# 3GPP and Broadband Communication Applied to Critical Communications

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# Outline

- What is 3GPP, how to work in this organization

- 3GPP Broadband Communication Overview

- Critical Communications, Features and Prospects

- Conclusions
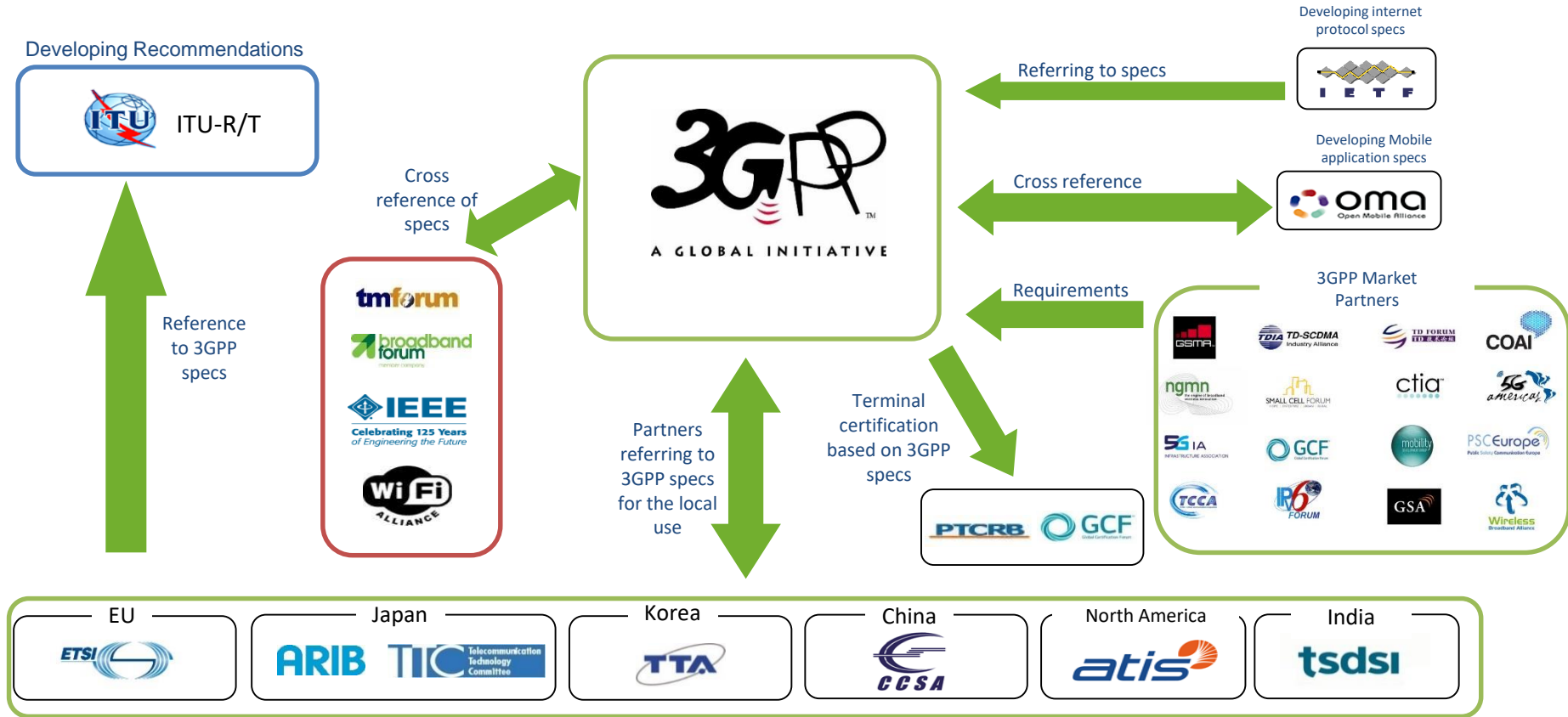
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# Partantnership (1/2)

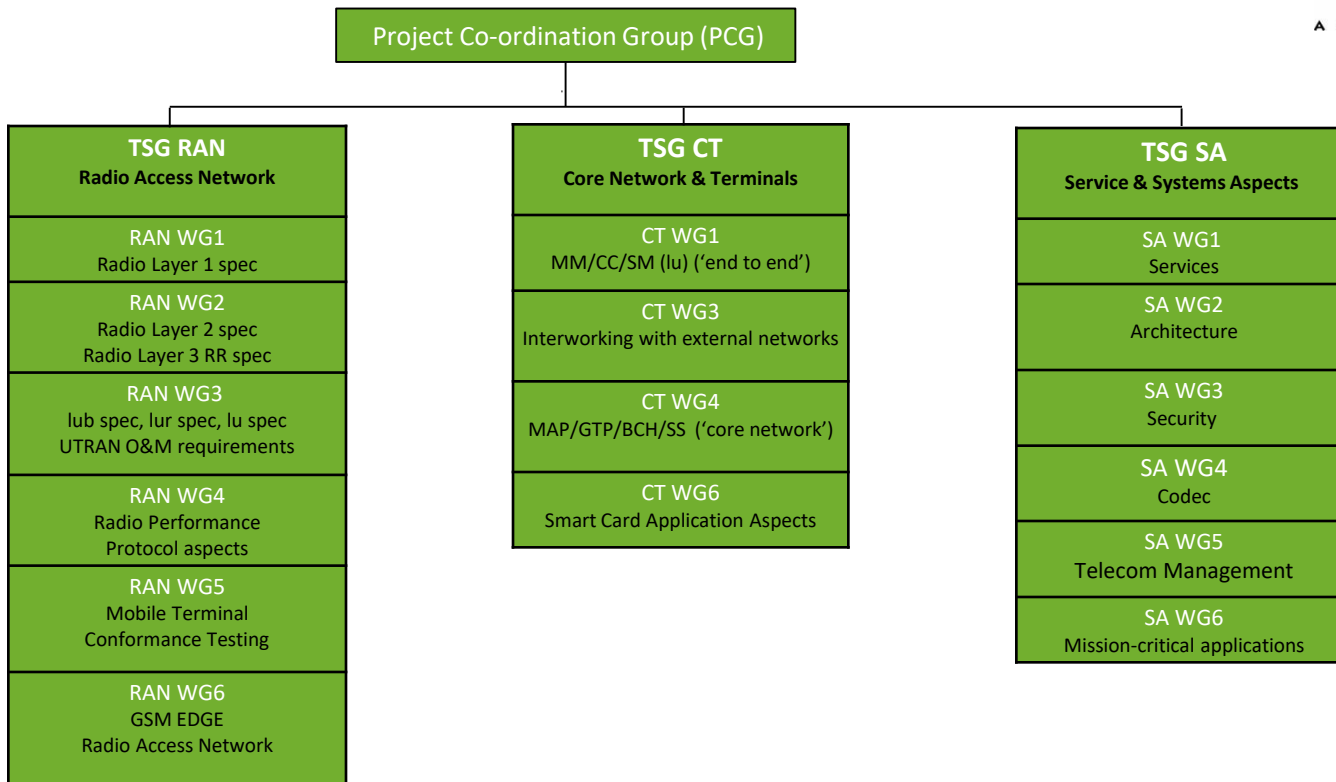## Organizational Partners (SDOs)

- ARIB (Japan)
- ATIS (USA)
- CCSA (China)
- ETSI (Europe)
- TTA (Korea)
- TTC (Japan)
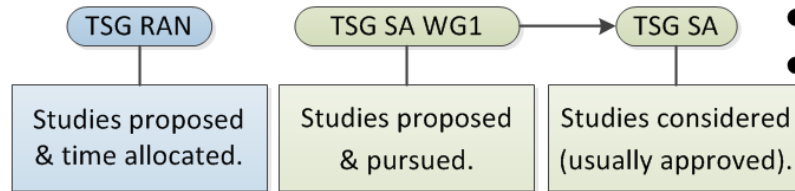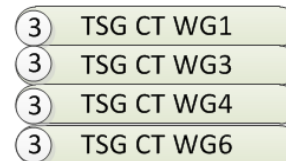- TSDSI (India)

# The 3GPP Eco-system

# Working Groups

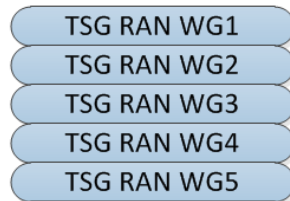Project Co-ordination Group (PCG)

**TSG RAN**
**Radio Access Network**

RAN WG1
Radio Layer 1 spec

RAN WG2
Radio Layer 2 spec
Radio Layer 3 RR spec

RAN WG3
Iub spec, Iur spec, Iu spec
UTRAN O&M requirements

RAN WG4
Radio Performance
Protocol aspects

RAN WG5
Mobile Terminal
Conformance Testing

RAN WG6
GSM EDGE
Radio Access Network

**TSG CT**
**Core Network & Terminals**

CT WG1
MM/CC/SM (Iu) ('end to end')

CT WG3
Interworking with external networks

CT WG4
MAP/GTP/BCH/SS ('core network')

CT WG6
Smart Card Application Aspects

**TSG SA**
**Service & Systems Aspects**

SA WG1
Services

SA WG2
Architecture

SA WG3
Security

SA WG4
Codec

SA WG5
Telecom Management

SA WG6
Mission-critical applications

# Getting Work Done in 3GPP

**Initiating Investigation**



| TSG RAN | TSG SA WG1 → TSG SA |
|---|---|
| Studies proposed & time allocated. | Studies proposed & pursued. | Studies considered (usually approved). |

- Activity is **contribution driven**.
- Progress depends on activity by multiple contributing 3GPP members.

**Study and Specification**

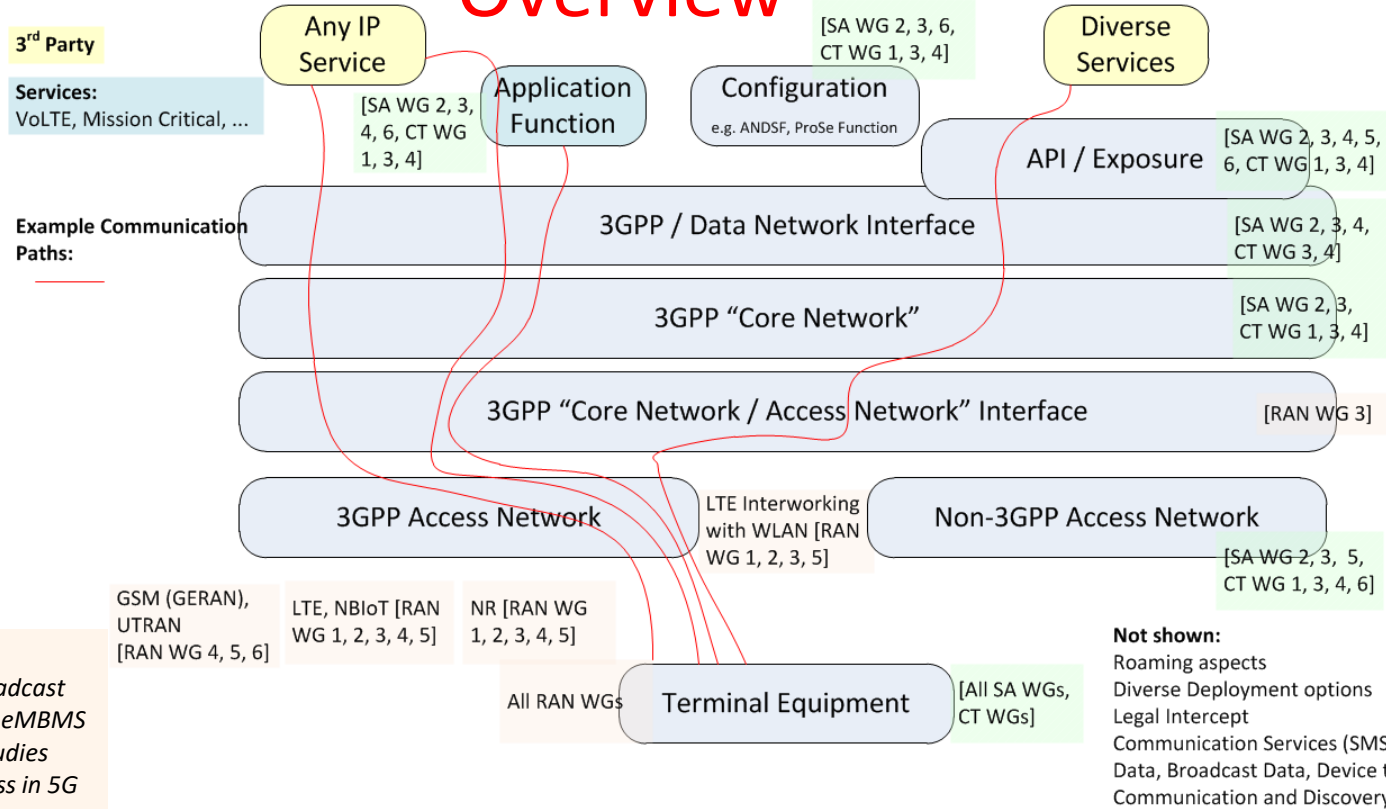| TSG RAN WG1 | (1) **TSG SA WG1** | (3) TSG CT WG1 |
|---|---|---|
| TSG RAN WG2 | (2) **TSG SA WG2** | (3) TSG CT WG3 |
| TSG RAN WG3 | (3) TSG SA WG3 | (3) TSG CT WG4 |
| TSG RAN WG4 | (3) TSG SA WG4 | (3) TSG CT WG6 |
| TSG RAN WG5 | (3) TSG SA WG5 | |
| | (2) **TSG SA WG6** | |

- Ordering overlaps, is not sequential.

- Ordering overlaps, may extend over several releases.

- Progress depends on activity by stakeholders: not every member must attend all WGs.
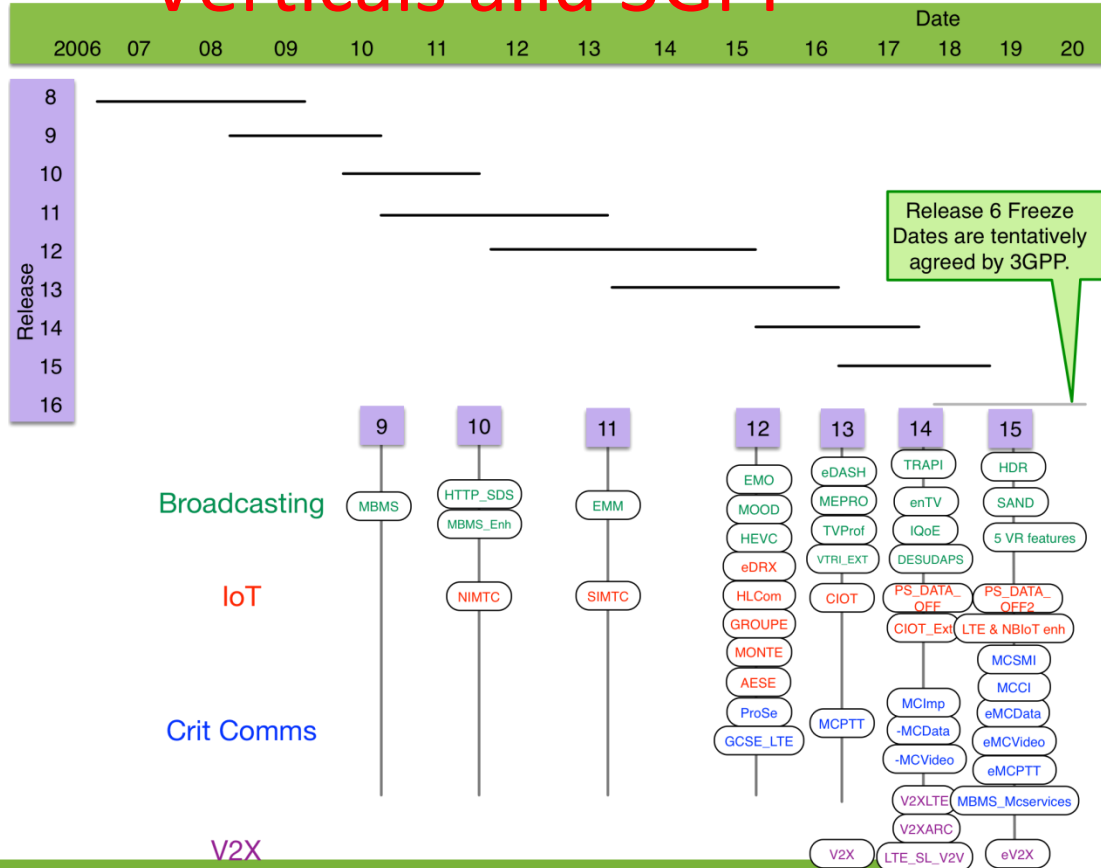
# 3GPP Broadband Communication Overview

# Critical Communications – Features

| Rel-12 | Rel-13 | Rel-14 | Rel-15 |
|--------|--------|--------|--------|

**Rel-12**

- Proximity Services
- Group Communication Service Enablers over LTE

**Proximity Services**
Device to Device Communication, UE to Network Relay

**Group Communication**
Unicast and Multicast/ Broadcast communication to efficiently transmit to a group; managed by an application.

*End-to-End Service Enabler*

**Rel-13**

- Mission Critical Push to Talk
- Proximity Services Enhancements

**MC Push To Talk**
User authentication and service authorization; security; configuration; de/ affiliation; group calls on- and off-network; private calls on- and off-network; simultaneous sessions; dynamic group management; floor control on- and off-network; pre-established sessions; resource management; bearer control; location configuration, reporting and triggering; use of UE-to-Network relays.

**Rel-14**

- Enhanced Mission Critical Push to Talk
- Mission Critical Data
- Mission Critical Video
- Mission Critical Common Services

**MC Common Services**
For all MC services: User authentication and service authorization; security; configuration; de/affiliation; dynamic group management; identity management.

**Mission Critical Data**
Common + Short Data Service; File Distribution; Transmission Control; Disposition Notification...

**Mission Critical Video**
Common + Private & Group Video Call; Transmission Control

**Rel-15**

- Enhanced Mission Critical {Push to Talk, Video, Data}
- MC Communication Interworking between LTE and non-LTE Systems
- MC system migration and interconnection
- MBMS usage for MC communication services

**MC Communication Interworking**
LMR/PMR interworking with MC Services

**MC System Migration and Interconnection**
Inter-agency / inter-server scenarios

# Critical Communications Prospects

- Core and specific MC services continue to be enhanced, release by release.
    - Ongoing evolution and enhancement of all aspects (media plane, security, services [push to talk, video, data], signalling, interworking, migration/interconnection…)
- Currently under study, potential features in Rel-16:
    - Future Mobile Railway Communication System
    - MBMS APIs for MC Services

# Conclusions

- The 3GPP organization welcomes new participants.

- Most work in 3GPP advances the broadband capabilities of the 3GPP system: **all services operating over mobile networks benefit**.

- Please consider getting involved and participating in the work.

# For more Information:

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www.3gpp.org

Search for WIDs at http://www.3gpp.org/specifications/work-plan and http://www.3gpp.org/ftp/Information/WORK_PLAN/ (See excel sheet)