TSDSI SG2 Organized Seminar

Public Safety
(SESSION I: 3GPP MCVideo Overview)

Mission Critical Video

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- MCVideo applications
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Example Application: Surveillance

1. Mobile video surveillance based on patrol car
2. High point fixed video surveillance
3. Covert investigation, Temporary surveillance
4. UAV surveillance

MCVideo use cases (TR 22.879):
- Car Bombing Incident
- Remote Monitoring of a Road Traffic Stop
- Pursuit (Car Chase, Robbery) - Realtime
- Hostage Incident
- Train Crash and Fire
- Incident/Rescue Investigation
- ...

MCVideo CPE

PS-LTE

MCVideo UAV

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Typical Mission Critical Video Solution

Dispatching Center

Video Conference

Video interconnection

Video from Surveillance area

Remote Expert

Field Agents

Accident Site

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MCVideo service characteristics

- Full HD (1920x1080) video resolution
  - Enables license plate reading, facial and fingerprint recognition and overview of scenes

- Support for Low latency video modes (Emergency scenarios)
  - E2E delay <= 1 sec
  - Transmission start duration < 2 sec

- Support high mobility
  - Speeds upto 160 Kmph

- Optimized use of network bandwidth.
  - MCVideo service requires high data rate.
MCVideo services

- Group communications
- Private communications
- Video Pull and Video Push
- Capability Information Sharing
- Ambient Viewing
- Transmission and Reception Control
Group communications

- All group members can send video streams to the group subject to transmission control policy
- The group communication will last until being released by authorized user (e.g., initiator or dispatcher) or server.
Either party can send video stream at any time
Video Pull and Video Push

- “Pull” is from the view of the initiator
- On-Network
  - One-to-One video pull
  - One-from-Server video pull
- Off-Network
  - Video pull to self

- On-Network
  - One-to-One video push
  - One-to-Server video push
  - Remotely initiated video push
  - Remotely initiated video push to group
- Off-Network
  - One-to-One video push
  - Remotely initiated video push
  - Remotely initiated video push to group
Capability Information Sharing

- Capabilities of the MCVideo UEs are published in both on-network and off-network operations.
- It is useful to know about MCVideo UE capability in order to be sure the operational purpose can be achieved.

Ambient Viewing

- Locally initiated – To let the dispatcher view the ambience of a MCVideo UE under threat scenarios.
- Remotely initiated – Dispatcher can view the ambience of a remote MCVideo UE.
- No indication of the on-going call at the “Viewed-to” MCVideo UE.
Transmission control and Reception control

- On-Network Transmission and Reception Control
  1. Request to Transmit Video
  2. Transmission Control for the request
  3. Initiate reception control
  4. Reception control for the available video stream
  5. Notifications and Downloading of video stream
  6. Downlink status update – Required for decision to stop/store online video stream

- Transmission control in off-network can be performed in two ways:
  ◊ Single arbitrator: transmission participants rely on a single participant designated as transmission arbitrator for the arbitration of transmission requests.
  ◊ Self arbitration: each transmission participant arbitrates its own transmission based on its view of the topology.

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Key 3GPP specifications for MCVideo

- **Stage 1 – 3GPP SA1**
  - TS 22.280 – Common requirements
  - TS 22.281 – MCVideo service requirements

- **Stage 2 – 3GPP SA6**
  - TS 23.280 – Common functional architecture
  - TS 23.281 – MCVideo service functional architecture and information flows

- **Stage 3 – 3GPP CT1**
  - TS 24.281 – MCVideo call control signalling protocol
  - TS 24.581 – MCVideo media plane control protocol
Thank You