



CT Status on 6G

Mr. Peter Schmitt
TSG CT Chair

Content

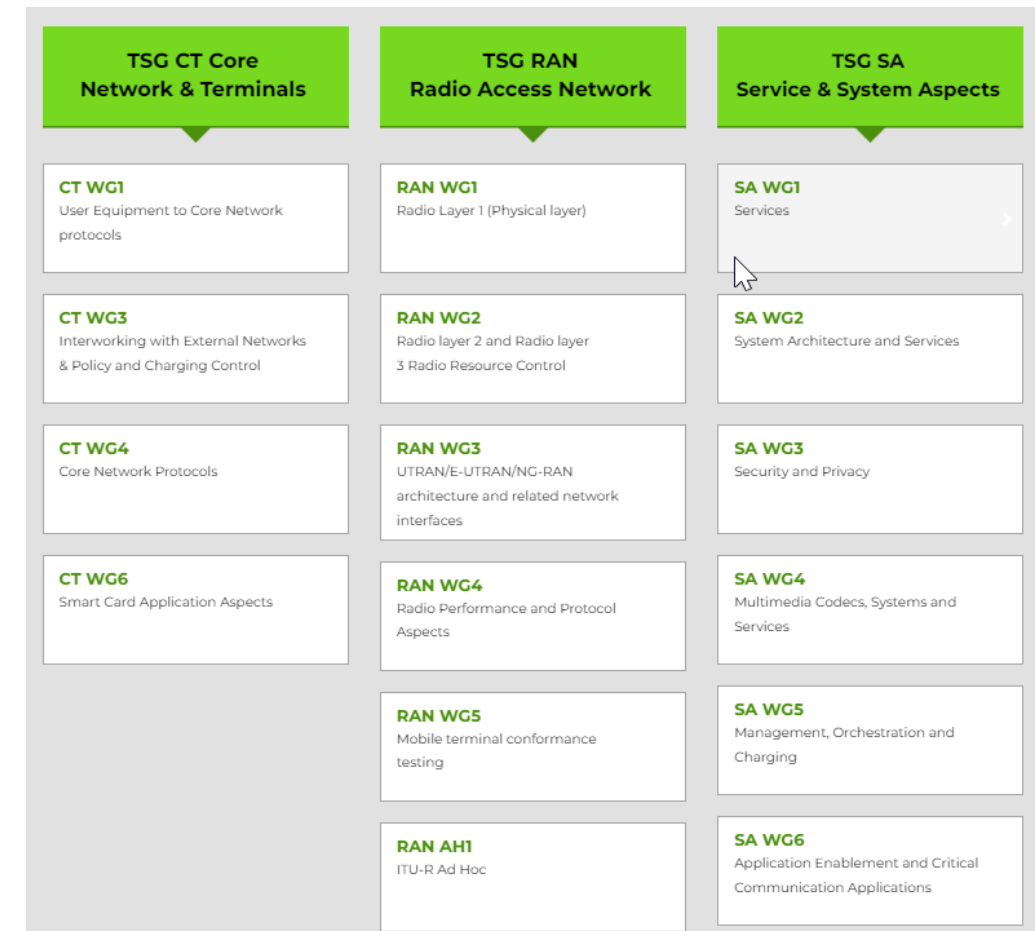


- Technical Specification Groups
- CT Officials
- 3GPP CT
- 6G Studies in CT
- Interactions with other SDOs
- Summary

Technical Specification Groups



- The TSGs prepare, approve and maintain the 3GPP Technical Specifications and Technical Reports.
- They are responsible for the detailed time frame and management of the work's progress;
 - Management of work items;
 - Technical Co-ordination;
 - Proposal and approval of work items within the agreed scope and terms of reference of the TSG
- The TSG Chair is responsible for the overall management of the technical work within the TSG and its Working Groups.
- The WG Chair is responsible for the overall management of the technical work within the WG and its sub-groups.





CT Officials



TSG CT Officials



Peter Schmitt
TSG CT Chair
CCSA
peter.schmitt@huawei.com



Hiroshi Ishikawa
TSG CT Vice Chair
TTC
hiroshi.ishikawa.ev@nttdocomo.com



Francois Piroard
TSG CT Vice Chair
ETSI
francois.piroard@airbus.com



Kimmo Kymalainen
Secretary
MCC
kimmo.kymalainen@etsi.org



Biao Long
TSG CT Vice Chair
CCSA
longbiao@chinatelecom.cn



3GPP CT



Ongoing work in CT

- **Maintenance of Rel-19 and pre Release19:**
currently a number of releases are in use due to roaming all of them have to interact and multi vendor environment. If problems are detected providing maintenance is an important task
 - **Release 20:** contains 2 parts
 - enhance 5G Advance
 - Studies regarding 6G
- The intention is to use 50% of the time for 6G Studies and 50% on 5G Advanced
- The work on Release 20 has started in CT after CT#111 in March 2026
 - 28 WIDS are send for approval by CT WGs



6G Studies in CT

Rel-20 6G SIDs

📶 Study on NAS protocol for 6G System

- 📶 Protocol aspects of the UE to Core Network interfaces and the aspects of the Non-Access Stratum (NAS) protocol
- 📶 Work will be captured in TR 24.860
- 📶 Work Intends to cover
 - Identifying any limitations of legacy NAS protocol.
 - Objectives related to studying the NAS protocol for 6G System. That includes:
 - Studying NAS protocol architecture.
 - Studying NAS message format and encoding.
 - Objectives related to studying stage 3 NAS protocol for 6G System based on the SA2 and SA3 studies for 6G as captured in 3GPP TR 23.801-1 and 3GPP TR 33.801-1. That includes:
 - Studying stage 3 protocol aspects for NAS to fulfil control signalling requirements.
 - Studying stage 3 protocol aspects for NAS to fulfil security and privacy requirements.
- 📶 Work started on the skeleton of the TR

Rel-20 6G SIDs

📶 Study on 6G Control Plane (1/2)

- Work will be captured in TR 29.840
- Work intends to cover:
 - 📶 Study candidate protocols for the Control Plane within the Core Network of the 6G System, based on architectural and functional requirements (including enabling the use of AI) defined by SA2.
 - 📶 Study the protocol framework for the technical realization of the Control Plane within the Core Network for 6GS
 - 📶 Study the technical realization of the registration and discovery framework for 6GS
 - 📶 Study protocol aspects for the event exposure framework within the Core Network for 6GS.
 - 📶 Study protocol impacts for supporting interworking between 5GS and 6GS, based on SA2 requirements.
 - 📶 Study the design of subscriber data models and procedures for 6GS, following SA2 requirements
 - 📶 Study protocol aspects for supporting essential and regulatory services (such as Voice Services, Emergency Services, Location Services, Messaging Services, MPS/MCX Service, PWS) in accordance with requirements from SA2 and CT1.
 - 📶 Study the Model, Principles and Guidelines for API definitions in 6GS and Interface Definition Languages.
 - 📶 Study the formats of UE and Network Identifications for 6GS, following SA2 requirements.

Rel-20 6G SIDs

📶 Study on 6G Control Plane (2/2)

- Work started on:
 - 📶 limitations (passthrough/schema rigidity, static logic, filtering inefficiencies, API versioning and feature negotiation issues)
 - 📶 protocol requirements (general protocol and transport requirements, indirect communication, more agile/flexible protocol framework) and evaluation criteria
 - 📶 candidate protocol solutions, including data serialization formats
 - 📶 5G registration and discovery framework limitations (high number of query parameters, no automated NRF discovery at start-up, excessive info exposure by NRF)
 - 📶 5G event exposure framework limitations (large number of subscriptions, no guaranteed delivery of notifications)
 - 📶 API Principles and IDL (Analysis of OpenAPI 3.1 and 3.2 features)

API: application programming interface

NRF: Network Repository Function

IDL: Interface definition Language



Rel-20 6G SIDs

📶 Study on 6G User Plane (1/2)

📶 Work will be captured in TR 29.841

📶 Work Work intends to cover:

- 📶 Study User Plane protocol within the Core Network and between the Core Network and the Radio Access Network for the 6G system, based on SA2 user plane architectural and functional requirements, to support a diverse set of 6G applications and traffic patterns.
 - 📶 review potential limitations of existing GTP-U protocol.
 - 📶 study possible improvements to the current GTP-U protocol.
 - 📶 study other candidate protocols (e.g. SRv6) and how to support the interworking with existing GTP-U based network (e.g. roaming support).
- 📶 Study the protocol for the interface between the Control Plane and the User Plane within the Core Network for the 6G system, based on SA2 user plane architectural and functional requirements.
 - 📶 identify potential impacts to the protocol for the interface between the Control Plane and the User Plane, related functionalities and procedures to support 6G services and features, based on SA2 user plane architectural and functional requirements (e.g. supporting AI traffic, UPF resiliency, QoS enforcement requirement, etc.), and study possible solutions.
 - 📶 review potential limitations of the existing protocol for the interface between the Control Plane and the User Plane (e.g. in supporting of flexible CP/UP deployment), related functionalities and procedures and study potential improvements.

Rel-20 6G SIDs

Study on 6G User Plane (2/2)

Work started on

- Basic architecture assumptions and basic protocol requirements agreed
- Some limitations in existing system have been identified:
 - GTP-U: lacking of explicit path routing, tunnel based data forwarding
 - PFCP: not cloud friendly
 - Suboptimal solution for CP/UP full-mesh
- Several key issues have been agreed
 - studying candidate 6G User Plane protocols
 - studying better support for CP/UP function full-mesh
 - studying PFCP enhancement for better support for cloud infrastructure
- Several solutions have been documented for 6G user plane protocol



Release 20 Status – 6G

📶 Study on 6G Resilience and Reliability (1/2)

- 📶 Work will be captured in TR 29.842
- 📶 Work intends to cover:
 - 📶 Study requirements on 6G core network and IMS network to improve resilience and reliability, including:
 - 📶 Review the gaps, limitations and challenges, and identify the learnings, as well as referenceable and replicable network resilience mechanisms and procedures from existing networks (e.g., 5GS, IMS), and their impacts as a basis to provide resilience and reliability for 6G services.
 - 📶 Analyse and identify 6G resilience and reliability requirements based on 6G network architecture and 6G capabilities (including enabling the use of AI) specified by SA2, 6G services specified by SA1/SA2 and 6G protocols.
 - 📶 Study mechanisms and procedures on 6G core network and IMS network to improve resilience and reliability, including:
 - 📶 Study on network failure prevention to improve the network robustness and resilience with minimal functionality disruption, including:
 - 📶 Study on failure handling during perturbation events, minimizing the failure impact, including:
 - 📶 Study on network functionality recovery to the pre-event level after perturbation events, including:

Release 20 Status – 6G

📶 Study on 6G Resilience and Reliability (2/2)

📶 Work started on

- Several limitations in existing system have been identified regarding:
 - Fault Propagation, Existing NRF SET mechanism, Existing NF SET mechanism for NFs that register at the UDM, Underlayer network failure, UPF failure and restoration, Overhead in Load and Overload Control
- Several use cases have been agreed, including:
 - Accelerating network fault detection, Zero-outage network, Fast network provisioning to improve resilience, Disaster risk-based network resilience, Prevention of signalling storm, Critical communication infrastructure during a power outage situation, Rapid network restoration and ensuring service continuity, Self-healing network
- Several key issues have been agreed including:
 - Study on network failure prevention mechanisms and procedures,
 - Study on failure handling mechanisms and procedures during perturbation events,
 - Study on network functionality recovery mechanisms and procedures after perturbation events

Rel-20 6G SIDs

📶 Study on miscellaneous functions and services for 6G System

📶 Work will be captured in TR 24.861

📶 Work intends to cover:

📶 Unified Access Control (UAC)

- Study whether and how to enhance UAC mechanism for 6G system to support "consolidated potential functional and performance requirements" included in 3GPP TR 22.870.

📶 Public Warning System (PWS)

- Study how to support PWS as specified in 3GPP TS 22.268 in 6G

📶 Protocol(s) for secure tunnel establishment over non-3GPP access

- Study the protocol(s) for secure tunnel establishment over non-3GPP access in the 6G system, based on the SA2 and SA3 studies for 6G as captured in 3GPP TR 23.801-1 and 3GPP TR 33.801-1 and considering the latest IETF developments



Rel-20 6G SIDs

Study on Network selection

 Work will be captured in TR 24.862

 Work intends to cover

 Study whether and how to enhance network selection (i.e. PLMN selection and SNPN selection) procedures for 6GS based on the legacy requirements included in 3GPP TS 22.011, and new requirements, if any, added in TS 22.011 and/or TS 22.270 and

 Analyse whether and how to enhance the existing steering of roaming (SoR) mechanisms for 6GS based on the legacy requirements included in 3GPP TS 22.011, and new requirements, if any, added in TS 22.011 and/or TS 22.270.

Rel-20 6G SIDs

Study on Network Capability Exposure in 6G System

 Work will be captured in TR 29.830

 Work intends to cover:

-  Study the candidate protocols for the 6G Network Capability (network and application enablement) Exposure, including existing 3GPP exposure protocols and new protocols.
-  Study the protocol design and selection aspects to support 6G Network Capability (network and application enablement) Exposure.
-  Study the protocol impacts for enabling interworking/coexistence with the 5G Network Capability Exposure services.

Rel-20 6G SIDs

🌿 Study on Protocol for AI in the 6G System

🌿 Work will be captured in TR 29.832

🌿 Work intends to cover:

- 🌿 Study on the candidate protocols and the protocol design considerations to support and enable the use of AI (e.g., AI agent, intent) in 6G.
- 🌿 Study on the technical realization for the interfaces under CT3 remit to support and enable the use of AI (e.g., AI agent, intent) in 6G.
- 🌿 Study on the impact of 6G interworking with 5G with the introduction of AI protocols.

Coordination with IETF would be needed for the AI Agent related protocol study.
At IETF currently 4 WGs are under discussion in the area of AI.

Rel-20 6G SIDs

📶 Study on 6G Network Interworking with External Data Networks

📶 Work will be captured in TR 29.833

📶 Work Intends to cover

- 📶 Study the candidate protocols for 6G Network Interworking with External Data Networks.
- 📶 Study protocol selection and impacts on 6G Network Interworking with External Data Networks based on the corresponding Stage 2 agreements.

Rel-20 6G SIDs

📶 Study on Protocol aspects for Data Framework in Core Network of 6G System

📶 Work will be captured in TR 29.845

📶 Work Intends to cover

📶 Analysis of the potential protocol requirements based on the data framework architecture defined by stage 2, focusing on the use cases and functionalities that may potentially impose stage 3 requirements, such as data registration and discovery, data collection/transfer, data exposure, data model.

📶 Study the candidate protocols for data framework under CT4 remit based on the architectural and functional requirements defined by stage 2.

NOTE: The protocol study for UE aspects, RAN aspects, and data collection from OAM/AF within data framework architecture are out of scope at the current stage, and relevant coordination with other working groups may be required at a later stage.

Interaction with other SDO



IEEE and IETF

- ongoing task CT contacted IEEE Registration Authority Committee (RAC) regarding allocation of an EtherType value per 3GPP TS 24.193 and ask to allocate a value.
- IANA registrations at IETF.
- Any dependencies and interactions are tracked by MCC on the 3GPP web page under Delegates Corner:
[IEEE/IETF \(3gpp.org\)](https://www.3gpp.org/standards/3gpp/IEEE/IETF)



IETF-3GPP Coordination meeting

 A side meeting is held during each IETF meeting

- Participants are: CT chair, IETF liaison, IESG members, IAB members, WG chairs and delegates. About 40 attendees
- Topics to be discussed are:
 - Liason statement(s),
 - referenced documents by 3GPP and there status
 - Necessary action to improve the cooperation.



Summary



Summary

- Currently CT focus is Rel-20, 5G advanced and 6G Studies
- The Status of the work can be derived from the workplan
- A new Generation is seen as a chance to check if a protocol currently in use is future proved
- 6G studies are intended to analyse the protocols which are candidates for 6G and to follow up closely the ongoing work in other SDOs like IETF
- 6G studies are also analyzing 5G, "the usual lessons learned from previous releases" e.g. the handling of OpenAPI means.
- A final protocol decision will take place once stage 2 architecture is agreed
- Completion of 6G studies are foreseen by September 2027 6 Month after SA2(Architecture) and 3 month after SA3 (security) have completed their studies



Thank You!



Peter Schmitt
TSG CT Chair
CCSA
peter.schmitt@huawei.com