3GPP TSG-RAN WG1 Meeting #109-e R1-22xxxxx

e-Meeting, 9th – 20th May 2022

**Agenda Item: 9.6**

**Title: FL summary for TR skeleton for Rel-18 SI on further NR RedCap UE complexity reduction**

**Source: Moderator (Ericsson)**

**Document for: Discussion, Decision**

# 1 Introduction

This feature lead (FL) summary (FLS) concerns the Rel-18 study item (SI) on further NR RedCap UE complexity reduction [1, 2, 3]. This Rel-18 study item was preceded by a Rel-17 study item [4] and a Rel-17 work item [5].

This document captures the email discussion for the TR skeleton for the new study item:

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| --- |
| [109-e-R18-RedCap-01] Email discussion and approval of TR skeleton for Rel-18 SI on further NR RedCap (reduced capability) UE complexity reduction by May 13 – Johan (Ericsson) |

The issues in this document are tagged and color coded with High Priority or Medium Priority. The issues that are in the focus of this round of the discussion are furthermore tagged FL1.

Follow the naming convention in this example:

* *eRedCapSkeletonFLS-v000.docx*
* *eRedCapSkeletonFLS -v001-CompanyA.docx*
* *eRedCapSkeletonFLS -v002-CompanyA-CompanyB.docx*
* *eRedCapSkeletonFLS -v003-CompanyB-CompanyC.docx*

If needed, you may “lock” a discussion document for 30 minutes by creating a checkout file, as in this example:

* Assume CompanyC wants to update *eRedCapSkeletonFLS -v002-CompanyA-CompanyB.docx*.
* CompanyC uploads an empty file named *eRedCapSkeletonFLS -v003-CompanyB-CompanyC.checkout*
* CompanyC checks that no one else has created a checkout file simultaneously, and if there is a collision, CompanyC tries to coordinate with the company who made the other checkout (see, e.g., contact list below).
* CompanyC then has 30 minutes to upload *eRedCapSkeletonFLS -v003-CompanyB-CompanyC.docx*
* If no update is uploaded in 30 minutes, other companies can ignore the checkout file.
* Note that the file timestamps on the server are in UTC time.

In file names, please use the hyphen character (not the underline character) and include ‘v’ in front of the version number, as in the examples above and in line with the general recommendation (see slide 16 in [R1-2203012](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_109-e/Docs/R1-2203012.zip)), otherwise the sorting of the files will be messed up (which can only be fixed by the RAN1 secretary).

To avoid excessive email load on the RAN1 email reflector, please note that there is NO need to send an info email to the reflector just to inform that you have uploaded a new version of this document. Companies are invited to enter the contact info in the table below.

**FL1 Question 1-1a: Please consider entering contact info below for the points of contact for this email discussion.**

|  |  |  |
| --- | --- | --- |
| **Company** | **Point of contact** | **Email address** |
| FUTUREWEI | Vip Desai | vipul.desai@futurewei.com |
| Ericsson | Sandeep Narayanan Kadan Veedu | sandeep.narayanan.kadan.veedu@ericsson.com |
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| Intel | Yingyang Li | yingyang.li@intel.com |

# 2 Discussion

A draft skeleton for TR 38.865 (“Study on further NR RedCap UE complexity reduction”) has been provided in [3]. To a large extent, the structure of the draft TR skeleton follows the structure of TR 38.875 [4].

**FL1 High Priority Question 2-1a: Can the draft TR skeleton be approved? Please provide any comments you might have on the TR skeleton in the Comments field.**

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| --- | --- | --- |
| **Company** | **Y/N** | **Comments** |
| FUTUREWEI | N | Though we appreciate the rapporteur efforts to add explanatory notes, any aspects that don’t have consensus should be removed for now. For example, network capacity and spectral efficiency are not part of the SID and should be removed (6.3, 9). For coverage aspects, there is no *recovery* objective in the SID, so if RAN1 decides in 9.6.1 or 9.6.2 to do a link budget for say 5MHz RF devices, relevant sections should use a term like analysis rather than recovery. For performance aspects, at this point the subheadings should all be removed. Finally, we would suggest that the “Analysis of coexistence with legacy UEs” subsections be updated to “Analysis of network and coexistence aspects” to better align with the SID. |
| Spreadtrum |  | **Comments 1:** Share the similar views as FUTUREWEI, it seems that “coverage recovery” is out of SID scope. For coverage part, we just need to identify the performance loss for each solution, and compare the advantages and disadvantages, and then make decisions (specify it or not in WI) for the solution.  **Question 1:** If the impact of memory cost can be captured in the TR (e.g., qualitative description, without any update for the current methodology), which chapter is suitable to collect the information, e.g., 7.x.2 Analysis of UE complexity reduction? |
| Ericsson |  | What headings to keep/remove can be revisited once the email discussions under agenda items 9.6.1 and 9.6.2 have progressed further.  It is important that the study includes evaluation of the potential coverage impacts, but it is fine to rename the section from “Coverage recovery” to “Coverage impact” if there is no intent to capture anything regarding potential coverage recovery techniques. However, in that case there will be higher uncertainty in the RAN plenary regarding the feasibility and scope of a potential subsequent WI.  Regarding Spreadtrum’s question above, we are open to capture impact on memory cost/complexity/size qualitatively in the 7.x.2 sections. |
| ZTE, Sanechips |  | Considering the TU is limited in the SI stage and no significant impacts are foreseen, evaluation for network capacity and spectral efficiency can be deprioritized. |
| DOCOMO |  | We think it is not necessary to include the network capacity and spectral efficiency related parts, i.e., section 6.3 and 9, so far. In addition to the current subsections for section 7, other complexity reduction features, e.g., reduction of HARQ process number etc., can be included depending on the discussion in AI 9.6.1. |
| Intel |  | In the current TR skeleton, only BW reduction, peak rate reduction and relaxed processing time are captured in section 7.2/7.3/7.4. Since multiple companies are still discussing other features including lower modulation order, HD-FDD type B and reduced maximum number of HARQ processes, we would like to how such study will be reflected in the TR. |

# References

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| [1] | [RP-213661](https://www.3gpp.org/ftp/TSG_RAN/TSG_RAN/TSGR_94e/Docs/RP-213661.zip) | New SID on Study on further NR RedCap UE complexity reduction | Ericsson |
| [2] | [R1-2204058](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_109-e/Docs/R1-2204058.zip) | Work plan for Study on further NR RedCap UE complexity reduction | Rapporteur (Ericsson) |
| [3] | [R1-2203121](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_109-e/Docs/R1-2203121.zip) | Draft skeleton for TR 38.865 Study on further NR RedCap UE complexity reduction | Rapporteur (Ericsson) |
| [4] | [TR 38.875 V17.0.0](https://www.3gpp.org/ftp/Specs/archive/38_series/38.875/38875-h00.zip) | Study on support of reduced capability NR devices (Release 17) | 3GPP |
| [5] | [RP-220966](https://www.3gpp.org/ftp/TSG_RAN/TSG_RAN/TSGR_95e/Docs/RP-220966.zip) | Revised WID on support of reduced capability NR devices | Ericsson |