**3GPP TSG-RAN WG3 #109-e R3-205681**

**17 – 28 August 2020**

Title: [DRAFT] Reply LS on SA WG2 assumptions from conclusion of study on architecture aspects for using satellite access in 5G

Response to: LS on SA WG2 assumptions from conclusion of study on architecture aspects for using satellite access in 5G (SP-2004688/R3-204616)

Release: Release 17

Source: Qualcomm Incorporated [to be RAN3]

To: SA2, RAN2, CT1

Cc:

**Contact Person:**

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**Send any reply LS to: 3GPP Liaisons Coordinator,** **mailto:3GPPLiaison@etsi.org**

Attachments: None

**1. Overall Description:**

RAN3 would like to thank SA2 for the LS on assumptions after conclusion of the study on architecture aspects for using satellite access in 5G.

Regarding the question posed by SA2, RAN3 has initiated its work on the related release 17 work item, which targets both GEO and LEO systems (the latter comprising both earth-fixed and moving cell scenarios). RAN3 expects to further study this topic in conjunction with RAN2 during release 17, but can offer the following initial considerations.

The cell ID provided by the RAN is included in the User Location Information (ULI), which is present in many uplink NGAP messages. The following scenarios are possible:

* In fixed-earth cell scenarios, the interaction between RAN and CN should be very similar to terrestrial systems, and the information in the ULI should be handled in the same way.
* In LEO scenarios with earth-moving cells, the mapping between cell identities and geographical areas is continuously changing.
* In LEO scenarios, it is also possible that cells are temporarily fixed on the ground through beam steering, in which case the mapping between cell identities and geographical areas changes in a stepwise manner.

In both LEO scenarios, the cell identity in the ULI cannot always be used directly by the CN, although a mapping may be straightforward in the last case. From an initial discussion, several solutions were identified for this issue including for example mapping of cell identity by the RAN or CN, or addition of position information if available. The discussion is so far preliminary, and there is as yet no consensus in RAN3 that a solution is needed. One company also has a view that the AMF is able to trigger positioning procedures for the UE, and therefore the above can be solved without any of the above.

To make further progress, RAN3 would like to clarify requirements from a CN perspective, and would like to ask the following questions:

Q1: Are solutions with higher granularity (than e.g. the cell coverage of a non-terrestrial cell) considered preferable, or essential?

Q2: From perspective of 5GCN impact, would SA2 find acceptable solution(s) that require further processing or mapping of the CN-received cell ID based on known/ predictable ephemeris of a satellite trajectory, or should any such mapping, if needed, be performed in the RAN?

RAN3 expects to continue to analyse this issue based on SA2’s feedback.

**2. Actions:**

**To** **SA WG2, RAN WG2, and CT WG1 groups.**

**ACTION:** RAN3 kindly asks SA WG2, RAN WG2, and CT WG1 to take the above information into account, and inform RAN3 of further progress on this topic.

**3. Date of Next RAN3 Meetings:**

RAN3#110-e November 2020 Electronic meeting