**3GPP TSG RAN meeting #88-e RP-20xxxx**

Online, 26th June-3rd July, 2020

**Source: Rapporteur (CMCC, Ericsson)**

**Title: Revised WID on enhancement of data collection for SON/MDT in NR and EN-DC**

**Document for: Approval**

**Agenda Item: 9.10.14**

3GPP™ Work Item Description

For guidance, see [3GPP Working Procedures](http://www.3gpp.org/About/WP.htm), article 39; and [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm).
Comprehensive instructions can be found at <http://www.3gpp.org/Work-Items>

# Title: **New WID on enhancement of data collection for SON/MDT in NR**

## Acronym: NR\_ENDC\_SON\_MDT\_enh-Core

## Unique identifier: [860053](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=840191)

NOTE: For new WIs/SIs leave the Unique identifier empty but you may make a proposal for an Acronym.

 If this is a RAN WID including Core and Perf. part, then Title, Acronym and Unique identifier refer to the feature WI.

 Please tick (X) the applicable box(es) in the table below:

 Either:

|  |  |
| --- | --- |
| **This WID includes a Core part** | X |
| **This WID includes a Performance part** |  |

 or:

|  |  |
| --- | --- |
| **This WID includes a Testing part** |  |
| **and it addresses the following 3GPP work area:** | **Radio Access** |  |
| **Core Network** |  |
| **Services** |  |

## 1 Impacts

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Affects:** | UICC apps | ME | AN | CN | Others (specify) |
| **Yes** |  | x | x |  |  |
| **No** | X |  |  |  |  |
| **Don't know** |  |  |  | X |  |

## 2 Classification of the Work Item and linked work items

### 2.1 Primary classification

|  |  |
| --- | --- |
| X | Feature |
|  | Building Block |
|  | *Work Task* |
|  | Study Item |

NOTE: Normally, Core/Perf./Testing parts in RAN WIDs are Building Blocks. Only if they are under an SA or CT umbrella, we define them as work tasks. If you are in doubt, please contact MCC.

### 2.2 Parent and child Work Items

|  |
| --- |
| Parent and child Work Items  |
| Unique ID | Title | Nature of relationship |
|  |  |  |

NOTE: RAN agreed some time ago, that it describes the feature WI + Core/Perf. part WI or Testing part WI in one WID. Therefore the table above should just include the feature WI Unique ID and title and Nature of relationship is "parent WID".

### 2.3 Other related Work Items and dependencies

|  |
| --- |
| Other related Work Items (if any) |
| Unique ID | Title | Nature of relationship |
| 801000 | Study on RAN-centric Data Collection and Utilization for LTE and NR | Preceding Study Item |
| 840091 | SON/MDT support for NR | Preceding Work Item |

NOTE: Classical examples: List a preceding SI or a preceding WI (e.g. if you further enhance a topic). Also related or dependent WIs in other TSGs should be indicated.

**Dependency on non-3GPP (draft) specification**:

## 3 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. The first SON features, PCI allocation and Automatic Neighbour Relations (ANR) were introduced already in Rel.8 (while the term "SON" was introduced in Rel-9). Success of these two features encouraged further study on the topic and resulted in a Rel.9 work item that eventually enabled 3 SON features: Mobility Robustness Optimisation (MRO), Mobility Load Balancing (MLB) and RACH optimisation. The two first features, MRO and MLB, turned out to be key enablers of LTE and they were further enhanced in following releases to match increasing LTE complexity. Besides ANR, MRO, MLB and RACH optimisation, also other features enabling particular aspects of network self-optimisation were discussed and enabled in separate SIs/WIs: Minimization of Drive Tests (MDT), Energy Saving (ES), interference cancelation (ICIC, eICIC), TDD UL/DL traffic adaptation (eIMTA), collaborative multi-point operation (CoMP), etc.

The study item 801000 “Study on RAN-centric Data Collection and Utilization for LTE and NR” studied use cases of SON/MDT and other use cases related to data collection and utilization, and identified potential solutions for these use cases. The studies use LTE solutions as baseline and take the NR new architectures and features into account, e.g., MR-DC, CU-DU split architecture, beam, inactive state, etc. The feasibility check of L1/L2 measurements specified in SA5 TS 28.552 was also accomplished. However, due to limited time, only a subset of potential SON/MDT functions and initial considerations are studied in 801000.

Moreover, due to the time constrains, it seems impossible to accomplish all the objectives listed in the Rel-16 SON and MDT WID. Some of the leftover features could be considered in Rel-17, potentially including PCI selection, energy efficiency, MDT for MR-DC, RACH Optimisation enhancements, enhancement to UE reports for mobility optimisation, etc.

Therefore, this WI tackles the leftover use cases and further enhancement of SON/MDT, including leftover of Rel-16 SI/WIs, e.g., CCO, energy saving, Successful HO reports, etc, enhancement of R16 new features enabled by data collection, e.g. 2-step RACH, mobility enhancements.

## 4 Objective

### 4.1 Objective of SI or Core part WI or Testing part WI

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 CCO, inter-system inter-RAT energy saving, inter-system load balancing, 2-step RACH optimization, mobility enhancement optimization, and leftovers of Rel-16 SON/MDT WI (PCI selection, energy efficiency (OAM requirements), Successful Handovers Reports, UE history information in EN-DC, load balancing enhancement, MRO for SN change failure, RACH Optimisation 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 2-step RACH optimization and leftovers of Rel-16 SON/MDT WI (MDT enhancements and MDT for MR-DC) [RAN2, RAN3, RAN4]
* Enhancement of logged and immediate MDT (including coexistence with IDC) [RAN2, RAN3]
* Enhancement of reporting e.g. RLF and accessibility measurements, Successful Handover reporting [RAN2, RAN3].
* Specification of MDT for MR-DC [RAN2, RAN3, RAN4]
* Specification of L2 measurements, if needed [RAN2, RAN3]

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

### 4.2 Objective of Performance part WI

NOTE: Leave empty if the WI proposal does not contain a RAN performance part.

### 4.3 RAN time budget request (not applicable to RAN5 WIs/SIs)

NOTE: For all RAN related WIs/SIs which are not led by RAN WG5 the WI/SI rapporteur has to fill out the attached Excel table to request time budgets for corresponding RAN WG meetings.
The Excel table has to be filled out for all affected RAN WGs and up to the target date of the WI/SI.
One time unit (TU) corresponds to ~ 2 hours in the meeting.
If no TU is needed leave the field empty otherwise enter a number in the field.

 For revisions of already approved WI/SI descriptions: Please remove the Excel table from the WID/SID's zip file. The time budgets are already recorded. If you want to modify them, then this has to be done via the status report and not via a revised WID/SID.

 If this WID is covering Core and Performance part, then please fill out one line for each of them in the attached Excel table.

**additional comments to the time budget request in the attached Excel table:**

## 5 Expected Output and Time scale

|  |
| --- |
| **New specifications** *{One line per specification. Create/delete lines as needed}* |
| Proposed Spec no. or series | Type (see note 1)  | Title | For info at TSG#  | For approval at TSG# | Remarks |
|  |  |  |  |  |  |

Note 1: Only TSs may contain normative provisions. Study Items shall create or impact only TRs.
"Internal TR" is intended for 3GPP internal use only whereas "External TR" may be transposed by OPs.

NOTE: If this is a RAN WID including Core and Perf. part, then all new Core part specs have to be listed first and then all new Perf. part specs. Indicate "Core part" or "Perf. part" under Remarks for each spec.
By default a new specs can only be new for one of both parts.

|  |
| --- |
| **Impacted existing TS/TR** *{One line per specification. Create/delete lines as needed}* |
| TS/TR No. | Description of change  | Target completion plenary# | Remarks |
| 38.300 | Support of enhancement of data collection for NR | RAN#93 | Core part |
| 37.320 | Support of MDT for NR | RAN#93 | Core part |
| 38.314 | Support of L2 measurements for NR | RAN#93 | Core part |
| 38.306 | Support of enhancement of data collection for NR | RAN#93 | Core part |
| 38.331 | Support of enhancement of data collection for NR | RAN#93 | Core part |
| 38.401 | Support of enhancement of data collection for NR | RAN#93 | Core part |
| 38.410 | Support of enhancement of data collection for NR | RAN#93 | Core part |
| 38.413 | Support of enhancement of data collection for NR | RAN#93 | Core part |
| 38.420 | Support of enhancement of data collection for NR | RAN#93 | Core part |
| 38.423 | Support of enhancement of data collection for NR | RAN#93 | Core part |
| 38.460 | Support of enhancement of data collection for NR | RAN#93 | Core part |
| 38.463 | Support of enhancement of data collection for NR | RAN#93 | Core part |
| 38.470 | Support of enhancement of data collection for NR | RAN#93 | Core part |
| 38.473 | Support of enhancement of data collection for NR | RAN#93 | Core part |
| 37.340 | Support of enhancement of data collection for NR | RAN#93 | Core part |
| 36.413 | Support of enhancement of data collection for NR | RAN#93 | Core part |
| 36.423 | Support of enhancement of data collection for NR | RAN#93 | Core part |
| 38.133 | Support of enhancement of data collection for NR | RAN#93 | Core part |
| 36.133 | Support of enhancement of data collection for NR | RAN#93 | Core part |

NOTE: If this is a RAN WID including Core and Perf. part, then all new Core part specs have to be listed first and then all new Perf. part specs. Indicate "Core part" or "Perf. part" under Remarks for each spec.
If an existing spec is affected by both (Core part and Perf. part), then it has to be listed twice with appropriate approval dates.

## 6 Work item Rapporteur(s)

**Liu Liang, CMCC,** **liuliang@chinamobile.com** (RAN2)

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## 7 Work item leadership

**Primary: RAN WG3**

**Secondary: RAN WG2, RAN WG4**

## 8 Aspects that involve other WGs

NOTE: For RAN WIDs: Section 8 applies only toWGs outside of TSG RAN because RAN WG aspects have to be covered in section 4.

## 9 Supporting Individual Members

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| --- |
| Supporting IM name |
| AT&T |
| CATT |
| CMCC |
| China Telecom |
| China Unicom |
| Ericsson |
| Huawei |
| NTT Docomo |
| Nokia |
| Nokia Shanghai Bell |
| OPPO |
| Orange |
| Softbank |
| SAMSUNG |
| Telecom Italia |
| Verizon |
| Vivo |
| Vodafone |
| ZTE |
| LGEe Telekom |
| NEC |
| Lenovo |
| Motorola Mobility |
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