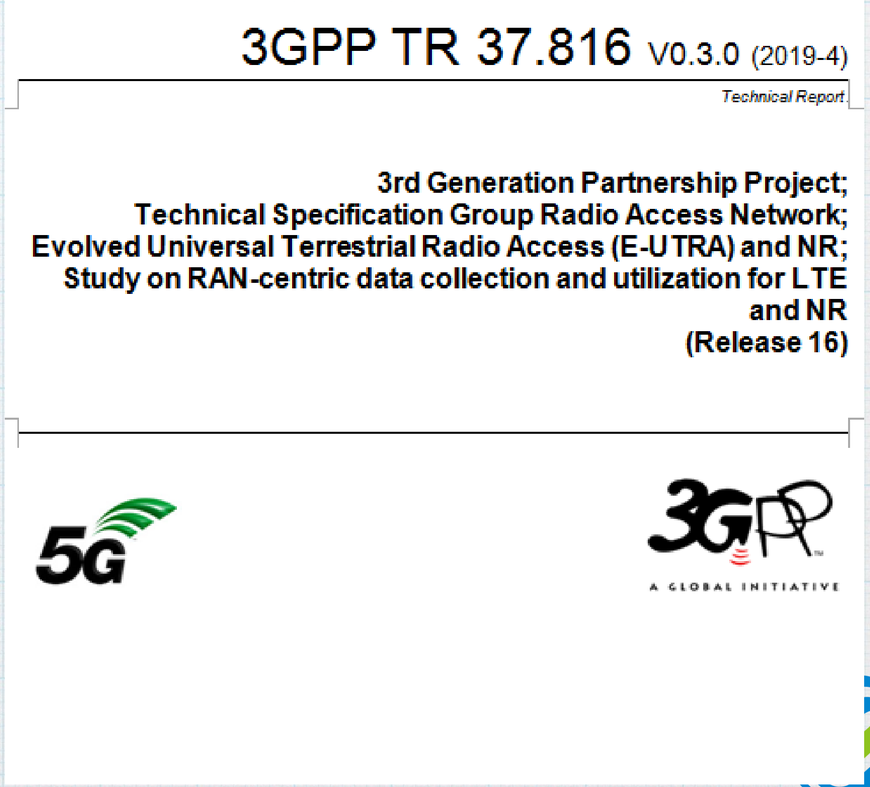
3GPP TSG RAN Meeting #84
RP-191216
Newport Beach, USA, June 3-6, 2019
Document for: discussion
Agenda Item: 8

Motivation for
Study on RAN-Centric Data Collection and Utilization Enhancement

CMCC

Progress of R16 RAN-centric DCU (801000)

- Basic SON/MDT functions have been studied
  - CCO, PCI Selection, MRO, MLB, RACH optimization, Energy Saving, MDT
- Initial consideration on NR features
  - CU-DU split, MR-DC, inactive, beamforming, …
- Leftover use cases due to time limitation
  - Massive MIMO
  - System Information Transmission optimization
  - RAN Notification Area Optimization
  - Edge Computing Optimisation
  - Per-UE Local RRM Policy Information Storage and Retrieval
  - …


3GPP TR 37.816 V0.3.0 (2019-4)

Technical Report

3rd Generation Partnership Project;
Technical Specification Group Radio Access Network;
Evolved Universal Terrestrial Radio Access (E-UTRA) and NR;
Study on RAN-centric data collection and utilization for LTE and NR
(Release 16)

5G

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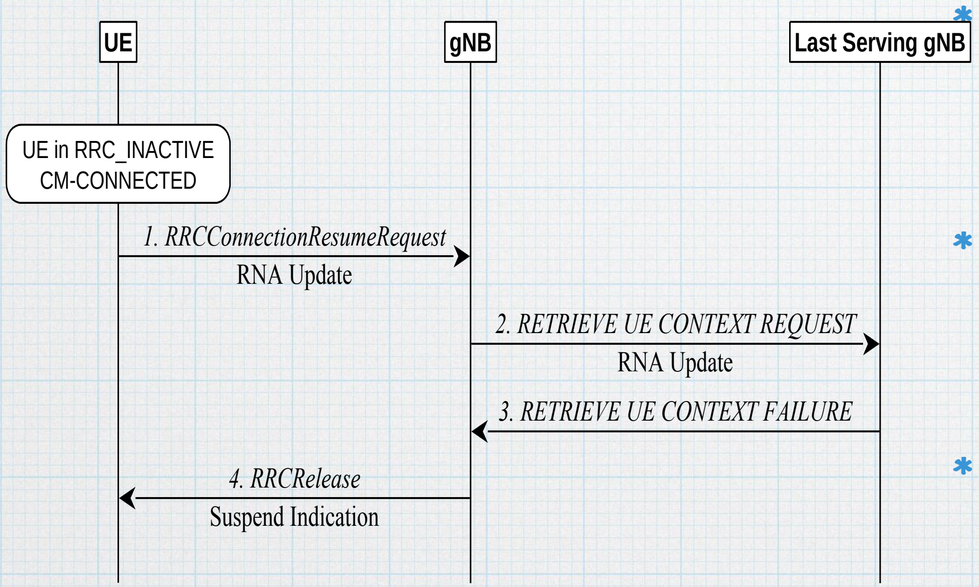
Study on RAN-Centric DCU Enhancement is necessary

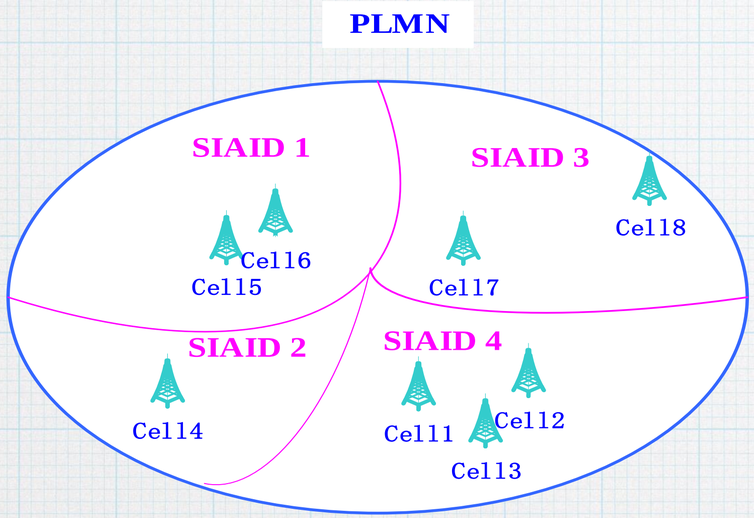
- Leftover use cases of Rel-16 RCU
- Further enhancements of SON/MDT for NR, including the consideration of R16 new features, e.g. NR-U, NR V2X
  - Improvement of ANR, MRO, MLB, RACH optimization, Energy Saving, etc
  - Improvement of MDT, including Logged MDT and immediate MDT, signalling-based and management-based MDT
- Identify new use cases and potential architecture and protocol impacts
  - QoE enhancement
  - Log behaviour mismatch between UE expectation and network action
  - RAN data collection as input of Machine Learning & Artificial Intelligence

Leftovers – RAN Notification Area Optimization

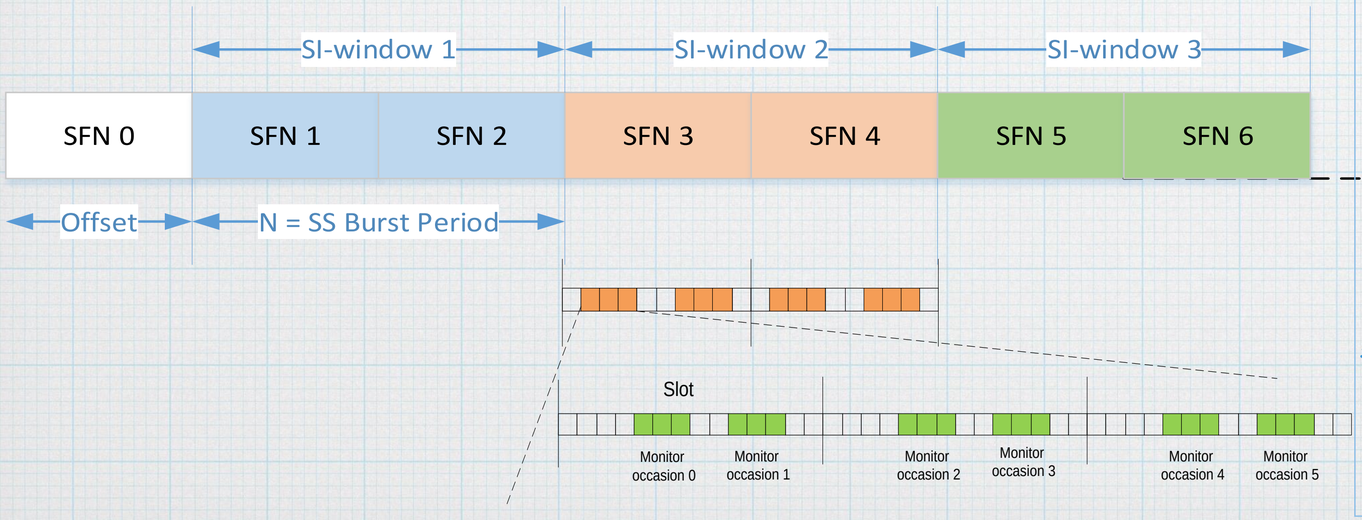


- As long as the RRC_inactive UE is moving towards cells which are part of the configured RNA, it does not have to notify NG-RAN
- When it moves towards a cell which is not part of the configured RNA, then it has to send an RNA update (RNAU)
- The design of the RNA has impact on the overhead produced by RNAUs or paging
  - Small RNAs will cause a lot of RNAUs
  - Large RNAs will cause a lot of paging overhead

Leftovers – System Information Transmission optimization

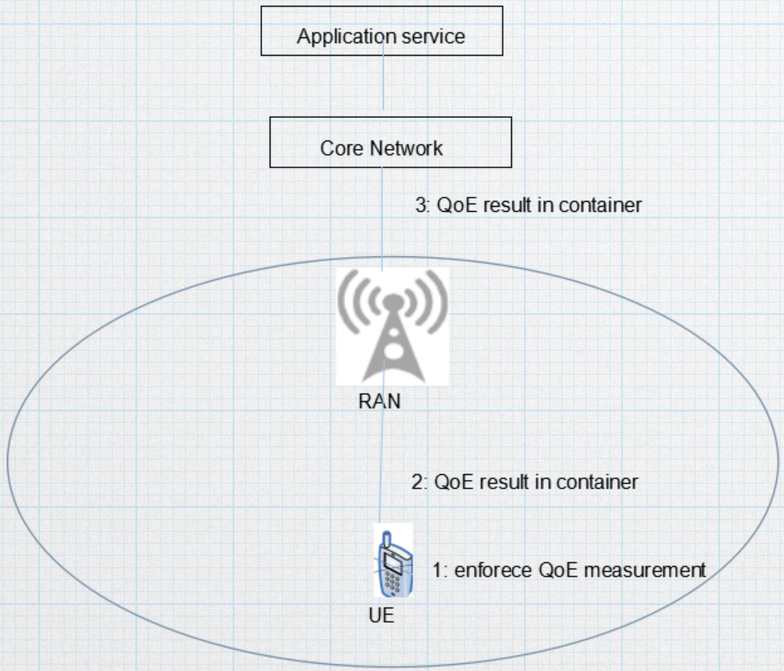


- Any SIB except SIB1 can be configured to be cell specific or area specific using an indication in SIB1
- Cell specific SIB is applicable only within a cell
- Area specific SIB is applicable within an area referred to as SI area



- SIBs other than SIB1 are delivered to the UE via SI messages
  - Each SI message consists of SIBs having the same periodicity.
  - Indication of whether an Other SI message is broadcasted or not is given in SIB1
- Further study on SI Area planning and transmission of SIBs, e.g. broadcasting or on-demand

New use case - QoE Enhancement



- Understanding customers' experience, e.g. throughput, data loss, latency, is beneficial for operators
- QoE measurement can be defined based on different Vertical Applications and measurement takes place at UE's application layer
  - streaming services evaluation standard was defined by ITU
  - how to evaluate Dynamic Adaptive Streaming over HTTP was defined in SA4
  - SA5 has studied the management solution for collection of QoE information and proposed use cases, potential requirements and possible solutions
- Based on the work above, the operators can collect and utilize the QoE measurement information in order to monitor the user experience and optimize NW

New use case – Behaviour mismatch between UE expectation & network action

- The overheating issue and suggested configuration is reported from UE, but no response received or the response from NW side cannot relieve it effectively
- Event-based measurements are reported by UE, but no handover command received

Thank You
Q&A