**3GPP TSG-RAN WG3 Meeting #115 electronic R3-222447**

**Online, 21th Feb – 3rd Mar 2022**

**Agenda Item: 18.1**

**Source: CMCC (moderator)**

**Title: Summary of CB: # AIRAN1\_General**

**Document for: Discussion and Decision**

# 1 Introduction

**CB: # AIRAN1\_General**

**- Check the work plan, revise if needed**

**- Endorse the updated TR if agreeable**

**- Provide the conclusion for SI based on the outputs of other CBs**

(CMCC - moderator)

Summary of offline disc [R3-222447](file:///D:\1.3GPP\0.XF's%20contribution\36.RAN3%23115\Inbox\R3-222447.zip)

The deadline for the first phase of the email discussion is Friday February 25th, 12am UTC.

# 2 For the Chairman’s Notes

**Proposal 1: Endorse draft TR as BL.**

**Proposal 2: Agree the TP** **to TR 37.817 for SI Conclusion in R3-222764. And the conclusion is as follows:**

**The AI/ML functionality and the following use cases are recommended by RAN3 to be specified in Rel-18 normative phase:**

* **AI/ML-based Network Energy Saving**
* **AI/ML-based Load Balancing**
* **AI/ML-based Mobility Optimization**

**Recommendations for each use case take the section of “Solutions and standard impacts” for each use case as basis. The high-level principles captured in section 4.1 of TR37.817 shall remain valid during normative phase, while the functional framework captured in section 4.2 of TR37.817 should be used as a guideline in normative phase.**

# Discussion (Phase 2)

**Q1: Companies are invited to provide comments on proposals above from the 1st round discussions.**

|  |  |  |
| --- | --- | --- |
| **Company** | **Agree/Disagree** | **Comments/update wording** |
| Huawei | Agree |  |
| Ericsson | Agree with comments | We would like to point out that the one of the High Level principles in section 4.1 of TR37.817 states:   * A general framework and workflow for AI/ML optimization should be defined and captured in the TR. The generalized workflow should not prevent to “think beyond” the workflow if the use case requires so.   Therefore, it seems inconsistent with the above principle to conclude that “the functional framework captured in section 4 of TR37.817 shall remain valid during normative phase”.  We would rather propose to reformulate the sentence as follows:  **The high-level principles in section 4 of TR37.817 shall remain valid during normative phase. The functional framework captured in section 4 of TR37.817 should be taken into account during normative phase** |
| Intel | Agree with comment | We are ok not capturing the details of common information and SA5 impact. However, we think a proposal based on common procedure would be helpful based on phase-1 discussion, which is also summarized by moderator.  **Proposal: On the common procedures among use cases, avoid duplication in normative phase.** |
| Nokia | Disagree on proposal 2 | Regarding proposal 2, we agree that the high-level principles captured in the TR shall remain valid during normative phase. However, when it comes to the functional framework, in our view, it is useful to complete the ML workflow but should only be considered as a guideline. “Shall remain valid in normative phase” would be a very strong requirement for the ML framework. |
| ZTE | Agree with moderator’s proposal. |  |
| Deutsche Telekom | P1: Agree  P2: Consider comments | We are fine with the updates proposed by Intel and Nokia on P2. |
| Futurewei | Agree with comments | We agree with Ericsson’s comments, using the wording that the functional framework should be taken into account during the normative phase may be better. |
| Samsung | Agree with moderator’s proposal. |  |
| CATT | Agree with moderator’s proposal. |  |
| Qualcomm | Agree | On P2, slightly prefer Ericsson’s rewording. |
| NEC | Agree | Agree with Proposal 1. Agree with Proposal 2; modifications are also acceptable. |

**Q2: Companies are invited to provide their views on the draft TP.**

|  |  |
| --- | --- |
| **Company** | **Comments and Suggestions** |
| Huawei | We agree moderator’s proposed TP. |
| Intel | We suggest adding “**On the common procedures among use cases, avoid duplication in normative phase.**” in the end of the conclusion, so that it could be considered as guidance for normative phase. |
| Nokia | Update the TP as follows:  Recommendations for each use case take the section of “Solutions and standard impacts” for each use case as basis. The high-level principles captured in section 4.1 of TR37.817 shall remain valid during normative phase, while the functional framework captured in section 4.2 of TR37.817 should be used as a guideline in normative phase. |
| ZTE | Agree with moderator’s TP. |
| Deutsche Telekom | See answer to Q1. |
| Futurewei | Agree after modifying the wording for the functional framework as discussed in Q1. |
| Samsung | Prefer moderator’s TP. |
| CATT | Agree the moderator’s TP |
| qualcomm | Agree with moderator’s TP. |
|  |  |

**Moderator’s summary**

**Some companies deem that the functional framework captured in section 4.2 of TR37.817 should only be taken into account during normative phase or considered as a guideline, rather than shall remain valid in normative phase. Moderator also think the modification makes sense. So, it is proposed to reword the TP and agree following as conclusion of the SI:**

**The AI/ML functionality and the following use cases are recommended by RAN3 to be specified in Rel-18 normative phase:**

* **AI/ML-based Network Energy Saving**
* **AI/ML-based Load Balancing**
* **AI/ML-based Mobility Optimization**

**Recommendations for each use case take the section of “Solutions and standard impacts” for each use case as basis. The high-level principles captured in section 4.1 of TR37.817 shall remain valid during normative phase, while the functional framework captured in section 4.2 of TR37.817 should be used as a guideline in normative phase.**

**As for avoiding duplication on the common procedures among use cases, moderator share the view with some companies that we can manage to avoid the duplication in normative phase, and do not need to add it in the conclusion.**

# 3 Discussion (Phase 1)

As per the guidance from the chair, the first round of the CB will be structed as follows:

* Endorse the updated TR if agreeable
* Provide the conclusion for SI

## 3.1 Draft TR

Moderator think we can endorse draft TR as BL [1]. In case companies have any comments, please indicate in following table:

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Reasons/Comments/Suggestions** |
| Huawei | Yes |  |
| Intel | Yes |  |
| Nokia | Yes |  |
| CATT | Yes |  |
| Qualcomm | Yes |  |
| Samsung | Yes |  |
| ZTE | Yes |  |
| Lenovo, Motorola Mobility | Yes |  |
| Deutsche Telekom | Yes |  |
| InterDigital | Yes |  |
| Futurewei | Yes |  |
| NEC | Yes |  |
| CTC | Yes |  |
| CMCC | Yes |  |

**Moderator’s summary**

All companies agree to endorse draft TR as BL.

**Proposal 1: Endorse draft TR as BL.**

## 3.2 Conclusion for SI

In R3-222276 [2], following TP on conclusion for the SI is provided:

# 6 Conclusion

The AI/ML functionality and the following use cases are recommended by RAN3 to be specified in Rel-18 normative phase:

* AI/ML-based Network Energy Saving
* AI/ML-based Load Balancing
* AI/ML-based Mobility Optimization

Recommendations for each use case take the section of “Solutions and standard impacts” for each use case as basis.

**Q1: Companies are invited to provide views on whether agree above TP on conclusion of the SI?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Reasons/Comments/Suggestions** |
| Ericsson |  | We have provided a draft conclusion in R3-222100. The conclusion proposed is as follows:  The study on enhancements for Data Collection for NR and EN-DC can be considered completed.  The following is concluded:  • The high-level principles captured in section 4.1 of TR37.817 shall remain valid during normative phase.  • The Network Energy Saving use case description and “solutions and standard impacts” should be taken as baseline for normative phase.  • The Load Balancing use case description and “solutions and standard impacts” should be taken as baseline for normative phase.  • The Mobility Optimisation use case description and “solutions and standard impacts” should be taken as baseline for normative phase.  With respect to the conclusion above, we add that the high level principles shall be considered as baseline during WI phase |
| Huawei | Yes | We agree with moderator’s proposed texts, we also think E///’s proposal on high-level principles needs to be captured together, like:  …  …  Recommendations for each use case take the section of “Solutions and standard impacts” for each use case as basis, and the high-level principles captured in section 4.1 of TR37.817 shall remain valid during normative phase. |
| Nokia | Yes | We agree with the proposed text by the moderator with the additional update by HW. |
| CATT | Yes | We are also OK to merge the first bullet from E/// as proposed by Huawei. |
| Qualcomm | Yes | OK to the merge the proposals together. |
| Samsung | Yes, but prefer to add framework valid in normative phase too | We are OK for the text proposed by moderator and the merged one proposed by HW.  In addition to the merged one proposed by HW, we prefer framework is also valid during normative phase as:  …  …  Recommendations for each use case take the section of “Solutions and standard impacts” for each use case as basis, and the high-level principles and the functional framework captured in section 4 of TR37.817 shall remain valid during normative phase. |
| ZTE | Yes | We are OK for the text proposed by CMCC, HW and SS. And also fine for the proposal by E///.  We suggest to extend the final sentence as:  RAN3 has analyzed the descriptions and potential solutions, expected inputs, expected outputs, and expected feedback information of each use case. Recommendations for each use case take the section of “Solutions and standard impacts” for each use case as basis, and the high-level principles and the functional framework captured in section 4 of TR37.817 shall remain valid during normative phase. |
| Lenovo, Motorola Mobility | Yes | We also agree with E/// to capture the high level principles. |
| Deutsche Telekom | Yet, but … | We share Samsung’s view that the functional framework needs to be noted in addition to the high-level principles as these are two separate issues to be considered as basis for normative work in the Rel-18 WI. |
| InterDigital | Yes | We also agree with the E/// and Huawei enhancements. |
| Futurewei | Yes | We share the view from Samsung that both “high-level principles” and “functional framework” should be included in the wording. |
| NEC | Yes | We also agree to merge above TP with proposals from Ericsson and Huawei. |
| CTC | Yes | We are OK to merge the text proposed by moderator and proposals from E/// and Huawei together. |
| CMCC | Yes | We are fine to merge above TP with proposals from Ericsson and Huawei |

**Moderator’s summary**

Almost all companies agree to merge the text proposed by moderator and enhancements to include “high-level principles” and “functional framework”. So, it is proposed:

**Proposal 2: Add following context to the TP on conclusion: “the high-level principles and the functional framework captured in section 4 of TR37.817 shall remain valid during normative phase”.**

In R3-221941 [3], following TP on conclusion for the SI is provided:

# 6 Conclusion

Potential impact on SA5 specifications:

* Support Model deployment/update, which is used to initially deploy a trained, validated, and tested AI/ML model to Model Inference function or to deliver an updated model to the Model Inference function.
* Support Model performance feedback, which may be used for monitoring the performance of the AI/ML model
* Support data collection of Input and Feedback information used for AI/ML-based network energy saving, AI/ML-based load balancing and AI/ML-based mobility optimization, as defined in Section 5.1.2.4, 5.1.2.6, 5.2.2.4, 5.2.2.6, 5.3.2.4 and 5.3.2.6.

RAN3 should work on standard impacts of each use case, which are identified in Section 5.1.2.7, 5.2.2.7 and 5.3.2.7, during work item phase in Rel-18.

Common information (input/output/feedback) for all three uses cases should be worked together. Potential common Xn interface impact among three use cases:

* New signalling procedure or enhanced existing procedure to collect the input data information
  + Predicted resource status between neighboring NG-RAN nodes and source NG-RAN node
* New signalling procedure or enhanced existing procedure to retrieve feedback information
  + UE performance information between neighboring NG-RAN nodes and source NG-RAN node
  + System KPIs between neighboring NG-RAN nodes and source NG-RAN node

Other standard impact of input/output/feedback can be found in Section 5.1.2.7, 5.2.2.7 and 5.3.2.7.

**Q2: Companies are invited to provide views on whether agree above TP on conclusion of the SI?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Reasons/Comments/Suggestions** |
| Ericsson | No | As mentioned above, we are in favour of a simpler conclusions the one presented in R3-222100, where it is stated that the high level principles and the use case descriptions shall be taken as baseline for normative work. The impact on SA5 stated above has not been analysed during the SI (RAN 3 concluded that Model Deployment/Update and Model Performance Feedback are out of scope)a lot of the information above is included in the use case descriptions under “Standard Impacts”.  For these reasons we would prefer not to take this conclusion as baseline. |
| Huawei | No | We think the summary in Q1 should be enough, we share similar comments as E/// on SA5 related part, thus we would suggest to take the proposals in Q1 (with some addition from E///’s contexts, as what we suggested) as base line. |
| Intel |  | For common information used by all three use cases, we are fine not capturing explicitly what are the duplicated information in the conclusion, while it would be good to reach an agreement to not duplicate working on the same information in each use case separately during WI.  Regarding to impact to SA5, we acknowledge and agree that model deployment/update, model performance feedback is not in the scope of RAN3.  Recalling that we send a LS to SA5 to support model deployment/update for “model training in OAM and model inference in NG-RAN” in RAN3 #113e meeting. SA5 also replied us they will study and support it during Rel-18. However, they are not informed “model performance feedback” is introduced in last RAN3 meeting.  The intention of capturing such standard impact is not to let RAN3 study or continue work on the impact during WI. It is proposed to capture such impact so that the solutions could be completed in 3GPP across WGs during WI, especially in SA5, in which case, SA5 could also refer to the outcome of RAN3 SI to complete their work in Rel-18.  Therefore, we think it would be beneficial to capture standard impact to SA5 in the conclusion. |
| Nokia | No | The proposed conclusion is unnecessarily detailed in our view. We don’t see the need to capture details beyond the conclusion in Q1. |
| Qualcomm | No | We also prefer simple conclusion in Q1.  For the proposal of SA5 impact, we can send LS to SA5 in normative phase on need.  On the common procedures, we can manage to avoid duplication in normative phase too. |
| Samsung | No | For SA5 impact, we can provide the information to SA5 and the corresponding impact is better to be defined by SA5.  For the common impact, it can be done via coordination among three use cases in normative phase. |
| ZTE | No | We prefer the conclusion proposed in Q1. Simple one is better.  And regarding SA5 specification, this would be discussed in R18 by SA5, which is not involved in the RAN3. Don’t suggest to capture spec impact related to SA5 in the TR. |
| Lenovo, Motorola Mobility |  | [3] did good analysis on what will have spec impact eventually. Those issues related to SA5 may not need RAN3 to drive the discussion, although coordination with SA5 is needed when necessary, as stated in the R18 WID.  We agree with those bullets for RAN3 spec impacts. Since they are also covered in each use case chapters, we are also fine to go with the simple version proposed by companies in Q1. |
| Deutsche Telekom | No | We also prefer a simpler approach as discussed under Q1.  With respect to common info listed in the proposal we think this can be captured in a simple sentence, if required, without going into details, like e.g. “*In the normative work common information (on input/output/feedback) for all three uses cases should be considered together as far as possible to avoid duplicated work.*”  As stated by QC a LS can be sent to SA5 during normative phase, if needed. Therefore, it is currently not needed to list in the conclusions the impact on SA5 specs. |
| InterDigital | No | Same thoughts as most above. |
| Futurewei | No | We share the same view as most companies that the conclusion/description proposed in Q1 can be used. |
| CTC | No | We prefer simple conclusion in Q1. |
| CMCC | No | Share the view with QC. |

**Moderator’s summary**

**Almost all companies prefer simple conclusion in Q1. For the proposal of SA5 impact, we can send LS to SA5 in normative phase on need. On the common procedures, we can manage to avoid duplication in normative phase too.**

# 4 Conclusion, Recommendations

# 5 Reference

1. R3-221610 TR37.817 v1.2.0 (CMCC)
2. R3-222276 TP to TR 37 817 for SI conclusion (CMCC)
3. R3-221941 Consideration on alignment for AIML in NG-RAN Rel-17 SI (Intel Corporation)