S1-181340

3GPP TSG-SA WG1 Meeting #82
Dubrovnik, Croatia, 7 - 11 May 2018

New SID

Feasibility Study on Audio-Visual Service Production

(S1-181023)

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Motivation

- 3GPP technologies are already widely used for news gathering
- Content production is complex and expensive
  - currently requires specialised equipment (hardware and software)
- 5G could enable
  - new use cases that currently are not possible
  - increased operational flexibility and efficiency
  - cost reduction

Audio-visual production use cases (1)

a) Remote audio and video production

- '*Remote*' means outside special production facilities (e.g. studios)
  - Stationary operation or in motion, including airborne
- Examples: - News gathering
  - Live outdoor events (e.g. concerts, festivals, street manifestations)
  - Sports events
- Main required functionalities
  - Connecting multiple cameras and microphones with a central location
    - There could be 20-30 cameras and hundreds of microphones
  - Crew communications (on-site and remotely)
  - Remote control of cameras and microphones
- Live production is a particular challenge

Remote production – conventional setup

Cordless camera → Camera transmitter → Video relays → Production vehicles (OB van) → Satellite → Studio

handheld

portable

temporary point-to-point

on-board

vehicular

airborne

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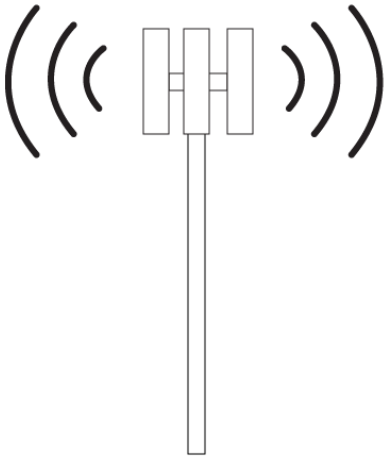
Source: ECC Report 204

Remote production – 5G supported

Cordless camera → 5G → Studio

handheld

on-board



Audio-visual production use cases (2)

b) Studio based production

- On-going shift from specialised hardware to IP-based solutions
- 5G would allow to replace wired studio networks with wireless

c) Remote editing

- Requires access from any location to the content stored e.g. in the cloud

d) Stage performers

- Body-worn microphones, in-ear monitors
  - very low latency (<5ms), tight time synchronisation, low weight, long battery life
- Service links
- Large number of equipment (several hundreds) in a single events

Why are these applications challenging?

Stringent performance requirements in particular on uplink

- Very high throughput for video applications
  - 5-6 Gbps per 4k/UHD camera (uncompressed signal)
  - A large number of cameras (20-30 or more) can be used in complex productions
- Low latency
  - Extreme requirement for stage performers (<5 ms)
  - More relaxed 10s of ms for other live production applications
- Accurate time synchronisation between streams (~10 – 100 µs)
- High reliability
- Long session durations (several hours to several days)
- Guaranteed network access
- Stationary and/or in motion (including airborne)
  - Extended network coverage

Proposal

Objectives

- Study scenarios and use cases where 5G could support AV production
- Identify service requirements
- Gap analysis of the existing 3GPP reports and specifications (e.g. FS_CAV, FLUS)

Output

TR 22.XXX: '*Use cases and requirements for audio-visual content and service production*'

Time line	for info:	SA#82 (December 2018)
	for approval:	SA#83 (March 2019)
Leading WG	*SA1*	
Rapporteur	Roland Beutler, EBU (roland.beutler@swr.de)	

Supporting Members

Company name
EBU
BBC
IRT
BMWi
Sennheiser
Siemens
Qualcomm
Fraunhofer (HHI)
Huawei

Content production sector

- Broadcasters
- Film industry
- News agencies
- Independent producers (fiction, documentary, education)
- Theatres
- Sports events
- Live events (e.g. concerts, festivals)
- Conferences, trade shows
- …

- Potential synergies with other verticals with similar technical and operational requirements (e.g. PPDR)

Thank you

for your attention!

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