

TSG SA#80

SP-180351

13-15 June 2018, La Jolla, USA

# Views on 3GPP SA “Focus Areas” Rel-16

Source: Qualcomm Inc.



# Introduction

- At SA#79, determining system-wide focus areas for Release 16 was discussed (SP-180040). This paper observed that RAN #80 will select focus areas for Release 16 by RAN and initiate and do time planning for associated WIDs (studies and work items.)
- It was also considered important for SA to become aware of expected scheduling of completion of RAN-led focus areas that will have a significant impact on SA WGs (that is, beyond minor ‘alignment’ late in the release.)
- This paper is aiming to:
  - Identify Focus Areas (with clear reference to approved or proposed study items and work items in SA working groups) that the contributor(s) consider *essential* to complete in Release 16.
    - Other study items *not in this list* can still get time allocation on a best effort basis
  - Justify why these focus areas are essential.
  - Explain expected impacts on RAN WGs, that is, the necessary resources and schedule constraints to discuss in joint session with RAN (if any).

# Release 16 timeline

2016				2017				2018				2019				2020
Q1	Q2	Q3	Q4	Q1												

5G study

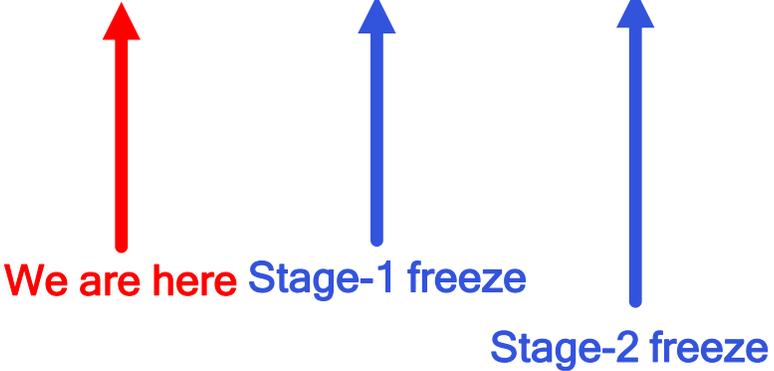
Release 15 (5G Phase 1)

NSA Op.3  
ASN.1

R15  
ASN.1

Late R15  
ASN.1

Release 16

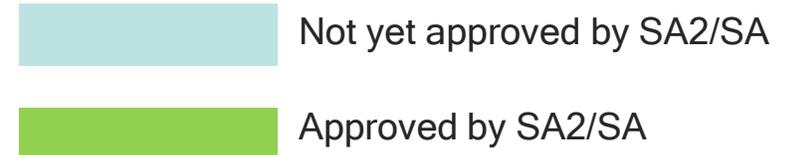


2 SA1 meetings remaining until stage-1 freeze  
8 SA2 meetings remaining until stage-2 freeze

# Focus Areas for rel.16

- Rel.16 is about cellular expansion
- We would like to prioritize Rel-16 work accordingly
  - eMBB efficiency enhancements
  - Support for new “verticals” (automotive/aerial, IIOT, CIOT/LPWA)
  - Support new RAN topologies in 5GS
  - Complete missing parts in 5GS (some w/ RAN impacts)
- The above is consistent with our commitment to corresponding work in TSG RAN in order to complete features with E2E functionality in Release 16

# Focus areas in TSG SA rel.16



eMBB efficiency

*Optimisations for handling of radio capabilities (SA2)- TBD in SA2#127bis*

**Automotive/Aerial** *(interest from auto/drone ecosystem)*

Architecture enhancements for V2X services (SA2)- ongoing

*Remote Identification of Unmanned Aerial Systems (SA1/SA2/SA3)- ongoing SA1 study*

**Industrial IOT** *(interest from industrial ecosystem)*

Enhancement of URLLC supporting in 5GC (SA2)- ongoing

*Enhanced support of Vertical and LAN Services (SA1/SA2/SA3)- ongoing SA1 WI, SA2 SID submitted in SA2#127b*

CIOT / LPWA

Cellular IoT support and evolution for the 5GS (SA2/SA3)- ongoing

New RAN topologies

*System impacts from IAB (still TBD depending on RAN3 progress)*

Complete missing parts in 5GS

Study for single radio voice continuity from 5GS to 3G (SA2/SA3)-ongoing

Study on Enhancement to the 5GC Location Services (SA2) - ongoing

# EPS enhancements

- Majority of vertical applications do not require dual-connectivity support e.g. automotive, IIOT, URLLC etc.
- NR is the major enabler of “low latency” and URLLC
- Unless EPS supports “standalone” NR (aka architecture option 6) enhancements in EPS to achieve similar targets as 5GS e.g. URLLC will not have market value
  - See “enhancement of systems using EPS for Ultra Reliability and Availability using commodity equipment” (FS\_EPS\_URACE) and “EPC support for Mobility with Low Latency Communication” (FS\_LLC\_Mob)
- Other EPS enhancements e.g. targeting eMBB and CIOT use cases are still useful
  - See “System enhancements for Provision of Access to Restricted Local Operator Services by Unauthenticated UEs” (FS\_PaRLOS) that is meant to fulfill regulatory requirements

# Proposal

- 3GPP SA to agree on the following focus areas for 5GS:
  - eMBB efficiency enhancements
  - Support for new “verticals” (automotive, IIOT, CIOT/LPWA)
  - Complete missing parts in 5GS
- 3GPP SA to agree on the following focus areas for EPS:
  - Potential EPS enhancements targeting e.g. eMBB and CIOT use cases
- Corresponding SA study and feature WIs to be given time priority in order to complete in rel.16:
  - Optimisations for handling of radio capabilities (SA2)
  - Architecture enhancements for V2X services (SA2)
  - Enhancement of URLLC supporting in 5GC (SA2)
  - Enhanced support of Vertical and LAN Services (SA1/SA2/SA3)
  - Cellular IoT support and evolution for the 5GS (SA2/SA3)
  - Study for single radio voice continuity from 5GS to 3G (SA2)
  - Study on Enhancement to the 5GC Location Services (SA2)
  - System enhancements for Provision of Access to Restricted Local Operator Services by Unauthenticated UEs (SA/SA3)
- Depending on progress in RAN and SA1 also the following topics may have SA2 impacts: IAB, Remote identification of unmanned vehicles (UAVs)
- Other rel.16 SA2 studies can be served on a best effort basis

# Annex

# Does SA2 need prioritisation for rel.16?

Current time allocation cannot lead to successful completion of many SIDs

- 18 rel.16 studies approved so far
- A snapshot from SA2#126:
  - FS\_5G\_IoT → 19 unhandled tdocs (w /1 TUs)
  - FS\_eNA → 10 unhandled tdocs (w/1 TUs)
  - FS\_eV2x → 12 unhandled tdocs (w/1 TUs)
- A snapshot from SA2#127:
  - FS\_eNA → 10 unhandled tdocs (w/1 TUs)
  - FS\_eV2x → 12 unhandled tdocs (w/1 TUs)
  - FS\_5G\_IoT → 19 unhandled tdocs (w /3 TUs)
  - FS\_WWC → 5 unhandled tdocs (w /1 TUs)
  - FS\_eIMS → 5 unhandled tdocs (w /1 TUs)
  - FS\_ATSSS → 7 unhandled tdocs (w /1 TUs)
- All these SIDs have the same TUs planned in the upcoming meetings

# Does SA2 need prioritisation for rel.16?

Number of tdocs put under Email approval keeps increasing

- SA2#125: 29 documents under email approval
- SA2#126: 35 documents under email approval
- SA2#127: 101 documents under email approval
  
- Trend shows that not enough time is available to handle revisions (mostly for pCRs) during the meeting
- Increasing volume of email approval reduces delegates' time for 1 week after the meeting, delays TR implementations, and preparations for subsequent meeting

# Qualcomm's view of RAN Release 16 priorities

NR

LTE

eMBB efficiency (power, robustness, spectral eff.)

Automotive *(interest from auto ecosystem)*

Unlicensed *(interest from industrial & cable ecosystem)*

Industrial IOT *(interest from industrial ecosystem)*

Low Power IOT / LPWA

Topology

Broadcasting *(interest from broadcasting ecosystem)*

LTE optimizations

NR eMBB Power Consumption enh. (R1-led)

NR MIMO, including Multi-TRP (R1-led)

NR mobility enhancements (R2-led)

NR V2X (R1-led)

Adding >52.5 GHz to the scope of the NR-U SI (RAN1-led)

URLLC enh. (R1-led)

"Industrial Wireless Ethernet" over NR (R2-led)

NB-IoT enh. (R1-led)

eMTC enh. (R1-led)

IAB / Self-backhaul (R2-led)

High layer CU-DU split enhancements (R3-led)

EnTV enh. (R1-led)

LTE mobility enh. (R2-led)

Low Complexity 4RX MIMO (R4-led)



# Thank you

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