3GPP activity towards IMT-2020

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TIM
3GPP Roadmap

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Release 15 (aka phase 1, by June ‘18) will aim at enabling a first phase of expected deployments in 2020

Release 16 (aka phase 2, by Dec ’19)

Additional “Early drop” milestone (Dec ’17) added to support emerging market needs

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3GPP System

3GPP aims to the definition of a full system (Radio and Core Network)

3GPP specifications will be labelled “5G” from Release 15 onwards

5G requirements
- Service: TS 22.261 “Service requirements for next generation new services and markets”
- Radio: TR 38.913 “Study on scenarios and requirements for next generation access technologies”

Overall architecture (expected Dec 2017):
- TS 23.501: “System Architecture for the 5G System; Stage 2”
- TS 23.502: “Procedures for the 5G System; Stage 2”

RAN aspects
- TR 38.901: “Study on channel model for frequencies from 0.5 to 100 GHz”
- TR 38.912: “Study on new radio access technology”
- Technical specifications will be captured in the 36, 37 and 38 series
3GPP deployment scenarios

December 2017:
- NR Non Stand-Alone (NSA) - The eNB is the master node
- 4G Core Network (EPC)
- Enhanced LTE (eLTE)

Release 15 (June 2018):
- 5G Core Network
- NR Stand-Alone, eLTE Stand Alone and NSA combinations

From RP-161266
Release 15 contents (Radio)

R15 **NR** WID (RP-172115)

R15 **LTE**: LTE/NGC integration, Enhanced reliability and short TTI (URLLC per LTE), enhancements of MTC & NB-IOT, C- V2X Phase II, Fixed Wireless Access, FeCoMP, Positioning enhancements, eVideo, QoE reporting, CA utilization
Release 15 NR features

**R15 NR WID (RP-172115)**

- Radio architectures and RAN interfaces
- NR-LTE co-existence mechanisms
- Support co-existence of LTE UL and NR UL within the bandwidth of an LTE component carrier and co-existence of LTE DL and NR DL within the bandwidth of an LTE component carrier
- Support of ultra-reliable part of URLLC
- Radio Access Network architecture, interface protocols and procedures for functional split between central and distributed units
- Normative stage-2/3 specification of one higher layer split (based on centralised PDCP/RRC and decentralised RLC/MAC/PHY)
- Dual Connectivity between E-UTRA and NR and within NR
- Carrier Aggregation within NR
- Support for network slicing
- Support for PWS and IMS voice
- Support of (SON) functions: Automatic Neighboring Relation (ANR); NG/Xx/Xn setup
- Inter-RAT mobility between NR and E-UTRA
Release 15 Features (System)

5G Core Network (5G CN)
- System WIDs: Stage 1 (SMARTER, TS 22.261), Stage 2 System Aspects (5GS_Ph1, TS 23.501, TS 23.502) and Security Aspects (5GS_Ph1-SEC, TS 33.501)
- EPC enhancements to support 5G New Radio via Dual Connectivity (EDCE5)

Enhanced Packet Core (EPC)
- Enhancement of V2X, MTC Enhancement, PS Data Off Phase 2, Security Assurance for 3GPP network products, HPLMN Radio Access Technology deployment optimization, Unlicensed Spectrum Offloading System

5G Core Network
- Network slicing
- QoS framework (enhanced beyond EPC’s framework), Policy framework
- Mobility framework, Session management, Support for session and service continuity and efficient user plane paths, Service Based Control Plane Architecture
- Network capability exposure
- Untrusted Non-3GPP access support

EPC enhancements to support 5G New Radio via Dual Connectivity
- Alignment of specifications
- Support for E-UTRAN URLLC capabilities
Initial studies for Release 16 (Radio)

Some feasibility studies:

- **NR**: Non-Orthogonal Multiple Access (NOMA), eV2V, Relay, CU-DU lower layer split, Test methods for New Radio (OTA measurements)
- **LTE**: Architecture Evolution for E-UTRAN (split CU-DU for LTE), Study on Aerials (planned to be part of Rel 15)
Initial progress on Release 16 (System)

Requirements

- Concluded normative 5G requirements (Aspects not yet included in Rel-15)
  - TS 22.261: "Service requirements for next generation new services and markets"
- Some requirements currently being studied
  - LAN Support in 5G, Positioning Use Cases, Enhancements to the Public Warning System

Architecture Studies for the 5G System

- Agreed studies for aspects not yet included in Rel-15
  - Cellular IoT support and evolution for the 5G System
  - Wireless and Wireline Convergence for 5G system architecture
  - Access Traffic Steering, Splitting between 3GPP and non-3GPP access
  - Topology Enhancements
- Other aspects under evaluation
  - 5G Support for Broadcast/Multicast Capabilities, Off-Network Communication, Relay UEs
  - 5G Minimal connectivity within extreme rural deployments
  - 5G Trusted Non-3GPP Access (essentially required by Wireline-Wireless Convergence)
IMT-2020 submission - timeplan

IMT-2020 WORKSHOP

IMT-2020 PROPOSAL SUBMISSION WINDOW

2017
Mar  
Jun  
Sept

2018
Mar  
Jun  
Sept

2019
Mar  
Jun  
Sept

2020

WP 5D

#28
3-11 Oct

#29
31 Jan-7 Feb

#30
13-20 Jun

#31
9-16 Oct

#31 bis
11-15 Feb

#32
9-17 Jul

#33
9-13 Dec

IMT-2020 SUBMISSIONS MILESTONES

WP 5D

3GPP RAN PLENARY

2017
Mar  
Jun  
Sept

2018
Mar  
Jun  
Sept

2019
Mar  
Jun  
Sept

2020

#77
11-14 Sept

#79
19-22 Mar

#81
10-13 Sept

#83
18-21 Mar

#84
3-6 Jun

#86
9-12 Oct

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From RP-172098
### IMT-2020 submission - timeplan

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From RP-172098
Submission 1
- SRIT
  - Component RIT: NR (*)
  - Component RIT: EUTRA/LTE
    - incl. standalone LTE, NB-IoT, eMTC, and LTE-NR DC
  - full 38 and 36 series, and subset of 37 series

Submission 2 (In addition to the above)
- NR RIT (*)

Naming
- Name: 5G
- Footnote: Developed by 3GPP as 5G, Release 15 and beyond

(*) The plan is to leverage the NR RIT (in submission 2) as the NR component RIT in submission 1; NR details TBD
Thanks
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