\_IIOT\_URLLC\_enh

=> the CR will be updated and reviewed after the email in short email discussion

[R2-2200992](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200992.zip) UE capabilities for Rel-17 IIoT / URLLC Intel Corporation discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

=> Noted

*=> [CB] Wait for next week discussion Proposal 1: Discussion for RAN2 UE capabilities for propagation delay compensation can wait for the conclusion regarding UE side PDC vs. network side PDC.*

Agreements:

1 An optional UE capability signalling is introduced for simultaneous configuration of LCH based prioritization (capability lch-priorityBasedPrioritization-r16) and cg-RetransmissionTimer. The capability is per UE, not FDD-TDD DIFF, not FR1-FR2 DIFF.

2 An optional UE capability signalling (intraCG-Prioritization) is introduced to indicate whether UE supports the HARQ process ID selection based on LCH priority. A UE supporting this feature shall also support simultaneous configuration of LCH based prioritization and cg-RetransmissionTimer. The capability is per UE, not FDD-TDD DIFF, not FR1-FR2 DIFF.

3 An optional UE capability signalling for survival time is introduced.

FFS A UE supporting survival time feature shall also support CA PDCP duplication (capability pdcp-DuplicationMCG-OrSCG-DRB) and configured grant type-1 (capability configuredUL-GrantType1 or configuredUL-GrantType1-v1650). The capability is per UE, not FDD-TDD DIFF, not FR1-FR2 DIFF.

FFS on DC duplication or CG Type 1 is supported

Not treated

[R2-2201131](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201131.zip) RAN1 feature impact on MAC in Rel-17 IIoT/URLLC Apple discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core Late

[R2-2201132](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201132.zip) Text proposals to MAC running CR for Rel-17 IIoT/URLLC Apple discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core Late

[R2-2201373](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201373.zip) MAC impact of RAN1 Rel-17 HARQ deferral Xiaomi Communications discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

### 8.5.2 Enhancements for support of time synchronization

RAN1 progress if any should be taken into account. \

R2-2201826 Tsynch open issues – outcome of email discussion 503 ZTE

[R2-2200060](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200060.zip) RE: LS on Time Synchronization IEEE 1588 WG LS in To:RAN, SA Cc:RAN2

[R2-2200182](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200182.zip) Signalling for Support of Propagation Delay Compensation Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_IIOT\_URLLC\_enh

[R2-2200320](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200320.zip) RTT-based PDC and TA-based PDC CATT discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

[R2-2200477](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200477.zip) Discussion about propagation delay compensation for accurate time synchronization Huawei, HiSilicon discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

[R2-2200611](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200611.zip) Discussion on propagation delay compensation for TSN NTT DOCOMO INC. discussion Rel-17

[R2-2200678](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200678.zip) Discussion on RTT-based PDC ZTE Corporation, Sanechips, China Southern Power Grid Co., Ltd discussion NR\_IIOT\_URLLC\_enh-Core

[R2-2200761](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200761.zip) Signaling procedure of RTT based propagation delay compensation Lenovo, Motorola Mobility discussion Rel-17

[R2-2200872](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200872.zip) Discussion on RTT-based PDC Enhancement CMCC discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

[R2-2200926](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200926.zip) Remaining issues on time synchronization enhancement OPPO discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

[R2-2200952](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200952.zip) Propagation delay compensation enhancements Ericsson discussion

[R2-2200991](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200991.zip) Remaining issues of timing synchronization Intel Corporation discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

[R2-2201016](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201016.zip) Propagation Delay Compensation for TSN Qualcomm Incorporated discussion Rel-17

[R2-2201263](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201263.zip) Discussion on propagation delay compensation vivo discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

[R2-2201367](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201367.zip) Issues on PDC Samsung discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

### 8.5.3 Uplink enhancements for URLLC in unlicensed controlled environments

Remaining open issues.

R2-2201827 UCE open issues – outcome of email discussion 504 Vivo

[R2-2200183](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200183.zip) Remaining Issues on Configured Grant for URLLC in Unlicensed Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_IIOT\_URLLC\_enh

[R2-2200321](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200321.zip) Leftovers of UCE CATT discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

[R2-2200478](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200478.zip) Remaining issues about uplink enhancements for URLLC in UCE Huawei, HiSilicon discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

[R2-2200927](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200927.zip) Remaining issues on URLLC over NRU OPPO discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

[R2-2200953](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200953.zip) Remaining issues in UL CG enhancements Ericsson discussion

[R2-2201018](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201018.zip) CG Harmonization for Unlicensed Controlled Environment Qualcomm Incorporated discussion Rel-17

[R2-2201226](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201226.zip) Further Consideration on the Intra-UE multiplexing in UCE ZTE Corporation,Sanechips discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

[R2-2201264](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201264.zip) Remaining Issues for UCE vivo discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

[R2-2201285](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201285.zip) Remaining issues for IIoT in UCE III discussion NR\_IIOT\_URLLC\_enh-Core

[R2-2201368](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201368.zip) Remaining Issues on CG Enhancement and Intra-UE Prioritization Samsung discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

[R2-2201374](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201374.zip) UE processing time restriction on the retransmission grant selection Xiaomi Communications discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

[R2-2201460](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201460.zip) Remaining issues for UCE MediaTek Inc. discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core [R2-2110754](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2110754.zip)

### 8.5.4 RAN enhancements based on new QoS

Contributions should aim to bring new issues not covered in email discussions already and should be clearly separated in the document from issues covered in the email discussion.

Including email discussion [Post116-e][513][IIoT] QoS survival time (Apple)

RAN enhancements based on new QoS related parameters taken into account SA2 progress

[R2-2200003](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200003.zip) Report of [Post116-e][513][IIoT] QoS Survival Time (Apple) Apple discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

=> Noted

Proposals for Online Discussion and Confirmation

*Proposal 1-1 (10/18): To provide radio resources on the legs used for PDCP duplication and to guarantee CG resources are not used outside of Survival Time, RAN2 to discuss whether a CG can be considered deactivated outside of Survival Time and activated in Survival Time. Other variants FFS.*

*Does it apply to type 1?*

- Huawei would like to downpriotize CG. LG doesn’t think we need a mechanism and when we had a similar discussion when we introduced PDCP and it is up the network.

- Vivo also thinks that this is complicated from network point of view and it is not clear how this work for DC dupcliation. Prefer 1C.

- Apple explains is to prevent using the resources out of survival time. It is possible that the UE uses the resources for UCE or MAC CE.

- Fujitsu thinks we would like to rely on NW. CG reuse for other UEs is allowed, but never used for other UEs during STM

- Samsung thinks that this is very rare and agree with LG that this resources will not be used. Same for 1C.

- Ericsson thinks that type 2 can be left to NW implementation and the question is on type1 whether we have autonomous activation/deactivation.

- Qualcomm is generally fine because it saves a lot of overhead but type 1 we are deviating from what and how type 1 was designed to do. Nokia agrees with Qualcomm

- InterDigital thinks that we are discussing what happens after survival time and it is just an optimization.

- CATT doesn’t think that CG type 2 works fine and implicit activation of CG type 1 is a clean and safe way.

- Nokia is concerned that the gNB has to continue decoding the resources as the UE implementation may still send the MAC CE or UCI.

Proposal 1C (11/18): RAN2 to discuss whether CG type-2 and DG based solutions can be used as a supplement to provide radio resources on the legs used for PDCP duplication in Survival Time.

*Proposal 4: RAN2 to discuss whether the number of associated RLC entities that can be activated upon entry into Survival Time can be supported by one or either one of two variants. The second variant may be optionally configured.*

*1) (11/17)* *Following entry to Survival Time, PDCP duplication is activated for all associated RLC entities that are configured for a DRB. The RLC entities are identified using the Rel-15/16 options for RRC configuration of associated RLC entities.*

*2) (8/17) Following entry to Survival Time, PDCP duplication is activated for a separately configured set of associated RLC entities that are configured for a DRB. The RLC entities are identified using a new RRC configuration option which can be optionally present. The separate set is used in Survival Time only.*

- LG thinks that we should use option 2 and there is not reason to introduce the tradeoff. Option 2 is not very complex and in RRC we just need to configure the entities. Xiaomi thinks that we need to reserve more corner cases.

- CATT has done a thorough analysis and shown all possible combination and the additional flexibility only allows addressing new use cases 2 out of 11 and all other cases are addressed by option 1. And there is no obvious benefit. Mediatek, Samsung, Vivo and OPPO supports CATT.

- Nokia has a concern with option1 that the UE will continue transmitting a NACK packed. The UE doesn’t have the knowledge on what is happening and the gNB should have the flexibility to control

- Mediatek asks how option 2 with survival time

- Lenovo agrees with Nokia now and the network can simply configure all carries and cover option 1. Support option 2.

- Intel supports option 1. Not clear how the network knows for option 2 which leg is better.

- Apple supports option 2

- Ericsson agrees that the technical benefit for option 2 is not clear.

- CMCC supports option 1

**Agreements**

1 For the issue that a CG resource may be insufficient for the UE to include the whole application layer message in one configured grant if a MAC CE is to be transmitted in the same CG, it is up to gNB implementation to ensure CG resources are appropriately configured.

2 Survival Time support is configured at DRB level and a new RRC parameter is added in PDCP-Config.

3 Existing LCH to CG mapping restrictions are used to ensure DRBs in support of Survival Time are mapped to one or multiple CGs. No specification change is foreseen.

4 RAN2 assumes that Rel-16 LCH to CG mapping restrictions can be used to prevent a case where DRBs with and without a Survival Time requirement are mapped to the same CG. The setup of mapping restrictions is up to gNB implementation. No specification change is foreseen.

5 Following entry to Survival Time, PDCP duplication is activated for all associated RLC entities that are configured for a DRB. The RLC entities are identified using the Rel-15/16 options for RRC configuration of associated RLC entities

6 The index of LCHs in the MAC PDU that a retransmission grant relates to is used to identify triggering of Survival Time state of a DRB. The MAC layer can receive information from upper layers as to which LCIDs are associated with Survival Time.

7 Following a HARQ-NACK, entry to Survival Time state is triggered only for the DRBs (with a requirement for Survival Time) which are included in the MAC PDU associated with the grant used for transmission of the TB

8 We will support the case where N=1. FFS if cases with N>1 are supported

In that case, when PDCP duplication is already activated in dual connectivity, in order to minimize dependencies between MAC entities in a configuration with survival time the UE enters Survival Time upon reception of one HARQ NACK at either MCG or SCG.

Within a MAC entity, the determination of HARQ-NACKs does not incur interaction between different CCs. When PDCP duplication is already activated in CA duplication for a configuration of survival time, the UE enters Survival Time upon reception of one HARQ NACK at any CC.

9 RAN2 assumes that SDUs from multiple DRBs with a Survival Time requirement (potentially with a different transfer interval and/or lead time for Survival Time entry) are not mapped to the same CG. Setup of appropriate mapping restrictions is up to gNB implementation. No specification change is foreseen.

Not discussed yet

Proposal 5: A new field (such as “duplicationStateSurvTime”, name FFS) is optionally configured to indicate a dedicated set of associated RLC entities configured for activation of PDCP duplication upon entry to Survival Time. The field enables Option 2 (in Q4). If the field is not present then Option 1 (in Q4) is used. Details can be sorted out in stage-3.

Proposal 13 (9/17): For a DC split-bearer in a configuration with N=1 when PDCP duplication is not yet activated, the UE enters Survival Time state upon reception of one HARQ NACK at either MCG or SCG.

Proposal 14: RAN2 to monitor the situation and decide (potentially at a later time) whether a LS to RAN3 is needed.

Proposals for Further Discussion

Proposal 16: RAN2 to discuss, if time permits, options to support a configurable number of count N>1 as well as a combination of HARQ NACK and Tx-side timer for survival time state trigger.

Proposal 12A-1: RAN2 may discuss whether Proposal 12A can be extended to N>1 after reaching a conclusion on the support of N>1

Proposal 13-1: RAN2 may further discuss the counting of N in a split-bearer scenario with N>1 after reaching a conclusion on the support of N>1.

[R2-2200184](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200184.zip) Some open issues for Survival Time Support Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_IIOT\_URLLC\_enh

[R2-2200309](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200309.zip) Analysis on HARQ-NACK solution Fujitsu discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core [R2-2109710](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2109710.zip)

[R2-2200310](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200310.zip) Survival Time Mode and Measurement Gap Fujitsu discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

[R2-2200311](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200311.zip) L1/L2 configuration adaptation Fujitsu discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core [R2-2109709](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2109709.zip)

[R2-2200322](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200322.zip) HARQ NACK solution: leftover issues and TP CATT discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

[R2-2200369](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200369.zip) Additional aspects on resource in Survival Time III discussion Rel-17 NR\_IIOT\_URLLC\_enh

[R2-2200479](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200479.zip) Discussion about UE behaviors for Survival Time state operation Huawei, HiSilicon discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

[R2-2200704](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200704.zip) N and combined Tx-side timer for IIoT QoS ZTE, Sanechips, China Southern Power Grid Co., Ltd, TCL Communication Ltd., vivo discussion NR\_IIOT\_URLLC\_enh-Core [R2-2110108](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2110108.zip)

[R2-2200708](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200708.zip) Remaining issues on the support of survival time Lenovo, Motorola Mobility discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

[R2-2200873](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200873.zip) Remaining Issues on HARQ-NACK Solution CMCC discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

[R2-2200928](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200928.zip) Remaining issues on survival time OPPO discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

[R2-2200954](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200954.zip) Remaining details on survival time enhancement Ericsson discussion

[R2-2200990](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200990.zip) Survival time handling Intel Corporation discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

[R2-2201019](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201019.zip) RAN Enhancement to support Survival Time Qualcomm Incorporated discussion Rel-17

[R2-2201133](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201133.zip) Remaining QoS solution aspects Apple discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

[R2-2201173](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201173.zip) Remaining issues on the support of survival time InterDigital discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

[R2-2201265](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201265.zip) Discussion on HARQ NACK solution vivo discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

[R2-2201375](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201375.zip) Remaining issues of survival time requirements Xiaomi Communications discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

[R2-2201520](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201520.zip) CG status and PDCP Duplication status LG Electronics discussion NR\_IIOT\_URLLC\_enh-Core

[R2-2201521](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201521.zip) Remaining issues on QoS support LG Electronics discussion NR\_IIOT\_URLLC\_enh-Core

[R2-2201522](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201522.zip) Selective RLC activation for PDCP duplication in ST state LG Electronics discussion NR\_IIOT\_URLLC\_enh-Core

[R2-2201530](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201530.zip) Finalising Survival Time related enhancements Samsung Electronics GmbH discussion

[R2-2201622](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201622.zip) Considerations on UE Survival Time support Sequans Communications discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

## 8.6 Small Data enhancements

(NR\_SmallData\_INACTIVE-Core; leading WG: RAN2; REL-17; WID: RP-212594)

Time budget: 1.5 TU

Tdoc Limitation: 4 tdocs

Email max expectation: 2 threads

### 8.6.1 Organizational

In coming LSs, rapporteur input for email discussions summaires etc (tdocs in this don’t count towards tdoc limit).

Inputs expected for 38.321 CR (Huawei), 38.331 CR (ZTE), 38.300 CR (Nokia)

Including [Post116-e][506][SDT] RRC running CR update (ZTE), [Post116-e][507][SDT] MAC running CR update (Huawei), and [Post116-e][508][SDT] Stage-2 running CR update (Nokia)

[R2-2200025](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200025.zip) Introduction of SDT Nokia, Nokia Shanghai Bell CR Rel-17 38.300 16.8.0 0357 - B NR\_SmallData\_INACTIVE-Core [R2-2110808](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2110808.zip)

=> The CR is endorsed

[R2-2200032](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200032.zip) Summary of [Post116-e][507][SDT] MAC running CR update (Huawei) Huawei, HiSilicon discussion Rel-17 NR\_SmallData\_INACTIVE-Core

=> Noted

[R2-2200031](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200031.zip) Running MAC CR for small data Huawei, HiSilicon draftCR Rel-17 38.321 16.7.0 B NR\_SmallData\_INACTIVE-Core

=> The CR is endorsed

[R2-2200050](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200050.zip) RRC Running CR for SDT ZTE Corporation (rapporteur) discussion Rel-17 38.331 NR\_SmallData\_INACTIVE-Core

=> Noted

[R2-2201027](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201027.zip) Updated RRC running CR for SDT ZTE corporation (rapporteur) draftCR Rel-17 38.331 16.7.0 B NR\_SmallData\_INACTIVE

=> The CR is endorsed

[R2-2200073](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200073.zip) Reply LS on the physical layer aspects of small data transmission (R1-2112782; contact: ZTE) RAN1 LS in Rel-17 NR\_SmallData\_INACTIVE-Core To:RAN2

RAN1 still cannot reach consensus on separate non-initial BWP and explicit L1 ACK feedback for CG-SDT

- LG indicates that for redcap there can be dedicated BWP and it should be excluded as well. Samsung agrees that we should have the same restriction but then there will be an issue. InterDigital also thinks that we should have same assumptions for all cases and if they want to support SDT they should do it on initial BWP. ZTE explain that for REDCAP the initial BWP is still an initial BWP but it is different than the normal BWP.

=> RAN2 confirms that SDT will be configured only on initial BWP and there is no L1 ACK feedback for CG-SDT. ASK RAN1 to confirm whether it is different from initial BWP and that there is no conflict with the agreement

RAN1 would like to ask RAN2 for feedback on whether there is restriction on candidate values of CG period.

=> Respond that we have no restriction

[R2-2200502](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200502.zip) UE capabilities for Rel-17 SDT WI Intel Corporation discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2200503](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200503.zip) UE capabilities for Rel-17 SDT WI Intel Corporation draftCR Rel-17 38.306 16.7.0 NR\_SmallData\_INACTIVE-Core

[R2-2200504](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200504.zip) UE capabilities for Rel-17 SDT WI Intel Corporation draftCR Rel-17 38.331 16.7.0 NR\_SmallData\_INACTIVE-Core

[R2-2201357](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201357.zip) Discussion on MAC running CR LG Electronics Inc. discussion NR\_SmallData\_INACTIVE-Core

*Proposal 1. In the case of CG-SDT initial transmission, for TA validation, the RSRP at the time of initiating CG-SDT is compared to the DL pathloss reference RSRP stored at the time when RRCRelease message is received*

### 8.6.2 User plane common aspects

Overall user plane procedure for SDT (including details of ROHC continuity, BSR/PHR configuration, LCH restrictions, handling of TAT and CG-TAT) )

LG is expected to submit a paper on the proposals not treated from last meeting. Companies are discouraged from submitting documents on those issues again unless their opinon has changed. Focus on new critical open issues

[R2-2201321](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201321.zip) Remaining UP issues in SDT LG Electronics Inc. discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2201825 UP open issues – outcome of email discussion 501 LG electronics

[R2-2200203](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200203.zip) User Plane Aspects of RACH and CG based SDT Samsung Electronics Co., Ltd discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2200336](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200336.zip) Consideration on UP remaining issues CATT discussion Rel-17 NR\_SmallData\_INACTIVE-Core Late

[R2-2200435](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200435.zip) Remaining issues of user plane common aspects Huawei, HiSilicon discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2200573](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200573.zip) Remaining user plane aspects of SDT NEC discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2200643](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200643.zip) Discussion on user plane issues of SDT OPPO discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2200726](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200726.zip) Remaining issues on UP aspects of SDT Qualcomm Incorporated discussion Rel-17 NR\_SmallData\_INACTIVE-Core [R2-2110752](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2110752.zip)

[R2-2200863](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200863.zip) Data volume calculation for SDT CMCC discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2200985](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200985.zip) Common aspects for SDT Ericsson discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2201024](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201024.zip) Remaining UP issues for SDT InterDigital discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2201028](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201028.zip) User plane common aspects of SDT ZTE corporation, Sanechips discussion

[R2-2201124](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201124.zip) User plane aspects of SDT Apple discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2201439](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201439.zip) Remaining Issues on Subsequent UL transmission during SDT vivo discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2201570](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201570.zip) Consideration on UP remaining issues CATT discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2201586](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201586.zip) UP aspects for SDT Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_SmallData\_INACTIVE-Core

### 8.6.3 Control plane common aspects

Including output of [Post116-e][510][SDT] CCCH and DCCH (Nokia). Only co-sourced CRs and papers are encouraged for this topic.

Other critical CP open issues

[R2-2200026](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200026.zip) Report of [Post116-e][510][SDT] CCCH and DCCH (Nokia) Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_SmallData\_INACTIVE-Core

*Proposal 1: Send an LS to CT1 to confirm whether NAS provides resume cause upon non-SDT data arrival and in case it does, whether it shall be included in the RRC message for non-SDT data indication for DCCH based solution.*

*Proposal 2: The UE shall not perform periodic RNA update during SDT procedure.*

*Proposal 3: NW can transmit RRCReject message at any point in time during the SDT procedure, including the case the non-SDT data indication for DCCH based solution has been sent by the UE.*

*Proposal 4: Send an LS to SA3 and ask if they see any issue in UE autonomous horizontal key derivation when switching from SDT procedure to RRC resume procedure for non-SDT data indication with CCCH based solution.*

*Proposal 5: Furthermore, ask if SA3 sees any issue in using the same KgNB derived for the SDT procedure for resumeMAC-I generation for the RRCResumeRequest used for non-SDT data indication with CCCH based solution.*

*Proposal 6: Ask in the LS to SA3 the preference from SA3 about the key and/or input parameters used as input for the resumeMAC-I generation for the RRCResumeRequest used for non-SDT data indication.*

*Proposal 7: The key/solution used for the security for non-SDT data indication with CCCH based solution will be the same regardless of whether the RA procedure for the SDT procedure has been completed or not.*

*Proposal 8: No explicit indication from the UE is specified to indicate to the NW the RRCResumeRequest is used for non-SDT data indication with CCCH based solution, ie., it is left to NW implementation to identify this.*

*Proposal 9: Send an LS to RAN3 about the CCCH based solution details for them to work on the required RAN3 details.*

Discussion

*Suggestion is to continue with both solutions in parallel and send LS to SA3 and make a final decision next meeting.*

- Intel thinks that DCCH is complete and it works and we should agree to it as a baseline. Nokia thinks that CCCH solution is also complete and there is no complexity but we are ok to send SA3. Ericsson agrees with Nokia. Ericsson, Huawei, Fujitsu, InterDigital agree with way forward

- Nokia also thinks we should send an LS to CT1.

- Rapporteur is concerned that we are not ready to complete if there is a hiccup from SA3 and agrees with Intel. Samsung, Qualcomm agrees.

- ZTE thinks that the resume cause is not a showstopper.

- Huawei indicates that SA3 starts ahead of RAN2. Huawei thinks that we clarified all the issues.

- Intel thinks it impact to RAN3. Nokia thinks that it is just regular things that they have to add. Intel explains that we are changing the behaviour.

- LG thinks that DCCH also impacts other group so it is the same and also DCCH also has a lot of open issues.

R2-2201821 LS to SA3 Nokia

[505]

R2-2201822 LS to CT1 ZTE

- do have resume cause provided

- Intel thinks that we should ask it regardless of CCCH or DCCH.

- Huawei thinks that we need some background, like an emergency call (e.g. higher priority)

- LG asks if non SDT data has not arrived at the PDCP layer and the SDT data is stopped then the new resume procedure will not be triggered. Data arrival is not mandated by CT1. So we should ask if data will be provided with service request. ZTE explains that from NAS level there is no difference between SDT and non-SDT. LG agrees that there is no difference but data arrival at L2 buffer is up to UE implementation and with DCCH solution if there is no data then no resume request will not be triggered.

[506]

R2-2201823 LS to RAN3 Intel

[507]

[R2-2201674](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201674.zip) Summary of Rel-17 SDT contributions on Control Plane Common Aspects InterDigital discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2201824 CP open issues – outcome of email discussion[AT116bis-e][502] InterDigital

[R2-2200201](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200201.zip) Paging Monitoring during SDT procedure Samsung Electronics Co., Ltd discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2200202](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200202.zip) RNA update and SI request handling during SDT procedure Samsung Electronics Co., Ltd discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2200312](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200312.zip) Handling of SDTF detection timer Fujitsu discussion Rel-17 NR\_SmallData\_INACTIVE-Core [R2-2109712](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2109712.zip)

[R2-2200313](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200313.zip) RAN paging reception and response during SDT Fujitsu discussion Rel-17 NR\_SmallData\_INACTIVE-Core [R2-2109713](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2109713.zip)

[R2-2200337](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200337.zip) Consideration on some CP issues CATT discussion Rel-17 NR\_SmallData\_INACTIVE-Core Late

[R2-2200505](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200505.zip) Control Plane leftover issues on SDT procedure Intel Corporation discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2200574](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200574.zip) Remaining control plane aspects of SDT NEC discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2200644](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200644.zip) Discussion on control plane issues of SDT OPPO discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2200663](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200663.zip) Emergency call in the middle of SDT operation InterDigital, Europe, Ltd. Rakuten Mobile Inc. discussion Rel-17

[R2-2200696](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200696.zip) Handling of SDT failure timer InterDigital, Europe, Ltd. discussion Rel-17

[R2-2200727](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200727.zip) Remaining issues on CP aspects of SDT Qualcomm Incorporated discussion Rel-17 NR\_SmallData\_INACTIVE-Core [R2-2110753](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2110753.zip)

[R2-2200811](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200811.zip) Control plane common aspects for SDT Huawei, HiSilicon discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2200919](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200919.zip) Subsequent SDT failure detection timer Sony discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2200986](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200986.zip) CP aspects for SDT Ericsson discussion

[R2-2201029](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201029.zip) CP open issues for SDT ZTE corporation, Sanechips discussion

[R2-2201125](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201125.zip) Control plane aspects of SDT Apple discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2201126](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201126.zip) Power Saving for SDT Apple discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2201174](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201174.zip) DCCH-based indication of non-SDT data arrival Intel Corporation, ZTE Corporation, Sanechips, Samsung, Xiaomi, MediaTek, Radisys and Reliance JIO, Qualcomm, CMCC, OPPO, Lenovo, Sony, Apple discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2201217](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201217.zip) RNA Update during SDT Sharp discussion

[R2-2201358](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201358.zip) Remaining issues on Control Plane Aspects for SDT LG Electronics Inc. discussion NR\_SmallData\_INACTIVE-Core

[R2-2201376](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201376.zip) Clarification on the area configured for ROHC continuity Xiaomi Communications discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2201377](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201377.zip) Paging reception during SDT Xiaomi Communications discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2201378](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201378.zip) RACH failure in subsequent data transmission phase Xiaomi Communications discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2201440](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201440.zip) Remaining Issues on RRC-Controlled SDT procedure vivo discussion Rel-17 NR\_SmallData\_INACTIVE-Core [R2-2109439](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2109439.zip)

[R2-2201441](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201441.zip) Further Consideration on the Handling of non-SDT Data Arrival vivo discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2201495](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201495.zip) SDT control plane aspects Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_SmallData\_INACTIVE

[R2-2201496](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201496.zip) RRC procedure for SDT Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_SmallData\_INACTIVE

[R2-2201535](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201535.zip) Remaining issues for non-SDT data arrival China Telecommunications discussion

[R2-2201571](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201571.zip) Consideration on some CP issues CATT discussion Rel-17 NR\_SmallData\_INACTIVE-Core

### 8.6.4 Aspects specific to RACH based schemes

Contribution on this topic should be submitted on the RACH partitioning/configuration AI, unless something specific to Small data needs to be discussed.

[R2-2200338](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200338.zip) Anchor relocation during SDT CATT discussion Rel-17 NR\_SmallData\_INACTIVE-Core Late

[R2-2200506](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200506.zip) RACH leftover issues on RA-SDT procedure Intel Corporation discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2200638](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200638.zip) Discussion on RACH-based SDT Spreadtrum Communications discussion Rel-17

[R2-2200645](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200645.zip) Discussion on swiching from RA-SDT to non-SDT OPPO discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2200729](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200729.zip) Remaining issues on RACH based SDT Qualcomm Incorporated discussion Rel-17 NR\_SmallData\_INACTIVE-Core [R2-2110760](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2110760.zip)

[R2-2200738](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200738.zip) Discussion on triggering legacy RA for RA-SDT ASUSTeK discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2200779](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200779.zip) Analysis on open issue of RA based SDT Lenovo, Motorola Mobility discussion Rel-17

[R2-2200983](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200983.zip) RACH based small data transmission Ericsson discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2201355](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201355.zip) Switching cases of SDT and non-SDT LG Electronics Inc. discussion NR\_SmallData\_INACTIVE-Core

[R2-2201356](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201356.zip) Discussion on Carrier selection for SDT LG Electronics Inc. discussion NR\_SmallData\_INACTIVE-Core

[R2-2201572](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201572.zip) Anchor relocation during SDT CATT discussion Rel-17 NR\_SmallData\_INACTIVE-Core

### 8.6.5 Aspects specific to CG based schemes

Including outcome of [Post116-e][509][SDT] CG open issues (Huawei)

Contributions should aim to bring new issues not covered in email discussions already and should be clearly separated in the document from issues covered in the email discussion.

[R2-2200033](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200033.zip) Summary of [Post116-e][509][SDT] CG open issues (Huawei) Huawei, HiSilicon discussion Rel-17 NR\_SmallData\_INACTIVE-Core

=> Revised in [R2-2201657](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201657.zip)

[R2-2201657](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201657.zip) Summary of [Post116-e][509][SDT] CG open issues (Huawei) Huawei, HiSilicon discussion Rel-17 NR\_SmallData\_INACTIVE-Core [R2-2200033](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200033.zip)

*Discussion*

*Proposal 6 Stick to the previous agreement: subsequent new transmission on CG-SDT. Support implicit ACK for first TB by dynamic scheduling of uplink new transmission for the same HARQ process (like legacy, no new mechanisms).*

*- Nokia indicates that the second part depends on the retransmission discussion and dynamic grant mechanism is not only way to acknowledge implicitly. Intel actually thinks that we shouldn’t support. ZTE supports Intel. InterDigital indicates that this is only for initial transmission and it is something that the network can do but doesn’t have to do.*

*- Samsung doesn’t understand why we have different behaviour. Nokia explains that the network doesn’t need to respond to every retranmsision but has to respond to new transmission. Ericsson and Lenovo agree with Nokia. Xiaomi, InterDigital, Apple and LG agree with Samsung*

*- Ericsson thinks that this is inefficient and you’d have to send a DL for every retx*

*Proposal: There is no restriction on the candidate values of CG period*

- Ericsson thinks that we should be able to configure longer values that current values

*Proposal 8*

*8 Do not perform SSB reselection for retransmission for initial CG-SDT*

*- Nokia, Ericsson, InterDigital and Huawei think that we should support reselection and it is more complex to specify this restrictions.*

*- Lenovo explains that this would make UE’s life a bit easier. Nokia explains that UE doesn’t need to change but it may. Lenovo explains that if the criteria changes the UE should change. ZTE explains that if we switch SSBs we may have to switch HARQ processes as RAN1 has defined some mapping and for simplicity sake we shouldn’t reselect. If we want to allow reselections we should add a restriction to not change HARQ processes. LG, Qualcomm, CATT agrees with ZTE and the procedure doesn’t last long.*

**Agreements:**

1. RSRP-based TA validation is only applicable for initial CG-SDT and not needed for retransmission of the initial CG-SDT.

2 No additional NTA is defined for CG-SDT procedure

3 Upon expiry of CG-SDT-TAT , UE should (a) clears all SDT configured grant, (b) flushes HARQ buffer and (c) continue to maintain NTA.

4 Stick to the previous agreement: subsequent new transmission on CG-SDT is supported. Support ACK for first TB by dynamic scheduling of uplink new transmission for the same HARQ process (like legacy, no new mechanisms).

5 For subsequent TB on CG, UE initiated retransmission is not supported. Dynamic scheduling can be supported like legacy.

6 Subsequent downlink transmission can serve as an implicit acknowledgement for initial CG-SDT but not for subsequent CG-SDT.

7 ConfiguredGrantTimer is reused for CG-SDT for prohibiting the HARQ process for new uplink transmissions

8 Do not perform SSB reselection for retransmission for initial CG-SDT

9 CS-RNTI for CG-SDT is provided to the UE in RRCRelease message.

10 UE does not perform UL carrier reselection for subsequent CG-SDT transmission over CG-SDT resources within one CG-SDT procedure

11 Once a UL carrier is selected for a specific CG-SDT transmission, the UE should perform autonomous retransmission on the same uplink carrier on initial CG

12 There is no restriction on the candidate values of CG period. FFS on values for CG periods and time offset

13 Do not support multiple CG occasions per CG period.

14 If (a) the thresholds for SSB selection and SSB subset selection for TA-validation are different and (b) the highest beam measurement is below the configured threshold, the beam with the highest beam measurement value is used for TA validation

15 CG-SDT timer for initial transmission should be stopped when PDCCH addressed to C-RNTI and CS-RNTI is received. When timer expires the UE is allowed to retransmit for initial CG. CG-SDT is used for controlling retransmissions

16 UE does not use RA-SDT resources during ongoing CG-SDT session

*Proposal 10: CG-SDT timer should be stopped when PDCCH addressed to C-RNTI and CS-RNTI is received*

- Sony explains that we had agreed that it is re-started. Huawei explains that this is for PDCCH monitoring. ZTE explain this timer is not needed for subsequent phase because there are no retransmissions now for this phase as agreed above. Lenovo agrees that we don’t need this timer anymore once we switch to dynamic grant.

- LG explains that the UE doesn’t only monitor PDCCH only when the timer is running.

*Intel After 1st UL SDT, we agree with ZTE that UE should follow the general SDT failure detection timer*

*Proposal18: RAN2 continues the discussion on CG-SDT on the following aspects*

*- Open issues for supporting subsequent transmission on CG*

*- Whether the UE should maintin uplink timing alignment in RRC\_INACTIVE for CG-SDT*

*- Whether UAC should be applicable when CG-SDT is used for the DRB configured for SDT*

*- Wheter CG-SDT assistance information similar to PUR is needed for CG-SDT*

*- Whether power ramping is needed for autonomous retransmission*

[R2-2200437](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200437.zip) Further discussion on TA issues for CG-SDT Huawei, HiSilicon, ZTE corporation discussion Rel-17 NR\_SmallData\_INACTIVE-Core

- Intel thinks we need further discussion on this. LG will include it in their email discussion.

[R2-2200204](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200204.zip) CG-SDT-TAT expiry handing during the CG-SDT procedure Samsung Electronics Co., Ltd discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2200339](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200339.zip) Consideration on CG-SDT CATT discussion Rel-17 NR\_SmallData\_INACTIVE-Core Late

[R2-2200436](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200436.zip) Remaining issues of CG-SDT Huawei, HiSilicon discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2200507](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200507.zip) CG-SDT leftover issues Intel Corporation discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2200646](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200646.zip) Discussion on open issues of CG-SDT OPPO discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2200717](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200717.zip) Remaining issues on CG-based Small data transmission Lenovo, Motorola Mobility discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2200734](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200734.zip) Remaining issues on CG based SDT Qualcomm Incorporated discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2200739](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200739.zip) Discussion on CS-RNTI configuration for CG-SDT ASUSTeK discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2200984](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200984.zip) Details of CG based SDT Ericsson discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2201023](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201023.zip) Remaining issues for CG-based SDT InterDigital discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2201030](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201030.zip) Aspects specific to CG-SDT ZTE corporation, Sanechips discussion

[R2-2201338](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201338.zip) Aspects specific to CG-SDT Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2201379](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201379.zip) Clarification on the RSRP-based TA validation Xiaomi Communications discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2201442](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201442.zip) Supporting Small Data Transmission via CG PUSCH vivo discussion Rel-17 NR\_SmallData\_INACTIVE-Core Late

[R2-2201537](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201537.zip) Remaining issues on CG based SDT China Telecommunications discussion

[R2-2201573](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201573.zip) Consideration on CG-SDT CATT discussion Rel-17 NR\_SmallData\_INACTIVE-Core

## 8.18 RACH indication and partitioning

Time budget: Equivalent to 0.5-1 TU

Tdoc Limitation: 2 tdocs

Expected to cover WIs SDT, CovEnh, RedCap, RAN slicing. RA specific aspects from the different WI should be covered in this AI given the RA experts are all there.

### 8.18.1 Common signalling framework

Including output of [Post116-e][514][RACH partitioning] Signaling design (Ericsson) and any other input for RRC signalling (focus company tdocs on issues that are not addressed in [514] email)

[R2-2200020](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200020.zip) [Post116-e][514][RACH partitioning] Signaling design (Ericsson) Email discussion Rapporteur (Ericsson) discussion Rel-17 NR\_redcap-Core, NR\_SmallData\_INACTIVE-Core, NR\_cov\_enh-Core, NR\_slice-Core

The reason from this construction in the draft CR, i.e. that this field is present in both IEs, is to implement the agreement from earlier which allows a separate time-frequency resource (i.e. RACH configuration) dedicated to a feature combination but also a subset of the preambles within a time-frequency resource (i.e. a subset of the preambles within a RACH configuration). More specifically:

1) the indication in RACH-ConfigCommon allows to associate an additional whole RACH resource to a specific feature combination. This feature combination may then be considered the default one associated to all ROs of an additional RACH configuration,

2) the indication in FeatureCombinationPreambles, is to allow that a subset of a RACH configuration is associated to a RA partition. Optionality in those fields would result in a signaling structure similar to removing the indication from RACH-ConfigCommon.

*Proposal 1: Discuss if signaling should allow for a flexibility as clarified above acc. to agreements.*

- Ericsson would like to have the flexibility and indicates that it is already in the CR. Huawei is also in favour of having this flexibility but we don’t need it in RACH config common and we can keep it in feature combination preambles. It would be simpler. Intel prefers just keeping it for FeatureCombinationPreambles and it can anyway achieve the same flexibility

- Vivo agrees with Ericsson but wonders if we should also have the flexibility for msgA. Ericsson agrees that it can be taken for msgA.

- ZTE ask what the proposal is. Ericsson thinks that we would be agreeing to 1 and 2.

- ZTE asks if there still then one-to-one mapping between RACH partition and feature combination

- Vivo would like to have the flexibility and removing the flexibility would result in more overhead.

=> FFS if we remove the FeatureCombination from RACH common config and only keep 2)

Whether we support RO sharing per feature and at which level.

In some company comments it is clarified what cases shall be possible in the signaling structure. For example, the following cases are mentioned:

- RA resource in R17 RA partition shares the RO with legacy RA resource. Or in other words, some of the legacy RA resources are associated to a Rel-17 RA partition

- Different types of RA resource within one RA partition share the RO with each other. Or in other words, one RO is shared between different RA partitions.

- etc.

In the current draft, the intention is that at least those mentioned are covered.

***Proposal 2: Confirm the cases to be supported and that the current signaling structure includes the above cases.***

***=> confirmed the above cases as a baseline***

In the current draft running CR, mainly a signaling structure framework for the RA Partitioning has been attempted. It can be beneficial to discuss and decide how WI/Feature specific parameters due to agreed signaling options are captured; if the RA Partitioning CR is updated based on WI specific details as a single merged version, or if each WI impacted by RA partitioning (RedCap, SDT, Coverage enhancements, and Slicing) should each capture their parts of RA partitioning in their specific running RRC CR based on this common CR.

The rapporteur suggests, that RAN2 should submit a single RRC CR for RA partitioning that captures all RA partition related procedures/signalling which has the WI-code for RedCap, SDT, Coverage enhancements, and Slicing on the cover page. The RRC CRs for RedCap, SDT, Coverage enhancements, and Slicing should then not have any overlap with the RA partitioning CRs.

=>  **RAN2 submits one RRC CR to plenary that captures the RA partitioning feature that covers all common aspects for RA partitioning. The RRC CRs for RedCap, SDT, Coverage enhancements, and Slicing should not have any overlap with this common RRC CR.**

In some company comment, it was discussed in which order the preambles of different RA partitions should be determined by the UE. For example, in case two RA partitions share a certain RO (e.g. one RedCap partition and SDT partition): how is it determined which preambles belong to RedCap and which preambles belong to SDT? In any case, the order should not result in that a legacy UE uses preambles associated with a Rel-17 feature.

The rapporteur sees two approaches:

A) for each partition only the number of preables per feature are indicated (e.g. 7 preambles for RedCap and 4 preambles for SDT) the order must be clear either from signalling, or from a descriptive tex.

B) the RRC signaling indicate explicitly the preamble numbers that belong to partition (e.g. the RedCap partition uses preambles 13-19, and SDT uses 20-23), resulting in no need to indicate the order explicitly.

**Proposal 4: Decide if only the number of preambles belonging a partition is signalled (i.e. X preambles), or if the exact preamble-numbers belonging a partition is signalled (i.e. preambles X-Y)**

- Ericsson thinks that X-Y approach would be simpler from CR implementation. QC, Huawei also agrees.

**=> Agree to use X-Y solution**

[R2-2200019](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200019.zip) Running CR to 38.331 on RA Partitioning Ericsson draftCR Rel-17 38.331 16.7.0 B NR\_redcap-Core, NR\_SmallData\_INACTIVE-Core, NR\_cov\_enh-Core, NR\_slice-Core

=> The CR is endorsed

[R2-2200206](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200206.zip) Preamble and RACH resource configuration Samsung Electronics Co., Ltd discussion Rel-17 NR\_cov\_enh-Core, NR\_SmallData\_INACTIVE-Core, NR\_slice-Core

[R2-2200261](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200261.zip) RRC aspects of RACH partition OPPO discussion Rel-17

[R2-2200419](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200419.zip) Discussion on signaling design for RACH partitioning CATT discussion Rel-17 NR\_cov\_enh-Core, NR\_slice-Core, NR\_SmallData\_INACTIVE-Core, NR\_redcap-Core

[R2-2200456](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200456.zip) Signalling design of RACH partitioning for multiple feature combinations Intel Corporation discussion Rel-17 NR\_cov\_enh-Core, NR\_redcap-Core, NR\_UE\_pow\_sav\_enh-Core, NR\_slice-Core

[R2-2200701](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200701.zip) Consideration on the common signalling framework for RACH partitioning Beijing Xiaomi Software Tech discussion

[R2-2200812](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200812.zip) Common signalling for RACH indication and partitioning Huawei, HiSilicon discussion Rel-17 NR\_SmallData\_INACTIVE-Core, NR\_slice-Core, NR\_redcap-Core, NR\_cov\_enh-Core

[R2-2201049](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201049.zip) Features Combination signalling Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_SmallData\_INACTIVE-Core, NR\_cov\_enh-Core, NR\_redcap-Core, NR\_slice-Core

[R2-2201127](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201127.zip) Signaling aspects of RACH partitioning Apple discussion Rel-17 NR\_SmallData\_INACTIVE-Core, NR\_cov\_enh-Core, NR\_redcap-Core

[R2-2201128](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201128.zip) MAC aspects of RACH partitioning Apple discussion Rel-17 NR\_SmallData\_INACTIVE-Core, NR\_cov\_enh-Core, NR\_redcap-Core

[R2-2201473](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201473.zip) Discussion on signalling aspects on common RACH framework LG Electronics Inc. discussion Rel-17 NR\_SmallData\_INACTIVE-Core, NR\_slice-Core, NR\_redcap-Core, NR\_cov\_enh-Core

[R2-2201553](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201553.zip) RACH partitioning for Rel-17 features Ericsson other Rel-17

[R2-2201597](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201597.zip) Discussion on RACH Partitioning in RA Configuration Aspect vivo discussion Rel-17 [R2-2109442](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2109442.zip) Late

### 8.18.2 Common aspects of RACH procedure

Including output of [Post116-e][515][RACH partitioning] MAC Procedure aspects (ZTE) and any other inputs not treated in 515, including RACH procedure and input for handling of the common MAC aspects including handling of RACH initiation, retransmissions etc

[R2-2200049](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200049.zip) [Post116-e][515][RACH partitioning] MAC Procedure aspects (ZTE) email discussion Rapporteur (ZTE Corporation) discussion Revised

|  |
| --- |
| **Agreements**   1. CE will also be considered as part of the feature combination for each RACH partition. The eligibility criteria for CE will be determined before the RACH partition selection is performed. [CB need to confirm that it is compatible with the CE agreements] 2. FFS Switching from non-CE to CE is not allowed if both are not configured (NOTE that the UE cannot switch between RACH feature partitioning) 3. General understanding for RACH partition usage is per below: Some details are still TBD   For each RACH partition configured, the RACH partition will be considered as available for a triggered RACH procedure in case all the following conditions are satisfied:  a) if REDCAP indication is configured for the partition, then the RACH partition is only applicable to the RACH procedure triggered for REDCAP UE where Msg1 identification is required. Otherwise, if REDCAP indication is not configured, then the RACH partition is applicable to non-REDCAP UE and REDCAP UE where Msg1 identification is not required. (FFS how to determine whether Msg1 identification is required or not)  b) if slice info is configured for the partition,then the RACH partition is only applicable to the RACH procedure triggered for the slice. Otherwise, if the slice info is not configured, then the RACH partition is applicable to all slices.  c) if SDT indication is configured, then the RACH partition is only applicable to the RACH procedure triggered for SDT. Otherwise, if SDT indication is not configured, then the RACH partition is applicable to the RACH procedure not triggered for SDT.  FFS if CE indication is configured, then the RACH partition is only applicable to the RACH procedure where CE is required. Otherwise, if CE indication is not configured, then the RACH partition is applicable to the RACH procedure where CE is not required. (if CE is considered as part of feature combination) |

*Proposal 1: CE will also be considered as part of the feature combination for each RACH partition and the use of CE will be determined before the RACH partition selection is performed*

- ZTE is concerned that this will introduce complexity in the procedure. Qualcomm that it should be part of feature combination.

- Huawei indicates that after analysing this more agree with ZTE and don’t see how the agreement can be compatible with the CE agreements and it is carrier specific. Agree that CE should be done at the end and not as part of feature combination.

- LG doesn’t see any issue.

- Qualcomm thinks that there would be no problem if both CE and carrier selection are both part of feature combinationObservation 2: In general companies agree with the principles highlighted above for each feature. Some details need further discussion (TBD).

[CB week2]

*Proposal 4: If we agree to specify a set of priorty rules, these rules are selected between following options:*

*Proposal 6: Once the RACH resource partition for a given feature set combination is determined, RACH procedure related variables in sections 5.1.1 and 5.1.1a will be initialized based on the values signalled within the selected RACH partition*

*Proposal 7: In general, RACH parameters (e.g. power ramping step, max RACH transmissions etc) are configured per RACH partition rather than per feature within the partition.*

*Proposal 9: RA-type selection can happen like today (i.e. after the carrier and BWP selection) based on the RACH parameters signalled in the selected RACH partition*

*Proposal 10: To solve the RNTI collision issue, selection between following options is proposed:*

*Option 1: Do nothing (i.e. leave to network implementation)*

*Option 3: the network should be able to (optionally) configure a specific search space for RAR/MSGB monitoring per RACH resource partition*

[R2-2200193](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200193.zip) Selection and fallback between RACH partitions Qualcomm Incorporated discussion Rel-17 NR\_SmallData\_INACTIVE-Core, NR\_cov\_enh-Core, NR\_redcap-Core, NR\_slice-Core

[R2-2200207](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200207.zip) RA Procedure Aspects Samsung Electronics Co., Ltd discussion Rel-17 NR\_cov\_enh-Core, NR\_SmallData\_INACTIVE-Core, NR\_slice-Core

[R2-2200262](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200262.zip) MAC aspects of RACH partition OPPO discussion Rel-17

[R2-2200420](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200420.zip) Discussion on MAC procedure for RACH partitioning CATT discussion Rel-17 NR\_cov\_enh-Core, NR\_slice-Core, NR\_SmallData\_INACTIVE-Core, NR\_redcap-Core

[R2-2200457](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200457.zip) RACH resource/configuration selection and fallback mechanism Intel Corporation discussion Rel-17 NR\_cov\_enh-Core, NR\_redcap-Core, NR\_UE\_pow\_sav\_enh-Core, NR\_slice-Core

[R2-2200617](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200617.zip) Remaining issues for MAC procedure in RACH partition NEC discussion Rel-17 NR\_redcap-Core, NR\_cov\_enh-Core, NR\_SmallData\_INACTIVE-Core, NR\_slice-Core

[R2-2200703](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200703.zip) Considerations on the common aspects of RACH procedure Beijing Xiaomi Software Tech discussion

[R2-2200813](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200813.zip) MAC aspects for RACH partitioning Huawei, HiSilicon discussion Rel-17 NR\_SmallData\_INACTIVE-Core, NR\_slice-Core, NR\_redcap-Core, NR\_cov\_enh-Core

[R2-2200848](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200848.zip) Discussion on RACH indication and partitioning CMCC discussion Rel-17

[R2-2200917](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200917.zip) RNTI collision issue for different features in NR Sony discussion Rel-17 NR\_redcap-Core, NR\_SmallData\_INACTIVE-Core, NR\_cov\_enh-Core, NR\_slice-Core

[R2-2201025](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201025.zip) RACH indication and partitioning InterDigital discussion Rel-17 NR\_SmallData\_INACTIVE-Core, NR\_cov\_enh-Core, NR\_redcap-Core, NR\_slice-Core

[R2-2201026](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201026.zip) Updated - [Post116-e][515][RACH partitioning] MAC Procedure aspects (ZTE) email discussion Rapporteur (ZTE Corporation) discussion [R2-2200049](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2200049.zip)

[R2-2201031](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201031.zip) MAC procedure aspects of RACH partitioning ZTE corporation, Sanechips discussion

[R2-2201474](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201474.zip) Further discussion on common RA procedure LG Electronics Inc. discussion Rel-17 NR\_SmallData\_INACTIVE-Core, NR\_slice-Core, NR\_redcap-Core, NR\_cov\_enh-Core

[R2-2201554](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201554.zip) RNTI collision problem for Rel-17 features Ericsson other Rel-17

[R2-2201589](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201589.zip) Selection of RACH partition Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_SmallData\_INACTIVE-Core

[R2-2201628](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2201628.zip) Discussion on RACH Partitioning in RA Procedure Aspect vivo discussion Rel-17 [R2-2110927](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_116bis-e\Docs\R2-2110927.zip) Late