3GPP TSG-RAN WG2 #116-e R2-21xxxxx

Electronic, 1st – 12th Nov, 2021

Agenda Item: 5.4.1

Source: R2 Chair (MediaTek inc)

Title: [AT116-e][049][TEI17] TEI17 NR proposals (Chairman)

Document for: Discussion, Decision

# Introduction

This document is to kick off the following email discussion:

* [AT116-e][049][TEI17] TEI17 NR proposals (Chairman)

 Scope: Collect comments on selected NR TEI17 proposals
Intended outcome: Report
Deadline: Tuesday W2

The intention with this offline discussion is to collect comments to identify proposals that could be agreeable.

**Chair on TEI proposals**

A TEI item shall have a limited scope, it should be possible to complete the work in 1 quarter (given sufficient attention and focus). The work should be limited to one WG (small exceptions are allowed).

TEI proposals are usually judged differently according to novelty - in a range, e.g.

* Corrections not implemented in a previous release, small proposals that should obviously/reasonably have been implemented in a previous WI but was missed for some reason.
* Well known earlier WI proposals with some support but were not done e.g. due to lack of time. Small features that were implemented in earlier system.
* New items, giving better performance, or enabling a new use case etc.

Corrections or almost corrections are typically judged similarly to corrections, e.g. the motivation for the full story is assumed pre-known. Discussions can be quite simple, straightforward opinions on impact vs gain and the bar for acceptance is usually medium (higher or somewhat higher than for pure corrections).

New features most often require a more comprehensive analysis and understanding, sometimes similar to judging new WI proposals at Plenary. Understanding justifications vs impact/possibility to deploy etc is important. Operator input is sometimes helpful to verify validity of justifications. The bar for acceptance is usually quite high.

Other aspects are usually considered, e.g. proposals that has recently been rejected would be considered again if the situation has changed somehow, but not otherwise. Proposals that were rejected for an ongoing WI should generally not be considered for TEI.

As usual and always, for all kinds of proposals, technical sanity check is fundamental. Does the proposal work? Is it feasible? Does the proposal address the intended issue / intended case.

Please consider these aspects when you provide comments in this discussion so there can be a balanced result.

**Opinions and Comments**

Please provide opinions. It is appreciated that you give a concise motivation. You can refer to other company’s motivation if your’s is the same. You can also ask questions, and make comments that you think may impact the perception of the proposal.

Opinions will be interpreted as follows:

Support = Support the proposal, think it is useful

Not Support = Don’t support the proposal, not useful etc. Could be acceptable.

Not Acceptable = This is objected to.

Unclear = Don’t know yet, asking some questions, may decide later if there are replies.

**Updating this document**

This is a big document so collision updates may happen. When naming your file update, please:

1) Increase the revision one step compared to your baseline version.

2) Keep the previous editor company name and add your company name last (i.e. two company names)

E.g. CATT revision based on Nokias:
*[AT116-e][049][TEI17] TEI17 NR proposals\_v12\_Nokia\_CATT.docx*

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# Discussion

## Undecided proposal (has been treated no decision)

### CGI Report extension

CGI Report Extension Proposal

[R2-2110981](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110981.zip) On the support of NG-based handover using CGI report Huawei, HiSilicon, CMCC, China Telecom, China Unicom discussion Rel-17 TEI17

[R2-2109716](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2109716.zip) CR to 38.331 on support of NG-based (i.e. via CN) handover based using CGI report China Telecom, Huawei, HiSilicon CR Rel-17 38.331 16.6.0 2816 - F TEI17

Some Comments has already been provided in the following tdoc

[R2-2110856](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110856.zip) On using RAN3 based solution for unsupported SCS+BW of neighbor cell Ericsson discussion

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| Company | Support / NSupport / NAccept / unclear | Comments |
| Huawei, HiSilicon | Support(Proponent)  | Issue: unmatched capability of SCS/BW between UE and target cell leads to HO failureTwo options on the table:a) RAN2 solution: add SCS and BW into CGI report;b) RAN3 solution (proposed by Ericsson): enhance the ’cause’ values in the HANDOVER FAILURE message to reflect unsupported SCS and/or BWWe think RAN2 solution is better. For UEs configured to report CGI, SCS/BW info of target cell is already obtained by the UE and the UE will send the CGI report anyway. No big effort to include extra known fields into the CGI report. Besides, the HO failure can be prevented.Drawback of RAN3 solution: 1) The HO has to be failed first to know the SCS/BW is(/are) unsupported;2) Even though the source node know the reason for failure, it is not aware about the exact the SCS/BW of target node, thus future failures can happen again. |
| Nokia, Nokia Shanghai Bell | Not accept | As proposed, this seems to require source to do the same checks as target already does. * When source sends HO request to target, the target cell will check the UE capabilities and current RRC configuration. If they do not match the cell, target will reject the HO request.
* If there are multiple HO failures to a cell, that would likely be recognized as a bad HO candidate and blocked.

In any case, this is really a RAN3-only issue and should be solved there. Huawei Response: we have explained the problem if it is left to RAN3. It seems that there is same understanding here that this would lead to potential handover failures, thus we think it is worth discussing which solution is better in RAN2. |
| CMCC | Support | As one of the proponent companies, we are supportive to enhance CGI reporting to facilitate NG-based handover. Source gNB still has no idea of the SCS/BW of the target gNB. So the failure may happen again.  |
| Apple | Not support | Our understanding is the channel bandwidth, and SCS of one frequency should be rather stable configurations. It is not likely that for one spectrum, different cells are deployed with different channel bandwidth.With this logic, isn’t it better to solve the problem by OAM? Relying on UE reporting seems an overkill to us. |
| OPPO | NSupport | If network based solution can solve the issue as Ericsson‘ paper said, we would like not to impact UE. |
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### Location Privacy in RRC

Location Privacy in RRC

[R2-2110047](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110047.zip) User preferences to control location information sharing Apple, Samsung, Google, Xiaomi, Vivo, BT Plc, Rakuten Mobile, MediaTek Inc discussion TEI17

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| Company | Support / NSupport / NAccept / unclear | Comments |
| Nokia, Nokia Shanghai Bell | NSupport | This is outside 3GPP: The intent of "available" for location information was that UE indicates the information if it UE has it at the time of reporting, but not that UE has to do location update to obtain the information. This seems like a UE implementation matter and not something RAN2 should discuss. User consent is already taken into account for MDT (once user consent is provided it ensures privacy and legal obligations are fulfilled), so it's unclear what the problem is.The proposed solution (by statement in RRC specification) does not actually help either, as this would be still implementation issue on how the RRC layer gets this “User Preference”. This is some application layer-level information and actual perception of the user preference information into RRC still remains implementation specific.Furthermore, we believe the intention does not differ from what is already captured in the current RRC: “The UE may not succeed e.g. because the user manually disabled the GPS hardware, or due to no/poor satellite coverage. Further details, e.g. regarding when to activate GNSS, are up to UE implementation.” |
| CATT | NSupport | We can understanding the requirement and intention to introduce User Preferences, but this may be out of RAN2 scope, this issue coudl be left to other groups to confirm or discuss, not RAN2. |
| CMCC | NAccept | We have shared our opinion in last meeting. This is unacceptable for us. The reasons are as follows:1. Firstly, anything related with security or privacy should be discussed in SA3 or SA5, not in RAN2. RAN2 is not responsible to discuss on privacy unless any issue is identified by SA3.
2. The current user consent mechanism is sufficient. If the UE sign the user consent, it means the UE is willing to share MDT reporting containing location info. It looks strange if UE still don’t prefer to report location. If UE don’t want to report location or not trust operator, the UE can simply not sign the user consent.
3. For SON reporting, e.g., RLF-reporting, CEF-reporting, they are one shoot reporting. With UE ID anonymization, the UE cannot be tracked.
4. UE ID is anonymized by the gNB. For SON/MDT related reporting, the UE ID is removed by the gNB from the record before send it to OAM. So there won’t be any privacy issue.
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| Huawei, HiSilicon | Not a RAN2-led TEI | If the proposal is referring to the user consent, we understand there is already discussion in other groups. RAN2 is not the leading group to discuss this. |
| ZTE | NSupport | According to current specs UE can decide its preference on location report by turn on/off GPS module, and by user consent. And operator would offer special discount to UE who have signed the user consent, so if UE is allowed to refuse to report the location info even when it has already signed the user consent, the efforts from operators are wasted.Anyhow, we don’t see a need to discuss this in RAN2, if there are concerns then SA3 will initiate the discussion.  |
| OPPO | Support |  |
| Lenovo, Motorola Mobility | unclear | We agree with the intention but think a note is sufficient. Adding the phrase “allowed by the user” in the normative text looks strange in AS specs. |

### System Information Scheduling

System Information Scheduling Proposal

[R2-2111248](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2111248.zip) On the need of providing explicit SI start position for SI Scheduling Ericsson, Verizon, Deutsche Telekom, Softbank, Swift Navigation, ESA, T-Mobile USA discussion Rel-17

Some comments has already been provided in the following tdoc

[R2-2110799](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110799.zip) SIB and posSIB scheduling constraints MediaTek Inc. discussion Rel-17 TEI17

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| Company | Support / NSupport / NAccept / unclear | Comments |
| Ericsson | (Proponent for R2-2111248) | Some comments on R2-2110799.It is difficult to solve (avoid collision and have more rooms for SI) just by means of changing parameters in deployment.Reducing SI window length implies:* Reducing coverage
* decreased Transport Block Size; which may increase latency for PWS SI which then would have to be provided in very small segments
* Not possible to have large number of beam sweeps. Each beam needs to have the SI information and if the SI window length is small; NW can’t provide large number of beams for UE beam sweeping procedure

Increasing SI periodicity implies:* Increased latency. Longer time for UE to preform cell selection and cell reselection which will also impact how quickly a UE can access a cell for RACH procedures etc. Can consume more UE power.

For DSS:* Even in a legacy deployment the current solution is not good and there might be a need to introduce e.g. more MBSFN subframes to counter for the legacy SIBs. However, without a future proof solution for NR new SIBs (MBS, UE power savings in rel-17 may introduce new SIBs) and posSIBs we see a high risk that there will not be possible to support new functionality together with DSS without deteriorating the performance.

For Positioning SIBs: Also, R2-2110799 analysis show need of at least 9 SIs for positioning.* One version of RTK (~5 SI messages)
* GNSS assistance data for one constellation (~3 SI messages)
* DL positioning (1 SI message)

Even with 80ms offset solution; we will not be able to schedule 9 positioning SIs. Pls note that these offsets based will anyway have the same constraints as mentioned in Observation Observation 1: If the shortest SI periodicity is x\*si-WindowLength, the SI scheduling mechanism can only accommodate x SI messages.That is as 80ms SI needs to be repeated and hence we will be able to accommodate only 7 positioning SIs at maximum. It would become x-1 in fact.Further in Rel-17, there will be further new posSIBs (around 10) |
| ESA | Support | We agree with Ericsson´s analysis. The number of posSIBs is already high and it is expected to increase even more in Rel17. There is need to find a way to be able to schedule more posSIBs. |
| CMCC | Support | The identified issue is valid for the current SI mechanism in NR system. We are open if the solution can be backward compatible and future proof for more SIBs in the future.  |
| CATT | unclear | The observations in R2-2110799 are quite objective. We need to figure out what the real issue is with the deployment, and how serious the issue is at first. CATT share the similar understanding as MTK that the SI scheduling issue mainly comes from positioning SI. This issue is valuable to further discuss since the posSI becomes larger and larger in Rel-17. We need further analysis before we jump into some solution, such as a new scheduling mechanism. |
| Huawei, HiSilicon | NAccept for Rel-16 Nsupport/unclear for Rel-17 | For Rel-17, we are not sure whether there will be such cases in real deployment. The major issue here is based on the assumption that quite a lot SIs are deployed for positioning and no 80ms SI are scheduled in SIB1, which we think is a corner case. This proposal leads to a fundamental change on current SI scheduling mechanism, and also requires the UEs to adapt to such new scheduling mechanism. The network usually can use proper implementation scheudling planning to avoid such corner cases.In any case, we cannot accept this mechanism extending to Rel-16 SIBs, which would impact legacy UEs. |
| Apple | Support with comments | We agree that the current posSI-scheduling is problematic when the minimum SI periodicity is not 80ms, we support to find a way to fix this issue and allow more posSIBs to be accommodated without causing conflict. |
| OPPO | NSupport | It’s also not clear whether such cases may happen in real field and we have concern on the proposed mechanims which may have big impacts on the Ues. |

### C-DRX enhancements for 5G applications

[R2-2109730](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2109730.zip) C-DRX enhancements for 5G applications vivo, CMCC, China Telecom, China Unicom, Spreadtrum, Guangdong Genius discussion Rel-17 TEI17 R2-2107416

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| Company | Support / NSupport / NAccept / unclear | Comments |
| LG | NSupport | At the beginning of NR, RAN2 has discussed this issue, i.e., Active Time is not well aligned with frame boundary or Active Time does not incldue sufficient PDCCH Monitoring opportunity. However, it was considered difficult to keept the PDCCH-subframe concept in NR because of various numberologies. Thus, we are not in favor of introducing PDCCH-subframe like concept to NR at this moment (option1)Given that DRX cycle is defined in an absolute value, we are not sure how solution2 solves this problem. Our understanding is that solution3 would be the today’s implementation, i.e., no need to specify. |
| Nokia | NSupport | Agree with LG and wondering how that would work with dynamic patterns. |
| CATT | NSupport | This is quite a big change at this late stage and should rather be discussed in XR WI. Solution 3 (longer *onDurationTimer*) is enough for R17. |
| CMCC | Support | The issue can happen for some specific DRX configuration. We are open for solutions. |
| Huawei, HiSilicon | NSupport | We think such enhancements should be considered in Rel-18 relevant discussion, no duplicated discussion here. |
| Apple | NSupport | Agree with LG. This issue was discussed and NR at the early stage and also discussed in LTE previously, and RAN2 agreed the current after thorough discussion. |
| OPPO | Nsupport | It’s understood in the early NR discussion, this case was brought up however, due to the complexity of the UE monitoring duration, it’s decided to use absolute time for controlling the monitoring behaviour. In general, if network configure UL heary frame structure, it mean more UL traffic is expected compared with DL traffic, in order to balance the power saving and the low latency requirement as pointed by this contribution, one way is that netowkr can configure proper configured grant while keeping the DRX related timers in a reasonable duration. Thus, we dont think for now we need to specially handle this case, and we can keep the R15 design as it is. |
| Lenovo, Motorola Mobility | NSupport | Very likely DRX enhancement to support applications like XR will be discussed in Release 18, wherein similar issues, e.g., dynamic DRX to better fit non-integer traffic period, are considered. Optimization as such would be more appropriate to discuss in Release 18. |

## New Proposals (has not been treated yet for R17)

### EPS Fallback

EPS Fallback

[R2-2110485](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110485.zip) EPS fallback enhancements for UEs in IDLE/INACTIVE Huawei, HiSilicon, CMCC, China Telecom, China Unicom, LG Uplus discussion Rel-17 TEI17

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| Company | Support / NSupport / NAccept / unclear | Comments |
| Huawei, HiSilicon | Support (Proponent) | Following legacy procedure, when an IDLE/IACTIVE UE is paged for voice, the EPS falllback latency includes 1) UE response paging and establish/resume RRC in NR Cell, 2) the HO/redirection procedure triggered by the NR cell blindly or based on UE measurement reporting, 3) UE initiates access to LTE cell to get voice service.The EMR based solution proposed by vivo is trying to save the time of measurement configuration and reporting time in NR side.While the key point in this contribution is that after UE receives the paging message indicating EPS fallback, UE can directly select and access to the LTE cell, which can save the time of all procedure in NR side. This also omits the measurement reporting, while we understand the real scenario in the field is largely blind HO/redirection scenarios, assuming LTE coverage is better than NR. |
| Nokia | NSupport | Decreasing latency is interesting for voice fallbacks in general. We are wondering what is different compared to LTE CS fallback – this seems analogous to that. And secondly, we wonder why focus on MT cases? Shouldn’t one also consider MO like in CS fallback that UE establishes connection directly in LTE(or wherever)?Additionally at least in the past there has been strong concerns on adding new IEs in the paging message as it would decrease the paging capacity. We are wondering why this would be different now?Huawei response: we understand in LTE, CS fallback is triggered by UE, i.e. UE request to do CS fallback in NAS message, based on which MME will inform RAN to perform the corresponding AS procedures.In NR, it was assumed UE and CN would support IMS voice, while gNB can decide if EPS fallback is needed according to support of VoNR etc [this is described clearly in 23.502]. So we think even for IDLE/INACTIVE UE, it still should be the gNB to make the decision on EPS fallback.Then for paging capacity, in LTE, CS/PS indication is included in paging, and here EPS fallback is just a similar one-bit indication, would not impact capacity much. |
| CATT | Unclear | Some issues on the below enhancements for EPS fallback is to be clarified,* **When the paging message indicates voice service, the UE sets the NR RRC establishment cause as voice instead of mt-access.**

[CATT]if paging cause is set to voice but actually the voice is VONR,UE will still set RRC establishment cause as voice, then it seems gNB will falsely treat is as EPS fallback. what is the impact?[Huawei] we are not sure we understand the comments on “gNB falsely treat as EPS fallback”, as EPS fallback can only trigger by gNB. The cause value only indicate the UE access to gNB for voice service, the gNB will determine if it will provide UE voice service via VoNR or trigger EPS fallback.* **The gNB can include EPS fallback indication in paging message, the UE selects an E-UTRA cell to establish the RRC connection, and sets the E-UTRA RRC establishment cause as voice.**

[CATT] based on EPS fallback indication in paging message ,the UE select a LTE cell and initiate RRC connection on LTE cell autonomously without involving gNB and 5GC. We are wondering whether it is still EPS fallback. EPS fallback procedure contains interaction between gNB and 5GC, and between CN network entities, according to TS23.502.[Huawei] in our solution, it is like the UE receives a NR RRC redirection message (i.e. “or AN Release via inter-system redirection to EPS” as you coted below) to E-UTRA cell. After UE accesses to E-UTRA cell, it will perform TAU which trigger EPC retrieve the UE context (including voice service) from 5GC. So we think this is consistent with the legacy 5GC-EPC interaction principle.//23.5024. NG-RAN responds indicating rejection of the PDU Session modification to setup QoS flow for IMS voice received in step 2 by PDU Session Modification Response message towards the PGW-C+SMF (or H-SMF+P-GW-C via V-SMF, in the case of home routed roaming scenario) via AMF with an indication that mobility due to fallback for IMS voice is ongoing. The PGW-C+SMF maintains the PCC rule(s) associated with the QoS Flow(s) and reports the EPS Fallback event to the PCF if PCF has subscribed to this event.5. NG-RAN initiates either handover (see clause 4.11.1.2.1), or AN Release via inter-system redirection to EPS (see clause 4.2.6 and clause 4.11.1.3.2), taking into account UE capabilities. The PGW-C+SMF reports change of the RAT type if subscribed by PCF as specified in clause 4.11.1.2.1, or clause 4.11.1.3.2.6. When the UE is connected to EPS, either 6a or 6b is executed |
| CMCC | Support | This is an efficient solution to reduce EPS fallback delay. |
| Apple | Unclear | We have several questions and comments on this matter:1) Does the EPS fallback indication come from gNB directly or from AMF? If it’s decided by AMF, CT1 and SA2 should be involved.2) We also wonder why only MT call matters? Why not considering MO calls?3) We have some concerns regarding the reliability of using paging message to indicate the EPS fallback. In legacy EPS fallback procedure, UE is already in RRC connected state thus the EPS fallback indication from NW can get to UE for sure. Using CCCH channel instead without knowing in which cell the UE actually locates, might be a big concern.4) The capacity and security of using paging message to indicate EPS fallback should also be considered. |
| OPPO | Unclear | We understand the motivation, however, it’s not clear for us for the following aspects:1. Whether the enhancement on the paging for MUSIM can be resused by this mechinams

If 1 is confirmed, we understand the key enhancement is to enhance the paging message in from gNB to the UE, i.e., based on the paging mesage with voice indicatation, the UE can perform RRC connection to E-Utra. However, it’s not clear to us why the UE need to set the RRC establishment cause as voice when performing E-UTRA RRC establishment.  |
| Vodafone | Unclear | We support the motivation and need for TEI-17 work to reduce EPS fallback latency/improve reliability, however, we suspect that there are ‘systems aspects’ that mean that this proposal is incomplete. |
| Lenovo, Motorola Mobility | unclear | Regarding EPS fallback in inactive the RAN Paging message is used like RRC release message with redirection command to LTE/EPS. However, we wonder whether UE can trust the received paging message, e.g. in view of fake base stations or man-in-the-middle attack. Therefore, there may be security issues with this enhancement.Regarding the solution of setting the NR RRC establishment cause as voice (mo-VoiceCall) instead of mt-access, it will face the risk that the establishment request could be rejected by network.For the solution of EPS fallback indication, if EPS fallback indication is proposed to be included in paging message, we need to evaluate the load of current paging messgae. It may impact the current paging capacity. |

### UL Skipping Control

UL Skipping Control

[R2-2110198](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110198.zip) Fast Control of UL Skipping NTT DOCOMO INC., Ericsson, CMCC, Verizon discussion Rel-17

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| Company | Support / NSupport / NAccept / unclear | Comments |
| LG | NAccept | P2 has been discussed in RAN2#115 and not pursued, hence it should be excluded in this discussion.Regarding P1: Such dynamic on/off may complicate the UE behaviour because the generation of the MAC PDU may need to depend on the timing of receiving such MAC CE. For example, sudden change to skipping ON while the UE is already preparing a MAC PDU or sudden change to skipping OFF while the UE has already generated a MAC PDU. We already have a similar experience, e.g., CSI reporting considering sudden Active Time or sudden non-Active Time in DRX, which is complex even today.In addition, we don’t think the SINR situation is so dynamically change and requires very dyanmic on/off of skipping.Lastly, for false detection case, the UE ignores the received grant for the skipped transmission. So, we don’t agree with the view that the gNB will have problem with soft combining issue or the UE may use this wrong grant for UCI multiplexing. |
| Nokia | Unclear | LG’s concerns are relevant. |
| CATT | NSupport | It’s not necessary to introduce the optimization. |
| CMCC | Support |  |
| Huawei, HiSilicon | NSupport/Unclear | It is noted that the network is free to disable UL skipping in advance whenever needed, since from LTE. It is unclear whether there is any real problem for reusing this mechanism on NR. This may also lead to impact on the LCP, i.e. the feasibility for UE timing during LCP if this becomes a fast control via MAC CE. |
| OPPO | Nsupport | Currenlty the UL skipping is already supported by RRC configuration, it’s not clear why we need MAC CE based UL skipping control.  |

### SRS in Dormancy

SRS in Dormancy
Had some support in R16 but wasn't done in the end

[R2-2110836](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110836.zip) Periodic SRS in SCell dormant BWP Qualcomm Incorporated, ZTE Corporation, Futurewei discussion Rel-17

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| Company | Support / NSupport / NAccept / unclear | Comments |
| Nokia | unclear | To us having very seldom SRS is hardly helping NW in assessing quality of the cell. But RAN1 also indicated in R16 that this could be useful. This seems quite simple addition, so we are neutral on having this if UEs are willing to send it for dormant BWP. We do not see the need to change the PHR behavior though as proposed in P3 since it should be very sporadic transmissions without impacting other cells much and no close loop power control for the dormant BWP.  |
| CATT | Support |  |
| OPPO | NSupport | It is already discussed in R16 DCCA and it is not agreed.If RAN2 wants to support it in R17 TEI. RAN1 should be involved first. I also think it is RAN1 scop to decide whehter to support it or not. |
| Lenovo, Motorola Mobility | NSupport | It has been already discussed in R16 and not agreed. |
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### Skip RACH on Data Arrival

Skip RACH on Data Arrival

[R2-2111161](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2111161.zip) Skipping RACH upon data arrival NTT DOCOMO, INC. discussion Rel-17

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| Company | Support / NSupport / NAccept / unclear | Comments |
|  | NSupport | We have some sympathy to the intention that the network may want to poll the BSR rather than the UE by itself always trigger the BSR and consequently SR/RA. Currently, the only way to prevent BSR trigger by UE is not to allocate a LCG. However, it prevents BSR report as well because BS is reported per LCG.R2-2111171 has proposed to allow skipping RA for this case, which we don’t think is the only solution. For example, we could enhace BSR so that BSR is not triggered by UE itself. Therefore, we are open to discuss more but not limited to RA skip. |
| Nokia | Nsupport | There are already means to prevent triggering SR like logicalChannelSR-DelayTimer and logicalChannelSR-Mask |
| CATT | NSupport | It is not essential. |
| Huawei, HiSilicon | NSupport | We understand by existing mechanism, the network can configure SR mask to prevent the UE from triggering SR-RA in case it thinks SR-RA is not needed. It seems to be sufficient and a bit unclear to us why new mechanism is needed.  |
| OPPO | NSupport | It seems this contribution assumes the UE is always reacheable if the beam turns to the UE in FR2. In this case, by requesting aperiodical CSI, the UE is assumed to have the opportunity to send the BSR and even the ul data (if any).However, we think this is not always the case, because UE should be supposed to work with DRX in order for power saivng, in this case, UE is not always reachable in the case when UE is not in Active Time. Then, SR can be used to trigger the UE entering into the Active Time when UL data is available. Thus the statement in the contribution „This means that the gNB can receive UL data from the UE without interruption when the gNB requires BSRs frequently enough. In such an operation, scheduling requests can be stopped by configuring in RRC“ seems not alwasy work especially considering the DRX configuration. |
| Lenovo, Motorola Mobility | NSupport | This is presumably not good from system/ network’s perspective since due to Beam sweeping the amount of unused resources (just now put in the PDCCH to send a possible BSR) will be too high. |

### Fast RLF

Fast RLF

[R2-2110055](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110055.zip) Discussion on Fast RLF recovery Apple, Verizon discussion Rel-17 TEI17

[R2-2110056](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110056.zip) 38.331 CR to introduce fast RLF recovery (Option 1) Apple, Verizon draftCR Rel-17 38.331 16.6.0 B TEI17

[R2-2110057](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110057.zip) 38.331 CR to introduce fast RLF recovery (Option 2) Apple, Verizon draftCR Rel-17 38.331 16.6.0 B TEI17

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| Company | Support / NSupport / NAccept / unclear | Comments |
| Ericsson (Tony) | NSupport | We think that this is an optimization that basically bring no benefits. With the proposed solution(s) we think that gaining e.g., around 20-30ms, is not really essential taking into account that the reestablishment procedure itself can last several second (from the moment to when is initiated to the moment in which the RRCReestblishmentRequest is sent). Therefore, we gain few milliseconds in a procedure that last several seconds.A further doubt that we have is that, sometime, the RLF may be due to a reconfiguration error and thus restoring the previous configuration it will bring yet to another RLF (in this case the proposed solutions do not help at all). On top of this, when a UE performs reestablishment, the network may also want to give a different configuration at the UE for e.g., load balancing reasons, and this will basically void the small benefits given by the proposed solutions.Also, we are wondering if the case that is describing (UE with temporary out-of-coverage) can be simply resolved by extending the timer T310 (also simply set the maximum allowed time).For all these reasons, the benefits for restoring the previous RRC configuration during reestablishment it seems to be very limited. |
| Nokia | NAccept | It is not clear if this really reduces any delay. RRC reestablishment is already supported and UE does not release RRC configuration as stated in discussion paper. It seems only aspects is to keep PSCell configuration in case of RLF but that hardly seems to bring any benefit. |
| CATT | NSupport | RRC re-establishment may be triggered due to RRC reconfiguration failure, e.g. inability to comply with *RRCReconfiguaration* message. In this case, the previous configurations cann’t be used. Thus, the benefit of fast RLF recovery is not clear. |
| Huawei, HiSilicon | NSupport | The proposal is apparently specific to the case when the UE re-establishes to the same cell after RLF. This is rather unlikely to occur. Besides, the CRs provided are not simple and may require a lot of discussions. Thus we are not convinced on this proposal. |
| Apple (Proponent) | Support  | We think it is quite frequent that UE will select the same PCell (which is the serving cell before the failure) during RRC Establishment procedure triggered by RLF or HOF. In this case, it is reasonable to allow UE to continue to use its prior configuration w/o let NW to reconfigure the UE. This can help reduce the signaligng overhead and latency of the recovery. We have presented two options to address this problem, one is to extend the CHO configuratuon to cover the source cell. The other is to adopt a procedure simialr to RRC resumption when the select cell is the same prior PCell. |
| Lenovo, Motorola Mobility | NSupport | If the cause of declaring RLF is T310 expiry, the network has reserved the sufficient time for recovery of channel. If the channel can not be recovered during T310, it is almost impossible that UE can reselect the same cell during T311. If the cause of declaring RLF is reconfiguration failure, the proposed solution can not work.Actually, we already have some enhanced solutions to speed up the recovery e.g fast MCG link recovery and CHO recovery. |

### Idle / Inactive Measurements w SUL

Measurements

[R2-2109773](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2109773.zip) Idle/Inactive state measurement enhancement for UEs supporting SUL OPPO, Spreadtrum Communications, Qualcomm discussion Rel-17 TEI17

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| --- | --- | --- |
| Company | Support / NSupport / NAccept / unclear | Comments |
| Nokia | NSupport | This would bring at most negligible UE power saving gain for SUL UEs if any. And setting this parameter and optimizing it for NW will be challenging.  |
| Huawei, HiSilicon | NSupport/ unclear | It is unclear how much gains we can get from such enhancements, considering large number of existing UEs, we think the gain is marginal. |
| Apple | Nsupport | Generally speaking, the configuration on those parameters would not be that extreme low, otherwise the mobility performance may get compromised. |
| OPPO | Support (proponent) | Having separate measurement start threshold for SUL capable UEs can help these UEs to save power, i.e. these UEs only need to perform neighbour cell measurement when they are near the SUL‘s coverage edge, which is different from NUL’s coverage edge. |
| Lenovo, Motorola Mobility | Nsupport | It might be good if proponents provide some quantitative analysis on the gains wrt UE power consumption that can be achieved with the proposed enhancement. |
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### RMSI alignment and HARQ granularity

Miscellaneous

[R2-2110558](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110558.zip) RMSI alignment and HARQ granularity Nokia, Nokia Shanghai Bell discussion Rel-17 TEI17, NR\_unlic-Core

Note that this document has two proposals that should be considered individually:

**RMTC:** Enhance RMTC-Config to allow RSSI measurements to be contained in gNB idle periods.

**HARQ:** Allow more granular configuration of PDSCH HARQ processes for UE in Rel-17.

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| Company | Support / NSupport / NAccept / unclear | Comments |
| Nokia | Support both (proponent) |  |
| CATT | For RMTC, unclearFor HARQ，unclear | For RMTC and HARQ, from the view of Ran2, we are fine to accept it, but we think the RMTC part should be discussed in RAN4 firstly, since it relate to a more meaningful measurement in idle time of every Nth gNB FFP, the benefits shoudl be confirmed by RAN4. The HARQ part should be discussed in RAN1 to see whether it has the potential impact to HARQ procedure and the UE chip. |
| Huawei, HiSilicon | NSupport /unclear | It is a bit unclear what the issue 1 is, and hence not clear what is needed to be done. For issue 2, sensible UE implementation already takes care of the HARQ buffer management, and it has been acknowledged by the UE vendors. In this sense, not sure any enhancement is needed. |
| Apple | For RMSI unclear | Regarding RMTC one, so far we don’t see a clear motivation yet. Besides, we are wondering would it be possible to use RSRQ by network implementation to derive RSSI? e.g., use SSB based RSRQ but indicate the RSSI symbol locations, and then use RSRP divided by RSRQ network may still get rough RSSI during certain symbol level period (not exactly the LBT BW). It’s not so starightforward like RMTC configuration, but I think it still can work roughly.  |
| OPPO | Nsupport | We agree the issue may exist, but the impact can be limited especially when a smart UE uses a proper algorithm. To me, it is not very essential, there is no need to enhance RMTC-Config at this late stage. |
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### UE assistance information configuration in RRCResume

Miscellaneous

[R2-2109474](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2109474.zip) UE assistance information configuration in RRCResume message OPPO discussion Rel-17 TEI17

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| Company | Support / NSupport / NAccept / unclear | Comments |
| Nokia | NSupport | If we understand correctly this would allow to send *otherConfig* in resume message without needing separate RRC reconfiguration message. So this could save one RRC message in case where the delay is not really issue so hard to see motivation for this change. |
| CATT | NSupport | It is not urgent to report UE assistance information to the network when the UE transfer from RRC\_INACTIVE to RRC\_CONNECTED. |
| Huawei, HiSilicon | NSupport | We understand this is an enhancement for UAI configuration to reduce one more RRCReconfiguration message. But we are not sure if it really reduces the signaling overhead, the NW may still need to send RRCReconfiguration message for other configurations in addition to UAI configuration. So we don’t think this enhancement is essential. |
| Apple | Neutral | We think this is good to have but no strong opinion.  |
| OPPO | Support | Proponent |
| Lenovo, Motorola Mobility | NSupport | We think that this is a minor optimization. |

### Efficient UL pre-scheduling

[R2-2110759](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110759.zip) Efficient UL pre-scheduling operation MediaTek Inc., Qualcomm Inc. discussion Rel-17 TEI17 R2-2109019

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| Company | Support / NSupport / NAccept / unclear | Comments |
| LG | NSupport | We wonder why the network provides such useless UL grant axcessively. More safe and helpful way would be to report BSR=0 in this case so that the network does not provide more UL grant until the UE requests so.  |
| Nokia | NSupport | Agree with LG. Also, this cannot be introduced as mandatory behaviour for backward compatibility reasons (with legacy gNBs). Explicit configuration of the feature will be required and overall operation will still have to rely on smart gNBs. |
| CATT | NSupport | P1 can be a vast topic and, in our understanding, is part of R18 XR scope.P2 requires that the MAC entity is configured with *enhancedSkipUplinkTxConfigured* and the problem is that if the UE receives a dynamic grant for new transmission, it starts the CGT, so it cannot go to sleep as it may receive a dynamic grant for a ReTx. So the issue raised by LG in R2-2111170 should be addressed first. |
| Huawei, HiSilicon | NSupport /unclear | We are not sure about the complexity for checking LCP result whenever handling the inactivity timer, and felt the potential benefit is marginal. |
| OPPO | unclear | We understand the motivation of the proposals. From UE’s perspective, it would be beneficial for UE power saving if UL pre-scheduled grant is unused due to no UL data at UE side. However, we are not sure whether this intensive UL pre-scheduling operation is widely used in real field, maybe we need to check with NW vendor. |
| Lenovo, Motorola Mobility | NSupport | For P1 “**Introduce assistance information to indicate that whether current UE application requires low latency transmissions**”: We think the need should not arise since due to QoS negotiation and information available at gNB (from CN) it would know what latency requirement is for a DRB; and secondly, the proposal can be misused by UEs.For P2 “**Support of** **enhanced DRX inactivity timer operation** **to reduce power consumption when UE has no UL data to transmit“**: Drx-inactivitytimer is directing UE to go to ActiveTime for reception of DL and UL DCI. Even though UE may not have UL data, there may be still DL data for the UE pending. Furthermore, gNB may also ask for e.g. aperiod CSI etc. Therefore, we don’t think that this is a good solution. |

### Multi-TB CGs on licensed bands

[R2-2109652](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2109652.zip) Enabling Multi-TB CGs on licensed bands CATT discussion TEI17

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| Company | Support / NSupport / NAccept / unclear | Comments |
| LG | NSupport | Using HARQ formula when cg-RT is not configured but multi-TB CG is configured, it will allocates the same HPID to all HARQ processes within the CG period. In unlicensed, it is of not problem because the intention was to allow pending data transmission by using the same HPID. However, for licensed, retransmission of pending data is not an issue. If multi-TB CG is for transmitting new data in licensed, different HPID needs to be allocated, which we think is a specification impact. Also, multiple CG configuraiton would provide similar CG occasions, hence see not much need to support multi-TB CG in licensed.  |
| Nokia | NSupport | This was discussed in RAN1 in Rel-16 NR-U WI and concluded as not supported for licensed. |
| CATT | Support(Proponent) | To LG: Note that even without this proposal, multi-TB CGs are already currently supported when *cg-RetransmissionTimer* is not configured, since it is allowed, in R17 to not configure *cg-RetransmissionTimer* in shared spectrum. In other words, multi-TB CGs are already supported when the same HPID is allocated to all CGs within the CG periodicity.And that does not raise any problem, on the contrary it can serve other IIOT purposes such as addressing traffic jitter as discussed in above contribution.So the intention here is just to extend this behavior to licensed bands, because, if the mechanism works in UCE (w/o CGRT configured), there is no technical reason to prevent it from being used in licensed bands as well. |
| Huawei, HiSilicon | unclear | Is it RAN1-led or RAN2-led? |
| OPPO | Unclear | In unlicensed band, we understand the reason to introduce multi-TB CG is to increase the transmission opportunity when the UE occupies the channel, however, it’s not clear the motivation to introduce Multi-TB CG on licensed band, thus we think there is no need to copy the unlicensed mechanisms to licensed band. |
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### Pending empty PDUs

[R2-2109651](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2109651.zip) Handling of pending empty PDUs after UCI multiplexing CATT, Lenovo, Motorola Mobility discussion TEI17

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| Company | Support / NSupport / NAccept / unclear | Comments |
| LG | NSupport | We have symphathy to the intention and are open to discuss. However, flushing the buffer is not sufficient because CGT is started and transmission using this CG will be blocked until CG expiry. We think CGT and CGRT should not be started for this empty PDU and HARQ process status should be kept as not pending regardless of LBT failure indication.  |
| Nokia | unclear | We are fine with the intention but current text impacts legacy behaviour. New behaviour must be limited to the cases where Rel-16 features like autoTx, CG retx timer or Rel-16 UL skipping is/are configured. |
| CATT | Support(Proponent) | We acknowledge the LG’s observation regarding CGT (and BTW, we support your proposal), but we think it is another problem: we address the useless continuation of the retransmission attempts of this empty PDU while you address the blocking of the HP associated with this transmission by the CGT.  |
| OPPO | NSupport | So the scenario described in the contribution is that when UCI mutlipexing is performed due to overlapping between PUSCH and PUCCH, the UE may transmit the MAC PDU multiplexed with UCI in the PUSCH even if the MAC PDU is empty. Then, it’s not necesasry to perform retransmission due to the empty MAC PDU. We think keeping the MAC PDU in the buffer does not casue any issue because network is not aware there the MAC PDU is empty or not, by flushing the buffer does not save any UL grant resources. Thus we don’t think it is an critial issue to be resolved.. |
| Lenovo, Motorola Mobility | Support (Proponent) | The main point of the proposal is to avoid autonomous retransmissions of an empty MAC PDU. Regarding LG’s comment, we would be open to discuss the starting of CGT/CGRT timer. |
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### QoS Flow to DRB Mapping for MDBV Enforcement

[R2-2109851](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2109851.zip) Adaptation of QoS Flow to DRB Mapping for MDBV Enforcement Futurewei discussion Rel-17

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| Company | Support / NSupport / NAccept / unclear | Comments |
| Nokia | unclear | Agree with the issue (challenges with MDBV enforcement) but would prefer controlling the bit rate where the bits are allocated for transmission i.e. during LCP. |
| CATT | NSupport | Dynamic flow to DRB mapping (switching) depending on whether MDBV is met/not met. It is unclear which entity controls the switch. Sounds like a big change for TEI. Could be discussed in R18 (XR)? |
| OPPO | Unclear | We understand the QoS parameters for signled 5QI will only be transmitted to gNB, UE may not be aware of the related QoS parameters inlcuding MDBV and PDB of the signalled 5QI. The proposal shows that SDAP can perform dynamic switching between two configured DRBs for a QoS flow based on the MDBV requirement, we wonder how UE switch the DRB without knowing MDBV. |
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### Activation/Deactivation of QoS Flow to DRB Mapping for SMBR Enforcement

[R2-2109852](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2109852.zip) Activation/Deactivation of QoS Flow to DRB Mapping for SMBR Enforcement Futurewei discussion Rel-17

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| Company | Support / NSupport / NAccept / unclear | Comments |
| Nokia | unclear | If any bit rate enforcement enhancement is needed for SMBR, it should take place in the gNB and impact LCP in the UE. |
| CATT | NSupport | Dynamic "hold" on delivering SDAP PDUs to associated DRB when the aggregated bitrate across all GBR and Non-GBR QoS flows belonging to the PDU sessions associated with a network slice exceeds the UE-Slice-MBR.One first issue is what to do with these PDUs if they are not delivered? Discard? Buffered?Here again SDAP enhancements are likely to be discussed in the context of the R18 XR WI. We prefer to address those at that time. |
| OPPO | NSupport | There was a discussion on whether UE related enhancement is needed for SMBR in the slicing session, and finally, it is ruled out, since most companies thought it is sufficient to rely on gNB implementation. To us, it is not an essential issue and no need for further enhancement. |
| Lenovo, Motorola Mobility | unclear | We tend to agree that there might be limitations of enforcing UL SMBR but think a more detailed study is required. |
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### Stopping CGT for ignored or skipped UL grant

[R2-2111170](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2111170.zip) Stopping CGT for ignored or skipped UL grant LG Electronics Inc. discussion TEI17

[R2-2111172](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2111172.zip) CR to 38321 on stopping CGT for ignored or skipped UL grant LG Electronics Inc. CR Rel-17 38.321 16.6.0 1177 - F TEI17

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| Company | Support / NSupport / NAccept / unclear | Comments |
| LG | Support (Proponent) | Last meeting, companies understanding was that CGT is started at the gNB side when dynamic UL grant is skipped or ignored. However, for CG, neither CGT nore the CGRT starts. Therefore, we believe that even for dynamic UL grant, if it is ignored or skipped, the netowkr would not start CGT and CGRT. With this understanding, starting it only the UE side causes unsynchronized state of CGT and CGRT, which was the concern from the companies. So, rather than jumping into P3 for the suggested change, we would like to hear more on P1 and P2. |
| Nokia | NSupport | This is NBC. When the CG timer is running, it prevents the UE from using the process for CG, but network can still schedule dynamic grant for that process. Stopping the timer would cause problem at NW side since it creates misalignment. |
| CATT | Support | P1: OKP2: Not sure. This assumes NW correctly detects DTX. Anyways, if UE is assumed to keep the timer running, NW should also do so, to keep in sync, irrespective of DTX detection.Nor for P3, the difference between CG and DG is that, for the CG, the CGT is not started upfront by the DCI. And the problem is if the NW mis-detects the DTX, it will schedule a dynamic ReTx, and if, per Proposal 3, the CGT was stopped at the UE, UE may use that HARQ process to send new data (e.g. on a CG). That being said:1) no data was transmitted in first place, so it is unlikely that now UE suddenly has new data to send, immediately after that2) even if the UE ignores the dynamic ReTx, it is no big deal as the initial transmission didn't happen hence no data is lost.So we think we can indeed align the CGT behavior of DGs to that of CGs. |
| Huawei, HiSilicon | Support the intention | We acknowledge it is a bug in the spec but the NBC issue raised by Nokia may need to be investigated further. |
| OPPO | Nsupport | This is a legacy issue, we prefer to keep the spec as it is. |
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## Added after kick-off

### Secondary DRX

Added 2021-11-04 1430 UTC in v04

R2-2111460 Secondary DRX enhancements Verizon, Ericsson, Qualcomm Inc, T-Mobile USA Inc discussion Rel-17 TEI17

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| Company | Support / NSupport / NAccept / unclear | Comments |
| Nokia | Support BUT… | If there is already an activated cell in the group, there is no need to start the timer (since the gNB can already schedule that cell and by doing so, restart the timer – as for pDRX group).Besides, not sure how fast-activation would impact the proposal since without fast-activation, the inactivity timer could be expired already before the SCell is actually activated thus wouldn’t help. |
| CATT | Partly | P1 would be OK to us.But P2 has been discussed already and we don’t see the need for it. NW can derive/estimate a suitable *DRX-InactivityTimer* of each DRX group from the single *preferredDRX-InactivityTimer*. |
| Huawei, HiSilicon | NSupport |  This first proposal significantly change the principle that both DRX groups are ensured to operate separately and hence it cannot be pursed in TEI. Actually that is the root why we agreed not to combine cross-carrier scheduling with sec DRX group. So if it is the case, we believe the sensible implementation would be to enable cross-carrier scheduling rather than this optimization with considerable UE complexity. For the second proposal, it has been discussed over several times and we still see no benefit to introduce another UE capability.  |
| Apple | Support | We support both proposals, since they can provide the benefit on the service latency reduction and UE power reduction.  |
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# Conclusion

TBD