**3GPP TSG RAN meeting #95-e RP-220383**

**Electronic Meeting, March 17-23, 2022**

## Status Report to TSG

**Agenda item:** 9.3.2.7

|  |  |
| --- | --- |
| **WI / SI Name** | NR NTN (Non-Terrestrial Networks) enhancements |
| included in this status report | Study Item: No | Core part: Yes | Performance part:Yes | Testing part:No |
| **Acronym** | NR-NTN-enh |
| **Unique ID** | 941006 |
| **TSG Tdoc of latest approved WI/SI description (if any)** | RP-213690 |
| **Target Completion Date****(indicate if changed)** | Study Item:  | Core part: 12/2023 | Performance part: 06/2024 | Testing part:  |
| **Overall Completion level** | Study Item:  | Core part: 0% | Performance Part:  | Testing part:  |

Note: Overall completion level percentage numbers should use one of the colors below:

* xx%: Normal progress, no RAN plenary action needed
* xx%: Progress behind schedule, may need RAN plenary intervention. If so, SR should clearly define requested action
* xx%: Progress critically behind, RAN plenary shall intervene. SR should define requested action

**Source:**

|  |  |
| --- | --- |
| **Leading WG** | RAN2 |
| **Rapporteur** | **Name** | Nicolas Chuberre |
| **Company** | Thales |
| **Email** | Nicolas.chuberre@thalesaleniaspace.com |

## 1 Work plan related evaluation

|  |  |
| --- | --- |
| **Do you want to modify the time budget for this WI/SI compared to what was endorsed at the last RAN meeting?** | No |

*If you answered No: Then please remove the Excel file from the zip file of this status report.*

*If you answered Yes: Then please fill out the attached Excel template to request a modification of the time budgets for your WI /SI. The Excel table has to be filled out for all affected RAN WGs and up to the target date of the WI/SI. The basis are the endorsed time budgets of the last RAN meeting. Please highlight all changes of the values.
 One time unit (TU) corresponds to ~ 2 hours in the meeting.
 If this status report covers a WI with Core and Performance part, then please have one line for each in the attached Excel table.
 Note: If no Excel table is attached, then this means no time budget change.*

**Additional explanations/motivations for the time budget changes in the attached Excel table:**

## 2. Detailed progress in RAN WGs since last TSG meeting (for all involved WGs)

 NOTE: Agreements and Open issues impacted cross-TSG aspects shall be explicitly highlighted

## 2.1 RAN1

#### 2.1.1 Agreements

#### 2.1.2 Remaining Open issues

Coverage enhancements

* Evaluate the coverage performance and identify the candidate physical radio channels that have coverage issues specific to NTN with following target services taking into account the studies in TR38.830 where appropriate, as well as general coverage enhancement techniques specified in Rel-18
	+ VoIP and low-data rate services for commercial handset terminals

Network verified UE location

* Study and evaluate, if needed, solutions for network to verify UE reported location information

## 2.2 RAN2

#### 2.2.1 Agreements

#### 2.2.2 Remaining Open issues

Coverage enhancements

* Evaluate the coverage performance and identify the candidate physical radio channels that have coverage issues specific to NTN with following target services taking into account the studies in TR38.830 where appropriate, as well as general coverage enhancement techniques specified in Rel-18
	+ VoIP and low-data rate services for commercial handset terminals

Network verified UE location

* Study and evaluate, if needed, solutions for network to verify UE reported location information

NTN-TN and NTN-NTN mobility and service continuity enhancements

* Specify NTN-TN and NTN-NTN measurement/mobility and service continuity enhancements

## 2.3 RAN3

#### 2.3.1 Agreements

#### 2.3.2 Remaining Open issues

Network verified UE location

* Study and evaluate, if needed, solutions for network to verify UE reported location information

NTN-TN and NTN-NTN mobility and service continuity enhancements

* Specify NTN-TN and NTN-NTN measurement/mobility and service continuity enhancements

## 2.4 RAN4

#### 2.4.1 Agreements

#### 2.4.2 Remaining Open issues

NR-NTN deployment in above 10 GHz

* Study and identify NTN example band: Analysis of regulations and adjacent channel co-existence scenarios.
* Specify Rx/Tx requirements for satellite access node and different VSAT UE class (not only 60 cm aperture) as appropriate for the identified example band
* Identify values for physical layer parameters chosen from the existing FR1 and FR2 sets.

Coverage enhancements

* Evaluate the coverage performance and identify the candidate physical radio channels that have coverage issues specific to NTN with following target services taking into account the studies in TR38.830 where appropriate, as well as general coverage enhancement techniques specified in Rel-18
	+ VoIP and low-data rate services for commercial handset terminals

NTN-TN and NTN-NTN mobility and service continuity enhancements

* Specify NTN-TN and NTN-NTN measurement/mobility and service continuity enhancements

## 3. Detailed progress in SA/CT WGs since last TSG meeting (for all involved WGs)

NOTE: This section only needs to be filled in for WI/SIs where there is a corresponding relevant WI/SI in SA/CT.

## 3.1 SA2

#### 3.1.1 Agreements with cross-TSG impacts

#### 3.1.2 Remaining Open issues with cross-TSG impacts

NOTE: This section should also flag any critical dependencies that need TSG attention.

Aspects related to Network verified UE location

## 4. References

NOTE: This can be e.g. a list of all related Tdocs in the affected WGs since last TSG, references to LSs, produced TRs/TSs, the work/study item description or status reports of previous TSGs.

 09.11.2020 minor adaptations for RAN #90e

 31.08.2020 minor adaptations for RAN #89e

 20.04.2020 minor adaptations for RAN #88e

 18.02.2020 minor adaptations for RAN #87e

 14.11.2019 minor adaptations for RAN #86

 18.08.2019 minor adaptations for RAN #85

 12.05.2019 minor adaptations for RAN #84

 27.02.2019 minor adaptations for RAN #83

 21.11.2018 completion levels with colours added (for RAN #82)

v04.81 31.07.2018 simplification of template and addition of cross-TSG aspects (for RAN #81)

v04.80 21.05.2018 minor adaptations for RAN #80

v04.79 26.02.2018 minor adaptations for RAN #79

v04.78 18.11.2017 minor adaptations for RAN #78

v04.77 06.08.2017 minor adaptations for RAN #77

v04.76 15.05.2017 minor adaptations for RAN #76

v04.75 31.01.2017 minor adaptations for RAN #75

v04.74 28.10.2016 minor adaptations for RAN #74

v04.73 01.09.2016 adaptations for RAN #73 (time units in extra Excel table, RAN6 reporting included)

v04.72 26.05.2016 adaptations for RAN #72 (introduction of NR & GERAN TUs)

v04.71 10.02.2016 minor adaptations for RAN #71

v04.70 30.10.2015 minor adaptations for RAN #70

v04.69 12.08.2015 minor adaptations for RAN #69

v04.68 21.05.2015 minor adaptations for RAN #68

v04.67 01.02.2015 minor adaptations for RAN #67

v04.66 16.11.2014 minor adaptations for RAN #66

v04.65 16.08.2014 minor adaptations for RAN #65

v04.64 22.05.2014 minor adaptations for RAN #64

v04.63 24.01.2014 restructuring for RAN #63 to cover Core & Perf. in one doc file

v03.62 11.11.2013 section 1.2.3 adapted for RAN #62

v03 11.08.2013 section 1.2.3 added on time budget

v02 07.05.2010 history added, some spelling corrections

v01 13.11.2009 First version of the template