

TSDSI Induction Program

About 3GPP

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3GPP and its Scope

- 3GPP, 3rd Generation Partnership Project is an industry collaboration that develops and manages the standards for the mobile communications systems.
- Global standards organization for mobile communication
- 700 Companies from all over the world actively participating
- A new Release every 15 to 24 months
- A new Generation every 10 years – 3G/UMTS, 4G/LTE, 5G
- Standards for all sectors of mobile communication – VoLTE, NB-IoT
- ~20 Working Groups & TSGs, each meeting 4 to 8 times a year
- Contribution driven
- Consensus based

Scope:

3GPP, 3rd Generation Partnership Project manages a variety of standards, and essentially it looks after the standards that have come out of GSM and UMTS. These include:

- GSM and related 2G / 2.5G standards including GPRS and EDGE.
- UMTS and related 3G standards including HSPA
- LTE and related 4G standards
- 5G and beyond standards

3GPP organisational partners (1/2)

- 3GPP has a set of organisational partners. These are essentially regional standards institutions.
- Organizational Partnership is open to any Standards Organization, irrespective of its geographical location, which has:
 - A national, regional or other officially recognized status and the capability and authority to define,
 - publish and set standards within the 3GPP scope, in that nation or region
 - An Intellectual Property Rights (IPR) Policy which is compatible with those of the Organizational Partners
 - Committed itself to all or part of the 3GPP scope
 - Signed the Partnership Project Agreement
 - Standards Organizations may apply to become an Organizational Partner by writing to any of the existing Organizational Partners.`
- These organisational partners determine the general policy and strategy of 3GPP as well as undertaking a number of other specific tasks.

3GPP organisational partners (2/2)

There are currently 7 Organizational Partners of 3GPP

3GPP ORGANIZATIONAL PARTNERS		
ORGANIZATION	ORIGINATING REGION	Country
ARIB	Association of Radio Industries and Businesses	Japan
ATIS	Alliance for Telecommunications Industry Solutions	USA
CCSA	China Communications Standards Association	China
ETSI	European Telecommunications Standards Institute	Europe
TSDI	Telecommunications Standards Development Society India	India
TTA	Telecommunications Technology Association	Korea
TTC	Telecommunication Technology Committee	Japan

Individual Members, Observers and Guests (1/2)

Individual Members

- It is essential to take individual membership of 3GPP to take part in Standard development of 3GPP.
- All entities registered as members of an Organizational Partner and eligible for participation in the technical work of that Organizational Partner, can become Individual Members of 3GPP if they are committed to support 3GPP and:
 - To contribute technically or otherwise to one or more of the Technical Specification Groups within the 3GPP scope
 - To use the 3GPP results to the extent feasible
 - An Individual Member has the right to participate in the work of 3GPP by attending meetings of the technical Specification Groups and subtending groups.

Individual Members, Observers and Guests (2/2)

Observers and Guests

- The status of Observer may be granted by the Organizational Partners to an entity which has the qualifications to become a future Partner
- An Observer may send a single representative to an Organizational Partners or PCG meeting. An Observer may also have representatives at TSG meetings. Observers shall not take part in decision making or hold any leadership positions
- Additional participation rights of an Observer shall be decided by the Organizational Partners on a case-by-case basis
- The status of **Guest** may be granted for a limited period, by the Organizational Partners to an entity which has the qualifications to become a future Individual Member. The limited period shall be decided by the Organizational Partners on a case-by-case basis

Market Representation Partners (MRPs)

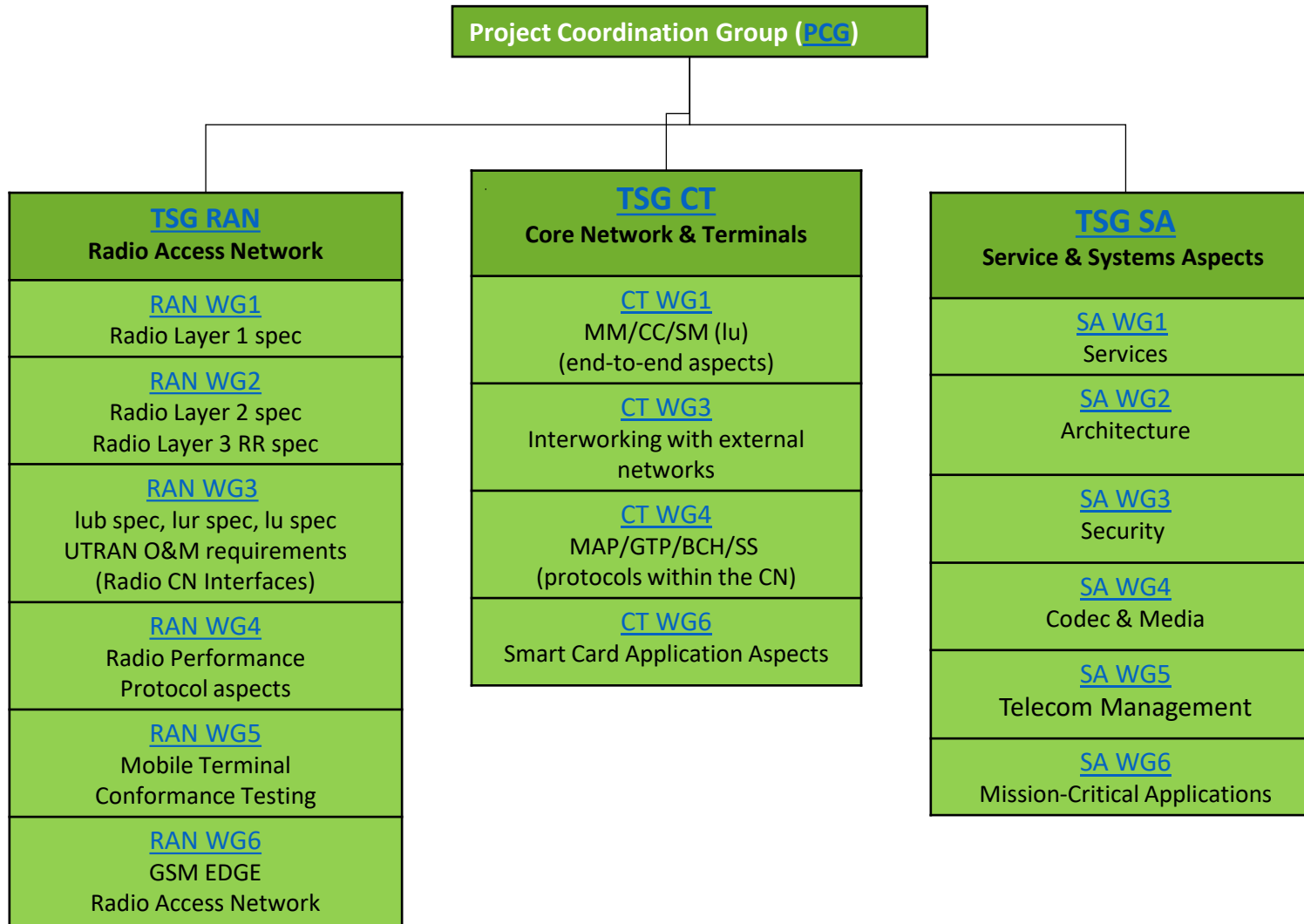
MRP is an entity which has the ability to offer market advice to 3GPP and to bring into 3GPP a consensus view of market requirements (e.g., services, features and functionality) falling within the 3GPP scope:

- Does not have the capability and authority to define, publish and set standards within the 3GPP scope, nationally or regionally
- Has committed itself to all or part of the 3GPP scope;
- Has signed the Partnership Project Agreement.

Currently, there are over 20 MRPs associated with 3GPP



3GPP Organization Structure



- 3GPP – The 3rd Generation Partnership Project (“the project”)
- PCG – Coordination of 3GPP by the Organizational Partners (OPs)
- Technical Specification Groups (TSGs) covering different aspects of 3GPP system & process
- TSGs are organized into **Working Groups (WGs)**
- TSGs meet 4 times a year in the so-called “Plenary meetings” (co-located)
- WGs meet once or more per plenary cycle (mostly not co-located)
- Each TSG and each WG elects its own leadership (2year terms / 2 terms)
- **Technical work is mostly done in WGs**
- **Overall planning and coordination in TSGs**
- **Individual Members (IMs) participate in TSG and WG (TSDSI-19 IMs)**

Project Co-ordination Group

- PCG – Coordination of 3GPP by the [Organizational Partners \(OPs\)](#)
- The Project Co-ordination Group (PCG) meets about twice a year
- Discussion takes place electronically between meetings
- Final Adoption of TSG work items
- Highest Decision-making body
- Determines overall time frame and manages work progress in TSG
- Handles appeal from individual members on procedural or technical matters referred to them



Technical Specification Groups

- The Technical Specification Groups meet in series/parallel (TSGs CN, RAN, CT in parallel followed by TSG SA). They meet four times per year: in March, June, September and December
- The TSGs have the authority to approve their own specifications
- TSG SA undertakes a co-ordination role across all TSGs
- WGs meet 1 or 2 times between TSG meetings
- WGs have up to 350 participants and handle up to 1300 technical documents per week
- Preparation of detailed time frame and management of detailed work progress
- Proposal and approval of work items within the agreed scope and terms of reference of the TSG
- Handling of appeals from individual members on technical matters

TSG RAN

- The RAN or Radio Access Network specifications groups are known as TSG RAN. This is split into six working groups: RAN WG1 to RAN WG6. Often these are shortened to just RAN1 to RAN6.
- The TSG RAN is responsible for the definition of the functions, requirements and interfaces associated with the radio access network, i.e. UTRA / E-UTRA in both FDD and TDD modes.
- TSG RAN encompasses both user equipment and base station functionality addressing areas including radio performance, physical layer, layer 2 and layer 3 RR specification in UTRAN/E-UTRAN; specification of the access network interfaces (Iu, Iub, Iur, S1 and X2); definition of the O&M requirements in UTRAN/E-UTRAN.
- TSG RAN also addresses the conformance testing of both the UE and the Base Stations to ensure complete interoperability regardless of the manufacturer / designer of the equipment.

TSG SA

- The Service and System Aspects Working Group is known as TSG SA. TSG SA is responsible for the overall architecture and service capabilities of systems and, as such, has a responsibility for cross TSG co-ordination.
- There are six working groups known as SA WG1 to SA WG6. Again these are often referred to as just SA1 to SA6.
- Each working group is responsible for a different area of the services and systems: SA1 - Services; SA2 - Architecture; SA3 - Security; SA4 - Codec; SA5 - Telecom management; and SA6 - Mission critical applications.

TSG CT

- The TSG CT is the working group that addresses the Core Network and Terminals.
- In this role it is responsible for specifying terminal interfaces (logical and physical), terminal capabilities (such as execution environments) and the Core network part of 3GPP systems.

3GPP Process (1/3)

How It Works...?

3GPP works based on

- Participation in face-to-face meetings
- Pro-activity & Contributions – you need written proposals to get attention
- Consensus

Work organization

- Study Items, Work Items
- Releases with fixed time-lines, which are partially overlapping

3 stages, often overlapping

- Stage 1: Requirements
- Stage 2: Architecture
- Stage 3: Protocols

Around 700 Companies actively participate in the 3GPP work

- From all over the world
- All major telecommunication companies – operators, network/device/chipset vendors
- More and more vertical industry representatives bring their work directly to 3GPP

Amazing Track Record

- 3GPP started 1998, since then all major standards projects were deployed
- E.g. 3G/UMTS, 4G/LTE, VoLTE/IMS, NB-IoT, 5G
- Seamless migration from “old” to “new” technology generations

A new Release every 15 to 24 months

- Allows for reasonably fast standardization & deployment of new ideas
- Strong commitment to time-lines guarantees reliable planning and time-to-market
- New technologies get easily introduced (IP, IoT, AI ...)

3GPP Process (2/3)

Some 3GPP Terms explained...

- **Feature:**

New or substantially enhanced functionality which represents added value to the existing system
Complex features may be broken down into building blocks
Study Items (SI) and Work Items (WI) are created

- **SI:**

Feasibility study to analyze the market and potential technical difficulties of a given service or approach.
The results may be made available in a TR (technical report).

- **WI:**

The actual specification development for a new feature and/or a building block. Produces TS (technical specification).
WI may cover more than one specification within TSG and more than one TSG

- **Releases:**

Specifications grouped together

3GPP Process (3/3)

Some 3GPP Terms explained...

CR (Change Request):

- Once a TS or TR has become sufficiently stable and has been approved by the TSG, a version x.0.0 is produced and put under change control
- A CR may be raised by any individual and brought to the attention of the responsible Working Group
- The TSG Secretary shall collate all CRs approved by the WGs of that TSG and shall bring them to the TSG for approval
- Following approval at TSG level, the changes are incorporated, and new version of the specification shall then be made available

"Freezing" of specifications:

- A TSG may decide that a specification is sufficiently stable that it may be considered "frozen"
- After "freezing", a Release can have no further additional functions added. However, detailed protocol specifications (stage 3) may not yet be complete. A "frozen" Technical Specification is one which can have no further new or modified functionality Change Requests
- Only CRs for essential corrections of errors shall be considered

Benefits of becoming member of 3GPP (1/2)

- 3GPP is a technology collaboration platform where organizations from all over the world with experts in various aspects of international mobile telecommunications participate.
- The working groups of 3GPP deal with a large variety of technology topics which have synergy with various related technological development undertaken by the R&D and manufacturing organizations in India.
- Participation in 3GPP allows opportunity to get exposure to most advanced mobile communication technologies and the entire ecosystem around that.

Benefits of becoming member of 3GPP (2/2)

- This provides opportunity to make contributions in the development of advance technologies and incorporation of IPRs in the international standards. Thus, Indian requirements can also become part of International standards.
- As an example, NAVIC system of ISRO became part of the 3GPP standards due to the contributions made by TSDSI members of 3GPP. The handset manufacturers will introduce NAVIC facility in the headsets as we have the GPS facility today.
- Since, most of the large organizations in the area of equipment manufacturers, chip manufacturers, power amplifier manufacturers, R & D organizations, telecom service providers are part of 3GPP, it provides opportunity to explore one to one or one to many collaborations not only for development of standards but also for commercial purposes.

Intellectual Property Rights (IPR) Policy

- Individual Members shall be bound by the IPR Policy of their respective Organizational Partner
- Individual Members should declare at the earliest opportunity, any IPRs which they believe to be essential, or potentially essential, to any work ongoing within 3GPP. Declarations should be made by Individual Members to their respective Organizational Partners
- Organizational Partners should encourage their respective members to grant licences on fair, reasonable terms and conditions and on a non-discriminatory basis

Important Links

- About 3GPP <https://www.3gpp.org/about-3gpp/about-3gpp>
- 3GPP User (3GU) Portal <http://portal.3gpp.org>
- 3GPP FAQ <https://www.3gpp.org/about-3gpp/3gpp-faqs>
- 3GPP News <http://www.3gpp.org/news-events>
- 3GPP TSG SA – Home <http://www.3gpp.org/specifications-groups/sa-plenary/sa-plenary/home>
- 3GPP Working Procedures http://www.3gpp.org/ftp/Information/Working_Procedures/3GPP_WP.pdf
- Liaison Statements <https://www.3gpp.org/specifications-groups/liaison-statements>
- Current List of Work Items : <https://www.3gpp.org/DynaReport/GanttChart-Level-2.htm>

THANK YOU
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