

3GPP TSG-RAN WG1 Meeting #106bis-e
E-meeting, August 11th – 19th, 2021

R1-2110415



Agenda Item: 8
Source: Moderator (Ericsson)
Document for: Information

Title: Recommendations for RAN1 RRC Parameter Preparation

Outline



- Background
- Motivation
- Q&A
- Suggested guidelines
- Recommendations

Background



- Similarly to previous releases, RAN1 has started discussions to prepare a list of RRC parameters for Rel-17 PHY layer functionalities that are dependent on higher layers.
- The list is intended to provide necessary information to RAN2 such that RAN2 can accomplish necessary RRC implementations to support Rel-17 PHY layer functionalities.
- For this purpose, an ExcelSheet with Columns labeled as below has been used in RAN1 since Rel-15 to facilitate communication between RAN1 and RAN2.

| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P |
|---|---------|-------------------|--------------------|---------|----------------|-----------------|----------------------------|------------------|----------------------------|-------------|-------------|----------------------|--------------------------|------------------------------|---------------|---------|
| 1 | WI code | Sub-feature group | RAN1 specification | Section | RAN2 Parent IE | RAN2 ASN.1 name | Parameter name in the spec | New or existing? | Parameter name in the text | Description | Value range | Default value aspect | Per (UE, cell, TRP, ...) | UE-specific or Cell-specific | Specification | Comment |

- Observing different approaches used in RAN1 for preparing the RRC parameter list and in RAN2 for using the list, it may be beneficial to discuss the WHY/HOW/WHAT aspects of the task at hand:
 - WHY: Good understanding of primary goal of the task
 - HOW: Embrace constructive, consistent and effective practices to achieve the goal
 - WHAT: Use the Excelsheet appropriately by understanding the intention of the entries of different columns
- This document discusses the aspects above and suggests a set of recommendations and guidelines that hopefully would benefit RAN1 for the task at hand.

Motivation



- **RAN1 primary goal** is to provide **information** to RAN2 such that RAN2 would achieve a clear understanding on what RRC parameters are needed and how they should be configured to support a feature. **As long as RAN2 reaches the proper understanding based on the information provided by RAN1, the goal is achieved.**
- The Excelsheet is a structured tool intended to help RAN1 to send the information that is needed from RAN2 point of view for the purpose of implementing RRC.
- Proper input in Excelsheet from RAN1, prevents unnecessary work at RAN1 and RAN2.
- Some columns in the Excelsheet have been observed to be understood differently in RAN1 than was originally intended by RAN2.
 - This document provides explanations in the form of Q&A based on discussions with the TS 38.331 rapporteur to clarify the intention of these columns.

Motivation



- Based on past experience, RAN2 may start running CRs to process the input from RAN1 as soon as it receives the first LS on RRC parameters.
 - A good quality LS from RAN1 prevents unnecessary work in RAN2, and consequently in RAN1.
- In past, it was occasionally observed that RAN2 was hesitant to make any changes on the input received from RAN1, although it is up to RAN2 to implement the RRC parameters in the way that is most suitable.
 - If RAN1 addresses this issue e.g., via LS to RAN2, it would help to ensure that RAN2 applies their expertise to achieve a good RRC implementation.

Q&A: Column E & F



- **Should there be any input in Column E, Column F from RAN1?**

- In Rel-16, E&F were empty, and RAN2 filled them out after ASN.1 code review.
- If there is information that from RAN1 point of view is suitable for these columns (e.g., the IE that RAN1 think is the most appropriate for an RRC parameter is pucch-Config) RAN1 can provide this information in column M (see next Q&A) and leave E&F columns empty.
- This allows RAN2 to learn about RAN1's intention on where the parameter should end up (e.g., in pucch-Config) and can implement accordingly.

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Q&A: Column M



• What is the purpose of column M?

- Column M: RAN1 can provide information that gives clarity to RAN2 on the level that configuration of an RRC parameter changes, e.g., per cell, per BWP, per TRP... . The important aspect is to provide the needed information properly.
 - Some background: In Rel-15, by introduction of BWP in RAN1, a UE specific parameter, can be configured differently in different BWPs of the UE. Therefore, RRC parameters had to be revisited to clarify whether a parameter (that previously e.g., was tagged as per cell) was the same, or different for the all the BWPs configured in the cell to the UE.
- Based on the same logic, if RAN1 thinks which IE is suitable for an RRC parameter (e.g., pucch-Config), it can provide that information (“in pucch-Config”) in Column M.
 - By this, RAN1 also informs RAN2 that this parameter is per UE and per BWP as in pucch-Config, and hence it would be redundant (but not conflicting) to mention per UE, or per BWP etc. in addition to “in pucch-Config”, in column M.

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Q&A: Column N



- **What is the purpose of column N?**

- Column N: cell-specific or UE-specific to indicate if a parameter is common to all UEs or specific to UE, respectively.

- **Is there redundant information if N=UE-specific, M=(per UE, per cell) ?**

- Yes. In this example, “per UE” is redundant. However, whether it is kept or not, does not result in any misunderstanding for RAN2.

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Q&A: Column J



- **What is the recommendation for this column?**

- **Think about Column J, that the text should be such that RAN2 could copy in the specification as field description (not necessarily copy everything, but it should be written in a way that is comprehensible for specification.). Field description should be precise and concrete and as short as possible. The unit for a parameter should be given, when applicable, e.g., ms, slot, symbol, dB, etc.**
 - **Leave explanations, discussions, background, agreements, reasons, etc. to comment (Column P).**
- It is important to understand what this Column (J) is about. We have to have a clear understanding of what we want to achieve with the RRC parameter. In order to do that, ask yourself the question what is the field description of this parameter supposed to say? **What does the UE do when the NW sets the field?**
- Note that how the feature works, and how different parameters are used, are described in other specs, e.g. RAN1 specs. References can be made to clauses in other spec for the expected behavior when applicable. TBD place holders can be used if corresponding clauses are not available yet. These place holders can be updated in later revisions.
- It is also very helpful to provide explanations in Column P if it helps RAN2 with the understanding that is needed for implementation of RRC parameters.

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Q&A: Column I



- **What is Column I for?**

- It is intended for current name in RAN1 spec or the temporary name that RAN1 uses.
- Probably in Rel-17, similarly to previous releases there will be an activity to ensure alignment with RRC parameter names adopted by RAN2 across specifications.

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Q&A: List



- **What is your view on RAN1 describing entries using AddModList, etc.?**
- ToAddMod list, is a special flavor of the list which makes it more efficient to add, remove or change elements in a list. Whether that is necessary or not, it is better to be left to RAN2 to judge. It is sufficient if RAN1 clarifies that it should be a list up to e.g., 10 elements.
- Also, RAN1 can suggest to RAN2 if RAN1 thinks using ToAddModList is a better way. However, the implementation of the list is up to RAN2.

Suggested guidelines



- Suggested guidelines for preparation of RRC parameter list (based on details in Q&A):
 - Column J (description): Should be suitable as “field description” for the RRC specification. i.e. it should clarify what the UE does when the NW sets the field. Should e.g., contain the unit of the numerical values. Short and concrete descriptions are preferred.
 - Column P (Comments): Should contain background information from RAN1 to RAN2 that helps RAN2 to understand the context and the feature.
 - Column M (per UE, cell, ...): May also contain the name of a parent IE that RAN1 considers appropriate.
 - Column E (RAN2 Parent IE): Should be left empty. Provide information on Parent IE in Column M, if needed.
 - Column F (RAN2 ASN.1 name): Should be left empty.
 - Using ToAddModList and ToReleaseList structures: Suggest to leave it to RAN2 to whether to use these structures or other methods for proper implementation of signalling.

Recommendations



- Based on the discussion, the following practices are recommended:
- Recommendation1: RAN1 is encouraged to include RRC parameter lists in LS to RAN2 that are stable (not necessarily complete) and achieve the primary goal.
- Recommendation2: RAN1 is encouraged to consider the suggested guidelines for preparation of RRC parameter list.
- Recommendation 3: RAN1 is encouraged to emphasize in the LS to RAN2 that RAN1 understands that RAN2 can modify the RAN1 input RRC parameter lists for the purpose of proper implementation of the functionalities as needed.



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