

[RAN94e-R18Prep-20] SON/MDT Enhancements
Variant of [RAN94e-R18Prep-20] SON/MDT Enhancements Version 0.0.3
RAN

3GPP TSG RAN Meeting #94-e RP-21xxxx

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Source: RAN3 Chair (ZTE)

Title: Moderator's summary for discussion [RAN94e-R18Prep-20] SON/MDT Enhancements

Agenda Item: x.x

1 Initial Round

1.1 Introduction

This email discussion is to continue the discussion on the potential R18 project on SON/MDT enhancements (led by RAN3) in RP-211666:

***SON MDT Enhancements (WI).** There seems to be consensus to have a SON MDT Enhancements WI and the scope indicated here seems agreeable as baseline. The scope indicated is large, and somewhat vague (e.g. not split per SON MDT, no detailed impact per WG) and further consolidation is needed. General agreement that features not deployed by operators shall have lower priority. It was also proposed to move some parts (V2X, NPN, IAB) to other WIs, which could be considered (at some point in time).*

SON MDT WI Tentative Areas / Scope (RAN3, RAN2)

1. IRAT ho voice fallback

2. SONMDT Rel-17 leftovers (details FFS) e.g. MR-DC CPAC and MRO successful PScell change report, fast MCG recovery

3. Rel-16 features not earlier covered including their Rel-17 enhancements: NPN, V2X, IAB

4. Rel-17 new features, RACH enhancements, MBS, Cov Enh, NTN, SDT, Slice,

5. Other, FFS e.g. Mandatory capability for essential cases (e.g. related to energy consumption), applicable parts of 5GAA predictive QoS not covered above if any.

Note: Bullets 1-4 are tentatively ordered according to decreasing priority and the feature listing in bullets 3

and 4 are tentatively ordered according to decreasing priority. This is preliminary.

The following discussion is based on the additional guidance on RAN Rel-18 Email Discussion during October 20th to 29th in RP-212657.

1.2 R18 SON/MDT Enhancements WI

The following items are proposed as the objectives of R18 WI based on the conclusion of R17 WI:

- a) IRAT ho voice fallback
- b) SONMDT Rel-17 leftovers (details FFS) e.g. MR-DC CPAC and MRO successful PScell change report, fast MCG recovery
- c) Rel-16 features not earlier covered including their Rel-17 enhancements: NPN, V2X, IAB
- d) Rel-17 new features, RACH enhancements, MBS, Cov Enh, NTN, SDT, Slice,
- e) Other, FFS e.g. Mandatory capability for essential cases (e.g. related to energy consumption), applicable parts of 5GAA predictive QoS not covered above if any.

Please companies take tangible commercial interests and R18 timeline into account, for those features which are not in good shape after R17 or without clear commercial deployment possibility, the priority should be lowered.

Feedback Form 1: Q1-1: Companies are invited to provide views on the proposed objectives for this R18 SON/MDT WI and the corresponding priority consideration.

1 – vivo Mobile Communication Co.

We are generally fine with the objectives, but we wonder if we need to prioritize c) over b). The continuation of Rel-17 (generally not that urgent but further enhancements) , except for MCG fast recovery, can be discussed at a lower priority, compared to those to-be-specified Rel-16 features. In addition, we doubt the feasibility of moving bullet c) to the respective WIs, considering that each WI has its own tasks to tackle. Additionally, moving bullet c) to respective WIs would require some companies to have more than 2 delegates to handle one WI, e.g., one delegate for MDT and another one for IAB.

If time is not allowed, we can down-scope bullet d) at a later stage of the Rel-18 WI. In summary, we think the first three bullets are of the highest priority and should be the primary target of this WI.

2 – InterDigital Germany GmbH

We are fine with the objectives, and the general prioritization mentioned. We also don't think that moving SON issues to other work items is helpful. Keeping b higher priority than c makes sense but of course is dependent on what is ultimately on the list of things left out of R17, some might be lower priority than some things in c.

3 – Guangdong OPPO Mobile Telecom.

Consideration of lots of features to be involved in the R18 SON/MDT and the corresponding time limit, we

are ok to move bullet c to respective WIs, for the features experts to make quick progress on them. Note that in R17 SON scope, only DAPS, CHO, and 2-step RACH is included, still we make a lot of efforts to progress and the time left is very limited for us to finish discussion on them before the deadline of R17

4 – TELECOM ITALIA S.p.A.

The scope seems very large. few considerations:

- on Rel 17 leftovers: if the reason is lack of consensus, we should avoid to re-open the discussion in Rel 18
- on c) and d) we should try to reuse as much as possible the general solutions. Slicing should be top priority
- on e) it would be important to define some mandatory feature, to ensure that MNOs can rely and use the feature. As an example, MDT is a key feature to optimise network operations, but it is not widely supported by UEs, therefore jeopardizing its usefulness

5 – Samsung R&D Institute UK

LX We are in general fine for a), b) and c). On top of that, it's not possible to include all the topics in d) considering the R18 timeline. Slicing is interested by operators, therefore slicing could be included in c). e) is not needed.

In summary, the scope and priority should be as follow in our view:

a) SONMDT Rel-17 leftovers (details FFS) e.g. MR-DC CPAC and MRO successful PScell change report, fast MCG recovery

b) IRAT ho voice fallback

c) Rel-16 features not earlier covered including their Rel-17 enhancements: NPN, V2X, IAB, slicing

6 – KDDI Corporation

I'm sorry I could not speak up during the last August email discussion, but from operators' point of view let us provide following three comments.

1. LTE MDT improvement (UE's height location)

Let us propose LTE MDT improvement (UE's height location) as a candidate work area for Rel-18. We are now trying to start the RAN2 work on UE's height location information which is not standardized in LTE MDT (Please refer to R2-2108596/R2-2109718 for more details). To recognize coverage area in higher floor such as skyscrapers, LTE MDT features are not enough, because the current mechanism cannot provide UE's height location to network, so operators have no knowledge about whether the reported data is measured on grand floor or higher floor. NR specs have this feature already, but in LTE the feature is not standardized yet. This would be a candidate work area for Rel-18, if RAN2 conclude it cannot be done in TEI17.

2. Enhancement/improvement MDT for Inter RAT (including coordination between LTE MDT and NR MDT)

With regard to Inter RAT, we want to have some enhancement/improvement on MDT. I mean that for MDT, LTE and NR each MDT functionality was standardized separately, so we think there are some area to be improved. For example, for coverage investigation of deployment scenarios where UEs easily change the RAT, current specification requires new configuration from the network every time after changing the RAT,

and it would be not so efficient. So, we think there would be some room to be improved, potentially some coordination between LTE MDT and NR MDT would be beneficial to avoid frequent configurations.

3. Priority among the objectives

We think that the tentative MDT/SON demands mainly from mobile operators, features which helps operators' deployment improvement should be prioritized. In that sense, addition to two area mentioned above, it's better to prioritize IRAT ho voice fall back, leftovers from Rel-17, NPN, Coverage enhancement, RAN slice.

7 – Lenovo (Beijing) Ltd

In general, we are fine with the listed objectives a)- e).

If we need to down select some features, we have the following understanding□

- High prioritization: IRAT ho voice fallback, CPAC and MRO successful PScell change report, fast MCG recovery, NTN, SDT, Slicing
- Mediate prioritization: RACH enhancements, MBS, Cov Enh
- Low prioritization: NPN, V2X, IAB

For whether to move SON/MDT for NPN, V2X and IAB to their respective WIs separately, we think it is better to maintain them in R18 SON/MDT WI since NPN/V2X/IAB WI has their main feature objectives to be considered, it seems difficult for them to take enough time and efforts to discuss SON/MDT enhancements.

8 – CATT

We are Ok with the objectives in general. In the meanwhile, we could understand the comments from other companies that the current scope is large and also agree that we may need to make priority.

For Rel-17 leftover and the bullet which is very clear i.e. IRAT ho voice fallback, it could be high prioritized.

For Rel-16 and Rel-17 features, we do not think a common principle is needed i.e. Rel-16 features are prioritized or Rel-17 features are prioritized. Instead, it could be discussed case by case. From our point of view, NPN, MBS, SDT and V2X could be prioritized considering these features have more urgent deployment and optimization requirements.

9 – SHARP Corporation

In general, we are fine with the objectives and the prioritization. But with many R16 and R17 new features, the scope is too large if we consider all these in limited time. Moving bullet c to respective WIs may be one way if it is feasible.

10 – ZTE Corporation

1: It is propose that the subjects should be divided into SON and MDT. Traditionally, SON/MDT enhancement is divided into two independent functions: SON and MDT, because not all functions (NPN, SDT) need to enhanced with both SON and MDT. For example, the function "IRAT ho voice fallback" belongs to SON functions rather than MDT functions.

2: Down scoping is necessary. The SON and MDT functions are kind of enhancement to the existing functions (Mobility etc). The more scale of objective function deploy in the network, the more benefit to consider enhance SON and MDT for the function. This should be taken into account when objective functions are selected. In addition, further clarification is required for the enhancement of some functions. For example, the Network Slice is in this list, this feature has already taken into account the Load balance related to slice in the R17 SON. If consider MDT for Network slice, MDT is a UE-based measurement

report, while Slice is essentially a end to end network-side resource, so it is difficult to evaluate the usage of slice resources with UE-based measurement.

3: Combine several objective into one. 5GAA predictive QoS comes from [RWS-210360]. The main content of this requirement is "Introduce more accurate sidelink and Uu report.". Therefore, the 5GAA predict QoS, together with IAB and V2X, can be combined into a common part objective. We propose to use MDT for Sidelink as objective instead of IAB/V2X/Predictive QoS.

Based on above consideration, we propose to rephrase objectives of this WI as following:

The objective of this work item is to specify data collection enhancement in NR for SON/MDT purpose. The specific objectives of this work are:

- Support of data collection for SON features, including SONMDT Rel-17 leftovers e.g. MR-DC CPAC and MRO successful PScell change report, fast MCG recovery, IRAT ho voice fallback, Rel-17 new features: RACH enhancements [RAN3, RAN2]
 - Specification of the UE reporting necessary to enhance the network configuration [RAN2].
 - Specification of the inter-node information exchange, including possible enhancements to S1/NG, X2/Xn, and F1/E1 interfaces [RAN3]

- Support of data collection for MDT features for identified use cases, including Rel-16 features not earlier covered including their Rel-17 enhancements: NPN,SDT; Sidelink MDT(Cover 5GAA predictive QoS); Rel-17 new features: RACH enhancements and MBS [RAN2, RAN3]
 - Enhancement of logged and immediate MDT [RAN2, RAN3]
 - Enhancement of reporting e.g. RLF and accessibility measurements, SDT reporting [RAN2, RAN3]

- Specification of L2 measurements, if needed [RAN2, RAN3]

Support of NR-U related SON/MDT optimization which aims to reuse e.g. the existing NR-U measurements [RAN3, RAN2]

If needed, co-operate with RAN1, SA2, SA5, CT4. SA5 changes on the MDT/trace configuration will be taken into account.

11 – Huawei Technologies France

1. In general we are fine with suggested objective, but it is better to have a clear split as Rel-18 SON, Rel-18 MDT and Rel-17 leftovers
2. As to concrete objectives, yet we also see that some potential areas might be missing, for example we think new R17 features to considered should also include side link relay/CPAC for SON operation; possible new MDT measurements (e.g. the vertical aspects such as the report of V2X/Sidelink measurement information, MBS measurement and logging, etc.); "Predictive QoS" from 5GAA should also be considered;

12 – NEC Corporation

The current scope for Rel-18 SON/MDT enhancement is far too big, we'd better perform some down scope of the features in a), b) and c). For those being down scoped, to be discussed in respective WIs is a good solution.

13 – Nokia

The R18 SON/MDT WI objectives should be well-focused (e.g. no "other" category) and clearly identify the needed SON/MDT aspects (e.g. what kind of issue/failure are we trying to solve with SON/MDT?).

Regarding R17 new features, the need for related SON/MDT enhancements (if any) may not be clear right now since R17 work is still ongoing.

With the above in mind, here is our view on potential objectives in order of priority:

1. SON/MDT R17 leftovers (e.g. MR-DC CPAC and MRO successful PScell change report, fast MCG recovery, MRO for NR unlicensed)
2. Legacy features not earlier covered including their Rel-17 enhancements:
 - Further SON support for private networks (e.g. RLF reporting for SNPN)
 - MRO enhancements considering beam usage
3. R17 new features (if need confirmed, details FFS)

The above list could be expanded but SON aspects should be made clear (e.g. for “IRAT HO voice fallback” => what is the SON aspect?).

14 – Apple Benelux B.V.

General comments:

- The proposed scope appears to be too large and therefore some downscoping is needed
- Moving SON/MDT aspects of some features to other WIs is not the most efficient approach, we should continue enhancing SON/MDT in a dedicated WI/SI as we always do. Otherwise, it would be hard for SON/MDT experts to hop between different sessions.
- Not all leftovers from the previous release should be automatically carried on to the next one. If those leftovers did not conclude because of lack of consensus, it would be counterproductive to reopen that discussion.

Regarding the scope:

- We don't think "Mandatory capability for essential cases" is needed. The whole bullet e) is not very well defined and is the primary candidate for downscoping (in which case Rel-17 new features can be taken out).
- The following seems OK, but perhaps even further downscoping will be needed:
 - a) IRAT ho voice fallback
 - c) Rel-16 features not earlier covered including their Rel-17 enhancements: NPN, V2X, IAB
 - d) Rel-17 new features, RACH enhancements, MBS, Cov Enh, NTN, SDT, Slice,

15 – Telia Company AB

- a) ok
- b) Only non-controversial SONMDT Rel-17 leftovers to Rel18 discussions
- c) NPN atleast but more details and clarifications needed and possible downscoping for V2X, IAB?
- d) Slice, Cov Enh ok
- e) energy consumption should be considered.

16 – Qualcomm Technologies Int

We have some comments on the way forward:

Regarding a), we don't see much SON/MDT enhancements needed for optimizing IRAT HO voice fall back (current reports should suffice) and this feature will be anyway pushed out with the advent of VoNR. We therefore propose to remove IRAT HO voice fall back from the list or move it to the lowest priority.

Regarding b) and c), we feel both are important and should be in scope. We might not need to prioritize one over the other.

Regarding d), we can prioritize some of the features such as MBS, RACH enhancements, slice to keep the WI load in check. Also, it needs to be clarified whether Sidelink Relays are to be considered as part of d)

Regarding e), we propose to remove it from the list of objectives. UE capability discussion (e.g., mandatory capability for essential cases) should be discussed post enabling features in the later stages of the WI as usual and Predictive QoS can be part of the AI/ML WID and should not belong to the SON/MDT WI.

Also, we propose to include an objective to optimize Unified Access Control (UAC) mechanism by collecting relevant statistics via the SON/MDT framework.

17 – Ericsson LM

For the SON enhancements, it is important to have good expert knowledge of the respective feature. It is also important to have the involvement of delegates that have followed previous SON discussions, so to ensure that solutions are in line with the design principles so far adopted. If a future SON enhancement work covers different and disconnected topics it becomes difficult to maintain this set of skills in discussions. This could lead to incoherent standardization of features with little benefits to performance.

With the above in mind, we are pro including IRAT HO voice fallback (a) and SON/MDT Rel-17 leftovers (details FFS), e.g. enhancements for NR-U, MR-DC CPAC and successful PSCell change report, and MRO for fast MCG recovery (b) in the Work Item.

Features like V2X and IAB are 'standalone' systems on their own that do not need to be treated in the SON WI because they have never been in the scope of SON. As an example, Interference coordination could also be considered as a SON feature, but it has always been handled in 3GPP with dedicated WIs. It would take a large amount of time and a different set of skills to develop such topics. Therefore, SON enhancements of IAB, NPN and V2X (c) should be handled as separate activities. We propose to remove them from the SON-MDT WI scope.

Of all the features listed in (d), only RACH enhancements (e.g., RACH partitioning) is common across multiple WIs and therefore it makes sense to look at SON enhancements of such a feature in the SON-MDT work. We have some sympathy towards MBS as LTE can be taken as baseline.

The predictive QoS referred in (e) is ideally suited in the AI-ML related work that is being studied in RAN3 SI. It is probably more suitable to keep the predictive QoS metrics and predictive KPIs related work in AI-ML work rather than in a SON-MDT work item. Note that there are similar proposals in SA2, to keep predictive QoS as an activity that is part of the AI/ML framework.

18 – China Mobile International Ltd

We share our views on the following points:

1. The current scope is too large, significant down-scope is needed. Based on the experience from Rel-16 to Rel-17 SONMDT WI. Even the optimization of some features having LTE as reference, e.g., MRO, MLB, RACH optimization, MDT, it still consumes a lot of time. It is expected that optimization of new NR features will be even more complex. Tangible commercial interests is a good principle to do the down-scope and based on this principle, the Rel-16 features does not necessarily take high priority than Rel-17 features.

2. It is not sensible to move the SON/MDT optimization for the features to the dedicated WI, since the objectives are quite different and the expertise needed for the delegates also varies. We should have a single WI to cover all the SON/MDT objectives.

3. With the above, the potential features in our view includes

Rel-17 leftovers (the very contentious topics in Rel-17 should not be continued in Rel-18), Rel-16 and Rel-17 new features, including NTN, SDT, slicing, MBS and root cause analysis and optimization for the behavior mismatch between UE expectation and NW action

The specific objectives can be formulated as below,

Support of data collection for SON features, including SON/MDT Rel-17 leftovers e.g. MR-DC CPAC and MRO successful PScell change report and optimization for Rel-16/Rel-17 new features, including NTN, SDT, slicing, MBS [RAN3, RAN2]

- Specification of the UE reporting necessary to enhance the network configuration [RAN2].
- Specification of the inter-node information exchange, including possible enhancements to S1/NG, X2/Xn, and F1/E1 interfaces [RAN3]

· Support of data collection for MDT features for identified use cases, including NTN, SDT, slicing, MBS and root cause analysis and optimization of the network for the behavior mismatch between UE expectation and NW action [RAN2, RAN3]

- Enhancement of logged and immediate MDT [RAN2, RAN3]
- Enhancement of reporting e.g. RLF and accessibility measurements, SDT reporting [RAN2, RAN3]

Note □ **Details of Rel-17 leftover could be further refined when the Rel-17 SON/MDT WI finishes**

19 – Deutsche Telekom AG

Generally, the selected topics and their order/priority are fine for us, i.e., having (a), (b), (c) first in case of down-prioritization.

We see no benefits in shifting SON/MDT aspects to related WIs as it is better to discuss and align the use cases in a common WI.

20 – LG Electronics France

Fine to consider the objectives (a),(b). For (c) and (d), we can only consider ‘very’ few features (including zero) as work scope, and otherwise, this WI would not be manageable. We think (e) is of low priority.

21 – TELECOM ITALIA S.p.A.

in addition to the previous comment, we support KDDI proposals 1 and 2

1. LTE MDT improvement (UE’s height location)
2. Enhancement/improvement MDT for Inter RAT (including coordination between LTE MDT and NR MDT)

22 – Verizon UK Ltd

The listed topics a, b, c, d and priority order is fine for us. In addition we also support KDDI proposals for MDT enhancements (LTE MDT improvement for UE’s height location and MDT enhancement for inter-RAT coordination). The objectives for SON and MDT should be considered separately.

23 – VODAFONE Group Plc

We support continued work on SON/MDT. The priority order of a (if not solved), b, c, d is fine, but any work for energy saving may need to be brought up the list.

24 – Intel

The objective is ok. Priority should be Rel17 leftovers, IRAT HO, NPN. Remaining items should be de-prioritized.

Feedback Form 2: Q1-2: Do you agree that RAN3 is the primary WG, and RAN2 is the secondary WG for this R18 SON/MDT enhancements WI?

1 – vivo Mobile Communication Co.

Agree

2 – InterDigital Germany GmbH

agree

3 – Guangdong OPPO Mobile Telecom.

Agree

4 – TELECOM ITALIA S.p.A.

agree

5 – Samsung R&D Institute UK

Agree

6 – ZTE Corporation

Agree

7 – KDDI Corporation

We are also fine with that.

8 – Lenovo (Beijing) Ltd

Agree

9 – CATT

Agree

10 – SHARP Corporation

Agree

<p>11 – Huawei Technologies France</p> <p>Yes, we see no issue to follow what we did for R17 SON/MDT WI.</p>
<p>12 – NEC Corporation</p> <p>Agree</p>
<p>13 – Nokia</p> <p>Agree</p>
<p>14 – Apple Benelux B.V.</p> <p>Agree</p>
<p>15 – Telia Company AB</p> <p>Agree</p>
<p>16 – China Mobile International Ltd</p> <p>Agree, we did the same from Rel-16 to Rel-17, it seems good exercise.</p>
<p>17 – Qualcomm Technologies Int</p> <p>Agree</p>
<p>18 – Ericsson LM</p> <p><i>This is typically how SON work has been developed and it has worked well so far. Hence we are positive to this working structure</i></p>
<p>19 – Deutsche Telekom AG</p> <p>Agree</p>
<p>20 – LG Electronics France</p> <p>Agree</p>
<p>21 – Verizon UK Ltd</p> <p>Agree</p>
<p>22 – VODAFONE Group Plc</p> <p>agree</p>
<p>23 – Intel</p> <p>Yes</p>

1.3 Moderator's Summary

Moderator's summary:

Proposal1) For this R18 SON/MDT enhancements WI, RAN3 is the primary WG, and RAN2 is the secondary WG.

During the email discussion, 3 companies propose to include Inter-system MDT (LTE & NR) in R18, however, it should be careful to introduce new feature especially on UE side for LTE, such requirements should be confirmed by companies firstly before introducing it in this WI.

Proposal2) Further clarification on Inter-system MDT (LTE & NR) is needed, e.g., motivation and benefits, standard impact.

For SONMDT Rel-17 leftovers, companies propose that only non-controversial SONMDT Rel-17 leftovers should be continued in Rel18 discussions, it seems reasonable.

Proposal3) Including SONMDT Rel-17 leftovers to R18 WI with the assumption that only non-controversial SONMDT Rel-17 leftovers should be continued in Rel18 discussion.

While for those R16/R17 new features, there is no consensus on whether to prioritize one over the other. Furthermore, 4 companies propose to move the SON/MDT related enhancements on those Rel-16/17 features to their respective WIs, while there also have opposite opinions.

All the features proposed as below:

NPN: 8 companies propose to take this feature as high priority. The solution is stable enough and the business deployment is foreseen, additionally there is no R18 WI on NPN, it can be included in R18 WI.

IAB/V2X/Side link: R17 discussion is still ongoing. Features like V2X and IAB are 'standalone' systems on their own, some company see the possibility to discuss SON/MDT enhancements of those features as separate activities in their respective WIs.

RACH enhancements: RACH enhancements is common across multiple WIs and this feature is essential to network performance, therefore it makes sense to look at SON enhancements of such a feature in the SON/MDT work.

MBS, Cov Enh, NTN, SDT, Slice, Energy Saving: For those features, R17 discussion is still ongoing. Whether more Rel-16/17 new features to be included in this WI can be decided later if R18 timeline is allowed.

Proposal4) Including NPN, RACH enhancements to R18 WI as the starting point, whether more Rel-16/17 new features need to be included in this WI can be decided later if R18 timeline is allowed.

2 Intermediate Round

Based on the discussion in the initial round, it seems more clarification on "IRAT ho voice fallback" and "Inter-system MDT (LTE & NR)" is needed in order to decide whether it should be included in this R18 WI or not after further discussion.

Feedback Form 3: Question 2-1: What's the issue and standard impact for the IRAT ho voice fallback case? Do you agree to include this in R18 SON/MDT WI?

1 – Lenovo (Beijing) Ltd

Inter-RAT handover from NR to E-UTRA for voice fallback is triggered when voice service is requested by UE but 5GC does not support VoNR. The gNB makes handover decision when receives Voice fallback indication from 5GC, and includes the voiceFallbackIndication IE in the MobilityFromNRCommand message. When Inter-RAT HO with voice fallback fails, the UE shall select a suitable E-UTRA cell in priority. The handover decision criteria of Inter-RAT HO with voice fallback is different with traditional Inter-RAT handover, which is driven by service not by coverage. Then, it is worthy to have failure reporting including voice fallback indication for handover failure detection and optimization. Then, network can differentiate the IRAT HO with voice fallback from the traditional Inter-RAT handover. Actually, This IRAT case has less specification impact. We support to include SON enhancements for Inter-RAT HO voice fallback in R18 since voice fallback is an important feature in 5G network initial deployment phase.

2 – TELECOM ITALIA S.p.A.

Agree to include

3 – KDDI Corporation

We also agree to include. IRAT ho voice fallback seems to be beneficial to operators, since at this moment many operators are not ready to introduce voice call on 5G spectrum especially TDD spectrum.

4 – Samsung R&D Institute UK

If included, the main work is MRO related for inter-RAT handover from NR to E-UTRA for voice fallback. We are fine to include it.

5 – vivo Mobile Communication Co.

We are open to have this included in R18 SON/MDT WI if it's the majority view, but proponents may need to detail the specific issues to be solved/objectives to be achieved so that WGs have a clear picture of what kind/extent of enhancements are expected.

6 – CATT

We are OK to include bullet.

7 – Apple Benelux B.V.

We agree with the issue description provided by Lenovo and support inclusion of the use case in the WI.

8 – ZTE Corporation

We support to introduce this user case in Rel-18.

9 – Nokia

The scenario described by Lenovo is an inter-system scenario. We are fine to include it in the R18 WI but propose to modify the wording of the objective as follows: "MRO enhancement for inter-system handover voice fallback".

<p>10 – Ericsson LM</p> <p>In case an IRAT handover from NR to E-UTRA for voice fallback reasons is initiated, but fails, the UE shall attempt to select a suitable E-UTRA cell to connect to after the failure . Including information on that the purpose of the IRAT handover was voice fallback in the IRAT handover failure report will help the network to improve the handover settings.</p>
<p>11 – Qualcomm Technologies Int</p> <p>The standard impact is not clear to us. It would be good to have this clarified from the proponents before discussing this further.</p>
<p>12 – Huawei Technologies France</p> <p>we are fine to include if it justifies, maybe the proponent should be clearer about the purpose, and try to elaborate a bit more what else needs to do, in addition to the existing RLF report for connection failure during inter-RAT/system HO.</p>
<p>13 – VODAFONE Group Plc</p> <p>we support this use case</p>
<p>14 – China Mobile International Ltd</p> <p>We see the explanation from Lenovo is valid, if included, we also suggest to change the wording as proposed by Nokia, <u>”MRO enhancement for inter-system handover voice fallback”</u></p>
<p>15 – Verizon UK Ltd</p> <p>Agree with Lenovo’s clarification and comments above. Voice fallback is an important feature in 5G network deployments and so we support to include SON enhancements for Inter-RAT HO voice fallback in R18.</p>

Feedback Form 4: Question 2-2: What’s the issue and standard impact for the Inter-system MDT (LTE & NR)? Do you agree to include this in R18 SON/MDT WI?

<p>1 – TELECOM ITALIA S.p.A.</p> <p>Agree to include. Mobility between LTE and NR is expected to be required in the mid / long term</p>
<p>2 – Intel</p> <p>We don’t see issue so far for inter-system MDT. Further justification is needed to include in R18 SON/MDT WI.</p>
<p>3 – InterDigital Germany GmbH</p> <p>If we include intersystem MDT topic given the impacts to RAN2 signalling (and possibly RAN3 signalling) there needs to be justification that it is needed.</p>
<p>4 – KDDI Corporation</p> <p>1. Issue to be addressed</p>

The current RAN2 specifications require UEs to clear logged data *VarLogMeasReport* upon receiving a logged measurement configuration in another RAT (TS36.331 Section 5.6.7 and TS38.331 Section 5.5a.2) but the current specification has no NR procedure to acquire the LTE logged data. So, operators have no choice to giving up the logged data and configure a new RAT measurement or giving up a new RAT measurement for the sake of the logged data of previous RAT. This is the issue we want to address in Rel-18 at least. We may want to include other enhancements such as LTE logged measurement configuration via gNB or NR measurement configuration via eNB which has EN-DC capability, but we also feel that it would be difficult considering the current SON/MDT scope is little bit broad.

2. Only applicable to the UE having both LTE and NR capability

We are also think that it's better to make the relevant changes limited to NR side to avoid LTE UE impacts.

5 – Samsung R&D Institute UK

Firstly we would like to clarify the scope of the proposal. It is for intra-system inter-RAT MDT enhancement or inter-system MDT?

In Rel-17, inter-RAT MDT is applied for MR-DC. Further improvement of intra-system inter-RAT MDT is possible. We are fine to consider further enhancement in Rel-18 e.g. to avoid reconfiguration in case of inter-RAT mobility.

For the inter-system, the MDT configurations are from two different core networks, the coordination between LTE and NR MDT within two different system seems not necessary. Further clarification on the scenario and benefit on inter-system inter-RAT MDT is needed.

6 – CATT

With the explanation from KDDI, it seems the topic is related to inter-RAT MDT configuration not inter-system. We are open to discuss this issue in Rel-18, however, to be accurate, we think it should be rephrased as inter-RAT MDT configuration

7 – Apple Benelux B.V.

We prefer to limit impacts to LTE UEs and therefore we do not support this use case.

8 – ZTE Corporation

We are not fully understand the issue described as KDDI:

”So, operators have no choice to giving up the logged data and configure a new RAT measurement or giving up a new RAT measurement for the sake of the logged data of previous RAT”.

For example, UE has valid LTE logged MDT report and access to NR, based on current specification, UE provide an indicator in e.g. RRCConnectionSetupComplete message. Based on this indicator, NR node start UEInformation procedure to retrieve LTE logged MDT report. After that, the NR node able to assign a new NR logged MDT for the UE. Therefore there seems no conflict during the inter RAT Handover.

9 – Ericsson LM

The discussion on inter system MDT has been started with contributions at RAN3-114e. The main issues are related to limitations at the UE to execute in parallel MDT configurations for multiple RATs/systems. For example, only one Logged MDT configuration (for a single RAT) can be run by a UE at a given time. From a network point of view there are not many pending issues. The network should signal to the serving RAN nodes all relevant MDT configurations for the UE (e.g. configuration for each serving RAT), but this is already allowed by the current standard. Possible error messages could be triggered if the appropriate

MDT configurations per RAT are not made available to the serving RAN, but this is the subject of the ongoing discussion in RAN3.

10 – Qualcomm Technologies Int

Needs clarification. Inter-system MDT has already been discussed indirectly in the context of logged MDT for MR-DC in Rel-17. There were proposals on whether UE should have two simultaneous logged MDT configurations i.e, one configuration per RAT, in order to avoid overwriting the logged MDT configuration upon moving to a different RAT. But this was not agreed in Rel-17 due to no consensus. So is the proposal is to open up the previous discussion again in Rel-18 or are there any other enhancements proposed as part of this inter-system MDT?

Also, don't think there is any issue of overwriting configurations with immediate MDT and enhancements needed for inter-system immediate MDT.

11 – Huawei Technologies France

In R16/R17 MDT, there is only one RAT-specific logged measurement configuration for Logged MDT in the UE. It means the UE only have one logged MDT configuration.

If we are talking the enhancement that the UE can store two MDT configurations from different RATs, RAN2 discussed it in R16/R17 MDT. It was not agreed because it will increase the memory requirement of the UE (Currently the max memory for MDT logging is 64K. If UE need to store the logs of two RATs, UE need to increase the memory). In our understanding, The network can collect the MDT results from a lot of UEs. One RAT can select the UE that is not configured the MDT configuration of other RAT to collect the MDT results. Is the intention is to revisit the discussion and conclusion?

In addition, does this objective also intend to discuss potential enhancements to logged MDT accross different RAT? If so, maybe it is better to be clear on this point.

12 – VODAFONE Group Plc

Assuming that the KDDI problem description is not already solved, then we see that work in this area would be useful

13 – LG Electronics France

We see that this as general enhancements for logged MDT and can increase the chance of intended data collection. What matters, however, seems to be the scope of the WI. If SONMDT WI scope is limited to non-controversial Rel-17 leftovers and very few Rel-16/17 new features (including zero), it seems acceptable to consider inter-system MDT, but not otherwise.

14 – Verizon UK Ltd

Mobility between LTE and NR is expected to be required in the short/ mid / long term. So we support inclusion of this R18 SON/MDT WI.

The objectives of this R18 WI are narrowed down as below:

Support of data collection for SON features, including Rel-17 leftovers e.g. MR-DC CPAC and MRO successful PScell change report, fast MCG recovery, and Rel-16/17 new features: NPN, RACH enhancements [RAN3, RAN2]

- Specification of the UE reporting necessary to enhance the network configuration [RAN2].

- Specification of the inter-node information exchange, including possible enhancements to interfaces [RAN3]

Support of data collection for MDT features for identified Rel-16/17 features: NPN, RACH enhancements [RAN2, RAN3]

- Enhancement of logged and immediate MDT [RAN2, RAN3]
- Enhancement of reporting [RAN2, RAN3]

If needed, co-operate with RAN1, SA2, SA5, CT4. SA5 changes on the MDT/trace configuration will be taken into account.

Note1: Whether to include LTE MDT improvement (UE's height location) can be decided later based on R17 progress in RAN2.

Note2: Details of Rel-17 leftover could be further refined when the Rel-17 SON/MDT WI finishes e.g., NR-U enhancements.

Note3: Whether more Rel-16/17 new features to be included in this WI can be decided later if R18 timeline is allowed.

Feedback Form 5: Question 2-3: Do you agree the above objectives for R18 SON/MDT WI?

1 – Lenovo (Beijing) Ltd

In general, we are fine with the listed objectives above.

Considering SON/MDT enhancements for RACH enhancements, as rapporteur summarized, RACH enhancements is applied across multiple WIs e.g. RAN slicing, SDT, CovEnh and etc, it would be better for us to clarify which feature (e.g. RAN slicing, SDT, CovEnh, RedCap) is included in the scope of SON/MDT enhancements for RACH optimization. For example, since SDT is an important feature to be deployed and has optimization requirements, if SDT is not included in SON/MDT enhancements for RACH optimization, maybe we can support them in separate bullets, e.g. MDT enhancements for SDT.

Besides NPN and RACH enhancements, NTN should also be included in SON/MDT enhancements Rel-16/17 new features. Since in R17 NTN, besides radio link quality, the distance between UE and the source cell/target cell, and the serving time duration of the source cell/target cell are also considered for mobility (e.g. traditional handover, CHO), enhanced RLF report needs to be considered to enable the network optimize NTN specific mobility configurations.

2 – TELECOM ITALIA S.p.A.

In general fine, but it would be better to have a clear picture of what is included in Rel 17 and which Rel 15/16/17 features are not supported before freezing the objectives

3 – Intel

We are ok with the objectives

4 – InterDigital Germany GmbH

We are ok with the objectives basically, agree with Lenovo that NTN should be included in the R17 new features supported for SON, but are willing to let R17 SON WI complete to formalize the list of supported features. Also agree that we should clarify what is in RACH enhancements to avoid extra sorting out during the actual working group discussions.

5 – KDDI Corporation

In general we are fine with the proposed objectives as a base line. “as a base line” I mean on top of the objectives, if we have consensus on inter-RAT enhancements, then it should be updated accordingly.

6 – Samsung R&D Institute UK

It’s in good shape after the initial round of discussion. Two comments here (other parts are fine)

- V2X: Failure event should be avoided in best effort basis. We see the requirements to have V2X in the scope from deployment point of view. Sidelink relay, as a applicable scenario for V2X, may need optimization to ensure the reach ability and service continuity of the remote UE.
- RACH optimization is continued to be controversial during Rel-16 and Rel-17 discussions. There is no much fancy idea except the blocking point. Probably RACH enhancement should be removed from the list.

7 – vivo Mobile Communication Co.

We are generally ok with the above objectives, also we share the similar view with the comments that the clarification on which feature to be included for RACH optimization is needed.

8 – CATT

We are generally OK with the objectives. For the new features to be supported, it is OK to take the features listed here as the start point and further check whether other features should also be considered at a late stage.

One more comment on the MDT part. There are two sub bullets for MDT topic which includes enhancement of logged and immediate MDT and enhancement of reporting. From our point of view, the second subbullet is one aspect of the first subbullet i.e. logged and immediate MDT include both MDT configuration and report. With that, we propose to update the two bullets as follows:

Enhancement of logged and immediate MDT configuration [RAN2, RAN3]

Enhancement of logged and immediate MDT reporting [RAN2, RAN3]

9 – Apple Benelux B.V.

Yes, we are OK with the proposed objectives. We have some sympathy for the NTN use case, but we must be careful not to inflate the WI scope too much.

10 – ZTE Corporation

We are generally ok with the above objectives.

11 – Nokia

We believe that the text needs restructuring:

- For the first item (support of data collection for SON), the text includes a list of R17 leftovers and R16/R17 new features, followed by sub-bullets listing enhancements. However, it is unclear which enhancements are “mapped” to which features. In the extreme, it could be interpreted that every feature requires every enhancement. We believe that the objectives should be more precise, i.e. the text should clearly identify what SON enhancement(s) are needed for each individual feature.
- For the second item (support of data collection for MDT), the same issue exists.

Then, we propose to include an additional objective to support enhancements for per-beam MRO, which would allow e.g. to optimize different cell individual offsets for different areas of the same cell boundary.

12 – Ericsson LM

We suggest to follow the guidelines taken also in other discussions, e.g. IAB/VMR, and to remove from the objective the wording “Rel17 left overs”. Instead we propose to spell out the exact objectives to address. These objectives can be refined closer to the start of Rel18. Keeping an objective that mentions Rel17 leftovers gives freedom to claim that any topic that did not conclude in Rel17 or for which consensus was not achieved is eligible for work in Rel18.

For support of data collection for SON features, NR-U should be added to the list.

For support of data collection for MDT, RACH enhancements should be removed, as the support needed here is expected to be data collection for SON only.

Even though not mentioning Rel17 it should be clear from the objective that the ‘left-over’ features (e.g. MR-DC CPAC and MRO successful PScell change report, fast MCG recovery, NR-U) have the highest priority. Among the new features, it should be clear that RACH enhancements is first priority and NPN specific enhancements should be taken as second priority.

13 – Qualcomm Technologies Int

Overall the scope looks like fine. We also propose to include i) SON/MDT enhancements for MBS (to have parallel with LTE MBMS MDT) and ii) MDT enhancements with slice information (e.g., to enhance logged MDT considering slice-specific reselection) as part of the scope.

Regarding the proposal to include UE’s height location (this is already included as part of LTE specifications) for NR MDT, we believe this should not be in the scope of SON/MDT WI and instead should be decided by the Rel-17 NTN WI. Even if Rel-17 agrees to include this UE measurement, there aren’t any SON/MDT specific enhancements and will be implicitly supported. We therefore propose to remove this bullet in the scope.

Also, as highlighted in initial round, we propose to include an objective to optimize Unified Access Control (UAC) mechanism by collecting relevant statistics via the SON/MDT framework.

14 – Huawei Technologies France

In general we are fine. But we also see that for new R17 features to be consider for SON/MDT, just NPN, RACH were explicitly listed, we understand we don’t have enough time to identify/investigate which features to be in or out, thus we would like to make the note to be a bit clearer, like “More Rel-16/17 new

features, i.e. SL, V2X, IAB, are not precluded in this WI which can be decided later during WI phase, taking R18 timeline into account.”

15 – China Mobile International Ltd

In general, we are fine with the objective. For the Rel-17 features, we also propose to add the objective MRO enhancement for NTN at SON part and logged MDT enhancement with slicing and SDT information at MDT part.

Also the RACH part can be further clarified, only controversial parts are left in Rel-16/17, does this mean we intend to address the RACH configuration issues for redcap, slicing, SDT, etc?

16 – LG Electronics France

We think MDT for RACH enhancements can be included since it will benefit several features introduced in Rel-16 and Rel-17, which uses dedicated RACH resources/parameters. For NPN, however, we do not think it is relevantly more important than others. We are fine with having RACH enhancements only.

17 – Verizon UK Ltd

We are fine with the objectives as listed by the moderator.

2.1 Moderator’s Summary

Moderator’s Summary:

According to the feedback received from the intermediate round of email discussion, majority companies are fine to include “MRO enhancement for inter-system handover voice fallback” for SON, while there is no consensus on “the Inter-system MDT (LTE & NR)”, further clarification are requested by majority companies, e.g., the scenario and issues (e.g., inter-RAT intra-system or inter-system), overlapping with ongoing discussion, UE impacts, and benefits. The proponents are welcome to provide clarification/feedback on the questions raised by companies in the intermediate round.

Proposal5: It’s proposed to include “MRO enhancement for inter-system handover voice fallback” in Rel-18 SON/MDT WI.

While for including “UE’s height location (this is already included as part of LTE specifications) for NR MDT”, one company believes this should not be in the scope of SON/MDT WI and instead should be decided by the Rel-17 NTN WI. And no additional SON/MDT specific enhancements foreseen if it is approved in Rel-17.

For R17 left-over on NR-U, the R17 discussion is still on-going in RAN3, not sure whether and what left-over will be at the end of R17, therefore, a note seems enough.

For RACH enhancements, the assumption that only non-controversial SONMDT Rel-17 leftovers should be continued in Rel18 discussions is valid, and since it is a common feature, which means it also covers any potential RACH enhancements needed for redcap, slicing, SDT, etc.

Furthermore, we don’t have enough time to investigate on details which features to be in or out during RAN email discussion, in order to avoid the endless debates on the R16/17 features to be included/excluded, therefore, the moderator propose a general description as “More Rel-16/17 new features are not precluded in this WI which can be decided later during WI phase, taking R18 timeline into account”.

Proposal6: In order to avoid the endless debates on the R16/17 features to be included, the moderator proposes a general description as “More Rel-16/17 new features are not precluded in this WI which can be decided later during WI phase, taking R18 timeline into account”.

The objectives of this R18 WI are refined as below:

Support of data collection for SON features, including “left-over” features (e.g. MR-DC CPAC and MRO successful PScell change report, fast MCG recovery) and MRO enhancement for inter-system handover voice fallback [RAN3, RAN2]

- Specification of the UE reporting necessary to enhance the network configuration [RAN2].

- Specification of the inter-node information exchange, including possible enhancements to interfaces [RAN3]

Support of SON/MDT enhancements for RACH enhancements, NPN [RAN3, RAN2]

If needed, co-operate with RAN1, SA2, SA5, CT4. SA5 changes on the MDT/trace configuration will be taken into account.

Note1: Details of Rel-17 leftover could be further refined when the Rel-17 SON/MDT WI finishes e.g., NR-U enhancements.

Note2: More Rel-16/17 new features are not precluded in this WI which can be decided later during WI phase, taking R18 timeline into account.

3 Final Round

The following R18 SON/MDT WID draft is proposed as the baseline to be approved in Dec:

Justification

Self-Organising Networks (SON), which encompasses solutions for network self-configuration and self-optimisation, was introduced in LTE to support deployment of the system and performance optimization.

Due to the time constrains, some of the leftover features in the Rel-17 SON and MDT WID could be considered in Rel-18. Only non-controversial SONMDT Rel-17 leftovers should be continued in Rel18. In addition, taking the tangible commercial interests and the stability and technological maturity into account, SON/MDT enhancements for some Rel-16/Rel-17 new features could also be considered in Rel-18.

Objective

Support of data collection for SON features, including “left-over” features (e.g. MR-DC CPAC and MRO successful PScell change report, fast MCG recovery) and MRO enhancement for inter-system handover voice fallback [RAN3, RAN2]

- Specification of the UE reporting necessary to enhance the network configuration [RAN2].

- Specification of the inter-node information exchange, including possible enhancements to interfaces [RAN3]

Support of SON/MDT enhancements for RACH enhancements, NPN. [RAN3, RAN2]

If needed, co-operate with RAN1, SA2, SA5, CT4. SA5 changes on the MDT/trace configuration will be taken into account.

Note1: Details of Rel-17 leftover could be further refined when the Rel-17 SON/MDT WI finishes e.g., NR-U enhancements.

Note2: More Rel-16/17 new features are not precluded in this WI which can be decided later during WI phase, taking R18 timeline into account.

Feedback Form 6: Question 3-1: Do you agree the above WID draft as the baseline to be approved for R18 SON/MDT WI?

<p>1 – Intel</p> <p>We are ok with the objectives.</p>
<p>2 – Nokia</p> <p>The above text is fine for now, but further cleanup e.g. at RAN#94 would be beneficial to make the text more clear and precise. Also, we should avoid the mechanism proposed in Note 2, i.e. inclusion of SON/MDT support for additional features after the WI has already started.</p>
<p>3 – InterDigital Germany GmbH</p> <p>Agree with Nokia</p>
<p>4 – CATT</p> <p>We are generally OK with the objectives. One comment on note 2: We think that inclusion of more features could be considered when Rel-17 WI finishes instead of after the Rel-18 WI starts.</p>
<p>5 – Lenovo (Beijing) Ltd</p> <p>In general, we agree with the above WID draft as the baseline for R18 SON/MDT WI. If R18 time is allowed, CHO in NTN should also be included in SON/MDT enhancements since some new execution conditions have been introduced, and compared with R17 MRO for CHO, most mechanism can be reused, it would not cause much time to consider SON enhancements for CHO in NTN in R18.</p>
<p>6 – ZTE Corporation</p> <p>Moderator’s feedback to the question raised above:</p> <p>Update the description of Note2 as below:</p> <p>Note2: More Rel-16/17 new features are not precluded in this WI which can be decided later when Rel-17 finishes, taking R18 timeline into account.</p>
<p>7 – KDDI Corporation</p> <p>In general, we are fine with the proposed objectives, but LTE MDT improvement (UE’s height location) is for terrestrial LTE UE, not for NTN. So, if it is agreeable to everyone, then we want to add the following sentence again in the next version.</p> <p>Note1: Whether to include LTE MDT improvement (UE’s height location) can be decided later based on R17 progress in RAN2</p>

8 – Samsung R&D Institute UK

We are fine for the WID draft except the RACH part. Clarification on RACH part is needed. As observed, the RACH optimization has been controversial during Rel-16 and Rel-17 discussion. If those cannot be concluded in Rel-17, continuation in Rel-18 will not help but taking time. Some detail description on RACH enhancement is needed e.g. to address RACH enhancement for slicing, redcap or others?

9 – vivo Mobile Communication Co.

Agree

10 – ZTE Corporation

We are ok with the objectives.

11 – Apple Benelux B.V.

We are generally OK with the WID, under the assumption that it will be further revised before approval. In particular, we want notes and "e.g." removed and instead have clear and well defined objectives.

12 – Verizon UK Ltd

We are in general fine with the WID draft. But it needs another round of revision taking multiple comments above into account. We support including SON enhancements to CHO for NTN.

13 – LG Electronics France

We are fine in general with the WID but with the following comments:

1) On the NPN-related SON/MDT enhancements, we would like to understand why this is more important and urgent than others and what specific enhancements are really required. We also wonder if companies have a similar understanding of the justification and expected enhancements. If this is not clear to companies, it seems premature to include NPN given that many other candidate features could be alternatively included.

2) On the second Note, we doubt that this approach works well. This approach makes it difficult to estimate the expected amount of work, and then it will be difficult to set up a TU budget, which should be based on the expected amount of work. So we would like to draw a clear line until and including the next RP.

14 – TELECOM ITALIA S.p.A.

Support the proposal and clarification from KDDI

15 – Ericsson LM

In general we are okay with the topics included in the WID draft objective.

One of the objectives listed is 'Specification of the UE reporting necessary to enhance the network configuration [RAN2]'. In order to avoid a too wide interpretation of the term 'network configuration', we propose to change this to 'Specification of the UE reporting necessary to enhance the mobility parameter tuning [RAN2]'.

We still think it is better to spell out the exact objectives to address instead of using the general term 'left-overs'. As the judgement of what is a 'non-controversial SON/MDT Rel-17 leftover' is subjective, this

will still result in freedom to claim that any topic that did not conclude in Rel-17, or for which consensus was not achieved is eligible for work in Rel-18.

Details to be further refined would supposedly include all the 'left-over features', and therefore we see no reason to separate them by referring to only MR-DC CPAC, MRO successful PScell change report, and fast MCG recovery (but not NR-U) in the first paragraph of the objective, and referring to NR-U only (but not MR-DC CPAC, MRO successful PScell change report, or fast MCG recovery) in Note-1.

As the scope of the WI could become large, we would also like the priority order of the objectives of the WI to be clarified, in line with the following:

1. 'Left-over features' (i.e. MR-DC CPAC and MRO successful PScell change report, fast MCG recovery, NR-U), and MRO enhancement for inter-system handover voice fallback.
2. Support of SON/MDT enhancements for RACH enhancements
3. Support of SON/MDT enhancements for NPN

16 – Huawei Technologies France

In general the objectives look fine, but just some small updates:

1. Suggest to remove "SA5 changes on the MDT/trace configuration will be taken into account.", it is a bit earlier to list such concrete mechanism without technical discussions.
2. Suggest to update "Note:..." to "Editor's Note:..."
3. After a second consideration, we would suggest to remove "taking R18 timeline into account" in Note2, when time for us to discuss potential new features to consider for SON/MDT, maybe we see the importance for the industry, e.g. vertical, then we need to manage it, at least it is a bit earlier to consider this as a restriction.

17 – China Mobile International Ltd

We are fine in general with the WID draft, with the following comments:

1. Remove "SA5 changes on the MDT/trace configuration will be taken into account", this sentence "If needed, co-operate with RAN1, SA2, SA5, CT4" seems enough.

18 – China Mobile International Ltd

We are fine in general with the WID draft, with the following comments:

1. Remove "SA5 changes on the MDT/trace configuration will be taken into account", the first sentence "If needed, co-operate with RAN1, SA2, SA5, CT4" seems enough.
2. To make the WI more managable, we think whether to add the Rel-16/Rel-17 new features should be decided before the Rel-18 starts, e.g., before or at RAN #95 meeting. So the second note can be changed to "Note2: inclusion of more Rel-16/17 new features are decided before Rel-18 WI starts"

For the justification part. we propose to add one more sentences as below:

Self-Organising Networks (SON), which encompasses solutions for network self-configuration and self-optimisation, was introduced in LTE to support deployment of the system and performance optimization. **SON for NR was first introduced in Rel-16 and further enhanced in Rel-17.**

Due to the time constrains, some of the leftover features in the Rel-17 SON and MDT WID could be considered in Rel-18. Only non-controversial SONMDT Rel-17 leftovers should be continued in Rel18. In addition, taking the tangible commercial interests and the stability and technological maturity into account, SON/MDT enhancements for some Rel-16/Rel-17 new features could also be considered in Rel-18.

19 – Qualcomm Technologies Int

We can agree with the text as a baseline.

20 – Qualcomm Technologies Int

Additionally, and to KDDI's comment, we have no issue with the reintroduction of the note mentioned by KDDI (after some further clarification)

Feedback Form 7: Question 3-2: Further clarification on the questions raised in the intermediate round of “the Inter-system MDT (LTE & NR)” case?

1 – KDDI Corporation

Let me comment below based on the feedbacks from the companies.

Motivation

Huawei commented the network can collect the MDT results from a lot of UEs. But actually it is not the case at least in our network. Because MDT requires user consent based on personal Information Protection Law, the number of the UEs which can offer MDT results is often limited.

Possible enhancement

Based on some requests for clarification, we list up three candidates below. We would like to include #1 at least. We are also supportive to #2 and #3, but we guess probably #2 and #3 impact on the current specification a lot, so we need to check work load whether we can do it under the limited Rel-18 time frame.

#1. NR UR Information enhancement to retrieve LTE LogMeasReport

NR UR Information procedure is changed so that a gNB can request a UE to report VarLogMeasReport which the UE logged in LTE, and the UE reports LTE VarLogMeasReport to the gNB.

#2. NR LoggedMeasurementConfiguration enhancement to configure LTE LoggedMeasurementConfiguration

NR LoggedMeasurementConfiguration is changed so that a gNB can configure LTE LoggedMeasurementConfiguration. It may require RAN3 work on an interface

#3. Two simultaneous logged MDT configurations

This is the feature discussed in Rel-16/17. UE can be configured with two logged measurement configurations, one over LTE and another over NR, without SN configuration. LTE and NR logged MDT configurations are independent, and UE performs logging based on the logged MDT configuration of the same RAT its camps (R2-2106037).

2 – Verizon UK Ltd

We support the enhancements proposed by KDDI above for inter system MDT.

3 – TELECOM ITALIA S.p.A.

we support KDDI

4 – Ericsson LM

As pointed out by some companies, the discussion on inter system MDT has been started in RAN3 and the main issues are related to limitations at the UE to execute in parallel MDT configurations for multiple RATs/systems. From a network point of view there are not many pending issues, also see our reply to Q2-2. Since most companies want further clarification on the topic, we propose not to include anything in the WID as of now. Any specific objective on inter system MDT can be revisited closer to Rel-17 completion, when we will know if the inter system/inter RAT problems have been solved at least in part.

5 – Huawei Technologies France

As commented, if we are talking about two sets of MDT configurations, this was dropped before, not sure if we should re-open the discussion; if we are talking about MDT report should cover both RATs, e.g. NR MDT task could be configured to cover MDT measurements on LTE and this task could even be valid if UE moves under LTE, we think this could be discussed.

6 – VODAFONE Group Plc

The KDDI comments seem reasonable

7 – Qualcomm Technologies Int

Enhancement to logged MDT to avoid reconfiguration in case of intra-system inter-RAT mobility, e.g., by defining an inter-RAT logged MDT doesn't seem so useful due to - i) limited local optimization scope at RAN (inter-RAT logged MDT will only avoid reconfiguration but won't have any local optimization goals at target node unless propagated to source node) and ii) would need enhancement to LTE logged MDT as late as Rel-18.

Also, it seems unnecessary to define inter-system MDT (i.e., MDT configurations from two different core networks) as this requires the coordination between the two systems and cross-RAT logged MDT configurations (i.e., LTE logged MDT configuration via gNB or NR logged MDT configuration via eNB) as proposed by KDDI.

4 Conclusion

Considering companies still have different views on “the Inter-system MDT (LTE & NR)” case, more discussion is needed.

According to the feedback from the final round of email discussion, the following conclusions are proposed:

Conclusion1) The RAN3 leading R18 SON/MDT WI to be approved in Dec, while RAN2 is the secondary responsible WG.

Conclusion2) Take the draft WID below as the baseline to be approved:

4 Justification

Self-Organising Networks (SON), which encompasses solutions for network self-configuration and self-optimisation, was introduced in LTE to support deployment of the system and performance optimization. SON for NR was first introduced in Rel-16 and further enhanced in Rel-17.

Due to the time constrains, some of the leftover features in the Rel-17 SON and MDT WID could be considered in Rel-18. Only non-controversial SONMDT Rel-17 leftovers should be continued in Rel18. In addition, taking the tangible commercial interests and the stability and technological maturity into account, SON/MDT enhancements for some Rel-16/Rel-17 new features could also be considered in Rel-18.

4 Objective

The objective of this work item is to specify data collection enhancement in NR for SON/MDT purpose. The specific objectives of this work are:

- Support of data collection for SON features, including “left-over” features (i.e. MR-DC CPAC and MRO successful PScell change report, fast MCG recovery, NR-U) and MRO enhancement for inter-system handover voice fallback [RAN3, RAN2]
- Specification of the UE reporting necessary to enhance the mobility parameter tuning [RAN2].
- Specification of the inter-node information exchange, including possible enhancements to interfaces [RAN3]
- Support of SON/MDT enhancements for RACH enhancements, NPN. [RAN3, RAN2]

If needed, co-operate with RAN1, SA2, SA5, CT4.

Editor’s Note1: Details of Rel-17 leftover could be further refined when the Rel-17 SON/MDT WI finishes.

Editor’s Note2: Whether to include LTE MDT improvement (UE’s height location) can be decided later based on R17 progress in RAN2.

Editor’s Note3: More Rel-16/17 new features are included in this WI which can be decided later after Rel-17 SON/MDT WI finishes.