3GPP RAN
IMT-2020 – 5G - NR

Glenn Parsons
ITU-T SG15 vice-chair

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Introduction

- 3GPP RAN Liaisons
  - TD93/G - Initiation of work to support IMT-2020/5G in the Transport Network (reply to SG15-LS40)
  - TD123/3 - Status of Synchronization Requirements for 5G (reply to SG15-LS49)
- ITU-R IMT-2020 Workshop
- 3GPP TS 38.401
- 3GPP TR 38.801
- 3GPP WI NR-newRAT
- 3GPP TS 23.501

ITU-R IMT-2020 Workshop

- Terrestrial radio interfaces workshop
  - October 5, 2017 - Munich, Germany
  - "to promote information sharing on IMT-2020"

- 3GPP RAN presentation
  - Giovanni Romano, 3GPP ITU-R Ad Hoc group coordinator
    - prepared with the RAN chairman, the SA chairman

3GPP roadmap

2016	2017	2018	2019	2020	2021	2022

Release 15

Early drop

Rel 16

Early phase 1 deployment

Phase 1 deployment

Phase 2 deployment

- Release 15 (aka phase 1, by June '18) will aim at enabling a first phase of expected deployments in 2020
- Additional "Early drop" milestone (Dec '17) added to support emerging market needs

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3GPP deployment scenarios
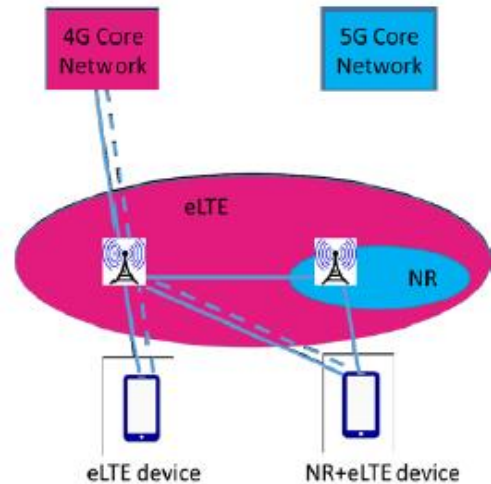
December 2017:
- NR Non Stand-Alone (NSA) - The eNB is the master node
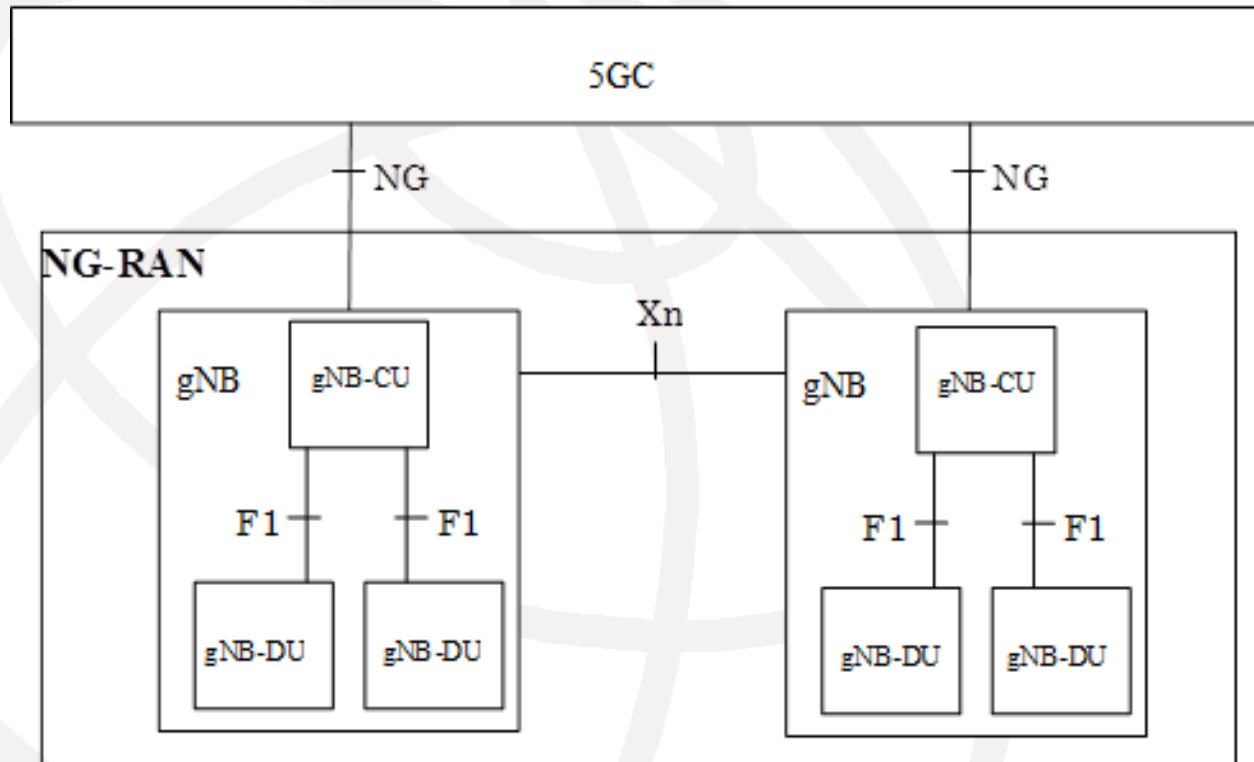- 4G Core Network (EPC)
- Enanced LTE (eLTE)
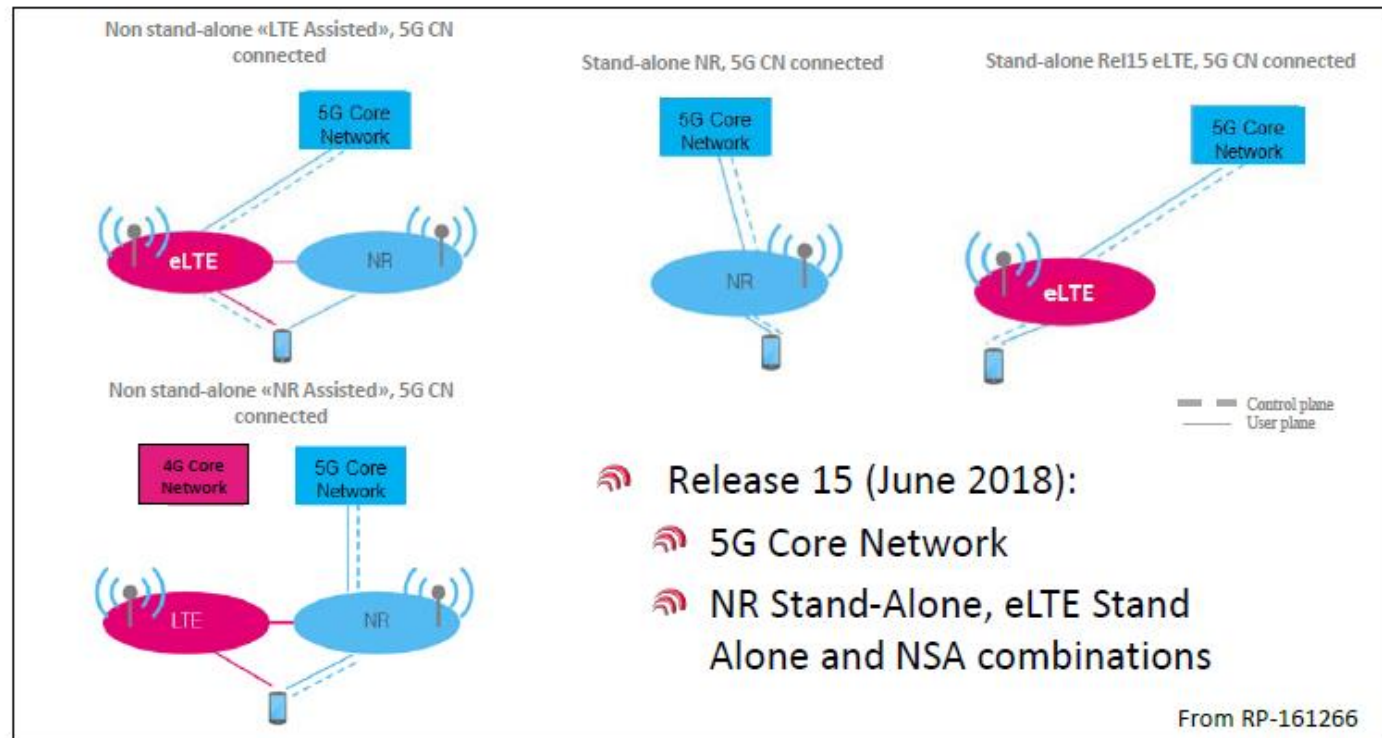
Release 15 (June 2018):
- 5G Core Network
- NR Stand-Alone, eLTE Stand Alone and NSA combinations
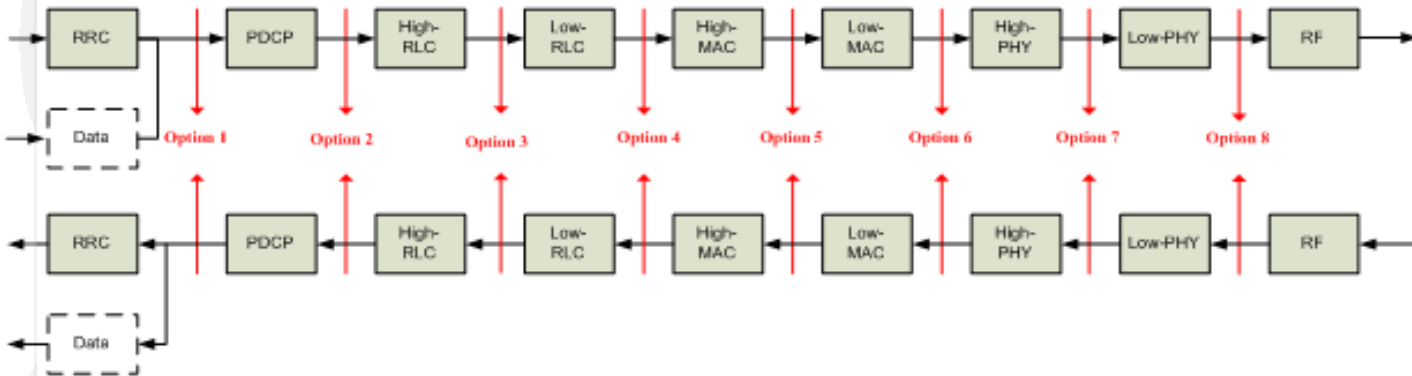
TS 38.401 (0.3.0 R15)

overall **NG-RAN** architecture

"there is no **RRU** specified"

TR 38.801 (14.0.0 R14)

- Conclusion of NR Study Item phase
- Option 2 will be progressed as a NR Work Item

- "the transport requirements for split option 2 are deemed to be the most relevant for the ongoing work in ITU-T SG15"

LTE Items	Assumption
Channel Bandwidth	[100MHz(DL/UL)]
Modulation	[256QAM(DL/UL)]
Number of MIMO layer	[8(DL/UL)]

Protocol Split option	Required bandwidth	Max. allowed one-way latency [ms]
Option 2	[*DL: 4016Mb/s*] [*UL:3024 Mb/s*]	[*1.5~10ms*]

NR-newRAT (RAN4 work item)

- *The work item should specify the NR functionalities for enhanced mobile broadband (eMBB) and ultra-reliable low-latency-communication (URLLC)*

- "cell phase synchronization accuracy", for TDD, measured at BS antenna connectors, shall be better than [3µs].

TS 23.501 (1.4.0 R15)

- *A Network Slice is defined within a PLMN and shall include:*
  - *the Core Network Control Plane and User Plane Network Functions, as described in clause 4.2,*
- *and, in the serving PLMN, at least one of the following:*
  - *the NG Radio Access Network described in 3GPP TS 38.300 [27],*
  - *the N3IWF functions to the non-3GPP Access Network described in clause 4.2.7.2.*

- *"From a transport network point of view, different Network Slices may be characterized e.g. by differentiated QoS support."*

Summary

- 3GPP timeline – Release 15 by June 2018, Release 16 by December 2019

- Non-standalone will be first deployment case for Release 15

- There is no RRU (and thus no RRU-DU interface) specified in the NG RAN architecture for R15

- SG15 recommended to focus on transport for F1 interface

- Initial synchronization accuracy proposed to be better than [3µs]

- Network slicing will be end-to-end in a mobile operator network and transport may be characterized with differentiated QoS