3GPP TSG-RAN #91-e draft RP-21xxxx

Online, 16-26 March 2021

Agenda Item: 9.1.3

Source: RAN3 Chair (Moderator)

Title: Summary of Offline Discussion – Scope of Normative Work for QoE

Document for: Discussion

# Introduction

RP-210529 proposes to add to the WID objective the parts related to additional LTE functionality as requested by SA5. RP-210427 and RP-210529, on the other hand, propose to limit the scope of the WID.

# Proposals, Discussion

Proposals from [4]:

**Proposal 1: Add an objective to the work item for NR QoE Management implementing the SA requirements in the LTE specifications, by** **porting the solutions from NR.**

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| **Company** | **Comment** |
| Nokia | We disagree with Proposal 1. RAN2 already responded to SA5 that the QoE requirements mentioned in their LS are only being discussed for NR in Rel-17. Also, there are already too many features proposed for the NR QoE WID, so RAN should focus on reducing (rather than increasing) the scope of QoE in Rel-17. |
| ZTE | As we discussed in last RAN plenary meeting, it would be better to discuss the LTE solution after NR solution in a stable condition in R17 WI phase. Then there are two ways on how to finalize the LTE solution rather than including this into NR QoE WI:  Option1: treat it in TEI17, if time allows.  Option2: postpone it to R18.  It can be decided later based on the progress of R17 NR QoE WI. |
| vivo | Disagree. We should firstly focus on the specification of NR QoE solutions in Rel-17. After the WI finalizes Rel-17 NR QoE, and the efforts of porting the solutions from NR to LTE are just copy paste, RAN could consider the SA5 requirements on LTE. |
| CATT | Disagree, share the same view as above, considering the current relative big NR WI scope, we cannot agree include the LTE part in this WI. |
| Huawei | No, the NR QoE WID has already not enough TU in RAN2 to complete the TR recommendation [2], the LTE QoE enhancement request by SA5 could be postponed to later release. |
| Lenovo /Motorola Mobility | The requested TUs for RAN2, RAN3 are limited, so focus of the WI should be on NR. If majority of companies think that the missing functionalities for LTE should be added, then they should be treated with lower priority, i.e. if time allows. Furthermore, it is not fully clear yet whether the solutions for NR can be simply ported to LTE. |
| Ericsson | We are proponents of [4]. |
| Qualcomm | We would prefer not to further overload the WI, and keep this WI NR-focused. A possible option would be to define some very minimum features that could be done (e.g. as TEI). |
| LGE | We share view with Nokia. |
| Samsung | We are fine for porting the solutions from NR to LTE. We have no strong view whether to handle it in TEI or merging to this NR QoE WI. If TU is an issue, NR QoE has higher priority. |

**Proposal 2: Reply to SA5 in an LS saying that necessary enhancements will be done in the RAN Rel-17 QoE WI.**

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| **Company** | **Comment** |
| Nokia | See response to Proposal 1. |
| ZTE | See reply above. We can send LS to SA5 in this meeting to remove the misalignment or send reply LS later once the situation is clear in R17. |
| vivo | See comments to P1. |
| CATT | See comments to P1. |
| Huawei | No, the NR QoE WID has already not enough TU in RAN2 to complete the TR recommendation [2], the LTE QoE enhancement request by SA5 could be postponed to later release. |
| Lenovo /Motorola Mobility | Depends on conclusion to Proposal 1. |
| Ericsson | SA5 has sent numerous LSs to us and we should reply. |
| LGE | See reply above. |
| Samsung | See response to Proposal 1. |

**Proposal 3: If proposal 1 and 2 are not agreeable, reply to SA5 and ask them to update the feature description for LTE QoE and remove the requested functionality.**

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| **Company** | **Comment** |
| Nokia | OK, this would bring SA5 specs into alignment with RAN2 specs. |
| ZTE | See above. |
| vivo | Agree |
| CATT | OK |
| Huawei | LS could be send to advice SA5 that their requirement on enhancement of LTE QoE could be consider in later release. |
| Lenovo /Motorola Mobility | Depends on conclusion to Proposal 1. |
| Ericsson | If RAN decides not to complete this work we should tell SA5 that, so that they can align their specs (possibly removing any functionality which is not currently supported in RAN). |
| Qualcomm | Agree with Lenovo/MM. |
| Samsung | Agree with Lenovo/MM/QC. |

Merged proposals from [2] and [5]:

**Proposal 4: Considering current TU allocation for QoE, the following features are suggested to be in the WI scope:**

**- Config/report (Signalling-based & Management-based activation/deactivation) for connected solutions [RAN2 led]**

**- Multiple QMC support [RAN2 led] (if time allows?)**

**- QoE handling (pause/resume) [RAN2 led]**

**- Override solution (including Alignment of MDT and QoE measurements) [RAN3 led] (if time allows?)**

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| **Company** | **Comment** |
| Nokia | The Rel-17 WID scope should take into account the RAN3 recommendations, the limited TU capacity in RAN2/RAN3, and a phased approach. We agree that the following features listed in Proposal 4 can be included in the WID since they are needed as part of the baseline NR QoE framework:  (NOTE: for clarity we also map each feature to the wording in the draft WID [1])   * Config/report for connected solutions, i.e. “*Specify activation and deactivation procedures for both signalling-based and management-based QoE measurement*” in [1]. * QoE handling (pause/resume), i.e. “*Specify QoE measurement handling at RAN overload, including pause and resume of QoE measurement reporting*” in [1].   It can be further discussed if there is enough available bandwidth in RAN2/RAN3 to include any additional features. If so, then the following could be a candidate:   * Multiple QMC support, i.e. “*Specify configuration and reporting for multiple simultaneous QoE measurements at a UE*” in [1].   It is not clear what is meant by “override solution”. |
| ZTE | The features recommended to be specified in Rel-17 normative phase was discussed and concluded in [R3-211343](file:///C:\Users\ematfol\AppData\Local\Packages\Microsoft.MicrosoftEdge_8wekyb3d8bbwe\TempState\Downloads\Inbox\R3-211343.zip) in RAN3#111e meeting as below:  - Signalling-based activation/deactivation  - Management-based activation/deactivation  - QoE measurement handling at RAN overload  - Multiple QMC support  - QoE continuity for intra-RAT mobility  - QoE measurement in RRC\_INACTIVE  - RAN visible QoE  - Per-slice QoE measurement  - Alignment of MDT and QoE measurements  It would be better to follow the conclusion made in SI. |
| vivo | The basic functionality of QoE should be specified at the first place (e.g., the support of a single QoE config), they are:  - Config/report [RAN2 led]  - QoE handling (pause/resume) [RAN2 led]  - Override solution (management-based QoE cannot override signalling-based)  After that, we can take this as the baseline and specify the solution for multiple QoE configs in a later stage at Rel-17:  - Multiple QMC support [RAN2 led] |
| CATT | Agree the first three items:  - Config/report (Signalling-based & Management-based activation/deactivation) for connected solutions [RAN2 led]  - Multiple QMC support [RAN2 led] (if time allows?)  - QoE handling (pause/resume) [RAN2 led]  Put the last one as low priority. It is not basic and necessary function for QoE feature  - Override solution (including Alignment of MDT and QoE measurements) [RAN3 led] (if time allows?) |
| Huawei | The Step approach from Nokia and Vivo is fine by us with in first step:   * Config/report [RAN2 led] * QoE handling (pause/resume) [RAN2 led] * Override solution (management-based QoE cannot override signalling-based) [RAN3 led] (thank you vivo for the clarification)   Then as second step:   * Multiple QMC support [RAN2 led] |
| Lenovo /Motorola Mobility | We are fine with the current scope of WID RP-210225 as it is aligned with the conclusions made in RAN3. We can check at a later point in time the work progress and make adjustments (e.g. deprioritization of objectives or slightly increasing TU) if needed. |
| Rakuten Mobile | We agree with ZTE, Conclusion made during RAN3 #111 should be followed. |
| Ericsson | The functionality in proposal 4 and 5 is part of the scope according to the prioritization that was made at the end of the study item, and the functionalities in both proposals were placed in the “prioritized” group. Time units can be discussed, but the above is the agreed scope. |
| Qualcomm | Agree in general with CATT. The first three bullets are fine as a starting point / baseline, and in line with the initial prioritization in the email discussion in RAN3. After that we should discuss.  The fourth bullet - override solution (including Alignment of MDT and QoE measurements) seems however lower priority. Also, it can be network-based for a simplistic solution and to avoid significant standard impacts. |
| LGE | Among features described in Proposal 4, the following features are needed to be specified in Rel-17:   * Config/report (signaling-based & Management-based activation/deactivation) for connected solutions [RAN2 led] * QoE handling (pause/resume) [RAN2 led]   If time is allowed, the following feature can be included into the WI scope:   * Multiple QMC support [RAN2 led] |
| Samsung | We support the objectives in Proposal 4. In general, we agree with ZTE to follow the conclusion made in SI phase. |
| China Unicom | The above features are recommended to be specified in Rel-17 normative phase according to RAN3 agreements and conclusion of the TR. Besides, we want to highlight the features in Proposal 4 are also included in R17 WI features.  We agree the above features in R17 WI scope, and we notice there are three features led by RAN2 and one feature led by RAN3. |

**Proposal 5: The following features can be discussed for inclusion in the WI, but require additional work to be allocated for QoE:**

**high workload for RAN2 and RAN3:**

**- Config/report for idle/inactive solutions: QoE measurement in RRC\_IDLE/ RRC\_INACTIVE [RAN2 led]**

**- Mobility (QoE continuity for intra-RAT mobility) [RAN2 led]**

**- RAN visible QoE [RAN3 led]**

**- Radio+QoE [RAN3 led]**

**- Per-slice QoE measurement [RAN3 led]**

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| **Company** | **Comment** |
| Nokia | There is very limited TUs pre-reserved for the WI phase (0.5 & 1.0 TU/meeting for RAN2 & RAN3 respectively), and it is our understanding that no additional TUs can be allocated. Therefore, most of the features listed in Proposal 5 should be postponed to a future release.  If there is available bandwidth in RAN2/RAN3 to include e.g. one feature listed in Proposal 5, then the following could be considered part of the baseline QoE framework:   * Mobility, i.e. “*Specify the support for QoE measurement collection and reporting continuity in intra-system intra-RAT mobility scenario*” in [1]. |
| ZTE | See above. And QoE measurement in RRC\_IDLE is recommended by RAN3 to be deprioritized in Rel-17. |
| vivo | The specification of *config/report for idle/inactive solutions* can be considered in the WI phase, which can be applied to MBS. |
| CATT | The Mobility (QoE continuity for intra-RAT mobility) [RAN2 led] need to be included in the WI.  Regarding to The Config/report for idle/inactive solutions, we may check with MBS project later and added it in future  For other part, if more TU is available, we can specify them in R17 |
| Huawei | We are not keen on additional objective in this release…  However we would like to notice that today LTE is supporting some QoE intra-RAT mobility e.g. context transfer, etc … then the Mobility should be added in second step of the objective of rel-17 NR QoE WID |
| Lenovo /Motorola Mobility | We are fine with the current scope of WID RP-210225 as it is aligned with the conclusions made in RAN3. We can check at a later point in time the work progress and make adjustments (e.g. deprioritization of objectives or slightly increasing TU) if needed. |
| Ericsson | The above is part of the scope according to the prioritization that was made at the end of the study item. These features were in the “prioritized” group. Time units can be discussed, but the above is the agreed scope. Mobility is very basic functionality which needs to be included. Also, handling of QoE configuration when transferring to RRC\_INACTIVE needs to be specified. |
| Qualcomm | From our point of view the following should be supported within the current TU allocation  - QoE continuity for intra-RAT mobility  - Inactive mode support  The following require further discussion to check need, and WI load  - RAN visible QoE  - Per-slice QoE measurement  - Idle mode support |
| LGE | Because there is not enough TU allocation for this WI, all of features in Proposal 5 should be postponed to a later release. |
| Samsung | We support the following objectives in Proposal 5.  **- Mobility (QoE continuity for intra-RAT mobility) [RAN2 led]**  **- RAN visible QoE [RAN3 led]**  **- Radio+QoE [RAN3 led]**  **- Per-slice QoE measurement [RAN3 led]**  Regarding to The Config/report for idle/inactive solutions, we share CATT view. |
| China Unicom | Considering the TU allocation in RAN2(0.5 TU/meeting) and RAN3(1 TU/meeting), we propose to include RAN3 led features RAN visible QoE, Radio+QoE, and Per-slicing QoE measurements.  From our side, Radio+QoE could be part of the solutions for RAN visible QoE. This feature would be facilitated for data processing.  For RAN2 led features, if TU not allowed, we prefer to support mobility first and consider QoE measurement in RRC\_IDLE/ RRC\_INACTIVE in later release.  In summary, considering the comments of Propose 4 and 5, we prefer to highlight the following features.  **RAN2 leading 4 features (0.5 TU/meeting),**  **- Config/report (Signalling-based & Management-based activation/deactivation) for connected solutions**  **- Multiple QMC support**  **- QoE handling (pause/resume)**  **- Mobility (QoE continuity for intra-RAT mobility)**  **RAN3 leading 4 features (1 TU/meeting),**  **- Override solution (including Alignment of MDT and QoE measurements)**  **- RAN visible QoE**  **- Radio+QoE**  **- Per-slice QoE measurement**  RAN2 are leading 4 features in 0.5 TU/meeting, RAN3 are leading 4 features in 1 TU/meeting. We can balance the work load of RAN2 and RAN3. |

**Proposal 6: The following features are suggested to be discussed in later release:**

**- Inter-RAT/Inter-system mobility**

**- QoE support for MR-DC**

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| **Company** | **Comment** |
| Nokia | OK, these features are already deprioritized in the TR conclusions. |
| ZTE | Yes. Above suggestion is align with the decision made in SI, furthermore, QoE measurement in RRC\_IDLE is also agreed to be discussed in later release. |
| vivo | Agree |
| CATT | Agree |
| Huawei | Yes… |
| Lenovo /Motorola Mobility | Agree as it is aligned with conclusions made in RAN3. |
| Rakuten Mobile | Agree |
| Ericsson | This is basic functionality and requires small amount of work. |
| Qualcomm | Agree with the proposal |
| LGE | Agree with the proposal |
| Samsung | Agree with the proposal |
| China Unicom | Agree to discuss the above deprioritized features in later release. |

**Proposal 7: RAN to down scope the list of NR QoE features which are to be included in the Rel-17 WID.**

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| **Company** | **Comment** |
| Nokia | Agree. The TR conclusion lists the features recommended by RAN3 but does not take into account the very large work effort needed in both RAN3 and RAN2, nor does it take into account that RAN2 did not study all the features. |
| ZTE | Considering that different features are leading by different WGs as proposed in RP-210225 which means the load can be distributed among groups, it seems no need to down scope the list of NR QoE features on RAN level. |
| vivo | Agree |
| CATT | Agree, we may include the basic function firstly. And evaluate the effort of other features and add them in future if the TU can cover them. |
| Huawei | Yes see proposal above |
| Lenovo /Motorola Mobility | We see no need for this, see our comment to Proposal 4 and 5. |
| Rakuten Mobile | Agree, Workload can be handled by distribution among WG’s. |
| Ericsson | No further down scoping – this is why we had the SI. |
| Qualcomm | Agree with the proposal. We note that in the RAN3 email discussion there were three categories of priorities, but online session combined the top two. In our view RAN should be free to re-examine the second category (mostly items under P5). CATT’s suggestion is possible (or simply add them as lower priority if time permits, avoiding overload of the agenda at the beginning). |
| LGE | Down scoping is needed. It is not possible to include all of features recommended to be specified in Rel-17 normative phase, which is captured in TR conclusion, because TU allocation is very limited and RAN2 may not consider all of these features. |
| Samsung | We share ZTE view. All high priority issues should be included in the objectives. |
| China Unicom | Agree to down scope if we need, as we comments in Proposal 4, 5 and 6. |

**Proposal 8: The WID objectives should include enough details about the QoE features to avoid overly broad interpretation.**

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| **Company** | **Comment** |
| Nokia | Some of the features in the draft WID are described at a very high level, which may lead to misinterpretation and needless discussion in the working groups. Therefore, refinement of the feature descriptions (including lead WG) may be needed before agreeing on the final version of the WID. |
| ZTE | Take the proposed WI in RP-210225 as baseline. Any further updates can be discussed in this email thread. |
| vivo | Agree, this should be useful to have a common understanding on the scope of the WID. |
| CATT | Agree to have more exactly scope description of the objective of WI |
| Huawei | Yes, the WID objective should be clear and further refine as needed. |
| Lenovo /Motorola Mobility | We are fine with adding further details of objectives if deemed necessary. |
| Rakuten Mobile | Yes, WID objective should be discussed and clarified. |
| Ericsson | Crisp and clear objectives save a tremendous amount of time in WGs. |
| Qualcomm | Yes agree, this can be considered in the next step. |
| LGE | Based on WID in [1], QoE features can be discussed and updated in this email thread. |
| Samsung | Agree to refine the objectives to avoid misinterpretation. |
| China Unicom | Agree to polish the descriptions of the bullets in WID in detail. |

# References

1. RP-210225 New WID on NR QoE management and optimizations for diverse services, China Unicom, Ericsson.
2. RP-210427 Scope of Rel-17 WI on NR QoE management and optimizastions for diverse services, Huawei, HiSilicon.
3. RP-210461 Motivation for new WI on NR QoE management and optimizations for diverse services, China Unicom.
4. RP-210529 Discussion on scope for QoE, Ericsson.
5. RP-210676 Scope of new WID on NR QoE, Nokia, Nokia Shanghai Bell.