

## TSDSI SG2 Organized Seminar

### **Public Safety**

(SESSION II: 3GPP MCPTT Overview)

### **Mission Critical Push To Talk**

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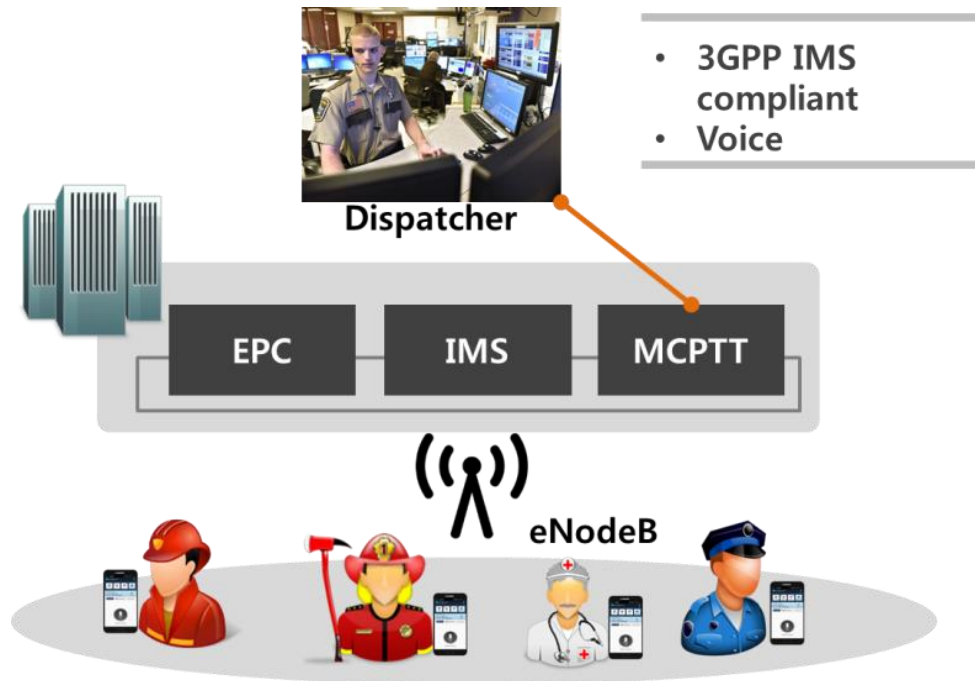
## ❑ What is 3GPP MCPTT?

- ◇ A system for mission-critical voice communication.
- ◇ Designed keeping public safety agencies as primary users, with following technical requirements:
  - High availability/reliability
  - Secure and arbitrated communication
  - Low latency
    - KPI 1 - MCPTT Access time < 300 ms
    - KPI 2 - End-to-end MCPTT Access time < 1000 ms
    - KPI 3 - Mouth-to-ear latency < 300 ms
- ◇ Worked on by 3GPP in Rel-13, finalized in March 2016.
- ◇ **Definition from 3GPP TS 22.179**  
“A group communication service with fast setup times, ability to handle large groups, strong security and priority handling.”

# Operation Modes

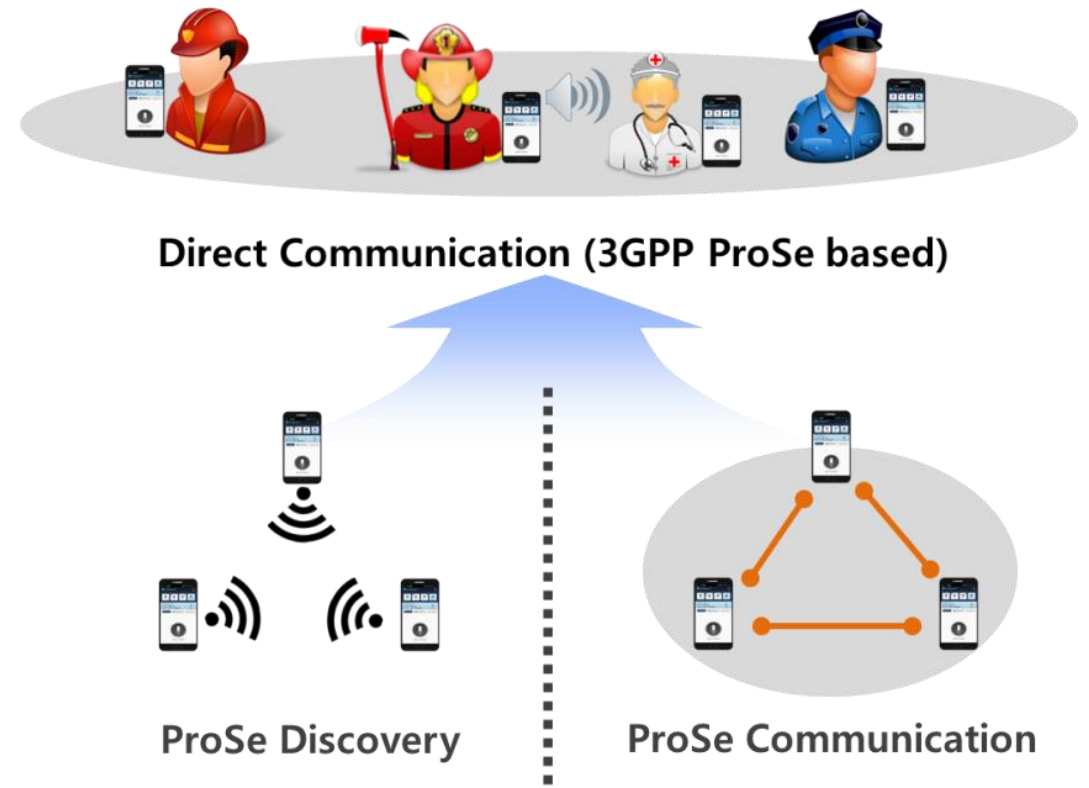
## ❑ On-network

- ◇ Communication channels through the network

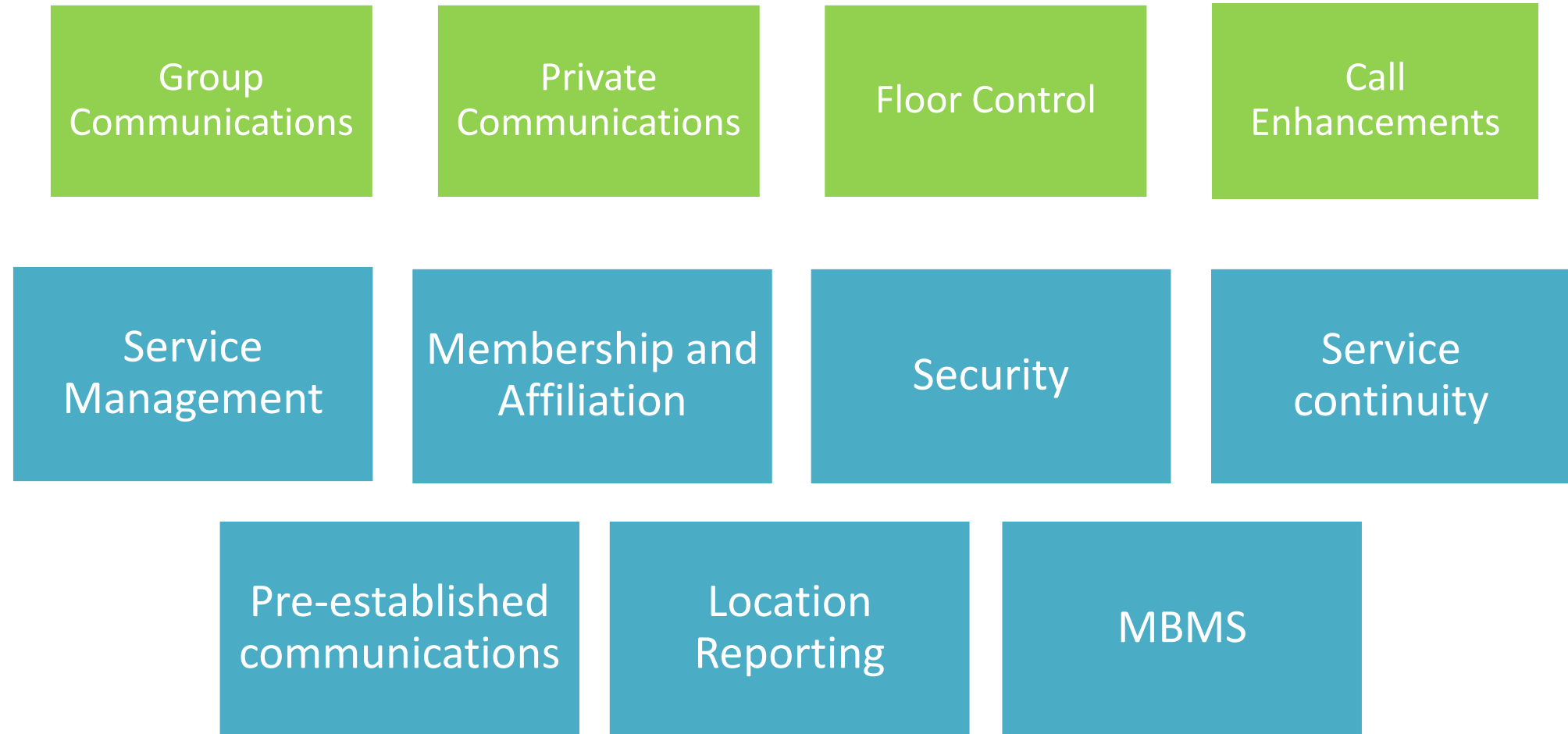


## ❑ Off-network

- ◇ Direct device-to-device communication



# Service requirements and Functionalities



# Functionalities

- Group Management
- Identity Management
- Configuration Management

## Service Management

- Group Membership
- Affiliation
- De-affiliation

## Membership & Affiliation

- Service Authorization
- User Authentication
- Encryption (control and media)

## Security

- Control plane signalling is established in advance
- Bearers are reserved
- Push of PTT button triggers the call

## Pre-established Communications

- UE-to-Network Relays
- Remote UEs channel control and media through relays
- Transparent to user

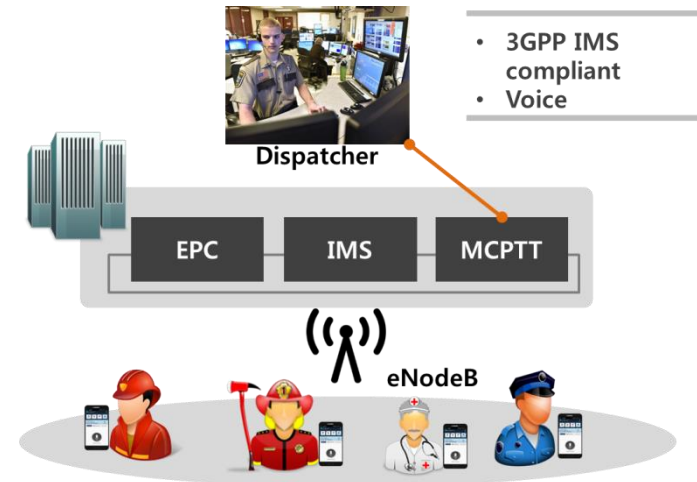
## Service Continuity

# Services

# Group Communications

- ❑ Group calls
  - ◇ Chat group calls
  - ◇ Pre-arranged group calls
- ❑ Broadcast group calls
- ❑ Emergency and Imminent Peril group calls
- ❑ Emergency Alerts
- ❑ Audio cut-in enabled group calls

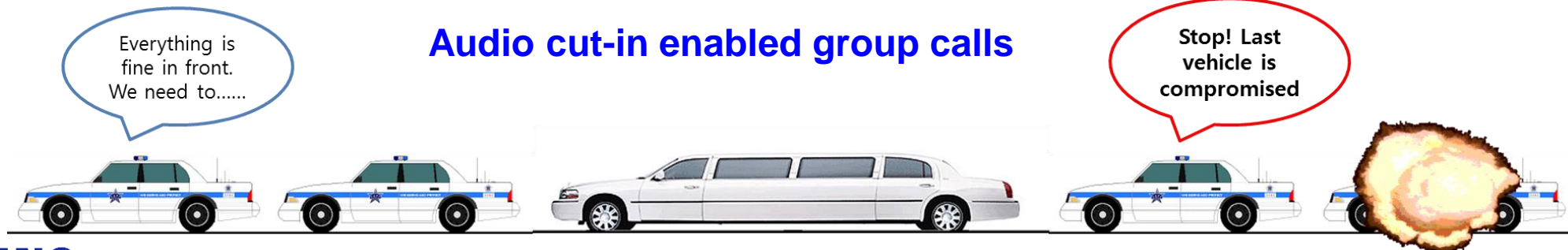
## On-network Group Call



## Off-network Group call



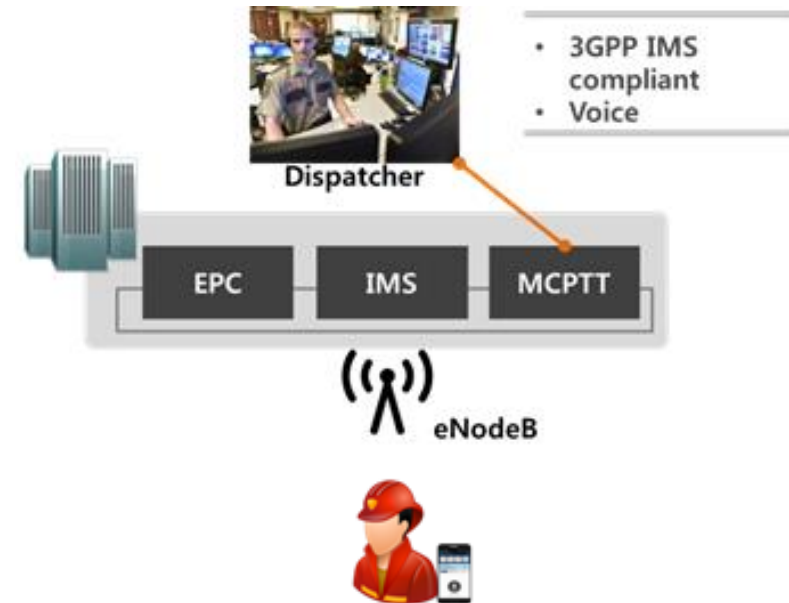
## Audio cut-in enabled group calls



# Private Communications

- ❑ Private calls
  - ◇ Automatic commencement calls
  - ◇ Manual commencement calls
- ❑ Emergency private calls
- ❑ Ambient listening calls
  - ◇ Locally initiated
  - ◇ Remotely initiated
- ❑ Call-back requests

## On-network Group Call



## Off-network Private call





# Floor Control

- ❑ Arbitrated communications using floor control server
  - ◇ Allow only one user to speak at a time
  - ◇ Queueing
  - ◇ Priority handling
- ❑ Group call and Private call
- ❑ On-network and Off-network

# Call Enhancements

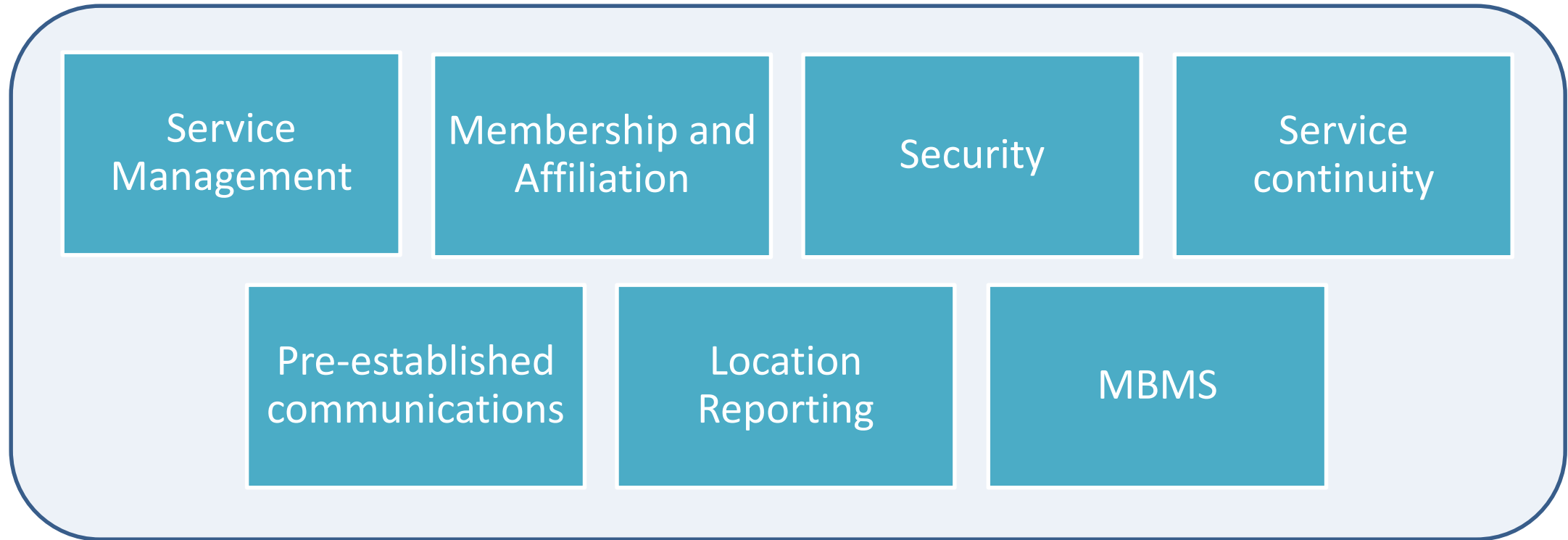
- ❑ Remotely initiated MCPTT calls
  - ◇ Authorized users can trigger UEs to make MCPTT calls
  - ◇ No restriction on type of the call
  
- ❑ First-to-answer calls



- ◇ Incoming call notification goes to the group
- ◇ Call establishes only with the first user who answers

# Common Functionality Architecture

- Common components across Mission Critical Services (PTT, Video, Data)





**Thank You**