3GPP TSG-RAN WG2 Meeting #113 bis electronic R2-2104304

Online, April 12 – April 20, 2021

Source: Session Chair (InterDigital)

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

**Email discussions:**

* [AT113bis-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
* [AT113bis-e][501][SDT] UP SDT open issues (LG)

Scope:

* + - Discuss open UP SDT open issues AI 8.6.2

Intended outcome:

* + - Agreeable Proposals in R2-2104395

Deadline for providing comments:

* + - Companies inputs April 15th
    - Rapporteur Proposals – April 16th
    - Comments on Proposals and final proposals – April 19th

## 8.5 NR IIoT URLLC

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

Time budget: 0 TU

Tdoc Limitation: 2 tdocs

Email max expectation: 0 threads

THIS FEATURE WILL NOT BE TREATED in 113bis-e online and offline (i.e. no in-meeting email discussions). However, two post-meeting email discussions to get company views will be triggered for 8.5.3 and 8.5.4 (see below)

### 8.5.1 Organizational

Rapporteur input

No input expected

R2-2102631 LS on gNB-based propagation delay compensation (R3-211136; contact: Nokia) RAN3 LS in Rel-17 NR\_IIOT\_URLLC\_enh To:RAN1, RAN2 Cc:-

### 8.5.2 Enhancements for support of time synchronization

Including requirements and scope.

No input expected

This AI will not be treated in 113bis-e and no email discussion will be triggered on this topic during or post April meeting.

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

RAN2 aspects related to URLLC in unlicensed controlled environments. Initial discussion on potential impacts, including requirements and scope

This AI will NOT be treated in 113bis-e and NO in meeting email discussions will be triggered.

Contributions on this topic can be submitted, but is not required, and a post April meeting email discussion is expected to be triggered to get company inputs on the remaining open issues.

R2-2102685 CG Harmonization for Unlicensed Controlled Environment Qualcomm Incorporated discussion Rel-17

R2-2102725 URLLC in UCE CATT discussion NR\_IIOT\_URLLC\_enh-Core

R2-2102992 HARQ Process Prioritization of Configured Grant for IIoT in NR-U Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_IIOT\_URLLC\_enh

R2-2103059 Remaining issues about uplink enhancements for URLLC in UCE Huawei, HiSilicon discussion NR\_IIOT\_URLLC\_enh-Core

R2-2103072 Uplink enhancements for URLLC in unlicensed controlled environments Intel Corporation discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

R2-2103126 Issue of Prioritizing Initial Transmission over Retransmission on a CG vivo discussion

R2-2103211 Consideration on URLLC over NRU OPPO discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

R2-2103297 Enhancements for URLLC in unlicensed controlled environments Lenovo, Morotola Mobility discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

R2-2103428 Harmonizing UL CG enhancements in NR-U and URLLC Ericsson discussion Rel-17

R2-2103441 Further Consideration on the UL transmission in UCE ZTE Corporation, Sanechips discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

R2-2103492 CG Harmonization for NR-U and IIoT/URLLC in Unlicensed Controlled Environments III discussion Rel-17 NR\_IIOT\_URLLC\_enh

R2-2103566 Prioritization of UL transmissions in unlicensed URLLC Sony Europe B.V. discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

R2-2103648 CG Harmonization for UCE Samsung discussion Rel-17

R2-2103688 Discussion on the remaining issue for uplink enhancements for URLLC in UCE CMCC discussion Rel-17 NR\_IIOT\_URLLC\_enh

R2-2103797 IIoT operation in unlicensed controlled environments InterDigital discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

R2-2104103 Further details on harmonization LG Electronics UK discussion NR\_IIOT\_URLLC\_enh-Core

R2-2104224 Remaining issues of CG harmonization Xiaomi Communications discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

=> Revised in R2-2104288

R2-2104288 Remaining issues of CG harmonization Xiaomi Communications discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

### 8.5.4 RAN enhancements based on new QoS

RAN enhancements based on new QoS related parameters if any, e.g. survival time, burst spread, decided in SA2. [RAN2, RAN3]

This AI will NOT be treated in 113bis-e and NO in meeting email discussions will be triggered.

Contributions on this topic can be submitted taking into account SA2 progress, but is not required, and a post April meeting email discussion is expected to be triggered to get company inputs on the remaining open issues.

R2-2102686 RAN Enhancement to support new QoS Qualcomm Incorporated discussion Rel-17

R2-2102726 Handling of Survival Time CATT discussion NR\_IIOT\_URLLC\_enh-Core

R2-2102993 RAN Enhancement for New QoS Parameters Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_IIOT\_URLLC\_enh

R2-2103060 RAN enhancements based on new QoS related parameters Huawei, HiSilicon discussion NR\_IIOT\_URLLC\_enh-Core

R2-2103125 Discussion on RAN enhancement to support survival time vivo discussion

R2-2103196 Topics on new QoS handling Fujitsu discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core R2-2000418

R2-2103212 RAN enhancement based on new QoS OPPO discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

R2-2103329 Further considerations on new QoS ZTE Corporation, Sanechips, China Southern Power Grid Co., Ltd discussion NR\_IIOT\_URLLC\_enh-Core R2-2100328

R2-2103420 Discussion on RAN enhancements based on Survival Time III discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core R2-2100449

R2-2103429 RAN enhancements based on new QoS related parameters Ericsson discussion Rel-17

R2-2103432 Entering and operating in the Survival Time state Samsung Electronics GmbH discussion

R2-2103689 Discussion on the RAN support for new QoS parameters CMCC discussion Rel-17 NR\_IIOT\_URLLC\_enh

R2-2103735 RAN2 Enhancements for Support of QoS Parameters Intel Corporation discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

R2-2103798 Enhancements based on new QoS requirements InterDigital discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

R2-2103896 Discussion on entering and exiting survival time state Futurewei Technologies discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

R2-2104097 View on survival time mechanisms LG Electronics UK discussion NR\_IIOT\_URLLC\_enh-Core

R2-2104225 Clarification on the survival time Xiaomi Communications discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

R2-2104265 RAN enhancements based on new QoS TCL Communication Ltd. discussion Rel-17 NR\_IIOT\_URLLC\_enh-Core

## 8.6 Small Data enhancements

(NR\_SmallData\_INACTIVE-Core; leading WG: RAN2; REL-17; WID: RP-210870)

Time budget: 1 TU

Tdoc Limitation: 4 tdocs

Email max expectation: 4 threads

FFS whether RACH partitioning should be initially done as a common design for multiple WIs: RAN slicing, RedCap, Small Data Transmission, CovEnh? Or whether coordination should be attempted once each WI has produced CRs.

### 8.6.1 Organizational

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

Including [Post113-e][501][502][503][504]

R2-2102620 Reply LS on physical layer aspects of small data transmission (R1-2102125; contact: ZTE) RAN1 LS in Rel-17 NR\_SmallData\_INACTIVE-Core To:RAN2

R2-2102634 Reply LS on small data transmission (R3-211280; contact: Ericsson) RAN3 LS in Rel-17 NR\_SmallData\_INACTIVE-Core To:RAN2 Cc:-

R2-2103527 Stage-2 running CR Introduction of SDT Nokia, Nokia Shanghai Bell CR Rel-17 38.300 16.5.0 0357 - B NR\_SmallData\_INACTIVE-Core

R2-2102707 Report from email discussion [POST113-e][501][SDT] Selection criteria and overall Procedure Samsung Electronics Co., Ltd discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103022 Summary of General and other control plane open issues for SDT (email: [Post 113-e][502]) Rapporteur (ZTE) discussion

R2-2103897 DRAFT Reply LS on small data transmission Ericsson LS out Rel-17 NR\_SmallData\_INACTIVE-Core To:RAN3

R2-2104490 DRAFT Reply LS on physical layer aspects of small data transmission (Reply to R2-2102620) ZTE Corporation LS out Rel-17 NR\_SmallData\_INACTIVE-Core To:RAN1

### 8.6.2 User plane common aspects

Overall user plane procedure for SDT (including triggering and thresholds, HARQ, and MAC CEs), data volume computation,. suppression of PDCP status report, RSRP threshold for SDT selection, switching between CG/RA, and any other user aspects included in Post113-e][501][503] which cannot be concluded as part of the email

Email discussion summary expected for this AI durin 113bis-e

R2-2104395 Summary of UP SDT open issues LG

[CB on Tuesday, April 20th]

R2-2102708 User Plane Common Aspects of RACH and CG based SDT Samsung Electronics Co., Ltd discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2102750 Discussion on user plane issues of SDT OPPO discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2102755 Discussion on User Plane Aspect of Small Data Transmission vivo discussion NR\_SmallData\_INACTIVE-Core R2-2100139

R2-2102840 User plane aspects for SDT Intel Corporation discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103018 User plane open issues for SDT ZTE Corporation, Sanechips discussion

R2-2103102 Analysis on UP common aspects of SDT CATT discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103197 Support of CA and PDCP CA duplication Fujitsu discussion Rel-17 NR\_SmallData\_INACTIVE-Core R2-2100419

R2-2103319 The UP common issues for small data transmissions Lenovo, Motorola Mobility discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103430 Discussion on user plane common aspects of NR small data transmission Qualcomm Incorporated discussion Rel-17 NR\_SmallData\_INACTIVE-Core R2-2101221

R2-2103444 Discussion on data volume threshold for small data transmission PANASONIC R&D Center Germany discussion

R2-2103454 Avoid triggering RA during subsequent SDT ASUSTeK discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103521 Common aspects for SDT Ericsson discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103528 User Plane common aspects Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103531 User plane common aspects for SDT Huawei, HiSilicon discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103583 Some aspects of User Plane for SDT in NR Sony Europe B.V. discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103672 Discussion on small data transmission Google Inc. discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103674 Discussion on beam operations for small data transmission Google Inc. discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103714 Remaining issues on transmission type selection and overall procedure CMCC discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103870 User plane aspects on the SDT procedure Apple discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103990 Consideration on overall SDT procedure and criteria LG Electronics Inc. discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2104206 On the overall and detailed procedure of SDT China Telecommunications discussion

R2-2104220 Discussion on data volume calculation Xiaomi Communications discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2104263 Discussion on Small Data Transmission TCL Communication Ltd. discussion Rel-17

### 8.6.3 Control plane common aspects

Cell reselection and failure handling, handling of subsequent data transmissins (including, how to indicate presence of subsequent data, etc) handling of non-SDT DRBs (including whether to resume or not non-SDT), CP data over SDT, SDT termination and data loss prevention and any other control plane aspects included in [Post113-e][501][502][503] which cannot be concluded as part of the email

R2-2103971 Report of [Post113-e][503][SDT] T319, cell reselection and re-establishment InterDigital discussion Rel-17 NR\_SmallData\_INACTIVE-Core

Not treated

R2-2102709 Control Plane Common Aspects of RACH and CG based SDT Samsung Electronics Co., Ltd discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2102751 Discussion on control plane issues of SDT OPPO discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2102756 Discussion on RRC-Controlled Small Data Transmission vivo discussion NR\_SmallData\_INACTIVE-Core R2-2100140

R2-2102841 Signalling and NAS-AS interaction for SDT Intel Corporation discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2102842 Fallback and failure handling for SDT Intel Corporation discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2102900 New timers for SDT failure detection Langbo discussion Rel-17 NR\_SmallData\_INACTIVE-Core Late

=> Withdrawn

R2-2102991 Handling of non-SDT traffic arrival PANASONIC R&D Center Germany discussion

R2-2103019 Control plane aspects of SDT ZTE Corporation, Sanechips discussion

R2-2103103 Considerations on Some Common Control Plane Issues CATT discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103151 Handling of non-SDT data arrival Potevio Company Limited discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103198 RAN paging reception and response during SDT Fujitsu discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103257 Handling of non-SDT data during SDT ETRI discussion

R2-2103299 Discuss on solutions for arriving of non-SDT data during SDT NEC discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103405 Consideration on CP issues for small data transmission Lenovo, Motorola Mobility discussion Rel-17

R2-2103431 Discussion on control plane common aspects of NR small data transmission Qualcomm Incorporated discussion Rel-17 NR\_SmallData\_INACTIVE-Core R2-2101223

R2-2103455 Beam management in SDT ASUSTeK discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103497 SDT control plane aspects Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_SmallData\_INACTIVE

R2-2103522 CP aspects for SDT Ericsson discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103568 Discussion on subsequent SDT in NR, timer handling, and support for SRB1/2 Sony Europe B.V. discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103715 Non-SDT data transmission CMCC discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103796 Subsequent small data transmission InterDigital discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103867 Non-SDB handling during the SDT procedure Apple discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103868 Control plane aspects on the SDT procedure Apple discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103904 Control plane common aspects for SDT Huawei, HiSilicon discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103970 CP and configuration aspects for small data InterDigital discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103972 [Draft] LS to SA WG3 on re-use of same NCC and I-RNTI value for RRC Resume procedure in different cells during small data transmission procedure. InterDigital LS out Rel-17 NR\_SmallData\_INACTIVE-Core To:SA3

R2-2103989 Discussion on switching to non-SDT procedure LG Electronics Inc. discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103991 Discussion on cell reselection during SDT LG Electronics Inc. discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2104204 Resuming non-SDT RBs and indication LG Electronics Inc. discussion Rel-17 NR\_SmallData\_INACTIVE-Core Late

R2-2104221 Discussion on the support of the RRC-less SDT Xiaomi Communications, Intel Corporation, ASUSTeK, Fujitsu, MediaTek, Apple, Spreadtrum Communications discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2104222 Technical details of the RRC-less SDT Xiaomi Communications, ASUSTeK, Fujitsu, Spreadtrum Communications discussion Rel-17 NR\_SmallData\_INACTIVE-Core

### 8.6.4 Aspects specific to RACH based schemes

RA resource configuration and selection, PDCCH monitoring after successful SDT RA completion, RAN2 specific details of context fetch/data forwarding with and without anchor relocation

R2-2102710 Details of RACH bsaed Small Data Transmission Samsung Electronics Co., Ltd discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2102752 Discussion on RACH based SDT OPPO discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2102757 Supporting Small Data Transmission via RA Procedure vivo discussion NR\_SmallData\_INACTIVE-Core R2-2100141

R2-2102847 Fallback issue for 2-step RA based small data transmission Sharp discussion NR\_SmallData\_INACTIVE-Core R2-2100413

R2-2103020 Open issues for RACH based SDT ZTE Corporation, Sanechips discussion

R2-2103104 Considerations on Procedures without Anchor Relocation CATT discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103105 Analysis on Search Space of RA-SDT CATT discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103252 Discussion on RACH-based SDT Spreadtrum Communications discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103264 PDCCH monitoring in subsequent data transmission period Asia Pacific Telecom co. Ltd, FGI discussion

R2-2103403 Analysis on open issues of RA based SDT Lenovo, Motorola Mobility discussion Rel-17

R2-2103433 Discussion on RACH based NR small data transmission Qualcomm Incorporated discussion Rel-17 NR\_SmallData\_INACTIVE-Core R2-2101231

R2-2103456 Discussion on RO configuration between SDT and non-SDT ASUSTeK discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103519 RACH based SDT Ericsson discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103529 Details of context fetch and data forwarding Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103580 Discussion on context fetch and anchor relocation Sony Europe B.V. discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103716 Anchor relocation and context fetch CMCC discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103869 Subsequent data transmission for SDT Apple discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103903 Small data transmission with RA-based schemes Huawei, HiSilicon discussion Rel-17 NR\_SmallData\_INACTIVE-Core

### 8.6.5 Aspects specific to CG based schemes

This AI will not be treated in RAN2#113bis-e (only the email discussion [504] in AI 8.6.1 will be treated)

CG resources, configuration and selection, validity of CG resources, multiple CG configurations, handling of beam selection for CG (including association between CGs and SSBs) etc, any other aspects included in [Post113-e][504][SDT] which cannot be concluded as part of the email

R2-2103533 Report from [POST113-e][504][SDT] CG Open Issues Huawei, HiSilicon discussion Rel-17 NR\_SmallData\_INACTIVE-Core

Not treated

R2-2102711 Details of Configured Grant based Small Data Transmission Samsung Electronics Co., Ltd discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2102753 Discussion on CG based SDT OPPO discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2102758 Supporting Small Data Transmission via CG configuration vivo discussion NR\_SmallData\_INACTIVE-Core

R2-2102843 On Configured Grant aspects for SDT Intel Corporation discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103021 Open issues for CG based SDT ZTE Corporation, Sanechips discussion

R2-2103199 PDCCH monitoring after TAT expiry Fujitsu discussion Rel-17 NR\_SmallData\_INACTIVE-Core R2-2000420

R2-2103265 CG-SDT based on beam operation Asia Pacific Telecom co. Ltd, FGI discussion

R2-2103367 Aspects specific to CG based SDT Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_SmallData\_INACTIVE

R2-2103404 Consideration on CG based small data transmission Lenovo, Motorola Mobility discussion Rel-17

R2-2103434 Discussion on CG based NR small data transmission Qualcomm Incorporated discussion Rel-17 NR\_SmallData\_INACTIVE-Core R2-2101233

R2-2103457 Beam selection for CG-SDT ASUSTeK discussion Rel-17 NR\_SmallData\_INACTIVE-Core R2-2101752

R2-2103520 Details of CG based SDT Ericsson discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103532 Small data transmission with CG-based scheme Huawei, HiSilicon discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103581 Details of CG-based scheme for SDT in NR Sony Europe B.V. discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2103795 CG-based SDT InterDigital discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2104223 Remaining issues of CG SDT Xiaomi Communications discussion Rel-17 NR\_SmallData\_INACTIVE-Core

R2-2104241 On CG Resource Configuration in Small Data enhancement China Telecommunications discussion