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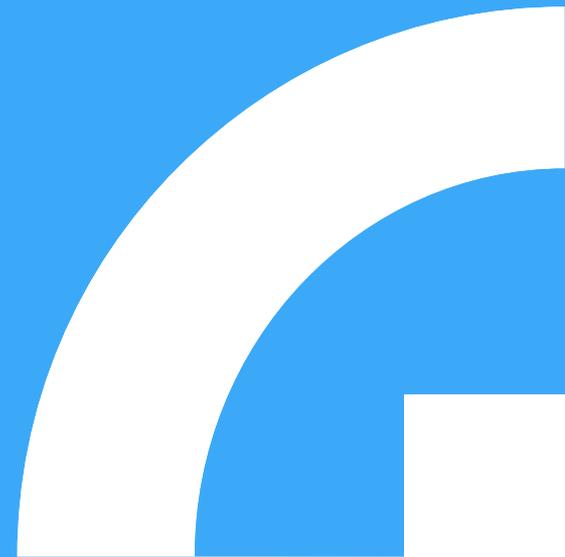
# 3GPP Core Network and Terminals

Georg Mayer  
Chairman of 3GPP TSG CT

**3GPP Summit**

Standards Timeline for 5G

GIS MOTC Convention Center  
Taipei, Taiwan, 24 November 2015



# Outline

- 3GPP CT Working Groups & Roles
- 3GPP CT Current Status (Rel-13)
- Mission Critical Push To Talk Service
  - Service & Architecture
  - CT related MCPTT Work
  - Work Status

# CT Terms Of Reference

- Protocol Specification (Stage 3)
- CoreNetwork Internal and Terminal Interfaces
- Interworking with other Networks
- Certain aspects of the SmartCard
- Also some Stage 2 aspects
- Relation with other Standards Bodies (GSMA, IETF, ...)

# 3GPP Areas of Work

- EPC – Evolved Packet Core
- IMS – IP Multimedia Subsystem
- PCC – Policy and Charging Control
- HSS – Home Subscriber Server
- IMS/CS Interactions - Voice Call Continuity, CS-Fallback
- QoS, CS, GPRS, CAMEL, legacy issues

# 3GPP CT Structure

- 3GPP TSG Core Network & Terminals Plenary
  - CT1 - Call Control, Session Control, Mobility Mgmt
  - CT3 – Interworking with External Networks
  - CT4 – Network Internal Interfaces
  - CT6 – Smart Card Application Aspects

# 3GPP CT In Numbers

- about 400 Technical Specifications (TS's) and Technical Recommendations (TR's) owned by CT WGs
- about 8,000 documents treated / Year
- 4 Plenary Meetings / Year
- about 6 Working Group Meetings / Year
- about 150 – 250 Delegates in WGs / Meeting

# 3GPP CT Leadership

## TSG CT

Chairman Georg Mayer, CCSA  
ViceChairs Martin Dolly, ATIS  
Atsushi Minokuchi, TTC  
Nigel Berry, ETSI  
MCC: Kimmo Kymalainen

## CT WG1

Chairman Atle Monrad, ETSI  
ViceChairs Chen-Ho Chin, ETSI  
Peter Leis, ETSI  
MCC: Frédéric Firmin

## CT WG3

Chairman Weihua Qiao, CCSA  
ViceChairs Kenjiro Arai, TTC  
Susanna Fernandez, ETSI  
MCC: Maurice Pope

## CT WG4

Chairman Nigel Berry, ETSI  
ViceChairs Yvette Koza, ETSI  
Lionel Monrad, ETSI  
MCC: Kimmo Kymalainen

## CT WG6

Chairman Paul Jolivet, TTA  
ViceChairs Michele Berionne, ETSI  
Heiko Kruse, ETSI  
MCC: Xavier Piednoir

# What Is “Stage 3”?

- Detailed Protocol Specifications
- Based on Stage 2 Requirements
- Communication between entities (network switches and terminals)
- Base for Product Implementations

# Relation With Other Standards Organizations - IETF

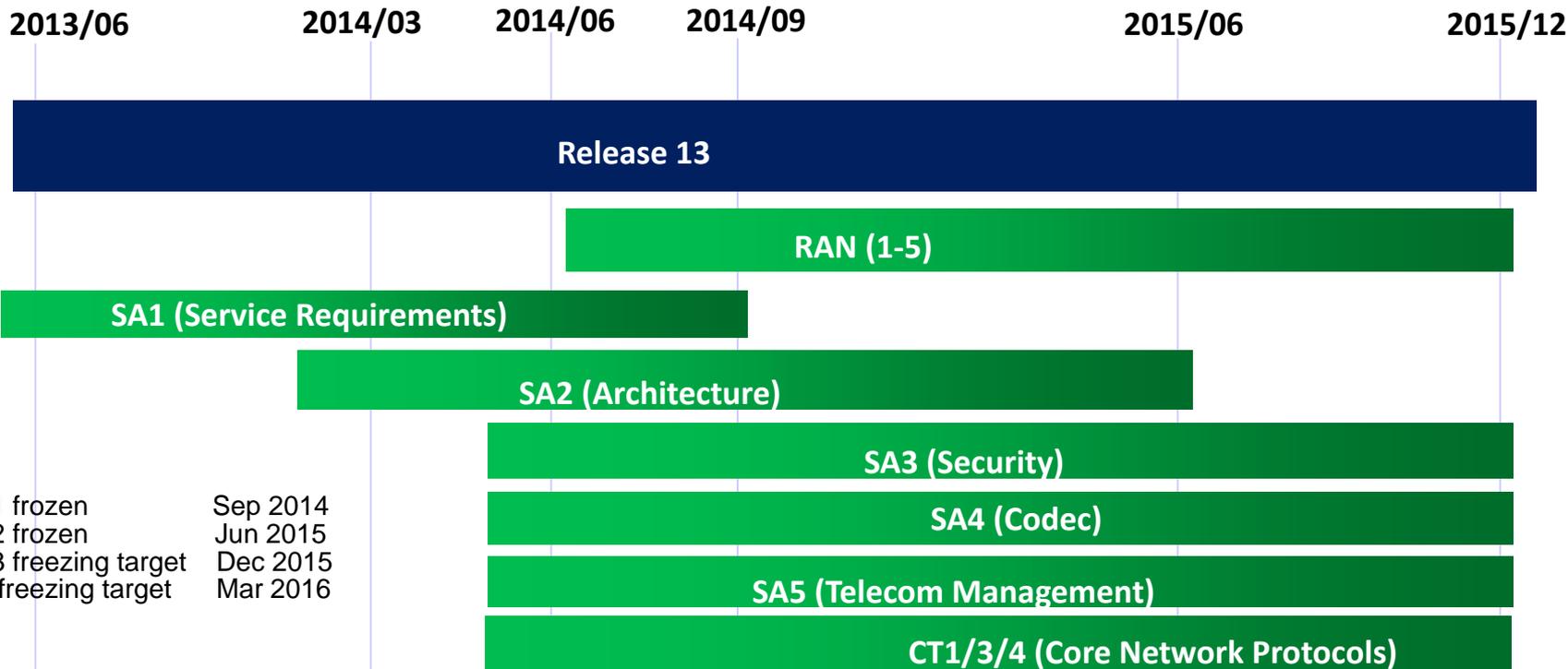
- Internet Engineering Task Force
- Different background and working methods than 3GPP
- Lots of 3GPP standards depend on IETF protocols, e. g. IMS is built upon SIP, diameter, SDP
- Many IETF functionalities are incorporated into 3GPP system, e.g. Telepresence, WebRTC
- IETF Drafts are open dependencies in 3GPP

# 3GPP CT Work Status (Rel-13)

# CT – Release 13 Work

- about 40 Work Items in CT for Rel-13, e.g
  - Mission Critical Push To Talk
  - EPC Signalling Improvement for Race Scenarios
  - Cellular Internet of Things
  - IMS Operator Determined Call Barring
  - Enhancements to existing features
  - Protocol Evolution

# 3GPP Release 13 Timeline



## Rel-13 Status

- Freezing of Stage 3 in December 2015 Plenary
- Exceptions need to be clear and approved by Plenary
- Another 3 months (till March 2015) for CT WGs to work on the outlined exceptions
- March 2013 will see the “deep-freeze”
- Afterwards CRs against R13 will only be allowed for FASMO (frequent and severe mis-operation)

# Mission Critical Push To Talk

- **Mission Critical**  
fast setup times, high availability, reliability, priority handling
- **Push to Talk**  
group call, walkie-talkie
- **Service**  
3GPP so far did not specify dedicated services  
new requirements and players in 3GPP  
already existing (legacy) deployments

- Stage 1 by SA1, input from various Public Safety communities/players
- New Stage 2 WG: SA6 Mission Critical Applications
- Complete Solution ready by end of Release 13
- Work in CT Groups started in July 2015
- Work is close to 50% complete now
- 100% planned for March 2016

# MCPTT Functionality

- On- & Off-Network Operation
- Floor Control
- Group Management
- Configuration Management
- Identity Management

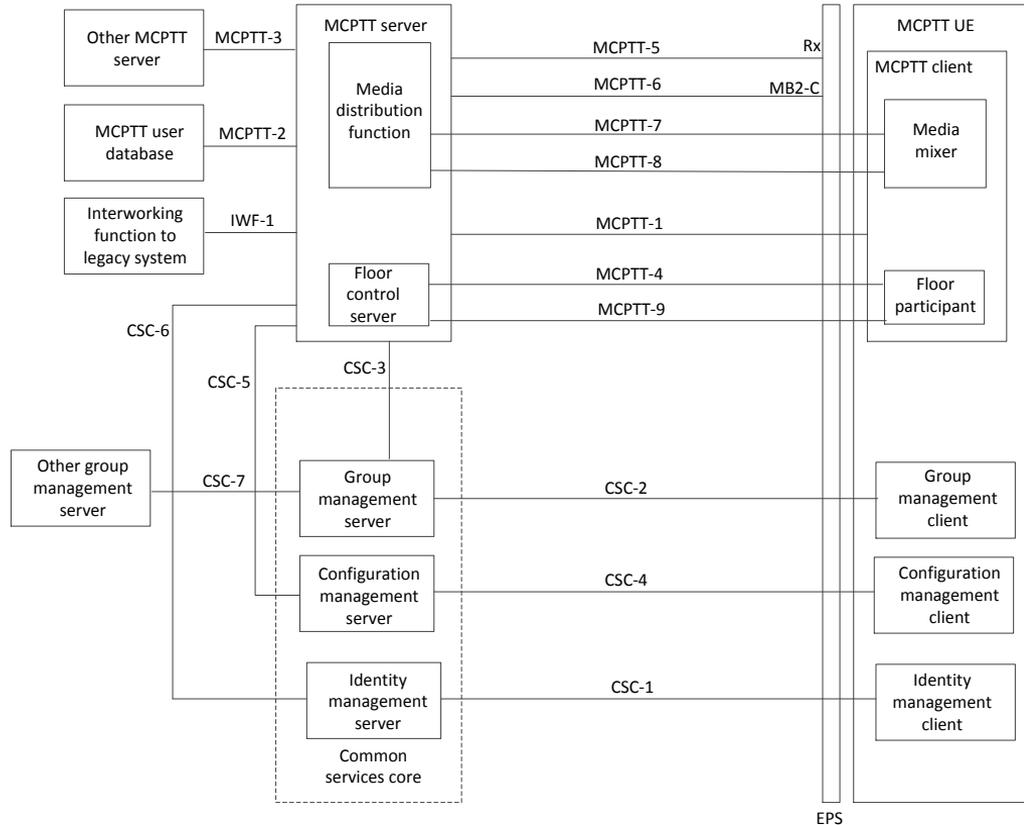
# MCPTT and 3GPP Network

- Access via E-UTRAN, using EPS Architecture
- SIP-core: IMS-compliant Network
- Utilize 3GPP Enablers
  - Group Communication GCSE\_LTE
  - Proximity Services (ProSe)
- Application Plane: Common Service Core

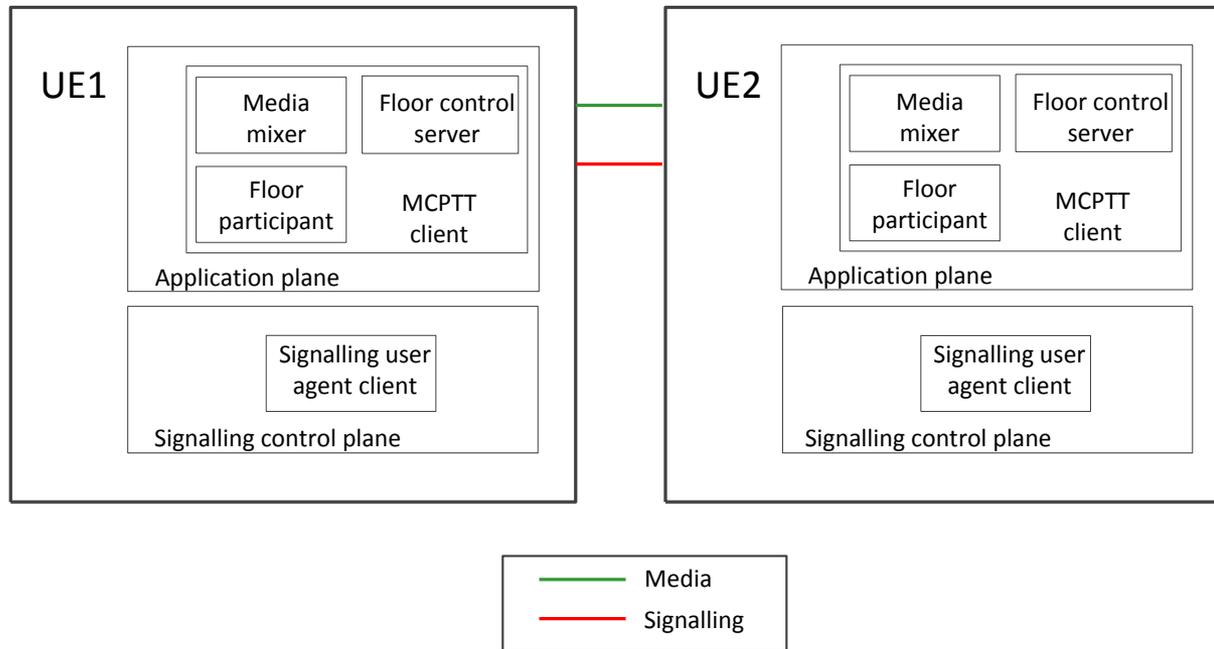
# SIP-Core

- The SIP core contains a number of sub-entities responsible for registration, service selection and routing in the signalling control plane.
- The SIP core shall be either:
  1. a 3GPP IMS; or
  2. a SIP core, which *internally* need not comply with the 3GPP IMS architecture, but with those *reference points* of 3GPP IMS which are required to provide the MCPTT service

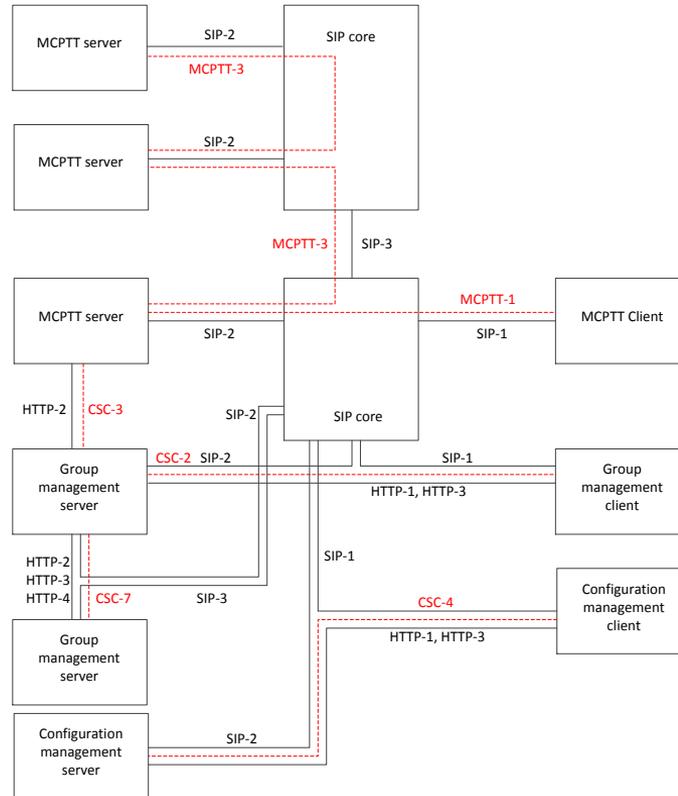
# MCPTT Functional Model



# MCPTT Off-Network Operation



# MCPTT an 3GPP Architecture



## Mapping of Interfaces

- SIP-1 → IMS Gm
- SIP-2 → ICS / Ma
- SIP-3 → Mm / Ici
- HTTP-1 → Ut
- AAA1 → Cx

# Some 3GPP MCPTT Specs

- Stage 1:
  - TS 22.179 MCPTT over LTE
- Stage 2:
  - TS 23.779 Study on application architecture to support mission critical communication services
  - TS 23.179 Functional architecture and information flows to support mission critical communication services
- Stage 3:
  - TS 24.379 MCPTT call control protocol specification
  - TS 24.380 MCPTT media plane control specification
  - TS 24.381 MCPTT group management protocol specification
  - TS 24.382 MCPTT identity management protocol specification
  - TS 24.383 MCPTT Management Object (MO)
  - TS 24.xyz MCPTT configuration management protocol specification
  - TR 24.980 Requirements for support of MCPTT Service over the Gm reference point

# MCPTT Profile

- TR 24.980 Requirements for support of MCPTT Service over the Gm reference point
- minimum IMS (24.229) profile of the Gm reference point for SIP core implementation to guide interoperable implementation of MCPTT solutions
- Separate Work Item in 3GPP CT

# Thank you!