3GPP TSG-RAN WG2 Meeting #130 R2-250xxxx

Malta, 19 – 23 May 2025

**Agenda item: 8.0**

**Source: Nokia (Rapporteur)**

**Title: Report of [POST129bis][002][ASN.1 review] Process improvements**

**WID/SID: General - Release 19**

**Document for: Discussion and Decision**

# 1 Introduction

This document is the report of the following offline session:

* [AT129bis][002][ASN.1 review] Process improvements (Nokia)

Intended outcome:

Deadline: 10-17-24

And the start of the post email discussion [POST129bis][002][ASN.1 review] Process improvements (Nokia)

* [POST129bis][002][ASN.1 review] Process improvements (Nokia)

Intended outcome:

Deadline: 15-05-25

# 2 Contact Points

Respondents to the email discussion are kindly asked to fill in the following table.

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| --- | --- | --- |
| Company | Name | Email Address |
| Nokia (Rapporteur) | Jerediah Fevold | jerediah.fevold@nokia.com |
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# 3 Summary of Email Discussion on Spec Review

An email discussion, [POST129][032][ASN.1 review] ASN.1 Review Process, was held after RAN2#129 and the discussion and its conclusions were captured in [R2-2502764](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_129bis/Docs/R2-2502764.zip). The summaries and resulting proposals are copied below for reference and to continue the discussion during the present meeting.

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| **Discussion Summaries** |
| **Summary 1**: 4/4 companies agree that it would be feasible to split the specification review file into a reasonable number of parts – 13 were suggested in the proposed split from Ericsson. It was noted that splitting would also allow for more parallel work, reducing contention.  **Summary 2**: 0/3 companies agree with extracting the ASN.1 for its own review. Field descriptions would be detached from the ASN.1 if we did this, which would make it infeasible to split in that manner.  **Summary 3**: Every company agrees that Word should still be used even for the ASN.1 part of the review.  **Summary 4**: A few unique suggestions were made to increase the utility of the Word comment bubbles:   * Reduce the text content of the RILs, and possible reduce the RIL template. * Use a separate review file per WI * Use the Word comment bubbles as pointers to a table of RIL comments, which could be stored   + In a separate Excel file   + In a separate Word file   + In the review Word file in a table at the end   **Summary 5**:4/4 companies support the continued use of manual lock files for checking out the review file, but two companies think that we could still explore a simple tool to automate the creation of the lock file and indicate who has the file checked out. [Rapp: this could be especially useful if we end up splitting the review file.]  **Summary 6**: Ericsson provided 7 additional topics for input. Feedback was not generally provided, but 2/4 companies think it would be difficult to define the boundary of what a small change is. There seems potential for discussion on allowing for corrections of typos to be directly implemented into the review file. It was noted that changes on top of changes could occur if the changes are too large, so that should be discussed. It was suggested that splitting the review by WI could avoid the problems of points 2 and 5 – giving each WI the flexibility to implement its CRs and to avoid overlapping comments across WIs. |

The following main proposals were provided based on the discussion.

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| **Proposal 1:** Split the review file into multiple parts, respecting section boundaries. The exact split and number of review files is FFS.  **Proposal 2:** Discuss the following alternatives to provide comments in the review files:   * Reduce the text content of the RILs, and possible reduce the RIL template. * Use a separate review file per WI * Use the Word comment bubbles as pointers to a table of RIL comments, which could be stored   + In a separate Excel file   + In a separate Word file   + In the review Word file in a table at the end   **Proposal 3:** Continue to use the manual file locking procedure as a baseline, but keep as FFS the possibility of automatically creating the lock file and providing for download the next version of the review file with the version number incremented. |

And Ericsson proposed to add the following topics to the discussion.

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| 1. Make the “RRC style” (e.g. naming conventions) more visible to WI editors and delegates.    1. The RRC Rapp could give some presentation and provide slide mtrl. 2. Do not implement WI-CRs that are not functionally complete and not in good shape into the review file.    1. The ASN. Review originally assumed high-quality WI CRs (i.e., formally respecting the RRC style and guidance, as well as functionally complete and stable.    2. This is indeed controversial topic. Typically, all WI are considered complete at the time of creating the first spec version of the release, however this approach may make ASN.1 review more effective and smoother.    3. Some WI CR may benefit from a delayed merge, allowing more time to resolve functional and ASN.1 issues outside the ASN.1 review. 3. The time for ASN.1 review is normally very short. To get more time, we could start the ASN.1 review on draft spec before official spec is available. We can discuss if this is feasible closer to the ASN.1 review. 4. To improve ASN.1 review by delegates, encourage the delegates to study and the latest WI CRs to more easily understand spec impact. In this way a reviewer who wants to review how feature X was implemented, can more easily understand feature X if it has reviewed the WI CR for feature X. 5. On adding and commenting RILs, advice delegates on the following:    1. Avoid a lot of RILs overlapping same word/sentence/paragraph/section.    2. Avoid too large text comments and text in a RIL    3. Discussion among companies about a certain RIL should be outside review file (instead use e.g. email among most concerned/involved delegates). In principle only the problem and conclusion need to be captured in the RIL text itself. 6. Allow delegates to introduce changes directly in spec text of the review file    1. Many minor changes can be corrected directly in the review file, simple typos can be corrected even without a RIL which reduces workload on the delegates    2. This would possibly also reduce the need for additional tdocs, instead fix the problem inside the review file. So far, we have not allowed changes to the spec text in the review file 7. Can consider a Tdoc cap related to RILs, e.g. one Tdoc for RILs per company per WI. |

# 4 Discussion

The discussion can be split into the following topics: splitting the review file; how to provide comments for the review; how to check the review file in and out; direct modification of the review file for small, editorial changes; and review logistics.

## 4.1 Splitting the review file

### 4.1.1 Discussion Points from RAN2#129bis

**Topic 1:** Should we split the review file? If so, should it be split by section or by work item?

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| **Option** | **Discussion** |
| Split by section | **Support –** Qualcomm, Ericsson, Samsung, vivo (prior to merge WI-specific as normal, but after, we split by section)  **Against –** Huawei (would require one reviewer to work with multiple files, and ASN and procedures are closely associated with one another)  **Discussion –** Potential split: Procedures, UE capabilities, PC5, Remainder of PDU formats, Xiaomi **(**we first need to understand if the bubble is needed or not) |
| Split by work item  (Full file per WI) | **Support** – Huawei (Intention is to reduce contention resolution – kind of like the post-meeting RRC email discussion), CATT  **Against** – Ericsson, Xiaomi, Samsung (the point is to create a coherent spec across work items, and that work items should be finished prior to the review), OPPO (cross-topic issue checking is difficult with this split)  **Discussion** – OPPO (this doesn’t solve the check-in, check-out problem) |
| Split by company | **Support** – OPPO (Excel sheet per company)  **Against** – Ericsson (Best to minimize changes), Nokia  **Discussion** – Qualcomm (Maybe reasonable but adds burden to rapporteur)  **Notes**: This would ultimately resolve contention |
| No change |  |

### 4.1.2 Discussion after RAN2#129bis

**Question 1**: How should the review file be split, if at all, to reduce contention and/or to improve loading times and reduce performance problems in Microsoft Word? Some examples from the previous discussion include splitting by section, splitting by work item, splitting by company, or keeping the current way.

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| Answers to Question 1 | | |
| Company | Preferred Split | Technical Arguments |
| OPPO | By Section, and by Company | Based on AT129bis discussion, we understand majority view is more that we need to relocate at least part of the RIL comment into a separate table (separate from the review file), while leave at least the RIL number in the bubble in the review file.  Considering that, we  1/ Support to split the review file via the section, to solve the legacy issue that the review file is slow to open and easy to collapse (it is safer considering the number of bullets, although with smaller size with content relocated, is still large).  2/ This is not exclusive to split by company, which is more about how to collect the RIL comment, considering the collision of check-in/check-out problem. E.g., each company provides a per-company RIL comment table, for rapp to concatenate into a single table. |
| Ericsson | Split per sections | Splitting the review file into (say) 5-8 smaller parts should help to allow multiple delegates get access to the file.  Smaller review file size should also reduce the performance problems.  After some tests, we understand that the fact we use MS Word comments (“bulbs”) for RILs does not significantly contribute to the Word performance (e.g. to open the files). We understand the file size itself is the main problem. Hence there is no need to replace the bulb comments.  Companies can test by opening e.g. v001 (no RILs) and v229 (1428 RILs) of the R18 review files (Rel-18 2024 Q1)  [Directory Listing /ftp/Email\_Discussions/RAN2/[Misc]/ASN1 review/Rel-18 2024-03/38331/ASN1 review file](https://www.3gpp.org/ftp/Email_Discussions/RAN2/%5BMisc%5D/ASN1%20review/Rel-18%202024-03/38331/ASN1%20review%20file)  With full review file per WI we lose the possibility to have a joint ASN.1 review of the spec incl all WIs.  Per company lists will result in same issue detected by multiple companies, and additional effort to merge the lists. |
| Qualcomm | By section | We suggest splitting into N smaller parts. Breaks should be based on the sections. N is up to the RRC Spec Rapp. |
| vivo | Split by sections | How to split can be decided by RRC rapporteur. |
| Xiaomi | Separate review file from spec, then split by WI by company (but a separate one for cross-WI) | As we commented online, the main motivation to split the review file is because the method of how we provide comment for the review (i.e., adding bubble comment in the word makes the review becomes very slow, hence need a reduction of document size).  First of all, to make it clear, review file itself (which is used to collect companies’ review comment) should be separated from 331 spec itself, i.e., the comments should not be inserted into the spec directly, since opening 331 spec itself without any comment can be very slow already. Therefore, at least, we propose to use a separate WORD/EXCEL document as review file to collect companies’ comments. **Note that, this ‘separate WORD/EXCEL document’ approach has been widely used by many RAN2 rapporteurs during CR review/LS review, etc,** as inserting comment directly in document makes it difficult for rapporteur to read the original text and bubble comments may also be easily lost.  Though splitting by section of the RRC specification could help to reduce the document size, we kind of lose the linkage between the procedure part and ASN.1 part for the same feature. During the review, one may need to jump between different documents, since the whole feature may be spread across different sections. Splitting by section may work for UE capability ASN.1 review, since capability is quite independent from the rest procedure. However, splitting by section doesn’t work well for other sections.  As mentioned earlier, if the review file is different from the spec used for ASN.1 review, considering most of ASN.1 review issue may be WI-specific, the review file itself can be split by WI and one for across WI issues. Then to avoid check-in check-out issue, the review file should be further split by company.  Note: RAN2 running CR rapporteur (per WI) is providing the open issue list for May meeting. For RRC related issues, it can be reused for ASN.1 review purpose if we split the issues as WI specific and across WI. WI RRC running CR Rapporteur can maintain it until the ASN.1 freeze. |
| Huawei, HiSilicon | No split if E in 4.2.2 is adopted.  Otherwise, per WI. | E in 4.2.2 (no bubble comments, can use draft view) should make MS word performance acceptable, even for the whole specification.  Splitting by section makes search really inconvenient (and with big files as proposed, we doubt there is any change in performance), so:  - if E in 4.2.2 is adopted, we prefer no split  - if E in 4.2.2 is not adopted, we prefer split by WI, which makes the review by most delegates easier (but we should still use check-in/out). |
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**Summary 1: TBD**

**Proposal 1: TBD**

## 4.2 Providing comments for the review

### 4.2.1 Discussion points from offline at RAN2#129bis

**Topic 2:** How can we more efficiently provide comments in the review file?

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| **Option** | **Discussion** |
| Reduce comment template | Support – Samsung, OPPO |
| Comments contain an identifier pointing to a comment table   * Table at the bottom of the review file * Table in a separate document | Support – Ericsson (preference to keep bubbles but OK with a separate table), Samsung, OPPO (with more context than just the pointer to a table)  Against – Xiaomi (use a different kind of inline text pointer instead of bubble comments)  Discussion – CATT, vivo, Huawei (global numbering is important), Qualcomm (at least need bubble comments to point to text), Xiaomi (number of bubbles, not the content that is the problem; supports a review Excel sheet per company and a reference to section number and line number, but Ericsson mentions this could be very difficult for the rapporteur to use) |
| Reduce instances of comments addressing the same topic |  |
| Discuss potentially controversial issues with companies externally instead of in the review file |  |

It was noted by Huawei that finding comments is very difficult and it’s hard to find out if multiple companies commented in the same place.

### 4.2.2 Discussion after RAN2#129bis

**Question 2**: Which of the following enhancements should be considered to improve the end of release review?

* A – reduce the comment template to increase readability
* B – enter a pointer to a comment ID inside the bubble comments and either store the comment body at the end of the Word file or separately in an Excel file.
* C – enforce some rules about duplicate or similar comments – these could be discussed with the original reviewer externally to the review file
* D – discuss potentially controversial issues with companies externally instead of in the review file to avoid multiple comments addressing the same topic.
* E – Comments maintained in a separate document without the bubble comments (pointer) in the RRC specification. The separate document needs to include unique quoting to the original context in the specification.

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| Answers to Question 2 | | |
| Company | Preferred Enhancement(s) | Technical Arguments |
| OPPO | A,B,C,D | A and B comes together.  Specifically, for the two approaches   * Table at the bottom of the review file * Table in a separate document   Our preference is for the latter one, in order to solve the issue that ‘the review file is too big to open quickly, and is usually easy to collapse’.  C/D are more or less the business as usual, i.e., offline discussion is always encouraged. |
| Ericsson | B | A: We were not sure exactly what is covered by this point. We added the RIL template here. We define in Guidelines how each field should be used and filled in by the delegate.  B: Problem we can target here is that RILs that are close to each other (each with a lot of text) may overlap (difficult to read and add more comments).  A simple solution is to indicate in in the RIL Bulb comment that there are further comments in a “Comment area”. And simplest is probably if this “Comment area” is at the very end of the review file (i.e, not in a separate file), and identified by the RIL number. We think this extra “Comment area” need to be utilized for a few RILs, that need extra the extra space.  A benefit is that in this “Comment area” we can probably use usual tracked changes etc to easy visualize changes (this is a problem with text inside the Bulb comments).  A drawback is that the comments in the Comments area will not be exported to the Excel files (the “RIL lists”). But since we typically use the RIL lists more for follow up and status monitoring, this is probably not a major drawback.  We can try this enhancement.  C: Similar as before, we can only encourage companies to try to avoid adding new RILs when there is already existing RIL for (almost) the same issue.  D: Typically, there should be no need for several companies to “confirm” or “agree” inside a RIL. Those only create overhead. More important is to comment if you disagree with a potential solution or way forward. Indeed, that consensus building activity is preferable handled offline (via mail) as we have encouraged earlier. |
| Qualcomm | A,B,C,D | 1. By ‘reduce comment template’, we understand the definitely mandatory field is [RIL], perhaps [WI] can be made mandatory, and almost all of the other fields can be offloaded to the ‘comments table’. Of course, the current script needs some modification to handle proper extraction (but that should not be a deal-breaker). 2. The [RIL] is the pointer. [WI] helps. Other information can be captured in the ‘comments table’. 3. Agree with above comments. 4. Agree with above comments. In general, the discussion on the specific RILs do not need to happen within the same review file. Perhaps we could explore using NWM tool for controversial items where multiple companies are expected to participate in real-time. |
| vivo | B can be first one.  Open discussion on A, C, D. | B is more important one. |
| Xiaomi | Prefer E,  Open to A,  Can live with B with table in a separate document,  Not for C and D | We are fine for Option B only if the review comments are collected in a separate file (instead of inside the spec itself), as we mentioned in Q1.  For C, it would be good for rapporteur to understand different companies’ view on the same issue. Limiting companies’ not commenting the same issue is not beneficial to make progress and identify the issue earlier.  For discuss externally – though we have some sympathy to the proposal is trying to avoid the bubble comment size, but, it is quite easy that some companies that are interested are not included. |
| Huawei, HiSilicon | E | A comment is entered as:  - a tag directly in the specification text (e.g., [RIL:MIMO:H023])  - the description either at the end of the specification file, or in a separate MS word file (easier than Excel, can extract to Excel afterwards)  The description follows the existing format. Optionally, a hyperlink from the tag to the description could be used (if in the same file).  Benefits:  - can use "draft view" (better performance)  - easier to write comment descriptions (can paste extract of specification and propose changes with change tracking)  - easier to copy all comments from one file to another (a single copy-paste for all descriptions, automatic "merge" could work for tags) |
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**Summary 2: TBD**

**Proposal 2: TBD**

## 4.3 Checking the review file in and out

### 4.3.1 Discussion points from offline at RAN2#129bis

**Limit the amount of time the review file(s) can be checked out or allocate specific review time slots**

* Support – Samsung, vivo
* Against – Ericsson thinks companies have behaved well

### 4.3.2 Discussion after RAN2#129bis

During the discussion, there was insufficient time to fully discuss this topic. Therefore, we propose two questions, one which was discussed: a time limit for the review file checkout, and a new one about automating the check-in/check-out process.

**Question 3**: Should a limit be imposed on the amount of time the review file can be checked out?

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| Answers to Question 3 | | |
| Company | Yes/No | Technical Arguments |
| OPPO | Yes | There was some guidance on it already previously (if I recalled correctly).  While the real problem is that the copy-paste of the RIL comment bubble is time-consuming, so that it is suggested to simplify the bubble template as much as possible, e.g., only RIL number is included. In this way, the bubble insertion can be done quickly, and thus time limit can be secured easily.  And more importantly, the RIL comment uploading can be done in a per-company manner, e.g., via an Excel file. So that the merging can be done by Rapp by copy-paste the rows in each company’s file, so that the uploading is not sequential but parallel. |
| Ericsson | Yes and No | It has happened very seldom that delegates kept the file too long, e.g. forgot to upload. In Rel-18 review once, as I recall.  We can of course set a hard time limit (a next delegate can check out the latest file version again after say 1.5h.  We can even some queue that is visible to all (e.g. using Torhu). But also adds complexity, and we do not think this is needed. |
| Qualcomm | See comment | Generally, agree with OPPO’s comment that the real problem is the copy-paste of the RIL bubbles takes time. Also agree with Ericsson’s observation that adding more rules just adds complexity for enforcement.  On the second point by OPPO, once the RIL pointers are added to review file, the discussion of RIL comments does not need to happen in the same main file. (This is related to item D in previous question.) |
| vivo | comments | We are also ok without hard split time per companies if RRC rapporteur think it is not needed after simple the bubble. |
| Xiaomi | See comment | If we use separate file per company (as we commented in Q1), we don’t need this time limit. |
| Huawei, HiSilicon | Yes | The guidelines already say 1h.  If we use B2 in 4.2.2, entering comments should be much faster than 1h (add tags in the specification file, copy-paste the whole list of comments in the description file). |
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**Summary 3: TBD**

**Proposal 3: TBD**

**Question 4:** Should we devise a way to automate the process of checking the review file in and out? Currently, we download the latest version of the review file, create a lock file with the version name, whose contents are the name of the delegate who checked out the file, and then upload the review file with the version number incremented by 1.

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| Answers to Question 4 | | |
| Company | Yes/No | Technical Arguments |
| Ericsson | No | Existing method is simple. But we are open to proposals. |
| Qualcomm | Yes | Agree with Ericsson. Existing method may be sufficient but open to new proposals. |
| Xiaomi | See comment | If we use separate file per company (as we commented in Q1), we don’t need this time limit. |
| Huawei, HiSilicon | Yes/No | If easy yes, but time is short to make something that works, so we suggest using the existing procedure. |
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**Summary 4: TBD**

**Proposal 4: TBD**

## 4.4 Direct Modification of the review file

During the offline session, we did not get to this topic, but given the more important topics to discuss first, we will preserve but postpone this topic.

**Topic 5:** Should delegates be allowed to make small editorial changes, e.g., grammar and formatting changes directly to the review file? If so, should a comment be provided in addition to the change?

## 4.5 Logistics

### 4.5.1 Discussion points from RAN2#129bis

The RAN2 chair suggested that MCC could create a temporary version of the specification to kickstart the review. However, several companies mentioned that the MCC would not have enough time to do an early implementation and that very few companies comment on the running CRs as is. Perhaps the better solution is that companies proactively check the running CRs in advance of the review. It was further noted that running CRs are endorsed right before the plenary submission date, so the draft cannot be created on time and that this concept could duplicate work.

A compromise solution would be to assign RIL numbers to the running CRs to begin the review in advance.

### 4.5.2 Discussion after RAN2#129bis

Based on the offline discussion and the email discussion held prior to this meeting, one question is posed, and another is postponed until the first set of issues is resolved.

The following topic is postponed.

**Topic 6:** Should we impose a limitation for RIL discussion papers to one TDoc per company per WI per meeting?

**Question 5:** Should we formalize the review of running CRs prior to the specification freeze such that RIL issues can be identified in the running CR prior to the merge for the cross-WI review?

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| Answers to Question 5 | | |
| Company | Yes/No | Technical Arguments |
| Ericsson | Yes | The WI CRs are agreed to be implemented in the first RRC version of the new release. Then, it takes 3-4 weeks before the new spec is published. In previous releases, we expect companies during this time made notes on issues they would later raise as RILs.  We can formalize this. Each WI can have an activity (“pre-ASN1 review”) to resolve already known issues and continue to review the CRs to detect more issues. During this “pre-ASN1 review”, the agreed WI CRs are used as review files. We can even create RILs.  When the new spec is published, issues found during the pre-ASN1 review are inserted as RILs in the ASN.1 review file (the new spec). |
| Qualcomm | No | We do not see a benefit of creating more RILs even before the WI-specific running CRs are endorsed. The pre-ASN.1 review within the scope of a specific WI should be handled within the running CR discussion of that WI (i.e. legacy business as usual). |
| Xiaomi | See comment | In principle, we understand ASN.1 review should be based on the agreed RRC CR. This means, we start early ASN.1 review per WI based on the agreed RRC CR per WI first without further waiting. This could help to resolve WI-specific ASN.1 review issue earlier.  However, cross-WI review should also start early instead of waiting for final version from MCC. Note that, if we wait for MCC final published version after plenary and then start cross-WI review, we will only have 1 week for cross-WI review and identifying RIL issues. Especially for cross-WI review, early review before published specification would be much beneficial, as those issues may take more time than other WI-specific RIL issue. For example, RACH-less in Rel-18 takes several meetings to finalize. Therefore, for cross-WI review, we suggest RAN2 to start early review based on temporary specification created by RAN2 companies/MCC, so that RAN2 could start cross-WI review even during the week of plenary. With this, we could have maximum 3 weeks for a more comprehensive ASN.1 review. |
| Huawei, HiSilicon | Yes | The review time is really short for Rel-19, and most issues are WI-specific, so it is beneficial to start the review on agreed running CRs before the (draft) merged specification is available.  If we used E in 4.2.2, once the merged specification is available, each RRC CR rapporteur can rather easily copy the issues to the merged file (merging the tags might work automatically, merging descriptions is a single copy-paste). |
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**Summary 5: TBD**

**Proposal 5: TBD**

# 5 Conclusion

TBD.