SA WG2 Meeting #140e S2-200XXXX

August 19 - September 2, 2020, Elbonia

**Title: LS on Potential RAN impact for support of Multi-USIM devices**

**Response to:**

**Release: Rel-17**

**Work Item: FS\_MUSIM**

**Source: SA2**

**To: RAN2, RAN3**

**Cc:**

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**Attachments:** None

# 1 Overall description

SA2 would like to inform RAN2 and RAN3 that they have progressed the study on FS\_MUSIM (TR 23.761) and would like to provide an early overview of solution types under consideration by SA2 that have RAN impact or require closer RAN WGs’ examination and feedback.

SA2 would like to point out that they have not yet completed the evaluation of the solutions in TR 23.761, many of them having RAN dependency. The majority of proposed solutions refer to RAN concepts that require RAN expertise.

The three tables below provides a high-level overview of FS\_MUSIM solution types in TR 23.761 that requires RAN feedback in order to conclude:

**<Key Issue 1: Handling of Mobile Terminated service with Multi-USIM device>(TBD)**

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|  | **Solution’s distinguishing mark** | **Reference** | **Questions for RAN WG** |
| **Key Issue 1: Handling of Mobile Terminated service with Multi-USIM device** | Negotiated Short Period Absence and UE may be RRC\_Inactive during UE Absence | Solution #2 | SA2 understand it is entirely RAN side mechanism and has no CN impact, no feedback is expected. |
| RRC busy indication when UE doesn’t want to response the RAN paging | Solution #3 | **Question 1.1:** SA2 would like RAN2 to feedback whether RRC busy indication is needed or not? |
| Operator-defined upper bound timer for paging response and trigger a RRC release indication and NAS paging reject when upper bound timer expiry  - UE includes RRC release indication in RRC msg5 and RAN release the RRC after the transmission of NAS paging reject based on the RRC release indication | Solution #11 | **Question 1.2:** SA2 would like RAN2 and RAN3 to feedback 1) whether the UE associated NG connection establishment can be skipped when sending the 1st NAS PDU 2) and based on RRC release indication in RRC msg5, whether RAN can self-release the RRC connection without CN involvement? (TBD) |

**< Key Issue#2: Enabling Paging Reception for Multi-USIM Device>**

Solution#14 to #21 tempt to fix two sub-issues: 1) paging collision: Solution#14 to #20; and 2) paging reception for UE with 1Rx only: Solution#21.

* For Solution#14 to #20, SA2 kindly request RAN2 to feedback the following questions:
  + **Question2.1**：Whether Solution #14-#20 are feasible to solve paging collision between NR and NR/other RAT, or between LTE and LTE/other RAT (except for NR) effectively, e.g. once the paging collision is fixed, paging collision happens again in subsequent UE mobility is not expected.
  + **Question2.2**：Whether Solution #14-#20 comply the assumption “without EUTRA related impact”?
* For Solution#21, SA2 understand this solution is entirely RAN side mechanism and has no CN impact, SA2 kindly request RAN to consider this solution during study and no feedback is expected.

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|  | **Solution’s distinguishing mark** | **Reference** |
| **Key Issue 2: Enabling Paging Reception for Multi-USIM Device**   * **1） paging collision** | NAS-only solutions requiring RAN WG’s feedback (1/2):  - UE detects potential collisions and requests new GUTI. | Solution #14 Solution #20 |
| UE negotiates assistance with the network using NAS signalling, but the solution is entirely in Access Stratum and may include:  - paging repetitions (#18 Send paging on UE’s consecutive POs) | Solution #18 |
| NAS-based solutions requiring changes on calculation of PF/PO at UE side and/or the RAN side  RAN WG’s feedback (2/2):  - CN and RAN use an Alternative UE ID (different from UE’s GUTI) for calculation of PF/PO (#15)  - Calculation of PF/PO by using the Offset to IMSI (#16)  - Calculation of PF/PO based on MUSIM Assistance Information (#17) | Solution #15  Solution #16  Solution #17 |
| UE Implementation-based (e.g. alternating USIMs when monitoring POs) | Solution #19 |
| **Key Issue 2: Enabling Paging Reception for Multi-USIM Device**   * **2） paging reception** | UE negotiates “scheduling gap” in RAN A so that UE can listen to paging in RAN B during RRC\_Connected state | Solution #21 |

For key issue#3, SA2 kindly request RAN2 to feedback the following questions:

* **Question3.1** the feasibility of the following solutions.

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|  | **Solution’s distinguishing mark** | **Reference** | **Questions for RAN WG** |
| **Key Issue 3: Coordinated leaving for Multi-USIM device** | Local leaving   * Local RRC release in NG-RAN based on N2 request. * Local RRC suspend or local release based on negotiation via NAS in advance | Solution #4  Solution #5 |  |
| UE-requested Leave and Resumption via RRC.   * Provide MUSIM-RAI(#5) or not(#6) * When RAN turns the UE into RRC\_Inactive, RAN should set a pause timer to the UE, when the pause timer expiry, the RAN and UE locally release the UE if the UE doesn't resume (#5) * After UE AS-triggered leaving, UE locally set a timer to wait for the RRC release signing from the RAN and release the RRC once the timer expiry (#22) | Solution #5  Solution #6  Solution #22 | **Question 3.2:** whether RRC\_Inactive state is restricted with duration, i.e. the RAN and UE need to turns into RRC\_idle after a timer expiry (Solution#5)(TBD). |

# 2 Actions

**To RAN2**

**ACTION:** SA2 kindly asks RAN2 and RAN3 to feedback the questions above.

# 3 Dates of next TSG SA WG 2 meetings

SA2#141E TBD Electronic meeting

SA2#142E TBD Electronic meeting